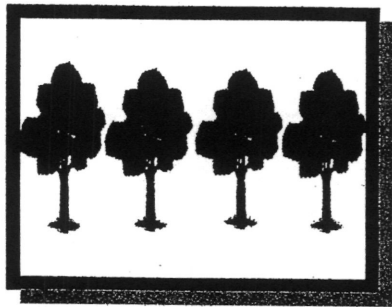
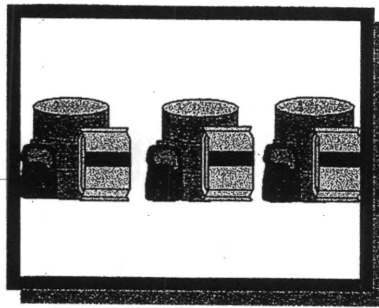


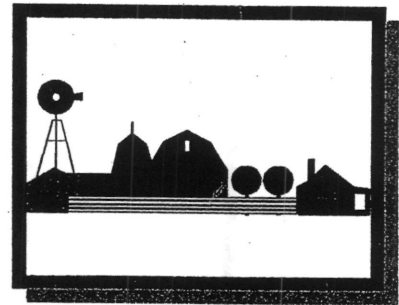
# KENTUCKY AGRICULTURE WATER QUALITY AUTHORITY



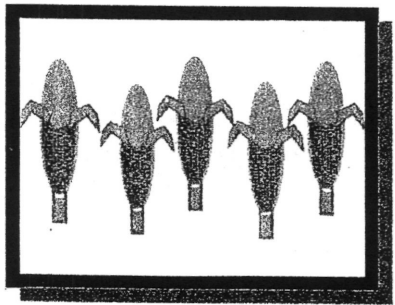
Silviculture



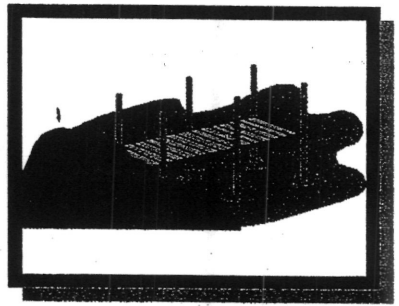
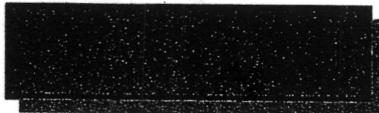
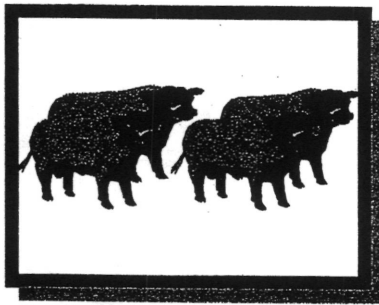
Pesticides



Farmstead



Cropland



Streams

## Producer Workbook

Kentucky Agriculture Water Quality Authority  
Division of Conservation  
663 Teton, Trail  
Frankfort, KY. 40601

May 24, 1999

**KENTUCKY AGRICULTURE WATER QUALITY PLAN - REVISION NOTICE - NO. 1**

This notice transmits one (1) Agriculture Water Quality Best Management Practice (BMP) to be added to the Kentucky Agriculture Water Quality Plan.

This notice also transmits one (1) Agriculture Water Quality Best Management Practice (BMP) to replace existing BMPs in the Kentucky Agriculture Water Quality Plan.

**Livestock BMP #11--Nutrient Management (AWQA Revision - 1, 5/99)**  
**Livestock BMP #17--Poultry Facility Siting and Land Application of On-Farm Generated Waste By-Products (AWQA Revision - 1, 5/99)**

**ACTION**

The Kentucky Agriculture Water Quality Act - Revision Notice - No. 1 is to be retained at the beginning of the Crops Section starting on page 92 and a copy<sup>1</sup> retained at the beginning of the Livestock Section starting on page 133 of the Kentucky Agriculture Water Quality Plan.

