

THE FARMLAND PROTECTION TOOLBOX

tax benefits as a result of donating easements. Grantees are responsible for monitoring the land and enforcing the terms of the easements.

Easements may apply to entire parcels of land or to specific parts of a property. Most easements are permanent; term easements impose restrictions for a limited number of years. All conservation easements legally bind future landowners. Land protected by conservation easements remains on the tax rolls and is privately owned and managed. While conservation easements limit development, they do not affect other private property rights.

Agricultural conservation easements are a flexible farmland protection tool. Private land trusts and other conservation organizations educate farmers about the tax benefits of donating easements, and state and local governments have developed programs to purchase agricultural conservation easements from landowners. In addition, agricultural conservation easements can be designed to protect other natural resources, such as wetlands and wildlife habitat.

Executive Orders

Governors of at least 10 states have issued executive orders that document the importance of agriculture and farmland to their states' economy, environment and culture. Some executive orders direct state agencies to withhold funding from projects that would result in farmland conversion. Others have created task forces to investigate farmland conversion. State executive orders have the potential to build public and institutional support for other farmland protection programs. By restricting the use of state funds for projects that would result in the loss of agricultural land, executive orders also can influence the actions of local governments. To the extent that they call attention to the problem of farmland conversion and facilitate discussion about solutions, executive orders can serve as a building block of a comprehensive farmland protection program.

Growth Management Laws

Growth management laws are designed to control the timing and phasing of urban growth and to determine the types of land use that will be permitted at the local and regional levels. At least 12 states have laws that control development or set planning standards for local governments, but only seven - Hawaii, Maryland, Minnesota, New Jersey, Oregon, Vermont and Washington - address the issue of farmland conversion. These seven laws vary in the controls that they impose on state and local governments and in the extent to which they protect agricultural land from development.

Growth management laws take a comprehensive approach to regulating the pattern and rate of development and set policies to ensure that most new construction is concentrated within designated urban growth areas or boundaries (UGBs). They direct local governments to identify lands with high resource value and protect them from development. Some growth management laws require that public services such as water and sewer lines, roads and schools be in place before new development is approved. Others direct local governments to make decisions in accordance with comprehensive plans that are consistent with plans for adjoining areas.

Oregon has one of the nation's strongest growth management laws. As a result of the state's 1972 Land Conservation and Development Act, every county in Oregon has implemented agricultural protection zoning, protecting more than 16 million acres of agricultural land. Washington's Growth Management Act, passed in 1990 and strengthened in 1991, also is proving to be an effective farmland protection tool. Most of Washington's counties have developed inventories of important agricultural land, and several have implemented farmland protection techniques, such as agricultural protection zoning, purchase of agricultural conservation easement programs and transfer of development rights programs since the enactment of the GMA. Growth management laws in Hawaii, Vermont, New Jersey

and Maryland have been somewhat less effective in preventing farmland conversion and promoting the development of local farmland protection programs.

Purchase of Agricultural Conservation Easement Programs

Purchase of agricultural conservation easement programs pay farmers to protect their land from development. PACE is known by a variety of other terms, the most common being purchase of development rights. Landowners sell agricultural conservation easements to a government agency or private conservation organization. The agency or organization usually pays them the difference between the value of the land for agriculture and the value of the land for its "highest and best use," which is generally residential or commercial development. Easement value is most often determined by professional appraisals, but may also be established through the use of a numerical scoring system that evaluates the suitability for agriculture of a piece of property.

State and local governments can play a variety of roles in the creation and implementation of PACE programs. Some states have passed legislation that allows local governments to create PACE programs. Others have enacted PACE programs that are implemented, funded and administered by state agencies. Several states work cooperatively with local governments to purchase easements. A few states have appropriated money for use by local governments and private nonprofit organizations. Finally, some local governments have created independent PACE programs in the absence of any state action.

Cooperative state-local PACE programs have some advantages over independent state or local programs. Cooperative programs allow states to set broad policies and criteria for protecting agricultural land, while county or township governments select the farms that they believe are most critical to the viability of local agricultural economies, and monitor the land once the

easements are in place. Involving two levels of government generally increases the funding available for PACE. Finally, cooperative programs increase local government investment in farmland protection.

PACE programs allow farmers to cash in a fair percentage of the equity in their land, thus creating a financially competitive alternative to selling land for non-agricultural uses. Permanent easements prevent development that would effectively foreclose the possibility of farming. Removing the development potential from farmland generally reduces its future market value. This may help facilitate farm transfer to the children of farmers and make the land more affordable to beginning farmers and others who want to buy it for agricultural purposes. PACE provides landowners with liquid capital that can enhance the economic viability of individual farming operations and help perpetuate family tenure on the land. Finally, PACE gives communities a way to share the costs of protecting agricultural land with farmers.

Right-to-Farm Laws

State right-to-farm laws are intended to protect farmers and ranchers from nuisance lawsuits. Every state in the nation has at least one right-to-farm law. Some statutes protect farms and ranches from lawsuits filed by neighbors who moved in after the agricultural operation was established. Others protect farmers who use generally accepted agricultural and management practices and comply with federal and state laws. Twenty-three right-to-farm laws also prohibit local governments from enacting ordinances that would impose unreasonable restrictions on agriculture.

Right-to-farm laws are a state policy assertion that commercial agriculture is an important activity. The statutes also help support the economic viability of farming by discouraging neighbors from filing lawsuits against agricultural operations. Beyond these protections, it is unclear whether right-to-farm laws help maintain the land base.

THE
FARMLAND
PROTECTION
TOOLBOX

Tax Relief

Circuit Breaker Tax Relief Credits

Circuit breaker tax programs offer tax credits to offset farmers' property tax bills. Four states have circuit breaker programs. In Michigan, Wisconsin and New York, farmers may receive state income tax credits based on the amount of their real property tax bill and their income.

In Iowa, farmers receive school tax credits from their local governments when school taxes exceed a statutory limit. The counties and municipalities are then reimbursed from a state fund. In Michigan, landowners that wish to receive circuit breaker credits must sign 10-year restrictive agreements with their local governments to prevent farmland conversion. In Wisconsin, counties and towns must adopt plans and enact agricultural protection zoning to ensure that tax credits are targeted to productive agricultural land. The Wisconsin program has facilitated the adoption of agricultural protection zoning in more than 400 local jurisdictions.

Like differential assessment laws, circuit breaker tax relief credits reduce the amount farmers are required to pay in taxes. The key differences between the programs are that most circuit breaker programs are based on farmer income and are funded by state governments.

Differential Assessment Laws

Differential assessment laws direct local governments to assess agricultural land at its value for agriculture, instead of its full fair market value, which is generally higher. Differential assessment laws are enacted by states and implemented at the local level. With a few exceptions, the cost of the programs is borne at the local level.

Every state except Michigan has a differential assessment law. Differential assessment is also known as current use assessment, current use valuation, farm use valuation, use assessment

and use value assessment.

Differential assessment programs help ensure the economic viability of agriculture. Since high taxes reduce profits, and lack of profitability is a major motivation for farmers to sell land for development, differential assessment laws also protect the land base. Finally, these laws help correct inequities in the property tax system. Owners of farmland demand fewer local public services than residential landowners, but they pay a disproportionately high share of local property taxes. Differential assessment helps bring farmers' property taxes in line with what it actually costs local governments to provide services to the land.

PROGRAMS THAT ARE ENACTED AT THE LOCAL LEVEL

Agricultural Protection Zoning

Zoning is a form of local government land use control. Zoning ordinances segment counties, cities, townships and towns into areas devoted to specific land uses and establish standards and densities for development.

Agricultural protection zoning ordinances designate areas where farming is the primary land use and discourage other land uses in those areas. APZ limits the activities that are permitted in agricultural zones. The most restrictive regulations prohibit any uses that might be incompatible with commercial farming.

APZ ordinances also restrict the density of residential development in agricultural zones. Maximum densities range from one house per 20 acres in the eastern United States to one house per 640 acres in the West. Some local ordinances also contain right-to-farm provisions and authorize commercial agricultural activities, such as farmstands, that enhance farm profitability. Occasionally, farmers in an agricultural zone are required to prepare farm management plans.

In most states, APZ is implemented at the county level, although towns and townships may also have APZ ordinances. Zoning can be modified through the local political process. Generally, the enactment of an APZ ordinance results in a reduction of permitted residential densities in the new zone. This reduction in density, also called downzoning, is generally controversial because it can reduce the market value of land. A change in zoning that increases permitted residential densities is known as upzoning. A change in the zoning designation of an area—from agricultural to commercial, for example—is known as rezoning. Successful petitions for upzoning and rezoning in agricultural protection zones often result in farmland conversion.

APZ stabilizes the agricultural land base by keeping large tracts of land relatively free of non-farm development. This can reduce the likelihood of conflicts between farmers and their non-farming neighbors. Communities can use APZ to conserve a “critical mass” of agricultural land, enough to keep individual farms from becoming isolated islands in a sea of residential neighborhoods. Maintaining a critical mass of agricultural land can ensure that there will be enough farms to support local agricultural service businesses. By restricting the development potential of large properties, APZ limits land speculation and helps keep land affordable to farmers and ranchers. Finally, APZ helps promote orderly growth by preventing sprawl into rural areas, and benefits farmers and non-farmers alike by protecting scenic landscapes and maintaining open space.

Cluster Zoning

Cluster zoning ordinances allow or require houses to be grouped close together on small lots to protect open land. The portion of the parcel that is not developed may be restricted by a conservation easement. Cluster developments are also known as cluster subdivisions, open space or open land subdivisions.

Cluster subdivisions can keep land available for agricultural use, but generally they are not

designed to support commercial agriculture. The protected land is typically owned by developers or homeowners’ associations. Homeowners may object to renting their property to farmers and ranchers because of the noise, dust and odors associated with commercial agricultural production. Even if the owners are willing to let the land be used for agriculture, undeveloped portions of cluster subdivisions may not be large enough for farmers to operate efficiently, and access can also be a problem. For these reasons, cluster zoning has been used more successfully to preserve open space or to create transitional areas between farms and residential areas than to protect farmland.

Comprehensive Planning

Comprehensive planning allows counties, cities, towns and townships to create a vision for their joint future. Comprehensive plans, which are also known as master or general plans, outline local government policies, objectives and decision guidelines, and serve as blueprints for development. They typically identify areas targeted for a variety of different land uses, including agriculture, forestry, residential, commercial, industrial and recreational activities. Comprehensive plans provide a rationale for zoning and promote the orderly development of public services.

A comprehensive plan can form the foundation of a local farmland protection strategy by identifying areas to be protected for agricultural use and areas where growth will be encouraged. It may include policies designed to conserve natural resources and provide affordable housing and adequate public services. Some counties have used the comprehensive planning process to encourage their cities and towns to develop UGBs and adopt agricultural protection zoning. Others have incorporated the use of PACE and transfer of development rights into their master plans.

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Mitigation Ordinances and Policies

Mitigation ordinances are a new farmland protection technique. In 1995, city officials in Davis, Calif., enacted an ordinance that requires developers to permanently protect one acre of farmland for every acre of agricultural land they convert to other uses. Generally, developers place an agricultural conservation easement on farmland in another part of the city, although mitigation may also be satisfied by paying a fee. While most of the regulatory farmland protection techniques restrict the property rights of farmers, the Davis mitigation ordinance makes developers pay for farmland protection.

King County, Wash., has a “no net loss of farmland” policy in its comprehensive plan. The policy prohibits the conversion of land subject to APZ unless an equal amount of agricultural land of the same or better quality is added to the county’s agricultural production zones.

Right-To-Farm Ordinances

Local governments around the nation are enacting their own right-to-farm laws to strengthen and clarify weak language in state laws. Local right-to-farm laws are most widespread in California, where the state farm bureau developed and distributed a model right-to-farm ordinance during the 1980s.

A local right-to-farm ordinance can serve as a formal policy statement that agriculture is a valuable part of the county or town economy and culture. Some require that a notice be placed on the deed to all properties in agricultural areas, cautioning potential buyers that they may experience noise, dust, odors and other inconveniences due to farming and ranching operations. Local ordinances help educate residents about the needs of commercial agriculture and reassure farmers that their communities support them.

Transfer of Development Rights

Transfer of development rights programs allow landowners to transfer the right to develop one parcel of land to a different parcel of land. Generally established through local zoning ordinances, TDR programs can protect farmland by shifting development from agricultural areas to areas planned for growth. When the development rights are transferred from a piece of property, the land is restricted with a permanent agricultural conservation easement. Buying development rights generally allows landowners to build at a higher density than ordinarily permitted by the base zoning. TDR is known as transfer of development credits in California and in some regions of New Jersey.

TDR is used by counties, cities, towns and townships. Two regional TDR programs for farmland protection were developed to protect New Jersey’s Pinelands and the pine barrens of Long Island, N.Y. TDR programs are distinct from PACE programs because they involve the private market. Most TDR transactions are between private landowners and developers. Local governments approve transactions and monitor easements. A few jurisdictions have created “TDR banks” that buy development rights with public funds and sell them to developers and other private landowners.

Some states, such as New Jersey, have enacted special legislation authorizing local governments to create TDR programs. Other states, notably Virginia, have consistently refused to give local governments such authorization. Counties and towns have created TDR programs without specific state authorizing legislation; municipal governments must work with their attorneys to determine whether other provisions of state law allow them to use TDR.

TDR programs are designed to accomplish the same purposes as publicly funded PACE programs. They prevent non-agricultural development of farmland, reduce the market value of protected farms and provide farmland owners

with liquid capital that can be used to enhance farm viability.

TDR programs also offer a potential solution to the political and legal problems that many communities face when they try to restrict development of farmland. Landowners often oppose agricultural protection zoning and other land use regulations because they can reduce equity. APZ can benefit farmers by preventing urbanization, but it may also reduce the fair market value of their land. When downzoning is combined with a TDR program, however, landowners can retain their equity by selling development rights.

While dozens of local jurisdictions around the country allow the use of TDR, only a few of them have used the technique successfully to protect farmland. TDR programs are complex and must be carefully designed to achieve their goal. Communities that have been most successful in using TDR are characterized by steady growth, with the political will to maintain and implement strong zoning ordinances and planning departments that have the time, knowledge and resources to administer complex land use regulations.

OTHER STRATEGIES TO PROTECT FARMLAND AND SUPPORT AGRICULTURE

Competition for land is only one of the problems facing farmers and ranchers. Financial problems and the burden of complying with regulations are also significant challenges for commercial agricultural operations. Most farmers say the best way to protect farmland is to keep farming profitable. State and local governments have created a variety of marketing programs to support and enhance the economics of agriculture. Several states and a few local governments have developed programs that compensate farmers for protecting natural resources.

FARMLAND PROTECTION ACTIVITIES BY STATE

State	Agricultural Districts	Agricultural Protection Zoning	Circuit Breaker	Differential Assessment	PACE	Right-to-Farm*	TDR
Alabama				▲		▲	
Alaska				▲		▲	
Arizona				▲		▲	
Arkansas				▲		▲	
California	▲	+		▲	▲+	▲	+
Colorado		+		▲	▲+	▲	+
Connecticut				▲	▲+	▲	+
Delaware	▲			▲	▲	▲	
Florida		+		▲	+	▲	+
Georgia				▲		▲	
Hawaii		▲		▲		▲	
Idaho		+		▲		▲	+
Illinois	▲	+		▲		▲	
Indiana		+		▲		▲	
Iowa	▲	+	▲	▲		▲	
Kansas		+		▲		▲	
Kentucky	▲			▲	▲	▲	
Louisiana				▲		▲	
Maine				▲	▲	▲	
Maryland	▲+	+		▲	▲+	▲	+
Massachusetts	▲			▲	▲	▲	+
Michigan		+	▲		▲+	▲	
Minnesota	▲+	+		▲		▲	+
Mississippi				▲		▲	
Missouri				▲		▲	
Montana		+		▲		▲	+
Nebraska		+		▲		▲	
Nevada				▲		▲	
New Hampshire				▲	▲	▲	
New Jersey	▲			▲	▲+	▲	+
New Mexico				▲		▲	
New York	▲		▲	▲	▲+	▲	+
North Carolina	▲			▲	+	▲	
North Dakota		+		▲		▲	
Ohio	▲	+		▲		▲	
Oklahoma				▲		▲	
Oregon		+		▲		▲	
Pennsylvania	▲	+		▲	▲+	▲	+
Rhode Island				▲	▲	▲	
South Carolina				▲		▲	
South Dakota		+		▲		▲	
Tennessee	▲			▲		▲	
Texas				▲		▲	
Utah	▲	+		▲		▲	+
Vermont				▲	▲	▲	+
Virginia	▲+	+		▲	+	▲	
Washington		+		▲	+	▲	+
West Virginia				▲		▲	
Wisconsin		+	▲	▲	+	▲	
Wyoming		+		▲		▲	
TOTAL	16	24	4	49	20	50	15

▲ State program

+ Local program

* A number of local jurisdictions also have enacted right-to-farm ordinances. We do not have a complete inventory.



FACT SHEET

GLOSSARY

ADEQUATE PUBLIC FACILITIES ORDINANCE

A form of comprehensive growth management that prevents new homes from being built in a community until municipal services such as sewers, roads, public water supplies and schools are available to serve the new residents.

AGRICULTURAL CONSERVATION EASEMENT

A legal agreement restricting development on farmland. Land subjected to an ACE is generally restricted to farming and open space use. See also conservation easement.

AGRICULTURAL DISTRICT

A legally recognized geographic area formed by one or more landowners and approved by one or more government agencies, designed to keep land in agriculture. Agricultural districts are created for fixed, renewable terms. Enrollment is voluntary; landowners receive a variety of benefits that may include eligibility for differential assessment, limits on annexation and eminent domain, protection against unreasonable government regulation and private nuisance lawsuits, and eligibility for purchase of agricultural conservation easement programs. Also known as agricultural preserves, agricultural security areas, agricultural preservation districts, agricultural areas, agricultural incentive areas, agricultural development areas and agricultural protection areas.

Agricultural Protection Zoning (APZ)

Zoning is a form of local land use regulation. Agricultural protection zoning ordinances protect the agricultural land base by limiting non-farm uses, prohibiting high-density development, requiring houses to be built on small lots and restricting subdivision of land into parcels that are too small to farm.

APZ takes many forms:

Exclusive agricultural zoning

This form of zoning prohibits non-farm residences and most non-agricultural activities; exceptions are made for parcels of land that are not suitable for farming.

Large minimum lot size zoning

These ordinances require a certain number of acres for every non-farm dwelling, typically at least 20 acres in the eastern United States or at least 35 acres in other regions.

Area-based allowance zoning

These ordinances establish a formula for the number of non-farm dwellings permitted per acre, but houses are typically built on small lots.

Fixed area-based allowance zoning

These ordinances specify a certain number of units per acre.

Sliding scale area-based allowance zoning

Under these ordinances, the number of dwellings permitted varies with the size of the tract. Owners of smaller parcels are allowed to divide their land into more lots on a per-acre basis than owners of larger parcels.

ANNEXATION

The incorporation of land into an existing community that results in a change in the community's boundary. Annexation generally refers to the inclusion of newly incorporated land but can also involve the transfer of land from one municipality to another.

APPRAISAL

A systematic method of determining the market value of property.

BARGAIN SALE

The sale of property or an interest in property for less than fair market value. If property is sold to a qualifying public agency or conservation organization, the difference between fair market value and the agreed-upon price can be claimed as a tax-deductible charitable gift for income tax purposes. Bargain sales also are known as conservation sales.

BUFFERS

Physical barriers that separate farms from land uses that are incompatible with agriculture. Buffers help safeguard farms from vandals and



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GLOSSARY

trespassers, and protect homeowners from some of the negative impacts of commercial farming. Vegetated buffers and topographic barriers reduce the potential for clashes between farmers and their non-farming neighbors. Buffers may be required by local zoning ordinances.

CIRCUIT BREAKER TAX RELIEF

A tax abatement program that permits eligible landowners to take some or all of the property tax they pay on farmland and farm buildings as a credit to offset their state income tax. Generally, farmers are eligible for a credit when property taxes exceed a set percentage of their income.

CLUSTER ZONING

A form of zoning that allows houses to be built close together in areas where large minimum lot sizes are generally required. By grouping houses on small sections of a large parcel of land, cluster zoning can be used to protect open space. Also known as cluster development, land preservation subdivision, open land subdivision and open space subdivision.

COMMUNITY SUPPORTED AGRICULTURE (CSA)

A form of direct marketing of farm products that involves customers paying the farmer in advance for a weekly share of the harvest. Customers are often called shareholders. In some cases, shareholders may participate in farm work and farm decisions. Farms that use this marketing strategy are called "CSA farms" or "CSAs." CSA is also known as subscription farming.

COMPREHENSIVE GROWTH MANAGEMENT

A state, regional, county or municipal government program to control the timing, location and character of land development.

COMPREHENSIVE PLAN

A regional, county or municipal document that contains a vision of how the community will grow and change and a set of plans and policies to guide land use decisions. Comprehensive plans also are known as general plans and master plans.

CONSERVATION EASEMENT

Legally recorded, voluntary agreements that limit land to specific uses. Easements may apply to entire parcels of land or to specific parts of the property. Most are permanent; term easements impose restrictions for a limited number of years. Land protected by conservation easements remains on the tax rolls and is privately owned and managed; landowners who donate permanent conservation easements are generally entitled to tax benefits. See also agricultural conservation easement and purchase of agricultural conservation easements.

CORN SUITABILITY RATING (CSR)

A numerical system for rating the productivity of farmland, used primarily in Iowa.

COST OF COMMUNITY SERVICES (COCS) STUDY

A case study method of allocating local revenues and expenditures to different land use categories. COCS studies reveal the net contribution of residential, commercial, industrial, forest and agricultural lands to local budgets.

CURRENT USE ASSESSMENT

See differential assessment.

DEFERRED TAXATION

A form of differential assessment that permits eligible land to be assessed at its value for agriculture. Deferred taxation is similar to preferential assessment, but landowners must pay some or all of the taxes that were excused if they later convert land to ineligible uses. Rollback taxes assess the difference between taxes paid under differential assessment and taxes that would have been due if the land was assessed at fair market value.

DEVELOPMENT RIGHTS

Development rights entitle property owners to develop land in accordance with local land use regulations. In some jurisdictions, these rights may be sold to public agencies or qualified nonprofit organizations through a purchase of agricultural conservation easement or purchase of development rights program. Sale of development

rights to a public agency or land trust generally does not pass any affirmative interest in the property. Rather than the right to develop the land, the buyer acquires the responsibility to enforce the negative covenants or restrictions stipulated in the development rights agreement.

Development rights may also be sold to individuals or a public agency through a transfer of development rights program. In this case, the buyer does acquire a positive right to develop land, but the right is transferred to a site that can accommodate growth.

DIFFERENTIAL ASSESSMENT

An agricultural property tax relief program that allows eligible farmland to be assessed at its value for agriculture rather than its fair market value, which reflects "highest and best" use. These take three different forms: preferential assessment, deferred taxation and restrictive agreements. Differential assessment is also known as current use assessment, current use valuation, farm use valuation and use assessment.

DOWNZONING

A change in the zoning for a particular area that results in lower residential densities. For example, a change from a zoning ordinance that requires 10 acres per dwelling to an ordinance that requires 40 acres per dwelling is a downzoning.

FARM LINK

A program that matches retiring farmers who want to keep their land in agriculture with beginning farmers who want to buy a farm. Farm Link programs are designed to facilitate farm transfer, usually between farmers who are not related to each other. Also known as Land Link.

FEE SIMPLE

A form of land ownership that includes all property rights, including the right to develop land.

GENERALLY ACCEPTED AGRICULTURAL AND MANAGEMENT PRACTICES (GAAMPS)

Agricultural practices that are widely used by farmers, promoted by agricultural institutions such as Extension and comply with federal and state environmental, health and safety laws and regulations. Some states have specific definitions of GAAMPs that may be used to determine whether a particular farm practice constitutes a public or private nuisance.

GEOGRAPHIC INFORMATION SYSTEM (GIS)

A method of storing geographic information on computers. Geographic information can be obtained from a variety of sources, including topographical maps, soil maps, aerial and satellite photographs and remote sensing technology. This information can then be used to create special maps for recordkeeping and decision-making purposes. GIS systems may be used to maintain maps of protected land or make decisions about which farmland to protect.

LAND EVALUATION AND SITE ASSESSMENT (LESA)

A numerical system that measures the quality of farmland. It is generally used to select tracts of land to be protected or developed.

LAND LINK

See farm link.

LAND TRUST

A private, nonprofit conservation organization formed to protect natural resources such as productive farm and forest land, natural areas, historic structures and recreational areas. Land trusts purchase and accept donations of conservation easements. They educate the public about the need to conserve land, and some provide land use and estate planning services to local governments and individual citizens.

GLOSSARY

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LOCAL AGENCY FORMATION COMMISSION (LAFCO)

A California state agency existing in each county, LAFCOs consist of commissioners from city councils, county boards of supervisors and members of the general public. They function as boundary commissions with the power to approve or deny requests for annexation of land from unincorporated (county) areas into incorporated (city) areas. LAFCOs also have authority to incorporate cities, establish or modify "sphere of influence" boundaries, and create or expand special district boundaries.

MITIGATION ORDINANCE

An ordinance or section of an ordinance or state law that requires developers of agricultural land to protect an equivalent quantity of land with similar characteristics in the same political jurisdiction. In some cases, developers may satisfy the mitigation requirement by paying a fee.

NATURAL RESOURCES CONSERVATION SERVICE (NRCS)

Formerly known as the Soil Conservation Service, NRCS is a federal agency within the U.S. Department of Agriculture that provides leadership and administers programs to help people conserve, improve and sustain our natural resources and environment. The agency provides technical assistance to farmers and funds soil conservation and farmland protection programs. It also maintains statistics on farmland conversion. NRCS has offices in every state and in most agricultural counties.

PLANNED UNIT DEVELOPMENT (PUD)

A tract of land that is controlled by one entity and is planned and developed as a whole, either all at once or in programmed stages. PUDs are developed according to detailed site plans and may incorporate both residential and commercial land uses. They generally include improvements such as roads and utilities.

PREFERENTIAL ASSESSMENT

A form of differential assessment that permits eligible land to be assessed at its value for agriculture.

PURCHASE OF AGRICULTURAL CONSERVATION EASEMENTS (PACE)

PACE programs pay farmers to keep their land available for agriculture. Landowners sell an agricultural conservation easement to a qualified public agency or private conservation organization. Landowners retain full ownership and use of their land for agricultural purposes. PACE programs do not give government agencies the right to develop land. Development rights are extinguished in exchange for compensation. PACE is also known as purchase of development rights (PDR) and as agricultural preservation restriction (APR) in Massachusetts.

PURCHASE OF DEVELOPMENT RIGHTS (PDR)

See purchase of agricultural conservation easements.

REAL ESTATE TRANSFER TAX

A state or local tax imposed on the sale of real property.

RECEIVING AREA

Areas designated to accommodate development transferred from agricultural or natural areas through a transfer of development rights program.

RESTRICTIVE AGREEMENTS

A type of differential assessment that requires landowners to sign contracts to keep land in agricultural use for 10 years or more as a condition of eligibility for tax relief. If a landowner gives notice of intent to terminate a contract, the assessed value of the property increases during the balance of the term to the full fair market value.

RIGHT-TO-FARM LAW

A state law or local ordinance that protects farmers and farm operations from public and private nuisance lawsuits. A private nuisance interferes with an individual's use and enjoyment of his or her property. Public nuisances involve actions that injure the public at large.

SENDING AREA

Area to be protected through a transfer of development rights program. Landowners may sell their development rights to private individuals or a public agency; the rights are used to build homes in a designated receiving area.

SETBACK

A zoning provision requiring new homes to be separated from existing farms by a specified distance and vice versa.

SPECIAL ASSESSMENT

A charge that state and local governments can impose on landowners whose land benefits from the construction of roads or sewer lines adjacent to their property. The amount of the special assessment is usually the pro rata share of the cost of installing the improvement.

TAKING

An illegal government appropriation of private property or property rights. Traditionally, takings law has addressed physical seizures of land, but regulations that deprive landowners of certain property rights may also result in a taking in special circumstances. Courts decide whether a particular government action constitutes a taking.

TRANSFER OF DEVELOPMENT RIGHTS (TDR) PROGRAM

A program that allows landowners to transfer the right to develop one parcel of land to a different parcel of land to prevent farmland conversion. TDR programs establish "sending areas" where land is to be protected by agricultural conservation easements and "receiving areas" where land may be developed at a higher density than would otherwise be allowed by local

zoning. Landowners in the sending area sell development rights to landowners in the receiving area, generally through the private market. When the development rights are sold on a parcel, a conservation easement is recorded and enforced by the local government. In some cases, the local government may establish a "TDR bank" to buy and sell development rights. The development rights created by TDR programs are referred to as transferable development rights (TDRs) or transferable development credits (TDCs).

UPZONING

A change in the zoning for a particular area that results in higher residential densities. For example, a change from a zoning ordinance that requires 100 acres per dwelling to an ordinance that requires 25 acres per dwelling is an upzoning.

URBAN GROWTH BOUNDARY

A theoretical line drawn around a community that defines an area to accommodate anticipated growth for a given period of time, generally 20 years. Urban growth boundaries are a growth management technique designed to prevent sprawl. They are often used to guide decisions on infrastructure development, such as the construction of roads and the extension of municipal water and sewer services.



FACT SHEET

AGRICULTURAL

DISTRICT

PROGRAMS

DESCRIPTION

Agricultural district programs allow farmers to form special areas where commercial agriculture is encouraged and protected. Programs are authorized by state legislatures and implemented at the local level. Enrollment in agricultural districts is voluntary. In exchange for enrollment, farmers receive a package of benefits that varies from state to state. Minimum acreage requirements and initial terms of enrollment also vary. Agricultural district programs should not be confused with zoning districts that delineate areas governed by local land use regulations.

There are a total of 18 agricultural district laws in 16 states. Both Minnesota and Virginia have statewide and local agricultural district programs. Provisions vary widely, but most agricultural district laws are intended to be comprehensive responses to the challenges facing farmers in developing communities.

To maintain a land base for agriculture, some agricultural district laws protect farmland from annexation and eminent domain. Many laws also require that state agencies limit construction of infrastructure, such as roads and sewers, in agricultural districts. Three states offer participants eligibility for purchase of agricultural conservation easement programs, and two states include a right of first refusal in district agreements to ensure that land will continue to be available for agriculture.

Agricultural district laws help create a more secure climate for agriculture by preventing local governments from passing laws that restrict farm practices, and by providing enhanced protection from private nuisance lawsuits.

To reduce farm operating expenses seven programs offer either automatic eligibility for differential tax assessment or property tax credits to farmers who enroll in agricultural districts.

Some states encourage local planning by limiting district authorization to jurisdictions with comprehensive or farmland protection plans, requiring the adoption of land use regulations to pro-

tect farmland, involving planning bodies in the development and approval of districts, and limiting non-farm development in and around agricultural districts.

Agricultural district laws are intended to stabilize the land base and to support the business of farming by providing farmers with an attractive package of incentives.

HISTORY

In 1965, California enacted the California Land Conservation Act to preserve agricultural land and open space and promote efficient urban growth patterns. The Williamson Act, as it is commonly known, allows landowners within locally designated "agricultural preserves" to sign renewable 10-year contracts with local governments. Landowners agree to restrict use of property within preserves to agriculture or open space for the term of the contract. In return, the land is assessed at its agricultural use value, providing participants with significant property tax relief.

The New York Legislature created a comprehensive agricultural district program in 1971. Article 25 AA of the New York Agriculture and Markets Law made differential assessment available to New York farmers. The program also contained provisions that have been incorporated into other agricultural district laws, including protection against unreasonable local regulations, special review of the use of eminent domain and a requirement that state agency policies support the continuation of farming in agricultural districts.

Between 1971 and 1995, 14 other states and one region followed the examples set by California and New York. Agricultural district programs continue to evolve.

In 1992, amendments to the New York law reconstituted and strengthened local agricultural advisory committees, added new right-to-farm protections and required local governments to recognize the intent of the agricultural districts law when making local land use decisions. New



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AMERICAN FARMLAND TRUST · FARMLAND INFORMATION CENTER
 PROVISIONS OF AGRICULTURAL DISTRICT LAWS

PROVISION	Programs with Provision	Calif.	Del.	Ill.	Iowa
Limits on use of eminent domain ^a	12	▲			
Limits on non-farm development	12	▲	▲	▲	▲
State agency policies must support farming	12	▲	▲	▲	▲
Local planning requirement ^b	11	▲			▲
Limits on special assessments	11	△		▲	▲
Farmers receive extra right-to-farm protection	10		▲	▲	
Limits on public investment for non-farm development	7	▲			
Sound conservation practices required	7			▲	
Strong sanctions on withdrawal from districts	6	▲			
Agricultural impact statement required for public projects	6				▲
Farmers are automatically eligible for differential assessment ^c	5	▲	❖		
Public utilities exempted from limits on eminent domain	5				
Local governments compensated for taxes reduced by differential assessment	4	▲			
Limits on local governments' ability to annex land	4	△			
Protection from siting of public facilities (e.g., schools and solid waste mgt. facilities)	3	△		▲	
Enrollment required to be eligible for agricultural easement acquisition program	3		▲		
Landowners adjacent to districts must sign agricultural nuisance disclaimer	3		▲		
Land Evaluation and Site Assessment (LESA) system used to define boundaries of district	2		▲		
Landowner consent required prior to adoption of more restrictive zoning	2				
Enrolled land gets priority in water rights allocation	2				▲
Public entities have right of first refusal to purchase land	2				
Farmer can recover legal fees if he/she wins nuisance lawsuit	2		▲		
Mediation required for land use disputes	2				⌘
Soil and water conservation cost sharing for farmers	2				
Land use controls on adjacent land must consider districts	1				
Farmers are automatically eligible for annual per acre property tax credit	1				
Limits on rate of property tax increases	1				
Buffer strips required for development adjacent to districts	1		▲		
Initial term of enrollment (in years)	16	10/20**	10	10	3
Minimum acreage requirement	16	100	200	350	300

^a The degree of protection varies significantly from state to state. Minn. and N.J. prohibit eminent domain; Pa. and Utah can prohibit eminent domain, subject to review by state officials; Calif., Ky., Minn.-metro, N.Y., Ohio, Tenn. and Va. cannot prohibit eminent domain, but may require prior notification, agricultural impact statements, alternative proposals and/or public hearings.

^b Planning requirements vary among states. Calif., Minn. and Minn.-Metro require plans (i.e., comprehensive or agricultural land preservation) to be eligible to establish districts, and zoning or other "official controls" to protect farmland. Md., N.J., N.Y., Pa., Utah, Va. and Va.-Local involve planning bodies in the development and approval of districts. Iowa requires that counties create land use inventories prior to establishment of districts.

^c In Calif., farmers who sign an FSZ contract receive additional property tax relief.

Ky.	Md.	Mass.	Minn. State	Minn. Metro	N.J.	N.Y.	N.C.	Ohio	Pa.	Tenn.	Utah	Va. State	Va. Local
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▲ Provision included in program.
△ Benefit provided only to landowners who sign FSZ contracts in Calif., and landowners in "municipally approved" districts in N.J.
❖ Land enrolled in districts is exempt from all but agricultural property taxes.
⌘ Provision included but never implemented.
■ Minimum acreage requirement established by local entity.
* Only farms receiving soil and water conservation cost funds must have an approved conservation plan.
** The initial term is 10 years for Williamson Act contracts and 20 years for FSZ contracts. Each year, contracts automatically are extended for one year unless a notice of non-renewal is submitted.

AGRICULTURAL DISTRICT PROGRAMS

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York state added a nuisance disclaimer to its district law in 1998, and a requirement that enrolled farmers apply sound conservation practices.

A 1994 amendment to California's Williamson Act made it more difficult for local governments to acquire land in agricultural preserves for public use. In 1998, California passed a new law that authorized the creation of Farmland Security Zones (FSZ). Farmers who elect to sign a 20-year FSZ contract receive expanded district benefits, including a 35 percent reduction in property tax assessments on top of values calculated under Williamson Act contracts, and protection from annexation and school sitings on agricultural land.

In 1997, Utah added provisions requiring that landowners adjacent to districts sign a nuisance disclaimer; in 1998, local planning and minimum acreage requirements were added.

In 1998, the Iowa State Supreme Court ruled that the right-to-farm provision contained within Iowa's agricultural districts law constituted a taking of property rights without compensation. The court found that the provision, which immunized farms in agricultural districts from nuisance lawsuits, amounted to an interest in, or easement on, adjacent land without payment of just compensation.

In 2000, Kentucky placed limits on special assessments on land enrolled in districts. Virginia's state district law also was amended in 2000 to include significant economic consequences for early withdrawal from the program.

FUNCTIONS & PURPOSES

Agricultural district programs are intended to be comprehensive responses to the challenges facing farmers in developing communities. They can be designed to protect agricultural land, head off land conflicts, reduce farm operating expenses and encourage local planning.

ISSUES TO ADDRESS

- Who will be eligible to enroll land in an agricultural district?
- What are the procedures for enrollment?
- What are the incentives for enrollment?
- What restrictions, if any, are placed on land enrolled in an agricultural district?
- How easy--or difficult--is it to withdraw land from an agricultural district?
- Who has the authority to terminate agricultural district agreements?

BENEFITS

- Enrollment in agricultural districts is voluntary, making the programs popular with farmers.
- Agricultural district programs are very flexible; benefits and restrictions can be tailored to meet local objectives.
- Agricultural districts provide multiple benefits to farmers, including tax relief, protection from local regulation and eligibility for PACE programs.
- Agricultural districts help secure a critical mass of land to keep farming viable.

DRAWBACKS

- Sanctions for withdrawing land from agricultural districts may not be strong enough to discourage conversion.
- Limits on non-farm development may not prevent expansion of public services such as water and sewer lines into agricultural areas. Some agricultural district laws address this issue; others do not.
- In some states, the benefits provided by agricultural districts are not enough incentive for farmers to enroll.
- In some states, the procedure for creating agricultural districts is lengthy and complex.



FACT SHEET

AGRICULTURAL ECONOMIC DEVELOPMENT



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DESCRIPTION

Farmers often say that the best way to protect farmland is to ensure that farming is profitable. Many farmland protection programs are designed to prevent development of productive land. Protecting the land base is an investment in the infrastructure of agriculture. Building and maintaining a strong agricultural economy is just as important to the viability of farms and ranches. An increasing number of states, communities, organizations and producers are promoting investment in agriculture through loan and grant programs, the development of high-value agricultural products and services, direct marketing of farm products and diversification.

