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Concern Shown Over Food Supply

Introduction

FOR THE FIRST TIME in people's memory, consumers and policymakers have become concerned about the food supply. After years of bins full of grain, the stockpiles are gone. Consequently, the 1974 crop production cycle is receiving great interest. This issue of *Minnesota Agricultural Economist* discusses economic decisions Minnesota farmers must make about their 1973 crops still in the bin and their 1974 crops. From the standpoint of consumer food supplies, some of the most important decisions pertain to the corn crop. This is because corn crop decisions are so closely tied to livestock production—corn being the principal livestock feed.

As the 1974 planting season approaches, Minnesota farmers face a number of "givens," a number of important "unknowns," and some important data yet to be determined. In many ways, the situation is no different from previous years. However, prices and costs are at a new high, and markets show unprecedented volatility. Shortages of fuel, fertilizer, and other agricultural inputs are also creating new considerations.

People concerned with Minnesota agriculture must take an objective look at the situation. These articles are designed to help them do so. The articles provide information and a "planning procedure" for farms in Minnesota's corn belt. They look at the decision of feeding or selling a 1973 corn crop still in storage and the decision of planting corn in 1974. In most of Minnesota, the 1974 corn planting decision is tied directly to the soybean planting decision. In Minnesota's corn belt, planting decisions in recent years have been "corn or soybeans?" This year, substantial wheat acreage will appear, but the bulk of the acreage will still be corn or soybeans.

This year, there is considerable interest in wheat. Agronomists say that early planted wheat on land planted to soybeans last year has a low likelihood of disease problems. Also, our economic analysis suggests wheat has a high likelihood of profit. Therefore, we will most likely see increased wheat production in Minnesota this year, especially in western parts of the corn and soybean producing areas. This discussion begins with an assumption that wheat and other competing crop acreage is predetermined.

How To Market 1973 Corn

By Paul R. Hasbargen, Norlin A. Hein, and K. E. Egertson*

The major options that farmers have for old corn is: (1) sell it as grain during the next several months; (2) feed and sell it as pork or beef; and (3) hold it until 1975.

For those who believe that the world food situation will be even tighter after the 1974 harvest, the third option appears most profitable.

For those who think USDA projections on production and foreign demand (discussed in the accompanying article) are realistic, one of the first two alternatives will appear most profitable.

As we now see the outlook for 1974 crop and livestock prices, we rank the alternatives as follows:

* Corn fed to hogs will bring the highest return;
* Corn sold as grain for over \$2.50 per bushel will give the second highest return;
* Corn sold through cattle may return less than \$2.50 per bushel;
* Corn held for sale in 1975 will yield the lowest return.

Corn fed to hogs

Table 1 shows expected costs and returns from feeding a 40 pound feeder pig to market weight during the next 4 months.

The pounds of feed required per pound of gain will vary from 3.50 to 4.25 depending on the quality of the pigs and the management practices. This budget assumes a fairly good conversion of 3.84 pounds which requires 11.19 bushels of

*Extension economists, Agricultural and Applied Economics.

Norlin A. Hein (left), Paul R. Hasbargen, and K. E. Egertson report that corn fed to hogs will bring farmers highest return, according to latest data. Worst choice would be to hold corn for 1975 sales.

Table 1. Feeder pig budget and return tables

	Head	Cwt. gain
Performance:		
Purchase weight, pounds	40.00	
Selling weight, pounds	230.00	
Total gain, pounds	190.00	
Pounds feed per pound of gain	3.84	
Value produced:		
Sale value at $42/cwt.	$96.60	
Purchase cost at $32/head	32.00	
Gross margin	64.60	34.00
Feed requirements and costs:		
Corn 11.19 bu. at $2.50	27.97	14.72
Prot sup 40% 1.03 cwt. at $10.50	10.84	5.71
(Min, Vit, Antib included in prot sup)		
Total feed cost	38.81	20.43
Operating costs:		
Interest on animals (8%)	.83	.44
Death loss (3%)	.98	.52
Selling costs	2.30	1.21
Other operating costs	3.00	1.58
Total operating costs	7.11	3.74
Total feed and operating cost	45.92	24.17
Budgeted return for labor and facilities	18.68	9.83

Table 2. Swine feeding returns per head to labor and facilities at different corn prices and at different selling prices.

