Publication/Paper

Economic Impacts of Returning CRP Land to Production Under Conventional and Alternative Systems of Farming: A Case Study

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As the time for CRP contracts to end draws near, alternative scenarios are being developed. One year extensions are presently available. Future options will be prescribed by the 1995 farm bill. Given budget constraints and post-CRP plans of landowners to place much land which is presently in CRP in crop production (63%), it is likely that much of the land will revert to agricultural uses (Soil and Water Conservation Society). The principal questions are what type of production will take place and how will it impact the environment. In addition, both natural and economic/social consequences will be experience (Ikerd et.al.). The objectives of the research on which this report was based was to analyze the differences in economic impact between returning land to production with conventional farming practices and with alternative (sustainable) practices.

Previous Research

Several research projects have looked at production levels, input use and profitability of conventional versus sustainable agriculture.

Ikerd, Monson and Van Dyne employed the regional cropping system-land category approach to evaluate aggregate impacts of changes from conventional to more sustainable system of farming. The study indicated that cropping systems which incorporate reduced tillage, greater cropping diversity, and more efficient management of commercial pesticides and fertilizers can improve resource conservation, reduce environmental risks, reduce costs of production, and increase short run profits in comparison to conventional systems of farming.

Moore (1994) studied the potential economic consequences of a Management Intensive Grazing as opposed to more conventional continuously stocked grazing systems. He concluded that intensive grazing has the potential to increase farm profitability despite its greater initial cost.

The location of farm input purchases was the focus of a Minnesota study (Chism). His evaluation of detailed purchase records of 30 farmers in southern Minnesota indicated that as farms get bigger, they may tend to buy a smaller percentage of their inputs in local markets. The study also confirmed that farms with livestock as well as crops may spend more locally, but only up to a point. Very large livestock operations spent much more in total than did their smaller counterparts, but had no greater impact on the local economy because they had a much higher percentage of non-local spending.

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Lockeretz compared the economics of high input conventional cropping systems with lower input alternatives in an attempt to draw conclusions regarding their impacts on local communities (1989). The underlying assumption was that lower input systems were more ecologically sound. Thus, lower input systems would contribute more to community sustainability, if they made equal or greater contributions to the economic viability of the local community. The results from five regional comparisons were inconclusive with respect to sustainability. In general, the lower input systems were found to contribute less per acre to the local economy than did the higher input systems, resulting in a conflict between the relative economic and ecologic performance of the two types of cropping systems.

A South Dakota study went beyond the work of Lockeretz in evaluating impacts of alternative farming systems on consumer spending and marketing services in addition to business spending for production inputs (Dobbs and Cole). They paired five farms classified as "sustainable" with five "conventional" farms representing different regions of South Dakota. Data for the "sustainable" farms were gleaned from on-farm interviews, but four of the five "conventional" farms were "synthesized" from various sources. The "sustainable" farms were virtually "organic" farms in that none used inorganic fertilizer and only one farm reported appreciable use of commercial pesticides. First-round economic impacts on local input purchases and marketing services were clearly negative for the "sustainable" farms.

A Nebraska Study compared detailed economic data provided by 28 farmers, half of which were classified as "conventional" and the other half as "sustainable" based on current farming methods (Kleinschmit, et. al.). The farms identified as "sustainable" were only about one-half as large; in terms of acres farmed, head of livestock, and total sales; as those called conventional. However, the sustainable farmers actually reported a higher average farm income, or return over direct costs per farm, in spite of their smaller size.

All of these studies provide some insight on the ways in which the methods of agricultural production effect farming and communities within which the farm production takes place. They also provide some background data for a more detailed analysis of the economic impact of conventional and sustainable farming systems.

The Study Situation

For this study, a single case study county was utilized. The county chosen was Putnam County, Missouri. Putnam County is located in North-Central Missouri on the Iowa border. This county was chosen because:

1. its agriculture is typical of much of Northern Missouri,
2. it had a high level of CRP enrollment, and
3. it has an active economic development program.

Through the first nine sign-ups for the Conservation Reserve Program, 26,024 acres was enrolled by Putnam County landowners. Under the assumption that CRP would not continue after the current contract, landowners plan to use 41.2 percent (10,696 acres) for pasture or hay for livestock and 55.0 percent (14,313 acres) for row crop production (Traiyongwanich).