HISTORY

For most of U.S. history, agriculture was the foundation of local economies. Food was produced, marketed and sold close to home. Farmers and ranchers reaped most of the profits from the sale of food and fiber products. With the emergence of national and global markets, supermarkets and changes in the structure of agriculture, the producers' share of food and fiber profits decreased substantially. Since the 1970s, state and local governments and nonprofit organizations have been helping farmers and ranchers develop new products, processing facilities, services and marketing strategies to increase farm profits.

FUNCTIONS & PURPOSES

State and local agricultural economic development programs provide technical assistance to farmers, ranchers and agricultural communities and facilitate access to capital for agricultural business development and expansion. They are designed to build and support local agricultural economies and to improve the economic health of individual farms and ranches. Some jurisdictions also use agriculture as a foundation to develop other industries, such as food processing and tourism. Programs use different strategies to achieve different objectives.

STRATEGIES

Planning for agricultural viability

Some local governments are incorporating agricultural business strategies into their traditional economic development plans. Four local governments in Maryland employ economic development specialists who advise farmers on new products, services, marketing strategies and management techniques to increase profitability. New York's county Agricultural and Farmland Protection Boards have the authority to receive state matching funds to develop and implement county agricultural and farmland protection plans. Many of these plans include the promotion of economic development initiatives for agriculture.

Business planning and capital investment

Preparing a business plan can allow farmers and ranchers to examine a range of strategies to increase profits. A new Massachusetts program gives farmers access to a team of agricultural, economic and environmental consultants. Team members assess farm operations and make recommendations to improve performance. Farmers may receive state grants for capital improvements based on their business plans. In return, the farmers agree to sign five- or ten-year covenants restricting development of their land. The plans and grants are designed to make farms more profitable; the covenants give the strategies time to work. Canada has a national program that provides incentives for farmers to develop business plans through cost-sharing and grants.

Purchase of agricultural conservation easement programs

Purchase of agricultural conservation easement programs compensate property owners for restricting the future use of their land. Selling an easement allows farmers and ranchers to cash in a percentage of the equity in their land, thus creating a financially competitive alternative to development. Producers often use PACE program

AGRICULTURAL ECONOMIC DEVELOPMENT

funds to buy and improve land, buildings and equipment, to retire debt and to increase the viability of their operations.

Loan programs and economic development incentives

Farmers need access to capital to purchase land and equipment and to invest in the development of new products, services, production technologies and marketing strategies. Yet commercial banks often are reluctant to lend money to farmers for agricultural enterprises. Public economic development programs are generally targeted to the industrial and service sectors and do not consider loans to agricultural businesses. State and local governments can facilitate agricultural economic development by treating farms as other businesses, making loan funds, tax incentives and technical assistance available to producers.

Twenty-four states offer public agricultural financing programs. Many of these programs are targeted to beginning farmers. Few, if any, have the capital to meet the demand for credit among farmers. One promising approach is a private initiative in Maryland that is experimenting with getting commercial banks to participate in an agricultural loan program through the commitment of Community Reinvestment Act funds.

Direct Marketing

Growers who market agricultural products directly to customers usually receive higher prices than farmers and ranchers who sell wholesale. Counties and towns can encourage the development of agricultural retail businesses by specifically permitting roadside stands, pick-your-own operations, nurseries and other agricultural uses in their zoning by-laws. Many communities also have developed and distributed maps showing the location of farmstands, pick-your-own operations and farmers' markets, and some have posted signs directing drivers to farm businesses.

Farmers' markets

Farmers' markets give growers access to a large base of customers. Most markets are open-air public spaces where farmers gather to sell home-grown products. Farmers may travel hundreds of miles to downtown markets in big cities. The markets are good for the city as well as the farmers, as they attract customers who patronize other downtown businesses.

Marketing to restaurants and food retailers

Much of the retail price of food pays for marketing and distribution. By selling directly to food retailers, farmers and ranchers can capture more profit. A growing number of natural and specialty food stores are expressing interest in selling local farm products. Several nonprofit organizations are working to establish links between growers and chefs. Encouraging restaurants to use local produce and meats and promote them on their menus may help build a retail customer base for both local farms and dining establishments. Contact with restaurants and food retailers also helps keep farmers informed about trends in the food industry.

Community supported agriculture

Community supported agriculture is a relatively new form of direct marketing. CSA farm customers pay for a share of the harvest at the beginning of the year and receive a weekly bundle of vegetables and fruits throughout the growing season. This system takes some of the risk out of farming and shifts the time that growers must spend on marketing to the beginning of the year. Some organizations are working to build CSA networks that would allow individual growers to offer a larger selection of farm products to their customers.

AGRICULTURAL ECONOMIC DEVELOPMENT

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Diversification

Agricultural operations that specialize in commodities such as corn or milk are vulnerable to economic shocks caused by low prices or bad weather. State departments of agriculture, Extension agents and economic development agencies promote diversification to reduce risk and increase profits. Diversification can mean planting new crops or shifting to a different mix of crops and livestock, developing new products or services or targeting new markets.

New products and marketing strategies

State and local governments and agricultural organizations are helping growers create and market specialty products such as cheese, wine, preserves and sauces, potato chips and cereals. These products can be sold year-round - a big advantage in cold climates - and some can be marketed through the mail. Several states are investigating the feasibility of public commercial kitchens that could serve as incubators for farm-based food businesses. An organization in Virginia is developing a brand of local farm and seafood products, and an organization in Maine is experimenting with selling farm products on the internet.

Agritourism

Several state and local governments offer workshops for farmers who are interested in developing recreational businesses. Agricultural tourism is increasingly popular in farming communities near urban areas. Entrepreneurial growers are offering educational and recreational services such as school tours, hay and sleigh rides, crop mazes, petting zoos, restaurants, ranch vacations and bed-and-breakfast facilities. These services bring in new customers and promote farm products.

Grower Cooperatives

Growers who sell wholesale can increase their access to lucrative markets by forming cooperatives. High-volume retailers such as supermarkets that find it too difficult to buy from individual producers may welcome the opportunity to purchase locally-grown food from a well-organized cooperative. Cooperatives can also offer a diverse selection of products to retailers at a competitive price.

Reducing the costs of production

Most agricultural economic development strategies are designed to help producers increase revenues, but a few help them cut costs. A project in Vermont is training dairy farmers to implement pasture-based management. By switching from growing and storing feed crops to grazing, dairy farmers can cut costs and improve their quality of life. Other organizations promote the use of integrated pest management and organic farming, which reduce the cost of inputs and may increase the prices that growers can demand for their products. Purchasing cooperatives for seeds and other agricultural supplies also can reduce production costs.



FACT SHEET

DIFFERENTIAL

ASSESSMENT

AND CIRCUIT

BREAKER TAX

PROGRAMS



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September 1998

DESCRIPTION

Tax incentives are widely used to maintain the economic viability of farming. All states have at least one program designed to reduce the amount of money farmers are required to pay in local real property taxes.

The most important type of agricultural tax program is known as differential assessment. Every state except Michigan has a differential assessment program that allows local officials to assess farmland at its agricultural use value, rather than its fair market value, which is generally higher. Agricultural use value represents what farmers would pay to buy land in light of the net farm income they can expect to receive from it. Full fair market value represents the amount a willing buyer—whether farmer or developer—would pay for the land. Differential assessment is also known as current use assessment and use value assessment.

Three states—Michigan, New York and Wisconsin—allow farmers to claim state income tax credits to offset their local property tax bills. These programs are called “circuit breakers” because they relieve farmers of real property taxes that exceed a certain percentage of their income. Iowa offers a credit against school taxes on agricultural land. While circuit breaker programs are not widespread, they are receiving increasing attention from state governments looking for ways to relieve farmers’ tax burden.

HISTORY

Iowa’s Agricultural Land Credit Fund, established in 1939, was the first state program to provide farmers with relief from property taxes. Maryland enacted the nation’s first differential assessment law in 1956. Between 1959 and 1969, 20 other states adopted differential assessment legislation. Michigan adopted its circuit breaker tax relief program in 1974. By 1989, all 50 states had at least one type of agricultural tax program for farmland owners, and several states had more than one program.

As the value of farmland has risen, states have expanded their agricultural tax programs. Michigan adopted a special tax rate for farmland as part of its comprehensive property tax reform legislation in 1994. Wisconsin created a differential assessment program to supplement its circuit breaker program in 1995, and New York supplemented its differential assessment program with a circuit breaker program in 1996.

FUNCTIONS & PURPOSES

Differential assessment laws and circuit breaker tax relief programs have three purposes: to help farmers stay in business by reducing their real property taxes; to treat farmers fairly by taxing farmland based on its value for agriculture, rather than at fair market value as if it were the site of a housing development; and to protect farmland by easing the financial pressures that force some farmers to sell their land for development.

As agricultural land is developed, property values rise. As new residents and businesses move to rural areas, local governments often raise property tax rates to support increased demand for public services. Tax rates that are based on the value of agricultural land for residential or commercial development do not reflect the current use of the land, nor farmers’ ability to pay. Increasing property values and the corresponding rise in taxes can reduce farm profitability.

High land values also make it more difficult for farmers to increase profits by expanding their operations. The combination of expensive real estate and high taxes creates strong economic incentives for farmers to stop farming and sell land for development. Differential assessment and circuit breaker programs help ensure that farmers who want to continue farming will not be forced to sell land just to pay their tax bills.

Differential assessment and circuit breaker programs also help correct inequities inherent in local property tax systems. Property taxes are assessed on a per-acre basis, and farmers are

DIFFERENTIAL ASSESSMENT AND CIRCUIT BREAKER TAX PROGRAMS

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often the largest landowners in rural communities. The amount of land a farm family owns, however, does not reflect the cost of services they receive from local government. Studies show that farmland owners pay more in taxes than the value of the public services they receive from local governments, while homeowners receive more services than their taxes pay for.

BENEFITS

- Agricultural tax programs help farmers stay in business by lowering their expenses.
- Agricultural tax programs help correct inequities in the tax system.

DRAWBACKS

- Agricultural tax programs do not ensure long-term protection of farmland.
- Differential assessment programs often provide a subsidy to real estate speculators, who are keeping their land in agriculture pending development.

Source: American Farmland Trust, *Saving American Farmland: What Works* (Northampton, Mass., 1997).



FACT SHEET

FARM TRANSFER

AND ESTATE

PLANNING



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DESCRIPTION

Estate planning should lay a framework for a smooth transition of farm or ranch ownership and management. It can provide for the needs of all family members, even those who leave the operation. It can help reduce high inheritance taxes on land made more valuable by inflation and non-farm development pressure. And proper estate planning can address the settlement problems that arise because land is not a liquid asset.

An estate plan is more than a will. A will is an important part of the plan because it names heirs, nominates an executor and appoints guardians for dependents. But a will alone cannot guarantee a secure future for the farm family, land or business.

A good estate plan should accomplish at least four goals:

- Transfer ownership and management of the agricultural operation, land and other assets;
- Avoid unnecessary transfer taxes (income, gift and estate);
- Ensure financial security and peace of mind for all generations;
- Develop the next generation's management capacity.

Laws, especially tax laws, change. Two important elements of estate planning are to set goals and then to revisit them over time as families, finances, priorities and laws change. As part of this goal-setting process, landowners must take inventory of their assets and be sure they fully understand who owns what and how titles to the property are held.

BASIC TECHNIQUES

Farmers and ranchers should complete a will and keep it updated. A living will, health care

proxy and the designation of power of attorney are important ways to ensure that the family will be able to make decisions if the landowner becomes seriously injured or terminally ill. The estate planning process is a good opportunity to resolve business operation and management issues and to transfer assets. For tax and other reasons, it makes sense to start transferring operating assets as soon as both generations are comfortable with the commitment.

The estate planning and farm transfer process is also a good time for landowners to evaluate their present business arrangements and decide whether those arrangements meet their current needs and help achieve their goals. They should choose the most appropriate form of business organization, whether it is a sole proprietorship, partnership or corporation. Written agreements are essential.

TRANSFER AND TAX REDUCTION STRATEGIES

- Agricultural conservation easements can permanently protect farmland from non-farm development and significantly reduce transfer taxes in cases where the market value of the land is much greater than its restricted value;
- Annual gifts of assets can help transfer the business and reduce transfer taxes;
- Buy/Sell agreements can ensure an orderly transfer of the farm business;
- Life insurance can be used to fund buy/sell agreements, establish trusts, provide for non-farming heirs or pay estate taxes;
- Limited partnerships or corporations can allow separation of management and ownership of the business, if desired;
- Long-term care insurance can protect family assets from being used to pay for nursing home costs;

FARM TRANSFER AND ESTATE PLANNING

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- Minority discounts can substantially reduce transfer tax liability when minority interests of family farm businesses are transferred;
- Purchase of agricultural conservation easements (also known as purchase of development rights) programs can protect farmland, reduce taxes and provide cash for retirement and estate planning needs;
- Transferring management responsibility and asset ownership gradually can provide a smooth transition for the agricultural operation from one generation to the next;
- Trusts can provide financial security for surviving spouses, children and grandchildren.

ISSUES AND OPTIONS

Liquid assets - cash and cash equivalents - are important to settling farm and ranch estates. Having cash allows farm families to pay expenses and medical bills without selling land or farm equipment. Liquid assets also may be used to divide an estate fairly among heirs.

It is important to remember that an equitable settlement does not necessarily mean creating equal shares of a farm or ranch estate, because the children who are involved in a family agricultural enterprise have generally contributed a substantial amount of their time, energy and resources to make the business succeed. These children may have substantial "sweat equity" in the operation they inherit.

Balancing commercial and conservation goals in farm estate planning also is challenging, because farms are businesses. However, with careful planning, farmers and ranchers can take advantage of conservation options that protect land without unduly restricting agricultural enterprises. These conservation options should be integrated into estate plans to ensure long-term protection of both land and farming operations.

Successful farm transfer and estate planning require a team effort - including family, financial, farm management, tax and legal expertise. Because plans must be tailored to individual circumstances, they must be designed to meet a variety of unique situations. Landowners must be sure to talk to their families and find the professional legal and financial assistance they need to accomplish their goals.

ECONOMIC GROWTH AND TAX RELIEF RECONCILIATION ACT OF 2001

The Economic Growth and Tax Relief Reconciliation Act of 2001 contains several provisions that affect farmland conservation and farm estate planning and transfer including:

- A dramatic increase in the estate tax exclusion: \$1 million in 2002-3 up to \$3.5 million in 2009;
- Repeal of Estate Tax in 2010;
- A reduction of highest tax brackets;
- Modified carryover basis in 2010;
- Removal of geographic limitations for donated conservation easements eligible for estate tax benefits under Section 2031(c) of the tax code; and
- A sunset provision.

These recent tax law changes have provided significant estate tax reductions as well as some additional uncertainty for estate tax planning and farm transfer. Farm and ranch owners should contact their advisers to determine how those changes will affect their planning efforts.



FACT SHEET

RIGHT-TO-FARM LAWS

DESCRIPTION

Right-to-farm laws are designed to accomplish one or both of the following objectives: (1) to strengthen the legal position of farmers when neighbors sue them for private nuisance; and (2) to protect farmers from anti-nuisance ordinances and unreasonable controls on farming operations. Most laws include a number of additional protections. Right-to-farm provisions may also be included in state zoning enabling laws, and farmers with land enrolled in an agricultural district may have stronger right-to-farm protection than other farmers. A growing number of counties and municipalities are passing their own right-to-farm legislation to supplement the protection provided by state law.

The common law of nuisance forbids individuals from using their property in a way that causes harm to others. A private nuisance refers to an activity that interferes with an individual's reasonable use or enjoyment of his or her property. A public nuisance is an activity that threatens the public health, safety or welfare, or damages community resources, such as public roads, parks and water supplies.

A successful nuisance lawsuit results in an injunction, which stops the activity causing the nuisance, provides monetary compensation, or both. In a private nuisance lawsuit involving complaints against a farming operation, the court must decide whether the farm practices at issue are unreasonable. To make this decision, courts generally weigh the importance of the activity to the farmer against the extent of harm to the neighbor or community, taking into account the following factors:

- The degree of harm and its duration, permanence and character: Is it continuous or sporadic? Is it a threat to health, or simply a minor annoyance?
- The social value that state and local law places on both farming and the type of neighboring use that has been harmed;

- The suitability of the two sets of uses to the character of the locality; and
- The ease with which the neighbor could avoid the harm, and the farmer's ability to prevent or minimize the undesirable external effects of the farming operation.*

One of the most important issues is whether the person bringing the lawsuit should have been able to anticipate the problem, and thus has assumed the risk of injury. If the farm was in operation before the person with the complaint moved to the neighborhood, the farmer may argue that the plaintiff "came to the nuisance." In most states, "coming to the nuisance" does not necessarily prevent farm neighbors from winning in court, but a farmer usually has a stronger legal case if his or her operation was there before the plaintiff moved to the area. Right-to-farm laws give farmers a legal defense against nuisance suits; the strength of that defense depends on the provisions of the law and the circumstances of the case.

HISTORY

Between 1963, when Kansas enacted a law to protect feedlots from litigation, and 1994, when Utah included right-to-farm protections in its agricultural district law, every state in the Union enacted some form of right-to-farm law. Several states have enacted two types of right-to-farm legislation, and Minnesota and Iowa have enacted three.

FUNCTIONS & PURPOSES

Right-to-farm laws are intended to discourage neighbors from suing farmers. They help established farmers who use good management practices prevail in private nuisance lawsuits. They document the importance of farming to the state or locality and put non-farm rural residents on notice that generally accepted agricultural practices are reasonable activities to expect in farming areas. Some of these laws also limit the ability of newcomers to change the local rules that govern farming.



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Local right-to-farm laws often serve an additional purpose: They provide farm families with a psychological sense of security that farming is a valued and accepted activity in their communities.

RIGHT-TO- FARM LAWS

* American Law Institute, Restatement of Torts (Second) (St. Paul, Minn., 1982), Sections 827-828.

For additional information on right-to-farm laws and farmland protection, the Farmland Information Center offers publications, an on-line library and technical assistance. To order Right-to-Farm Laws: What Works, a 28-page comprehensive technical report (\$9.95), or other AFT publications, call (800) 370-4879. The farmland information library is a searchable database of literature, abstracts, statutes, maps, legislative updates and other useful resources. It can be reached at <http://www.farmlandinfo.org>. For additional assistance on specific topics, call the technical assistance service at (413) 586-4593.

Source: American Farmland Trust, *Saving American Farmland: What Works* (Northampton, Mass., 1997).



FACT SHEET

AGRICULTURAL PROTECTION ZONING

DESCRIPTION

Agricultural protection zoning refers to county and municipal zoning ordinances that support and protect farming by stabilizing the agricultural land base. APZ designates areas where farming is the desired land use, generally on the basis of soil quality as well as a variety of locational factors. Other land uses are discouraged. APZ ordinances vary in what activities are permitted in agricultural zones. The most restrictive regulations prohibit any uses that might be incompatible with commercial farming. The density of residential development is limited by APZ.

Maximum densities range from one dwelling per 20 acres in the eastern United States to one residence per 640 acres in the West.

In practice, the specific areas designated by APZ are generally called agricultural districts. In the context of farmland protection, however, these zoning districts, which are imposed by local ordinances, are easily confused with voluntary agricultural districts created by farmers under statutes in 16 states. To avoid confusion, American Farmland Trust refers to the mandatory agricultural areas as agricultural protection zones, and the voluntary areas as agricultural districts.

APZ ordinances contain provisions that establish procedures for delineating agricultural zones and defining the land unit to which regulations apply. They specify allowable residential densities and permitted uses, and sometimes include site design and review guidelines. Some local ordinances also contain right-to-farm provisions and authorize commercial agricultural activities, such as farm stands, that enhance farm profitability. Occasionally, farmers in an agricultural protection zone are required to prepare conservation or farm management plans.

The definition of APZ varies with jurisdiction and by region of the country. A minimum lot size of 20 acres, combined with other restrictions, may be sufficient to reduce development pressures in areas where land is very expensive and

farming operations are relatively intensive. Several county APZ ordinances in Maryland permit a maximum density of one unit per 20 acres. In areas where land is less expensive and extensive farming operations such as ranches predominate, much lower densities may be required to prevent fragmentation of the land base. In Wyoming and Colorado, counties are not permitted to control subdivision of lots that are larger than 35 acres. The 35-acre provision has led to the creation of hundreds of 35-acre "ranchettes" in both states, fragmenting ranches into parcels that are too small for successful commercial ranching.

Many towns and counties have agricultural/residential zoning that allows construction of houses on lots of one to five acres. Although these zoning ordinances permit farming, their function is more to limit the pace and density of development than to protect commercial agriculture. In fact, such ordinances often hasten the decline of agriculture by allowing residences to consume far more land than necessary. AFT defines APZ as ordinances that allow no more than one house for every 20 acres, support agricultural land uses and significantly restrict non-farm land uses.

HISTORY

The courts first validated zoning as a legitimate exercise of police power in the 1920s, giving local governments broad authority to regulate local land use. Rural counties in California, Pennsylvania and Washington began using zoning to protect agricultural land from development during the mid-1970s. In 1981, the National Agricultural Lands Study reported 270 counties with agricultural zoning. In 1995, an informal AFT survey found nearly 700 jurisdictions in 24 states with some form of APZ.

FUNCTIONS & PURPOSES

APZ helps towns and counties reserve their most productive soils for agriculture. It stabilizes the agricultural land base by keeping large tracts of land relatively free of non-farm development,



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AGRICULTURAL PROTECTION ZONING

For additional information on agricultural protection zoning and other farmland protection programs, the Farmland Information Center offers publications, an on-line library and technical assistance. To order Agricultural Protection Zoning: What Works, a 34-page comprehensive technical report (\$14.95), or other AFT publications, call (800) 370-4879. The farmland information library is a searchable database of literature, abstracts, statutes, maps, legislative updates and other useful resources. It can be reached at <http://www.farmlandinfo.org>. For additional assistance on specific topics, call the technical assistance service at (413) 586-4593.

thus reducing conflicts between farmers and their non-farming neighbors. Communities also use APZ to conserve a "critical mass" of agricultural land, enough to keep individual farms from becoming isolated islands in a sea of residential neighborhoods. Maintaining a critical mass of agricultural land and farms allows the retention of an agricultural infrastructure and support services, such as equipment dealers and repair facilities, feed mills, fertilizer and pesticide suppliers, veterinarians, spraying and seeding contractors, food processors and specialized financial services. All of these agricultural businesses need their farm customers to stay profitable.

APZ can also limit land speculation, which drives up the fair market value of farm and ranch land. By restricting the development potential of large properties, APZ is intended to keep land affordable to farmers. A strong ordinance can demonstrate to farmers that the town or county sees agriculture as a long-term, economically viable activity, instead of an interim land use.

Finally, APZ helps promote orderly growth by preventing sprawl into rural areas, and benefits farmers and non-farmers alike by protecting scenic landscapes and maintaining open space.

BENEFITS

- APZ is an inexpensive way to protect large areas of agricultural land.
- By separating farms from non-agricultural land uses, APZ reduces the likelihood of conflicts between farmers and non-farming neighbors.
- APZ helps prevent suburban sprawl and reduces infrastructure costs.
- Compared to purchase of conservation easement and transfer of development rights programs, APZ can be implemented relatively quickly.
- APZ is easy to explain to the public because most landowners are familiar with zoning.

- APZ is flexible. If economic conditions change, the zoning can be modified as necessary.

DRAWBACKS

- APZ is not permanent. Changes in APZ ordinances can open up large areas of agricultural land for development.
- APZ can reduce land values, which decreases farmers' equity in land. For this reason, farmers sometimes oppose APZ, making it difficult to enact.
- APZ may be difficult to monitor and enforce on a day-to-day basis.
- County APZ ordinances do not protect agricultural land against annexation by municipalities.

Source: American Farmland Trust, *Saving American Farmland: What Works* (Northampton, Mass., 1997).



FACT SHEET

COST OF COMMUNITY SERVICES STUDIES

DESCRIPTION

Cost of Community Services studies are an inexpensive, easy-to-understand way to determine the net fiscal contribution of different land uses to local budgets. Municipal records are reorganized to assign the cost of local public services to privately owned farm, forest and open lands, as well as residential, commercial and industrial lands. The result is a set of ratios that compare the annual income to the annual expenditures for different land uses.

COCS studies are a snapshot in time of costs versus revenues for each type of land use. They do not predict future costs or revenues or the impact of future growth. They do provide a baseline of current information to help local officials and citizens make informed land use and policy decisions.

METHODOLOGY

COCS studies involve five basic steps:

1. Define the scope of the project and identify land use categories to study (e.g., residential, commercial, industrial, farm and forest land).
2. Collect data on local revenues and expenditures.
3. Group revenues and allocate them to the land use categories identified in step 1.
4. Group expenditures and allocate them to the land use categories identified in step 1.
5. Analyze the data and calculate revenue-to-expenditure ratios for each land use category.

The process is straightforward, although ensuring reliable figures requires the assistance of local officials and service providers. The most complicated task is interpreting existing records to reflect COCS land use categories. Allocating revenues and expenses requires a significant

amount of research, including extensive personal interviews.

HISTORY

Communities often evaluate the impact of growth on local budgets by conducting or commissioning fiscal impact analyses. Fiscal impact studies project public costs and revenues from different land development patterns. They generally show that residential development is a net fiscal loss for communities and recommend commercial and industrial development as a strategy to balance local budgets.

Rural towns and counties that are likely to benefit most from the information provided by fiscal impact analyses rarely have the expertise or resources to conduct a study, which tends to be expensive. Also, these studies rarely consider the fiscal contribution of farm, forest and recreational lands, which are very important to rural economies.

American Farmland Trust developed COCS studies in the mid-1980s to give communities a simple, inexpensive method of evaluating the contribution of farm, forest and ranch lands to the local tax base. COCS studies have been conducted in at least 83 communities in the United States.

FUNCTIONS & PURPOSES

Communities pay a high price for unplanned growth. Scattered development frequently causes traffic congestion, air and water pollution, loss of open space and increased demand for costly public services. This is why it is important for citizens and community leaders to understand the relationships between residential and commercial growth, land conservation and their municipality's bottom line.

COCS studies can help local officials and farmland protection advocates counter three claims that are commonly heard at local meetings in rural and suburban communities:



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COST OF COMMUNITY SERVICES STUDIES

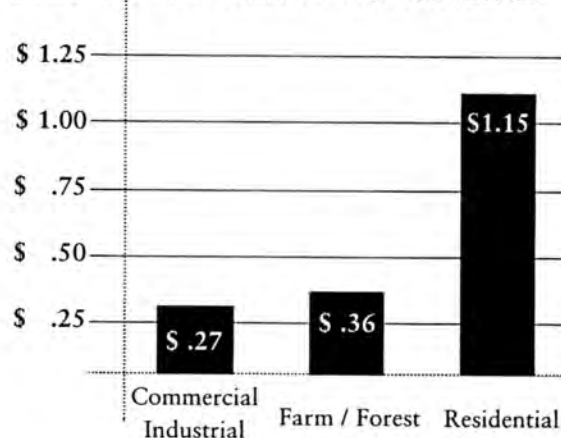
For additional information on cost of community services studies and farmland protection, the Farmland Information Center offers publications, an online library and technical assistance. The Farmland Information Library is a searchable database of literature, abstracts, statutes, maps, legislative updates and other useful resources. It can be found at <http://www.farmlandinfo.org>. For additional assistance on specific topics, call the technical assistance service at (413) 586-4593.

1. Residential development will lower property taxes by increasing the tax base;
2. Farmland gets an unfair tax break when it is assessed at its actual use for agriculture instead of its potential use for development;
3. Open lands, including productive farms and forests, are interim uses just waiting to be developed to their "highest and best use."

While it is true that an acre of land with a new house generates more total revenue than an acre of hay or corn, this tells us little about a community's fiscal stability. In areas where farming and forestry are major industries, it is especially important to consider the real property tax contribution of privately owned natural resource lands. Farms, forests and other open lands may generate less revenue than residential, commercial or industrial properties, but they require little public infrastructure and few services.

COCS studies conducted in more than 83 communities show that owners of farm, forest and open lands pay more in local tax revenues than it costs local government to provide services to their properties. Residential land uses, in contrast, are a net drain on municipal coffers: It costs local governments more to provide services to homeowners than residential landowners pay in property taxes.

SUMMARY: COST OF COMMUNITY SERVICES STUDIES



The findings of COCS studies are consistent with those of conventional fiscal impact analyses, which document the high cost of residential development and recommend commercial and industrial development to help balance local budgets. What is unique about COCS studies is that they show that agricultural land is similar to other commercial and industrial uses. In every community studied, farmland has generated a fiscal surplus to help offset the shortfall created by residential demand for public services. This is true even when the land is assessed at its current agricultural use.

Communities need reliable information to help them see the full picture of their land uses. COCS studies are an inexpensive way to evaluate the net contribution of farm and open lands. They can help local leaders discard the notion that natural resources must be converted to other uses to ensure fiscal stability. They also dispel the myths that residential development leads to lower taxes, that differential assessment programs give landowners an unfair tax break and that farmland is just waiting around for development.

One type of land use is not intrinsically better than another, and COCS studies do not judge the overall public good or long-term merits of any land use or taxing structure. Communities must balance goals such as maintaining affordable housing, creating jobs and conserving land and resources. With good planning, these goals can complement rather than compete with each other. COCS studies give communities another tool to make decisions about their futures.

Graph: Median cost—per dollar of revenue raised—to provide public services to different land uses.

SUMMARY OF COST OF COMMUNITY SERVICES STUDIES, REVENUE-TO-EXPENDITURE RATIOS IN DOLLARS

Community	Residential including farm houses	Combined Commercial & Industrial	Farm/Forest Open Land	Source
Connecticut				
Bolton	1 : 1.05	1 : 0.23	1 : 0.50	Geisler, 1998
Durham	1 : 1.07	1 : 0.27	1 : 0.23	Southern New England Forest Consortium, 1995
Farmington	1 : 1.33	1 : 0.32	1 : 0.31	Southern New England Forest Consortium, 1995
Hebron	1 : 1.06	1 : 0.47	1 : 0.43	American Farmland Trust, 1986
Litchfield	1 : 1.11	1 : 0.34	1 : 0.34	Southern New England Forest Consortium, 1995
Pomfret	1 : 1.06	1 : 0.27	1 : 0.86	Southern New England Forest Consortium, 1995
Idaho				
Canyon County	1 : 1.08	1 : 0.79	1 : 0.54	Hartmans and Meyer, 1997
Cassia County	1 : 1.19	1 : 0.87	1 : 0.41	Hartmans and Meyer, 1997
Kentucky				
Lexington-Fayette	1 : 1.64	1 : 0.22	1 : 0.93	American Farmland Trust, 1999
Maine				
Bethel	1 : 1.29	1 : 0.59	1 : 0.06	Good, Antioch New England Graduate School, 1994
Maryland				
Carroll County	1 : 1.15	1 : 0.48	1 : 0.45	Carroll County Dept. of Management & Budget, 1994
Cecil County	1 : 1.12	1 : 0.28	1 : 0.37	Cecil County Office of Economic Development, 1994
Frederick County	1 : 1.14	1 : 0.50	1 : 0.53	American Farmland Trust, 1997
Massachusetts				
Agawam	1 : 1.05	1 : 0.44	1 : 0.31	American Farmland Trust, 1992
Becket	1 : 1.02	1 : 0.83	1 : 0.72	Southern New England Forest Consortium, 1995
Deerfield	1 : 1.16	1 : 0.38	1 : 0.29	American Farmland Trust, 1992
Franklin	1 : 1.02	1 : 0.58	1 : 0.40	Southern New England Forest Consortium, 1995
Gill	1 : 1.15	1 : 0.43	1 : 0.38	American Farmland Trust, 1992
Leverett	1 : 1.15	1 : 0.29	1 : 0.25	Southern New England Forest Consortium, 1995
Middleboro	1 : 1.08	1 : 0.47	1 : 0.70	American Farmland Trust, 2001
Southborough	1 : 1.03	1 : 0.26	1 : 0.45	Adams and Hines, 1997
Westford	1 : 1.15	1 : 0.53	1 : 0.39	Southern New England Forest Consortium, 1995
Williamstown	1 : 1.11	1 : 0.34	1 : 0.40	Hazler et al., 1992
Michigan				
Scio Township	1 : 1.40	1 : 0.28	1 : 0.62	University of Michigan, 1994
Minnesota				
Farmington	1 : 1.02	1 : 0.79	1 : 0.77	American Farmland Trust, 1994
Lake Elmo	1 : 1.07	1 : 0.20	1 : 0.27	American Farmland Trust, 1994
Independence	1 : 1.03	1 : 0.19	1 : 0.47	American Farmland Trust, 1994

SUMMARY OF COST OF COMMUNITY SERVICES STUDIES, REVENUE-TO-EXPENDITURE RATIOS IN DOLLARS

Community	Residential including farm houses	Combined Commercial & Industrial	Farm/Forest Open Land	Source
Montana				
Carbon County	1 : 1.60	1 : 0.21	1 : 0.34	Prinzing, 1999
Gallatin County	1 : 1.45	1 : 0.16	1 : 0.25	Haggerty, 1996
Flathead County	1 : 1.23	1 : 0.26	1 : 0.34	Citizens for a Better Flathead, 1999
New Hampshire				
Deerfield	1 : 1.15	1 : 0.22	1 : 0.35	Auger, 1994
Dover	1 : 1.15	1 : 0.63	1 : 0.94	Kingsley et al., 1993
Exeter	1 : 1.07	1 : 0.40	1 : 0.82	Niebling, 1997
Fremont	1 : 1.04	1 : 0.94	1 : 0.36	Auger, 1994
Groton	1 : 1.01	1 : 0.12	1 : 0.88	New Hampshire Wildlife Federation, 2001
Stratham	1 : 1.15	1 : 0.19	1 : 0.40	Auger, 1994
Lyme	1 : 1.05	1 : 0.28	1 : 0.23	Pickard, 2000
New Jersey				
Freehold Township	1 : 1.51	1 : 0.17	1 : 0.33	American Farmland Trust, 1998
Holmdel Township	1 : 1.38	1 : 0.21	1 : 0.66	American Farmland Trust, 1998
Middletown Township	1 : 1.14	1 : 0.34	1 : 0.36	American Farmland Trust, 1998
Upper Freehold Township	1 : 1.18	1 : 0.20	1 : 0.35	American Farmland Trust, 1998
Wall Township	1 : 1.28	1 : 0.30	1 : 0.54	American Farmland Trust, 1998
New York				
Amenia	1 : 1.23	1 : 0.25	1 : 0.17	Bucknall, 1989
Beekman	1 : 1.12	1 : 0.18	1 : 0.48	American Farmland Trust, 1989
Dix	1 : 1.51	1 : 0.27	1 : 0.31	Schuyler County League of Women Voters, 1993
Farmington	1 : 1.22	1 : 0.27	1 : 0.72	Kinsman et al., 1991
Fishkill	1 : 1.23	1 : 0.31	1 : 0.74	Bucknall, 1989
Hector	1 : 1.30	1 : 0.15	1 : 0.28	Schuyler County League of Women Voters, 1993
Kinderhook	1 : 1.05	1 : 0.21	1 : 0.17	Concerned Citizens of Kinderhook, 1996
Montour	1 : 1.50	1 : 0.28	1 : 0.29	Schuyler County League of Women Voters, 1992
Northeast	1 : 1.36	1 : 0.29	1 : 0.21	American Farmland Trust, 1989
Reading	1 : 1.88	1 : 0.26	1 : 0.32	Schuyler County League of Women Voters, 1992
Red Hook	1 : 1.11	1 : 0.20	1 : 0.22	Bucknall, 1989
Ohio				
Madison Village	1 : 1.67	1 : 0.20	1 : 0.38	AFT and Lake County Ohio SWCD, 1993
Madison Township	1 : 1.40	1 : 0.25	1 : 0.30	AFT and Lake County Ohio SWCD, 1993
Shalersville Township	1 : 1.58	1 : 0.17	1 : 0.31	Portage County Regional Planning Commission, 1997

SUMMARY OF COST OF COMMUNITY SERVICES STUDIES, REVENUE-TO-EXPENDITURE RATIOS IN DOLLARS

Community	Residential including farm houses	Combined Commercial & Industrial	Farm/Forest Open Land	Source
Pennsylvania				
Allegheny Township	1 : 1.06	1 : 0.14	1 : 0.13	Kelsey, 1997
Bedminster Township	1 : 1.12	1 : 0.05	1 : 0.04	Kelsey, 1997
Bethel Township	1 : 1.08	1 : 0.17	1 : 0.06	Kelsey, 1992
Bingham Township	1 : 1.56	1 : 0.16	1 : 0.15	Kelsey, 1994
Buckingham Township	1 : 1.04	1 : 0.15	1 : 0.08	Kelsey, 1996
Carroll Township	1 : 1.03	1 : 0.06	1 : 0.02	Kelsey, 1992
Maiden Creek Township	1 : 1.28	1 : 0.11	1 : 0.06	Kelsey, 1998
Richmond Township	1 : 1.24	1 : 0.09	1 : 0.04	Kelsey, 1998
Stewardson Township	1 : 2.11	1 : 0.23	1 : 0.31	Kelsey, 1994
Straban Township	1 : 1.10	1 : 0.16	1 : 0.06	Kelsey, 1992
Sweden Township	1 : 1.38	1 : 0.07	1 : 0.08	Kelsey, 1994
Rhode Island				
Hopkinton	1 : 1.08	1 : 0.31	1 : 0.31	Southern New England Forest Consortium, 1995
Little Compton	1 : 1.05	1 : 0.56	1 : 0.37	Southern New England Forest Consortium, 1995
Portsmouth	1 : 1.16	1 : 0.27	1 : 0.39	Johnston, 1997
West Greenwich	1 : 1.46	1 : 0.40	1 : 0.46	Southern New England Forest Consortium, 1995
Texas				
Hays County	1 : 1.26	1 : 0.30	1 : 0.33	American Farmland Trust, 2000
Utah				
Cache County	1 : 1.27	1 : 0.25	1 : 0.57	Snyder and Ferguson, 1994
Sevier County	1 : 1.11	1 : 0.31	1 : 0.99	Snyder and Ferguson, 1994
Utah County	1 : 1.23	1 : 0.26	1 : 0.82	Snyder and Ferguson, 1994
Virginia				
Augusta County	1 : 1.22	1 : 0.20	1 : 0.80	Valley Conservation Council, 1997
Clarke County	1 : 1.26	1 : 0.21	1 : 0.15	Piedmont Environmental Council, 1994
Northampton County	1 : 1.13	1 : 0.97	1 : 0.23	American Farmland Trust, 1999
Washington				
Skagit County	1 : 1.25	1 : 0.30	1 : 0.51	American Farmland Trust, 1999
Wisconsin				
Dunn	1 : 1.06	1 : 0.29	1 : 0.18	Town of Dunn, 1994
Dunn	1 : 1.02	1 : 0.55	1 : 0.15	Wisconsin Land Use Research Program, 1999
Perry	1 : 1.20	1 : 1.04	1 : 0.41	Wisconsin Land Use Research Program, 1999
Westport	1 : 1.11	1 : 0.31	1 : 0.13	Wisconsin Land Use Research Program, 1999

American Farmland Trust's Farmland Information Center acts as a clearinghouse for information about cost of community services studies.