Selling price/cwt.	When corn price per bushel is: $ 2.25	$ 2.50	$ 2.75	$ 3.00	$ 3.25
$38	$12.27	$ 9.48	$ 6.68	$ 3.88	$ 1.09
40	16.87	14.08	11.28	8.48	5.69
42	21.47	18.68	15.88	13.08	10.29
44	26.07	23.28	20.48	17.68	14.89
46	30.67	27.88	25.08	22.28	19.49

corn and 103 pounds of supplement to put 190 pounds of weight on a pig.

Feeder pigs have been selling for $30 to $33 per pig since last fall. Market hogs hovered slightly over $40 per cwt. until early March. Feeder pigs purchased in April will not reach market until after August 1. Second-half 1974 supplies of hogs should be no more than a year earlier. This is a result of reduction in early winter farrowings as hog producers responded to high corn prices. We expect that market hogs will be over $40 again before mid-year and probably over $42 before pigs purchased in April would reach market weight.

Buying at $32 per head and selling at $42 per cwt. gives a gross margin per head of $64.60.

Country corn prices went up to $3 in late February, then back to near the $2.50 level in early March. Using $2.50 as the farm price of corn and $10.50 for 100 pounds of protein, feed costs would be $20.43 per cwt. of gain.

Operating costs were calculated using an 8 percent interest charge on the purchase cost of the pig, a 3 percent death loss, a $1 per cwt. selling cost, and $3 for power, utilities, repairs, and health.

Subtracting all feed and operating costs leaves $18.68 return per pig to pay for labor, management, risk, and facility overhead.

Table 2 shows how returns would vary if different corn prices and/or different market hog prices are used. Note that corn would have to go over $3.25 with hog prices at $38 before returns to labor and facilities would disappear. Therefore, we rank the alternative of marketing corn through hogs as excellent for the remainder of 1974.

Corn fed to cattle

Table 3 shows expected costs and returns from feeding a 700 pound steer to market weight during the next 6-8 months.

Feed efficiency and average daily gain will vary with type of animal, ration, and management practices. This budget assumes a fairly good rate of gain and feed conversion using a high energy ration.

For the past year, yearling feeders have been priced in the high forties and fifties. The drop to the mid-forties came only with the slaughter price drop in February and early March while country corn prices remained at $2.50 or more. The truckers' strike decreased beef marketings by 17 percent, causing increased wholesale and retail prices. Thereby, it triggered the backup of beef supplies and dropped prices to the low forties in early March. We expect that beef prices will strengthen again during the next few months if cattle are marketed in a more orderly fashion.

As fed cattle prices advance, feeder prices will also increase. A feeder price increase may also be triggered by declining corn prices. Therefore, the purchase price of $44 per cwt. shown in the budget may not hold for very long.

Feeders bought in April would go to slaughter in October. The fed cattle market at that time will probably be declining from summer highs. Our outlook price is the mid-forties with possible further declines in the fourth quarter. In contrast, the beef futures market (basis Minnesota) provides an opportunity to contract choice steers in the high forties for October or December.

Using a purchase price of $44 and a sales price of $46 per cwt. yields a gross margin of $49.11 per cwt. of gain.

With corn at $2.50 per bushel and protein at $8.50 per hundred pounds, feed costs come to $40.73 per cwt. of gain. Cash operating costs are projected at $7.87 per cwt. of gain, leaving almost no net return for labor, management, risk, and facilities.

Thus, marketing corn through cattle may add nothing for the extra work and worry to the $2.50 which can be obtained in the cash market. So unless feeders can be bought cheaper or a higher market price is expected for the slaughter animals this fall, there is little incentive to fill feedlots at this time.