**NOTE:** Livestock BMP #11--Nutrient Management (AWQA Revision - 1, 5/99) is to be used for all agriculture water quality planning that has previously been addressed with Crops BMP #5--Nutrient Management (page 103) and Crops BMP #14--Waste Utilization (page 128) in the Crops Section. Discard these two (2) BMPs and insert applicable, **Attention:** Kentucky Agriculture Water Quality Notes<sup>2</sup>. Also, Livestock BMP #11--Nutrient Management (AWQA Revision - 1, 5/99) is to be used for all agriculture water quality planning that has previously been addressed with Livestock BMP #11--Waste Utilization (page 169). Please replace existing BMP with revised BMP and insert applicable, **Attention:** Kentucky Agriculture Water Quality Notes in front of revised BMP.

Livestock BMP #17--Poultry Facility Siting and Land Application of On -Farm Generated Waste By-Products (AWQA Revision - 1, 5/99) shall be added as a new BMP at the end of the Livestock Section (between pages 184 & 185) and is to be used for water quality planning related to poultry.



STEPHEN A. COLEMAN  
Chairman, Kentucky Agriculture Water Quality Authority

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<sup>1</sup>Extra copy enclosed.

<sup>2</sup>Copies are enclosed.

## **Livestock BMP #11--Nutrient Management**

### **I. Description and Definition(s):**

Nutrient management involves carefully monitoring all aspects of soil fertility and making necessary adjustments so that crop needs are met while minimizing the loss of nutrients to surface or groundwater. This includes management of all plant nutrients associated with animal manure, commercial fertilizer, legume crops, crop residues and other organic wastes. Nutrient management provides the crop with the correct amount of nutrients at the optimum time and location possible so they are utilized efficiently. This limits the amount of plant nutrients lost to leaching, runoff and volatilization. Nutrient management is one of the more important conservation practices that protect our natural resources. Tremendous benefits to water quality can be achieved and it is relatively easy to implement and it can increase profits.

### **II. Regulatory Requirements:**

#### **All Agriculture Operations [401 KAR 5:026, 5:029, 5:030, and 5:031]:**

All operations must meet Kentucky Water Quality Standards.

#### **Operating Permits [401 KAR 5:005, 401 KAR 5:065]:**

Building and/or operating any facility with components for management of liquid waste requires a Kentucky No Discharge Operations Permit (KNDOP) in accordance with 401 KAR 5:005, or a Kentucky Pollution Discharge Elimination System Permit (KPDES), in accordance with 401 KAR 5:065. There are no requirements from the Division of Water for dry or solid manure waste management systems.

No permit is required from the Division of Water if the stack pad is covered and the manure, from generation to final disposal, is handled in a dry (no water added intentionally or otherwise) fashion.

#### **Activities near High Quality Waters and Outstanding National Resource Waters [401 KAR 5:029, 5:030, and 5:031]:**

Kentucky Water Quality Standards (401 KAR 5:029) require the use of Best Management Practices to protect High Quality Waters and Outstanding National Resource Waters listed in 401 KAR 5:030. In addition, outstanding resource waters that support federally listed threatened and endangered species require special protection (see 401 KAR 5:031).

#### **Use of Manure from Off-Site [KRS 224 and 401 KAR Chapters 47-48]:**

Manure brought from one farm to another is subject to Division of Waste Management solid waste regulations. Animal waste becomes solid waste when it is generated on one farm and disposed on another farm, or when its use doesn't constitute agronomic utilization of nutrients or benefit to the soil. If disposed on another farm, it is a permit-by-rule activity with no written authorization from the Division of Waste Management needed but must meet the minimum environmental standards of KRS Chapter 224.

**Activities in Jurisdictional Wetlands:**

Farming activities that may affect surface drainage in areas designated as jurisdictional wetlands may be subject to regulation by the U.S. Army Corps of Engineers, Kentucky Division of Water, U.S. Fish and Wildlife Service, U.S. Environmental Protection Agency, and U.S. Department of Agriculture depending on the nature of the activity. Contact local representatives of the USDA Natural Resources Conservation Service to determine specific requirements.