Inclusion in this table does not necessarily signify review or endorsement by American Farmland Trust.



FACT SHEET

FARMLAND PROTECTION POLICY ACT



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DESCRIPTION

Congress enacted the Farmland Protection Policy Act as a subtitle of the 1981 Farm Bill. The purpose of the law is to “minimize the extent to which Federal programs contribute to the unnecessary conversion of farmland to nonagricultural uses” (P.L. 97-98, Sec. 1539-1549; 7 U.S.C. 4201, et seq.). The FPPA also stipulates that federal programs be compatible with state, local and private efforts to protect farmland. For the purposes of the law, federal programs include construction projects - such as highways, airports, dams and federal buildings - sponsored or financed in whole or part by the federal government, and the management of federal lands. The U.S. Department of Agriculture’s Natural Resources Conservation Service is charged with oversight of the FPPA.

HISTORY

The FPPA grew out of efforts in both the executive and legislative branches of the federal government. In 1976, USDA issued a policy urging agencies to look at alternatives to activities that lead to the conversion of prime farmland. Later that year, the President’s Council on Environmental Quality released a memorandum advocating consideration of farmland conversion in environmental impact statements. Finally, in 1978, the Secretary of Agriculture published a revised memorandum on land use. The memorandum directed each agency within USDA to review and revise policies and rules that cause, or encourage, farmland conversion. To collect the baseline information needed to implement this policy, the Secretary of Agriculture and Chairman of the CEQ commissioned the National Agricultural Lands Study, a two-year project to document the extent and causes of the loss of farmland.

Between 1977, when the first bills focusing on farmland protection were introduced, and the enactment of the FPPA, Congress debated several measures that advocated consideration of the impact of federal activities on farmland.

Proposed legislation also would have required consistency between federal policies and state and local farmland protection efforts. However, lawmakers ultimately decided to postpone legislative action until NALS was completed. *

NALS was released in 1981. While its findings were controversial, few disputed the overall trend: Very large areas of farmland were being permanently converted to non-agricultural use. NALS also found that a significant number of federally sponsored programs contribute to farmland conversion. In response, Congress enacted the Farmland Protection Policy Act as part of the Agriculture and Food Act of 1981. The final rule was published in 1994.

FUNCTIONS AND PURPOSES

The Farmland Protection Policy Act is intended to minimize the extent to which federal activities contribute to the conversion of agricultural land to nonagricultural uses. It also seeks to ensure that federal policies are administered in a manner that will be compatible with state, local and private policies that protect farmland. FPPA does not cover private construction subject to federal permitting and licensing, projects planned and completed without any assistance from a federal agency, federal projects related to national defense during a national emergency and projects proposed on land already committed to urban development. Furthermore, the law cannot be used as the basis of legal actions by state or local governments or private individuals. State governors, however, were given legal standing in 1994 to challenge federal programs that do not comply with the FPPA.

The FPPA created a public education role for USDA. NRCS is encouraged to provide technical assistance to state and local governments and nonprofit organizations in the development of programs and policies to protect farmland. The law directed the Secretary of Agriculture to “designate one or more farmland information centers to serve as central depositories and distribution points for information on farmland issues,

FARMLAND PROTECTION POLICY ACT

For additional information on the FPPA and other farmland protection programs, the Farmland Information Center offers publications, an on-line library and technical assistance. To order AFT publications, call (800) 370-4879. The farmland information library is a searchable database of literature, abstracts, statutes, maps, legislative updates and other useful resources. It can be reached at <http://www.farmlandinfo.org>. For additional assistance on specific topics, call the technical assistance service at (413) 586-4593.

policies, programs, technical principles, and innovative actions or proposals by local and State governments." American Farmland Trust's Farmland Information Center was created under this provision.

IMPLEMENTATION

FPPA requires federal agencies to examine the impact of their programs before they approve any activity that would convert farmland. Agencies have the option of determining whether a site contains farmland - and therefore falls under the act - without input from NRCS. To rate the relative impact of projects on sites subject to the FPPA, federal agencies fill out a Farmland Conversion Impact Rating Form (form AD-1006).

The rating form is based on a Land Evaluation and Site Assessment system. LESA is a numerical system that measures the quality of farmland. LESA systems have two components. The Land Evaluation element rates soil quality. The Site Assessment component measures other factors that affect the farm's viability, including but not limited to proximity to water and sewer lines and the size of the parcel. In general, the higher the LESA score, the more appropriate the site is for protection.

Under FPPA, federal agencies sponsoring a project subject to the law complete a site assessment. NRCS is responsible for the land evaluation component. Sites receiving a combined score of less than 160 do not require further evaluation. Alternatives should be proposed for sites with a combined score greater than 160 points. On the basis of this analysis, a federal agency may, but is not required to deny assistance to private parties and state and local governments undertaking projects that would convert farmland. The only recourse for reviewing agency decisions is litigation brought by state governors.

In addition to project evaluation, FPPA directs each federal government agency to review its rules and procedures, with assistance from the USDA, to determine whether any policies prevent the agency from complying with the law.

Agencies must develop proposals to bring their programs into compliance. Each federal agency must submit an annual report to NRCS describing steps taken to comply with the law. However, annual agency review never has been conducted in any meaningful way.

BENEFITS

- The Farmland Protection Policy Act increases national awareness about farmland protection.
- A federal agency may withhold assistance from private parties and state and local governments undertaking projects that would convert farmland.

DRAWBACKS

- The FPPA does not require federal agencies to alter projects to avoid or minimize farmland conversion.
- Federal agencies have the option of determining whether a site contains farmland, and is therefore subject to the FPPA, without input from NRCS.
- Evaluation of a federal program's impact on farmland relies on site assessments performed by agencies that are not concerned with farmland protection and may, in fact, have competing interests.
- Most federal agencies are not represented at the local level and therefore cannot develop a meaningful site assessment system for evaluating the impact of a federal program on farmland.
- Federal agencies generally fail to return completed AD-1006 forms to NRCS field staff for reporting purposes; therefore, NRCS has no record of agencies' final decisions and cannot measure the effectiveness of the law.

* Dunford, Richard. *The Development and Current Status of Federal Farmland Retention Policy*. Congressional Research Service, 1984, Report. No.85-21 ENR.



FACT SHEET

GROWTH

MANAGEMENT

LAWS



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DESCRIPTION

Growth management laws are designed to control the timing, phasing and character of urban growth. They take a comprehensive approach to regulating the pattern and rate of development and set policies to ensure that most new construction is concentrated within designated urban growth areas or boundaries (UGBs). They direct local governments to identify lands with high natural resource, economic and environmental value and protect them from development. Some growth management laws require that public services such as water and sewer lines, roads and schools be in place before new development is approved. Others direct local governments to make decisions in accordance with comprehensive plans that are consistent with plans for adjoining areas.

Most growth management programs are established at the state level and may apply to the entire state, high-growth counties or a particular region. Growth management also may be used to guide development at the county and municipal level. Growth management laws can protect farmland by channeling new development away from important agricultural areas.

At least 12 states have growth management statutes, but only seven - Hawaii, Maryland, Minnesota, New Jersey, Oregon, Vermont and Washington - address the issue of farmland conversion. These seven laws vary in the controls that they impose on state and local governments and in the extent to which they protect agricultural land from development.

HISTORY

In 1961, Hawaii became the first state to experiment with statewide land use planning when it created four zoning districts that covered all of the land in the state. One of the four zones was dedicated to agriculture.

Vermont's Act 250, approved in 1970, requires state review of commercial, industrial and residential development projects that meet the act's criteria. Developers must minimize the loss of primary agricultural soils. Vermont passed another state planning act in 1988.

In 1972, Oregon enacted one of the nation's strongest growth management laws. Its 1972 Land Conservation and Development Act directed county officials to inventory farmland and designate it for agriculture in their comprehensive plans. County governments were required to enact exclusive agricultural protection zoning and adopt other farmland protection policies. City governments were required to establish urban growth boundaries.

Washington's Growth Management Act was adopted in 1990 and strengthened in 1991. The law requires all counties to designate important agricultural land and adopt regulations to ensure that land uses adjacent to farms and ranches do not interfere with agricultural operations. Fast-growing counties and their cities must prepare comprehensive plans that protect natural resource areas. Counties required to plan under the act also are required to designate urban growth areas to accommodate projected urban growth over 20 years. In general, urban services may not be extended beyond the boundaries of urban growth areas.

The New Jersey State Development and Redevelopment Plan, released in 1992, is designed to accommodate urban growth by directing it to defined urban areas. It provides a statewide framework that is intended to guide the investment policies of state agencies.

The Maryland Economic Growth, Resource Protection, and Planning Act of 1992 outlines a set of policies to guide growth. It calls for protection of natural resources, including agricultural

GROWTH MANAGEMENT

LAWS

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To order AFT publications, call (800) 370-4879. The farmland information library is a searchable database of literature, abstracts, statutes, maps, legislative updates and other useful resources.

It can be reached at <http://www.farmlandinfo.org>. For additional assistance on specific topics, call the technical assistance service at (413) 586-4593.

land, and for growth to be directed to existing population centers. State projects must be consistent with those policies. Local governments were required to adopt new comprehensive plans and revise their zoning and subdivision ordinances to implement the policies. In 1997, the state Legislature enacted the Smart Growth Areas bill, which directs state funding to areas targeted for development.

Minnesota's 1997 Community-Based Planning Act sets 11 goals for developing local and regional plans. Farmland protection is included as part of a goal to protect, preserve and enhance the state's resources. Local governments are encouraged, rather than required to develop comprehensive plans in accordance with the provisions of the law.

FUNCTIONS & PURPOSES

Growth management laws can result in the designation of lands with high resource value, such as prime farmland, and protect them from inappropriate development. They encourage "smart growth" by directing local governments to designate areas and prepare plans for different types of land uses. Urban growth boundaries encourage orderly growth and let the building industry know where public infrastructure will be provided for residential and commercial development.

Some growth management laws encourage or require local governments to develop comprehensive plans that are both internally consistent and consistent with the plans of neighboring jurisdictions. This provision helps ensure that different government agencies in different communities are working toward the same goals. Laws that control the pace of development help guarantee that new homes and businesses have adequate water, sewer, police, fire, education and transportation services.

BENEFITS

- State and regional growth management laws transcend local boundaries and can create incentives for many jurisdictions to work toward common goals.
- Growth management laws allow state and local governments to protect large blocks of agricultural land with a single legislative vote.
- Growth management laws can provide incentives for development in and around areas that are already urban in character while discouraging the use of productive farmland for non-agricultural uses.
- Growth management laws can save communities money by preventing sprawling developments that are costly to serve.

DRAWBACKS

- It is often difficult to win the political approval required to pass state growth management laws.
- Regional planning is especially controversial in many states and may be strongly opposed by local governments.
- Growth management laws are complex and generally take a long time to implement.
- Many growth management laws do not have a strong farmland protection component.



FACT SHEET

AGRICULTURAL CONSERVATION EASEMENTS

DESCRIPTION

A conservation easement is a deed restriction landowners voluntarily place on their property to protect resources such as productive agricultural land, ground and surface water, wildlife habitat, historic sites or scenic views. They are used by landowners ("grantors") to authorize a qualified conservation organization or public agency ("grantee") to monitor and enforce the restrictions set forth in the agreement.

Conservation easements are flexible documents tailored to each property and the needs of individual landowners. They may cover an entire parcel or portions of a property. The landowner usually works with the prospective grantee to decide which activities should be limited to protect specific resources. Agricultural conservation easements are designed to keep land available for farming.

RESTRICTIONS

In general, agricultural conservation easements limit subdivision, non-farm development and other uses that are inconsistent with commercial agriculture. Some easements allow lots to be reserved for family members. Typically, these lots must be small—one to two acres is common—and located on the least productive soils. Agricultural conservation easements often permit commercial development related to the farm operation and the construction of farm buildings. Most do not restrict farming practices, although some grantees ask landowners to implement soil and water conservation plans. Landowners who receive federal funds for farm easements must implement conservation plans developed by the USDA Natural Resources Conservation Service.

TERM OF THE RESTRICTIONS

Most agricultural conservation easements are permanent. Term easements impose restrictions for a specified number of years. Regardless of the duration of the easement, the agreement is legally binding on future landowners for the agreed-upon time period. An agricultural conservation easement can be modified or terminated by a court of law if the land or the neighborhood changes and the conservation objectives of the easement become impossible to achieve. Easements may

also be terminated by eminent domain proceedings.

RETAINED RIGHTS

After granting an agricultural conservation easement, landowners retain title to their property and can still restrict public access, farm, use the land as collateral for a loan or sell their property. Land subject to an easement remains on the local tax rolls. Landowners continue to be eligible for state and federal farm programs.

VALUATION

Landowners can sell or donate an agricultural conservation easement to a qualified conservation organization or government body. In either case, it is important to determine the value of the easement to establish a price or to calculate tax benefits that may be available under federal and state law. The value of an agricultural conservation easement is generally the fair market value of the property minus its restricted value, as determined by a qualified appraiser. In general, more restrictive agreements and intense development pressure result in higher easement values.

TAX BENEFITS

Grantors can receive several tax advantages. Donated agricultural conservation easements that meet Internal Revenue Code section 170 (h) criteria are treated as charitable gifts. Term easements do not qualify. Donors can deduct an amount equal to up to 30 percent of their adjusted gross income in the year of the gift. Corporations are limited to a 10-percent deduction. Easement donations in excess of the annual limit can be applied toward federal income taxes for the next five years, subject to the same stipulations. Most state income tax laws provide similar benefits.

Some state tax codes direct local tax assessors to consider the restrictions imposed by a conservation easement. This provision generally lowers property taxes on restricted parcels if the land is not already enrolled in a differential assessment program. Differential assessment programs direct local tax assessors to assess land at its value for agriculture or forestry,



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AGRICULTURAL CONSERVATION EASEMENTS

For additional information on agricultural conservation easements and farmland protection, the Farmland Information Center offers publications, an on-line library and technical assistance. To order AFT publications, call (800) 370-4879. The farmland information library is a searchable database of literature, abstracts, statutes, maps, legislative updates and other useful resources. It can be reached at <http://www.farmlandinfo.org>. For additional assistance on specific topics, call the technical assistance service at (413) 586-4593.

rather than its "highest and best" use, which is generally for residential, commercial or industrial development.

The donation or sale of an agricultural conservation easement usually reduces the value of land for estate tax purposes. To the extent that the restricted value is lower than fair market value, the estate will be subject to a lower tax. In some cases, an easement can reduce the value of an estate below the level that is taxable, effectively eliminating any estate tax liability. However, as exemption levels increase, there may be less incentive from an estate tax perspective.

Recent changes to federal estate tax law, enacted as part of the Economic Growth and Tax Relief Reconciliation Act of 2001, expanded an estate tax incentive for landowners to grant conservation easements. The new law removes geographic limitations for donated conservation easements eligible for estate tax benefits under Section 2031(c) of the tax code.

Executors can elect to exclude 40 percent of the value of land subject to a donated qualified conservation easement from the taxable estate. This exclusion will be \$500,000 in 2002 and thereafter. The full benefit offered by the new law is available for easements that reduce the fair market value of a property by at least 30 percent. Smaller deductions are available for easements that reduce property value by less than 30 percent.

HISTORY

Every state has a law pertaining to conservation easements. The National Conference of Commissioners on Uniform State Laws adopted the Uniform Conservation Easement Act in 1981. The Act served as a model for state legislation allowing qualified public agencies and private conservation organizations to accept, acquire and hold less-than-fee simple interests in land for the purposes of conservation and preservation. Since the Uniform Conservation Easement Act was approved, 21 states have adopted conservation easement enabling laws based on this model and 23 states have drafted and enacted their own enabling laws.

Accepting donated conservation easements is one of the major activities of land trusts. Land trusts exist in all 50 states. They monitor and

enforce the terms of easements. Some also purchase conservation easements.

BENEFITS

- Conservation easements permanently protect important farmland while keeping the land in private ownership and on local tax rolls.
- Conservation easements are flexible, and can be tailored to meet the needs of individual farmers and ranchers and unique properties.
- Conservation easements can provide farmers with several tax benefits including income, estate and property tax reductions.
- By reducing nonfarm development land values, conservation easements help farmers and ranchers transfer their operations to the next generation.

DRAWBACKS

- While conservation easements can prevent development of agricultural land, they do not ensure that the land will continue to be farmed.
- Agricultural conservation easements must be carefully drafted to ensure that the terms allow farmers and ranchers to adapt and expand their operations and farming practices to adjust to changing economic conditions.
- Donating an easement is not always a financially viable option for landowners.
- Monitoring and enforcing conservation easements requires a serious commitment on the part of the easement holder.
- Subsequent landowners are not always interested in upholding easement terms.
- Conservation easements do not offer protection from eminent domain. If land under easement is taken through eminent domain, both the landowner and the easement holder must be compensated.



FACT SHEET

FARMLAND PROTECTION PROGRAM



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DESCRIPTION

The 1996 Farm Bill established a Farmland Protection Program to protect farmland from conversion to nonagricultural uses. Section 388 of the Federal Agriculture Improvement and Reform Act authorized up to \$35 million in matching funds over six years to state and local programs for the purchase of agricultural conservation easements and other interests in productive farmland. Funding for the FPP comes from the Commodity Credit Corporation, the same federal entity that finances farm income support payments. The USDA Natural Resources Conservation Service (NRCS) is responsible for program implementation.

To be eligible to receive matching funds, state, tribal and local governments must have established farmland protection programs that have pending offers for the acquisition of conservation easements on prime, unique or other productive soils as defined in the Farmland Protection Policy Act (see HISTORY below). Program criteria stipulate that the farmland to be protected must be threatened by development, yet located near agricultural infrastructure and markets to ensure future viability. Applicants must demonstrate a commitment to farmland protection through the use of incentive-based or regulatory farmland protection techniques, and by proving their capacity to monitor and enforce conservation easements. State, tribal and local governments are also required to provide at least 50 percent of the estimated fair market value of the interest they are acquiring.

To distribute FPP funds, NRCS publishes a request for proposals in the Federal Register. The RFP is also posted online. When a state or local application for matching funds is approved, NRCS executes a cooperative agreement on behalf of the Commodity Credit Corporation. The agreement describes the transaction, including information about the parcel, the type of interest to be acquired, the project cost and an estimate of the federal share. Enrollment in the

FPP limits the land to agricultural use for a minimum of 30 years. Preference is given to projects that protect farmland in perpetuity. Conservation plans must be implemented on all land enrolled in the FPP. Failure to do so is considered a violation of the agreement. The cooperative agreement describes the role of NRCS in the development and implementation of a conservation plan. Finally, the agreement contains a reversionary clause requiring the state or local government to reimburse the federal government if the terms of the cooperative agreement are not enforced or if the easement is terminated.

HISTORY

The federal government's efforts to stem farmland conversion began with the passage of the Farmland Protection Policy Act in 1981. The FPPA directs federal agencies to evaluate the extent to which federally funded projects lead to the conversion of agricultural land and to consider less harmful alternatives. The regulations were issued in 1994 but have failed to effectively prevent farmland conversion.

The Farms for the Future Act, adopted as part of the 1990 Farm Bill, set the precedent for federal funding by authorizing the Resources Conservation Demonstration Program. This program provided guaranteed loans and subsidized interest payments to state and local farmland protection programs. A pilot program in Vermont saved the state approximately \$10.7 million in interest payments over three years. Congress did not appropriate funds in 1995. The program was superseded by the FPP in 1996.

The Farmland Protection Program is the most significant step the federal government has taken to date to support state and local farmland protection efforts. In fiscal year 1996, 41 entities in 18 states have been awarded more than \$16.2 million in federal matching funds.

FARMLAND PROTECTION PROGRAM

For additional information on the FPP and other farmland protection programs, the Farmland Information Center offers publications, an on-line library and technical assistance.

To order AFT publications, call (800) 370-4879. The farmland information library is a searchable database of literature, abstracts, statutes, maps, legislative updates and other useful resources.

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FUNCTIONS & PURPOSES

The FPP provides financial support to state and local farmland protection programs. These programs protect farmland from residential and commercial development by acquiring agricultural conservation easements on productive farmland. They free up capital for producers to reinvest in their operations, invest for retirement or reduce debt. By removing the speculative value of the land, state and local farmland protection programs also help keep farmland affordable for beginning farmers. In addition, the FPP encourages good stewardship by requiring the implementation of conservation plans.

BENEFITS

- The FPP provides much-needed financial assistance to state and local farmland protection programs.
- The FPP encourages the development of new farmland protection programs.
- The program makes farmland protection a USDA Natural Resources Conservation Service issue.
- The FPP fosters national awareness about farmland protection.

DRAWBACKS

- Modest funding to date has limited the amount of land the program can protect.
- Provisions in the cooperative agreement, in particular the implementation of a conservation plan, place an additional burden on the landowner and may discourage participation.
- The FPP is subject to the politics of the annual federal appropriations process. Funding is not predictable from year to year.



FACT SHEET

INSTALLMENT

PURCHASE

AGREEMENTS

DESCRIPTION

Purchase of Agricultural Conservation Easement (PACE) programs compensate property owners for restrictions on the future use of their land. One of the biggest challenges in administering PACE programs is figuring out how to pay for them. This fact sheet describes an innovative financing plan that helps jurisdictions stretch available funds while offering unique benefits to landowners.

What it is

An installment purchase agreement (IPA) is an innovative payment plan offered by a handful of jurisdictions with Purchase of Agricultural Conservation Easement (PACE) programs. IPAs spread out payments so that landowners receive semi-annual, tax-exempt interest over a term of years (typically 20 to 30). The principal is due at the end of the contract term. Landowners also can sell or securitize IPA contracts at any point to realize the outstanding principal. The IPA financing plan won the Government Finance Officers Association Award for Excellence in 1990.

How it works

The day before settlement, the jurisdiction sets the rate for the interest paid to the IPA holder. The rate is typically pegged to the current return on U.S. Treasury bonds. However, counties and local governments can set a minimum interest rate, or "floor," to provide participating farmers with additional security.

Jurisdictions can purchase zero-coupon bonds to cover the final balloon payments. "Zeroes" do not generate regular interest income. Instead, they yield a lump sum when the bond matures. Because zero coupon bonds cost a fraction of their face value, the public entity leverages available funds. "Zeroes" with a face value equal to the purchase price are usually purchased the day before settlement.

At settlement, the landowner grants the jurisdiction a permanent agricultural conservation easement in exchange for an IPA. Then the jurisdiction begins making tax-exempt interest payments twice a year. The balance of the purchase price is paid to landowners at the end of the agreement. The landowner may sell or "securitize" the IPA on the municipal bond market to recover the outstanding principal before the end of the agreement.

HISTORY

Howard County, Maryland, pioneered IPA as a strategy to fund its PACE program in 1989. By 1987, the county's five-year-old farmland protection program had stalled. Lump-sum payments were no longer a competitive option for farmers due, in part, to dramatic increases in land prices. Later that year, county officials met with a financial advisor to explore ways to make the most of accumulated tax revenues and reinvigorate the program. The advisor combined installment payments and the purchase of zero coupon bonds with the county's traditional funding mechanisms. Working with the county executive, county agencies and bond counsel to refine the proposal, the plan was announced in May 1989. Workshops were held for interested property owners over the next few months and the County Council approved the first round of IPAs in November. To date, 81 agreements have been executed in Howard County, adding 9,200 acres to the 7,500 protected before the IPA program was created.

Based on the Howard County model, Harford County, Md., Burlington County, N.J. and Virginia Beach, Va. have developed IPA programs to stretch public funds for farmland protection. In addition, Pennsylvania's statewide farmland preservation program is crafting an IPA program. In the spring of 1999, Pennsylvania legislators earmarked \$500,000 to support this effort.



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September 1999

The Farmland Information Center is a public/private partnership between American Farmland Trust and the USDA Natural Resources Conservation Service that provides technical information about farmland protection.

INSTALLMENT

PURCHASE

AGREEMENTS

For more information on installment purchase agreements contact:

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For information about farmland protection techniques contact AFT's technical assistance service.

FUNCTIONS AND PURPOSES

IPAs are intended to make PACE programs competitive with developers by providing unique financial and tax advantages. In addition, this payment option enables jurisdictions to use accumulated and future dedicated revenues to protect land while it is still available and relatively affordable.

ISSUES TO ADDRESS

Authority and Approvals

In general, state and local governments can enter into IPAs if they have the authority to issue general obligation bonds. Because IPAs constitute long-term debt, agreements typically require the same approval process as bonds. Laws governing the issuance of bonds vary from state to state. Some states require approval by the legislature, the voters or both. For more information, contact state agencies that regulate municipal bond issuance, bond counsel or independent investment banking or public financial advisory firms.

Funding

An IPA program requires dedicated funds to cover the interest and principal payments. Howard County uses proceeds from a local real estate transfer tax and the county's share of a statewide agricultural transfer tax to support its program. Virginia Beach relies on revenue from a property tax increase and a tax on cellular phone use.

BENEFITS

- Landowners may defer capital gains taxes until they receive the principal for the purchase price. This keeps a larger proportion of the proceeds "working" or earning interest.
- The semi-annual interest paid on the outstanding balance of the purchase price is exempt from federal, state and local income taxes and can provide a supplementary income stream.
- Landowners can liquidate their IPA prior to the end of the agreement.

- IPAs can be transferred to heirs and are useful in estate planning.
- The package of financial and tax benefits offered to landowners could enable them to net more than they could through a traditional cash sale. These benefits may encourage landowners to accept less than the appraised value for their easements.
- IPAs stretch public funds. By deferring principal payments, public entities can buy more easements while land is available and relatively affordable. Also, by purchasing "zeroes" jurisdictions spend a fraction of the negotiated purchase price at closing and leverage available funds.

DRAWBACKS

- IPAs require a dedicated funding source to cover the interest payments.
- An IPA program may take up to six months to develop.
- Bond counsel, a paying agent and a financial advisor will have to assist in each settlement. The estimated cost of each transaction including fees and charges by rating agencies ranges from \$5,000 to \$20,000. These costs can be higher—on a percentage basis—than the costs to issue bonds for a cash-purchase program.
- Because IPAs are backed by the full faith and credit of the jurisdiction, each agreement may require the same approval process as general obligation bonds.



FACT SHEET

PURCHASE OF AGRICULTURAL CONSERVATION EASEMENTS



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DESCRIPTION

Purchase of agricultural conservation easement programs compensate property owners for restricting the future use of their land. PACE is known as Purchase of Development Rights (PDR) in many locations.

PACE programs are based on the concept that property owners have a bundle of different rights, including the right to use land, lease, sell and bequeath it, borrow money using it as security, construct buildings on it and mine it, or protect it from development, subject to reasonable local land use regulations. Some or all of these rights can be transferred or sold to another person. When a landowner sells property, generally all the rights are transferred to the buyer. PACE programs enable landowners to separate and sell their right to develop land from their other property rights. The buyer, however, does not acquire the right to build anything on the land, but only the right and responsibility to prevent development. After selling an easement, the landowner retains all other rights of ownership, including the right to farm the land, prevent trespass, sell, bequeath or otherwise transfer the land.

Landowners voluntarily sell agricultural conservation easements to a government agency or private conservation organization. The agency or organization usually pays them the difference between the value of the land as restricted and the value of the land for its "highest and best use," which is generally residential or commercial development. The easement price is established by appraisals or a local easement valuation point system. Typically, PACE programs consider soil quality, threat of development and future agricultural viability when selecting farms for protection.

Easements give qualified public agencies and private organizations the right to prohibit land uses and activities that could interfere with present or future agricultural use.

Terms may permit the construction of new farm buildings and housing for farm employees and family members. Easements "run with the land," binding all future owners unless the document establishing the easement provides that the covenant may be terminated for cause or at the end of a specified period of time.

HISTORY

Suffolk County, N.Y., created the nation's first PACE program in the mid-1970s. Following Suffolk County's lead, Maryland and Massachusetts authorized PACE programs in 1977, Connecticut in 1978 and New Hampshire in 1979. Concern about regional food security and the loss of open space were motivating forces behind these early PACE programs.

FUNCTIONS & PURPOSES

PACE compensates landowners for permanently limiting non-agricultural land uses. Selling an easement allows farmers to cash in a percentage of the equity in their land, thus creating a financially competitive alternative to development.

Permanent easements prevent development that would effectively foreclose the possibility of farming. Because non-agricultural development on one farm can cause problems for neighboring agricultural operations, PACE may help protect their economic viability as well.

Removing the development potential from farmland generally reduces its future market value. This may help facilitate farm transfer to the children of farmers and make the land more affordable to beginning farmers and others who want to buy it for agricultural purposes. The reduction in market value may also reduce property taxes and help prevent them from rising.

PURCHASE OF AGRICULTURAL CONSERVATION EASEMENTS

For additional information on Purchase of Agricultural Conservation Easements and other farmland protection programs, the Farmland Information Center offers publications, an on-line library and technical assistance. To order PACE: What Works, a 38-page comprehensive technical report (\$14.95), or other AFT publications, call (800) 370-4879. The farmland information library is a searchable database of literature, abstracts, statutes, maps, legislative updates and other useful resources. It can be reached at <http://www.farmlandinfo.org>. For additional assistance on specific topics, call the technical assistance service at (413) 586-4593.

PACE provides landowners with liquid capital that can enhance the economic viability of individual farming operations and help perpetuate family tenure on the land. For example, the proceeds from selling agricultural conservation easements may be used to reduce debt, expand or modernize farm operations, invest for retirement or settle estates. The reinvestment of PACE funds in equipment, livestock and other farm inputs may also stimulate local agricultural economies.

Finally, PACE gives communities a way to share the costs of protecting farmland with landowners. Non-farmers have a stake in the future of agriculture for a variety of reasons, including keeping locally grown food available and maintaining scenic and historic landscapes, open space, watersheds and wildlife habitat. PACE allows them to “buy into” the protection of farming and be assured that they are receiving something of lasting value.

ISSUES TO ADDRESS

The effectiveness of PACE programs depends on how jurisdictions address several core issues.

These issues include:

- What kind of farmland to protect, which areas to target and how to set priorities?
- What restrictions to put on the use of the land?
- How much to pay for easements?
- How to raise purchase funds?
- How to distribute state funds among local jurisdictions?
- How to administer PACE programs?
- How to monitor and enforce easements?

Source: American Farmland Trust, *Saving American Farmland: What Works* (Northampton, Mass., 1997).

BENEFITS

- PACE protects farmland permanently, while keeping it in private ownership.
- Participation in PACE programs is voluntary.
- PACE can be implemented by state or local governments, or by private organizations.
- PACE provides farmers with a financially competitive alternative to development, giving them cash to help address the economic challenges of farming in urban-influenced areas.
- PACE programs can protect ecological as well as agricultural resources.
- PACE limits the value of agricultural land, which helps to keep it affordable to farmers.
- PACE programs involve the non-farming public in farmland protection.

DRAWBACKS

- PACE is expensive.
- PACE can rarely protect enough land to eliminate development pressure on unrestricted farms.
- PACE programs are generally unable to keep up with farmer demand to sell easements. This results in long waiting lists and missed opportunities to protect land.
- Purchasing easements is time-consuming.
- The voluntary nature of PACE programs means that some important agricultural lands are not protected.
- Monitoring and enforcing easements requires an ongoing investment of time and resources.



FACT SHEET

PURCHASE OF AGRICULTURAL CONSERVATION EASEMENTS: SOURCES OF FUNDING



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DESCRIPTION

Purchase of agricultural conservation easement (PACE) programs compensate property owners for restrictions on the future use of their land. One of the biggest challenges in administering PACE programs is figuring out how to pay for them. It is necessary to have reliable sources of revenue to allow farmers and ranchers to incorporate the sale of easements into their long-term financial plans. This fact sheet provides an overview of funding sources and identifies some issues to address when deciding how to pay for easements.

BONDS

General obligation bonds are the most popular source of funding for PACE. Bonds are essentially IOUs issued by cities, states and other public entities to finance large public projects. The issuer agrees to repay the amount borrowed plus interest over a specified term – typically 20 to 30 years. General obligation bonds are backed by the "full faith and credit" of the issuer. This means that the government entity is obligated to raise taxes or to take whatever action is within its power to repay the debt.

State rules guiding the issuance of bonds vary. General obligation bonds may require approval by the legislature or voters or both. Almost half of the states limit issuance of bonds through constitutional or statutory requirements. For more information contact state bond authorities and independent underwriting experts.

Benefits

- Bonds allow programs to commit large sums to farmland protection while land is still available and relatively affordable.
- Bonds distribute the cost of acquisition over time.

Drawbacks

- Interest paid on bonds increases the overall cost of the program.

TAXES

Property Taxes

Property taxes are a popular source of funding for local PACE programs. Property taxes are levies on the value of real estate. Municipalities use dedicated increases in the tax rate to pay for easement acquisitions and to cover debt service on bonds.

States create general guidelines and may set limits for computing tax rates and assessing properties. Public referenda usually are required to ratify a dedicated property tax increase. The state of Washington gives local governments the option to increase property taxes for land conservation. For more information on this potential funding source, consult local assessors and local government administrators.

Real Estate Transfer Taxes

A real estate transfer tax is a levy on property sales. It is typically a small percentage of the purchase price and is usually paid by the buyer. Transfer taxes may be used to acquire land directly or to cover financing costs on bonds. Transfer taxes ensure that the level of funding is tied to development activity—funding increases when the real estate market is hot and drops off when the market cools.

Legislatures can enact statewide transfer taxes or laws authorizing local jurisdictions to levy transfer taxes. In Washington, all counties may levy up to 1 percent of real estate sales. In contrast, the Maryland legislature grants transfer tax authority to local jurisdictions on a case-by-case basis. Enabling legislation typically requires taxing authorities to secure voter approval. For more information, consult local government administrators, municipal attorneys or state legislators.

Sales Taxes

Sales taxes are levies on retail sales imposed by states, local governments and special districts. Sales taxes may be broad-based or targeted to a particular item.

PURCHASE OF
AGRICULTURAL
CONSERVATION
EASEMENTS:
SOURCES OF
FUNDING

State constitutions and laws dictate whether local governments have the authority to levy sales taxes. According to the National Association of Counties, fewer than half of the nation's counties have the authority to levy a sales tax. However, there are efforts in at least two states to expand the capacity of local jurisdictions to raise revenues for farmland protection. Farmland protection advocates should check with local government administrators or state legislators for more information about this potential source of revenue.

Benefits

- In general, taxes provide a regular stream of revenue.
- Taxes on retail sales ensure that tourists help protect the open land they are enjoying.

Drawbacks

- Taxes are unpopular.
- Raising or levying new taxes requires well-organized campaigns to generate and sustain public support.
- Sales and property taxes are regressive and tend to fall disproportionately on lower-income people.
- Sales taxes are location-based and future revenues could be undermined by internet commerce.

ANNUAL APPROPRIATIONS

State and local governments can allocate a dollar amount to farmland protection from general or discretionary funds. This approach has been used by state legislatures to provide start-up money and to supplement other revenue sources. For example, the Vermont legislature appropriated \$20 million to the Vermont Housing and Conservation Trust Fund in 1988 to get the program off the ground. Since then, the program has received a portion of the state property transfer tax and funds from state bonds. In general, annual appropriations are not used as a primary funding source for PACE programs.

State agencies develop spending proposals that are incorporated into the state budget. Legislators may also introduce bills to allocate funds to particular programs. Town and county boards make spending recommendations that may be included in the local budget. Sometimes opportunities arise to earmark budget surpluses at the end of the fiscal year.

Benefits

- Expenditures reflect the will of the current electorate.
- This approach saves financing costs.

Drawbacks

- Funding is unpredictable from year to year.

FEDERAL FUNDS

Farmland Protection Program

The 1996 Farm Bill established the Farmland Protection Program to protect farmland from conversion to nonagricultural uses. The FPP provides matching grants to established state, local and tribal programs, up to a maximum of 50 percent of the final negotiated sales price of conservation easements. The farm bill authorized up to \$35 million over six years.

Eligible PACE programs submit proposals to USDA Natural Resources Conservation Service state offices. NRCS has published three requests for proposals between 1996 and 1998. During these application cycles, the USDA Natural Resources Conservation Service disbursed the entire \$35 million appropriation. NRCS will request additional funds for the FPP for fiscal year 2000. For more information contact an NRCS state office or visit NRCS' web site at <http://www.nrcs.usda.gov/>.

Hazard Mitigation Grant Program

The Hazard Mitigation Grant Program was created in November 1988 by Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, assists states and localities in implementing mitigation measures following a Presidential disaster declaration. Funds have been used to purchase conservation easements on farmland located in the 100-year floodplain.

State, local and tribal governments and private nonprofit organizations that serve a public function are eligible for funding. Projects must fall within the state and local government's overall mitigation strategy for the disaster area, and comply with program guidelines to qualify. HMGP will cover up to 75 percent of project costs. In kind services can be used to meet the state or local cost-share match. Each state sets its own priorities for funding and administering this

PURCHASE OF
AGRICULTURAL
CONSERVATION
EASEMENTS:
SOURCES OF
FUNDING

program. To apply, contact the state emergency management agency, state hazard mitigation officer or a FEMA regional office. Information is also available online at <http://www.fema.gov/mit/hmgp.htm>.

Transportation Funding (ISTEA and TEA-21)
The Intermodal Surface Transportation Efficiency Act of 1991 provided funding for a broad range of highway and transit programs, including "transportation enhancements." Enhancements are intended to improve the cultural, aesthetic and environmental quality of transportation routes. Easement acquisitions that protect scenic views and historic sites along transportation routes are eligible for this program. The Transportation Equity Act for the 21st Century, adopted in May of 1998, re-authorized transportation spending through fiscal 2003. Funding for enhancements was increased by nearly 40 percent nationwide, to \$3.6 billion.