Table 4 shows how the returns would vary if different corn prices and/or different slaughter cattle prices are used. If another opportunity to sell corn at $3 per bushel is expected and slaughter prices are at mid-March levels ($42) this fall, losses of $73.70 per head would be sustained. This is an improvement over the current losses of over $100 per head being incurred by those who paid considerably more for feeders last fall. However, it is hardly to be desired over cash grain sales.

Conversely if a farmer expects no more than a $2.50 market for his corn during the next several months and contracts his cattle for $48 (Minnesota prices), he could increase his income by marketing corn through cattle this summer.

Table 3. Budget for steer yearling using liberal grain ration

	Head	Cwt. gain
Performance:		
Purchase weight, pounds	700	
Selling weight, pounds	1150	
Total gain, pounds	450	
Average daily gain, pounds	2.40	
Days on feed	187	
Value produced:		
Sale value at $46/cwt.	$529.00	
Purchase cost at $44/cwt.	308.00	
Gross margin	221.00	$49.11
Feed requirements and costs:		
Corn 60 bu. at $2.50	150.00	33.33
Hay .3 ton at $50	15.00	3.33
Prot sup 1.8 cwt. at $8.50	15.30	3.40
Mineral .3 cwt. at $10	3.00	.67
Total feed cost	183.30	40.73
Operating costs:		
Interest on animals (8%)	12.66	2.81
Death Loss (.7%)	2.24	.50
Sell costs	11.50	2.56
Other operating costs	9.00	2.00
Total operating costs	35.40	7.87
Total feed and operating costs	218.70	48.60
Budgeted return for labor and facilities	2.30	.51

Table 4. Beef feeding returns per head to labor and facilities at different corn prices and at different selling prices.

Selling	When corn price per bushel is:				
price/cwt.	$2.25	$2.50	$2.75	$3.00	$3.25
$42	$-28.70	$-43.70	$-58.70	$-73.70	$-88.70
44	-5.70	-20.70	-35.70	-50.70	-65.70
46	17.30	2.30	-12.70	-27.70	-42.70
48	40.30	25.30	10.30	- 4.70	-19.70
50	63.30	48.30	33.30	18.30	3.30

Selling or holding for later sales

The cash crop farmer—or the livestock producer who has more corn (or other feed grain) than he cares to feed to livestock this year—must determine the best time to market his corn.

The accompanying article suggests holding grain in the face of expected production increases is to bet against the odds. However if yields are depressed because of weather and/or fertilizer shortages, the payoff on those odds will be high.

Cash price movements this summer will be in response to news on 1974 corn planting and crop yield prospects.

Summary

Given the current outlook for crop and livestock prices, we rank the relative profitability of alternative corn markets as follows:

1st—feed to hogs
2nd—sell in 1974 for over $2.50
3rd—feed to cattle
4th—sell in 1975

Earl Fuller (left) and Willis Anthony say that Minnesota corn-soybean growers will likely plant a substantial acreage of corn if 1974 has a good planting season. If the season is delayed, farmers should plant a substantial acreage of soybeans.

Planning For 1974 Corn And Soybeans

The authors suggest that corn-soybean growers begin planting corn as soon as possible. According to their yield and price assumptions, early corn will offer a greater return over overhead costs than will soybeans.

By Earl Fuller and Willis Anthony*

A windshield survey suggests that most of the corn—soybean land that needs to be plowed for high yield was plowed last fall. It was a good fall, and farmers took advantage of it. Considerable potash and phosphate fertilizers were also applied last fall. Last fall's fertilizer added to the residual quantities already on Minnesota corn belt farms suggests the availability of these two fertilizer elements this spring will not be a major consideration in determining whether to plant corn, soybeans, or both. However, phosphate and potash costs are substantially higher than in preceding years.