**III. AWQA Minimum Requirements:**

- Comply with the USDA Natural Resources Conservation Service (NRCS) Kentucky Standard and Specification for Nutrient Management, practice code 590.
- Maintain an adopted sequence of crop rotations to utilize nutrients.
- Take annual soil tests to determine the pH (buffer), pH (water), phosphorous, potassium, zinc, magnesium, and calcium to optimize plant production. Analyze animal waste for total nitrogen, phosphate, potash, calcium, and magnesium prior to land application to establish nutrient credits and to formulate application rates.
- Manage animal manure in a manner that prevents degradation of water, soil, air and that protects public health and safety.
- Temporary storage of poultry waste to be utilized on the farm on which it was generated, shall be for no more than 30 days, and shall be stored in a manner that prevents water from coming in contact with the litter storage area to prevent the migration of nutrients to surface and ground waters. Any method of temporary storage of poultry waste must meet or exceed the Natural Resources Conservation Service (Interim) standards and specifications in the Waste Field Storage Code 749.
- Temporary storage of poultry waste, generated on one agriculture operation and disposed of on or received by another agriculture operation, shall be for no more than 30 days, and shall be stored in a manner that prevents water from coming in contact with the litter storage area to prevent the migration of nutrients to surface and ground waters. Any method of temporary storage of poultry waste must meet or exceed the Natural Resources Conservation Service (Interim) standards and specification in the Waste Field Storage Code 749.
- Sufficient land must be available for a disposal area without overloading soils or exceeding crop requirements for nutrients.
- Minimize edge-of-field delivery of nutrients where no setbacks are required.



#### IV. Design Information:

##### Planning Considerations

**Water Quality Protection.** The nutrient form (animal manure, commercial fertilizer), timing, method of application and placement should be adjusted to conform to seasonal variations in the uptake of nutrients by specific crops. An example is splitting applications of nitrogen that is a recommended practice to reduce leaching and atmospheric deposition along with timing the application according to plant growth patterns. A single application may result in a portion of the nitrogen leaching into the groundwater or being transported in surface runoff to receiving water bodies.

Cover crops such as small grains can utilize excess nutrients, preventing their movement out of the root zone during the season when major crops are not produced. Nutrients returned to the soil from crop residues need to be considered when determining application rates of commercial fertilizers or animal manure for subsequent crops.

**Residual Soil Nutrients.** Soil tests are required to determine the amount of phosphorus; potassium, secondary nutrients and micronutrients available in the soil and the liming requirements based on the soil pH. Nutrient application rates should be based on the results of independent soil tests or the University of Kentucky soil test recommendations.

**Nutrient Needs of the Crops and Forages.** Specific crops will utilize nutrients at different rates depending on factors such as soil type, climatic factors and water budgets. Determination of a realistic yield goal should be determined for the crop based on these factors and nutrients applied to satisfy, but not exceed that specific yield goal. Yield goals should be realistic for the soil type and based on producer records and/or research documentation.

**Available Nutrients.** Nutrients available to crops include those identified by the soil test along with any residual nitrogen provided by animal manure applied in prior years and any nitrogen provided by legumes and green manure crops. (Nitrogen is not evaluated in the soil test, an estimate of nitrogen in the soil must be made based on history of manure application and previous crops grown.) Manure, litter, compost or wastewater that will be used should be analyzed for available nutrients prior to application.

#### V. Practice Maintenance:

Nutrient management is an ongoing practice and includes, but is not limited to the following:

- Take soil test annually and/or refer to University of Kentucky publication AGR-1 to determine annual nutrient and liming recommendations.
- Target realistic yield goals for each crop and forage grown.
- Utilize cover crops to maximize nutrient uptake, prevent groundwater contamination and/or leaching and prevent soil erosion. Cover crops can prevent un-utilized nitrogen from entering groundwater.

- Application Timing.
  - Wastes have a significant portion of nitrogen in the organic form which delays release to the crop (spring applied) until closer to peak demand, resulting in greater nutrient efficiency. However, waste applications may take place in the spring, summer, and fall months providing the appropriate conservation practices are followed (maintaining adequate residue, using cover crops, filter strips, etc.). Waste should not be applied within 48 hours following a rain or within 12 hours of a forecasted rain.
  - Monitor waste levels in storage facilities to assure proper storage capacity, and allow adequate time for emptying and spreading during favorable weather conditions and at times for optimum crop uptake. Avoid spreading animal waste on frozen or snow-covered land unless conditions allow no other reasonable alternatives and special provisions are made to control runoff and pollution. Permitted waste application operations cannot apply wastes to frozen or snow covered soil. Limit the rate of liquid application through irrigation to ½ inch per hour with the total application stopped when soil moisture in the surface 6 inches is brought to field capacity. Liquid applications to pasture and hay land should result in no more than 24% coverage of the plant leaf surface. Livestock should be withheld from animal waste application areas until either the plant has added 3 inches of growth or a rainfall of at least ½ inch has occurred since application to wash some of the material from the leaf surface.
  - Site specific information such as soil types and production capabilities are available from the USDA/Natural Resources Conservation Service and Cooperate Extension Service.