Procedure

The total acres which would be returned to production at the end of CRP contracts were evaluated under conventional and alternative scenarios. Conventional farming systems were assumed to have typical cropping patterns, tillage practices, application rates for chemicals, fertilizers, and pesticides, and yields which were typical for the area. Alternative (sustainable) systems were viewed as cropping systems which attempted to reduce environmental risks, such as soil erosion and water pollution from agricultural chemicals while maintaining productivity and profitability. Crop rotations, legumes, conservation, tillage practices and cover crops which help maintain soil fertility, control weeds, and prevent soil erosion and intensive grazing are emphasized in the alternative scenario.

Crop Production

Owners plan to resume crop production on 14,313 acres in Putnam County if the CRP ends. Crops which are typical in the area are soybeans, corn, and wheat. Total acreage planted to each crop was maintained at the same level under each scenario. This avoided effects of changing commodity prices and shifts in production patterns. The crop distribution pattern was: Soybeans 7271 acres, corn 6529 acres, wheat 514 acres.

A. Conventional Production

Crop rotations which are typically used for the prevailing land class in Putnam County were used to develop land use for the conventional system Table 1.

Table 1. POST-CRP LAND DEVOTED TO VARIOUS CROP ROTATIONS UNDER CONVENTIONAL PRODUCTION SCENARIO, PUTNAM COUNTY, MISSOURI

Crop Rotations	Acres	%
Corn/Beans	3,159	22.1
Cont. Corn	2,775	19.4
Corn/Bean/Wheat	444	3.1
Cont. Bean	4,323	30.2
2 Corn/Bean	2,575	18.0
2 Bean/Corn	543	3.8
2 Wheat/Corn	386	2.7
Cont. Wheat	108	0.8
Total CRP Acres[1]	14,313	100.0

[1] The 14,313 CRP acres in Putnam County which were expected to revert to crop production.

B. Alternative (sustainable) Production

The alternative crop production scenario was developed by eliminating monocropping whenever possible by moving to a corn/soybean rotation.

The production distribution for post-CRP acres under the alternative scenario are shown in Table 2.

Table 2. POST-CRP LAND DEVOTED TO VARIOUS CROP ROTATIONS UNDER ALTERNATIVE PRODUCTION SCENARIOS, PUTNAM COUNTY, MISSOURI

Crop Rotations	Alternative Acres	%
Corn/Bean	11,261	78.7
Cont. Corn	0	0
Corn/Bean/Wheat	769	5.4
Cont. Bean	429	3.0
2 Corn/Bean	72	0.5
2 Bean/Corn	1,396	9.8
2 Wheat/Corn	386	2.7
Cont. Wheat	0	0
Total CRP Acres[1]	14,313	100.0

[1] The 14,313 CRP acres in Putnam County which were expected to revert to crop production

Livestock Production

Beef/cow/calf enterprises are the principle forage based livestock operations in the Putnam County area. For this analysis, all of the post CRP land which owners planned to use for livestock was placed in cow/calf production. Hay was assumed to be produced at levels which would supply 50 percent of requirements. The remainder of feed needed was assumed to be purchased.

A. Conventional

For conventional livestock production, numbers were set at the level which would allow animals to be moved among three paddocks or grazing cells during the grazing season. This system would provide pasture for 2,928 cows.

B. A rotational management intensive grazing system was utilized for alternative livestock production. Four thousand-four-hundred and sixty cows could be supported by the intensive system. The management intensive system utilized 24 paddocks or grazing cells,

requiring moving the cattle much more frequently than for the conventional system.

Production and Costs

The value of crops and livestock produced with the conventional system totals $4.4 million, Table 3. With alternative production practices, the post CRP acreage has the potential to produce $5.5 million, Table 4.

TABLE 3. PRODUCTION VALUE POTENTIAL FOR POST-CRP CONVENTIONAL FARMING-PUTNAM COUNTY, MISSOURI.

	OUTPUT (BUSHELS)	VALUE[1]
CORN	601,405	$1,214,838
SOYBEANS	195,606	$1,353,594
WHEAT	20,111	$61,540
COW/CALF		$1,768,584
TOTAL VALUE		$4,398,556

[1] Based on prices of $2.02 for corn, $6.92 for soybeans, and $3.06 for wheat and $602 for calves.

