PURDUE AGRICULTURAL ECONOMICS REPORT

AUGUST 1993

Statewide Farmland Values Continue Modest Increase

J.H. Atkinson, Professor and Kim Cook, Research Associate

The Purdue land values survey revealed a statewide increase of 3.2% in the value of average-quality bare tillable land in the year ending in June 1992, about double the tiny increase of 1991-92. The USDA estimate for the year ending January 1 was 5%. The Federal Reserve Bank of Chicago survey of bankers indicated a 4% increase for the year ending March 31 in "good" farmland in the northern two-thirds of Indiana.

According to the Purdue survey, this is the sixth consecutive year of increasing Indiana land values. Top-quality land values are now 44% above the low levels of 1987, but are still 35% below the high of 1981. Furthermore, inflation of about 27% reduces the "real" increase in top and average land values since 1987 to 13%.

Compared to a year ago, the current number of farmland transfers was estimated to be up by 30% of the respondents, down by 26%, and the same by 44%. Only 7.5% of the respondents reported that there currently is more land on the market than a year ago; 43% said less, and 50% said the same.

Statewide Land Prices

For the *six months* ending in June 1993, the survey showed statewide average increases of 2.5% on top land, 1.8% on average land, and

Table 1. Average estimated land value per acre (tillable, bare land) and percentage change by geographic area and land class, selected time periods, Purdue Land Values Survey, Indiana, July 1993.

Area	Class	Corn bu/A	Dec. 1992 $	June 1993 $	Change 12/92-6/93 %	Projected Dec. 1993 $	Projected Change 6/93-12/93 %
North	Top	143	1721	1761	2.3	1777	0.9
	Average	112	1224	1236	1.0	1254	1.5
	Poor	84	850	845	-0.6	857	1.4
	Transitional[1]		2900	2960	2.1	3117	5.3
Northeast	Top	142	1505	1519	0.9	1548	1.9
	Average	115	1132	1134	0.2	1142	0.7
	Poor	89	810	815	0.6	814	-0.1
	Transitional[1]		3227	3305	2.4	3408	3.1
W. Central	Top	148	1811	1856	2.5	1917	3.3
	Average	124	1425	1456	2.2	1471	1.0
	Poor	96	1040	1056	1.5	1061	0.5
	Transitional[1]		3816	4006	5.0	4353	8.7
Central	Top	148	1844	1920	4.1	1941	1.1
	Average	123	1490	1539	3.3	1554	1.0
	Poor	100	1158	1186	2.4	1189	0.3
	Transitional[1]		3833	3972	3.6	4284	7.9
Southwest	Top	150	1901	1919	0.9	1942	1.2
	Average	118	1337	1359	1.6	1384	1.8
	Poor	89	840	862	2.6	868	0.7
	Transitional[1]		3104	3145	1.3	3246	3.2
Southeast	Top	135	1189	1237	4.0	1216	-1.7
	Average	109	918	928	1.1	934	0.6
	Poor	85	688	695	1.0	700	0.7
	Transitional[1]		2493	2610	4.7	2762	5.8
Indiana	Top	145	1685	1727	2.5	1750	1.3
	Average	118	1281	1304	1.8	1316	0.9
	Poor	91	923	936	1.4	939	0.3
	Transitional[1]		3256	3363	3.3	3570	6.2

1 Land moving out of agriculture.

1.4% on poor land, somewhat more than the increases of 1% to 1.3% reported for the same period a year ago (Table 1). Fifty-two percent of the respondents reported that some or all classes of land increased during the six-month period, 4.5% reported declines, and 42% felt there was no change in any class of land values. These estimates were more bullish than those of last year.

The statewide increase in value for the *year* ending in June 1993 was 3.2% on top and average land, and 3.7% on poor land (Table 2). These increases are greater than the 1.1% to 2.4% increases reported last year.

Statewide, land rated at a long-term corn yield of 145 bushels per acre had an average estimated value of $1,727 per acre (Table 1) or $11.91 per bushel (Table 3). Average land (118-bushel yield) was valued at $1,304 per acre, while the 91-bushel poor land was estimated to be worth $936 per acre. Land values per bushel of yield rating were $11.05 on average land and $10.29 on poor land. These per-bushel figures are $.21 higher than last year on top land, $.15 higher on average land, and $.26 higher on poor land.

Table 2. June 1992 and June 1993 average estimated land value (tillable, bare land) and percentage change by geographic area and land class, Purdue Land Values Survey, July 1993.

Area	Class	Land Value June 1992 $	Land Value June 1993 $	Change 6/92-6/93 $
North	Top	1692	1761	4.1
	Average	1240	1236	-0.3
	Poor	876	845	-3.5
Northeast	Top	1525	1519	-0.4
	Average	1118	1134	1.4
	Poor	796	815	2.4
W. Central	Top	1853	1856	0.2
	Average	1439	1456	1.2
	Poor	1028	1056	2.7
Central	Top	1814	1920	5.8
	Average	1447	1539	6.4
	Poor	1086	1186	9.2
Southwest	Top	1827	1919	5.0
	Average	1309	1359	3.8
	Poor	868	862	-0.7
Southeast	Top	1108	1237	11.6
	Average	856	928	8.4
	Poor	638	695	8.9
Indiana	Top	1673	1727	3.2
	Average	1264	1304	3.2
	Poor	903	936	3.7
	Transitional[2]	3156	3363	6.6

2 Land moving out of agriculture.

Purdue Agricultural Economics Report is a quarterly newsletter published by the staff of the Department of Agricultural Economics, Purdue University.

Editor
Chris Hurt

Editorial Board
Lee Schrader
Stephen B. Lovejoy

Layout and Design
Cathy Malady

Circulation Manager
Judy Conner

Purdue University
Cooperative Extension Service,
West Lafayette, IN

Figure 1. Indiana Land Values and Rent-to-Value Multiples

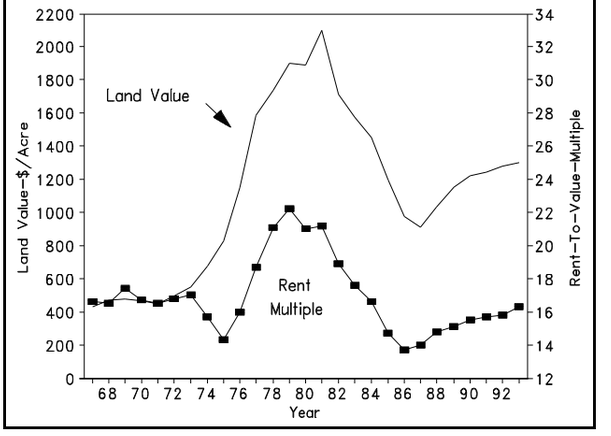


Table 3. Land value per bushel of estimated corn yield, Purdue Land Values Survey, Indiana, July 1993.

Area	Land Class								
	Top			Average			Poor		
	1992	1993	% Change	1992	1993	% Change	1992	1993	% Change
North	$11.92	$12.31	3.3	$11.07	$11.04	-0.3	$10.43	$10.06	-3.5
Northeast	10.97	10.70	-2.5	9.89	9.86	-0.3	9.15	9.16	0.1
W.Central	12.52	12.54	0.2	11.70	11.74	0.3	10.71	11.00	2.7
Central	12.26	12.97	5.8	11.96	12.51	4.6	11.31	11.86	4.9
Southwest	12.43	12.79	2.9	11.09	11.52	3.9	9.54	9.69	1.6
Southeast	8.52	9.16	7.5	8.15	8.51	4.4	7.88	8.18	3.8
Indiana	11.70	11.91	1.8	10.90	11.05	1.4	10.03	10.29	2.6

Transition land moving into nonfarm uses was estimated to have a value of $3,363 per acre in June 1993, up 6.6% from last year (Table 2). Only about 46% of the respondents reported on transition land values, and the range in estimates is quite wide. Hence, the reliability of the average value is not as good as with farmland.

