

2-22-1989


Economic Results of SDSU Alternative Farming Systems Trials: 1988 Compared to 1987; Outlook for Generic Certificates

Thomas L. Dobbs
South Dakota State University

Clarence Mends
South Dakota State University

Donald L. Peterson
South Dakota State University

Follow this and additional works at: http://openprairie.sdstate.edu/econ_comm

 Part of the [Agricultural and Resource Economics Commons](#), and the [Regional Economics Commons](#)

Recommended Citation

Dobbs, Thomas L.; Mends, Clarence; and Peterson, Donald L., "Economic Results of SDSU Alternative Farming Systems Trials: 1988 Compared to 1987; Outlook for Generic Certificates" (1989). *Economics Commentator*. Paper 266.
http://openprairie.sdstate.edu/econ_comm/266

This Newsletter is brought to you for free and open access by the Economics at Open PRAIRIE: Open Public Research Access Institutional Repository and Information Exchange. It has been accepted for inclusion in Economics Commentator by an authorized administrator of Open PRAIRIE: Open Public Research Access Institutional Repository and Information Exchange. For more information, please contact michael.biondo@sdstate.edu.

ECONOMIC RESULTS OF SDSU ALTERNATIVE FARMING SYSTEMS TRIALS: 1988 COMPARED TO 1987



Thomas L. Dobbs
Professor of Economics
and
Clarence Mends
Research Associate

Preliminary economic results of research at South Dakota State University (SDSU) on "alternative" farming systems were reported in Economics Newsletter No. 254 on September 4, 1987. Research on "alternative" ("sustainable", "low-input", "regenerative") farming systems has been underway at the University's Northeast Research Station, north of Watertown, S.D., since 1985.

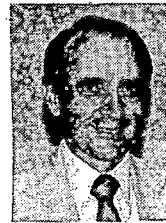
This research, supported by the SDSU Agricultural Experiment Station, received additional support starting in 1988 from a U.S. Department of Agriculture competitive grant (No. LI-88-12) under the "Low-Input/Sustainable Agriculture" (LISA) program. With the aid of that grant, the SDSU Economics Department has developed detailed crop enterprise budgets for the first 4 years (1985-1988) of these trials. These budgets will be used in the analyses of the economics of the "transition" from conventional to low-input/sustainable agriculture. In this article, we report the highlights of results for two of those years -- 1987 and 1988.

Much of South Dakota, including the area in which SDSU's Northeast Station is located, was severely affected by drought in 1988. Moisture conditions at the Northeast Station were almost normal during the growing season in 1987. Thus, this "snapshot" of the years 1987 and 1988 provides some preliminary insights on performance of alternative and conventional systems under contrasting weather conditions.

Systems Analyzed

The SDSU farming system studies at the
(Cont'd on p.2)

OUTLOOK FOR GENERIC CERTIFICATES



Donald L. Peterson
Extension Economist/
Marketing & Management

The generic certificate, which has become part of the farmers marketing tool kit may soon be a thing of the past, if current trends continue. The generic certificate program was authorized by the 1985 Food Security Act and the first certificates were issued in the spring of 1986. Their main function was to help the USDA get rid of burdensome CCC (Commodity Credit Corporation) stocks and move the commodity through the market. Now as a result of the certificate program, with a little help from the 1988 drought, CCC stocks and FOR (Farmer Owned Reserve) stocks have been greatly reduced. In February 1987, the CCC held 49.1 million metric tons (MMT) of feed grains and 900 million bushels of wheat. As of February 1989, these numbers have fallen to 16.6 MMT and 150 million bushels, respectively. Likewise, the FOR has fallen from 36.2 MMT and 450 million bushels to 20.7 MMT and 275 million bushels.

As the drought of 1989 reduced production and caused market prices to rise, the Posted County Prices (PCP) followed and finally rose above the current loan rates plus accrued interest. This meant that farmers could repay their loans and interest cheaper with cash than with certificates. As a result, farmer use of certificates became very low and the market value of certificates was 95% to 99% of face value much of last fall and this winter. Since farmers had little use for the certificates, they could either hold them for 5 months and surrender them for face value at the ASCS offices or sell them at a discount. Most farmers sold them at a discount, while warehousemen purchased them to exchange for wheat at CCC auctions or corn from the CCC corn catalogs.
(Cont'd. on p.3)

Alternative Farming ...

Northeast Station are grouped into two sets of comparisons. In Farming Systems Study I, a system characterized as the Alternative rotation, which involves no synthetic chemical fertilizers or herbicides, is compared with Conventional and Ridge Till rotations. Oats (as a nurse crop for alfalfa), alfalfa, soybeans, and corn are included (in that order) in the 4-year Alternative rotation. Corn, soybeans, and spring wheat (in that order) are included in both the Conventional and Ridge Till rotations. The Conventional and Ridge Till rotations receive recommended inputs of chemical fertilizers and herbicides.