Private conservation organizations and public entities are eligible to apply for enhancements money. The program covers up to 80 percent of project costs. Contact state departments of transportation for more information about the application process.

Benefits

- Federal grant programs that fund agricultural easement acquisitions make farmland protection a goal for the federal agencies that administer these programs.
- Federal grants provide much-needed assistance to farmland protection programs.
- HMGP, ISTEA and TEA-21 demonstrate that agricultural land provides floodwater storage and scenic vistas along transportation corridors, which helps make the case for farmland protection.

Drawbacks

- Funding is not predictable from year to year.
- HMGP and ISTEA funds are rarely used for agricultural easement acquisitions.
- Easement values in floodplains may be too low to encourage participation in the HMGP.

CREATIVE SOURCES OF FUNDING

Cellular Phone Tax

The city of Virginia Beach, Virginia, collects a 10 percent tax on cellular phone bills up to a maximum of \$3 per month. Proceeds from the tax are deposited in the general fund, and a flat dollar amount is earmarked for the farmland protection program.

The General Assembly gave all Virginia localities the right to tax cellular phone usage in the mid-1990s. In other states local jurisdictions may already have the authority to tax cellular phone service. Farmland protection advocates should check with town or county counsel.

Check-Off Box

In 1997, county commissioners in Kent County, Maryland, approved a voluntary check-off box program to help fund easement acquisitions. The county distributes a brochure with local tax mailings that describes the county's farmland protection efforts and asks for a small contribution.

Local governments may need to seek state authority to collect contributions for land conservation. Kent County did not need state approval, but sponsors sought support from the county commissioners.

Credit Cards

In 1996, the Land for Maine's Future Program issued the first state-sponsored credit card to raise money for land protection. LFMF acquires land to provide recreational opportunities, and to protect important natural resources (including farmland) and scenic views. The program receives 0.5 percent of all charges and has received about \$60,000 to date.

Local jurisdictions do not have a large enough pool of potential card users to make this alternative worthwhile. State programs may be required to seek statutory authority to issue a credit card. LFMF sought statutory authority to issue its credit card in 1995. There was overwhelming support among legislators for this funding option.

PURCHASE OF AGRICULTURAL CONSERVATION EASEMENTS: SOURCES OF FUNDING

For additional information on Purchase of Agricultural Conservation Easements and other farmland protection programs, the Farmland Information Center offers publications, an on-line library and technical assistance. To order PACE: What Works, a 38-page comprehensive technical report (\$14.95), or other AFT publications, call (800) 370-4879. The farmland information library is a searchable database of literature, abstracts, statutes, maps, legislative updates and other useful resources. It can be reached at <http://www.farmlandinfo.org>. For additional assistance on specific topics, call the technical assistance service at (413) 586-4593.

Lottery Proceeds

In 1992, 58 percent of Colorado voters approved the Great Outdoors Colorado Amendment redirecting a portion of lottery revenues to protect open space. The amendment also created the Great Outdoors Colorado Trust Fund to oversee the distribution of the funds. Great Outdoors Colorado funds wildlife habitat restoration, land conservation (including farmland), and parkland acquisition and maintenance. GOCO received an average of \$17 million each year between 1994 and 1999.

Enabling legislation for state lotteries typically specifies how revenues can be spent. Consequently, reallocating revenues to land protection often requires legislative action. Contact state legislators for more information about this potential funding source.

Mitigation Ordinances

The City Council of Davis, California, adopted an ordinance requiring farmland mitigation in 1995. For every acre of agricultural land converted to other uses, an acre of agricultural land must be protected by a conservation easement. Developers can grant a conservation easement or pay a fee that would cover the cost of protecting a comparable amount of land.

Mitigation ordinances are difficult to craft. The U.S. Supreme Court ruled in *Nollan v. California Coastal Commission*, 107 S. Ct. 3141, that there must be a direct connection or "nexus" between exactions from landowners and the proposed development's impact. Furthermore, in 1994 the U.S. Supreme Court determined in *Dolan v. Tigard*, 114 S. Ct. 2309, that exactions must be "roughly proportional" to the impact of the development.

Special Districts

In California, the Solano County Farmland and Open Space Foundation is funded by a Mello-Roos district. A Mello-Roos district is a special district created under the state's Mello-Roos Community Facilities Act of 1982 to finance open space acquisition and the development of parks. In Solano County, properties within the district pay an annual tax of \$16- \$33 per acre prior to development and \$80 per unit after construction.

The rules governing the creation of special districts vary from state to state. For more information, farmland protection advocates should contact their town or county administrators.

Benefits

- These funding options are often viewed as "new" sources of revenue and receive enthusiastic public support.
- The check-off box and credit card programs allow residents to choose to contribute to farmland protection.
- The mitigation ordinance makes developers pay for farmland protection, establishing a clear link between the cause and a potential solution.

Drawbacks

- Localities may not be able to secure the authority to implement some of these options.
- Some of these strategies produce modest revenues or take a few years to generate significant sums.

ISSUES TO ADDRESS

- What does state or local law allow?
- How difficult will it be to get approval?
- How much money can be raised?
- How predictable is the funding source?
- How secure is the funding source? Could funds be "raided" by state or local governments during fiscal crises?
- Who benefits and who pays?



FACT SHEET

STATUS OF STATE PACE PROGRAMS

DESCRIPTION

As of February 2001, at least 20 states have state-level Purchase of Agricultural Conservation Easement (PACE) programs. This table displays the status and summarizes important information about farm and ranch land protection programs in 19 states that have acquired funding and easements.

EXPLANATION OF COLUMN HEADINGS

Year of Inception/Year of First Acquisition

"Year of Inception" is the year the law creating the PACE program was approved. "Year of First Acquisition" is the year the program acquired its first easement.

Easements/Restrictions Acquired

Number of agricultural conservation easements or conservation restrictions acquired through the state program. This number does not necessarily reflect the total number of farms/ranches protected, as some programs protect a property in stages and may hold multiple easements on the same farm/ranch. Some state programs do not hold easements but instead provide funds for easement purchase to local governments or land trusts.

Acres Protected

Number of acres protected by the program to date.

Program Funds Spent to Date

Dollars spent by each program to acquire easements on farms/ranches. Amounts may include unspent funds that are encumbered for installment payments on completed projects. Unless otherwise noted, this figure does not reflect either incidental land acquisition costs, such as appraisals, insurance and recording fees, or the administrative cost of running the program. These figures may not reflect the total cost of acquiring easements, as some state PACE programs receive matching funds from local governments, as well as contributions from land trusts and donations from landowners.

Local Contributions to Date

Funds contributed by local governments (e.g., counties) toward state program acquisitions.

Funds Spent Per Capita

The amount spent on farmland protection per person based on state population figures for 2000 from the U.S. Bureau of the Census.

Funds Available

Program funds available for the current fiscal year to acquire easements on agricultural land.

Funds Available Per Capita

Program funds available per person based on state population figures for 2000 from the U.S. Bureau of the Census.

Outstanding Applications

Backlog of applications reported by program administrators.

Funding Sources

Sources of funding for each program. This list does not include contributions from local governments and land trusts or donations from landowners. "Transportation funding" refers to federal money disbursed under the Intermodal Surface Transportation Efficiency Act of 1991 and the Transportation Equity Act for the 21st Century (ISTEA and TEA-21). ISTEA provided funding for a broad range of highway and transit programs, including "transportation enhancements." Easement acquisitions that protect scenic views and historic sites along transportation routes are eligible for this program. TEA-21 was adopted in May of 1998, re-authorizing federal transportation spending through fiscal 2003. "FPP" is the federal Farmland Protection Program established in 1996 to provide matching funds to state, local and tribal agricultural easement acquisition programs. In 2000, the program was expanded to non-governmental organizations.


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The Farmland Information Center is a public/private partnership between American Farmland Trust and the USDA Natural Resources Conservation Service that provides technical information about farmland protection.

PURCHASE OF AGRICULTURAL CONSERVATION EASEMENTS

State	Year of Inception/ Year of First Acquisition	Easements/ Restrictions Acquired	Acres Protected	Program Funds Spent To Date	Local Contributions To Date
California	1995/1997	21	18,815	\$10,756,513	\$12,700,000 **
Colorado	1994/1995	41	65,265	\$26,948,065 ^	\$5,000,000
Connecticut	1978/1979	197	27,368	\$79,245,567 ^	\$500,000
Delaware	1991/1996	273	60,619	\$61,402,981	\$0
Kentucky	1994/1998	20	4,408	\$2,300,000	\$0
Maine	1987/1987	7	2,610	\$1,620,000	\$0
Maryland	1977/1980	1,303	185,872	\$232,824,657 ^	N/A
Massachusetts	1977/1980	527	47,737	\$117,659,019	\$10,926,076
Michigan	1974/1994	39	8,249	\$16,973,813	\$10,000
Montana †	1999/2000	8	9,923	\$888,000	\$0
New Hampshire Agricultural Lands Preservation Program	1979/1980	31	2,864	\$5,000,000 ^	\$15,000
Land Conservation Investment Program †	1987/1988	36	6,232	\$5,349,008	\$0
New Jersey	1983/1985	483	70,950	\$197,095,566 ^	\$97,144,353
New York	1996/1998	31	5,085	\$10,886,317 ^	\$4,591,895
North Carolina	1986/1999	20	2,869	\$2,037,500 ^	\$282,000
Ohio	1999/1999	3	374	\$0	\$0
Pennsylvania	1988/1989	1,527	186,321	\$377,510,418 ^	\$117,412,948
Rhode Island	1981/1985	45	3,719	\$15,017,580	\$5,676,276 **
Utah	1999/2000	8	8,739	\$2,491,550 ^	\$321,000
Vermont	1987/1987	278	88,281	\$44,500,000 ^	\$150,000
STATE TOTALS		4,898	806,300	\$1,210,506,554	\$254,729,548
LOCAL TOTALS		1,349	190,839	\$532,545,255	
NATIONAL TOTALS		6,247	997,139	\$1,743,051,809	

STATUS OF STATE PROGRAMS AS OF FEBRUARY 2001

Funds Spent Per Capita	Funds Available	Funds Available Per Capita	Outstanding Applications	Funding Sources
\$0.32	\$6,500,000	\$0.19	10	State appropriations, FPP
\$6.27	N/A	N/A	0	Portion of lottery proceeds, FPP
\$23.27	\$4,000,000	\$1.17	180	State bonds, FPP
\$78.36	\$6,122,621	\$7.81	178	State appropriations, portion of lawsuit settlement, transportation funding, FPP
\$0.57	\$400,000	\$0.10	91	State appropriations, FPP
\$1.26	\$1,000,000	\$0.78	4	State appropriations and bonds, royalties from credit card, FPP
\$43.96	\$20,000,000	\$3.78	N/A	Real estate transfer tax, agricultural transfer tax, FPP
\$18.53	\$8,338,000	\$1.31	104	State bonds, transportation funding, FPP
\$1.71	\$5,000,000	\$0.50	307	Repayment of tax credits by landowners withdrawing from the state's circuit breaker program, FPP
\$0.98	\$500,000	\$0.55	14	State appropriations
\$4.05	\$0	\$0.00	0	State appropriations, FPP
\$4.33	\$0	\$0.00	0	State bonds
\$23.42	\$105,000,000	\$12.48	542	State appropriations and bonds, portion of state sales and use tax, FPP
\$0.57	\$12,000,000	\$0.63	25	State bonds, FPP
\$0.25	\$1,500,000	\$0.19	N/A	State appropriations
\$0.00	\$0 #	\$0.00	6	State appropriations
\$30.74	\$47,000,000	\$3.83	1,689	State bonds, cigarette tax, FPP
\$14.33	\$2,000,000	\$1.91	36	State bonds, FPP
\$1.12	\$2,750,000	\$1.23	2	State appropriations
\$73.09	\$2,684,000	\$4.41	63	State appropriations and bonds, property transfer tax, Farms for the Future pilot program, transportation funding, FPP
	\$224,794,621		3,251	
	\$145,308,246			
	\$370,227,867			

NOTES

† The Land Conservation Investment Program was terminated in 1993. The Montana Agricultural Heritage Program was discontinued in 2001.

STATUS OF

^ "Program Funds Spent to Date" includes incidental land acquisition costs and/or personnel costs.

STATE PACE

** "Local Contributions to Date" includes contributions from land trusts and private citizens.

PROGRAMS

In November 2000, Ohio voters approved State Issue No. 1, amending the state's constitution to authorize issuance of a \$400 million bond with half dedicated to farmland and greenspace protection and half earmarked for brownfield redevelopment. The legislature currently is considering a bill that would earmark \$25 million to the farmland protection program.



FACT SHEET

STATUS OF

SELECTED

LOCAL PACE

PROGRAMS



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DESCRIPTION

As of spring 2001, there were at least 41 independently funded, local Purchase of Agricultural Conservation Easement (PACE) programs in 14 states. This table displays the status and summarizes important information about these local farm and ranch land protection programs.

EXPLANATION OF COLUMN HEADINGS

Jurisdiction

Name of jurisdiction sponsoring program.

Year of Inception/Year of First Easement Acquisition

"Year of inception" is the year the ordinance creating the PACE program was approved. "Year of First Acquisition" is the year the program acquired its first easement.

Total Easements/Restrictions Acquired

Total number of easements/restrictions acquired. This number includes joint projects with state and/or county programs and independent projects completed by the local program. This number does not necessarily reflect the total number of farms/ranches protected, as some programs protect a property in stages and may hold multiple easements on the same farm/ranch.

Total Acres Protected

Total number of acres protected by the program through independent and joint projects to date.

Total Program Funds Spent to Date

Dollars spent to acquire easements/restrictions on farms/ranches. This number includes matching funds spent on joint projects. Amounts may include unspent funds that are encumbered for installment payments on completed projects. Unless otherwise noted, this figure does not reflect either incidental land acquisition costs, such as appraisals, insurance and recording fees, or the administrative cost of running the program. These figures may not reflect the total cost of acquiring easements, as some local PACE programs receive contributions from land trusts and/or donations of a portion of easement values from landowners.

Independent Easements/Restrictions Acquired

Number of easements/restrictions acquired through independent projects. This number excludes easements/restrictions acquired through joint projects with state and/or county programs.

This number does not necessarily reflect the total number of farms/ranches protected, as some programs protect a property in stages and may hold multiple easements on the same farm/ranch.

Independent Acres Protected

Number of acres protected through independent projects. This number excludes acres protected through joint projects with state and/or county programs.

Independent Program Funds Spent to Date

Dollars spent to acquire easements/restrictions on farms/ranches through independent projects. This number excludes dollars spent on joint projects with state and/or county programs. Amounts may include unspent funds that are encumbered for installment payments on completed projects. Unless otherwise noted, this figure does not reflect either incidental land acquisition costs, such as appraisals, insurance and recording fees, or the administrative cost of running the program. These figures may not reflect the total cost of acquiring easements, as some local PACE programs receive contributions from land trusts and/or donations of a portion of easement values from landowners.

Funds Available

Program funds available for the current fiscal year to acquire easements on agricultural land. This figure may include allocations from state programs.

Outstanding Applications

Backlog of applications reported by program administrators.

Funding Sources

Sources of funding for each program. This list does not include contributions from municipal governments and land trusts or donations of a portion of easement values from landowners. "Transportation funding" refers to federal money disbursed under the Intermodal Surface Transportation Efficiency Act of 1991 and the Transportation Equity Act for the 21st Century (ISTEA and TEA-21). ISTEA provided funding for a broad range of highway and transit programs, including "transportation enhancements." Easement acquisitions that protect scenic views and historic sites along transportation routes are eligible for this program. TEA-21 was adopted in May of 1998, re-authorizing federal transportation spending through fiscal 2003. "FPP" is the federal Farmland Protection Program established in 1996 to provide matching funds to state, local and tribal agricultural easement acquisition programs. In 2000, the program was expanded to non-governmental organizations.

PURCHASE OF AGRICULTURAL CONSERVATION EASEMENTS

Jurisdiction	Year of Inception/ Year of First Easement Acquisition	Total Easements/ Restrictions Acquired	Total Acres Protected	Total Program Funds Spent To Date	Independent Easements/ Restrictions Acquired
CALIFORNIA					
Marin Co.	1980/1983	45	30,224	\$19,222,000 ^	45
Sonoma Co.	1990/1992	49	25,673	\$39,045,000	49
COLORADO					
Boulder	1967/1984	10	1,503	\$8,339,732 ^	10
Douglas Co.	1994/1995	5	27,808	\$15,800,000 ^	5
Routt Co.	1996/2000	5	2,317	\$1,279,194 ^	4
KENTUCKY					
Fayette Co.	2000/N/A	0	0	\$0	0
MARYLAND					
Anne Arundel Co. Δ	1991/1992	77	7,740	\$22,000,000	43
Baltimore Co.	1979/1980	150	16,975	N/A	8
Calvert Co.	1992/1992	N/A	11,677	N/A	32
Carroll Co. ‡	1992/1992	260	32,987	\$30,955,168	8
Frederick Co. ‡	1991/1993	92	14,555	N/A	12
Harford Co. Δ	1993/1994	179	25,903	\$46,780,240	91
Howard Co. Δ	1984/1984	102	16,738	\$187,560,000	75
Montgomery Co.	1988/1989	63	5,171	N/A	52
Washington Co.	1991/1992	38	6,863	N/A	1
MICHIGAN					
Peninsula Township	1994/1996	30	1,985	\$2,633,710	27
MONTANA					
Gallatin Co.	1998/N/A	0	0	\$0	0
NEW HAMPSHIRE					
Londonderry	1996/1998	5	375	\$921,000	5
NEW JERSEY					
Morris Co.	1992/1996	41	3,107	\$35,765,034	13
NEW YORK					
East Hampton	1982/1982	11	281	\$5,500,000	5
Pittsford	1996/1997	7	962	\$8,010,999	5
Southampton ††	1980/1982	N/A	N/A	N/A	27
Southold	1984/1984	67	1,432	\$11,104,032	61
Suffolk Co.	1974/1976	124	7,537	\$45,523,804 ^	114
Warwick	N/A/1997	4	646	N/A	1
NORTH CAROLINA					
Forsyth Co.	1984/1987	27	1,600	\$3,000,000 ^	25
Wake Co.	1989/N/A	1	70	\$0	0
PENNSYLVANIA					
Buckingham Township	1996/1996	13	737	\$5,042,908 ^	12
Bucks Co.	1989/1990	52	5,013	\$35,000,000	4
Chester Co.	1989/1990	81	7,386	N/A	48
Plumstead Township Δ	1997/1998	16	1,311	N/A	9
Lancaster Co.	1980/1984	380	33,965	\$58,076,743	230
Solebury Township	1996/1998	10	730	\$8,500,000 ^	8
VIRGINIA					
Albermarle Co.	2000/N/A	0	0	\$0	0
Loudoun Co.	2000/N/A	0	0	\$0	0
Virginia Beach Δ	1995/1997	37	5,293	\$5,943,486	37
WASHINGTON					
King Co.	1979/1984	209	12,880	\$54,700,000	209
San Juan Co.	1991/1993	18	1,625	\$2,566,320 ^	18
Skagit Co.	1998/1998	29	1,627	\$1,732,587 ^	29
Thurston Co. †	1996/1998	19	940	\$2,300,000	19
WISCONSIN					
Dunn	1996/1997	8	994	\$830,000	8
LOCAL TOTALS					1,349
STATE TOTALS ◊					4,898
NATIONAL TOTALS					6,247

STATUS OF SELECTED LOCAL PROGRAMS AS OF SPRING 2001

Independent Project Acres Protected	Independent Program Funds Spent To Date	Funds Available	Outstanding Applications	Funding Sources
30,224	\$19,222,000 ^	\$1,500,000	5	Appropriations, foundation grants, private contributions, state bonds, California Coastal Conservancy
25,673	\$39,045,000	\$2,200,000	60	Sales tax, state bonds
1,503	\$8,339,732 ^	N/A	N/A	City sales tax
27,808	\$15,800,000 ^	\$14,900,000	N/A	Bonds, sales and use tax
2,164	\$1,168,000 ^	\$500,000	3	Property tax, FPP
0	\$0	\$38,000,000	37	Appropriations
3,690	\$15,000,000	\$3,000,000	7	Appropriations, bonds, FPP
1,336	\$3,365,101	\$5,000,000	40	Appropriations, bonds, transportation funding, FPP
2,800	N/A	\$2,000,000	33	Appropriations, recording fee, FPP
1,180	\$1,625,059	\$5,300,150	29	Appropriations, property tax, FPP
1,370	\$2,380,781	\$3,600,000	N/A	Appropriations, recording fee, transportation funding, FPP
15,977	\$35,022,520	\$2,000,000	22	Appropriations, local real estate transfer tax
12,801	\$176,160,000	\$15,000,000	1	Appropriations, local real estate transfer tax, FPP
3,100	\$22,500,000	\$2,150,000	10	Bonds, interest from county's share of agricultural transfer tax, investment income, FPP
125	\$187,906	\$0	0	N/A
1,736	\$1,074,110	\$175,000	15	Property tax, transportation funding, FPP
0	\$0	\$10,000,000	N/A	Appropriations, bonds, property tax
375	\$921,000	\$350,000	1	Appropriations, land use change tax, state grants, transportation funding, FPP
452	\$7,582,656	\$4,000,000	18	Property tax
157	N/A	N/A	N/A	Bonds, county grants
629	\$6,092,248	N/A	1	Bonds, FPP
841	N/A	N/A	N/A	Bonds, real estate transfer tax, revenue from special district, county grants, FPP
1,206	\$9,378,363	N/A	8	Bonds, real estate transfer tax, FPP
6,950	\$38,386,269 ^	\$5,000,000	44	Appropriations, bonds, FPP
82	N/A	\$0	17	N/A
1,475	\$2,832,908 ^	\$145,000	36	Appropriations, FPP
0	\$0	\$25,000	0	Appropriations
667	\$4,878,419 ^	\$3,067,300	8	Bonds, FPP
317	\$1,616,540	\$4,800,000	65	Bonds, FPP
3,944	\$18,500,000 ^	\$3,028,417	55	Appropriations, Act 319 roll back tax interest, bonds, FPP
591	\$4,026,982	\$428,000	23	Bonds
17,837	\$23,367,268	N/A	N/A	Appropriations, bonds, FPP
470	\$6,000,000 ^	\$6,000,000	16	Bonds, property tax
0	\$0	\$1,000,000	10	Appropriations, transient lodging tax
0	\$0	\$4,000,000	94	Appropriations
5,293	\$5,943,486	\$3,500,000	15	Cellular phone tax, property tax
12,880	\$54,700,000	\$2,300,000	3	Appropriations, bonds, FPP
1,625	\$2,566,320 ^	\$914,379	6	Property tax, real estate transfer tax, state timber excise tax
1,627	\$1,732,587 ^	\$545,000	10	Property tax, state timber excise tax, state grant, FPP
940	\$2,300,000	\$0	N/A	Property tax, state grant
994	\$830,000	\$880,000	24	Property tax, FPP
190,839	\$532,545,255	\$145,308,246		
806,300	\$1,210,506,554	\$224,794,621		
997,139	\$1,743,051,809	\$370,102,867		

STATUS OF
SELECTED
LOCAL PACE
PROGRAMS

NOTES

Δ These jurisdictions enter into installment purchase agreements (IPAs) with landowners. IPAs are structured so that landowners receive semi-annual, tax-exempt interest over a term of years (typically 20 to 30). The principal is due at the end of the contract term. Landowners can convert IPAs into securities that can be sold in financial markets to recover the principal at any time. Jurisdictions often purchase U.S. zero-coupon bonds to cover the final balloon payment. The interest payments are generally funded by a dedicated revenue source, such as a real estate transfer tax. Therefore, "Program Funds Spent to Date" is relatively low for these jurisdictions.

‡ Carroll and Frederick, Md., counties offer "critical farms" programs. The programs allow landowners to sell options to buy their easements to the county for 75 percent of appraised easement value. In exchange, landowners agree to apply to the state PACE program. If the state approves the application, the landowner must repay the county from the proceeds. If the state application is not approved within five years, the county owns the easement, unless the landowner repays the program, with interest. Figures for Carroll and Frederick counties include critical farm projects that have not yet been approved by the state.

†† Figures are from 1999.

† The Thurston County program reached its goal in 2000 and will not acquire additional easements.

^ "Program Funds Spent to Date" includes incidental land acquisition costs and/or personnel costs.

◇ For a summary of state activity refer to the "Status of State PACE Programs" fact sheet.

ALL MARYLAND COUNTIES

In addition to local sources of funding, Maryland counties receive a portion of the state's agricultural land transfer tax.



FACT SHEET

TRANSFER OF DEVELOPMENT RIGHTS

DESCRIPTION

Transfer of development rights programs allow landowners to transfer the right to develop one parcel of land to a different parcel of land. Generally, TDR programs are established by local zoning ordinances. In the context of farmland protection, TDR is used to shift development from agricultural areas to designated growth zones closer to municipal services. The parcel of land where the rights originate is called the “sending” parcel. When the rights are transferred from a sending parcel, the land is restricted with a permanent conservation easement. The parcel of land to which the rights are transferred is called the “receiving” parcel. Buying these rights generally allows the owner to build at a higher density than ordinarily permitted by the base zoning. TDR is known as transfer of development credits (TDC) in California and in some regions of New Jersey.

TDR programs are based on the concept that property owners have a bundle of different rights, including the right to use land, lease, sell and bequeath it, borrow money using it as security, construct buildings on it and mine it, subject to reasonable local land use regulations. Some or all of these rights can be transferred or sold to another person. When a landowner sells property, generally all the rights are transferred to the buyer. TDR programs enable landowners to separate and sell the right to develop land from their other property rights.

TDR is most suitable in places where large blocks of land remain in farm use. In communities with a fragmented agricultural land base, it is difficult to find a viable sending area. Jurisdictions also must be able to identify receiving areas that can accommodate the development to be transferred out of the farming area. The receiving areas must have the physical capacity to absorb new units, and residents of those areas must be willing to accept higher density development. Often, residents of potential receiving areas must be persuaded that the benefits of protecting farmland outweigh the costs of living in a more compact neighborhood.

TDR programs are distinct from purchase of agricultural conservation easement (PACE) programs because they involve the private market. Most TDR transactions are between private landowners and developers. Local governments generally do not have to raise taxes or borrow funds to implement TDR. A few jurisdictions have experimented with public purchase and “banking” of development rights. A TDR bank buys development rights with public funds and sells the rights to private landowners.

HISTORY

TDR is used predominantly by counties, towns and townships. The 1981 National Agricultural Lands Study reported that 12 jurisdictions had enacted TDR programs to protect farmland and open space, but very few of these programs had been implemented. In the 1980s and 1990s, many local governments adopted TDR ordinances. A survey in the spring of 2000 identified 50 jurisdictions with TDR ordinances on the books. Three programs had been revoked. Despite the widespread adoption of TDR, only fifteen programs have protected more than 100 acres of farmland and only eight programs have protected more than 1,000 acres of farmland. Twenty-two programs, or 44 percent, have not protected *any* agricultural land. Since 1980, Montgomery County, Maryland, has protected 40,583 acres using TDR, or 60 percent of the national total (67,707 acres).

FUNCTIONS & PURPOSES

TDR programs can be designed to accomplish multiple goals including farmland protection, conservation of environmentally sensitive areas and preservation of historic landmarks. In the context of farmland protection, TDR programs prevent non-agricultural development of farmland, reduce the market value of protected farms and provide farmland owners with liquid capital that can be used to enhance farm viability.

TDR programs also offer a potential solution to the political and legal problems that many communities face when they try to restrict devel-



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January 2001

TRANSFER OF DEVELOPMENT RIGHTS

For additional information on transfer of development rights and other farmland protection programs, the Farmland Information Center offers publications, an online library and technical assistance.

The farmland information library is a searchable database of literature, abstracts, statutes, maps, legislative updates and other useful resources.

It can be reached at <http://www.farmlandinfo.org>.

For additional assistance on specific topics, call the technical assistance service at (800) 370-4879.

opment of farmland. Landowners often oppose agricultural protection zoning (APZ) and other land use regulations because they can reduce equity. APZ can benefit farmers by preventing urbanization, but it may also reduce the fair market value of their land. When downzoning is combined with a TDR program, however, landowners can retain their equity by selling development rights.

ISSUES TO ADDRESS

In developing a TDR program, planners must address a variety of technical issues. These issues include:

- Which agricultural areas should be protected?
- What type of transfers should be permitted?
- How should development rights be allocated?
- Where should development be transferred, and at what densities?
- Should the zoning in the sending area be changed to create more of an incentive for landowners to sell development rights?
- Should the zoning in the receiving area be changed to create more of an incentive for developers to buy development rights?
- Should the local government buy and sell development rights through a TDR bank?

One of the most difficult aspects of implementing TDR is developing the right mix of incentives. Farmers must have incentives to sell development rights instead of building lots. Developers must benefit from buying development rights instead of building houses according to the existing standards. Thus, local governments must predict the likely supply of and demand for development rights in the real estate market, which determines the price. TDR programs are sometimes created in conjunction with APZ: New construction is restricted in the agricultural zone, and farmers are compensated with the opportunity to sell development rights.

Because the issues are so complex, TDR programs are usually the result of a comprehensive

planning process. Comprehensive planning helps a community envision its future and generally involves extensive public participation. The process of developing a community vision may help build understanding of TDR and support for farmland protection.

BENEFITS OF TDR

- TDR protects farmland permanently, while keeping it in private ownership.
- Participation in TDR programs is voluntary—landowners are never required to sell their development rights.
- TDR promotes orderly growth by concentrating development in areas with adequate public services.
- TDR programs allow landowners in agricultural protection zones to retain their equity without developing their land.
- TDR programs are market-driven—private parties pay to protect farmland, and more land is protected when development pressure is high.
- TDR programs can accomplish multiple goals, including farmland protection, protection of environmentally sensitive areas, the development of compact urban areas, the promotion of downtown commercial growth and the preservation of historic landmarks.

DRAWBACKS OF TDR

- TDR programs are technically complicated and require a significant investment of time and staff resources to implement.
- TDR is an unfamiliar concept. A lengthy and extensive public education campaign is generally required to explain TDR to citizens.
- The pace of transactions depends on the private market for development rights. If the real estate market is depressed, few rights will be sold, and little land will be protected.

Source: American Farmland Trust, *Saving American Farmland: What Works* (Northampton, MA 1997)

LOCAL GOVERNMENTS WITH TDR PROGRAMS FOR FARMLAND, 2000

State/County	Date Ordinance Enacted	Acres of Farmland Protected	Total Acres Protected	Notes
California				
Marin County	1981	670	670	Multi-purpose program
*San Mateo County	1986	40	40	Bonus rights awarded for development of agricultural water storage
San Luis Obispo County	1996	0	0	Multi-purpose program, appraisals used to allocate development rights
Colorado				
Boulder County	1995	-2,800	-3,200	Multi-purpose program, mandatory program, bonus development rights awarded for available agricultural water rights
Connecticut				
Windsor County	1993	0	0	Multi-purpose program
Florida				
Hillsborough County	1985	0	0	Multi-purpose program
Palm Beach County	1992	0	6,573	Multi-purpose program, original program created in 1980, substantially revised in 1992
Idaho				
Fremont County	1991	0	200	Multi-purpose program
Maine				
Cape Elizabeth	1982	0	0	Multi-purpose program
Maryland				
Calvert County	1978	8,000	8,000	
Caroline County	1989	NA	NA	
Charles County	1992	1,183	1,183	
Harford County	1992	NA	NA	Sending and receiving areas must be within 500 feet of each other
Howard County	1992	1,438	NA	Multi-purpose program, county purchases and retires development rights
Montgomery County	1980	40,583	40,583	Mandatory program
Queen Anne's County	1987	2,000	2,417	Multi-purpose program, rights can be used to increase residential density or to increase square footage or impervious surface area in non-residential applications
*St. Mary's County	1990	0	6	Multi-purpose program
Talbot County	1989	500	580	Multi-purpose program
Massachusetts				
Groton	1980	50	292	Multi-purpose program
Hadley	2000	0	0	Rights can be used to increase commercial and industrial square footage and reduce parking requirements. An alternate mechanism allows developers to make cash payments into a farmland protection fund in lieu of buying development rights to receive the density bonuses
Sunderland	1974	NR	NR	
Townsend	1989	0	0	Multi-purpose program
Minnesota				
Blue Earth County	1977	-3,000	-3,000	
Montana				
Springhill Community, Gallatin County	1992	200	200	Mandatory program
New Jersey				
Chesterfield Township, Burlington County	1998	0	0	Multi-purpose program
Hillsborough Township, Somerset County	1975	0	0	Multi-purpose program
Lumberton Township, Burlington County	1996	563	563	Multi-purpose program
New Jersey Pinelands	1981	5,722	19,238	Multi-purpose program, mandatory program

AMERICAN FARMLAND TRUST · FARMLAND INFORMATION CENTER

State/County	Date Ordinance Enacted	Acres of Farmland Protected	Total Acres Protected	Notes
New York				
Eden	1977	31	38	Multi-purpose program
*Perinton	1993	56	82	Multi-purpose program
Central Pine Barrens (Long Island)	1995	NA	307	Multi-purpose program, mandatory program, rights can be used to increase residential density, commercial square footage or permitted sewage flow
*Southampton	1972	0	232	Multi-purpose program
Pennsylvania				
Birmingham Township, Chester County	1978	0	0	Multi-purpose program
*Buckingham Township, Bucks County	1975	280	280	
Chanceford Township, York County	1979	0	0	
Codorus Township, York County	1990	40	40	PROGRAM REVOKED
East Hopewell Township, York County	1984	NA	NA	
*East Nantmeal Township, Chester County	1994	0	0	
Hopewell Township, York County	1988	NR	NR	
London Grove Township, Chester County	1995	0	0	Point system used in allocation of development rights
*Lower Chanceford Township, York County	1990	200	200	Transfers between adjacent parcels in common ownership only
Manheim Township, Lancaster County	1991	190	190	PROGRAM REVOKED
Shrewsbury Township, York County	1991	NA	-100	TDR bank under discussion
Springfield Township, York County	1996	0	0	Multi-purpose program
*Warrington Township, Bucks County	1985	0	0	Rights can be used to increase commercial/industrial building coverage and impervious surface area
Washington Township, Berks County	1994	0	0	
Utah				
*Tooele	1995	0	0	
Vermont				
Jericho	1992	0	0	Multi-purpose program, mandatory program point system used for the allocation of development rights
South Burlington	1992	50	250	Multi-purpose program, mandatory program
Williston	1990	NA	NA	Multi-purpose program
Virginia				
Blacksburg	1996	23	23	Multi-purpose program
Washington				
Island County	1984	88	88	PROGRAM REVOKED
Thurston County	1995	0	0	Mandatory program
TOTALS		67,707	88,575	

* Information from 1997 survey

"NA" means that the program's contact person reported that the data either was not available or was not tracked.
 "NR" means that the program's contact person did not reply to the 1997 or the 2000 survey.

The terms "voluntary" and "mandatory" can be confusing when used in reference to TDR. For the purposes of this fact sheet we categorize TDR programs as "mandatory" if land use regulations (e.g., APZ) are adopted at the time the program is created to reduce the amount of development that can occur in the sending area. Under "mandatory" programs landowners who want to realize their full equity based on the old regulations must sell their development rights. For example, Thurston County, Wash., imposed APZ on more than 12,000 acres decreasing maximum residential density from one unit per five acres to one unit per 20 acres. Landowners in the agricultural zones can develop their land under the new zoning rules, or if they choose to participate in the TDR program, can sell one development right per five acres. TDR programs in Montgomery County, Md., and the Pine Barrens of New Jersey, use the same approach. Boulder County, Colorado, made the criteria for non-urban planned unit developments (NUPUDs) stricter at the time the TDR program was enacted. Previously, any landowner with 35 acres qualified for a NUPUD. Now, landowners are required to own 320 acres to qualify. NUPUDs allow development at the same rates as the TDR program.

Surveys were sent to programs identified by staff and profiled in farmland protection and planning publications, including *Saved By Development* by Rick Pruetz, AICP. The table is meant to be comprehensive. If you are aware of other TDR programs that protect farmland, please contact AFT's technical assistance service.

Agroforestry

Working Trees for Agriculture

Imagine for a moment a farm product that could control wind erosion, increase crop yields, and absorb water-polluting runoff. What if it could also protect livestock from cold winter winds and summer heat, improve their weight gain, and reduce energy costs? A product that provides additional sources of income for farmers and ranchers and at the same time helps to create a more diverse and healthy countryside, with clean water and more abundant wildlife and aquatic plants and animals. Most of us would rush out to purchase it!

Of course, no such product exists. However, there is an innovative concept that has contributed its share to doing these very things. It's agroforestry — combining agriculture and forestry. Putting trees to work for agriculture. Agroforestry's working trees help make agricultural systems more sustainable by protecting crops and livestock, conserving natural resources, improving human environments, and providing new sources of income.

Putting trees to work in conservation and production systems for farms, ranches, and communities means planting the right trees in the right places, at the right time, and in the correct design to achieve desired objectives. With agroforestry practices incorporated, an agricultural landscape might include windbreaks in fields, riparian forest buffers along waterways, growing trees and forage together, alley cropping with annual crops and high-value hardwood trees, and "forest farming" operations where high-value specialty crops are grown under the protection of a tree canopy. Look inside for more information on agroforestry practices.

Agroforestry can be a win-win situation for landowners and everyone who cares about the health of our land and water. It provides opportunities to balance productivity and profitability with environmental stewardship, and pass on healthy and sustainable agricultural systems to future generations.

Agroforestry...

...To Diversify Income

Fluctuating markets, unpredictable weather patterns, and international competition are all a part of today's modern agricultural world. Diversification reduces risk and can make the difference between success and failure for a farming or ranching enterprise. Agroforestry practices can provide a diversified income for a farm or ranch while still working every day to increase crop yields and conserve natural resources.

Valuable products that can be harvested from agroforestry practices include fuelwood; wood for energy generation, paper production, and landscaping chips; fruits and nuts; wood shavings for animal bedding material; Christmas trees; sawlogs for dimension lumber; high-value timber products such as furniture-quality wood and veneer logs; and high-value specialty crops like decorative ferns, mushrooms, herbs, and medicinal plants.

...To Enhance Productivity

Studies show that farm productivity and product quality can be increased substantially when agroforestry practices are introduced.

Windbreaks protect crops, livestock, and valuable natural resources. Livestock protected by trees show improved weight gains of as much as 10 percent and require up to 50 percent less feed. Milk production can increase by 8 to 20 percent. Survival rate of newborn lambs and calves can increase substantially. And, disastrous losses from blizzards can often be avoided, especially compared to a treeless environment.