Statewide Rents

Cash rents increased statewide from 1992 to 1993 by $2 per acre on top land and $1 per acre on poor land and declined $1 per acre on average land (Table 4).

The estimated cash rent on average land was $89 per acre, $114 on top land, and $69 on poor land. Rent per bushel of estimated yield was $.79 on top land, $.75 on average land, and $.76 on poor land. Cash rent on top land in 1993 was 17% below the record 1981 level.

Statewide, cash rent as a percentage of estimated land value declined a little from the levels of the three previous years. Average figures are 6.6% for top land, 6.8% for average land, and 7.4% for poor-quality land (Table 4).

Another way to examine the relationship between cash rent and land values is to calculate a "rent multiple" by dividing estimated land value by cash rent. USDA estimates of real estate tax per acre were subtracted from rent, and multiples calculated as shown in Figure 1 (USDA rent and land value data, 1967-76, Purdue data 1976-93). The estimated multiple on average land in 1993 was 16.3, much lower than the multiple of 21 to 22 in 1978-81 and slightly lower than the average of the fairly stable years, 1967-72. Land values fell faster than cash rents in the early 1980s, so the multiple fell to around 14 in 1986-87 and has risen since.

Table 4. Average estimated cash rents, bare tillable land, 1992 and 1993, Purdue Land Values Survey, Indiana, July 1992.

Area	Class	Corn	Rent/Acre		Percent Change	Rent/bu. of Corn		Rent as a % of June Land Value	
		bu/A	1992 $	1993 $	'92 - '93 %	1992 $	1993 $	1992 %	1993 %
North	Top	143	115	116	0.9	0.81	0.81	6.8	6.6
	Average	112	90	89	-1.1	0.80	0.79	7.3	7.2
	Poor	84	66	65	-1.5	0.79	0.77	7.5	7.7
Northeast	Top	142	100	104	4.0	0.72	0.73	6.6	6.8
	Average	115	79	78	-1.3	0.70	0.68	7.1	7.0
	Poor	89	60	60	0.0	0.69	0.67	7.5	7.4
W. Central	Top	148	127	126	-0.8	0.86	0.85	6.9	6.8
	Average	124	104	102	-1.9	0.85	0.82	7.2	7.0
	Poor	96	80	81	1.3	0.83	0.84	7.8	7.7
Central	Top	148	123	125	1.6	0.83	0.84	6.8	6.5
	Average	123	101	103	2.0	0.83	0.84	7.0	6.7
	Poor	100	78	82	5.1	0.81	0.82	7.2	6.9
Southwest	Top	150	112	114	1.8	0.76	0.76	6.1	5.9
	Average	118	87	85	-2.3	0.74	0.72	6.6	6.3
	Poor	89	64	66	3.1	0.70	0.74	7.4	7.7
Southeast	Top	135	83	84	1.2	0.64	0.62	7.5	6.8
	Average	109	65	65	0.0	0.62	0.60	7.6	7.0
	Poor	85	47	47	0.0	0.58	0.55	7.4	6.8
Indiana	Top	145	112	114	1.8	0.78	0.79	6.7	6.6
	Average	118	90	89	-1.1	0.78	0.75	7.1	6.8
	Poor	91	68	69	1.5	0.76	0.76	7.5	7.4

Area Estimates

The value of farmland by areas (Figure 2) from December 1992 to June 1993 increased except on poor land in the north which registered a $5 per acre decrease. The greatest increase, 4.1%. was on top land in the central area (Table 1).

For the year ending in June 1993, the greatest increases in all classes of farm land values occurred in the

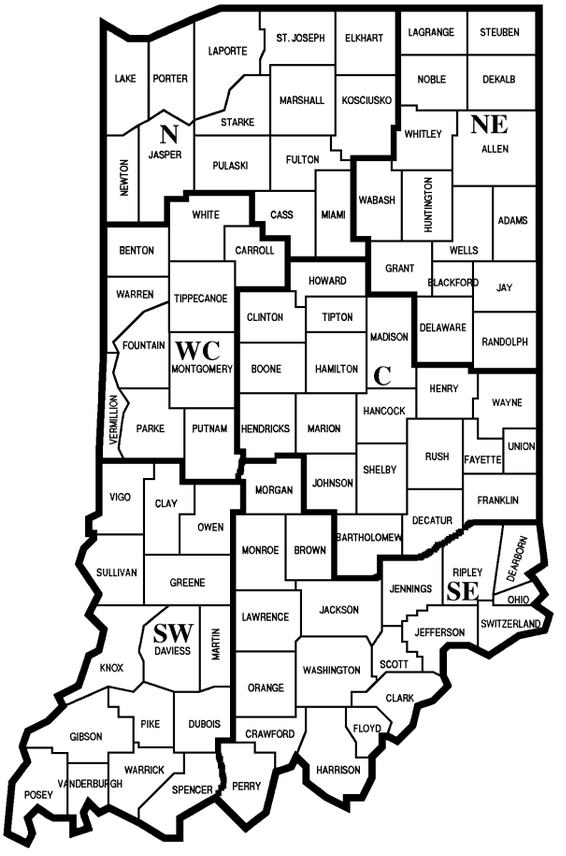
southeast and central areas, ranging from about 6% to nearly 12% (Table 2). Declines were noted for poor land in the southwest and north, as well as for average land in the north and top land in the northeast. Increases in other land classes ranged from under 1% to 5%. Transition land values increased in all areas except the west central.

The estimated average value of top-quality farm land was about $1,920 per acre in both the central and the southwest areas. Next highest, $1,856, was in the west central area. The corn yield rating on top land was practically identical in these three areas.

The percentage increase from the lows of 1987 has been greater in the southwest than in other areas — 60% on top land, 58% on average land, and 52% on poor land. In the other areas, top land has increased 44% to 47% in the southeast, north, west central, and central areas; 60% in the southeast; and 31% in the northeast. Increases for average were about the same as for top land in most areas. Poor land values rose more than values of top and average land in northeast and central areas, and less in the southwest.

Central Indiana top land with a 148-bushel corn yield rating had an average value of $1,920 per acre or $12.97 per bushel (Table 3). This per-bushel figure for top land was from $12.31 to $12.79 in the north, southwest, and west central areas; $10.70 in the northeast; and $9.16 in the southeast. These per-bushel figures declined as land quality declined.

Figure 2. Geographic Areas Used in the Purdue Land Values Survey



Per-acre rents for top land increased $1 to $4 from 1992 to 1993 in all areas except the west central, where rents for top land were down by $1 (Table 4). Average land rents increased only in the central area. Rent for poor land increased by $1 to $4 in three of the six areas. In the southwest area, average land rent was up $2, and poor land rent was down the same amount. Only in the central area were rents up for all classes of land.

Cash rents were highest in the west central and central areas, with averages of $125-$126 per acre on top-quality land ($.84-$.85 per bushel). The per-bushel rent for the top land was $.81 in the north and $.76 in the southwest. The estimate was $.73 for the northeast and $.62 in the southeast. As land quality declined, rent per bushel also tended to decline, but by only a few cents per bushel.

Cash rent as a percentage of land value tended to decline from 1992 to 1993 (Table 4). This percentage declined on top land in the southwest from 6.1% in 1992 to 5.9% in 1993. Cash rent as a percentage of land values on top land in the other areas fell in the narrow range of 6.5% to 6.8%. In most cases, this percentage increased as land quality declined.