The nitrogen situation is somewhat different. Estimates show that 25 to 35 percent of the nitrogen required for corn production was applied last fall. We will assume, for our analysis, that anhydrous nitrogen is available this spring at a considerable savings over dry nitrogen. Cost is much higher than in past years. In many instances, there will probably be limited availability. Limited availability would modify our economic analysis results, but not the procedures to determine whether or not to plant corn, soybeans, or both.

Finally, we assume that "sufficient" labor and machinery are available for spring planting at the same rates as in recent years. More details on inputs are given in the footnotes of the following tables.

Planting is still weeks away. It is months away from the earliest harvest of small grains. So to a great extent, market price prospects are based on assumption, conjecture, and projection. Yet since farmers make planting decisions on the basis of anticipated returns, crop price is important to consider. Crop prices are higher than they have been in years. They are also more volatile than they have been in the memory of most farmers. Since input prices are also sharply higher, relative profitability of different crops may shift.

In some ways, price expectations for 1974 corn and soybeans are difficult to come by. Selling futures contracts or contracting appear to be profitable relative to our expectations for cash prices next fall and winter. This being the case, we assume that contracts are taken at $6 per bushel on soybeans and $2.50 for corn. However, farmers should not overcontract beyond a minimal level of yield. The likely market price may be about $1.70 per bushel for corn and $5.00 for soybeans.

Our analysis could alternatively be made on the lower set of expected open market prices. However on an individual farm, its effects on planting corn and soybeans may not be much different from the assumptions we are going to use.

Corn price

A USDA survey indicated that U.S. farmers on March 1 intended to plant nearly 79 million acres of

*Extension economists, Agricultural and Applied Economics.

corn. This is about 10 percent more acres than were planted in 1973. If 1974 corn yield is "on trend" at 98 bushels per acre, the crop would be almost 6.8 billion bushels—more than 1 billion bushels above 1973. Stocks on hand carried into the 1974/75 marketing year will likely be about 500 million bushels. This would mean a 7.2 billion bushel corn supply for 1974/75—about 14 percent above the 1973/74 supply.

Corn use in 1974/75 will likely be up by only about 6 percent. Domestic livestock will probably consume about 4.5 billion bushels. Other domestic corn use will account for another 400-500 million bushels. So total domestic corn use in 1974/75 will be about 5 billion bushels. Corn exports will likely take 20-25 percent of the 1974/75 supply or about 1 billion bushels. Totaling these estimates, it looks like 1974/75 corn use will be around 6 billion bushels.

With this level of supply and use, corn stocks at the end of the 1974/75 marketing year would be 1.2 billion bushels. This level of supply and use would indicate sharply lower 1974/75 corn prices. In this event, a harvest price of \$1.60 to \$1.70 per bushel appears likely.

The principal uncertainties appear to be 1974 corn yield and 1974/75 exports. If yield equals the 1973 crop (92.4 bushels per acre), the total supply from anticipated acres would be 6.4 billion bushels. If 1974/75 exports are at the 1973/74 level of 1.3 billion bushels, total use would be 6.3 billion bushels. This would mean that 1974/75 ending stocks would total only 600 million bushels. In this event, a harvest price of about \$2.50 per bushel appears likely.

These two alternative supply and use pictures spell greatly different corn price situations. With a 6.4 billion bushel crop, increased 1974/75 livestock feeding and exports equal to 1973/74, the price would be at about current levels. However with the 6.8 billion bushel crop, higher livestock feeding, but lower exports, the price would be much lower. Hence to develop planning prices, judgments must be made within this range. Using

Table 1. 1974 corn grain contribution to overhead: a block budget

Basic assumptions

Location	: south central Minnesota	Drainage	: good
Soil type	: silty- clay loam	Size plow	: 5-16 (Fall plowed)
Fertility level	: High, 6.8 Ph.	Plant	: 6 row
Other	: date of planting May 10	Harvest	: 4 row