TABLE 4. PRODUCTION VALUE POTENTIAL FOR POST-CRP ALTERNATIVE FARMING-PUTNAM COUNTY, MISSOURI.

	OUTPUT (BUSHELS)	VALUE[1]
CORN	638,297	$1,289,360
SOYBEANS	213,650	$1,478,458
WHEAT	20,681	$63,284
COW/CALF		$2,681,487
TOTAL VALUE		$5,512,589

[1] Based on average 1992 prices of $2.02 for corn, $6.92 for soybeans, $3.06 for wheat, and $602 for calves.

Marketing Margins

The production of grain and livestock in Putnam County will benefit the local economy through purchases from area firms of production goods and through consumption by farm families. There will, in addition, be impacts which are generated through marketing activities. Grain and livestock which are sold through local firms create margin income for the firms involved.

All of the soybeans and wheat produced were assumed to be sold through local elevators. Only a portion of corn produced was assumed to be sent to market. Ten bushels per cow/calf pair was assumed to be used on the farms. Feeder calves produced were assumed to move through local auctions. Total marketing margins were estimated as $110,400 for conventional farming and $134,00 for alternative farming, Table 5.

TABLE 5. MARKETING MARGINS FOR PUTNAM COUNTY PROJECTED OUTPUT ON POST-CRP LAND

Product	Margin/Unit	Conventional	Alternative
Soybeans	$.15/bu	$29,341	$32,048
Corn	$.15/bu	$24,949	$23,176
Wheat	$.15/bu	$3,017	$3,102
Cattle	3% of sales	$53,058	$80,445
		$110,364	$138,770

Input/Output Analysis

The economic impact analysis for this study utilized an input/output model (Implan software and 1991 data base). The Implan model was used to generate indirect economic effect of the production and marketing activities.[2] Induced effects were generated from Implan consumption data and the Leontief matrix which was developed by Implan for Putnam County.[3]

The Implan system provides for 528 industrial sectors. For the analysis in this study the sectors were aggregated into 49.[4] Agriculture sectors, wholesale trade, retail trade, fertilizer and chemicals, feed manufacturing, and farm machinery were left unaggregated, Appendix 1.

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[2]Different combinations and quantities of inputs were utilized in each of the scenarios. The impact of these differences on a local economy depends upon (1) the production location of the inputs, and (2) the purchase location of the input. An analysis of Implan generated direct coefficients for Putnam County indicated that the coefficients for Putnam County were zero or close to zero because many of the inputs were not produced in the county and many purchases were made outside the county. Given the low level of direct coefficients for farm inputs, little accuracy was lost by not adjusting the direct coefficients. Adjustment would be mandated where most inputs were produced and/or purchased locally.

[3]Much of the difference in economic impact between conventional and sustainable production resulted from differences in the number of families which could be supported on a specified acreage. The Implan process of identifying induced effects by multiplying a consumption vector for each scenario by the Leontief matrix for the area was utilized.

[4]Not all of the sectors had economic activity in Putnam County. Thirty-five separate and/or aggregated sectors were present in the county model.

Study Results

Conventional Production

For the conventional production system the increased production and marketing activities which would be expected in Putnam County from returning CRP land to production totalled $4.5089 million.[5] Of this amount $2.4214 would be farmer owner/operator income.

a. Indirect Impacts

The total indirect impact of conventional production was projected to be $776,000, Table 6.[6] Industrial sectors in the Putnam County economy which would receive the largest benefits include: 26 (Agricultural Services), 447 (wholesale trade), and 456 (Banking, Insurance , and Real Estate).

b. Induced Impacts

For production in industrial sectors in which firms are primarily operated by owner operators with little hired labor, there are two sources of induced economic impacts:

1. hired workers in the subject industries and hired workers in supplying industries have consumption activity
2. The income which accrues to farm owner/operators supports their consumption activities.

The $2.42 million of farmer income was assumed to be spent on consumption activities.[7] For Putnam County, the total impact from this spending would amount to $2.58 million, Table 7. The relatively small difference between spending and projected economic impact results from the fact that few consumption items are produced in Putnam County. For hired workers the induced impact was projected to amount to $829,000. This amount plus the farmer spending effects would total to $3.41 million. Most of the spending which would be experienced would go to retail and to service sectors in the economy.