Respondents' Outlook

Respondents were a little more optimistic this year than last that farmland values would rise by year-end. Forty-three percent expect some or all classes of land to increase, up from one-fourth last year; however, 50% of the respondents felt that there would be no change. The average increase of 1.3% for top land was slightly higher than last year. Only 6% expected declines in some or all classes of land. Increases, mostly under 2%, were expected in all areas of the state for all classes of land except for poor land in the northeast (down 0.1%) and top land in the southeast (down 1.7%). The greatest average increase, 3.3%, was expected to occur on top land in the west central area.

Seventy-nine percent of the 1993 respondents expect land values to be

higher five years hence, 17% expected no change, and 4% expected decreases. This year, the group expected an average increase of 7.4% for the five-year period, down from 9% last year. This 7.4% increase in 5 years is a compound annual rate of about 1.5%. Current cash rent minus real estate tax and a few dollars per acre for other ownership costs would result in a return of 6% or a little less. Total return would thus be about 7% to 7.5%. This rate of return compares favorably with current rates on certificates of deposit, especially given the fact that land investment is an inflation hedge and has the potential of increased returns over time.

Respondents were asked to estimate annual averages over the next five years for corn and soybean prices, the farm mortgage interest rate, and the rate of inflation. The projections they made for the past decade are shown below:

	Prices, $/bu.		Rates, %/yr.	
Year	Corn	Beans	Interest	Inflation
1984	$3.13	$7.35	13.3	6.5
1985	2.70	6.13	12.3	5.1
1986	2.32	5.43	11.0	4.2
1987	2.16	5.62	10.7	4.5
1988	2.50	6.82	10.9	4.6
1989	2.48	6.55	11.0	4.7
1990	2.61	6.22	11.0	4.6
1991	2.47	6.07	10.4	4.2
1992	2.52	6.04	9.5	3.8
1993	2.35	5.96	8.7	3.8

The soybean price expectation has declined every year since 1988, although most of the decline ($.86) was over by 1991. This year's $.17 decline in corn price expectation is the greatest since 1985. The interest rate expectation dropped for the fourth year in a row by nearly a full percentage point to 8.7%, the lowest level since this question was first asked in 1983. The expectation for inflation was 3.8%, the same as last year. The difference between the expected interest rate and the inflation rate, sometimes used as a rough measure of the "real" interest rate, was 4.9, down from the range of 6.2-6.4 from 1987-91.

"Cautious investors would be well advised to assume that land values over the rest of the decade will do little more than keep up with inflation (little or no increase in "real" values); however, we believe that there is more upside potential in land values than there is downside risk, even though, in the short run, slight decreases might occur."

Factors Affecting Land Prices

This year, like a year ago, only modest increases in land values are expected. Listed below are several factors which are likely to affect land values.

Positive Factors

- low interest rates
- good crop prospects in Indiana for 1993
- gradual increases in crop yields
- the shift to no-till
- land purchase by investors
- improving technology in both crop and swine production
- gradual increases in ethanol production
- potential reduction in trade barriers
- prospects for decreasing carryover stocks of corn and beans

Negative factors

- environmental protection costs
- prospects for higher interest rates
- keen competition for exports
- reduced government payments
- declining percentage return to land

Some of the above factors change slowly and exert a gradual influence on land values, for example, changing production technology and increasing crop yields. Others can change quickly and could result in either increases or decreases in land values in the short run.

Cautious investors would be well advised to assume that land values over the rest of the decade will do little more than keep up with inflation (little or no increase in "real" values); however, we believe that there is more upside potential in land values than there is downside risk, even though, in the short run, slight decreases might occur. Remember, too, that because of the imprecise nature of land value estimation, a reported change of 1-3% per year either up or down may simply indicate a stable market rather than a trend.

****

The land values survey was made possible by the cooperation of professional farm managers, appraisers, brokers, bankers, county extension educators, and persons representing the Farm Credit System, the Farmers Home Administration, ASCS county offices, and insurance companies. Their daily work requires that they keep well-informed about land values and cash rent in Indiana. The authors express sincere thanks to these friends of Purdue and Indiana agriculture. They provided 340 responses representing most of Indiana's counties. We also express appreciation to Sandy Dottle of the Department of Agricultural Economics for her help in conducting the survey and to Professors Chris Hurt and John Kadlec for their review of this report and helpful suggestions.

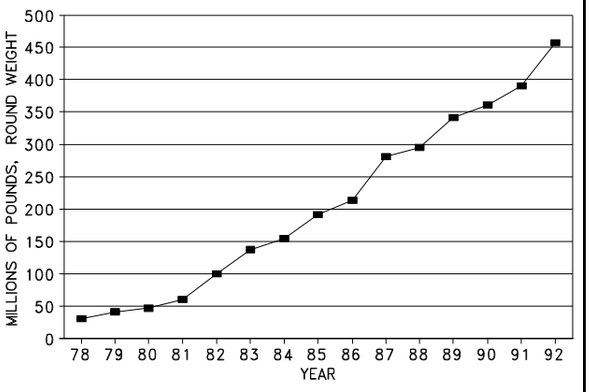
Can Indiana Farmers Make Money Producing Catfish?

Nancy Scott, Former Graduate Research Assistant; John E. Kadlec, Professor; Jean R. Riepe, Research Associate; and LaDon Swann, Aquaculture Extension Specialist, Department of Animal Sciences

The production and consumption of catfish have increased substantially during the past 15 years (Figure 1). Farm-raised catfish represent the fourth most valuable seafood species when comparing value of domestic production — behind salmon, shrimp, and crab. In 1992, 457.4 million pounds of live-weight farm-raised catfish were processed, compared with only 30.2 million pounds in 1978.

Catfish has become more widely accepted by consumers. Farm-raised catfish, fed primarily a diet of corn and soybean meal, is a mild-flavored fish that can be prepared many ways. Catfish is high in protein, vitamins, and minerals but contains little saturated fat. In light of increased consumer demand for catfish and interest by Indiana farmers, the purpose of this study was to answer the question "Is catfish production likely to be profitable for Indiana farmers?"

Figure 1. Pounds of U.S. Farm-Raised Catfish Processed, 1978-1992.



Source: USDA, Aquaculture Situation and Outlook, AQUA-10, March, 1993.

Table 1. Market Sources, Market Weight, and Price Received Per Pound for Farm-Raised Catfish: 1990 Survey Responses.

Market	Number of Respondents	Market Weight	Price Received Per Pound
Retail	5	.45-.75#	$2.20-$3.00 dressed weight
Restaurants	2	.45-.75#	$2.00-$2.25 dressed weight
Conservation Clubs	1	.75-.90#	$2.20 dressed weight
Fee Fishing Lakes	3	1.0-2.5#	$1.00-$1.10 live weight

To answer this question, the profitability of catfish production in Indiana was evaluated for three production systems: constructed ponds, cages in existing ponds, and indoor recirculating systems. Surveys of 13 fish producers, along with previous studies, were used to estimate costs and returns for the three production systems. Profit potential for catfish production in Indiana was evaluated, and Indiana costs of production were compared to those in Mississippi.

Accurate estimates of costs are difficult in a new industry such as catfish production in Indiana. In an undeveloped industry the few farms, input suppliers, and markets in the state are probably not attaining economies of size nor peak managerial efficiency. Hence, cost estimates tend to be higher than they would be in a fully developed industry, and few marketing alternatives exist to provide an accurate view of revenues. If the catfish industry grows in Indiana, costs will likely decline. Nevertheless, even with these shortcomings in mind, the catfish industry can benefit from the results of this study.