Furthermore, tree systems can successfully protect sensitive crops such as vegetables, vines, orchards, herbs, and soft fruits and flowers from temperature stress and wind damage.

During severe weather years, tree windbreaks have increased row-crop productivity by as much as 25 percent and hay yields by 60 to 80 percent. Horticultural crop production and quality are also improved when protected by windbreaks.

...To Conserve Energy

Agroforestry practices can reduce energy use significantly. For example, wood from agroforestry practices provides an alternate source of farm fuel. Living snowfences reduce the need for snow removal, thus saving fuel, and field windbreaks improve crop water-use efficiency thereby reducing irrigation costs.

Trees reduce energy costs. Farm homes protected by windbreaks can expect heating costs to be cut by as much as 30 percent, especially in the high wind, low temperature regions of the United States.

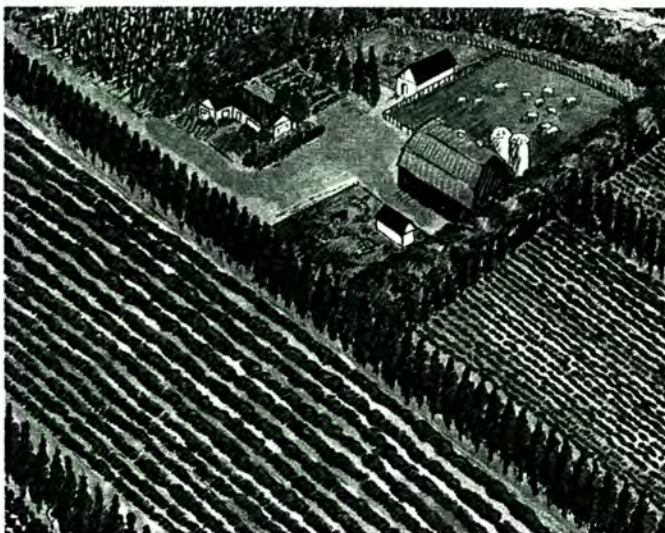
Forest Farming

In forest farming, high-value specialty crops are cultivated under the protection of a forest canopy that has been modified to provide the correct shade level. Crops like ginseng, shiitake mushrooms, and decorative ferns are sold for medicinal, culinary, or ornamental uses. Forest farming provides an added income while trees are being grown for high-quality wood products.



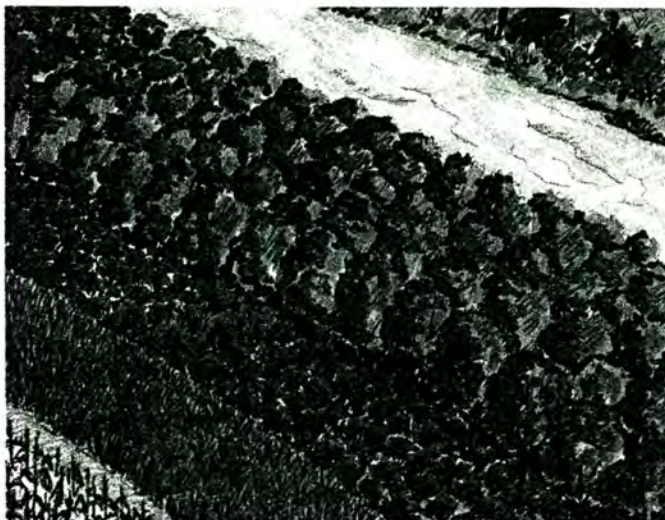
Windbreaks

Windbreaks are planted and managed as part of a crop and/or livestock operation to enhance production, protect livestock, and conserve natural resources. Field windbreaks protect a variety of wind-sensitive row, cereal, vegetable, orchard and vine crops, control wind erosion, and increase bee pollination and pesticide effectiveness. Livestock windbreaks help reduce animal stress and new-born mortality, reduce feed consumption, and help reduce visual impacts and odors. Living snowfences keep roads clear of drifting snow and increase driving safety. They can also spread snow evenly across a field, increasing available soil moisture.



Riparian Forest Buffers

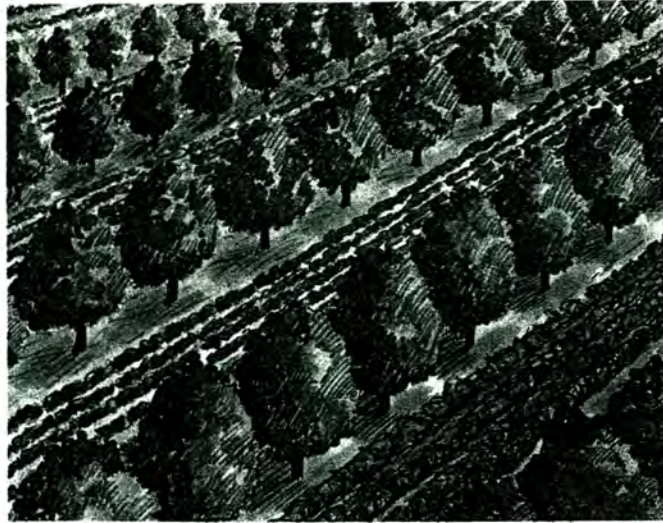
Natural or re-established streamside forests made up of tree, shrub, and grass plantings buffer non-point source pollution of waterways from adjacent land, reduce bank erosion, protect aquatic environments, improve wildlife habitat, and increase biodiversity.



Agroforestry Practices



A landscape without trees like the one above, is not environmentally sound or aesthetically pleasing. Incorporating appropriate agroforestry practices, as shown in the illustrations to each side, will increase agricultural productivity, protect natural resources, provide new sources of income, and enhance environments for wildlife and people.



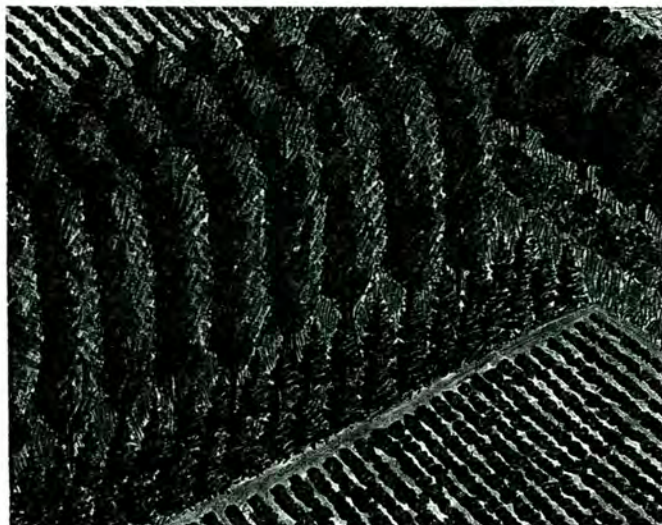
Alley Cropping

In an alley cropping system, an agricultural crop is grown simultaneously with a long-term tree crop to provide annual income while the tree crop matures. Fine hardwoods like walnut, oak, ash, and pecan are favored species in alley cropping systems and can potentially provide high-value lumber or veneer logs. Nut crops can be another intermediate product.



Silvopasture

Silvopasture combines trees with forage and livestock production. The trees are managed for high-value sawlogs and at the same time provide shade and shelter for livestock and forage, reducing stress and sometimes increasing forage production. In plantations of conifers for timber or Christmas trees, carefully managed grazing provides added products and income. Some nut and fruit orchards may also be grazed.



Special Applications

Tree and shrub plantings may be used to help solve special farm concerns such as disposal of animal wastes and filtering irrigation tailwater while producing a short or long rotation woody crop. Special multi-row "timberbelts" can be managed both to protect crops or livestock and to produce hardwood timber or a short-rotation woody crop for fuel or fiber. All agroforestry practices can be enhanced to provide wildlife habitat. Combination plantings of trees, shrubs, grasses, and feedgrains provide havens for many wildlife species.

...For Conservation

Agroforestry practices connected with other appropriate practices create conservation buffer systems to help control runoff, soil loss, and pollution from heavy rains.

The roots of trees and shrubs along rivers, streams, and ditches filter contaminated shallow groundwater and surface runoff laden with sediment, nutrient, chemical, and biological contaminants before they reach the water course. This helps to keep our water clean and more suitable for recreational use, household water use, and fish and wildlife habitat.


...To Create A Healthy Environment

When agroforestry practices are intentionally integrated into conservation systems, the resulting interactions can enhance the soil, water, air, plant, animal, and human resources of the farm or ranch. The challenge is to apply the practices in the key locations of the farm and watershed to maximize the desired benefits.

Agroforestry practices that use only one to five percent of the land area of a farming system can account for over 50 percent of the biodiversity. Agroforestry practices improve both terrestrial and aquatic wildlife habitat. Trees and shrubs grown near crops and gardens harbor birds and beneficial insects that feed on pest insects and mammals.

Populations of valuable wildlife species also increase with the addition of trees and shrubs into agricultural areas. This increase provides opportunities for both hunting and nonconsumptive uses, such as birdwatching. Finally, tree-induced biodiversity adds variety to the landscape and improves aesthetics.

...To Meet People's Needs

People and communities are an important part of agricultural systems. Agroforestry addresses human needs by improving quality of life, health, comfort, enjoyment, security, and recreation. Agroforestry can provide a more diverse farm economy leading to more stable farms, ranches, and communities. Agroforestry practices not only apply to rural farms, but communities as well. In fact, agroforestry practices like windbreaks and riparian forest buffers are being put to work in and near communities to protect soil, water, wildlife, roads, buildings, and recreational areas. 



NAC's Mission: The National Agroforestry Center is a partnership of the USDA Forest Service, Rocky Mountain Research Station and State & Private Forestry and the USDA Natural Resources Conservation Service. The Center's purpose is to accelerate the development and application of agroforestry technologies to attain more economically, environmentally, and socially sustainable land-use systems. To accomplish its mission, the Center interacts with a national network of cooperators to conduct research, develop technologies and tools, and provide useful information to natural resource professionals.

Address: National Agroforestry Center, USDA FS/NRCS, East Campus-UNL, Lincoln, Nebraska 68583-0822. For a supply of brochures, contact Nancy Hammond: nhammond/rmrs_lincoln@fs.fed.us, or call her at 402-437-5178 ext. 11. For more information on the Center, contact Jerry Bratton, 402-437-5178 ext. 24 or Bruce Wight, ext. 36.

Most agroforestry practices can be supported by cost-share incentives provided by federal, state, or local governments through programs like the Conservation Reserve Program (CRP), Environmental Quality Incentives Program (EQIP), and the Stewardship Incentives Program (SIP). Contact your State Forester, local Conservation District, or the Natural Resources Conservation Service (NRCS) for information about technical assistance and the various incentives presently available.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, gender, religion, age, disability, political beliefs, sexual orientation, or marital or family status. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (braille, large print, audiotape, etc.) should contact USDA's TARGET Center at 202-720-2600 (voice and TDD). To file a complaint of discrimination write: USDA, Director, Office of Civil Rights, Room 326-W, Whitten Building, 14th and Independence Avenue, SW, Washington, DC 20250-9410 or call 202-720-5964 (voice and TDD). USDA is an equal opportunity provider and employer.

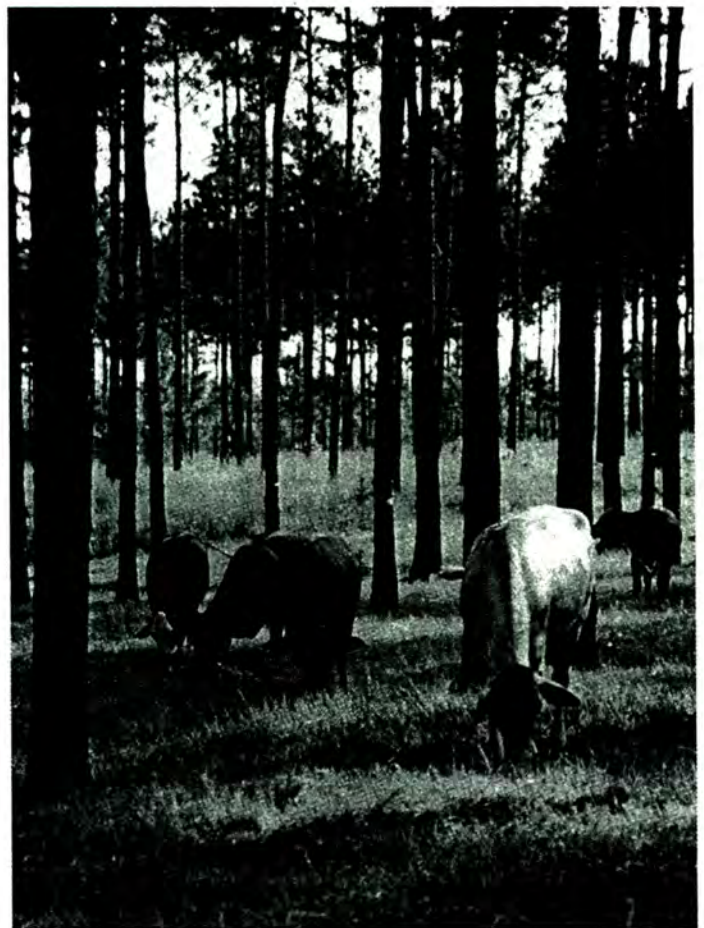


Working Trees for Livestock

Conventional wisdom has been that livestock and trees can't co-exist. Yet modern agricultural practice is showing that livestock and trees not only *can* co-exist, but, if properly managed, can provide additional income from land formerly used for a single crop.

Trees can provide livestock with protection from cold wind and blowing snow in winter, as well as from the hot sun and drying winds of summer. And, if commercially desirable timber or nut trees are planted, landowners can enjoy significant additional income from this diverse use of their land.

This publication will acquaint you with some of the specific ways you and your land can benefit by putting trees to work for your livestock.



Putting Trees to Work . . .

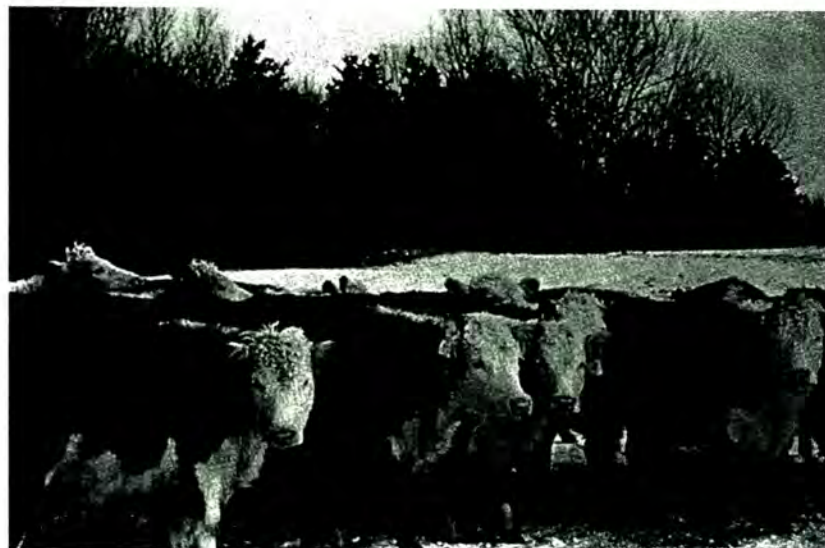
. . . To Diversify Your Farm



The planting of income-producing trees or shrubs interspersed with grasses and other forage species—can provide landowners with additional crop income from the same acres. In addition to extra income from timber, nuts or fruit, trees provide habitat for wildlife and lend natural beauty to the rural landscape.

With modern agroforestry methods, it is possible to balance tree density with sufficient sunlight penetration to insure healthy forage growth.

. . . To Protect Your Livestock



When planted as windbreaks or living barns, trees can reduce wind velocity as much as 70 percent, greatly diminishing the effect of cold temperatures on livestock. This can significantly lower stress on animals and, consequently reduce feed energy requirements. The benefits to farmers and ranchers include better animal health, lower feed costs, and greater financial gain.

During the summer months, trees can reduce livestock stress by providing cooling shade and protection from hot winds.

 Turn to Learn More

Diversify With Tree/Forage Systems

Utilizing the same acreage for both forage and trees can produce many benefits. By planting the right kinds of crop trees, the air space over existing forage lands can provide income beyond that produced by livestock alone. With proper management to insure adequate sunlight for forage, a pasture with trees can produce substantial beef gains *and* tree crop returns.

Farm 3-dimensionally—increase your usable acreage

Trees

Livestock
& Forage



Benefits from Adding Trees

On pastures or grasslands without existing trees, plant rows of pines or nut-producing trees, spaced to allow adequate sunlight penetration for forage growth. If needed, spaces between rows can be planted in shade-tolerant grasses suitable for your area and climate. When livestock are used to graze the forage, a planned grazing system will be needed to assure proper management of the forage, trees, and wildlife habitat.



• Wood Products

Timber harvesting for lumber, furniture, or pulpwood can be an ongoing source of income as trees are thinned, selectively cut, or harvested at maturity.



• Nuts & Fruit

Nuts in commercial demand include walnuts, almonds, pecans, and hazelnuts. A wide variety of orchard fruits and berries may also be produced.



• Wildlife

Many songbirds, game birds, and animal species are attracted by the food, nesting sites, and protection provided by trees that are added to existing forage land.



Benefits from Adding Forage

Many coniferous woodlands and a few select hardwood plantations can be transformed into silvopasture systems. By selectively removing/harvesting the correct number of trees, enough light will reach the soil to allow growth of forage under the tree canopy. Remaining trees should grow faster and have increased value. Proper livestock grazing or haying of the forages allows for annual returns while the trees mature. Desirable wildlife are often attracted to the extra food and cover.



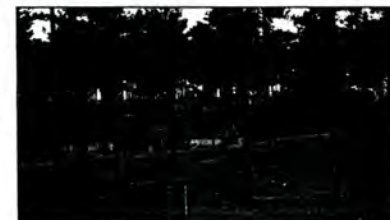
• Hay

Forage not utilized for your own cattle can be mowed, baled and sold as a source of supplemental income. Or, a pasture may be rented to others for grazing.



• Livestock

The shaded and sheltered forest pasture environment provides protected grazing where livestock can grow faster with less environmental stress.

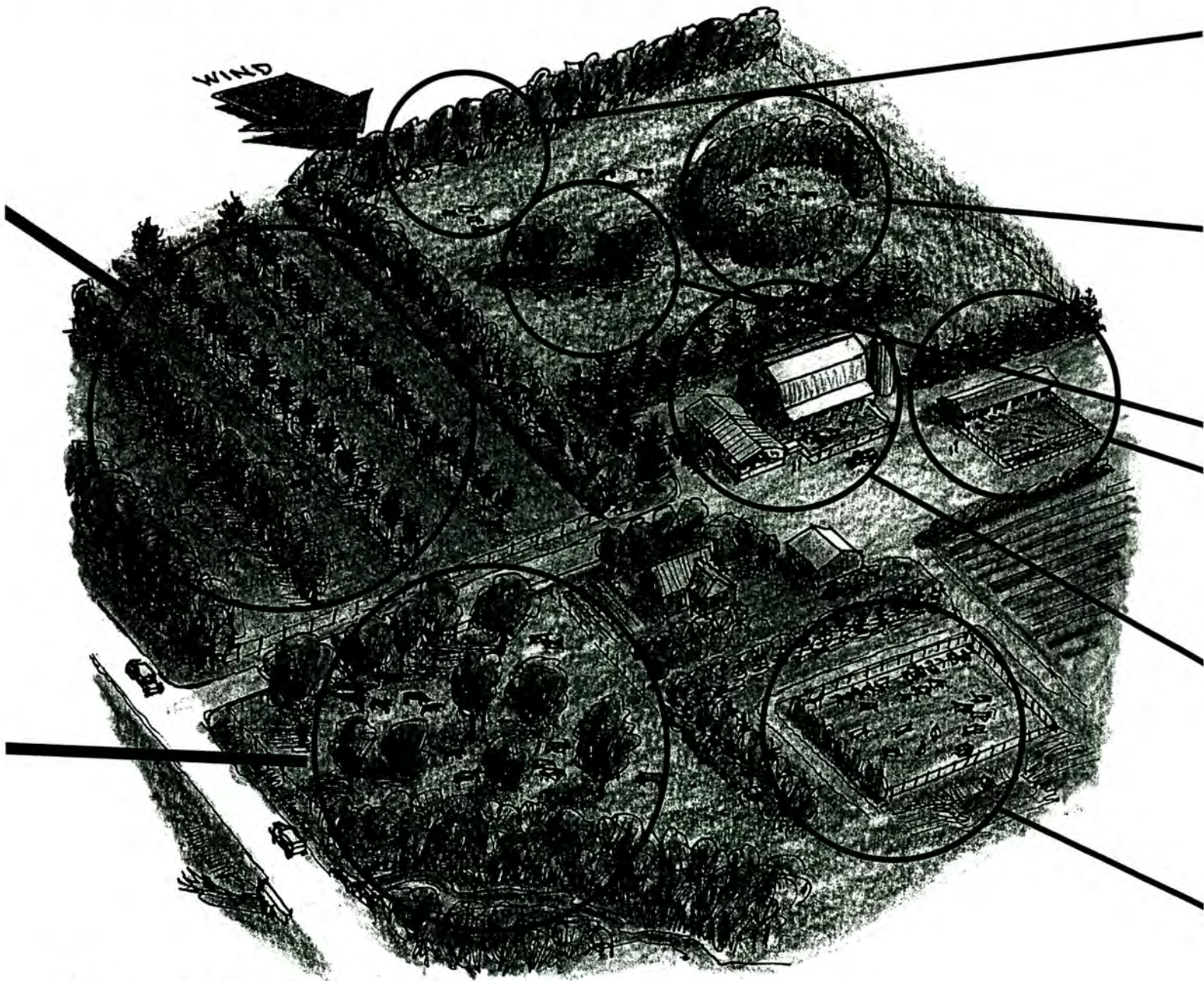


• Wildlife

A forested area that also includes forage is often a more attractive habitat for wildlife than an area with trees alone.



Working Trees for Livestock



Benefits for All . . .

Putting trees to work for livestock produces the following benefits for:

- **Water**—trees break the fall of heavy rain, allowing water to percolate into the ground. Tree roots help filter pollutants from runoff and groundwater.
- **The Air**—trees help reduce offensive odors and reduce airborne dust from concentrated livestock areas.
- **The Soil**—tree foliage breaks the fall of heavy rain, helping to prevent erosion and allowing water to infiltrate into the ground. Tree roots hold soil in place.
- **Wildlife**—tree/forage systems and windbreaks provide diversity of habitat and cover for many species of terrestrial wildlife. Fish and other aquatic animals are benefited by the role of trees in reducing erosion and filtering pollutants and agricultural runoff.
- **Plants**—trees in an agricultural setting provide greater plant diversity, making for a healthier ecosystem.
- **Humans**—trees create a more aesthetically pleasing landscape, provide a source of income and economic activity, and create settings for active and passive outdoor recreation.

Protect Your Livestock With Trees

• *Pasture Windbreaks*



A windbreak at the edge of a pasture provides herds with protection from wind and blowing snow.

Trees can be utilized in a number of ways to provide protection for livestock. Windbreaks at the edge of pastures, near feedlots, and near dairy, hog, and poultry facilities protect livestock from the stressful effects of winter winds and snow. Living barns and shade trees provide protection to herds in open pastures or on the range. A few examples of these practices are shown below.

• *Living Barns*



The encircling trees of a living barn can be the difference in herd survival in open pastures or range in the winter.

• *Shade Trees*



Shade trees in a pasture provide welcome places where livestock can find relief on hot summer days.

• *Hog & Poultry Facilities*



Swine and poultry benefit from protective windbreaks and shade-providing trees.

• *Feedlot Windbreaks*



A feedlot windbreak like this one can reduce wind velocity as much as 70 percent, reducing animal stress.

• *Dairy Herd Protection*



Barns, pens, and milking parlors that are protected by trees can increase milk yields from dairy herds.

Want More Information?

Local Assistance

There are technical specialists in your area who can assist you with the planning, design, application, and maintenance of your Working Trees for Livestock practice. Contact your nearest State Forestry agency, USDA Natural Resources Conservation Service, County Extension Office, or Soil and Water Conservation District.

Some working tree practices can be supported by cost share incentives provided by the Federal, State, or Local government. Contact your local conservation agencies for information about the various incentives available.

National Assistance

Contact the **USDA National Agroforestry Center**, East Campus—UNL, Lincoln, NE 68583-0822. Telephone (402) 437-5178; or the Natural Resources Conservation Service — **Grazing Lands Technology Institute**, 501 W. Felix Street, PO Box 6567, Fort Worth, TX 76115. Telephone (817) 334-5232.



This brochure was developed by the USDA National Agroforestry Center (NAC) in cooperation with The Natural Resources Conservation Service, Grazing Lands Technology Institute.



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NAC's Mission: The National Agroforestry Center is a partnership of the USDA Forest Service, Research & Development (R&D) (Rocky Mountain Research Station) and State & Private Forestry (S&PF); and the USDA Natural Resources Conservation Service. The Center's purpose is to accelerate the development and application of agroforestry technologies to attain more economically, environmentally, and socially sustainable land-use systems. To accomplish its mission, the Center interacts with a national network of cooperators to conduct research, develop technologies and tools, establish demonstrations, and provide useful information to natural resource professionals.

Address: USDA National Agroforestry Center, East Campus - UNL, Lincoln, Nebraska 68583-0822. For a supply of brochures, contact Nancy Hammond, nhammond@fs.fed.gov, or Fax 402-437-5712. For more information on the Center, contact Rich Straight, 402-437-5178 ext. 24 or Bruce Wight, ext. 36.

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Working Trees for Livestock

Agroforestry: Silvopasture in the Southeast



What are “Working Trees”?

Working trees are trees used in conservation and production systems on farms and ranches. They have a job to do, whether it's increasing income, protecting natural resources, or making our lives a little more enjoyable. “Working Trees” is a theme title designed to promote the science and practice of “agroforestry.” Agroforestry is a term that agriculturists and foresters have defined to include most practices where trees and shrubs are intentionally integrated into agricultural crop, forage, or livestock operations. Practices like windbreaks, riparian buffer strips, alley cropping, forest farming, and silvopasture use the same land to produce both forest and agricultural products, while at the same time conserve natural resources. Using working trees simply means planting the right trees, in the right place, at the right time, and in the right design to get a specific job done.

Silvopasture is the integration of trees with livestock operations. Silvopasture provides multiple benefits to landowners. If managed properly, trees in a livestock operation can reduce stress on livestock, while at the same time maintain forage production. Furthermore, by adding trees to forage systems, a landowner can receive additional income on the same land from timber products, Christmas trees, nut/fruit crops, or commercial wildlife or recreational opportunities.

What are Silvopastoral Systems?

Most people are accustomed to a single use of forest land or rangeland. Forest land and rangeland are basically used to produce crops, forage, livestock, forest products or to support wildlife. Silvopasture applies where livestock uses overlap with forest production. Silvopasture has become an important tool to improve income opportunities on farms and ranches in the Southeastern United States. The concept of silvopasture provides both forest production

and forage or livestock production simultaneously. The trees are ultimately managed for high value sawlogs (intermediate harvesting may produce pulpwood or posts and poles) and at the same time provide shade and shelter for livestock and forage. Trees can be planted into current forage systems, or woodlands can be thinned to accommodate additional growth of forage.

Benefits of Incorporating a Silvopastoral System

Incorporating long-term timber production into pasture and livestock management operations will provide for both an annual income and a longer-term cash flow. Silvopasture can improve the overall economic performance of a farm enterprise through diversification. The benefits primarily involve those gained in forage production and timber production.

Forage production

Incorporating trees into an established forage production or grazing system can maintain normal forage production while adding a long-term tree crop. In a study done by Cliff Lewis, USDA Forest Service, pine trees were planted and bahiagrass was seeded the same year. The trees were planted in spacings of 10-feet by 48-feet and 16-feet by 30-feet. The site was cut for hay the first three years, and then grazed for three years. At the end of six years, hay production averaged seven tons per acre (normal for the region) and beef gains averaged 200 pounds per acre during spring and summer grazing periods. After six years the trees were 22 feet in height and averaged 5.2 inches in diameter. This example demonstrates that increased timber growth can be realized with the multiple benefits of silvopasture.

Timber production

Incorporating grazing or forage production into a forested area can provide added cash flow to the enterprise and may increase wood production as shown in the following example.

A research study done in South Central Georgia found slash pine trees grown in both grazed and fertilized silvopastoral systems grew more rapidly, both in height and diameter, than those planted in ungrazed and nonfertilized native vegetation. In this study, trees were planted on 12-foot by 12-foot spacings and 20-foot by 20-foot spacings. The site was kept weed-free for three years. Bahiagrass, Dallisgrass, and coastal bermudagrass were planted in year four, and grazing commenced the fifth year. Trees in this design produced about 30 percent more wood per acre than surrounding plantations in native vegetation (see charts 1 and 2).

Silvopasture techniques can be convenient and effective. In some parts of the country, a typical timber management cycle involves site disturbance prior to replanting after a clearcut. This may be a good opportunity to seed grasses or even legumes. In the Coastal Plains region, a site-prepared area was seeded to pensacola bahiagrass. A year later, longleaf pine was established on the same site. The site was grazed year-long, and after nine years, there were 967 trees per acre. The longleaf pine trees that were grazed came out of the "grass" stage sooner than those ungrazed, and they grew significantly taller.

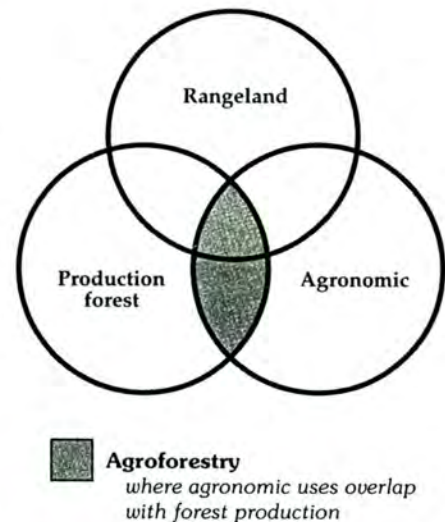


Chart 1-Tree height

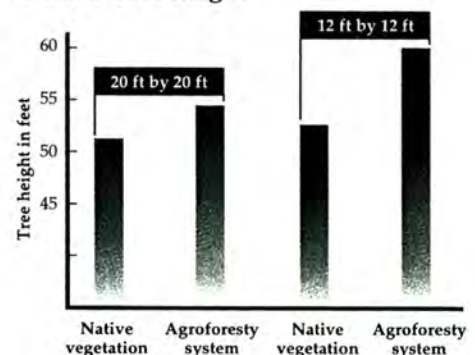
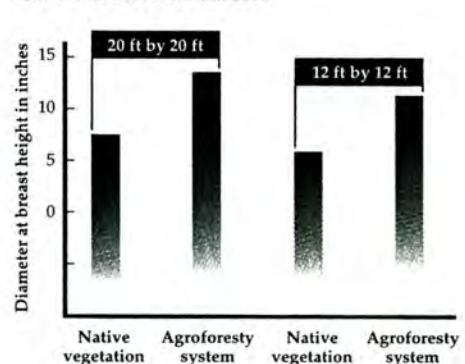


Chart 2-Tree diameter



Other benefits

Silvopasture practices can:

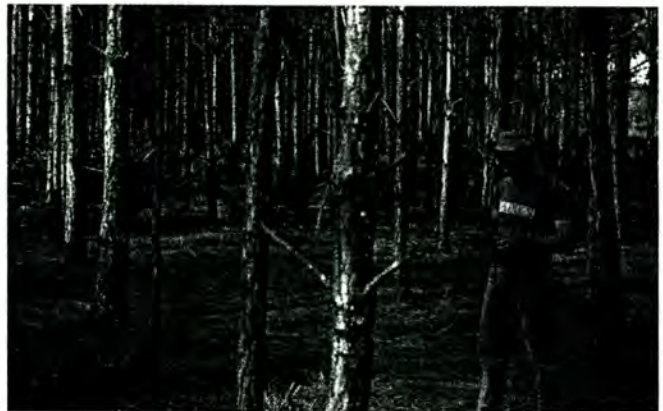
- Improve overall economic performance of a farm enterprise through diversification
- Maintain or increase tree growth
- Improve cool-season grass production
- Allow warm-season grass production with careful canopy management
- Provide shade for livestock
- Produce pine straw for landscaping and mulch
- Aid in erosion control
- Increase wildlife populations
- Improve water quality
- Increase opportunities for recreation
- Enhance aesthetics and property values



Tree spacing in silvopastoral systems provides for compatible forage and forest production.

Planning considerations

- **Inventory your resource base.** Begin planning with an inventory of existing resources. A local soil survey, which is available from your USDA Natural Resources Conservation Service office, can help you determine the suitability of different sites for different forage plants and trees. Your silvopastoral system will only be successful if you use plants adapted to your area.
- **Consider newer technologies.** Electrically powered fences may be the only way to afford a conservation grazing approach that matches livestock forage demand with forage production. Practical solar pumps may be used to provide water to previously unusable locations.
- **Analyze the economic implications.** Analyze the economic implications of pasture management, improvements required, and potential return. Then plan a grazing system using a conservative stocking rate. Intense grazing, overgrazing, and poor placement of supplemental troughs, water, or mineral feeders offer the highest potential for unacceptable levels of tree damage. Overstocking or improperly managed grazing can result in destruction of young pine seedlings. Consider a planting arrangement that would enhance self pruning, such as multiple row plantings, or higher density plantings that would require more frequent thinning. Wide-row, low-density planting increases limb retention and, depending upon species, decreases timber quality. For example, trees with large retained branches produce lower quality saw logs for lumber. Pruning is one method for assuring clear saw log production. A general guide is to prune trees when they reach four to six inches in diameter at breast height (dbh) and pruned to approximately where the trunk is four inches in diameter. Care should be taken to remove no more than about 30 percent of the live crown at any one time. (This is an accepted practice for wide spaced silvopastoral systems in other parts of the world.)
- **Special considerations.** To ensure an adequate stand of quality trees, consider the natural range of pests in your area. Cattle-induced injuries to lower limbs of trees may provide opportunities for insect or disease attacks. Stay in touch with others who have had experience with successful, local silvopastoral systems.

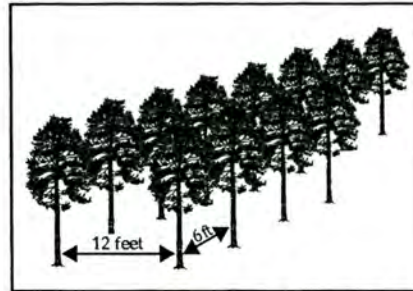


Closed canopy forest eliminates understory and the potential for grazing domestic livestock.

- **Select tree species, forage species, and a management option that assure compatibility.** Some forage plants are more shade tolerant than others. For example, in the Southeast bahiagrass has proven to be more shade tolerant than Dallisgrass or coastal bermudagrass. Nangeela subterranean clover is more shade tolerant than some other varieties available. Selection of forage plants as well as trees that are conducive to silvopasture is important. There appears to be a minor reduction in the digestibility of some forages growing in shade. This does not seem to be significant enough to affect livestock production or gains. There is evidence of increased palatability with some cool-season grasses.

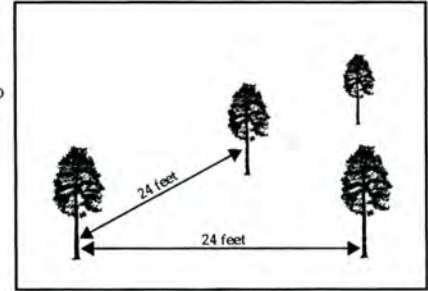
Management Options

Canopy closure reduces forage production as timber stands mature. In fact, in many ecosystems, when canopy cover exceeds 30 to 50 percent, forage production is curtailed to the point where grazing domestic livestock may not be economically feasible. One method of dealing with fluctuating forage production is through designed thinning (removal or harvest of some of the trees to maintain the desired canopy and competition level). Another method is planting fewer trees initially, which increases the period for canopy closure to occur. Row arrangements significantly impact space and canopy closure, which affect forage production. With proper management, a silvopastoral system can benefit the landowner, the land, and livestock all at the same time.

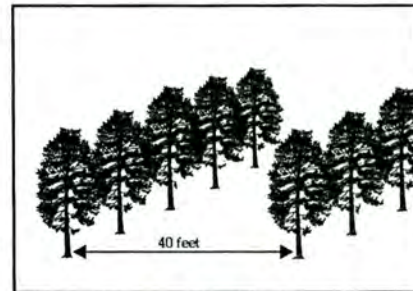


Self pruning will occur on a 6- by 12-foot planting arrangement. Periodic thinnings are needed to maintain forage production. However, forage production will fluctuate with tree density.

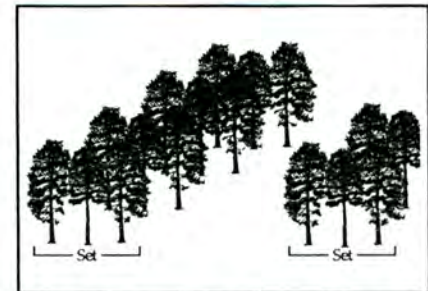
Thinned to



Timely thinnings of original 6- by 12-foot stand to a final stand of 75 trees per acre ensures more consistent forage production.



Single rows are spaced 40 or more feet apart. Pruning is required to produce quality trees. Forage production is easier to maintain.



Trees are planted in closely spaced, 3-row sets with wide spacing between sets. Outside rows are "trainers" and help self prune inside rows. Outside rows are removed for pulp; inside rows are managed for higher quality saw logs.

National
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This brochure was developed by the USDA National Agroforestry Center (NAC) in cooperation with the USDA-NRCS Grazing Lands Institute. Special thanks to Sid Brantly, Regional Grazing Lands Coordinator, USDA-NRCS, Auburn Alabama.

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From A Pasture to A Silvopasture System

There is potential to diversify a grazing operation and improve economic or environmental benefits on many acres through conversion of pasture to silvopasture. Silvopasture is the integration of trees with livestock grazing and forage operations. Research has demonstrated that, if managed properly, forage production can be maintained while producing high value timber.

Considerations

Southern pines (loblolly, longleaf, and slash) have been found to be compatible with forage production and livestock grazing when properly managed. This technical note provides several options for establishment of southern pines in existing pasture systems for the production and management of both forest and forage products. The following are planning considerations to convert from pasture to silvopasture:

Soils

Determine the soil suitability of the area for establishing pine trees. If the soil is not suited to southern pine species do not convert to a pine silvopasture system.