		Likely range	Per acre typical
Production :			
Expected yield	: 15.5 percent moisture	80-120 bu.	100 bu.
Expected price	:	\$1.50-\$2.50	\$2.50/bu.
Value of other products	: Corn refuse	0-20.00	
Total value/acre			\$250.00
Cash expenses associated with each acre:			
Seed	: 110 day; rate 27000/A	\$ 8.00-\$ 12.00	\$ 12.00
Fertilizer	: nitrogen 100 # @ 13¢	7.00- 20.00	13.00
	phosphate 40 # @ 18¢	4.00- 12.00	7.20
	potash 40 # @ 10¢	2.00- 8.00	4.00
	lime	0- 3.00	
Herbicide	:	8.00- 13.00	9.00
Insecticide	: \$3.50/acre applied	0- 3.50	2.00
Machinery	: plow 2.75 acre/hour	1.50- 2.00	1.70
	smooth 7 acre/hour	.25- .75	.50
	plant 4.50 acre/hour	1.75- 2.50	2.00
	cultivate 5.5 acre/hour	0.25- 0.75	.50
	harvest 3.5 acre/hour	3.00- 5.00	3.60
Custom hire:		0- 40.00	
Drying fuel & elect.: 6¢/bu.		4.00- 12.00	6.00
Handling, shrink & damage: 4¢/bu.		2.00- 6.00	4.00
Insurance & interest: 2¢/bu.		0- 13.00	2.00
Direct labor: 5 hr. needed		12.00- 20.00	
Actual land rent:		45.00- 65.00	
Interest on operating loan: 8.5%		0- 5.00	3.50
Direct cash costs acre:		-	70.00
Total value less cash costs (Net cash flow before paying "overhead costs")		\$113.00-\$203.00	\$180.00

Corn: south central Minnesota, 1974, notes

Planting date	Yield per acre	Value less cash costs per acre
Fall plowed land: 100 lbs. nitrogen		(at \$2.25 per bushel)
May 1	108	\$199
May 10 (assumed)	100	180
May 20	90	156
If Spring plowed land: 85 lbs. nitrogen		
May 1	92	143
May 10	85	146
75 lbs. nitrogen		
May 20	77	129
May 30	70	112

Price: Local elevator contract price March 1974.

Seed: Costs assume 22,000-24,000 viable plants per acre and an allowance for the purchase of some 85-day corn for late May planting, if necessary.

Nitrogen: The plant food element most directly related to yield given "normal" moisture and "high" P_2O_5 and K_2O levels and neutral Ph. soils.

------at May 10 planting date------

Pounds nitrogen/A	Expected yield/A	Value less cash costs/A
60 lbs.	77 bu.	$130
80 lbs.	92	164
100 lbs. (assumed)	100	180
120 lbs.	105	189
140 lbs.	108	194

(Value less cash costs changes by 13 cents/pound; of anhydrous nitrogen and 12 cents/bushel of corn yield.

P_2O_5&K_2O Crop removal rates at 100 bushels/acre are 35 pounds of P_2O_5 and 27 pounds K_2O. Recommendation: apply according to soil test. Availability is affected by Ph., moisture level, and soil exchange capacity.

Herbicide: Costs cover a wide variety of possible applications.

Insecticide: Rootworm control is usually not required after clean soybeans but may be after weedy soybeans and usually is after corn on the same field.

Machinery: Costs are for fuel, oil, and use-related repair; performance includes usual delays and field efficiency.

- Chop stalks : 6.2 acres/hour = 0.16 hours/acre.
- Plow : 2.75 acres/hour = 0.36 hours/acre.
- Fertilizer : Prices are on an applied basis.
- Smooth : Done in spring, without conflict with planting time. If a delay and rain occur before planting, some will have to be redone.

Plant : Includes fertilizer handling, equipment, and time.

Cultivate : Once over assumed after plants are 6 inches high.

Custom hire: Range covers none to all field operations done by custom workers, including direct machine costs. (Example assumes owned machinery.)