**VI. Technical Assistance:** (see address and telephone listings on pages 222-223)

- USDA Natural Resources Conservation Service
- University of Kentucky Cooperative Extension Service
- Approved third part vendors (i.e. Certified Crop Advisors through American Society of Agronomy, etc.)

**VII. Cost Share Assistance:**

Cost Share may be available for this BMP in some programs through the Kentucky Soil Erosion and Water Quality Cost Share Program or USDA Conservation Provisions of the 1996 Farm Bill or the local Conservation District.

**VIII. Recommendations:**

**Fertilizer and/or Manure Rates and Balancing**

Nutrient application rates should be based on soil tests, manure analysis, previous applications, soil characteristics, crops to be grown and projected realistic yield goals. Higher applications than recommended are not profitable and excess nutrients may be transported to groundwater aquifers or to surface streams.

**IX. References:** (see address and telephone listings on pages 222-223)

*Kentucky Best Management Practices for Agriculture.* Kentucky Division of Conservation, Kentucky Division of Water, and USDA/NRCS.

USDA/NRCS *Field Office Technical Guide.*

University of Kentucky College of Agriculture Extension publications.

KY-A-Syst publications, *Livestock Waste Storage and Livestock Yards Management.*

KY-A-Syst publications may be obtained from Local County Extension offices.

## **Livestock BMP #17--Poultry Facility Siting and Land Application of On-Farm Generated Waste By-Products**

### **I. Description and Definition(s):**

This practice is used to eliminate or control the potentially harmful effects of agriculture on surface and groundwater and relates to the siting of poultry facilities and the land applications of poultry waste and by-products. It applies to the construction of poultry facilities and the use of nutrient management planning in conjunction with land applications to control or eliminate the contribution of excess nutrients (especially nitrogen and phosphorus) to our water resources.

### **II. Regulatory Requirements:**

#### **Operating Permits [401 KAR 5:005, 401 KAR 5:065]:**

Building and/or operating any facility with components for management of liquid waste requires a Kentucky No Discharge Operations Permit (KNDOP) in accordance with 401 KAR 5:005, or a Kentucky Pollution Discharge Elimination System Permit (KPDES), in accordance with 401 KAR 5:065. There are no requirements from the Division of Water for dry or solid manure waste management systems.

#### **Use of Heavy Equipment in Stream Channels [US Clean Water Act, 33 USC §1251 et seq., Section 404]:**

The use of heavy equipment, within or along stream channels, that has the potential to degrade or alter the stream channel or the streambank, may require a 404 permit from the U.S. Army Corps of Engineers. See pages 199-216 of this document for further information.

#### **Activities in Jurisdictional Wetlands:**

Farming activities that may affect surface drainage in areas designated as jurisdictional wetlands may be subject to regulation by the U.S. Army Corps of Engineers, Kentucky Division of Water, U.S. Fish and Wildlife Service, U.S. Environmental Protection Agency, and U.S. Department of Agriculture depending on the nature of the activity. Contact local representatives of the Natural Resources Conservation Service to determine specific requirements.

No permit is required from the Division of Water if the stack pad is covered and the manure, from generation to final disposal, is handled in a dry (no water added intentionally or otherwise) fashion.

#### **All Agriculture Operations [401 KAR 5:026, 5:029, 5:030, and 5:031]:**

All operations must meet Kentucky Water Quality Standards.

**Activities near High Quality Waters and Outstanding National Resource Waters [401 KAR 5:029, 5:030, and 5:031]:**

Kentucky Water Quality Standards (401 KAR 5:029) require the use of Best Management Practices to protect High Quality Waters and Outstanding National Resource Waters listed in 401 KAR 5:030. In addition, outstanding resource waters that support federally listed threatened and endangered species require special protection (see 401 KAR 5:031).

**Use of Manure from Off-Site [KRS 224 and 401 KAR Chapters 47-48]:**

Manure brought from one farm to another is subject to Division of Waste Management solid waste regulations. Animal waste becomes solid waste when it is generated on one farm and disposed on another farm, or when its use doesn't constitute agronomic utilization of nutrients or benefit to the soil. If disposed on another farm, it is a permit-by-rule activity with no written authorization from the Division of Waste Management needed, but must meet the minimum environmental standards of KRS Chapter 224.