Tree Planting

Determine the desired row spacing for the pine planting. Planting rates from 100 to 400 trees per acre are typically recommended for planting a silvopasture system. Trees may be grown in single rows or in aggregate rows called sets with wide alleys for for-

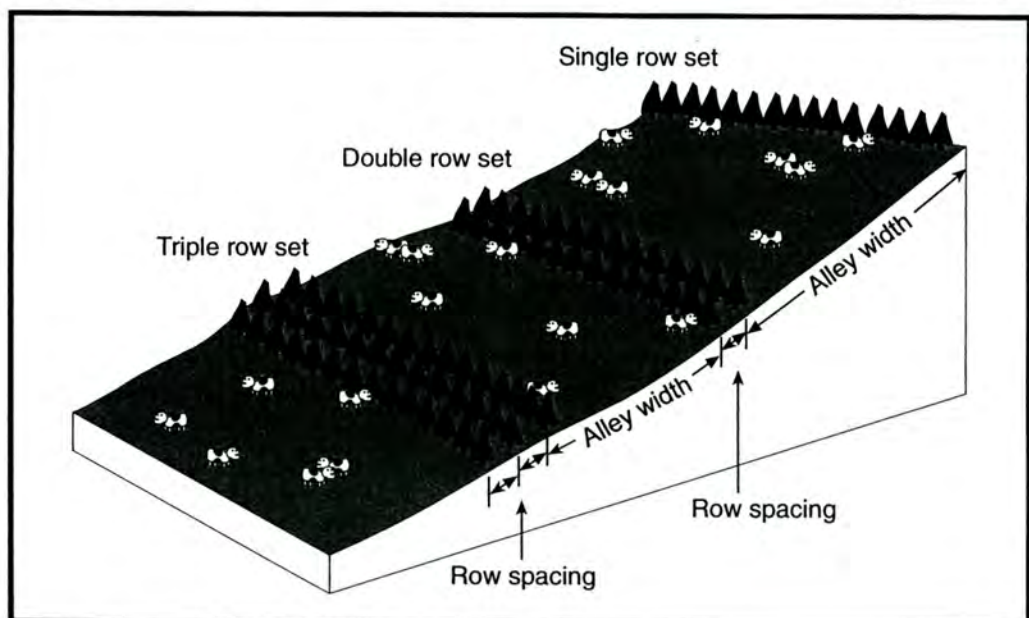


Figure 1: Typical layout diagram showing alley width, row spacing, and tree sets for establishing a silvopasture system in existing pasture.

		Single-Row Set			Double-Row Set			Triple-Row Set				
Alley Width	Row Spacing	Tree-to-tree-in-row spacing			Row Spacing	Tree-to-tree-in-row spacing			Row Spacing	Tree-to-tree-in-row spacing		
		6 foot	8 foot	10 foot		6 foot	8 foot	10 foot		6 foot	8 foot	10 foot
15 feet	Row spacing and alley width are the same for single-row sets.	6 foot	363	290	6 foot	691	518	414	6 foot	807	607	484
		8 foot			8 foot	631	473	378	8 foot	703	528	422
		10 foot			10 foot	580	435	348	10 foot	622	468	374
		12 foot			12 foot	537	403	322	12 foot	558	418	335
20 feet	the same for single-row sets.	6 foot	272	218	6 foot	558	418	335	6 foot	680	512	409
		8 foot			8 foot	518	388	311	8 foot	605	455	363
		10 foot			10 foot	484	363	290	10 foot	545	409	327
		12 foot			12 foot	454	340	272	12 foot	495	372	297
30 feet	the same for single-row sets.	6 foot	182	145	6 foot	403	303	242	6 foot	512	390	311
		8 foot			8 foot	382	287	229	8 foot	473	356	284
		10 foot			10 foot	363	272	218	10 foot	435	328	262
		12 foot			12 foot	345	259	207	12 foot	403	303	242
40 feet	the same for single-row sets.	6 foot	136	109	6 foot	315	237	189	6 foot	419	315	252
		8 foot			8 foot	303	227	182	8 foot	389	292	234
		10 foot			10 foot	290	218	174	10 foot	363	273	218
		12 foot			12 foot	279	209	167	12 foot	340	256	204

Bold figures are outside of recommended planting rates for silvopasture
*Field shape and planting design may cause some variation in trees-per-acre.

age production between sets. (See figure 1) Examples of recommended planting options are shown in table 1.

Planting arrangement should consider management objectives, equipment operability, adequate growing space until the first tree harvest, and companion-forage species needs.

The desired establishment density, in part, is determined by the existing markets for timber products. Higher planting densities will require the removal of smaller-diameter trees to prevent canopy closure. If readily available markets for small round wood exist then the higher planting densities are feasible options. If, however, these markets don't exist, the lower planting densities have the advantage of reducing the need for non-commercial thinning.

On sloping land, rows should be oriented on the contour to prevent soil erosion within the tree rows during establishment.

Site Preparation and Establishment

Determine site preparation needs. Apply a herbicide or till a strip two to four feet wide for each row to be planted. If the soil has a compacted layer, rip or subsoil down the planting rows. This improves the ease of planting and improves rooting conditions for young seedlings, thus ensuring better survival and growth. In some areas, a prescribed burn or pesticide treatment may be needed to control rodents prior to tree planting. Follow-up with a selective herbicide may be needed for two to three years until trees are well established. Follow locally approved tree planting practices for the establishment of the trees.

Tree Management

Determine the tree management needs.

- **Thinning.** Trees generally have little impact on forage production until shading becomes dense enough to limit sunlight to the understory. Thinning of trees is

scheduled to reduce canopy shade and tree competition for understory forage production. When the trees' combined canopy exceeds 35 to 45 percent, forage production of warm season grasses begins to decline. However, there are differences among the warm season grasses. For instance, Pensacola bahiagrass and Coastal bermudagrass were shown to produce more under tree canopy cover than dallisgrass and carpetgrass. Continuous observation is important in making adjustment in the management strategy. For cool season grasses, shade tolerance of some species may exceed 60 percent and still produce good forage yields. Depending upon the species of grass, tree thinning needs to be conducted to keep canopy cover below the maximum shade tolerance level. With proper establishment densities the first thinning should be planned around 10 to 15 years of age for pulp or small round wood. Successive thinnings can be scheduled about every five years until final harvest at approximately 30 to 45 years. This schedule will vary some depending upon the productivity of the site, the species of trees, and the targeted, final wood products.

- **Pruning.** Widely spaced trees delay tree canopy closure benefiting forage crops but the "open grown" trees may develop large branches that can reduce wood quality if trees are not pruned. The object of pruning is to confine the knots created by these branches to a small diameter (four inches) of core wood thereby producing high quality, knot free wood on the outer diameter of the tree stem.
 - Pruning should be initiated when the crop trees reach 15 to 20 feet and/or the stump diameter reaches five inches at a height six inches above the ground.
 - Pruning should strive to remove all of the branches where the trunk diameter is greater than four inches. But, never remove more than 50 percent of the live canopy.
 - Pruning operations should be scheduled periodically until the tree bole is pruned up to 18 feet. Each successive pruning operation proceeds up the main tree stem to a four-inch diameter core but removes no more than 1/3 to 1/2 of the total crown while maintaining a live crown equal to 1/3 of the tree height.
 - Pruning operations continue until a 18-foot knot-free log is developed. (see figure 2) Follow local guidelines from the state forestry agency, NRCS or extension service for proper pruning techniques.
- **Grazing Management.** Very young trees are subject to browsing or trampling by

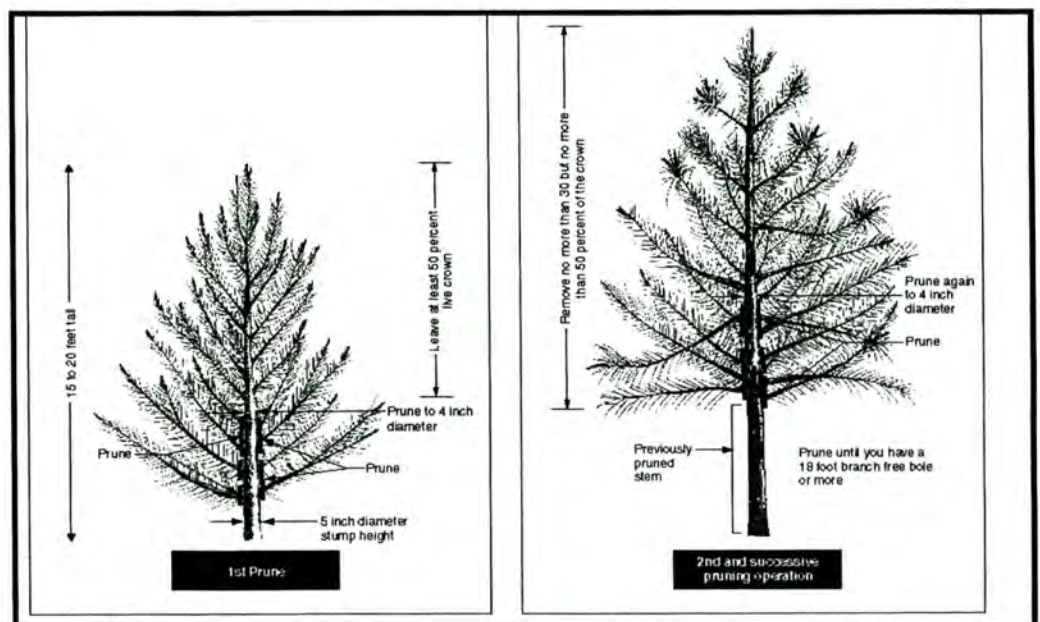


Figure 2: Pruning to create a four inch core.

livestock. It is recommended that grazing be restricted or excluded during the first two to three years after establishment or until the terminal bud of the trees is above the reach of livestock. Forage produced during these years can still be mechanically harvested and utilized for hay. Once the terminal bud of the trees is above the grazing height of livestock (six to eight feet), grazing can proceed without damage to the trees. If heavy browsing is observed there may be a deficiency in the livestock diet. Southern pine are not typically browsed by livestock when adequate quality forage is available.

As with any managed grazing system, soil amendments should be applied as needed to maintain desired forage production levels. An added benefit is that stem production of wood has been shown to increase by 20 to 30 percent in response to fertilizer management for forage production.

Continuous grazing is not recommended for silvopasture systems. A planned grazing system in which multi-grazing units are rested and grazed in a planned sequence should be developed. The grazing management plan should maintain an adequate balance between livestock numbers and forage production.

Close monitoring of forage, livestock and timber performance will provide economic and environmental benefits attainable through silvopasture systems.

Additional Information

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- "Managing Pine Trees and Bahiagrass for Timber and Cattle Production" Byrd, Nathan A., Lewis, Clifford E. 1983. USDA Forest Service, General Report R8-GR 2. Pp. 1-9.
- "Silvopastoral Practices Sustain Timber and Forage Production in Commercial Loblolly Pine Plantations of Northwest Louisiana USA." Clason, T.R. 1999. *Agroforestry Systems* 44: 293-303.
- "Timber-Pasture Management Enhances Productivity of Loblolly Pine Plantations." Clason, T. R. 1996. *Louisiana Agriculture* 39(2): 14-16.

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NAC is a partnership of the USDA Forest Service, Research & Development (R&D) (Rocky Mountain Research Station) and State & Private Forestry (S&PF) and the USDA Natural Resources Conservation Service. The Center's purpose is to accelerate the development and application of agroforestry technologies to attain more economically, environmentally, and socially sustainable land-use systems. To accomplish its mission, the Center interacts with a national network of cooperators to conduct research, develop technologies and tools, establish demonstrations, and provide useful information to natural resource professionals.

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Agroforestry Notes

USDA Forest Service • USDA Natural Resources Conservation Service

AF Note — 18

April, 2000

From Pine Forest to A Silvopasture System

Introduction

Agroforestry systems hold the potential for land users to realize diverse income-generating possibilities from the same acreage, as well as meet environmental goals. Silvopasture systems are agroforestry systems that incorporate the production of forage and/or livestock with the growing of trees for a timber product. The silvopasture system can be developed from a pasture system with the trees incorporated into



Silvopasture combines trees with forage and livestock production. The trees are managed for high-value sawlogs and at the same time an annual income is generated from livestock grazing.

the open fields or it can be developed from a forest plantation with the forage incorporated into the plantation following a thinning to reduce tree canopy.

A Southeastern Example

This technical note describes one technique to convert a loblolly pine plantation to a silvopasture system. This Note also compares the production data for a typical pine plantation, a silvopasture system, and a pasture system starting from a 20-year-old pine plantation. This information is based on research from Louisiana State University, Hill Farm Research Station in Homer, Louisiana.

The loblolly pine plantation was originally planted in 10-foot rows with six-foot spacing within the rows for a planting density of 726 trees per acre. At age 20 the trees averaged 8.6 inches in diameter and were 58 feet tall. The stand was considered overstocked with 209 square feet of basal area and 520 trees per acre.

Silvopasture

To establish a silvopasture system to manage for timber, forage, and livestock production, the following steps should be taken:

Table 1

Forage Yields of <i>Bahiagrass</i> Under Pasture and Silvopasture.				
Stand Age (Years)	Pasture (Tons/Acre)		Silvopasture (Tons/Acre)	
	Low Yield*	High Yield**	Low Yield*	High Yield*
21	0.7	0.7	0.5	0.5
22 to 35	1	1 to 2	1	1 to 2

*Low yield — Below average rainfall, 168-day grazing season.

**High yield — Average rainfall, 168-day grazing season.

Table 2

Coastal <i>Bermudagrass</i> Under Pasture and Silvopasture				
Stand Age (Years)	Pasture (Tons/Acre)		Silvopasture (Tons/Acre)	
	Low Yield*	High Yield**	Low Yield*	High Yield*
21	1	1	0.8	0.8
22 to 35	2	3 to 5	1.5	3 to 4

*Low yield — Below average rainfall, 168-day grazing season.

**High yield — Average rainfall, 168-day grazing season.

Table 3

Approximate Wood Yields of Loblolly Pine Under Silvopasture and Pine Plantation				
Stand Age (Years)	Silvopasture		Plantation	
	Cords/Acre	Board Feet Acre*	Cords/Acre	Board Feet Acre*
20	33	0	27	0
25	3	2000	3	1600
30	0	3000	1	2100
35	0	4000	1	3100

*Doyle Scale

Step 1.

Age 20. Conduct an initial thinning to reduce the pine density to 100 trees per acre. On severely overstocked stands or on some soils this density reduction may need to be done over a five-year period using two thinnings to limit windthrow or top breakage.

Step 2

Age 21. (if thinning is done over a five-year period, this would be age 26. Adjust all subsequent steps accordingly.) Establish a commercial forage crop. In this case study *Bahiagrass* and Coastal *Bermudagrass* were evaluated.

- **Bahiagrass:** Prepare the seed bed by prescribed burning and disking. Seed in March or April at a rate of 20 pounds per acre, then culti-pack and apply an initial fertilization of 36 pounds of nitrogen (N), 47 pounds of phosphorous (P) and 89 pounds of potassium (K) per acre. Top dress at 36 pounds of N per acre in June. The estimated cost for *Bahiagrass* establishment is \$260/acre. See Table 1 for forage production data.

- **Coastal Bermudagrass:** Prepare the site by prescribed burning and disking. Distribute 35 bushels per acre of sprigs in March or April and incorporate with a second disking. The fertilizer procedure is the same as for *Bahiagrass*. The estimated cost for Coastal *Bermudagrass* establishment is \$470/acre. See Table 2 for forage production data.

Step 3.

Age 22 to 35. Manage forage crop to optimize livestock production. The example case received an annual fertilizer application of 100 pounds of N, 39 pounds of P, 20 pounds of K and 17 pounds of sulfur (S) per acre, for a cost of \$60/acre. Annual weed suppression was also conducted with herbicides at a cost of \$24/acre.

Step 4

Age 25. Thin pine to a density of 50 trees per acre. Prune to 20 foot height.

Step 5

Age 30. Thin pine to a density of 25 trees per acre.

Step 6

Age 35. Harvest trees and replant. See Table 3 for timber yields. Seeding rates for forages and soil amendments used in this study provide some guidance, however, seeding rate

and soil amendments should be based on site-specific soil tests and recommendations of University Extension personnel or the USDA Natural Resources Conservation Service (NRCS).

Pine Plantation

A typical management regime for southern pine plantations was evaluated to provide a comparison of wood yield between plantation and silvopasture systems.

Age 20: thin plantation to 250 trees/acre.

Age 25: thin plantation to 100 trees/acre

Age 30: thin plantation to 50 trees/acre

Age 35: Harvest remaining trees and replant. For a comparison of timber yields from plantation and silvopasture see Table 3.

Additional Considerations

The technique discussed in this technical note is meant to provide a starting point for individuals who are considering establishing silvopasture systems in their loblolly pine plantations. Similar results could be expected when converting a well-stocked naturally regenerated pine stand. The timber yield and forage response will vary based on localized site conditions and species. Adjustments in management must be based on observations and desired production levels.



Converting a high density pine plantation to a silvopasture system starts with thinning the trees.

Cool season grasses may tolerate a higher tree density and still maintain their production levels. When seasonal rainfall quantity and distribution are sub-optimal, forage production in silvopastures may be 10 to 15 percent less than open pastures. If pine density is maintained at recommended levels, shading from the tree canopy should not limit warm season forage production.

Timber production in the silvopasture system versus the plantation system was approximately 30 percent greater. This increase was attributed to the fertilizer applied for forage production and reduced tree-to-tree competition.

For silvopasture systems to be successful there must be a commitment to intensive forage, livestock, and timber management. Planned tree harvests, and rotational or intensive grazing is a must. Continuous grazing is not recommended for silvopasture systems.

Based on results at the Louisiana State University, Hill Farm Research Station, silvopasture systems can provide a feasible opportunity to realize multiple products from the same acreage and an opportunity for landowners to diversify their management systems and economic strategies.

Additional Information

- “An Ongoing Study to Understand Tree, Forage, and Livestock Systems.” Clason, T. R. 1998. *Inside Agroforestry* 12(2):1, 5.
- “Agroforestry, Proceedings Southeastern Regional Conference Grazing Lands and People”; Pearson, Henry A. 1984. Editors Merkle, Dan; Carter, Roy; Artz, John L.; December 10-12; Atlanta, GA. 72-79.
- “Development of Silvopastoral Systems in the Northern Temperate Zone.” Clason, T. R. 1996. *Inside Agroforestry* 10(2): 3-7.
- “Double vs. Single-Row Pine Plantations for Wood and Forage Production.” Lewis, Clifford E., Etal. 1985. *Southern Journal of Applied Forestry*, Vol 9, No.1. 55-60.
- “Economic Implications of Silvopastures on Southern Pine Plantations.” Clason, T.R. 1995. Louisiana Agricultural Experiment Station, in *Agroforestry Systems* 29:227-238.
- “Integration of Pines, Pastures, and Cattle in South Georgia, USA”; Lewis, Clifford E.; etal. 1983. *Agroforestry Systems*. 1 : 277-297.
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- “Silvopastoral Practices Sustain Timber and Forage Production in Commercial Loblolly Pine Plantations of Northwest Louisiana USA.” Clason, T.R. 1999. *Agroforestry Systems* 44: 293-303.
- “Timber-Pasture Management Enhances Productivity of Loblolly Pine Plantations.” Clason, T. R. 1996. *Louisiana Agriculture* 39(2): 14-16.

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Invasion of Privacy

Environmental group posts farm payments on the Internet

Environmentalist Ken Cook is a master at attracting journalists and television cameras when he issues reports on hot-button pesticide or water quality topics.

In a new cyberspace strategy, he used the Internet to unleash an ancient communications medium—gossip. To push for more conservation spending as the Senate debates the farm bill, Cook in early November released information on “big government checks [that] have enabled big producers to buy neighbors’ farms or out-compete them in the farmland rental markets.”

Cook and his four-person press staff at the Environmental Working Group (EWG) alerted a couple of hundred journalists to a mammoth searchable database of some 70 million records of all federal farm payments from 1996 to 2000. At www.ewg.org, anyone can type in a farmer’s name to learn of combined farm program, disaster and conservation payments. The database often fails to paint a full picture. It doesn’t show a farm’s multiple owners, operations across county and state lines, or a breakdown of payments paid through cooperatives.

Coffee shop grist. But by surreptitiously posting a news release about the database on discussion threads of www.agweb.com and other Internet sites, EWG generated chatter among neighbors and landlords, at banks and law offices, and at coffee shops across the country. The EWG site attracts 7,000 to 8,000 new visitors each day.

The database lists 1,290 recipients of more than \$1 million over the five years. EWG concludes that the largest 10% of farmers received an average

By Sonja Hillgren

of \$39,864 a year, and two-thirds of total payments.

“I don’t know why the EWG and Ken Cook want to poison the atmosphere,” says Mark Hegg, a wheat, barley and lentils producer in Palouse, Wash. “The EWG could advance their agenda much more effectively if they stopped using division as a tool. Conservation can stand on its own merits. Low prices are the primary problem facing farmers.”

Daren Coppock, the CEO of the National Association of Wheat Growers, asked James Little, head of USDA’s Farm Service Agency, to halt more release of data identifying individual farmers and to try to stop organizations like EWG from identifying individuals.

“We are concerned that this information inappropriately identifies individual farmers for harassment by EWG and others,” Coppock says in a letter to Little. He cites USDA’s Freedom of Information Act (FOIA) rules on confidential business information.

As legal precedent, however, EWG cites a 1996 FOIA decision by U.S. District Judge Paul L. Friedman, granting cotton payment data to *The Washington Post*. USDA had objected to the release on privacy grounds, but the judge cited U.S. citizens’ right to be informed about government.

“None of the information at issue in this case is stigmatizing, embarrassing or dangerous; it does not expose these cotton farmers to creditors; and it reveals nothing about the success or failure of the farm or the wealth or poverty of the recipient,” the judge wrote in rejecting USDA’s concerns.

EWG filed FOIA requests for five years of farm payments and, with considerable computer expertise, took the unprecedented step of compiling public information from scattered sources into one accessible database.

EWG’s money. Founded in 1993, EWG has a \$1.6 million annual budget mostly derived from grants. Sources include the Joyce Foundation and the Wallace Genetic Foundation.

Before organizing EWG, Cook was an active player in creation of the Conservation Reserve Program, the Wetlands Reserve, the Environmental Quality Improvement Program, and conservation compliance. EWG’s advance release of selected tidbits from the new database last summer helped spark interest in a substitute conservation farm bill narrowly defeated by the House, but failed to stop House passage of \$170 billion in farm payments for the next 10 years.

“A lot of people were very happy to see the information released,” says Anne Keys, EWG vice president and a USDA official during the Clinton administration. “This is what America’s all about.”

She adds, “The public generally should be concerned about the farm sector getting larger and more concentrated on the backs of American taxpayers. We have an entire sector dependent on the taxpayer.”

Alan Karkosh, a corn, soybean and seed corn producer in Hudson, Iowa, replies, “If the farm program is geared toward environmental incentives, the big farmers are still going to get the bigger payments.”

Karkosh questions why a farmer who manages a farm as a hobby or a side business should receive a larger payment than someone who is solely in the business of farming.

He asks, “Is the EWG truly working to improve the environment or are they a group of computer experts with database skills that are looking to stir up controversies to increase funding for their organization?” **FJ**

**“40 farm subsidy recipients
in Aspen, 31 in Beverly Hills,
81 in Boca Raton,
372 in Brooklyn,
803 in Washington, D.C.
Congress is saving family farms
all across this great country.”**

*—excerpt from Internet ad created by
the Environmental Working Group*

Two Years Late, Trade Talks Begin

After years of false starts and failed attempts, U.S. agriculture officials and commodity leaders are looking forward to a new round of international trade talks they believe will open markets for American farmers and their products.

With slumping economies and terrorism fears forming the backdrop, last month's meeting of the World Trade Organization (WTO) in Doha, Qatar, resulted in agreement among the 142 countries on an agenda for three years of negotiations to expand global markets and reduce trade barriers. The deal was a dramatic contrast to the collapse of trade talks in Seattle in 1999.

"One of our biggest objectives is market access," explains Agriculture Secretary Ann Veneman. "That's significant given the fact that tariffs around the world for food and ag products are 62%."

The trade talks will have three goals: expanding market access, reducing trade-distorting subsidies and phasing out export subsidies.

"The Europeans use 70 times more export subsidies than we do in the United States," Veneman says. "So it's certainly to our farmers' benefit to be able to reduce those and hopefully eliminate them eventually."

In addition, the entry of China and Taiwan as WTO members is expected to benefit farmers almost immediately. USDA projects U.S. farm exports ultimately will expand by more than \$2.5 billion annually. All major industrial and developing countries are now WTO members, except Russia, which is pursuing membership.

While the new trade agreement is only the beginning of what promises to be a long and difficult process, optimism remains high. As Kenneth Hobbie of the U.S. Grains Council sees it: "It is an aggressive and important step forward for liberalization in agricultural trade."

Now Bush administration officials face a daunting challenge: convincing Congress to give President Bush

trade promotion authority so that other nations' negotiators will be willing to cut deals with the U.S.

Senate Panel OKs Farm Bill

In negotiations taking place closer to home, Senate Agriculture Committee members settled on a bill that would tweak some programs and shift some funds, but result in no new overriding vision. That will affect some farmers' checks, but will not revolutionize farm policy in the way many had hoped it would.

"It's a nudge," says Sen. Tom Harkin, D-Iowa, the committee's chairman, who acknowledges the bill is not a drastic change from what farmers have seen in the past.

Harkin discovered not only that it's hard to get a bipartisan bill, sometimes it can be hard to get even a partisan bill. To ensure the support of Southern Democrats, he dropped plans to reign in traditional program crop payments and scaled back plans for expanded conservation programs. The bill passed committee 12-9 with the support of only one Republican.

The final result is a bill with more similarities than differences with the House's \$170 billion farm bill. One key difference: the House plan would be for 10 years, while the Senate version is for five. The full House approved its measure in October, but the Senate version must still go to the floor, where an increasingly partisan atmosphere could impact the final outcome. Once a Senate bill passes, it heads to a House-Senate conference. It will be difficult to finish a bill before the end of the year.

In Short

■ Congress has renamed USDA's Farmer-to-Farmer Program in honor of John Ogonowski, the Massachusetts farmer who was captain of American Airlines Flight 11, the first to hit the World Trade Center on Sept. 11. The designation honors not only Ogonowski's sacrifice as a pilot,



Jane Fullerton
Farm Journal
Washington
Editor

*"The Europeans use
70 times more export
subsidies than we do in
the United States"*

—Agriculture Secretary

Ann Veneman

but his commitment to helping immigrants learn the practical methods and intrinsic value of farming.

■ The Environmental Protection Agency has delayed implementation of the total maximum daily load rule on water quality for 18 months in order to gather input and evaluate needed changes.

■ Homeland Security Director Tom Ridge says "we ought to at least take a look" at the concept of consolidating food inspection into a single agency. Those duties are now scattered among various agencies, primarily USDA for meat, poultry and eggs, while the Food and Drug Administration oversees most other foods. Food inspection consolidation has been discussed for decades, but times have changed. **FJ**



Working Trees for Communities



Trees strategically planted in a specific place to address a particular need — that's what "working trees" are all about! Working Trees have a job to do. For decades conservation trees have been planted in rural, agricultural areas to protect resources and enhance human environments. In the past, trees were planted in communities primarily to add beauty and provide shade. Community residents, however, have the same responsibility and opportunities as those who live in rural areas, when it comes to protecting our natural resources. Since urban areas are a major contributor to nonpoint source pollution, the time has come to apply proven rural conservation forestry practices in and around communities to improve and protect our urban resources.

Working trees, in the form of windbreaks, living snowfences, and streamside buffers work to protect homes, industry, schools, emergency facilities, roadways, and people. They reduce wind erosion, improve water quality, screen unsightly areas, provide wildlife habitat, clean the air, reduce energy costs, and help beautify your town while they work.

Working trees function not only *in* a community, but they also fill a very important role when located *in between* a community and adjacent agricultural lands — commonly referred to as the rural/urban interface. The rural/urban interface plays an increasingly important role as rural farmlands and ranches are encroached upon by expanding urban populations for housing, business, and industrial construction. Here, working trees serve as a "living buffer," the front-line defense for both rural and urban residents against contaminated water and air, blowing snow and dust, noise, and wind. Strategically located outside your community, working trees reduce flood damage, decrease nonpoint source pollution, and help reduce problems associated with municipal landfills.

The goal of working trees is to protect natural resources and at the same time make our communities productive, profitable, and sustainable for future generations.



Working Tree Practices...

...For Conservation



The major goal of working trees is to help conserve and protect our natural resources. Trees and shrubs along rivers, streams, and ditches have the ability to trap sediments and filter chemicals originating from lawns, roads, or parking lots, before they reach the natural water course. This helps keep our water clean and more suitable for domestic and recreational use. It also improves the quality of aquatic and wildlife habitat.

Trees work for us on both natural and artificial slopes and steep banks. While sod and other ground cover hold topsoil in place, tree roots penetrate deeper and spread out, anchoring large blocks of soil. Densely-planted trees and shrubs can do additional duty by keeping bikes, foot traffic, and motor vehicles off slopes and fragile soils that are prone to wind and water erosion.

...To Diversify the Environment

Populations of urban wildlife species increase with the addition of trees and shrubs. A single Baltimore oriole can devour 17 leaf-munching caterpillars in a minute and flickers can consume ants by the thousands. Birds earn their keep, and working trees in a community will help ensure that we continue to provide essential water, food, and shelter for desirable wildlife. Previous heavy reliance on a few tree species has resulted in major losses due to insect and disease outbreaks. For example, the American elm is becoming "extinct" in many communities due to Dutch elm disease. Working tree practices designed with a variety of plant species can guard against major losses and help communities diversify their urban forest.

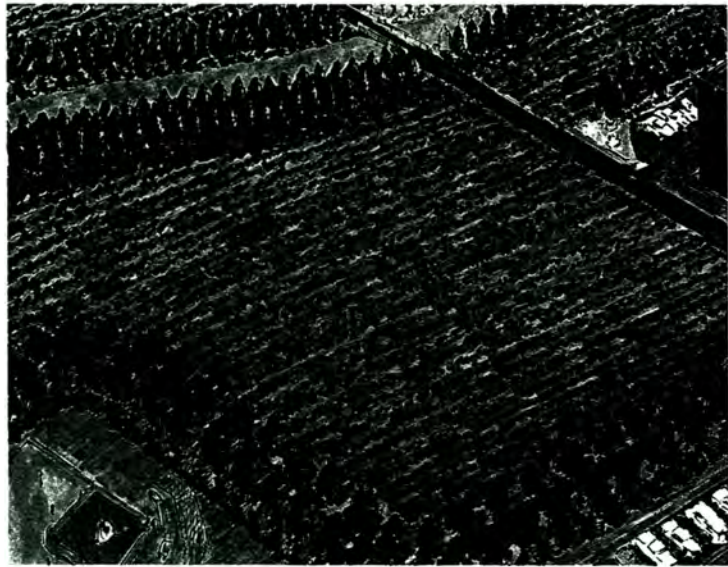
...To Conserve Energy

Properly placed working trees around homes, businesses, and other public facilities can reduce energy use significantly. For example, homes protected by windbreaks and shade trees can expect energy savings of up to 30 percent in the winter and 20 percent in the summer, especially in the high wind, low temperature regions of the United States. A living snowfence planted along a major roadway or near a parking lot can limit snow drift, reduce snow removal costs, and save energy costs to businesses. This can be especially important when the major roadway protected is an emergency vehicle route such as that needed for hospitals, schools, or fire stations.



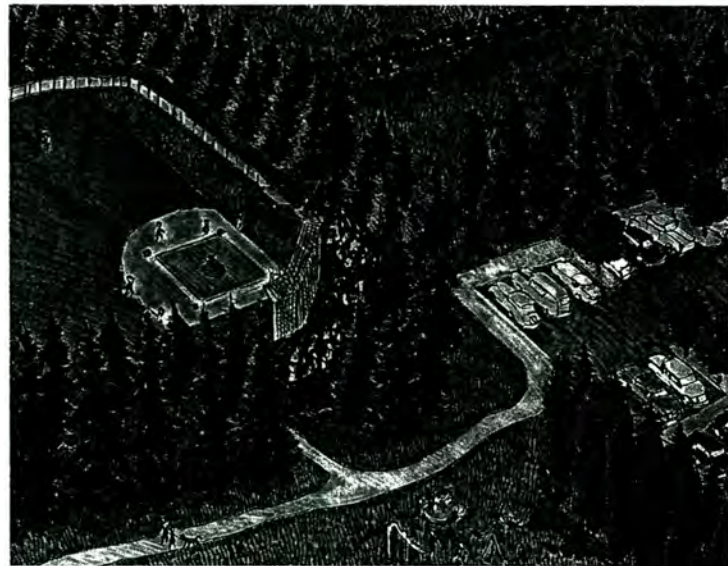
Rural/Urban Interface

Trees and shrubs serve as a “living buffer” separating rural, agricultural lands from residential areas. These buffers are the front-line defense against contaminated water and air, dust, noise, wind, and blowing snow originating from both rural and urban areas.



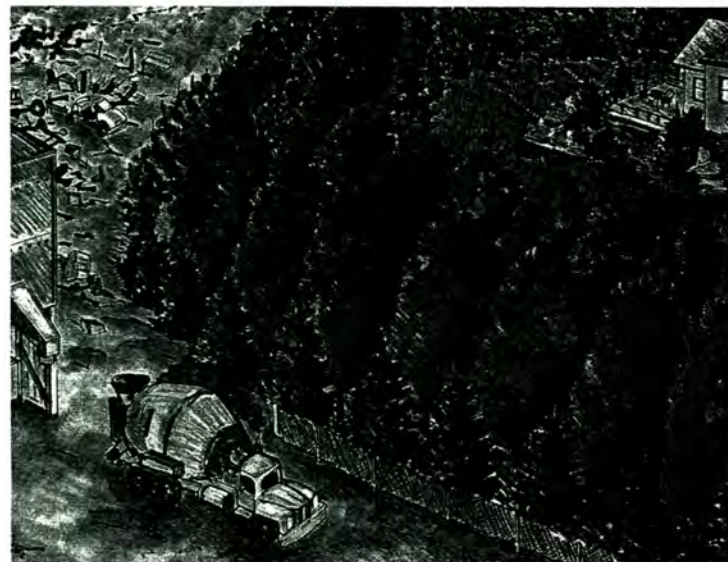
Windbreaks

Rows of trees improve community environments for both work and play. Windspeed can be reduced by more than 50 percent, making being outdoors more comfortable. Windbreaks can buffer both cold winter winds and hot summer winds. They can modify environments around hospitals, schools, homes, recreation areas, parking lots, and industrial parks, creating more pleasant living and working areas.



Screening, Dust and Noise Control, Wildlife Habitat, and Energy Conservation

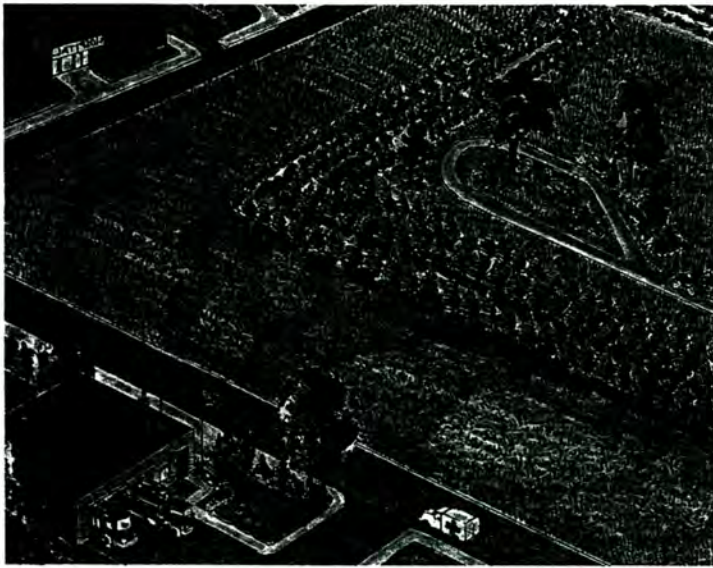
Rows of trees located between residential areas and unsightly or loud areas can screen and buffer residents from unwelcome sights, sounds, or dust associated with roads, industry, organized sports, businesses, or landfills. Reduction of sound levels in the range of 8-12 decibels (approximately half as loud) are possible for tree, shrub, and solid barrier combinations. These plantings also provide necessary food, shelter, breeding, and nesting sites for wildlife and can be incorporated most anywhere, including backyards and recreation areas. Furthermore, properly placed shade trees and windbreaks can reduce energy consumption by up to 20 percent in the summer and up to 30 percent in the winter.



Working Tree Practices

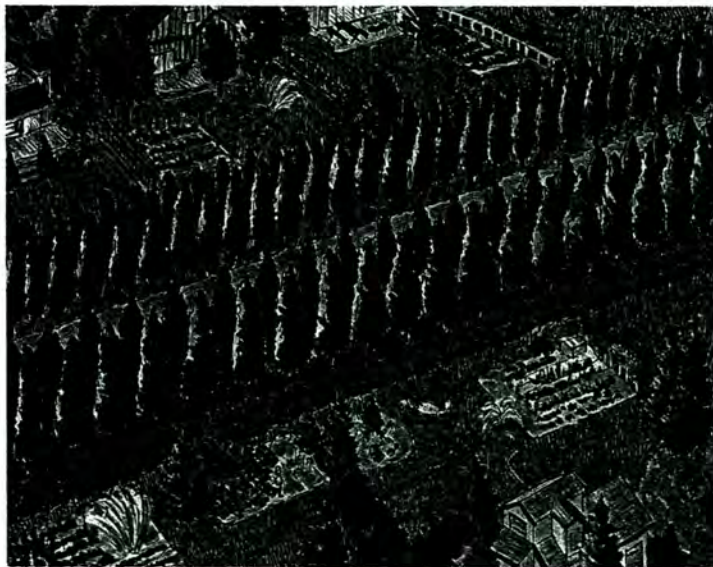


A community without trees, like the one above, is not cost-efficient, environmentally friendly, or aesthetically pleasing. Applying appropriate working tree practices to this area, as shown in the illustrations to each side, will promote natural resource conservation and enhance natural and human environments.