Drying: Covers direct cash costs (fuel, electrical, etc.) to bring the crop from a field moisture level of 18-30 percent to 15½ percent or to market specification; not sufficient for long term storage.

Labor: Total hours include marketing and enterprise management.

Actual land rent: Rent is a cash outflow item. (Example assumes owned land with nonescapable taxes and other land costs.)

our current judgment, a 1974 corn harvest price of $1.60-$1.70 per bushel in Minnesota looks like a cautious planning price.

Soybean price

From its March 1 farm survey, the USDA reported that farmers intended to plant about 55 million acres of soybeans in 1974. This would be 4 percent below the record 57.3 million acres in 1973. If 1974 soybean yield is on trend of 28.5 bushels per acre, the 1974 crop would be about 1.5 billion bushels. This would be slightly under the size of the 1973 crop. Stocks on hand carried into the 1974/75 marketing year will likely be about 200 million bushels—more than triple the stocks at the end of 1972/73. The 1974/75 supply would then be over 1.7 billion bushels. This would be 10 percent above the 1973/74 supply.

Thus, soybean use in 1974/75 would have to increase 10 percent to keep pace with supply. This would be an optimistic estimate. It would approximately match the rate of increase from 1972/73 to 1973/74. This would likely require an increase in both domestic use and exports. Each accounts for about half of soybean use. Such an increase is possible. In fact, it is quite likely.

The critical issue is—at what soybean price will the 10 percent use increase likely occur? This is a tough question. During the early part of the 1973/74 marketing year, soybean prices were much higher than a year earlier. But prices have remained well below the peak of midsummer 1973. At terminal prices in the $6 area, it appears that supplies are being adequately rationed to leave a comfortable carryover at year's end. If the crop is in line with the early projections, the soybean price is likely to slip going into harvest. It is likely to remain in the $5 per bushel area in the early part of the 1974/75 season.

There does not appear to be much room for difference of opinion on the size of the 1974 soybean crop. Farmers in southern states are shifting acres to cotton. Farmers in the northern states are shifting acres to wheat. In the central cornbelt, farmers are likely to increase soybean acres only if a late spring delays corn planting. Soybean yields have not fluctuated much in recent years. There has been only a slight upward trend. Yield has averaged between 27.5 and 28 bushels per acre in each of the last 3 years.

Making the decision

Corn budget

Table 1 presents typical data on corn returns and expenses. The series of notes which follow detail the associated assumptions. An additional comment: table 1 lists "costs" for potash and phosphorus—which may have been applied last fall. If these two cost items are, in fact, already on the land, the "past costs are no costs" rule applies. The two cost items should not affect spring planting decisions. However, we have costed them against the individual crops because many farmers will because they view such applications necessary to insure yields and maintain production capacity.

Note that the data on the response of corn to additional nitrogen fertilizer suggests that considerably more than 100 pounds of nitrogen per acre would be profitable (if available). Such additional nitrogen would encourage planting more corn relative to soybeans. However, the 100 bushels yield for the 100 pounds of fertilizer is to be a typical situation for the Minnesota corn-soybean producing area. Individuals can and should adjust these values to their own nitrogen response situation and basic yield levels.

Soybean budget

The soybean data in table 2 are similar to the corn data in table 1. The assumed planting date is 10 days later for the budget in table 2 than it was in table 1.

Data in tables 1 and 2 and their accompanying notes suggest that corn-soybean farmers should begin planting corn as soon as possible. Appreciable frost injury does not occur on a corn plant until the growing point emerges from the soil surface. This does not happen for at least a week after the crop is up. Furthermore, because solar radiation is greater in the early part of the growing season, it is to the producer's advantage to plant early. Under our yield and price assump-

Table 2. 1974 soybean contribution to overhead: a block budget

Basic assumptions:

Location	: south central Minnesota	Drainage	: good
Soil type	: silty- clay-loam	Size plow	: 5-16
Fertility level	: high 6.8 Ph.	Plant	: 6 row
Date of planting	: May 20	Harvest	: 4 row