**Spills, Leaks, or other Releases [KRS 224.01-400]:**

Any spill, leak, discharge, dumping, or other "release" of any of the following classifications of substances in excess of a reportable quantity must be reported immediately to the Natural Resources and Environmental Protection Cabinet's 24-hour environmental response line at (800) 928-2380:

- Hazardous substances.
- Pollutants or contaminants. A release or threatened release of any element, substance, compound, or mixture (including manure) into the environment in a quantity that may present an imminent or substantial danger to the public health is reportable.
- Petroleum or petroleum products. Any release including a fuel, oil, or lubricant, in excess of 25 gallons within a 24-hour period must be reported. The reportable quantity of diesel fuel is 75 gallons or more in a 24-hour period.

Cleanup requirements state that once a release has occurred, even if it is less than a reportable quantity, the responsible person must determine its affect on the environment and correct that effect. For questions concerning the Environmental Release Reporting and Cleanup Law call (502) 564-6716.

**Disposal of Animal Carcasses (KRS 257:160):**

The Division of Animal Health, under the supervision of the State Veterinarian, has responsibility for regulating the disposal of animal carcasses. All carcasses shall be disposed of within 48 hours after the carcass is found. The carcass shall be disposed of in one of the following ways:

- 1) complete incineration of the entire carcass and all of its parts and products;
- 2) boiling the carcass and all its parts and products in water or heating it with steam at a temperature above boiling, continuously for 2 hours or more;

- 3) burying the carcass and all of its parts and products in the earth at a point which is never covered with the overflow of ponds or streams and which is not less than 100 feet distance from any watercourse, sinkhole, well, spring, public highway, residence or stable. The carcass shall be placed in an opening in the earth at least 4 feet deep, the abdominal and thoracic cavities opened wide their entire length with a sharp instrument, and the entire carcass covered with 2 inches of quicklime and at least 3 feet of earth;
- 4) removal of the carcass by a duly licensed rendering establishment;
- 5) deposition of the carcass in a contained landfill approved pursuant to KRS Chapter 224.
- 6) composting of the carcass in a facility according to the Board of Agriculture Administrative Regulations;
- 7) any combination of the methods listed above, or any other scientifically proven method of disposal approved by the Board of Agriculture.

If the producer is unable to dispose of the carcass in an approved manner described above it will be permissible to haul a dead carcass (rendering service) under these conditions:

- 1) the bodies of dead animals transported over the highways must be covered with a tarpaulin or other heavy material and no portion of the dead animal can be exposed, and
- 2) the sides of the trucks used must be of solid material.

#### **Construction in Flood Plains (KRS 151.250):**

Construction activities (e.g. fillings, channel relocations, streambank restoration, buildings, culverts and bridges) in flood plains require a stream construction permit pursuant to KRS 151.250. An exemption exists for watersheds of less than one square mile (640 acres), except for impoundments and dams that again fall under KRS 151.250 for a permit.

### **III. AWQA Minimum Requirements:**

#### **Siting Acreage**

The minimum acreage on which a one or two poultry house farm may be sited is 15 acres. Each additional poultry house requires 5 acres.

#### **Siting Setbacks**

These distances apply to all nutrient management facilities as well as poultry houses themselves. Setbacks relating to dwellings, churches, and property lines may be waived by the owner of these features by obtaining a sworn affidavit from the owner that he or she is agreeable to the waiver:

- Schools, churches and adjacent cemeteries, incorporated city limits and public parks as of July 1, 1998 - minimum of 1500 feet.
- Dwellings other than growers/or not associated with the operation - 500 feet.  
Except at tunnel ventilation fan outlets - 750 feet.
- Property lines - minimum of 75 feet.
- Roadways, primary (state and federal) - minimum of 150 feet.
- Roadways, secondary (county) - minimum of 100 feet.
- Lakes, rivers, blue line streams, sinkholes with openings - minimum 150 feet.
- Water well not owned by producer - minimum of 300 feet.