The total economic impact on Putnam County from a return of present CRP land to conventional production is projected to total $6.2694 million, Table 8. The largest component of the economic impact would come from the expected increased consumption.

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[5]Because most agricultural production is exported from the county, production was assumed to equal final demand for this analysis.

[6]The entire $4.5 million of output was used to calculate indirect impacts because the Implan coefficients were developed from total sales transactions.

[7]Ikerd et. al., op. cit., p.9.

B. Alternative (sustainable)

The total production output and marketing margin of $5.65 million for the alternative production system would produce $926,000 of indirect impact for Putnam County, Table 9. Sectors which would benefit most would be 456 (Banking, Insurance, and Real Estate), 447 (Wholesale Trade) and 26 (Agricultural Services).

Farmer income of $3.28 million would create a total level of economic activity of $3.49 million if it were spent in Putnam County, Table 10.[8] Hired employees in both the farm production sectors and in the industries which supplied farm inputs would have family consumption which would add $1.07 million to the economy. Total induced impacts to all sectors would total $4.57 million

The economy of Putnam County would be increased by $7.86 million if the land presently in CRP was used for agricultural production with sustainable practices being utilized, Table 11. Large gains would be realized in the Retail, Wholesale, Transportation, and Banking-Insurance-Real Estate sectors.

Summary

Total economic impacts which could be achieved by alternative production methods were evaluated in a case study situation - post-CRP land in Putnam County, Missouri. An input/output model (Implan) was utilized in the analysis.

Principle findings were:

(1) Production of crops under both scenarios would be similar.

(2) Livestock production potential is much higher with management intensive grazing practices utilized by alternative farming methods.

(3) If alternative production practices used on post-CRP land in Putnam County, Missouri, total economic impacts would be 25 percent higher.

(4) Much of the higher level of economic impact projected with the utilization of alternative farming methods comes from the induced effects of the larger number of families which could be supported with this system.

[8]Ikerd et al, op cit, p.9.

TABLE 6
PROJECTED DIRECT AND INDIRECT ECONOMIC IMPACTS OF RETURNING PUTNAM COUNTY'S CRP LAND TO CONVENTIONAL PRODUCTION

		DIRECT IMPACT	INDIRECT IMPACT
		MILLION DOLLARS	
1	Dairy Farm Products	0.0000	0.0005
2	Poultry And Eggs	0.0000	0.0025
3	Ranch Fed Cattle	0.7950	0.0240
4	Range Fed Cattle	0.0000	0.0142
5	Cattle Feedlots	0.0000	0.0175
6	Sheep, Lambs And Goats	0.0000	0.0068
7	Hogs, Pigs And Swine	0.0000	0.0108
9	Miscellaneous Livestock	0.0000	0.0061
11	Food Grains	0.0276	0.0001
12	Feed Grains	0.5460	0.0178
13	Hay And Pasture	0.0000	0.0083
14	Grass Seeds	0.0000	0.0000
18	Vegetables	0.0000	0.0009
21	Oil Bearing Crops	0.6084	0.0042
24	Forestry Products	0.0000	0.0000
26	Agr, Forest, Fish Svc.	0.0000	0.1217
27	Landscape And Hort.	0.0000	0.0022
37	Mining	0.0000	0.0002
48	Construction	0.0000	0.0367
174	Other Mfg. Products	0.0000	0.0078
309	Farm Machinery And Equip.	0.0000	0.0439
433	Trans, Comm, @ Utility	0.0000	0.0902
447	Wholesale Trade	0.1104	0.1171
448	Bld. Materials @ Garden S	0.0000	0.0001
449	General Merchandise Store	0.0000	0.0001
450	Food Stores	0.0000	0.0006
451	Auto. Dealers @ Svc. Stat	0.0000	0.0016
452	Apparel & Accessory Store	0.0000	0.0001
453	Furniture & Home Furn.	0.0000	0.0003
454	Eating & Drinking	0.0000	0.0002
455	Miscellaneous Retail	0.0000	0.0010
456	Banking, Ins, @ R.E.	0.0000	0.2230
463	Services	0.0000	0.0148
513	Government	0.0000	0.0007
524	Misc. Special Sectors	0.0000	0.0000
		2.0875	0.7760
	FARMER INCOME	2.4214	
	TOTAL FARM PRODUCTION AND MARKETING MARGINS	4.5089 (1)	