Production :		Likely range	Per acre Typical
Expected yield	: 13 percent moisture	28-45 bu.	33 bu.
Expected price	:	$4.50-$6.50	$6.00
Total value/acre			$198.00
Cash expenses associated with each acre:			
Seed:	rate 52-54 lbs./Acre	$ 9.00-$ 12.00	$ 10.00
Fertilizer:	nitrogen	0- 3.00	
	phosphate 30 lbs. @ 18¢	0- 8.00	5.04
	potash 10 lbs. @ 10¢	0- 8.00	1.00
	lime	0- 3.00	
Herbicide:		8.00- 12.00	8.00
Machinery:	plow 2.75 acre/hour	1.50- 2.00	1.70
	smooth 7 acre/hour	.25- .75	.50
	plant 5 acre/hour	1.50- 2.25	1.70
	harvest 4 acre/hour	2.50- 5.00	3.25
	other		
Custom hire:		0- 35.00	
Drying fuel & elect.:			2.00
Insurance & interest:			2.00
Direct labor 4.5 hours needed		10.00- 18.00	
Actual land rent:		45.00- 65.00	
Interest on operating loan: 8.5 percent		0- 3.50	2.90
Direct cash costs acre:			$ 38.00
Total value less cash costs (Net cash flow before paying "overhead costs")		$122.00-$190.00	$160.00

Soybeans: south central Minnesota, 1974 notes

Planting date	Yield per acre	Value less cash costs per acre
May 10	34.4 bu.	$168.00
May 20 (assumed)	33 bu.	160.00
May 30	31.1 bu.	149.00

Price : Local elevator contract price March 1974.

Seed : Costs vary little by variety or seed size; certified not assumed.

Nitrogen : Application controversial. Some apply 10 lbs. as "pop up;" may cut fixation and yield or may get nitrogen fixation bacteria started.

P_2O_5 & K_2O : In corn rotation application usually on corn, but soybean crop removal is substantial; a 33 bushel yield removes 29 pounds. P_2O_5 and 45 pounds K^2O. Recommendation: apply according to soil test.

tions, early corn will offer a greater return over overhead costs than will soybeans. The ideal strategy would then be to plant corn until the day when the expected return from soybeans is greater than the expected return from corn. In a normal year and at the given level of nitrogen fertilization, this break-even date between the two crops will occur between May 10 and May 20 and approximately on May 15.

Thus if it is a good planting season with enough days to be in the field before May 15, Minnesota corn-soybean growers will likely plant a substantial acreage of corn. If the season is delayed, it will be more appropriate to plant a substantial acreage of soybeans.

A computer analysis has suggested that, if the season is typical, one half the available corn-soybean acreage will go to corn and the other half will go to soybeans. However if the season is delayed appreciably, two-thirds of the available acreage is likely to go to soybeans and only one-third to corn, except perhaps where feed supplies are a major consideration.

Herbicide : Costs cover a wide variety of possible applications.

Machinery : Costs are for fuel, oil, and use-related repair; performance includes usual delays and field efficiency.

- Plow : 2.75 acres/hr. = 0.26 hour/acre
- Fertilizer : Prices are on an applied basis.
- Smooth : Done in spring without conflict with planting time. If a delay and rain occur before planting, some will have to be redone.
- Plant : No "pop up" fertilizer used.
- Cultivate : Once over assumed after plants are several inches high.

Custom hire: Range covers none to all field operations done by custom workers, including direct machine costs. (Example assumes owned machinery.)

Drying: Assumes only part of the total crop needs drying to 13½ percent.

Labor: Total hours include marketing and enterprise management.

Actual land rent: Rent is a cash outflow item, if acres are not rented. (Example assumes owned land with nonescapable taxes and other land costs.)

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University of Minnesota
St. Paul, Minnesota 55101

Roland H. Abraham, Director

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