### **Land Application Setbacks - Poultry Waste**

These distances apply to all poultry waste or by-products that are land applied. Setbacks relating to dwellings, churches, and property lines may be waived by the owner of these features by obtaining a sworn affidavit from the owner that he or she is agreeable to the waiver:

- Dwellings or occupied building - minimum of 300 feet.
- Water well - minimum of 200 feet.
- Lakes, rivers, blue line streams, sinkholes with openings - minimum 75 feet.
- Property line - minimum of 50 feet.

### **Nutrient Management Plans**

Each poultry operation must prepare a nutrient management plan. As a minimum this plan must meet the Kentucky Agriculture Water Quality Plan requirements in Livestock BMP #11- Nutrient Management.

The nutrient management plan will specify on-farm application of litter.

### **Litter Storage**

Storage area must be covered temporarily as required in Livestock BMP #11-- Nutrient Management, or permanently and not located within 150 feet of a stream or tributary.

Take necessary measures to reasonably prevent an increase in moisture content by diverting water.

Accepted mortality methods will be limited to those approved by the Kentucky State Veterinarian (see Regulatory Requirements - Disposal of Animal Carcasses KRS 257:160).

## **IV. Design Information:**

### **Planning Considerations**

Storm water runoff patterns should be reflected in farm siting and construction.

The topography, prevailing wind and discharge area of the tunnel ventilation fan should be considered when siting a house.

Consider future expansion as well as present number in determining siting of facilities. Sufficient land must be available for a disposal area without overloading soils or exceeding crop requirements.

Use vegetative screens or other methods as needed to shield structure from public view and/or improve visual conditions. They will also reduce dust and odors that might create a nuisance or the perception of a nuisance among neighbors. If the house is sited within an adequate windshed and on high ground with adequate drainage, many potential air and water quality problems can be avoided with little or no adverse effect on the community.

**V. Practice Maintenance:**

Apply poultry manure at appropriate agronomic rates. Use soil test(s) recommendations, waste analysis and plant availability calculations to match rates of waste application with crop nutrient needs.

Remove and dispose of poultry waste according to a waste or nutrient management plan to prevent pollution of surface or groundwater.

Diligent and conscientious management of dead animals is a safeguard to prevent groundwater or surface water pollution and odor nuisances.

**VI. Technical Assistance:** (see address and telephone listings on pages 222-223)

- USDA Natural Resources Conservation Service
- Kentucky Division of Water
- University of Kentucky Cooperative Extension Service
- Kentucky Division of Livestock Sanitation ( State Veterinarian)

**VII. Cost Share Assistance:**

Cost Share assistance to landusers considering this BMP may be available in some circumstances through the USDA Conservation Provisions of the 1996 Farm Bill or the Kentucky Soil Erosion and Water Quality Cost Share Program. For more information, contact the local offices of the USDA Farm Service Agency (FSA) or the local conservation district office.

To receive cost share funding, approved BMPs must meet the specific requirements of the particular cost share program.

Some Conservation Districts offer cost share assistance for dead animal disposal.

**VIII. Recommendations:**

Waste should be used to the fullest extent possible by recycling it through soil and plants.

Manure shall be collected and safely spread on land, treated or stored until it can be safely spread. Adequate storage must be provided to allow spreading during favorable weather and at times compatible with crop management and available labor.

Adequate drainage, erosion control and other soil and water management practices shall be incorporated to prevent system-related problems.

The overall system shall include sufficient land for proper use or disposal of waste at locations, times, rates and volumes that maintain desirable water, soil, plant and other environmental conditions. Appropriate waste handling equipment shall be available for effective operation of the system.

Analyze waste products for nutrient content prior to use as feed. Feeding waste materials to livestock should be incorporated into a total feeding program and should meet the applicable requirements in Livestock BMP #12--Equine or Poultry Waste Feed.

**IX. References:** (see address and telephone listings on pages 222-223)

*Kentucky Best Management Practices for Agriculture.* Kentucky Division of Conservation, Kentucky Division of Water, and USDA/NRCS.

*USDA/NRCS Field Office Technical Guide.* The new standard and specification for nutrient management, practice code 590.

University of Kentucky College of Agriculture Extension publications.

*Poultry Water Quality Handbook,* Poultry Water Quality Consortium.

KY-A-Syst publications, *Livestock Waste Storage and Livestock Yards Management.*

KY-A-Syst publications may be obtained from County Extension offices.