Indiana Catfish Markets and Prices

The producers surveyed reported selling fish to several different markets, including retail customers, fee-fishing operations, live-haulers, and restaurants. Prices received were highly dependent upon the market in which the fish were sold (Table 1). The markets available to Indiana producers fall into three general categories: retail sales to local markets, fee-fishing lakes and live haulers, and wholesale markets.

Retail Sales to Local Markets: Local markets are usually located within a 50-mile radius of the production site. Some farmers have developed a specialized local market and receive premium prices. These

farmers have established a reputation for reliability and for delivering a high-quality product. Seven of the surveyed producers sold their fish directly to local customers. The fish were sold either live or dressed and were purchased at the farm or delivered. Several producers harvested fish in the fall, at which time they processed and froze them. The fish were then sold out of the freezers during the winter.

Two producers supplied fish to restaurants. The fish were usually processed by the farmer and delivered weekly. Fish were harvested when they reached .75-1.5 pounds live weight and typically yielded .45 - .75 pounds dressed weight and were sold for $2.00-$2.25 per pound. One producer established a yearly market by selling fish to Conservation and Lions Clubs for fish frys. These fish were typically sold at dressed weights of .75 - .9 pounds for $2.20 per pound. Most retail customers are repeat customers, and advertising is frequently by word of mouth.

Fee-Fishing Lakes and Live Haulers: Three of the producers sold direct to fee-fishing lakes or to live haulers who resold to fee-fishing lakes. Fee-fishing operators often paid above wholesale prices for fish. Live haulers also often paid favorable prices to obtain good quality fish; however, they usually purchase fish only during a four to five month period from May to September. Some producers like to provide fish for fee-fishing lakes because the requirements for sorting and grading are not strict.

Wholesale Markets: None of the catfish producers surveyed sold fish to wholesale processing markets. Prices paid by wholesale markets generally are much lower than those paid by retail or live-haul markets. As an example, from 1985 to 1991, prices averaged about 70 cents per live pound, with yearly averages from 62 to 75 cents per pound.

Costs and Returns for Three Catfish Production Systems

Costs of catfish production vary by system of production. The following is a discussion of production methods and costs of production for each of the three systems.

Ponds Constructed for Fish Production: For optimum operating efficiency, fish production ponds should be designed specifically for aquaculture. Ponds most suitable for aquaculture should be rectangular, four to six feet deep, have a smooth floor, and be easily drained and refilled. The investment for ponds constructed specifically for catfish production generally ranges from $2000 to $3000 per acre. The cost of pond excavation represents about 50 percent of this investment. Investments for pond production in Indiana are presented in Table 2, and an annualized budget is shown in Table 3. Assumptions included: one 10-acre pond; 16,850 fingerlings were stocked in the spring, with 16,000 fish harvested about six months later in the fall; these fish were fed twice per day an average daily total of 205 pounds of feed; and fish were harvested in late September at an average weight of 1.25 pounds each.

The cost of fish produced in the constructed pond was $1.16 per pound. Assuming a price of $1.25 per live pound, net returns would be 9 cents per pound or $1,767 per 10-acre pond. Return per hour of labor would be $12.89.

Climatic conditions is an important factor increasing cost for pond systems in Indiana. The optimum water temperature range for catfish growth (75˚ - 90˚F) is reached only four to six months of the year. Annual ownership costs associated with investments account for about one-fourth of the total cost. Fixed costs cannot be spread over as much production as would be possible in geographic areas that have optimum-growth temperatures for a greater number of months.

Table 2. Initial Investment for Three Production Systems in Indiana.

Constructed Pond[1]		Cages in Existing Pond[2]		Indoor Recirculating System[3]	
Investment Items	Initial Cost	Investment Items	Initial Cost	Investment Items	Initial Cost
Land - 10 a.	$10,000	Cages (21)	$ 2,415	Building, tank, filters	$50,000
Pond construction	15,000	Boat & cage		Heater	1,500
Wells	4,500	placement	1,000	Aerator	2,500
Aerators	3,500	Feed equipment	1,500	Generator	2,500
Feed equipment	1,500	Water test		Harvest equipment	500
Harvest equipment	1,500	equipment	400	Well	3,500
Water test equipment	400			Water test equipment	400
Total	$36,400	Total	$ 5,315	Total	$60,900

1 Based on one 10-acre constructed pond.

2 21 cages each 4'x4'x4' in an existing 10-acre pond.

3 Based on a 12,000 gallon tank with two batches per year.

Cages in Existing Ponds: Many ponds in Indiana have been designed for watershed conservation, irrigation, livestock watering, or for recreational purposes. These ponds usually cannot easily be drained, and they may contain structures such as stumps or felled trees which make fish harvesting difficult. In Indiana, existing ponds are prevalent along the interstate highways since many were created as sources of fill dirt. Cage production enables many existing ponds to be used effectively for aquaculture. The cage encloses a number of fish in a confined area, thus making harvest much easier than in an open pond. The fish are either dipped out of the enclosure, or the enclosure itself is removed.

Cage culture is an attractive type of production system because minimal pond investment is needed. The only investment required is for cages, harvesting equipment, feeding equipment, and occasionally for pond improvement. The cost of cages for producers surveyed ranged from $50 to $75 each when constructed by the producers and $115 per cage when purchased. Typical cage dimensions were 4' x 4' x 4'. The length of the growing season is approximately six months starting in April.

The cage culture budget in this study was based on a 21-cage unit with an existing 10-acre pond (Tables 2 and 3). Assumptions were: 8,400 fingerlings 6 to 8 inches long were stocked in April; 5 percent death loss; 8,000 fish harvested in the fall; and they were fed an average of 103 lbs. of feed per day. Cost per pound of fish produced was $1.12 per live pound. With a $1.25 selling price, the net return was $1,279 for the pond or $61 per cage. The return to labor and management was $11.26 per hour. Cage culture enables some producers to utilize previously unused resources to increase their income.

Indoor Recirculating Systems: Indoor recirculating systems allow year-round fish production. Some producers stock fish continuously, while others raise one batch at a time. Of the producers interviewed who had used recirculating systems, only one was presently raising catfish. Several had raised catfish in the past, but had switched to other species. The major economic drawbacks to an indoor recirculating system are the high initial investment and the high annual operating costs, especially for heating the tanks. The investment expense can be reduced if existing buildings can be converted. For the five producers surveyed, the total initial investment ranged from $50,000 to $150,000 for a complete indoor recirculating system (Table 2).

The budget for an indoor recirculating system was based on practices used by producers interviewed and on a 12,000 gallon tank. Two batches of fish were produced per year. Assumptions included: 12,500 fingerlings 4 to 6 inches long were stocked for both batches; death loss was 4 percent; 12,000 fish were harvested; and they were fed twice per day an average daily total of 63 pounds of feed. Fish were harvested at about 1.25 pounds.