(1) THE ENTIRE $4.5 MILLION WAS USED TO CALCULATE INDIRECT IMPACT

TABLE 7
PROJECTED INDUCED ECONOMIC IMPACTS OF RETURNING
PUTNAM COUNTY'S CRP LAND TO CONVENTIONAL PRODUCTION

		FARMER IMPACT(1)	WORKER IMPACT(2)	TOTAL IMPACT
		MILLION DOLLARS		
1	Dairy Farm Products	0.0000	0.0009	0.0010
2	Poultry And Eggs	0.0000	0.0022	0.0063
3	Ranch Fed Cattle	0.0000	0.0037	0.0044
4	Range Fed Cattle	0.0000	0.0009	0.0011
5	Cattle Feedlots	0.0000	0.0003	0.0004
6	Sheep, Lambs And Goats	0.0000	0.0005	0.0006
7	Hogs, Pigs And Swine	0.0000	0.0005	0.0006
9	Miscellaneous Livestock	0.0000	0.0007	0.0015
11	Food Grains	0.0000	0.0000	0.0001
12	Feed Grains	0.0000	0.0012	0.0019
13	Hay And Pasture	0.0000	0.0003	0.0003
14	Grass Seeds	0.0000	0.0000	0.0000
18	Vegetables	0.0000	0.0042	0.0074
21	Oil Bearing Crops	0.0000	0.0004	0.0005
24	Forestry Products	0.0000	0.0000	0.0008
26	Agr, Forest, Fish Svc.	0.0000	0.0015	0.0088
27	Landscape And Hort.	0.0000	0.0048	0.0062
37	Mining	0.0000	0.0001	0.0185
48	Construction	0.0000	0.0140	0.0314
174	Other Mfg. Products	0.0000	0.0165	0.0726
309	Farm Machinery And Equip.	0.0000	0.0002	0.0090
433	Trans, Comm, @ Utility	0.0000	0.0739	0.1605
447	Wholesale Trade	0.0000	0.0456	0.1038
448	Bld. Materials @ Garden Supp	0.0000	0.0040	0.0178
449	General Merchandise Store	0.0000	0.0032	0.3275
450	Food Stores	0.0000	0.0699	0.3067
451	Auto. Dealers @ Svc. Station	0.0000	0.0665	0.2122
452	Apparel & Accessory Store	0.0000	0.0044	0.0888
453	Furniture & Home Furn.	0.0000	0.0171	0.0529
454	Eating & Drinking	0.0000	0.0059	0.1683
455	Miscellaneous Retail	0.0000	0.0376	0.5319
456	Banking, Ins, @ R.E.	0.0000	0.3951	1.1551
463	Services	0.0000	0.0487	0.1022
513	Government	0.0000	0.0042	0.0048
524	Misc. Special Sectors	0.0000	0.0000	0.0000
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(1) ECONOMIC IMPACT FROM FARM FAMILY CONSUMPTION