In Farming Systems Study II, three systems are compared. (A fourth system, continuous No Till winter wheat, was found to be agronomically unsound and has now been discontinued; it is not discussed in this article.) The Alternative rotation contains oats (as a nurse crop for clover), a sweet clover-red clover mix, soybeans, and spring wheat. The clover is included strictly as a green manure crop; it is mowed and chiseled, but not harvested. As in Study I, no chemical fertilizers or herbicides are used in the Alternative rotation. Conventional and Minimum Till rotations in Farming Systems Study II include soybeans followed by spring wheat and barley.

Yield Results

Yield comparisons are shown in Table 1. In general, yields did not vary greatly among the different systems within each study during 1987. (Exceptions include especially low yields for Alternative system corn in Study I, due in part to smut which affected the different variety used in the Alternative system, and Minimum Till barley in Study II, which experienced increased barley yellow dwarf virus infection.)

Yields of all systems were dramatically lower in 1988 than in 1987, due to drought conditions. Yields for crops in the Alternative systems generally performed reasonably well in comparison to the other systems. Alternative system yields were either roughly equivalent to or higher than yields for other systems in all cases. Yields for Alternative system corn were substantially higher than for other systems in Study I.

Table 1. Farming Systems Yield Comparisons, 1987 and 1988.

Study I	Yield (bu. or ton)/Acre									
	Corn		Soybeans		S. Wheat		Oats		Alfalfa	
	1987	1988	1987	1988	1987	1988	1987	1988	1987	1988
Alternative	86.9	39.0	31.6	10.9	N/A	N/A	59.9	32.3	4.45	2.89
Conventional	124.4	19.0	31.0	9.0	43.6	18.6	N/A	N/A	N/A	N/A
Ridge Till	121.4	31.7	28.5	9.4	39.8	14.8	N/A	N/A	N/A	N/A

Study II	Yield (bu.)/Acre									
	Barley		Soybeans		S. Wheat		Oats		Clover	
	1987	1988	1987	1988	1987	1988	1987	1988	1987	1988
Alternative	N/A	N/A	33.2	16.5	44.2	20.0	72.4	43.8	Not harvested	
Conventional	80.8	28.5	32.8	14.1	44.7	18.3	N/A	N/A	N/A	N/A
Minimum Till	46.5	28.3	31.6	16.8	48.8	17.0	N/A	N/A	N/A	N/A

Profitability Results

Cost and return information for each system in 1987 and 1988 is shown in Tables 2 and 3. Costs reflect actual cultural practices in each year, and returns reflect applicable farm program and market prices and acreage set-aside requirements for 1987 and 1988, respectively. Costs and returns are shown on a per-acre basis in the first five columns of data in each table. The last column contains an aggregation of "net income over all costs except management" on a hypothetical "whole farm" basis, assuming 540 tillable acres.

In both 1987 and 1988, as expected, "direct costs other than labor" were lowest for the Alternative systems. "Gross income", on the other hand, was lowest for Alternative systems in both Study I and Study II in 1987. When all costs except management were deducted from gross income in 1987, the Conventional system resulted in the highest "net income" in Study I and the Alternative system was highest in Study II. All systems showed positive "net income over all costs except management" for 1987.

The net income picture was quite different for 1988, however. All except the Alternative systems showed net losses (when all costs except management were included) for 1988. The Alternative system in Study II was roughly a break-even operation in 1988, and the Alternative system in Study I produced nearly \$5,000 in net income, on a whole farm basis.

In addition to yield differences, another factor contributing to the relatively high gross and net income for the

Alternative system in Study I was the drought-induced alfalfa hay prices. The \$70/ton alfalfa hay price used in our 1988 budgets was roughly twice as high as the price in 1987. In many cases during 1988 in South Dakota, alfalfa hay commanded even more than \$70/ton.

Table 2. Results of Farming Systems Analyses Based upon 1987 Yields, Farm Program, and Prices.

System ¹	Direct Costs Other Than Labor	Dollars/Acre				Whole Farm Net Income Over All Costs Except Management ² (\$)
		Gross Income	Net Income Over		All Costs Except Management	
			Except Labor, and Management	Except Land and Management		
Farming Systems Study I						
1. Alternative (oats-alfalfa-soybeans-corn)	44	142	66	55	29	15,774
2. Conventional (corn-soybeans-s. wheat)	62	163	73	63	37	20,025
3. Ridge Till (corn-soybeans-s. wheat)	66	155	64	55	29	15,749
Farming Systems Study II						
1. Alternative (oats-clover-soybeans-s. wheat)	30	115	60	50	24	12,698
2. Conventional (soybeans-s. wheat-barley)	51	133	53	42	16	8,680
3. Minimum Till (soybeans-s. wheat-barley)	57	120	38	29	3	1,743

¹Crops are shown in the order in which they occur in each rotation.

²For farm with 540 tillable acres. Figures in this column are equivalent to 540 multiplied by "prerounded" figures in the "all costs except management" column.

Table 3. Results of Farming Systems Analyses Based upon 1988 Yields, Farm Program, and Prices.