Production costs and returns for the indoor recirculating systems are presented in Table 3. The cost of production per pound was $1.65, and the net loss was $6,087 with the $1.25 selling price. While production efficiencies rival those found in the southern states, the additional investment expenses for facilities boost the total cost per pound of

Table 3. Annual Budget for Indiana Catfish Production in Three Production Systems

	Constructed Pond	Cages in Existing Pond	Indoor Recirculating System
1. *Annual Production and Revenue*			
Total return	$25,000	$12,500	$18,750
Lbs of fish	20,000	10,000	15,000
Price per live lb	$ 1.25	$ 1.25	$ 1.25
2. *Direct or Operating Costs*	Total Cost	Total Cost	Total Cost
Feed[1]	$ 6,660	$ 3,330	$ 4,050
Fingerlings[2]	4,213	2,100	2,500
Chemicals	100	100	600
Power & fuel	750	200	1,300
Licenses	50	50	50
Supplies	200	100	200
Hauling and marketing	3,000	1,500	2,250
Interest on operating costs	400	200	225
Miscellaneous	200	200	200
Total Direct or Operating Costs	$15,573	$ 7,780	$11,375
3. *Return Over Direct Costs*	$ 9,427	$ 4,720	$ 7,375
4. *Indirect or Overhead Costs*			
Depreciation	$ 1,985	$ 783	$ 4,262
Interest	1,856	213	2,436
Repair & maintenance	1,320	265	3,045
Insurance	35	27	305
Taxes	364	53	609
Labor	2,100	2,100	2,800
Total Indirect or Overhead Costs	$7660	$ 3,441	$13,457
5. *Total Production Costs (2 + 4)*	$23,233	$ 11,221	$24,832
6. *Net Returns (1 - 5)*	$ 1,767	1,279	-6,082
7. *Cost per Lb of Fish Harvested*	$1.16	$1.12	$1.65
8. *Labor Return per Hour*	$12.89	$11.26	

1 37,000 pounds of feed in constructed ponds, 18,500 pounds of feed in cages in existing ponds, and 22,500 pounds of feed in the indoor recirculating system, all at 18 cents per pound.

2 16,850 fingerlings in constructed ponds and 8,400 fingerlings in cages in an existing pond at $0.25 each. 12,500 fingerlings in an indoor recirculating system at $0.20 each.

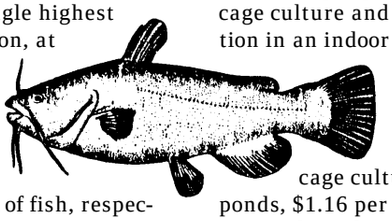
production above the $1.25 price received per pound. This conclusion is supported by research at North Carolina State University which showed "that catfish cannot be economically produced in recirculating systems" (Losordo, Easley, and Westerman).

Cost Comparison Between Indiana and Mississippi

Costs between $0.60 and $0.68 per pound are incurred by the most efficient producers to raise catfish in ponds in Mississippi (Keenum and Waldrop). Economies of scale are important in catfish production. Of the farm sizes compared in Keenum and Waldrop's research, a 643-acre farm consisting of 32 ponds, each 20 acres in size, with three additional acres for buildings and operations, was determined to be the most cost efficient. The cost estimates derived in their study represent the average of the upper ten percent of the producers in terms of efficiency and productivity. The industry average productivity is substantially less than that of the group represented in this study.

The methods of calculating costs for the Keenum and Waldrop study were similar to those used in this study. However, the Mississippi cost estimates are for the most efficient farms, while the Indiana figures are for typical farms.

Following are comparisons of individual resource costs in the two studies. Feed was the single highest cost item of production, at $0.245 per pound of fish produced in Mississippi. In Indiana, feed costs were $0.33, $0.33, and $0.27 per pound of fish, respectively, for constructed ponds, cage culture, and indoor recirculating systems. Fingerling costs were considerably less in Mississippi than in Indiana. Mississippi producers paid an average of 7.5 cents each for a six-inch fingerling. Indiana producers paid 20 cents each for 4- to 6-inch fingerlings and 25 cents each for 6- to 8-inch fingerlings. Ownership costs (depreciation, interest, insurance, taxes) in the Mississippi study averaged $0.103 per pound of fish harvested. In Indiana, ownership costs were: $.28 per pound for constructed ponds, $0.13 per pound for cages in existing ponds, and $0.71 per pound for indoor recirculating systems. Much of this substantial difference can be attributed to the lower stocking densities in Indiana as well as the slower growth of fish due to climatic conditions.



Summary and Conclusion

Indiana farmers can profitably produce catfish if they have special "niche" markets and if they produce fish in ponds. Indiana producers who do not have these special advantages are unlikely to make money raising catfish.

In Indiana, the average production costs per pound were lowest for cage culture and greatest for production in an indoor recirculating system. Production costs by system were $1.12 per live pound for cage culture in existing ponds, $1.16 per pound for constructed ponds, and $1.65 per pound for indoor recirculating systems. The average price paid to producers surveyed was $1.25 per pound. This is more than $0.50 above wholesale price because the catfish were sold to special niche markets. The production systems showing a profit in Indiana were cage culture and constructed ponds. However, Indiana production units are relatively small, and the catfish industry is not highly developed. Economies might be gained from increased size of production units and the establishment of more supply and marketing firms.

Costs of producing catfish are significantly higher in Indiana than in Mississippi because the growing season is shorter for pond production, the land is not as well suited for constructing ponds for large volume production as in the Mississippi Delta, and input costs are higher due to the immaturity of the aquaculture industry in Indiana. However, catfish production can be profitable for Indiana producers using pond production who have "niche markets" such as local restaurants.

"Catfish production can be profitable for Indiana producers using pond production who have 'niche markets' such as local restaurants."

For more information on aquaculture production costs and budgets, call Jean Riepe (317) 494-4301.

References

Keenum, Marke E. and John E. Waldrop. "Economic Analysis of Farm-Raised Catfish Production in Mississippi," Technical Bulletin 155, Mississippi Agricultural and Forestry Extension Station, July 1988.

Losordo, T.M., J.E. Easley, and P.W. Westerman. "The Preliminary Results of a Feasibility Study of Fish Production in Recirculating Aquaculture Systems." Paper presented at the 1989 International Winter Meeting of the American Society of Agricultural Engineers. New Orleans, Louisiana, December 12-15, 1989.

1993-1994 Outlook Meetings

Once again this year, the Cooperative Extension Service will be holding outlook meetings around the state. This is a tentative list of information on those meetings. Please check with your County Educator for specific details.

County	Dates	Time	Location	Specialist
Adams	Sept 16	7:00P	Adams Co. 4-H Meeting Room	Hurt
Benton	Sept 15	7:30a	Boswell 4-H Building Fairgrounds	Foster
Boone	Sept 15	7:00a	Lebanon 4-H Fairgrounds	Uhrig
Cass	Sept 22	Breakfast		Hurt
Clark	Dec 15	6:30a		Hurt
Clinton	Sept 16	7:30a	Clinton Co. 4-H Fairgrounds	Hurt
Dekalb	Sept 13	7:00p		Hurt
Fayette	Sept 20	Dinner	Miller Caf.-Connersville	Atkinson
Fulton	Sept 14	7:30a	Fulton 4-H Fairgrounds	Schrader
Grant	Sept 16	Noon	Marion 4-H Park	Doster
Greene	Sept 22	7:00p	Green Co. Ext. Office	Uhrig
Hamilton	Sept 13	Breakfast		Uhrig
Hancock	Sept 14	6:30a	Mac's I-70/U.S. 9	Uhrig
Harrison	Dec 15	7:30p		Hurt
Hendricks	Sept 21	Breakfast	Hendricks Co. Fairgrounds	Uhrig
Henry	Sept 21	7:30a	WG Smith Building, New Castle	Schrader
Howard	Sept 16	7:30a	Kokomo Shrine Club	Uhrig
Huntington	Sept 14	7:30a	Huntington College	Hurt
Jasper	Sept 13	Breakfast	Jasper Co. Fairgrounds	Foster
Johnson	Sept 17	Breakfast		Uhrig
Kosciusco	Sept 13	Breakfast		Schiek
Lagrange	Sept 16	7:30p	Prairie Hts. HS.	Schiek
Lawrence	Dec 16	6:30p		Hurt
Madison	Sept 21	7:30a	Alexandria 4-H Fairgrounds	Doster
Montgomery	Sept 14	7:30a	Montgomery Co. 4-H Fairgrounds	Foster
Newton	Sept 13	7:30p	S.Newton HS. Cafeteria	Foster
Orange	Dec 14	7:00p	Easterday Bro. Impl.	Hurt
Parke	Sept 21	6:30a	Putnam Co. Fairgrounds	Schiek
Porter	Sept 15	Breakfast		Schiek
Posey	Sept 15	Dinner		Schrader
Pulaski	Sept 15	7:30a	Pulaski Co. 4-H Fairgrounds	Hurt
Putnam	Sept 21	6:30a	Putnam Co. Fairgrounds	Schiek
Rush	Sept 22	7:30a	St. Mary's School	Schrader
Scott	Dec 14	6:30a	Scottsburg Best Western	Hurt
Shelby	Sept 13	7:30p	Shelbyville Fairgrounds	Uhrig
Steuben	Sept 16	7:30p	Prairie Hts. HS.	Schiek
Sullivan	Sept 22	11:30a	Sullivan Co. Fairgrounds	Uhrig
Switzerland	Sept 22	10:00a	Switzerland Co. 4-H Fairgrounds	Doster
Tippecanoe	Sept 16	Lunch		Schiek
Tipton	Nov 17	9:00a	Tipton Library	Hurt
Wabash	Sept 15	7:00a	Wabash 4-H Fairgrounds	Atkinson
Warrick	Sept 16	Breakfast		Schrader
Washington	Dec 16	6:30a		Hurt
Wayne	Sept 21	Breakfast		Atkinson
Wells	Sept 17	7:30a	Mickey's Res.-Bluffton	Hurt
White	Sept 14	7:30a	Chalmers American Legion	Atkinson