(2) INCLUDES HIRED LABOR INDUCED SPENDING PLUS FARMER PURCHASES INDUCED EFFECTS

TABLE 8
PROJECTED TOTAL ECONOMIC IMPACT OF RETURNING PUTNAM COUNTY'S CRP LAND TO CONVENTIONAL PRODUCTION

		DIRECT IMPACT	INDIRECT IMPACT	INDUCED IMPACT(1)	TOTAL IMPACT
		MILLION DOLLARS			
1	Dairy Farm Products	0.0000	0.0005	0.0010	0.0015
2	Poultry And Eggs	0.0000	0.0025	0.0063	0.0088
3	Ranch Fed Cattle	0.7950	0.0240	0.0044	0.8234
4	Range Fed Cattle	0.0000	0.0142	0.0011	0.0153
5	Cattle Feedlots	0.0000	0.0175	0.0004	0.0179
6	Sheep, Lambs And Goats	0.0000	0.0068	0.0006	0.0074
7	Hogs, Pigs And Swine	0.0000	0.0108	0.0006	0.0114
9	Miscellaneous Livestock	0.0000	0.0061	0.0015	0.0076
11	Food Grains	0.0276	0.0001	0.0001	0.0278
12	Feed Grains	0.5460	0.0178	0.0019	0.5657
13	Hay And Pasture	0.0000	0.0083	0.0003	0.0086
14	Grass Seeds	0.0000	0.0000	0.0000	0.0000
18	Vegetables	0.0000	0.0009	0.0074	0.0083
21	Oil Bearing Crops	0.6084	0.0042	0.0005	0.6131
24	Forestry Products	0.0000	0.0000	0.0008	0.0008
26	Agr, Forest, Fish Svc.	0.0000	0.1217	0.0088	0.1305
27	Landscape And Hort.	0.0000	0.0022	0.0062	0.0084
37	Mining	0.0000	0.0002	0.0185	0.0187
48	Construction	0.0000	0.0367	0.0314	0.0681
174	Other Mfg. Products	0.0000	0.0078	0.0726	0.0804
309	Farm Machinery And Equip.	0.0000	0.0439	0.0090	0.0529
433	Trans, Comm, @ Utility	0.0000	0.0902	0.1605	0.2507
447	Wholesale Trade	0.1104	0.1171	0.1038	0.3313
448	Bld. Materials @ Garden Supp	0.0000	0.0001	0.0178	0.0179
449	General Merchandise Store	0.0000	0.0001	0.3275	0.3276
450	Food Stores	0.0000	0.0006	0.3067	0.3073
451	Auto. Dealers @ Svc. Station	0.0000	0.0016	0.2122	0.2138
452	Apparel & Accessory Store	0.0000	0.0001	0.0888	0.0889
453	Furniture & Home Furn.	0.0000	0.0003	0.0529	0.0532
454	Eating & Drinking	0.0000	0.0002	0.1683	0.1685
455	Miscellaneous Retail	0.0000	0.0010	0.5319	0.5329
456	Banking, Ins, @ R.E.	0.0000	0.2230	1.1551	1.3781
463	Services	0.0000	0.0148	0.1022	0.1170
513	Government	0.0000	0.0007	0.0048	0.0055
524	Misc. Special Sectors	0.0000	0.0000	0.0000	0.0000
		2.0875	0.7760	3.4060	6.2694
	FARMER INCOME	2.4214			
	TOTAL FARM PRODUCTION AND MARKETING MARGINS	4.5089			

(1) INCLUDES 2.4214 MILLION OF FARMER INCOME

TABLE 9
PROJECTED DIRECT AND INDIRECT ECONOMIC IMPACTS OF RETURNING PUTNAM COUNTY'S CRP LAND TO ALTERNATIVE PRODUCTION

		DIRECT IMPACT	INDIRECT IMPACT
		MILLION DOLLARS	
1	Dairy Farm Products	0.0000	0.0006
2	Poultry And Eggs	0.0000	0.0027
3	Ranch Fed Cattle	1.4014	0.0260
4	Range Fed Cattle	0.0000	0.0154
5	Cattle Feedlots	0.0000	0.0188
6	Sheep, Lambs And Goats	0.0000	0.0074
7	Hogs, Pigs And Swine	0.0000	0.0116
9	Miscellaneous Livestock	0.0000	0.0070
11	Food Grains	0.0184	0.0002
12	Feed Grains	0.3770	0.0262
13	Hay And Pasture	0.0000	0.0120
14	Grass Seeds	0.0000	0.0000
18	Vegetables	0.0000	0.0012
21	Oil Bearing Crops	0.4326	0.0049
24	Forestry Products	0.0000	0.0000
26	Agr, Forest, Fish Svc.	0.0000	0.1374
27	Landscape And Hort.	0.0000	0.0026
37	Mining	0.0000	0.0002
48	Construction	0.0000	0.0450
174	Other Mfg. Products	0.0000	0.0094
309	Farm Machinery And Equip.	0.0000	0.0516
433	Trans, Comm, @ Utility	0.0000	0.1095
447	Wholesale Trade	0.1388	0.1412
448	Bld. Materials @ Garden S	0.0000	0.0002
449	General Merchandise Store	0.0000	0.0001
450	Food Stores	0.0000	0.0007
451	Auto. Dealers @ Svc. Stat	0.0000	0.0019
452	Apparel & Accessory Store	0.0000	0.0001
453	Furniture & Home Furn.	0.0000	0.0003
454	Eating & Drinking	0.0000	0.0002
455	Miscellaneous Retail	0.0000	0.0012
456	Banking, Ins, @ R.E.	0.0000	0.2705
463	Services	0.0000	0.0188
513	Government	0.0000	0.0008
524	Misc. Special Sectors	0.0000	0.0000
		2.3683	0.9257
	FARMER INCOME	3.2832	
	TOTAL FARM PRODUCTION AND MARKETING MARGINS	5.6515 (1)	