System ¹	Direct Costs Other Than Labor	Dollars/Acre				Whole Farm Net Income Over All Costs Except Management ² (\$)
		Gross Income	Net Income Over		All Costs Except Management	
			Except Labor, and Management	Except Land and Management		
Farming Systems Study I						
1. Alternative (oats-alfalfa-soybeans-corn)	37	114	46	35	9	4,894
2. Conventional (corn-soybeans-s. wheat)	50	63	-13	-21	-47	-25,274
3. Ridge Till (corn-soybeans-s. wheat)	53	69	-10	-17	-43	-23,100
Farming Systems Study II						
1. Alternative (oats-clover-soybeans-s. wheat)	27	84	34	26	0	46
2. Conventional (soybeans-s. wheat-barley)	41	74	7	-1	-27	-14,808
3. Minimum Till (soybeans-s. wheat-barley)	47	78	6	-2	-28	-14,882

¹Crops are shown in the order in which they occur in each rotation.

²For farm with 540 tillable acres. Figures in this column are equivalent to 540 multiplied by "prerounded" figures in the "all costs except management" column.

We have not yet analyzed the extent to which crop insurance and Federal drought disaster assistance payments would have made up those losses for particular systems. One must keep in mind, however, that such insurance and disaster assistance payments would have also enhanced net incomes for the Alternative systems -- which are positive (Study I) or roughly break-even (Study II) in 1988 without inclusion of those payments.

These results are consistent with those of other studies, which tend to indicate that alternative (low-input/sustainable) farming systems may perform better than more conventional systems under conditions of abnormally low rainfall. However, we must caution that the performance of alternative systems relative to more convention-

al systems needs to be observed under a variety of weather conditions over several additional years.

It will be particularly interesting to observe performance of the systems in 1989. In 1989, for example, several of the non-legume crops in the more conventional systems will not require nitrogen fertilizer due to the low yields in 1988 and resultant nitrogen carryover. This will reduce direct (cash) costs for those systems in 1989. This assumes, of course, that we do not experience weather conditions that result in nitrogen loss through leaching or denitrification.

Additional agronomic details are available in the 1988 Northeast Research Station Annual Report, Plant Science Department, SDSU, Brookings, S.D. 57007.

Generic Certificates ...

In January, President Reagan released his budget that greatly reduced the amount of certificates for fiscal year 1990, which begins 1 October 1989. In FY 1988, the USDA issued \$10.6 billion in certificates. By contrast, in FY 89, \$2.8 billion are to be issued and in FY 90 only \$1.2 billion are to be--according to the Reagan budget. The entire \$2.8 billion in 1989 is earmarked for Export Enhancement Program (EEP), Targeted Export Assistance (TEA), and deficiency payments. Of the \$1.2 billion in 1990, \$1.0 billion is for EEP and the \$.2 billion is for TEA, which leaves nothing for deficiency payments to farmers.

Shortly after the Reagan budget was released, the January 1 grain stocks report was released (Jan. 13) which showed increased corn stocks in the FOR by 100 million bushels and increased total production by 250 million bushels. This put the grain market in a steep slide, reducing both market prices and PCPs. Earlier the same week, Acting USDA Deputy Undersecretary, William Bailey, told the American Farm Bureau that farmers should prepare themselves for a market without certificates.

This decrease in supply and increase in stocks caused premium values to begin to rise. On 18 January, they reached 100% of face value for the first time in South Dakota since 28 November 1988. Another



SOUTH DAKOTA STATE UNIVERSITY
 Economics Department
 Box 504A
 Brookings, SD 57007

Non-Profit Org.
 U. S. Postage
PAID
 Brookings, S. D.
 Permit 24

Address Correction Requested

Page 4

Generic certificates ...

source of support for certificate premiums comes from a large number of FOR wheat loans which will mature by 1 July 1989. While more recent FOR loans can be more cheaply redeemed with cash, some of the older ones offer the possibility of using certificates profitably. As a result of these recent forces in the certificate market, most merchants are currently bidding between 99% and 101.5% of face value.

Currently the USDA is watching the issuing of certificates very closely. Historically, the USDA has kept \$2 of CCC stocks on hand for every \$1 in certificates issued. These supporting inventories are depleted. However, the USDA also wants to keep enough stocks in the market to draw down the FOR stocks. Prior to the latest grain inventory report, it was expected that few new certificates would be issued, and with a short crop this year, they could be gone by this fall. However, with more known stocks available and with the premium levels of certificates above par, we may expect certificates to be issued to pay part, if not all, of the \$850 million advance deficiency payments and \$250 million of 0/92 payments this spring. Some professional advisory services are calling for the whole \$1.1 billion to come in

certs, provided there are enough CCC stocks to back them up. If more certificates are issued, expect their values to decline again, likely below par. In any case, another short crop year will bring a quick end to their use. If we have a bumper crop, their use may be extended, but not likely beyond FY 1990.

 *Editor's Note: In the Editor's Note for *
 *Issue 269, I incorrectly used the term *
 Economics "Communicator." Our Department
 *continues to have one newsletter. Its *
 *name is Economics Commentator. *
 * *
 * Don Taylor *
 * Editor ' *

**ECONOMICS
 COMMENTATOR**

EDITOR: Donald C. Taylor, Agricultural Economist

ECONOMICS DEPARTMENT
 South Dakota State University
 Box 504A
 Brookings, SD 57007
 Phone: (605) 688 - 4141