Hog Production Booms In North Carolina: Why There? Why Now?

Chris Hurt, Extension Economist, Purdue University and Kelly Zering, Extension Economist, North Carolina State University

North Carolina is in a hog production boom that has taken them from the status of a minor producer a few years ago to one of prominence among the states. And the boom is not over! To many in the corn and hog belt, it is a mystery why a state so far removed from corn production would think they can raise hogs profitably. Not many years ago, midwest hog producers scoffed at their fellow North Carolina peers; now many of them would stand in awe of the "North Carolina production system."

We have undertaken a six-month study of the North Carolina pork industry in an attempt to understand the reasons why the expansion is occurring there, and why it is occurring now. The reasons are many, and they are related to a unique set of people and circumstance that have come together in North Carolina. However, the implications are bigger than just North Carolina, because if their pork industry model is successful, it may provide a glimpse of the future for the national industry.

Now a Competitive Force

In production efficiency, North Carolina producers, as a group, have moved to the head of the class in many categories. They lead the nation in such measures as: pigs per litter; pigs per sow per year; productivity per animal in the breeding herd; and feed efficiency to name a few (*Hogs and Pigs*). They also lead the nation in the restructuring of the hog industry from small operations to much larger commercial size units that are specialized in hog production. In addition, they lead the nation in the movement toward more tightly coordinated arrangements between production and processing.

How big is the boom? In the past three years, North Carolina producers have added about 240,000 animals to the breeding herd. These added animals represent about 3.2 percent of the U.S. breeding herd and equal or exceed the *total* breeding herd inventories of three of the ten top production states: Ohio, 240,000; Kansas, 185,000; and Georgia, 150,000. The 240,000-head expansion in North Carolina's breeding herd from June 1991 to June 1993 exceeds the expansion of the breeding herds in Iowa, Illinois, Minnesota, Indiana, and Nebraska *combined*. The latter five states have 56 percent of the nation's breeding herd (*Hogs and Pigs*).

North Carolina has moved from seventh, in 1991, to fourth in total inventory. Along the way they have passed Missouri and, just this year, Nebraska and Indiana, as shown in Figure 1. We are projecting that North Carolina's hog inventory will pass Minnesota in the September 1993 survey and will pass Illinois by the end of 1994, becoming second only to Iowa.

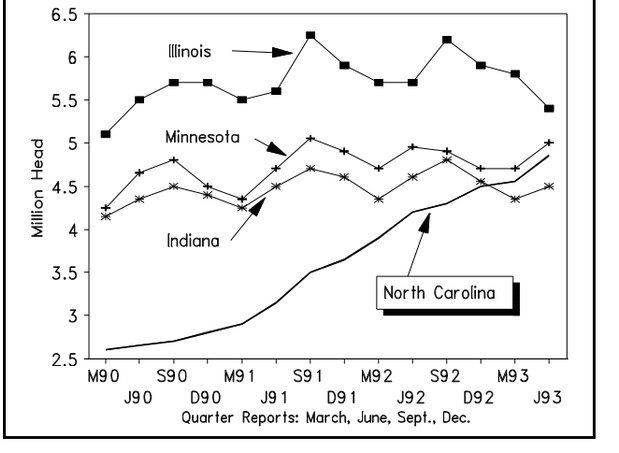
What Drives the Boom?

There are usually many reasons for a dramatic increase in production, but we believe the following are the key reasons. These are described in what we feel is their order of importance.

New Packing Capacity: The story starts with new packing capacity. North Carolina traditionally has shipped a large number of hogs to other states for processing. The primary receiving state was Virginia, and the packer there was Smithfield Foods, located just outside Norfolk. Smithfield Foods is growth oriented and has historically had high returns, having generated annual returns on equity in excess of 25 percent in the 1988-1992 period, (Standard OTC Stock Reports). Since the mid-1980's, they have been trying to stimulate additional pork production in Virginia. Their hope was to generate 100,000 sows of added production in company-owned or controlled production. They were successful in reaching a portion of this total, but environmental regulation and citizen concern in Virginia during the late 1980's caused them to abandon these goals.

Smithfield had already been buying many hogs from North Carolina, and they increasingly looked to these producers to increase production. They developed close working

Figure 1. Total Herd Inventories



relationships with several of the largest hog producers, who also some of the largest hog farms in the world. Several of these hog farms were also interested in developing closer linkages with a packer. These relationships led to Smithfield's decision to build a new processing plant closer to the production concentration in the southern coastal area of North Carolina.

What a plant it is! Processing began in the fall of 1992 at the largest capacity plant in the United States. If they are able to double-shift the plant successfully in 1994, it will process about 8 million head of hogs per year, or roughly 8.5 percent of the entire U.S. production. This number, if achieved, will exceed Indiana's total production.

As a result of this massive increase in processing capacity, a number of North Carolina producers are in a rush to put hog production in place to "fill" this capacity.

Figure 2 shows the number of hogs produced and slaughtered in North Carolina. The numbers for 1993 through 1995 are based on projections we have made from industry interviews. First, note the staggering increase in production which has already occurred. In 1986, the state marketed about 4 million head of hogs, and we are projecting a doubling of that number to about 8.5 million this year. Current expansion plans among key producers in the state, if realized, will thrust the production to around 10 million head by 1995.

Next, note the low number slaughtered in the state compared to production prior to 1993. The state had been shipping about 3 million head out of state for slaughter, but if the new plant is able to double-shift and run near capacity, state slaughter may also reach nearly 10 million head by 1995. These are truly enormous shifts in the market-slaughter balances of the state, and they have implications for a national redistribution of production and processing.

Contract Hog Production: The contract hog production system is well established in North Carolina. The state has a long history of using contract production in the poultry industry, so contract production in hogs was quickly accepted. The North Carolina hog production system is increasingly based upon three-site production. These three sites include the sow unit, which may be company owned or contracted; the nursery units, which are generally owned by local farmers and operated under contract; and the farmer-owned finishing units, which are also operated under contract.