(1) THE ENTIRE $5.65 MILLION WAS USED TO CALCULATE INDIRECT IMPACT

TABLE 10
PROJECTED INDUCED ECONOMIC IMPACT OF RETURNING
PUTNAM COUNTY'S CRP LAND TO ALTERNATIVE PRODUCTION

		FARMER IMPACT(1)	WORKER IMPACT(2)	TOTAL IMPACT
			MILLION DOLLARS	
1	Dairy Farm Products	0.0001	0.00120	0.0013
2	Poultry And Eggs	0.0055	0.00290	0.0084
3	Ranch Fed Cattle	0.0009	0.00480	0.0057
4	Range Fed Cattle	0.0002	0.00120	0.0014
5	Cattle Feedlots	0.0001	0.00040	0.0005
6	Sheep, Lambs And Goats	0.0001	0.00060	0.0007
7	Hogs, Pigs And Swine	0.0001	0.00070	0.0008
9	Miscellaneous Livestock	0.0011	0.00090	0.0020
11	Food Grains	0.0001	0.00000	0.0001
12	Feed Grains	0.0010	0.00150	0.0025
13	Hay And Pasture	0.0001	0.00040	0.0005
14	Grass Seeds	0.0001	0.00000	0.0001
18	Vegetables	0.0043	0.00540	0.0097
21	Oil Bearing Crops	0.0001	0.00050	0.0006
24	Forestry Products	0.0011	0.00000	0.0011
26	Agr, Forest, Fish Svc.	0.0099	0.00190	0.0118
27	Landscape And Hort.	0.0020	0.00620	0.0082
37	Mining	0.0250	0.00010	0.0251
48	Construction	0.0236	0.01810	0.0417
174	Other Mfg. Products	0.0761	0.02130	0.0974
309	Farm Machinery And Equip.	0.0120	0.00030	0.0123
433	Trans, Comm, @ Utility	0.1174	0.09550	0.2129
447	Wholesale Trade	0.0789	0.05890	0.1378
448	Bld. Materials @ Garden Sup	0.0187	0.00510	0.0238
449	General Merchandise Store	0.4398	0.00410	0.4439
450	Food Stores	0.3210	0.09020	0.4112
451	Auto. Dealers @ Svc. Statio	0.1976	0.08590	0.2835
452	Apparel & Accessory Store	0.1145	0.00570	0.1202
453	Furniture & Home Furn.	0.0486	0.02210	0.0707
454	Eating & Drinking	0.2202	0.00760	0.2278
455	Miscellaneous Retail	0.6702	0.04860	0.7188
456	Banking, Ins, @ R.E.	1.0306	0.51030	1.5409
463	Services	0.0725	0.06290	0.1354
513	Government	0.0008	0.00550	0.0063
524	Misc. Special Sectors	0.0000	0.00000	0.0000
		3.4942	1.07080	4.5650