Living Snowfences

Rows of trees and/or shrubs near access roads and emergency routes reduce dangerous crosswinds, trap blowing snow, lower snow removal costs, and increase driving safety. Living snowfences can also be designed to enhance recreational activities. For example, hiking and biking trails can be incorporated in between rows of trees, and berry-producing shrubs added to the design will improve songbird and wildlife habitat.



Riparian Buffer Strips

Natural or re-established streamside forests comprised of trees, shrubs, and grasses filter surface and shallow subsurface water pollutants before they enter streams and rivers. These filter strips also help control bank erosion, protect and enhance aquatic environments, provide wildlife habitat and recreational sites, and increase biodiversity.




Bioengineering

When a streambank is caving in, soil bioengineering techniques may be used to repair it. Bioengineering creates a stable streambank covered with tree/shrub/grass plantings, and is an effective alternative to structures. It is often used in combination with riparian buffer strips alongside the streambank to provide an effective and attractive streamside buffer zone.



...To Work in the Rural/Urban Interface



Working trees play an important role in mitigating environmental problems between urban dwellers and rural enterprises. Working trees on rural lands and watersheds directly influence communities by intercepting wind- and water-carried contaminants and sediments, keeping them out of the community. Conversely, properly applied working trees on urban lands and watersheds benefit rural areas by buffering them from accelerated urban water flow and associated contamination. Community working tree practices can also assist in solving urban-associated natural resource problems such as stabilizing landfills and disposal of treated sludge and wastewater.

...To Enhance Recreation

Working trees planted around recreation areas like parks, picnic areas, ball fields, and golf courses, block the wind and provide shade, helping to create a more pleasant atmosphere. This naturally improves wildlife habitat and adds recreational opportunities such as bird-watching, hiking, biking, and nature walks. Working trees in this setting also provide perfect environmental education sites!

...To Enhance the Environment for People

People are the major component of communities. Working trees address human needs by improving quality of life, health, comfort, enjoyment, and recreation. Trees and shrubs planted in the rural/urban interface improve water quality and reduce the amount of dust, noise, wind, and blowing snow entering the community.

Strips of densely-planted trees and shrubs significantly reduce the annoyance of city noise. Combining trees and shrubs with land forms, such as earthmounds, can result in reduction by as much as 12 decibels (approximately half)! Furthermore, tree and shrub plantings soften the visual harshness of walls and fences that typically line the urban landscape.


Working trees can earn many times their cost by changing the visual quality and value of a property. Whether it is improving the appearance of commercial property or screening out an undesirable view, a single row of conifers accomplishes multiple objectives. Just think, by strategically planting trees and shrubs, you can have a windbreak, a visual screen, and increase your property value, all at the same time!



National
Agroforestry
Center



This brochure was developed by the National Agroforestry Center (NAC) in cooperation with the following partners in the "Working Trees For Communities" Project: • USDA Natural Resources Conservation Service, Community Assistance and Resource Development Division • US Environmental Protection Agency • National Association of Conservation Districts • National Association of State Foresters • National Arbor Day Foundation • American Forests • International Society of Arboriculture • Urban Resources Partnership • Alliance for Community Trees • National Association of RC&D Councils • National Forest Foundation • Boys & Girls Clubs of America • Habitat for Humanity International • Big Brothers Big Sisters of America.



NAC's Mission: The National Agroforestry Center is a partnership of the USDA Forest Service, Rocky Mountain Station and the USDA Natural Resources Conservation Service. The Center's purpose is to accelerate the development and application of agroforestry technologies to attain more economically, environmentally, and socially sustainable land-use systems. To accomplish its mission, the Center interacts with a national network of cooperators to conduct research, develop technologies and tools, establish demonstrations, and provide useful information to natural resource professionals.

Address: National Agroforestry Center, USDA Forest Service, Rocky Mountain Station / USDA Natural Resources Conservation Service, East Campus - UNL, Lincoln, Nebraska 68583-0822. For a supply of brochures, contact Kim Isaacson, 402-437-5178 ext. 13. For more information on the Center, contact Jerry Bratton, 402-437-5178 ext. 24 or Bruce Wight, ext. 36.

Some working tree practices can be supported by cost-share incentives provided by the federal, state, or local government. Contact your State Forester, local Conservation District, or the Natural Resources Conservation Service (NRCS) for information about the various incentives presently available.

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Working Trees for Wildlife

Agricultural activities often lead to a reduction in the amount or effectiveness of wildlife habitat. Although providing quality habitat for wildlife in agricultural settings may be challenging, agroforestry offers a unique opportunity for landowners. Agroforestry technologies “put trees to work” by combining forestry and agricultural practices to make healthier, more sustainable agricultural systems.

Agroforestry practices such as windbreaks, riparian forest buffers, forest farming, alley cropping, and silvopasture, can protect crops and livestock, conserve natural resources, improve human environments and provide new sources of income. With proper planning, utilizing trees in an agricultural setting can also be an excellent way to create or improve wildlife habitat.

Agroforestry practices are often designed for a single purpose, with the assumption that they will also be adequate for wildlife. Although they usually benefit wildlife, practices often are designed far below their capability to provide the basic wildlife needs of food, water, and cover. Why not design the agroforestry practices to fulfill wildlife habitat needs first, and then incorporate traditional conservation functions as well?



Before beginning a wildlife habitat improvement project, several things need to be considered. If certain wildlife species are desired, habitat requirements of those species should be incorporated into the plan. Soil types, topography, drainage, location of the nearest water source, adjacent land uses, and local climate need to be taken into account. The availability of food is critical, therefore, measures should be taken to provide this for wildlife, especially during the winter

months. Trees and shrubs can provide needed cover for nesting, roosting, loafing, brood rearing, escaping, and protection from the elements.

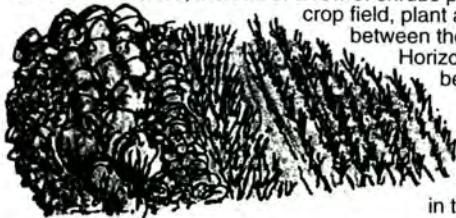
The goal of “working trees” is to protect all natural resources, including wildlife. Planting trees and shrubs, especially native plants, specifically for wildlife provides habitat while improving the health and sustainability of the agricultural system.

Planning for Wildlife . . .

“Working trees” can provide wildlife habitat in the agricultural landscape but landowners must know how to apply these principles to their agroforestry practice design.

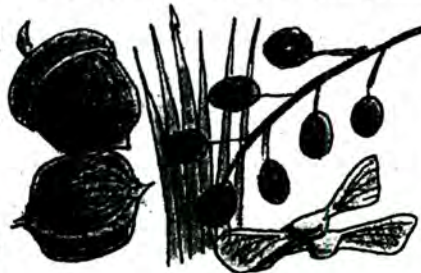
Horizontal Structure

Vegetation chosen for planting should be arranged to provide the greatest width practical and transition smoothly into the adjoining land use. For instance, instead of a row of shrubs placed next to a



crop field, plant a strip of native grass between the shrubs and crops. Horizontal structure can also be improved by using clump plantings under a tree canopy or along the outside edge. Minimize straight lines in the design, if possible.

Reliable Food Sources



The availability of food is critical, especially during winter months when energy needs of birds and animals are greatest. Planting trees and shrubs that keep their fruit during the winter is essential in areas where snow accumulation can make foraging difficult.

Vertical Structure

Vegetation heights should vary from tall trees to medium size trees and shrubs to lower growing grasses and forbs. Vertical structure is most important for birds, as different species use different layers for nesting, roosting, feeding, or loafing.



Placement Within Landscape

Placement of agroforestry practices within the larger landscape, known as juxtaposition, is important in determining habitat value for wildlife. Food, cover and water located in the same vicinity creates optimal habitat. Designs should consider the wildlife species and their normal range of mobility. For example, if the desired species seldom feeds more than 200 yards from escape cover, it does little good to provide cover a half mile from the food.



Width



The width of tree and shrub plantings depends on the agroforestry practice being applied, the wildlife species the landowner wants to attract, and the acreage the landowner wishes to commit to working trees. Proper vertical and horizontal structure benefits most edge-loving wildlife. Increased width along riparian areas provides habitat enhancement for both aquatic and terrestrial species. Generally speaking, “the wider, the better.”

Travel Lanes



The addition of travel lanes can overcome some of the problems of isolated habitat. Woody vegetation can be used to connect several small isolated cover areas within an agricultural landscape, thus increasing the useable space for wildlife. Sometimes, the addition of such travel lanes creates complete wildlife habitat from isolated components that were formerly unusable.

Diversity of Vegetation

The greater variety of plants, the better the chances of providing year around habitat for several wildlife species. This also reduces the possibility of losing all plants to disease, insects, or a catastrophic event. Consider coniferous and deciduous trees and shrubs, fall and spring fruiting varieties, perennial and annual herbaceous vegetation, and a variety of flowering dates. Try to use native plants when possible because wildlife are already familiar with them and these plants are adapted to the local climate.

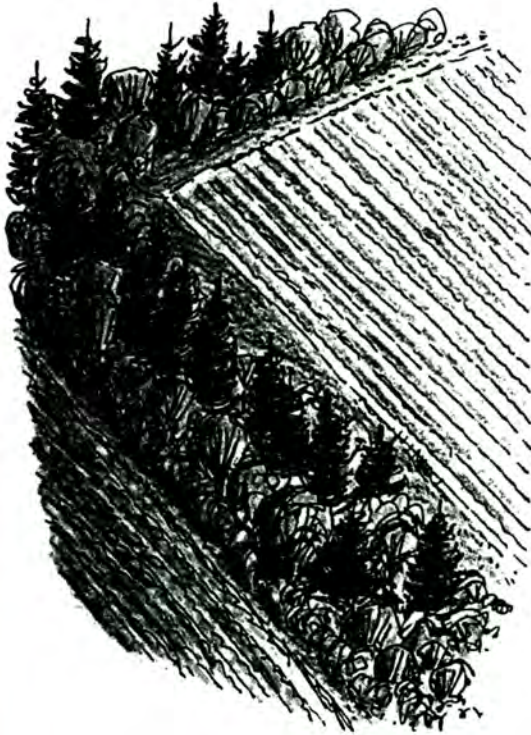


Disturbance

On most sites, disturbance increases the amount and kind of plants available for wildlife. Most sites require disturbance, while it can be detrimental to others. Vegetation can be disturbed naturally by fire, flood, wind, ice, and browsing by wildlife, or managed by disking, thinning, prescribed burning and grazing. When harvesting and thinning, consider leaving standing dead trees as homes for cavity nesters.



Windbreaks



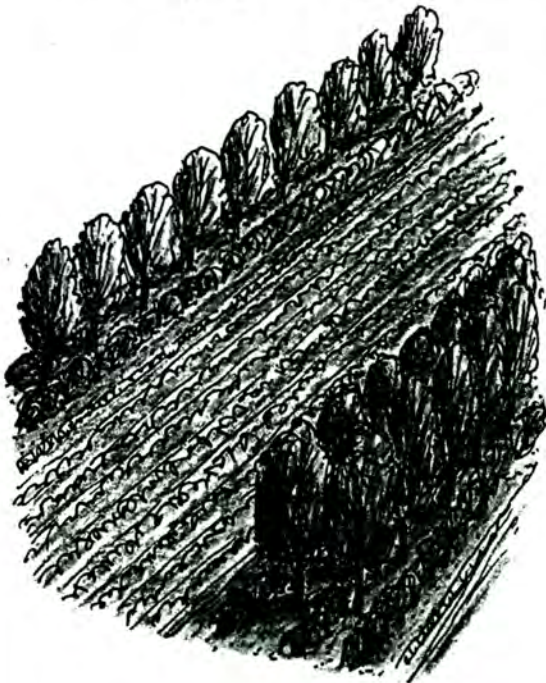
Windbreaks are multiple rows of trees and shrubs planted and managed to protect farmsteads or incorporated as part of a crop or livestock operation to enhance production, protect livestock, and control soil erosion.

When designing a windbreak for wildlife, remember to include plant species and arrangements that give desired wildlife the basic essentials of cover and food (and water, if possible.)

- ✓ Try to connect planted windbreaks to other planted or natural sources of cover, streams, ponds, or windmills. If the windbreak cannot be designed to connect, plant travel lanes to connect to other food, cover or water sources.
- ✓ If drifting snow is a problem, plant a "trip row" of shrubs 50 to 100 feet away on the windward side, to help keep snow out of the windbreak. This will also provide additional low-level cover.
- ✓ Plant food plots alongside the windbreak or leave a few rows of standing crops. Cultivating a strip to let native annual plants grow (some people call them weeds) can be a good source of food and cover.
- ✓ Remember, generally speaking, wider plantings are better. A single-row windbreak is less valuable to wildlife than multiple rows. The ultimate might be 20 rows of trees and shrubs up to 300 feet wide. However, few people are willing to give up this much land or maintain this large of a planting.
- ✓ Try to mix different yet compatible plants in the rows to give a natural "feel" to the windbreak. Or, better yet, plant connected groupings of five to seven trees and shrubs. You'll end up with a block planting that resembles a native woodland.

When these design principles are followed, windbreaks designed for wildlife will also protect crops, homes, livestock, or roads with little or no decrease in protection capability.

Alley Cropping



Alley cropping is growing an agricultural crop simultaneously with a long-term tree crop to provide annual income while the tree crop matures. Fine hardwoods like walnut, oak, ash, and pecan are favored species in alley cropping systems and can potentially provide high-value lumber or veneer logs. Nut crops can be another intermediate product.

Alley cropping systems are designed primarily to grow crops between rows of high value trees until they are harvested or the crops are shaded out. The following modifications will benefit wildlife:

- ✓ Rather than clean till or apply chemicals, use ground covers in the tree row areas that are attractive food/cover sources for wildlife, e.g. Desmodium or clovers are nitrogen-fixing plants that benefit wildlife as well.
- ✓ Plant fruit-bearing shrubs between or adjacent to the trees. Plants with fruit lasting long into the winter are excellent choices.
- ✓ Instead of single tree rows, plant two or three rows of trees between crop rows, creating wider strips of trees between crop alleys. This will add to the cover capability of the planting.
- ✓ With proper planning, the tree rows can be utilized as travel lanes to connect other food, cover, or water sources. The added shrub rows and ground cover will enhance wildlife capacity.
- ✓ A farm operator can leave one to two rows of crop next to the tree rows to provide winter food.

Alley cropping is an intensively managed system that benefits wildlife. With a little ingenuity and foresight, adding native plant components can increase the attraction of desired wildlife species.

Planning your Practices to Include *Wildlife*

All wildlife require food, water, and places for protection within reasonable proximity to each other. With awareness of these basic needs, you can plan and implement practices that will attract wildlife and provide them with a suitable home.

Water

Farm ponds and wetlands provide life-giving water for birds and animals. Agroforestry practices can provide travel lanes for access to water sources.



Cover

Trees, shrubs, and ground cover provide protection from predators and shelter from winter cold and summer heat.

Food

Seeds, berries, nuts, and fruits from trees or shrubs can provide food for many wildlife species.

Silvopasture

Silvopasture combines trees with forage and livestock production. The trees are managed for high-value sawlogs and at the same time provide shade and shelter for livestock and forage, reducing stress and sometimes increasing forage production.



In silvopastoral systems, the forest understory is manipulated to meet forage needs for livestock and are typically less diverse than the natural forest understory or natural ecosystem. To maximize the benefits to wildlife, the needs of the wildlife species desired must also be considered when designing the system.

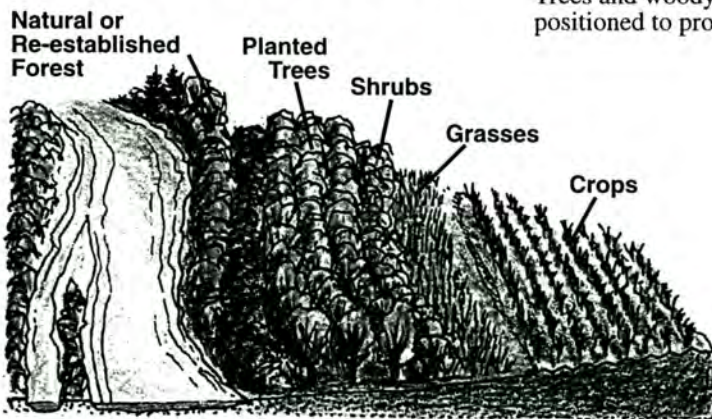
- ✓ **Wildlife allocation of resources:** The amount and type of understory needed for wildlife must be determined. These resources should be protected for use by the wildlife species desired.
- ✓ **Canopy management:** The amount of light penetration through the canopy must be regulated to allow for the production of forage and other understory plants. Canopy management can also allow a percentage of the canopy tree species to be trees that meet the needs of wildlife rather than the timber crop. In this way canopy management will influence both density and species diversity.
- ✓ **Grazing management:** Manipulation of the understory is done principally through grazing management. The timing, intensity, and duration of grazing to protect the resources allocated for wildlife become key elements in the grazing management plan. Prescribed grazing, prescribed burning, rotational systems, and rest periods are elements of the grazing plan that may be required to manage the understory to achieve wildlife objectives.

It must be recognized that silvopastoral systems generally meet the habitat requirements of specialized wildlife species, due to the constraints of a silvopasture.

Riparian Forest Buffers

Riparian Forest Buffers are natural or re-established forests along waterways, made up of tree, shrub, and grass plantings designed to buffer and filter non-point source pollution of waterways by runoff from adjacent land. They also reduce bank erosion, protect aquatic environments, enhance wildlife and increase biodiversity.

Trees and woody vegetation near streams, wetlands, or ponds are uniquely positioned to provide habitat for both terrestrial and aquatic wildlife.



- ✓ As with other agroforestry practices designed to encourage wildlife, a diversity of plant species will provide the best habitat for a large number of wildlife species.
- ✓ Native plant species should be encouraged, as wildlife are familiar with them and are adapted to their use.
- ✓ Tall streamside trees with spreading canopies provide shade, food, and in-stream woody structure for fish species.
- ✓ The width of the buffer and the plant species used will depend on the type of wildlife desired.

What About Forest Farming?

In forest farming, high-value specialty crops are cultivated under the protection of a forest canopy that has been modified to provide the correct shade level. Crops like ginseng, shiitake mushrooms, and decorative ferns are sold for medicinal, culinary, or ornamental uses. Forest farming provides income while high-value trees are being grown for wood products.

According to forest farming experts, small rodents and certain birds tend to be "problem" wildlife. By providing a habitat that attracts birds and animals that prey on these pests may benefit both the farmer and preying species. Species that could help control

pest populations in a forest farming area include: fox, coyote, hawk, owl, shrew, bat, mink, weasel, and many beneficial insects.

Additionally, planting good food sources and cover nearby, specifically designed to attract unwanted wildlife may benefit both farmer and wildlife, giving birds, animals, and insects an attractive habitat that may distract them from the forest farming planting.

Depending on the understory crop, precautions should be taken to protect it from damaging wildlife like turkey and deer as well as small rodents. Different fencing arrangements, including below-ground fences to block burrowing rodents and electric fences are typical pest management practices.

Other Considerations About Attracting Wildlife



Economics: Attracting wildlife to your agroforestry practice could be a way to provide income. There is potential for fee-hunting of game animals as well as opportunities to charge bird-watchers for viewing wildlife on your land.

Educational Value: Many agroforestry plantings intended to protect and provide income, can also serve as outdoor classrooms for area school children. Students can learn to identify animals and plants as they learn to value the importance of balanced human and environmental interactions.

Pollination: Some agroforestry practices can improve beneficial insect pollination. A properly designed windbreak will increase bee pollination in fruit orchards.

Wildlife Hazards: It is easy to forget that it isn't always a good idea to attract wildlife to some areas. For example, when considering an agroforestry planting near an airport, it is best to avoid plants that will attract birds, due to safety reasons. Attracting deer to an area near a city or major highway is not safe for animals or humans.

Be Considerate: It is a good idea to talk with your neighbors about your plans to attract wildlife. If the animals or birds must travel through your neighbors' property to get to the habitat, they may not appreciate the intrusion, especially if they perceive the wildlife as causing damage.

Pest Control: Creating habitat for bats and certain birds that consume forest and agricultural insects could reduce the need for costly insecticides.

Want More Information?

Local Assistance

There are technical specialists in your area that can assist you with the planning, design, application, and maintenance of your Working Trees for Wildlife practice. Contact your nearest state wildlife agency, state forestry agency, USDA Natural Resources Conservation Service District Office, County Extension Office, or Soil and Water Conservation District.

National Assistance

Contact the USDA National Agroforestry Center (NAC), East Campus–UNL, Lincoln, NE 68583-0822. Telephone (402) 437-5178; or the NRCS – *Watershed Science Institute*, c/o Dept. of Soil Science, PO Box 7619, Raleigh, NC 27695-7619. Telephone (919) 515-4181; or the NRCS - *Wildlife Habitat Management Institute*, 100 Webster Circle, Suite 3, Madison, MS 39110. Telephone (601) 965-5888. Visit the NAC web site at www.unl.edu/nac.

This brochure was developed by the National Agroforestry Center (NAC) in cooperation with the Natural Resources Conservation Service, Watershed Science Institute and Wildlife Habitat Management Institute.



A partnership of the Forest Service and Natural Resources Conservation Service

NAC's Mission: The National Agroforestry Center is a partnership of the USDA Forest Service, Research and Development (Rocky Mountain Research Station) and State & Private Forestry and the USDA Natural Resources Conservation Service. The Center's purpose is to accelerate the development and application of agroforestry technologies to attain more economically, environmentally, and socially sustainable land-use systems. To accomplish its mission, the Center interacts with a national network of cooperators to conduct research, develop technologies and tools, establish demonstrations, and provide useful information to natural resource professionals.

Address: USDA National Agroforestry Center, East Campus - UNL, Lincoln, Nebraska 68583-0822. For a supply of brochures, contact Nancy Hammond, nhammond/rmrs_lincoln@fs.fed.us. For more information on the Center, contact Jerry Bratton, 402-437-5178 ext. 24 or Bruce Wight, ext. 36.

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Working Trees for Treating Waste

A natural alternative for using nutrients from livestock and farm operations, municipalities, and industries.

Excess nutrients and other chemicals from agricultural, municipal, and industrial operations impact surface and ground water quality. Plant science and engineering have combined forces forming a natural partnership between treating waste and growing trees. The technology of putting fast growing trees to work recycling nutrients from solid and liquid waste is available and increasingly being adopted. This waste treatment approach has emerged as an alternative to other more expensive treatment technologies, such as constructed treatment plants.

What to do? Turn waste into a product by applying it to trees. This waste is actually a nutrient and water source for trees. Trees absorb excess nutrients and breakdown harmful chemicals, providing a natural cleaning process for soil and water resources. A major advantage is that trees can be used for a variety of products generating extra income that can potentially diversify the rural economy. Tree plantings also provide visual, noise, and odor buffers, while directly aiding in reducing atmospheric carbon dioxide by storing carbon in the wood and soil.



These hybrid poplars are nourished by wastewater from an industrial plant.

The increase in atmospheric carbon dioxide levels has become a worldwide concern. Trees use carbon dioxide for growth and store large amounts of carbon in wood tissue, both above and below ground.

Is it right for your operation? This publication addresses the concept of using trees to treat waste and also some key management questions to ask yourself before trees are put to work as your natural solution to water pollution.

Waste from one species can benefit another.

Trees require sunlight, carbon dioxide, water, and nutrients to grow. Waste from municipal sewage treatment plants, livestock operations, irrigated farming operations, and industrial processing contains nutrients that can be used by trees. Trees can often be substituted for more costly engineered practices.

Of the nutrients commonly found in these wastes, large amounts of nitrogen, phosphorus, potassium, magnesium, calcium, and sulphur are needed by trees in large quantities.

The nutrients taken up are distributed throughout cells in the tree, with the highest concentration ending up in the leaves. The leaves conduct photosynthesis, the process by which sunlight is used to convert carbon dioxide into sugars that accumulate primarily in the wood. Year after year, as the tree grows, nutrients are stored in the wood of branches, stems, and roots. Rapidly growing trees provide a better sink for these wastes than older trees.

In addition to the benefit of using the nutrients from wastes, the trees can be harvested after six to 15 years, depending on species and climate. Products derived from the wood can provide a substantial cash return to the landowner or operator.



Fast growing trees, such as hybrid poplars, can take up large amounts of nutrients, making them ideal for treating wastes.

Which trees?

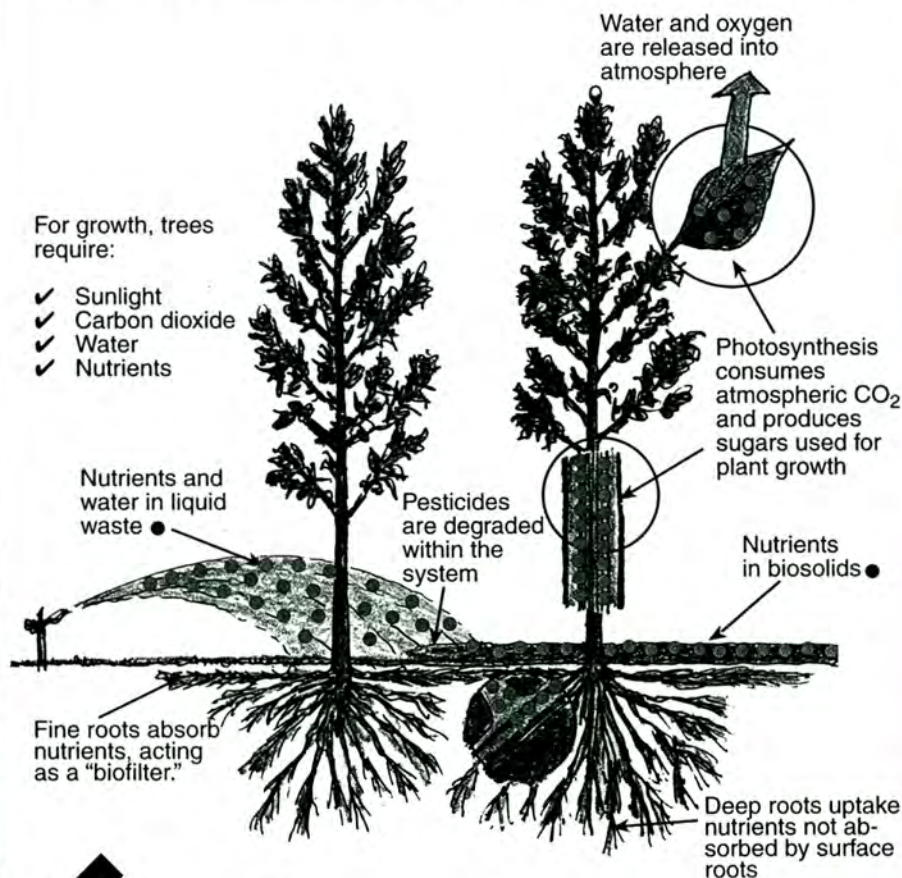
Success in using trees to remove wastes depends on the species and the length of the growing season. Trees that are well-suited for treating wastes include several species with rapid growth rates, which allow more nutrients to be absorbed than trees that grow more slowly. Extensive and deep root systems are also desirable, enabling nutrients to be effectively filtered out and keeping them from moving into ground water.

Fast-growing tree species that can be planted for nutrient uptake include:

- **Hybrid poplar** (grows in many regions of the U.S.)
- **Hybrid willow** (Northeast U.S.)
- **Sweetgum, sycamore, and yellow poplar** (Mid-Atlantic and Southeast U.S.)
- **Loblolly pine** (Southeast U.S.)

Both hybrid poplar and hybrid willow are especially attractive because of their ease of regeneration.

When selecting trees for eventual harvesting, check with local mills on the potential market for wood products.



← Open to learn more

On Agricultural Land . . .



Irrigation Tailwater

Excess irrigation water applied to crops contains high levels of nutrients (nitrogen, phosphorous, potassium), pesticides, and other compounds. Unless treated, this contaminated water will eventually reach surface and ground water. Trees can be planted to intercept this drainage water, or the water can be diverted, stored in a pond, and then applied to tree plantations. The trees can recycle this water, use many excess nutrients, and break down hazardous pesticides and other compounds. Tree species selection, irrigation water management, and soil and water quality monitoring are important planning elements to assure tree plantations accomplish their multiple purposes.



Animal Waste

Livestock operations, such as dairies, hog confinements, cattle feedlots, and poultry barns, generate both solid and liquid waste. Applying this waste to tree plantations is recognized as a treatment alternative throughout the United States. These tree plantations can also serve as a visual buffer to livestock operations and can reduce the drift of odors. Tree species need to be tolerant of high salt and sodium levels. Monitoring soil and ground water nutrient and pathogen levels will be important to protect water quality, where high levels of nutrients are applied to limited acreage (maximum loading). Treat the greatest number of acres possible to achieve a return on your investment from the harvest of wood products. It is important to use qualified technical assistance, conservation planning, and obtain appropriate permits.

Development and Site Management

Productive tree plantations used to recycle waste require close attention to tree establishment, stand management, and irrigation system design and monitoring. Since these working tree plantations are dual purpose plantings, it is important that adequate tree growth occurs to both sufficiently use the waste and produce a wood product. Below are some key planning considerations:

Soils/site — The best sites have deep loamy soil for good root development, as highly porous soil can contaminate ground water. Suitability of soils/site depends on tree species selected. Other considerations include slope, proximity to surface water, and proximity to people.

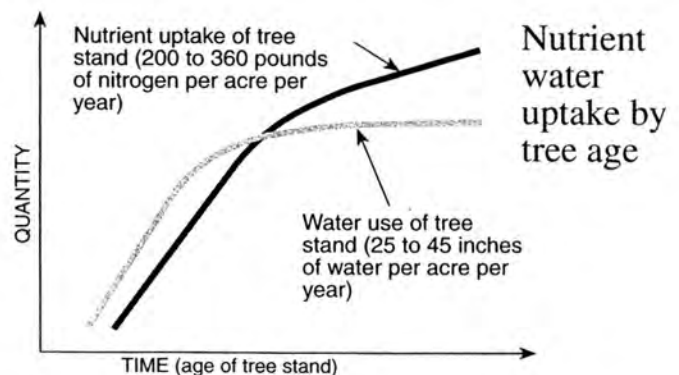
Tree species selection — Trees should be suited to the soil and have growth characteristics conducive to high nutrient uptake. Wood product qualities can be important selection criteria.

Tree spacing — Spacing affects future tree size and wood product potential as well as how rapidly the canopy will close.

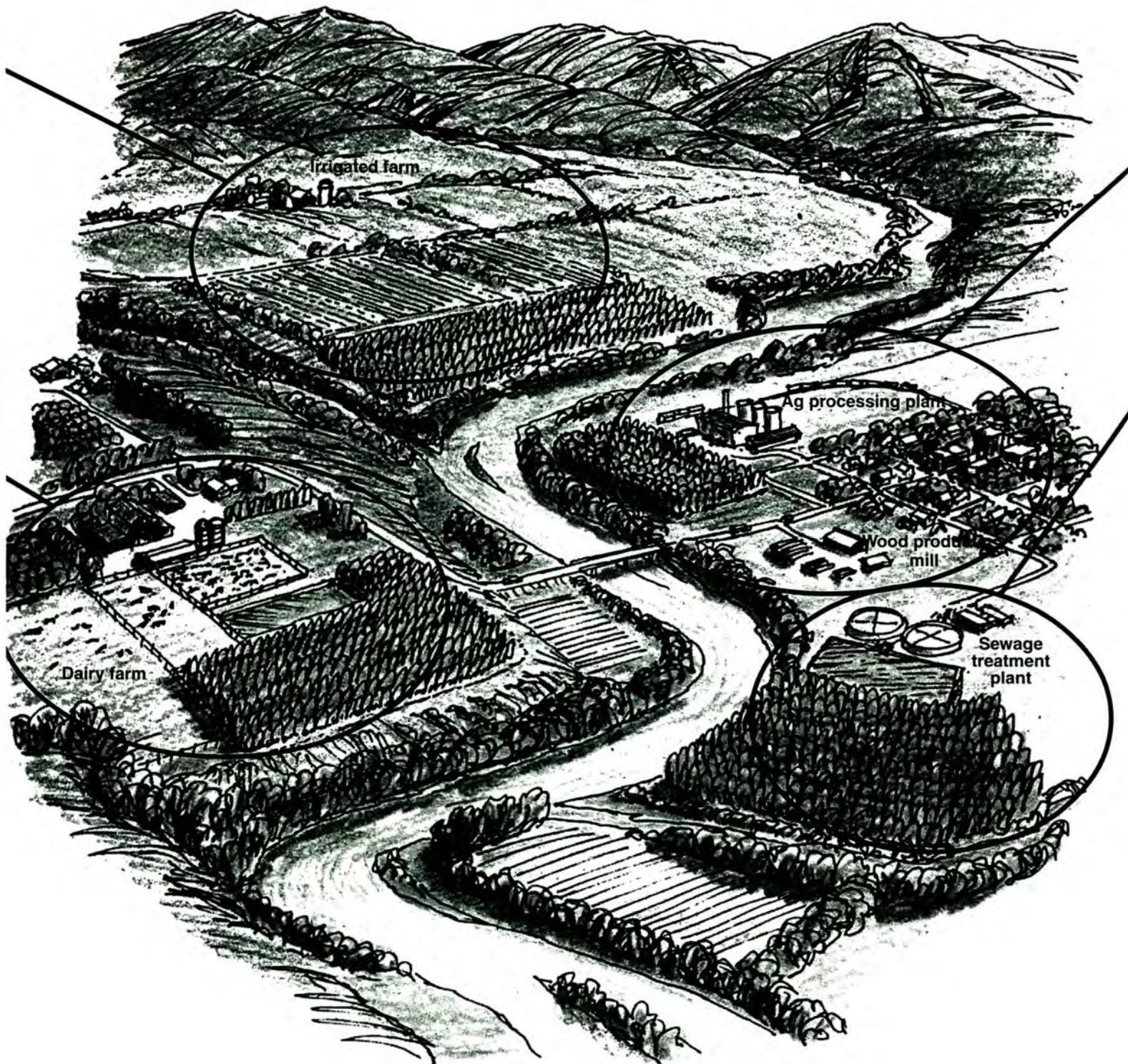
Stand establishment — Proper site preparation, planting, and maintenance are essential to maximize tree growth. Three to five years of weed control are needed to establish trees, depending on species and initial spacing.

Management — The tree plantation should be protected from animals (livestock, deer, mice/voles) during establishment. Eventually, the trees may need to be thinned and pruned if high quality sawlogs are an intended product.

Irrigation system design/monitoring — The quantity and quality of waste being applied is important. The delivery system must efficiently apply the waste to maximize waste/nutrient uptake. Monitoring nutrient loading rates and water requirements of the trees is important for sustainable tree growth while protecting ground water quality.



Putting trees to work on waste and waste water. . .



... In Communities

Municipal and Industrial Waste

Management of municipal and industrial effluent and biosolids is becoming increasingly challenged, as stricter regulations to improve water quality are imposed within our Nation's rivers, lakes, and ground water. The beneficial use of municipal and industrial wastes in tree plantations is one of the innovative approaches being developed. The trees use nutrients in the effluent and biosolids that would otherwise contribute to the problem of nutrient loading in the streams. In addition, the plantations enhance landscape aesthetics, and generate income from the production of wood products.



Benefits and Opportunities



Economic—A direct economic benefit is obtained from the sale of wood products. Wood products can be in the form of chips, fuelwood, mulch, veneer, lumber, paneling, molding, and specialty products. This helps offset the cost of treatment, making it less expensive than most structural treatment alternatives.

Aesthetic—The visual environment can be improved by providing a buffer to adjacent land uses. Also, the tree plantation can help reduce the drifting of odors to neighbors and communities.

Environmental—Working trees protect water quality and safeguard clean water supplies for communities, fish, wildlife, recreation, and people. Tree plantations provide wildlife habitat for a variety of birds and animals. The tree canopy catches dust particles and air pollutants, thereby improving air quality. Trees store carbon dioxide in their wood as they grow, and can contribute greatly to reducing atmospheric carbon dioxide levels. Carbon credits, whose value will be market based, may be sold to industries and utilities. The amount of carbon dioxide stored in a tree plantation will depend on the species, growth rate, age, and management.



Will it work for you?

Planning considerations

In considering whether or not to use trees to treat waste in your particular situation, answer the following questions. Technical assistance is available to accurately determine some of the information.

- Do you have available land with adequate soils for tree growth?
- What is the composition and amount of the waste material?
 - Quantity (volume and/or flow rate)
 - Quality (concentration of nutrients and heavy metals)
 - Form (liquid or solid)
- Does the need for dealing with these materials coincide with the growing season? If not, is there adequate storage for waste accumulated during the winter months?
- Are you willing to commit time and resources for the planning, design, installation, and maintenance of the trees?
- What is the desired end use for the trees? (timber, aesthetics, wood chips)
 - Acreage (optimal size needed for increased profits)
 - Cooperatives (harvesting and marketing advantages)
 - Products mix

The harvesting of animal waste requires special consideration and should be part of a comprehensive nutrient management plan (CNMP). For further assistance contact your local Natural Resources Conservation Service (NRCS) field office.

Where to get more information

Developing a successful program for using trees to treat waste is not a do-it-yourself project. Specialists are available in both the public and private sectors. For more information at the national level, contact the **USDA, National Agroforestry Center (NAC)**, East Campus – UNL, Lincoln, NE 68583-0822. Telephone (402) 437-5178, or visit NAC's web site at www.unl.edu/nac.

For local assistance, contact your nearest USDA, NRCS office, County Extension Office, Soil and Water Conservation District, State Forestry agency, state water quality agency, state land grant university, and/or reputable consultants working in this field.



A partnership of the
Forest Service and
Natural Resources
Conservation Service

This brochure was developed by the USDA National Agroforestry Center (NAC) in cooperation with Washington State University, The Upper Columbia Resource Conservation and Development Council (RC&D), and Greenwood Resources, Inc.

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Preserving the Health of the Land America's Conservation

USDA National Summit on Private Land Conservation Major USDA Natural Resource Programs

The U.S. Department of Agriculture (USDA) offers landowners financial, technical, and educational assistance to implement conservation practices on privately owned land. Incentives offered by USDA promote conservation practices that protect and conserve valuable agriculture land for future generations.

Agroforestry Technical Assistance

Provides for transfer of agroforestry technology information and technical assistance to landowners and communities through the Agroforestry Center. In FY-1999, the primary focus was implementation of practices in riparian areas.