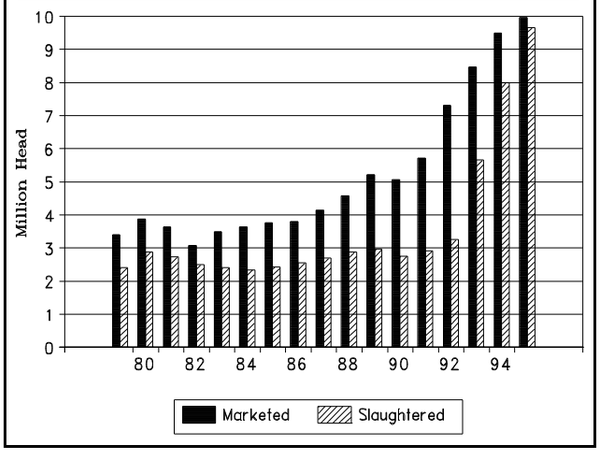
There are two important reasons contract production is helping to accommodate the rapid growth of the industry. The first involves the declining fortunes of tobacco. Tobacco has been the King of Agriculture in the state, literally since Europeans first settled there. Tobacco revenues allow many producers with small land bases to continue farming, but declining domestic tobacco use raises concerns for the future. Livestock contracts provide a way to stay on the farm and to enter a complex business with limited background or training. Thus, there is a waiting pool of farmers who are interested in contract nurseries or contract finishing units.

A second critical reason contract production contributes to rapid growth involves the financial leverage it provides to the owner of the hogs. Owning all of the buildings and equipment to raise hogs ties up large amounts of equity capital. However, if a contractor owns only the farrowing unit and contract producers own the nurseries and finishing capacity, this reduces by about one-half the total investment in buildings and equipment for a farrow-to-finish operation. A contractor can build one farrow-to-finish unit or build two farrowing units with contract nurseries and finishing with the same equity capital investment in buildings and equipment. Thus, to grow rapidly, they choose the two farrowing units.

Scale and Systems Approach to Production: Hog producers in North Carolina think in big volumes when it comes to raising hogs. They had the first 1,000 sow farm back in 1969, and by 1974 one of the main hog producers had settled on a 1,250-sow farm size. Today, a number of large commercial farms have a minimum scale of 2,000 sows in their farrowing units. State Veterinarian data shows that there are 211 farm locations with *over* 1,000 sows. The average number of sows on these farms is 1,536. A total of 184 farms are *between* 500 and 999 sows, with an average of 622 sows. These two size groups of 395 farms have 73.5 percent of all the sows in the state.

The large commercial operations have used a systems approach. This means that they have developed a standardized set of buildings, equipment, and hog management with the objective of minimizing costs. Once this system is established they can replicate it. Thus, scale and standardization allow rapid expansion.

Figure 2. Head of Hogs Marketed and Slaughtered In North Carolina



Environmental and Regulatory Factors: Regulations are still relatively unobtrusive in North Carolina. Water quality laws prohibit discharge into open streams or in any way impacting the quality of water. New registration requirements will require those farms with 250 or more hogs to register with the state by the end of 1993 and to have a qualifying waste disposal plan in place by the close of 1997 (Barker, EBAE 164-93).

Citizens action groups have targeted the hog production industry as a potential violator of environmental standards. New legislation has been introduced in the state legislature to greatly restrict the North Carolina hog production system. However, to date, the industry has been able to retard these attempts and to divert these groups toward supporting research to understand the impacts of large scale hog concentration and to improve technology and management practices.

From a midwest perspective (where it can be difficult to get permits to build one new 1,000 sow unit), it is clear that North Carolina's environmental and regulatory constraints are less restrictive to rapid expansion.

Manure Disposal Systems and Nitrogen Loading: Much of the state's swine waste disposal system is based upon buildings with flush-under-slat design. Waste is flushed from buildings to a single stage lagoon, and effluent from the lagoon is used to irrigate crops around the buildings. The crop of choice is coastal bermuda grass, which has a voracious appetite for nitrogen—the nutrient basis for establishing loading rates (Barker, EBAE 103-90).

The warm climate provides for decomposition of about 75 percent of the nitrogen in the lagoons (Safley and Westerman). Since coastal bermuda grass uses such large amounts of nitrogen, relatively small acreage may be required for irrigation. Depending on soils and grass yield, this may be in the range of 80 acres per 1,000 sows farrow-to-finish. The bermuda grass is grazed with brood cows or stocker cattle, or alternatively is baled if a cash hay market is available. Interestingly, the cattle industry is being spurred as a by-product of the hog industry. This cattle-following-the-hogs is an interesting reversal of the old hogs-follow-the-cattle management of diversified farms of years ago.

Expansion is facilitated by the fact that it takes relatively small land bases for high concentrations of animals, and in general, there remains a relatively large amount of marginal land.

Supportive Financial Lenders: The contract production system in the state has been successful in hogs partially because the mega-farms who write many of the contracts have made sure that the banks and families involved are financially successful. We heard farmers and bankers alike say that, "We have never had a failure on a hog contract from one of the major players." In part due to the faith in the mega-farms which write contracts, lenders are willing to make loans at competitive interest rates for contract nurseries and contract finishing buildings. This has been an important factor in supplying the needed debt capital to local farmers who are contract producers and in allowing rapid expansion.

Favorable Costs of Production: Surprisingly to most in the corn-hog belt, North Carolina producers believe they can be low-cost producers of pork. While their feed grain deficit is a disadvantage, they have some other costs advantages in sharply lower building costs, lower labor costs, lower waste disposal costs, perhaps lower interest rates, and lower transportation costs on finished pork products to east coast markets.

Summary and Conclusions

The North Carolina pork industry is in a boom of surprising magnitude. Production is expected to rise from about 4 million head in 1987 to near 10 million head by 1995. If realized, the state will likely be the second largest hog state, trailing only Iowa.

Why North Carolina, and why now? The reasons are unique to the people and circumstances which have developed there. The most important driving force is the addition of the country's largest pork processing plant, which is working closely with producers to supply their kill. A system of contract production is in place, the regulatory environment is accepting, a system of large-scale production can be quickly replicated, and there is a pool of farmers and bankers anxious to become part of a growth industry in the region.

In summary, North Carolina is where it could — and is — happening. But the North Carolina model has not gone unnoticed, as similar production and coordinated processing systems have been initiated in such states as Arkansas, Mississippi, Oklahoma, Texas, Missouri, Arizona, Colorado, and Utah.

Success, however, is not guaranteed by size or expansion. The highly coordinated North Carolina system of production and processing will face a major financial test in 1994 as increased production there, and by specialized firms elsewhere, drive pork profit margins down. If they are not successful, we midwesterners will breathe a sigh of relief, but if they are, much of the national industry can be expected to follow their lead, which could accelerate the current rate of structural change in the industry.

References

Barker, James C. "Water Quality Nondischarge Regulations for Livestock Farms In North Carolina." EBAE 164-93. North Carolina Cooperative Extension Service, North Carolina State University, January 1993.

Barker, James C. "Lagoon Design and Management For Livestock Waste Treatment and Storage." EBAE 103-90. North Carolina Cooperative Extension Service, North Carolina State University, January 1990.

Hogs and Pigs reports, various issues. National Agricultural Statistics Service, USDA, Washington, D.C.

Safley, L.M. and P.W. Westerman. "Performance of a Low Temperature Lagoon Digester." *Bioresourse Technology*: 41(1992), pp. 176-175.

Standard OTC Stock Reports, Vol 59, No. 40, Standard and Poors Corporation, 25 Broadway, New York, New York.