(1) ECONOMIC IMPACT FROM FARM FAMILY CONSUMPTION

(2) INCLUDES HIRED LABOR INDUCED SPENDING PLUS FARMER PURCHASES INDUCED EFFECTS

TABLE 11
PROJECTED TOTAL ECONOMIC IMPACT OF RETURNING PUTNAM COUNTY'S CRP LAND TO CONVENTIONAL PRODUCTION

		DIRECT IMPACT	INDIRECT IMPACT	INDUCED IMPACT(1)	TOTAL IMPACT
		MILLION DOLLARS			
1	Dairy Farm Products	0.0000	0.0006	0.0013	0.0019
2	Poultry And Eggs	0.0000	0.0027	0.0084	0.0111
3	Ranch Fed Cattle	1.4014	0.0260	0.0057	1.4331
4	Range Fed Cattle	0.0000	0.0154	0.0014	0.0168
5	Cattle Feedlots	0.0000	0.0188	0.0005	0.0193
6	Sheep, Lambs And Goats	0.0000	0.0074	0.0007	0.0081
7	Hogs, Pigs And Swine	0.0000	0.0116	0.0008	0.0124
9	Miscellaneous Livestock	0.0000	0.0070	0.0020	0.0090
11	Food Grains	0.0184	0.0002	0.0001	0.0187
12	Feed Grains	0.3770	0.0262	0.0025	0.4057
13	Hay And Pasture	0.0000	0.0120	0.0005	0.0125
14	Grass Seeds	0.0000	0.0000	0.0001	0.0001
18	Vegetables	0.0000	0.0012	0.0097	0.0109
21	Oil Bearing Crops	0.4326	0.0049	0.0006	0.4381
24	Forestry Products	0.0000	0.0000	0.0011	0.0011
26	Agr, Forest, Fish Svc.	0.0000	0.1374	0.0118	0.1492
27	Landscape And Hort.	0.0000	0.0026	0.0082	0.0108
37	Mining	0.0000	0.0002	0.0251	0.0253
48	Construction	0.0000	0.0450	0.0417	0.0867
174	Other Mfg. Products	0.0000	0.0094	0.0974	0.1068
309	Farm Machinery And Equip.	0.0000	0.0516	0.0123	0.0639
433	Trans, Comm, @ Utility	0.0000	0.1095	0.2129	0.3224
447	Wholesale Trade	0.1388	0.1412	0.1378	0.4178
448	Bld. Materials @ Garden Supp	0.0000	0.0002	0.0238	0.0240
449	General Merchandise Store	0.0000	0.0001	0.4439	0.4440
450	Food Stores	0.0000	0.0007	0.4112	0.4119
451	Auto. Dealers @ Svc. Station	0.0000	0.0019	0.2835	0.2854
452	Apparel & Accessory Store	0.0000	0.0001	0.1202	0.1203
453	Furniture & Home Furn.	0.0000	0.0003	0.0707	0.0710
454	Eating & Drinking	0.0000	0.0002	0.2278	0.2280
455	Miscellaneous Retail	0.0000	0.0012	0.7188	0.7200
456	Banking, Ins, @ R.E.	0.0000	0.2705	1.5409	1.8114
463	Services	0.0000	0.0188	0.1354	0.1542
513	Government	0.0000	0.0008	0.0063	0.0071
524	Misc. Special Sectors	0.0000	0.0000	0.0000	0.0000
		2.3682	0.9257	4.5650	7.8589
	FARMER INCOME	3.2832			
		5.6515			

(1) INCLUDES 3.2832 MILLION OF FARMER INCOME

Appendix I, Implan Sector Aggregation for Putnam County

IMPLAN SECTOR	INDUSTRY
1	DAIRY
2	POULTRY
3	RANCH FED CATTLE
4	RANGE FED CATTLE
5	CATTLE FEEDLOTS
6	SHEEP
7	HOGS
8	OTHER MEAT ANIMALS
9	MSC. LIVESTOCK
10	COTTON
11	FOOD GRAINS
12	FEED GRAINS
13	HAY AND PASTURE
14	GRASS SEED
15	TOBACCO
16	FRUIT
17	TREE NUTS
18	VEGETABLES
19	SUGAR CROPS
20	MISC. CROPS
21	OIL BEARING CROPS
22	FOREST PRODUCTS
23	GREENHOUSE AND NURSERY
24	FORESTRY PRODUCTS
25	COMMERCIAL FISHING
26	AGRICULTURAL SERVICES
27	LANDSCAPE AND HORTICULTURE
28-47	MINING
48-57	CONSTRUCTION
58-77 79-103	FOOD MANUFACTURING
78	FEED MANUFACTURING
104-201 206-308 310-432	MANUFACTURED PRODUCTS
309	FARM MACHINERY
310	LAWN AND GARDEN EQUIPMENT
433	TRANS., COMM., & UTILITY
447	WHOLESALE TRADE
448	BUILDING MERCHANDISE
449	GENERAL MERCHANDISE
450	FOOD STORES
451	AUTOMOBILE DEALERS
452	APPAREL AND ACCESSORIES
453	FURNITURE & HOME FURNISHINGS
454	EATING AND DRINKING EST
455	MISC. RETAIL
456-562	BANKING, INS., & REAL ESTATE
463-473	SERVICES
510-515 519-523	GOVERNMENT
516-518 524 528	MISC. SPECIAL SECTORS
525-528	HOUSEHOLD INDUSTRY

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