Conservation of Private Grazing Land Initiative (CPGL)

The program ensures that technical, educational, and related assistance is provided to those who own private grazing lands. In FY-1999, assistance was provided to 20 million acres.

Conservation Reserve Program (CRP)

CRP encourages farmers to convert highly erodible cropland or other environmentally sensitive acreage to vegetative cover. Farmers receive an annual rental payment for the term of the multi-year contract. Currently, 31.5 million acres are enrolled in CRP, and approximately 1 million acres have been enrolled under continuous CRP. Eight states (DE, IL, MD, MN, NC, NY, OR, WA) have signed CREP agreements with USDA, and two (PA, VA) additional agreements are pending. Eight states (AK, CA, MI, MO, NE, OH, UT, WY) have, or are in the process of submitting CREP proposals.

Conservation Technical Assistance (CTA)

The purpose of the program is to assist land-users, communities, units of state and local government, and other federal agencies in planning and implementing conservation systems. In FY-1999, 1.4 million producers were provided assistance.

Economic Action Program

This program provides technical and financial assistance to communities dependent on forest resources. In FY-1999, financial and technical assistance was provided to more than 2,500 communities.

Emergency Conservation Program (ECP)

ECP provides financial assistance to farmers and ranchers for the restoration of farmlands on which normal farming operations have been impeded by natural disasters. ECP also funds emergency water conservation measures during periods of severe drought.

Emergency Watershed Protection Program (EWP)

EWP is designed to reduce threats to life and property in the wake of natural disasters. It provides technical and cost sharing assistance, and provides for purchase of floodplain easements.

Environmental Quality Incentives Program (EQIP)

EQIP works in locally identified conservation priority areas where significant natural resource problems exist. High priority is given to areas where state and local governments offer financial, technical, or educational assistance, and to areas where agricultural improvements will help meet water quality objectives. In FY-1999, 18,000 new contracts were signed for a total of \$174,000,000.

Farmland Protection Program (FPP)

FPP provides funds to help purchase and keep productive farmland in use. Working through existing programs, USDA joins with state, tribal, or local governments to acquire conservation easements or other interests from landowners. USDA provides up to fifty percent of the costs of purchasing the easements. To date, 41,544 acres are enrolled.

Forest Legacy Program (FLP)

This is a voluntary program conducted in partnership with the states to protect privately owned environmentally sensitive forestlands. The program focuses on the acquisition of conservation easements. As of FY-1999, 17 states (CA, CT, DE, HI, IL, IN, MA, MD, ME, NH, NJ, NY, RI, UT, VT, WA, PR) are in the program, five states (MN, MT, NC, SC, TN) completed an Assessment of Need, and eight states (GA, IA, NE, NM, OH, PA, VA, WI) are in the planning phase.

Forest Stewardship Program

This program supports preparation of Forest Stewardship Plans for non-industrial private forest (NIPF) lands. As of FY-1999 plans have been prepared for 195,735 owners for 20,040,741 acres. This represents 1.9 percent and 5.7 percent of all NIPF owners and acres respectively.

Forestry Incentives Program (FIP)

FIP is designed to benefit the environment while meeting future demands for wood products. In FY-1999, \$5,043,641 was disbursed to 5,128 participants who completed FIP practices on 106,509 acres. Tree planting has occurred on 82,172 acres, timber stand improvement on 19,832 acres, and site preparation for natural regeneration on 4,505 acres.

Health Protection Program

This program provides for forest insect and disease epidemics surveys and professional and financial assistance for forest insect and disease management on National Forests, land managed by the Department of Defense and the Department of the Interior, other federal land, and tribal land. In FY-1999, more than 500 million acres were surveyed and evaluated for insects and disease and 175,000 acres were treated for infestation.

McIntire Stennis Forestry Research Program and the Renewable Resource Extension Program

These two programs combine to provide private and other nonfederal forest owners with comprehensive guidelines for better investment and harvesting decisions.

National Cooperative Soil Survey Program (NCSS)

NCSS is a partnership, led by NRCS, of federal land management agencies, state agricultural experiment stations, and state and local governments that provide soil survey information. Currently, 94 percent of private lands have been mapped.

Plant Materials Program

The program develops plants for conservation uses that help solve natural resource problems. To date, some 450 plants have been developed.

Resource Conservation and Development Program (RC&D)

RC&D accelerates conservation, development, and use of natural resources, improves local economic activity, and enhances the environment in authorized RC&D areas. Currently, there are 315 RC&D areas representing all 50 states and U.S. territories.

Small Watershed Program

The Small Watershed Program uses local government sponsors to help solve natural resource and related economic problems on a watershed basis. Currently there are 1,600 active projects.

Snow Survey and Water Supply Forecasting

The program provides western states and Alaska with future water supply information by collecting and analyzing data on snowpack depth and water equivalency at more than 1,200 mountain sites.

Urban and Community Forestry Program

This program helps state forestry agencies, local tribal governments, and the private sector improve the management of trees and forests in urban areas and community settings. In FY-1999, the program assisted more than 10,000 communities, provided more than 1.5 million hours of training, which generated two million hours of volunteer assistance.

Urban Resources Partnership

Established in 1994, URP is an interagency cooperative federal partnership to develop and implement a coordinated approach to helping urban communities improve the management and conservation of their natural resources. Partnership locations are Atlanta, Boston, Buffalo, Chicago, Denver, East St. Louis, Las Vegas, Los Angeles, New York, Philadelphia, San Francisco, Seattle, and South Florida.

Watershed Surveys and Planning

The program assists federal, state, and local agencies and tribal governments to protect watersheds from damage by erosion, floodwater, and sediment and to conserve and develop water and land resources.

Wetlands Reserve Program (WRP)

WRP is a voluntary program designed to restore wetlands. Landowners who participate can establish conservation easements of either permanent or 30-year duration or can enter into restoration cost-share agreements where no easement is involved. In all instances, landowners continue to control access to their land. To date, 785,024 acres have been enrolled.

Wildlife Habitat Incentives Program (WHIP)

WHIP provides financial incentives to develop habitat for fish and wildlife on private lands. Cost-share agreements for wildlife habitat development generally last a minimum of five years. To date, 8,455 contracts for approximately 1.4 million acres have been put in place.

For more information on USDA programs visit our website at www.usda.gov

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Fact Sheet

Conservation Provisions

United States Department of Agriculture

Conservation of Private Grazing Land

Introduction

The Nation depends on its 642 million acres of private grazing lands. They produce food and fiber. They provide aquifer recharge, streamflow, and flood protection. They offer wildlife habitat and recreational opportunities. To people in rural areas, private grazing lands are the economic lifeblood. And the environmental benefits that healthy private grazing lands provide make life better for us all.

How Conservation of Private Grazing Land Will Work

Conservation of Private Grazing Land was authorized by the conservation provisions of the 1996 Farm Bill. It will ensure that technical, educational, and related assistance is provided to those who own private grazing lands. This assistance will offer opportunities for:

- Better grazing land management;
- Protecting soil from erosive wind and water;
- Using more energy-efficient ways to produce food and fiber;
- Conserving water;

- Providing habitat for wildlife;
- Sustaining forage and grazing plants;
- Using plants to sequester greenhouse gasses and increase soil organic matter; and
- Using grazing lands as a source of biomass energy and raw materials for industrial products.

Conservation of Private Grazing Land is administered by the U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS).

Funding

For Conservation of Private Grazing Lands, \$10 million has been made available for fiscal year 1997 from conservation technical assistance funds. Legislation states that up to \$60 million can be appropriated for technical assistance for grazing lands.

For More Information

Your USDA Service Center or local conservation district can provide more information. The USDA Service Center is listed in the telephone book under U.S. Department of Agriculture. Information is also available on NRCS' World Wide Web site: <http://www.nrcs.usda.gov>.



Conservation Reserve Program

Authorization

The Food Security Act of 1985, as amended, authorizes the CRP, which is implemented through the Commodity Credit Corporation (CCC). The program is also governed by the regulations published in 7CFR part 1410.

Overview

The CRP is a voluntary program that offers annual rental payments, incentive payments for certain activities, and cost-share assistance to establish approved cover on eligible cropland.

The program encourages farmers to plant long-term resource-conserving covers to improve soil, water, and wildlife resources. CCC makes available assistance in an amount equal to not more than 50 percent of the participant's costs in establishing approved practices. Contract duration is between 10 and 15 years.

The CRP is administered by the CCC through the Farm Service Agency (FSA). The Natural Resources Conservation Service, Cooperative State Research and Education Extension Service, state forestry agencies, and local soil and water conservation districts provide program support.

Eligible Land

To be eligible for placement in the CRP, land must be:

1. Cropland that is planted or considered planted to an agricultural commodity 2 of the 5 most recent crop years (including field margins), which is also physically and legally capable of being planted in a normal manner to an agricultural commodity; or
2. Certain marginal pastureland enrolled in the Water Bank Program.

Additional Requirements for Cropland

In addition to the eligible land requirements, cropland must:

1. Have an Erosion Index (EI) of 8 or higher or be considered highly erodible land according to the conservation compliance provisions (redefined fields must have a weighted average EI of 8 or higher);
2. Be considered a cropped wetland;
3. Be devoted to any of a number of highly beneficial environmental practices, such as filter strips, riparian buffers, grass waterways, shelter belts, well-head protection areas, and other similar practices;
4. Be subject to scour erosion;
5. Be located in a national or state CRP conservation priority area; or
6. Be cropland associated with or surrounding non-cropped wetlands.

Ranking Criteria

Offers for CRP contracts are ranked according to the Environmental Benefits Index (EBI).

The Natural Resources Conservation Service collects data for each of the EBI factors, based upon the relative environmental benefits for the land offered. Each eligible offer is ranked in comparison to all others and selections made from that ranking.

EBI factors include:

- Wildlife habitat benefits resulting from covers on contract acreage;
- Water quality benefits from reduced erosion, runoff, and leaching;
- On-farm benefits of reduced erosion;
- Likely long-term benefits of reduced erosion;
- Air quality benefits from reduced wind erosion;
- Benefits of enrollment in conservation priority areas where enrollment would contribute to the improvement of identified adverse water quality, wildlife habitat, or air quality; and
- Cost.

Producer Eligibility Requirements

A producer must have owned or operated the land for at least 12 months prior to the close of the sign-up period, unless:

- The new owner acquired the land as a result of death of the previous owner;
- The only ownership change occurred due to foreclosure where the owner exercised a timely right of redemption in accordance with State law; or
- The circumstances of the acquisition present adequate assurance to CCC that the new owner did not acquire the land for the purpose of placing it in the CRP.

Rental Rates

The CCC bases rental rates on the relative productivity of soils within each county and the average of the past 3 years of local dryland cash rent or the cash-rent equivalent.

The maximum CRP rental rate for each offer is calculated in advance of enrollment. Producers may offer land at that rate or may offer a lower rental rate to increase the likelihood that their offer will be accepted.

In addition, CCC offers additional financial incentives of up to 20 percent of the annual payment for certain continuous sign-up practices.

Other Payments

The CCC encourages restoration of wetlands by offering a onetime incentive payment equal to 25 percent of the costs incurred. This is in addition to the 50-percent cost share provided to establish approved cover.

Continuous Sign-Up

Eligible acreage devoted to certain special conservation practices, such as riparian buffers, filter strips, grassed waterways, shelter belts, living snow fences, contour grass strips, salt tolerant vegetation, and shallow water areas for wildlife, may be enrolled at any time under the CCC's continuous sign-up and is not subject to competitive bidding. *(See FSA FACT Sheet: Continuous Sign-Up for High-Priority Practices for further details.)*

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A New Partnership for Environmental Progress

The Conservation Reserve Enhancement Program (CREP)

*Farmers, States and the Federal Government—
working together to protect our soil, water, and wildlife*

“This new initiative reflects the Administration’s commitment to voluntary, cost-effective conservation programs.”

Vice President Al Gore

“CREP gives the taxpayer the most bang for the environmental buck, and farmers real help in their conservation efforts.”

Secretary of Agriculture
Dan Glickman



CREP is:

- A flexible, **cost-effective** way to address many rural environmental problems;
- A **voluntary, cooperative** environmental improvement program;
- A **partnership** between farmers and ranchers, States, and the Federal Government;
- Part of the **largest and most effective** environmental improvement program in the United States today!

CREP

- **Targets** State and Federal funds to achieve **shared** environmental goals of National and State significance;
- Uses **incentives** to encourage farmers to voluntarily protect soil, water, and wildlife resources;
- Uses **effective, economical methods** to control water runoff, chemical and organic contamination, sedimentation, and soil erosion;
- **Encourages** the enhancement of habitat for threatened wildlife species;
- **Beautifies** rural areas by planting ground cover, trees, and other vegetation;
- **Improves** soil, water and air quality.

The *CREP* is part of the *Conservation Reserve Program* and is administered by the U. S. Department of Agriculture’s Farm Service Agency. This program shields millions of acres of American topsoil from erosion by encouraging the planting of protective vegetation. By reducing wind erosion as well as runoff and sedimentation, it also protects air and groundwater quality and helps improve countless lakes, rivers, ponds, streams, and other bodies of water.

Now State governments across the Nation have the opportunity to participate in this ground-breaking environmental improvement effort. USDA provides incentives to agricultural producers to participate, while State governments contribute specialized local knowledge, technical help, and financial assistance. The result is an environmental enhancement effort tailored to the specific environmental needs of each state.



Conservation Reserve Program

Continuous Signup Enhancements

Authorization

The Food Security Act of 1985, as amended, authorizes the Conservation Reserve Program (CRP), which is implemented through the Department of Agriculture's (USDA) Commodity Credit Corporation (CCC) by the Farm Service Agency (FSA).

Overview

CRP is a voluntary program that offers annual rental payments and cost-share assistance to establish long-term resource-conserving covers on eligible land. CCC makes annual rental payments based on the agriculture rental value of the land and provides cost-share assistance in an amount equal to not more than 50 percent of the participant's costs in establishing approved practices. The durations of contracts are from 10 to 15 years.

Continuous CRP Signup

Continuous signup provides management flexibility to farmers and ranchers to implement certain high-priority conservation practices on eligible land.

Offers are automatically accepted provided the acreage and producer meet certain eligibility requirements. The per-acre annual rental rate may not exceed CCC's maximum

payment amount. While acceptance is not determined by a competitive offer process, producers may elect to receive an amount less than the maximum payment rate.

Additional Incentives Offered

Additional incentives are being offered to encourage producers to participate in the CRP continuous signup.

Signup

Producers offering eligible land at their local FSA office for the continuous CRP signup may be eligible for certain enhancements.

Key Provisions

Key provisions of the continuous signup enhancements include:

- An up-front CRP Signing Incentive Payment (CRP-SIP) of \$100 to \$150 per acre (depending on contract length) will be provided to eligible participants who enroll selected practices. This one-time payment will be made after the contract is approved and all payment eligibility criteria are met.
- A Practice Incentive Payment (PIP) equal to 40 percent of the eligible installation costs will be

provided to eligible participants enrolling certain practices. This one-time payment will be issued after the practice is installed, eligible costs are verified, and other payment eligibility criteria are met.

- New rental rates have been established for certain marginal pastureland to better reflect the value of such lands to farmers and ranchers.
- The CRP-SIP and PIP funding are limited up to \$100 million in FY 2000 and \$125 million in FY's 2001 and 2002.

Eligible Land and Practices

To be eligible under continuous signup, land must first meet the basic CRP eligibility requirements. Acceptable land is:

- (1) Cropland that was planted or considered planted to an agricultural commodity 2 of the 5 most recent crop years (including field margins), which is also physically and legally capable of being planted in a normal manner to an agricultural commodity; or
- (2) Marginal pastureland that is suitable for use as a riparian buffer to be planted to trees.

Fact Sheet

Conservation Reserve Program Continuous Signup Enhancements

The acreage must also be determined by USDA's Natural Resources Conservation Service (NRCS) to be eligible and suitable for any of the following practices:

- Riparian buffers;
- Filter strips;
- Grassed waterways;
- Shelter belts;
- Field windbreaks; and
- Living snow fences.

Producer Eligibility Requirement

If a tenant, the producer must be a participant with an eligible owner or operator.

Rental Rates

CCC bases rental rates on the average value of dryland cash rent or the cash rent equivalent for the past 3 years and adjusts rates to reflect the relative productivity of soils within each county. The maximum CRP rental rate is calculated in advance of enrollment.

In addition, CCC offers additional financial incentives of up to 20 percent of the soil rental rate for field windbreaks, grass waterways, filter strips, and riparian buffers. An additional 10 percent may be added to the soil rental rate for land

located within EPA-designated wellhead protection areas. A per-acre payment rate may also be added for maintenance of eligible practices.

Offers for rents greater than the maximum rental rate are not considered, and the maximum rental rate, as a matter of general applicability, is not appealable. Only determinations by USDA officials regarding soil type and related soil type acreage may be appealed.

Cost-Share Payments

In addition to the payments described above, CCC will pay up to 50 percent of the eligible cost of establishing a permanent cover.

Contract Effective Date

The effective date of the CRP contract is the first day of the month following the month of approval. In certain circumstances, producers may defer the effective date for up to 6 months.

If the acreage is currently under CRP contract and is within 1 year of the scheduled expiration date, the effective date is the October 1 following the expiration date.

Length of Contracts

Contracts are for no less than 10 and no more than 15 years in duration.

Cooperating Agencies

The CRP is administered by USDA's FSA with assistance from NRCS, the Cooperative State Research, Education, and Extension Service, State agencies, and local soil and water conservation districts. Producers can find out program details and offer acreage for enrollment at their local FSA or NRCS office, both of which are listed in telephone books under "United States Government, U.S. Department of Agriculture."

More Information

More information about FSA and its conservation programs can be found on the FSA website at: www.fsa.usda.gov

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Debt for Nature Program

Background

The Debt for Nature Program (DFN), also known as the Debt Cancellation Conservation Contract Program, is available to persons with Farm Service Agency (FSA) loans secured by real estate. These individuals may qualify for cancellation of a portion of their FSA indebtedness in exchange for a conservation contract with a term of 50, 30, or 10 years. A conservation contract is a voluntary legal agreement that restricts the type and amount of development that may take place on portions of a landowner's property. Contracts may be established on marginal cropland and other environmentally sensitive lands for conservation, recreation, and wildlife purposes.

How DFN Works

All FSA borrowers who have loans secured by real estate are eligible if they have land that qualifies for a conservation contract. This includes both borrowers who are current on their payments as well as those who are experiencing difficulty in keeping their loans current. A conservation contract may be considered alone or in conjunction with FSA's primary loan servicing programs or new loans which are secured by real estate.

By participating in this program, borrowers reduce their FSA debt

thereby improving their overall financial stability. Borrowers can conserve wildlife habitat and improve the environmental and scenic value of their farms.

Eligible lands include the following types:

- Wetlands;
- Highly erodible lands;
- Lands containing aquatic life, endangered species, or wildlife habitat of local, regional, or national importance;
- Lands in 100-year floodplains;
- Areas of high water quality or scenic value;
- Historic or cultural properties listed or eligible for the National Register of Historic Places;
- Aquifer recharge areas of local, regional, or State importance;
- Buffer zones necessary to protect proposed conservation easement areas;
- Areas within or adjacent to Federal, State, or local conservation areas.

Contract Process

FSA will determine if the borrower is eligible and establish a contract review team. This team, consisting of representatives from FSA, the Natural Resources Conservation Service (NRCS), the U.S. Fish and Wildlife Service, and interested State, local, and nonprofit conservation agencies, will work with the

prospective borrower to conduct a field evaluation of the farm. Within 30 days of the site review, the team provides a report to the county FSA official indicating the following:

- A finding of whether the land being offered is suitable for conservation, recreation, and/or wildlife purposes;
- Potential contract boundaries;
- Recommended terms and conditions of the contract;
- A proposed management plan that is consistent with the contract purposes;

FSA evaluates the contract review team's report to determine if a conservation contract can be established on the farm in exchange for debt reduction.

Cancellation of Debt

In general, the maximum amount of a borrower's FSA debt that can be canceled is calculated by considering the present market value of the farm; the borrower's FSA debt secured by real estate; and the number of acres to be covered by the contract. For borrowers who are up to date on their loan payments or receiving a new loan secured by real estate, no more than 33 percent of the loan principal can be canceled in exchange for a contract. For delinquent borrowers, the amount of debt canceled may surpass this amount provided it

does not exceed the appraised value of the land on which the contract is placed. Conservation contracts can be used in conjunction with other FSA primary loan servicing options available to delinquent and financially distressed borrowers.

Contract Establishment Costs

FSA will cover the costs of all surveys, appraisals, and recording fees associated with the conservation contract. However, the borrower must obtain written consent to the terms of the conservation contract from all prior and/or junior lienholders, if applicable.

Terms and Conditions

The term of a conservation contract may be either 50, 30, or 10 years. In general, the following activities are prohibited:

- Building, construction, or other development;
- Altering the vegetation or surface or ground water on the contract area, except for the purpose of wildlife habitat restoration or management functions;
- Allowing access for livestock unless necessary to provide drinking water;
- Harvesting timber*;
- Agricultural production;
- Placing refuse, wastes, or other debris or contaminants on the contract area.

*Timber thinning/harvesting and other compatible uses

may be allowed if they achieve the protection and enhancement of the conservation values for which the contract was established.

The borrower retains the right to control public access to the contract area and may use the area in a manner compatible with the contract (e.g., hunting and fishing, if allowed by the management plan). Access to the contract area must be provided to FSA for enforcement purposes.

For More Information

Contact local FSA or NRCS offices or USDA Service Centers. Information may also be obtained from the FSA web site at: www.fsa.usda.gov

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Conservation Provisions

Fact Sheet

United States Department of Agriculture

Environmental Quality Incentives Program (EQIP)

The Environmental Quality Incentives Program (EQIP) was established in the 1996 Farm Bill to provide a voluntary conservation program for farmers and ranchers who face serious threats to soil, water, and related natural resources. Nationally, it provides technical, financial, and educational assistance primarily in designated priority areas—half of it targeted to livestock-related natural resource concerns and the remainder to other significant conservation priorities.

Conservation Tools

EQIP is one of several conservation programs making up tools in a "conservation toolbox" of Federal, State, and local programs that farmers and ranchers can use to solve their natural resource concerns. EQIP offers financial, educational, and technical help to install or implement structural, vegetative, and management practices called for in 5- to 10-year contracts for most agricultural land uses. USDA also offers the Conservation Reserve Program (CRP), which puts sensitive croplands under permanent vegetative cover for 10 to 15 years. CRP contract holders receive annual rental payments. Other USDA, Federal, State, and local programs provide additional tools for producers to care for our private lands—a shared commitment between public and private interests.

Priority Areas and Locally Led Conservation

EQIP works primarily in priority areas where significant natural resource problems exist. In general, priority areas are defined as watersheds, regions, or areas of special environmental sensitivity or having significant soil, water, or related natural resource concerns. These concerns could include soil erosion, water quality and quantity, wildlife habitat, wetlands, and forest and grazing lands. These priority areas are identified through a locally led conservation process. Conservation districts convene a local work group comprised of the district board members and key staff; Natural Resources Conservation Service (NRCS) staff; Farm Service Agency (FSA) county committees and key staffs; Cooperative State Research, Education, and Extension Service, representatives of American Indian and Alaskan Native governments, and other Federal, State, and local agencies interested in nat-

ural resource conservation. The conservation districts bring views of local interests to work groups by gathering community input through the locally led conservation process. They thus help ensure that the work groups develop and implement conservation programs that fully reflect local needs and priorities.

The local work group identifies program priorities by completing a natural resource needs assessment and, based on that assessment, develops proposals for priority areas. Priority area proposals are submitted to the NRCS State Conservationist, who selects those areas within the State based on the recommendations from the State Technical Committee.

EQIP can also address additional significant statewide concerns that may occur outside funded priority areas. At least 65 percent of the funds will be used in designated priority areas and up to 35 percent can be used for other significant statewide natural resource concerns. Additional emphasis is given to areas where State, tribal, or local governments offer financial or technical assistance and where agricultural improvements will help meet water quality and other environmental objectives.

Conservation Plans

All EQIP activities must be carried out according to a conservation plan. Conservation plans are site-specific for each farm or ranch and can be developed by producers with help from NRCS or other service providers. Producers' conservation plans should address the primary natural resource concerns. All plans are subject to NRCS technical standards adapted for local conditions and are approved by the conservation district. Producers are not obligated, but are encouraged, to develop comprehensive or total resource management plans.

Contracts

EQIP offers 5- to 10-year contracts that provide incentive payments and cost sharing for conservation practices called for in the site-specific plan. Contract applications will be accepted throughout the year. NRCS conducts an evaluation of the environmental benefits the producer offers. Offers are then ranked according to previously approved criteria developed with the advice of the local work group. The FSA County Committee approves for

funding the highest priority applications. Applications are ranked according to environmental benefits achieved weighted against the costs of applying the practices. Higher rankings are given to plans developed to treat priority resource concerns to a sustainable level. EQIP seeks to maximize environmental benefits per dollar spent.

Practice Payments

Cost sharing may pay up to 75 percent of the costs of certain conservation practices, such as grassed waterways, filter strips, manure management facilities, capping abandoned wells, wildlife habitat enhancement, and other practices important to improving and maintaining the health of natural resources in the area. Incentive payments may be made to encourage a producer to perform land management practices such as nutrient management, manure management, integrated pest management, irrigation water management, and wildlife habitat management. These payments may be provided for up to three years to encourage producers to carry out management practices they may not otherwise use without the program incentive.

Eligibility

Eligibility is limited to persons who are engaged in livestock or agricultural production. Eligible land includes cropland, rangeland, pasture, forestland, and other farm or ranch lands where the program is delivered. Owners of large confined livestock operations are not eligible for cost-share assistance for animal waste storage or treatment facilities. However, technical, educational, and financial assistance may be provided for other conservation practices on these "large" operations. Because of differences in operations nationwide, the definition of a large confined livestock operation may be determined in each State by the NRCS State Conservationist, after consultation with the State Technical Committee. In general, USDA considers a large confined livestock operation as having more than 1,000 animal units.

EQIP Funding

Funding for EQIP comes from the Federal Government's Commodity Credit Corporation, which funds several other USDA conservation programs. EQIP's authorized budget of \$1.3 billion is prorated at \$200 million per year through the year 2002. Conservation practices for natural resource concerns related to livestock production will receive 50 percent of the funding. Total cost-share and incentive payments are limited to \$10,000 per person per year and \$50,000 for the length of the contract.

NRCS has leadership for EQIP. It works with FSA to set the program's policies, priorities, and guidelines.

EQIP continues the Department's commitment to streamlining and improving its conservation services. Four of USDA's former conservation programs were combined in EQIP: the Agricultural Conservation Program, Water Quality Incentives Program, Great Plains Conservation Program, and the Colorado River Basin Salinity Control Program.

For More Information

NRCS, FSA, Cooperative Extension Service, or your local conservation district can provide more information. Your USDA Service Center is listed in the telephone book under U.S. Department of Agriculture. The final rule and other EQIP information is also available on USDA's World Wide Web site: <http://www.nrcs.usda.gov>.

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Conservation Programs

Fact Sheet

United States Department of Agriculture

Farmland Protection Program

Introduction

The Farmland Protection Program (FPP) is a voluntary program that helps farmers keep their land in agriculture. The program provides matching funds to state, local, or tribal government entities and nongovernmental organizations with existing farmland protection programs to purchase conservation easements. The goal of the program is to protect between 170,000 and 340,000 acres of farmland. The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) has been designated as the lead agency in implementing this program.

How FPP works

USDA partners with state, tribal, and local governments or nongovernmental organizations to acquire conservation easements from landowners. Participating landowners choose to keep their land in agriculture and agree not to convert the land for non-agricultural use. Landowners retain all rights to use the property for agriculture. All lands enrolled must have a conservation plan developed based on the standards in the NRCS Field Office Technical Guide.

Applications for FPP come from states, tribes, or local governments and nongovernmental organizations that have existing farmland protection programs. Although a minimum of 30 years is required for conservation easements, priority is given to applications with perpetual easements.

Eligibility

To qualify for FPP, the land offered must be:

- Prime, unique, or other productive soil;
- Included in a pending offer from a nongovernmental organization, state, tribe, or local farmland protection program;
- Privately owned;
- Covered by a conservation plan;
- Large enough to sustain agricultural production;
- Accessible to markets for what the land produces; and
- Surrounded by parcels of land that can support long-term agricultural production.

If the land cannot be converted to nonagricultural uses because of existing deed restrictions or other legal constraints, it is ineligible for FPP.

Funding

Funds for FPP come from the Federal Government's Commodity Credit Corporation, which funds several USDA conservation programs. Since 1996, total funding for FPP has been more than \$50 million.

For More Information

NRCS, the Farm Service Agency, Extension Service, or local conservation district can provide more information. Local USDA Service Centers are listed in the telephone book under U.S. Department of Agriculture. Information also is available on the Web at www.nhq.nrcs.usda.gov/PROGRAMS/fpcp_index.htm.

landowner. In addition to paying for the easement, USDA pays 100 percent of the costs of restoring the wetland.

30-Year Easement. This is a conservation easement lasting 30 years. Easement payments are 75 percent of what would be paid for a permanent easement. USDA also pays 75 percent of restoration costs.

Restoration Cost-Share Agreement. This is an agreement (generally for a minimum of 10 years in duration) to re-establish degraded or lost wetland habitat. USDA pays 75 percent of the cost of the restoration activity. This does not place an easement on the property. The landowner provides the restoration site without reimbursement.

Other agencies and private conservation organizations may provide additional assistance for easement payment and wetland restoration costs as a way to reduce the landowner's share of the costs. Such special partnership efforts are encouraged.

Eligibility

Landowner. To offer a conservation easement, the landowner must have owned the land for at least 1 year prior to enrolling the land in the program unless the land was inherited or the landowner can prove the land was not obtained for the purpose of enrolling it in the program. To participate in a restoration cost-share agreement, the landowner must show evidence of ownership.

Land. To be eligible for WRP, land must be restorable and be suitable for wildlife benefits. This includes:

- Wetlands farmed under natural conditions;
- Farmed wetlands;
- Prior converted cropland;

- Farmed wetland pasture;
- Farmland that has become a wetland as a result of flooding;
- Rangeland, pasture, or production forestland where the hydrology has been significantly degraded and can be restored;
- Riparian areas which link protected wetlands;
- Lands adjacent to protected wetlands that contribute significantly to wetland functions and values; and
- Previously restored wetlands (Conservation Reserve Program [CRP] land is eligible if it meets WRP requirements).

Ineligible Land. Ineligible land includes wetlands converted after December 23, 1985; lands with timber stands established under a CRP contract; Federal lands; and lands where conditions make restoration impossible.

Uses of WRP Land

A landowner continues to control access to the land—and may lease the land—for hunting, fishing, and other undeveloped recreational activities. At any time, a landowner may request that additional activities be evaluated to determine if they are compatible uses for the site. This request may include such items as permission to cut hay, graze livestock or harvest wood products. Compatible uses are allowed if they are fully consistent with the protection and enhancement of the wetland.

Cooperating Agencies

Additional information on WRP is available from USDA Service Centers, State Cooperative Extension offices, and local conservation districts.

RESTORING AMERICA'S WETLAND HERITAGE—IT'S IN YOUR HANDS.

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Conservation Provisions

Fact Sheet

United States Department of Agriculture

Forestry Incentives Program

Introduction

The 1996 Farm Bill extends the Forestry Incentives Program (FIP), which was originally authorized in 1978 to share up to 65 percent of the costs of tree planting, timber stand improvements, and related practices on nonindustrial private forest lands. FIP's forest maintenance and reforestation provide numerous natural resource benefits, including reduced wind and soil erosion and enhanced water quality and wildlife habitat as well as helping to assure a reliable future supply of timber. Improving timber stands, which help to sequester greenhouse gases, also contributes to the President's Climate Change initiative. FIP is administered by the U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) and Forest Service.

Program Availability

FIP is a nationwide program available in counties designated on the basis of a Forest Service survey of total eligible private timber acreage that is potentially suitable for production of timber products. Federal cost-share money is available—with a limit of \$10,000 per person per year with the stipulation that no more than 65 percent of the cost may be paid. To find out if your county participates in FIP, check with your local USDA office, State forester, conservation district, or Cooperative Extension office.

FIP—Preparing To Meet the Demand

FIP is intended to assure the Nation's ability to meet future demand for sawtimber, pulpwood, and quality hardwoods by planting more trees and placing more forest land under good forest management. FIP's cost sharing for these measures helps eligible private landowners, whose small parcels represent the majority of the Nation's forest lands.

To be eligible for cost-share assistance under FIP, a landowner must:

- Own no more than 1,000 acres of eligible forest land. In the public interest, the Secretary of Agriculture can grant an exception for larger acreages;
- Be a private landowner of a nonindustrial forest. Individuals, groups, associations, or corporations whose stocks are not publicly traded may be eligible for FIP provided they are not primarily engaged in the business of manufacturing forest products or providing public utility services;
- Have land that is suitable for conversion from nonforest land into forest land (afforestation); for reforestation; or for improved forest management; and
- Have land that is capable of producing marketable timber crops and meets minimum productivity standards established for FIP. At least 10 acres of eligible forest land is required for FIP.

Available practices under FIP are:

- Tree planting;
- Improving a stand of forest trees; and
- Site preparation for natural regeneration.

The State forester provides technical advice in developing a forest management plan and helps find approved vendors, if needed, for completing the FIP work. In addition, the State forestry agency must certify that the project has been completed satisfactorily before cost-share payments can be made.

For More Information

Additional information is available from NRCS, Forest Service, Farm Service Agency, Cooperative Extension Service, State forestry agencies, or your local conservation district. Your USDA Service Center is listed in the telephone book under U.S. Department of Agriculture. Information is also available on NRCS' World Wide Web site: <http://www.nrcs.usda.gov>.

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To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, Room 326W, Whitten Building, 14th and Independence Avenue, SW, Washington, DC 20250-9410 or call (202) 720-5964 (voice or TDD). USDA is an equal opportunity provider and employer.

Wetlands Reserve Program

The Wetlands Reserve Program (WRP) is a voluntary program to restore and protect wetlands on private property. It is an opportunity for landowners to receive financial incentives to enhance wetlands in exchange for retiring marginal agricultural land.

How Does WRP Benefit You?

You will:

- Receive financial compensation;
- Enhance wetland values that benefit you and society;
- Reduce problems associated with farming potentially difficult areas;
- Practice conservation stewardship; and
- Provide recreational opportunities.

Wetland Functions and Values

- Providing fish and wildlife habitat;
- Improving water quality by filtering sediments and chemicals;
- Reducing flooding;
- Recharging groundwater;
- Protecting biological diversity; and
- Furnishing educational, scientific, recreational, and esthetic benefits.

Background

Congress authorized WRP under the Food Security Act of 1985, as amended by the 1990 and 1996 Farm Bills. The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) administers the program in consultation with the Farm Service Agency (FSA) and other Federal agencies. Funding for WRP comes from the Commodity Credit Corporation.

Sign-up

States were authorized to begin a continuous sign-up as of October 1, 1996. Check with your local USDA Service Center or conservation district office for the sign-up schedule in your State.

How the Program Works

Landowners who choose to participate in WRP may sell a conservation easement or enter into a cost-share restoration agreement with USDA to restore and protect wetlands. The landowner voluntarily limits future use of the land, yet retains private ownership. The landowner and NRCS develop a plan for the restoration and maintenance of the wetland.

The program offers landowners three options: permanent easements, 30-year easements, and restoration cost-share agreements of a minimum 10-year duration.

Permanent Easement. This is a conservation easement in perpetuity. Easement payment will be the lesser of: the agricultural value of the land, an established payment cap, or an amount offered by the

Conservation Provisions

Fact Sheet

United States Department of Agriculture

Wildlife Habitat Incentives Program

Notice: This information is based on the final rule for the Wildlife Habitat Incentives Program (WHIP) published in the Federal Register, September 19, 1997. The WHIP rule can be viewed on the World Wide Web at <http://www.nrcs.usda.gov>.

Background

The Wildlife Habitat Incentives Program (WHIP) is a voluntary program for people who want to develop and improve wildlife habitat primarily on private lands. It provides both technical assistance and cost-share payments to help establish and improve fish and wildlife habitat.

How WHIP Works

Participants who own or control land agree to prepare and implement a wildlife habitat development plan. The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) offers participants technical and financial assistance for the establishment of wildlife habitat development practices. In addition, if the landowner agrees, cooperating State wildlife agencies and nonprofit or private organizations may provide expertise or additional funding to help complete a project.

The Plan

NRCS helps participants prepare a wildlife habitat development plan in consultation with the local conservation district. The plan describes the landowner's goals for improving wildlife habitat, includes a list of practices and a schedule for installing them, and details the steps necessary to maintain the habitat for the life of the agreement. This plan may or may not be part of a larger conservation plan that addresses other resource needs such as water quality and soil erosion.

Cost-Share Assistance

USDA and the participant enter into a cost-share agreement for wildlife habitat development. This agreement generally lasts from 5 to 10 years from the date the agreement is signed. Under the agreement:

- The landowner agrees to install and maintain the WHIP practices and allow NRCS or its agent access to monitor the effectiveness of the practices.
- USDA agrees to provide technical assistance and pay up to 75 percent of the cost of installing the wildlife habitat practices.

Cost-share payments may be used to establish new practices or replace practices that fail for reasons beyond the landowner's control.

Eligibility

Eligible participants include those who own or have control of the land under consideration.

All lands are eligible for WHIP, except:

- Federal land;
- Land currently enrolled in the Water Bank Program, Conservation Reserve Program, Wetlands Reserve Program, or other similar programs;
- Land subject to an Emergency Watershed Protection Program floodplain easement; and
- Land where USDA determines that impacts from onsite or offsite conditions make the success of habitat improvement unlikely.

Mitigation

WHIP funds cannot be used for mitigation or on land designated as converted wetland.

WHIP Funding

WHIP is currently budgeted for \$50 million total through the year 2002.

WHIP funds are distributed to States based on State wildlife habitat priorities, which may include wildlife habitat areas, targeted species and their habitats, and specific practices. WHIP may be implemented in cooperation with other Federal, State, or local

agencies; conservation districts; or private conservation groups. State priorities are developed through a locally led process that identifies wildlife resource needs and finalized in consultation with the State Technical Committee.

For More Information

NRCS; Farm Service Agency; Cooperative State Research, Education, and Extension Service; or your local conservation district can provide more information. Your USDA Service Center is listed in the telephone book under U.S. Department of Agriculture. Information is also available on NRCS's World Wide Web site: <http://www.nrcs.usda.gov>.