Agricultural Producers: Today and Tomorrow

Over the past decade, U.S. agriculture started down a path that promises a fundamental restructuring of the food chain as we have known it. While all of this restructuring has important implications for suppliers of agricultural inputs, none is more important than the changes which are occurring at the farm level. Farms are larger. Producers are more sophisticated. Their decision-making structures are more complex. The demands these farmers and ranchers make on their suppliers have increased explosively, ranging from operations of unprecedented size that literally provide their own inputs and need little from an outside vendor, to operations that depend on their suppliers for everything from the basic product, through financing, to production and marketing advice.

Such changes have radically reshaped the nature of the relationship between producers and farm input supply firms. For farmers, these changes have resulted in new expectations of their suppliers. And, for farm suppliers, the questions raised are almost endless. During July and August of 1993, Purdue University's Center for Agricultural Business and *Top Producer* magazine (Farm Journal Publications) embarked on a major research project to explore these issues. The focus of the project is to document changes in producer expectations and to examine the implications of these changes. The bottom line is to help agribusiness build a viable strategy in the 1990s to serve this rapidly evolving marketplace.

Phase One of the *Agricultural Producers: Today and Tomorrow* project focuses on the large commercial producer. More than 1000 large commercial farmers/producers participated in the research from the following agricultural segments: corn/soybeans, wheat, cotton, hogs, dairy, and beef. The opinions of these large producers will be compared and contrasted to the opinions of a group of mid-sized producers. Differences between the two groups will more clearly define the direction producer expectations may take over the next decade, providing agrimarketers with some highly useful information with which to fine-tune their market strategies for the future.

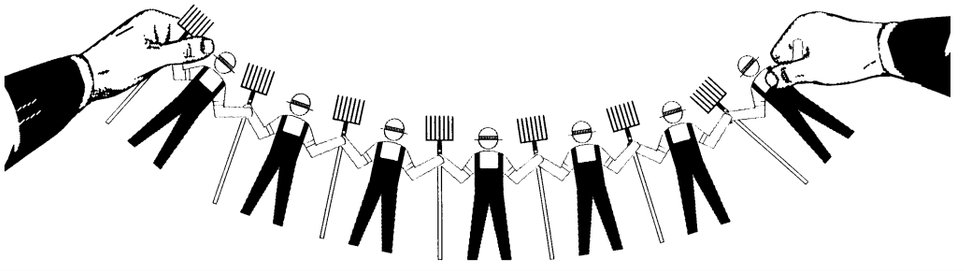
Phase Two of the research involves collecting information from several hundred agribusiness leaders on their beliefs and ideas about the large commercial producer of the future. The results, compared with the opinions of commercial producers, will be used to identify differences between the agribusiness perspective and those of commercial producers and will be presented at a national conference in November.

1993 National Conference for Agribusiness – Marketing to the Commercial Producer

The results of the *Agricultural Producers: Today and Tomorrow* project will be presented to agribusiness managers at the 1993 NATIONAL CONFERENCE FOR AGRIBUSINESS — *Marketing to the Commercial Producer*, sponsored by the Center for Agricultural Business. The November 8 – 9 conference will be held on the Purdue University campus and will focus on the unique needs of the large farmer customer.

This conference is expected to provide a valuable outside perspective on a set of issues that agribusinesses have spent millions of dollars researching. This multifaceted look at the challenges ahead offers a unique opportunity to facilitate further discussion between agrimarketers and university researchers on how best to approach the evolving needs of the agricultural marketplace. The project — and the conference dialogue — will lay the foundation for a closer, more efficient relationship between farm producers and their input suppliers.

For more information, please contact Ms. Sharon L. Wall at the Center for Agricultural Business, 1145 Krannert, Room 781, Purdue University, West Lafayette, Indiana 47907-1145, phone: (317) 494-4247, FAX: (317) 494-4333.



What the 1992 Farm Records Show

Don Pershing and Freddie Barnard,
Extension Agricultural Economists

The 1992 Indiana farm records reveal a huge difference between the highest earning third and the lowest earning third of the 136 Indiana farm managers who participated in the Purdue Comparative Farm Business Summary for 1992. The income difference among similarly sized farms is an indication of the variability in production, marketing, and financial performance among farm managers.

Returns to labor, management, and equity averaged $102,756 for the high profit third, compared to $3,363 for the low profit third. Allowing for a 6 percent return on their equity, the high profit group had labor and management earnings of $83,332, compared to $-23,562 for the low profit group. The return to total farm investment (return over the value of labor and management plus interest paid) for the high profit group was 17 percent, compared to -1 percent for the low-profit group.

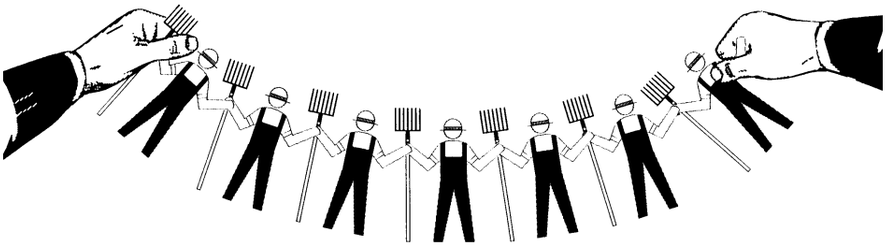
The high profit third had 27 cents from each dollar of value of farm production (VFP) to pay interest on borrowed money, reduce debt, and build investments; compared to -4 cents for the low profit third. The high profit group had a very high asset turnover ratio (62%), compared to the low profit group (32%), indicating high dollar sales in relationship to total assets. These farms tended to utilize more rented land as opposed to owned land, and thus with the favorable yields in 1992, had high dollar sales with relatively low investments. Lower labor productivity on the low profit farms ($85,300 VFP per person) appears to also be a significant factor in their poor returns compared to $156,300 VFP per person for high profit farms. Finally, expenses as a percentage of revenue were much higher for the low profit group (89%) compared to the high profit group (62%).

How does your farm compare? Is it closer to the high or low profit farms? For financial analysis of your farm, see your local Extension Agriculture Educator. Farmers can learn how to use this analysis to improve their farm's profitability. Further information on the 1992 farm records will soon be available in the publication **1992 Farm Business Summary**, at your local Purdue Cooperative Extension office.

Indiana Farm Business Summary 1992

	Average	Low Profit	High Profit
Number of Farms	136	45	45
Average Farm Investment	$686,129	$671,023	$510,427
Average Farm Debt to Asset (%)	32%	34%	35%
Total Crop Acres	783	661	879
% of Crop Acres Owned	28%	33%	16%
Estimated Months of Labor per Farm	27.2	30.2	24.5
Value of Farm Production	$268,004	$214,982	$318,960
Value of Farm Production per Person	$118,000	$85,300	$156,300
Expenses as a % of Gross Revenue	73%	89%	62%
Net Profit Margin (Returns as a % of Production)	16%	-4%	27%
Asset Turnover Rate (%)	39	32	62
Rate Earned on Investment	6%	-1%	17%
Farm Profit	$55,222	$ 3,363	$102,756
Labor and Management Earnings	$27,353	$-23,562	$83,332

When ALL farmers looked the same,
marketing was child's play...
...we just didn't know it.



Today, when you've seen one farmer,
you've seen ONE farmer...
...and an agrimarketer's job isn't so simple.

For Information on
Purdue's National Conference for Agribusiness.
See page 14.

In this Issue

Department of Agricultural Economics
Chris Hurt
1145 Krannert Building, Room 575
West Lafayette, IN 47907-1145

Non-profit Organization
U.S. Postage
PAID
Lafayette, Indiana
Permit No. 221