September 19, 2001

Cornhusker Economics

Cooperative Extension

Institute of Agriculture & Natural Resources
Department of Agricultural Economics
University of Nebraska – Lincoln

Dry Edible Bean Production Costs in Nebraska and by Region

Market Report	Yr Ago	4 Wks Ago	9/14/01
Livestock and Products, ***Average Prices for Week Ending***			
Slaughter Steers, Ch. 204, 1100-1300 lb Omaha, cwt	$64.80	$70.79	$70.01
Feeder Steers, Med. Frame, 600-650 lb Dodge City, KS, cwt	88.23	99.00	96.00
Feeder Steers, Med. Frame 600-650 lb, Nebraska Auction Wght. Avg	93.85	107.79	100.99
Carcass Price, Ch. 1-3, 550-700 lb Cent. US, Equiv. Index Value, cwt	98.60	108.65	109.50
Hogs, US 1-2, 220-230 lb Sioux Falls, SD, cwt	43.50	50.75	46.50
Feeder Pigs, US 1-2, 40-45 lb Sioux Falls, SD, hd	37.00	*	*
Vacuum Packed Pork Loins, Wholesale, 13-19 lb, 1/4" Trim, Cent. US, cwt	118.90	124.30	118.75
Slaughter Lambs, Ch. & Pr., 115-125 lb Sioux Falls, SD, cwt	68.50	43.00	*
Carcass Lambs, Ch. & Pr., 1-4, 55-65 lb FOB Midwest, cwt	163.00	135.21	122.10
Crops, ***Cash Truck Prices for Date Shown***			
Wheat, No. 1, H.W. Omaha, bu	2.89	3.00	2.90
Corn, No. 2, Yellow Omaha, bu	1.46	1.86	1.86
Soybeans, No. 1, Yellow Omaha, bu	4.47	5.03	4.65
Grain Sorghum, No. 2, Yellow Kansas City, cwt	2.57	3.63	3.54
Oats, No. 2, Heavy Minneapolis, MN , bu	1.20	1.50	1.73
Hay, ***First Day of Week Pile Prices***			
Alfalfa, Sm. Square, RFV 150 or better Platte Valley, ton	105.00	102.50	102.50
Alfalfa, Lg. Round, Good Northeast Nebraska, ton	67.50	67.50	65.00
Prairie, Sm. Square, Good Northeast Nebraska, ton	82.50	105.00	105.00

* No market.

The Nebraska dry edible bean industry has an extended history of production and processing in the North Platte River Valley. In the time that dry beans have been produced in the area, the region has developed a reputation for producing a consistently high quality product for both the domestic and export marketplace. Nebraska has historically been the market leader in Great Northern bean production with more than 85 percent of this market class being produced here. With the interest in dry bean production increasing throughout North America, it is an opportune time to evaluate cost of production by geographic region, and to review actual production history for these regions.

In the spring of 2001, farms were surveyed throughout the region, including Scottsbluff, Morrill, Cheyenne, Box Butte, Banner and Deuel counties, to determine the production practices used by growers. The types and levels of inputs used and differences in tillage, growing and harvesting practices for various production systems were identified.

Development of cost of production budget estimates for Western Nebraska has shown significant differences in production practices and costs within the region. These estimates were evaluated to determine the average, high and low cost of production for the region, in both gravity irrigated and center pivot irrigated production (Table 1).

Nebraska dry bean producers are leaders in the industry for low cost production under irrigation. The average total cost of production for gravity irrigation is $313.00 per acre, with the high and low cost producer coming in at $351.21 and $285.15 per acre respectively. For the center pivot irrigated production, the average cost is $323.28 per acre, with the high cost producer at $356.06 per acre and the low cost producer at $301.53 per acre. These are full costs of production including cash land rent at $95.00 per acre, return on machinery investment, a return to management and overhead and return to operator labor. There are significant differences in the sizes of equipment, number of tillage operations and amount of labor used. However, the most significant differences between the operators, in terms of cost, were in the purchased inputs. Producers used significantly different fertilizer and pesticide programs, as well as having

different seeding rates and seed costs. A prime example of these differences can be seen in Table 1 by looking at the difference between the high cost and low cost producer in both systems. The high cost producer in the gravity irrigated system used $104.36 per acre in purchased inputs, while the low cost producer used $51.99 per acre.

Evaluation of the costs of production is not complete until the costs are compared with the expected yield to determine the price required to cover those costs. Table 2 shows a sensitivity analysis for each of the scenarios presented in Table 1. The table presents both the price required for differing expected yields and the yield necessary to break even under differing price expectations.

Western Nebraska dry bean producers are able to grow the crop at costs lower than those in many other regions. As noted in Table 2, the price required for break even at the 20 cwt per acre yield ranges from $14.26 to $17.80 per cwt. These price levels are attainable in most years, with the most recent five year average for Great Northern beans being $19.55 per cwt.

Regional Production Costs

Dry edible beans are produced in at least 17 states throughout the United States as well as five of the provinces of Canada. The crop is produced under gravity irrigation, sprinkler irrigation and rainfed or dryland production systems. Each of these systems presents its own challenges and cost structure. Although the dry edible bean produced may be similar from one region to another, the production system and cost of production may be quite different.

Many of the regions of dry bean production has some form of dry bean budget published for use as a management tool. These budgets are produced by the area university or another government agency. These differing budgets were used to establish an estimate of the differences in costs from one region to another. Table 3 shows the results of the comparisons of production costs by state.

Nebraska dry bean producers are among the lowest cost producers throughout the United States. Among the irrigated growers, Nebraska has the lowest cost of production by a wide margin. Much of this can be attributed to the development of tillage practices that limit the amount of tillage passes made across each acre, as well as a limited reliance on crop inputs.

The one area that has a total cost of production advantage over Nebraska is the Red River Valley area of North Dakota. Although North Dakota has a lower total cost of production than Nebraska, the cost per cwt of expected bean yield is slightly higher. This is due to the significantly lower expected yield (13.4 cwt/acre vs. 20.0 cwt/acre) for the rainfed production of North Dakota.

The five year average price for Great Northern beans has been $19.55 per cwt, and for pinto beans it has been $17.50 per cwt. It would appear that dry bean production is profitable on average in Nebraska, North Dakota and possibly Colorado, but slightly below break even in Wyoming, Kansas and Idaho. The California and Arizona producers are not profitable producing the traditional commodity type beans, but must produce dry beans for specialty and niche markets to be able to return a profit given the cost structure that they face.

Cost of Production in Canada

Canadian producers face many of the same concerns over cost of production that United States producers are interested in. The rising cost of land, machinery and inputs are limiting profitability through both countries. In addition, the returns for dry beans have been less than favorable over the past several years. Over production and limited export opportunities have depressed the prices of nearly all dry bean classes in recent years.

Nebraska has the best cost structure in the United States, but has to be concerned with the costs of bean production in the Canadian provinces. The dry bean production in Canada is rainfed (dryland) in both Manitoba and Saskatchewan, while the production in Alberta is presently irrigated. The Canadian cost of production data is compared to the Nebraska values in Table 4. The Canadian cost values are lower than Nebraska in Manitoba, and higher than Nebraska in both Alberta and Saskatchewan. Of all the regions evaluated, the Saskatchewan producers are the low total cost producers ($189.02/acre) followed closely by the Manitoba bean growers ($199.33). These values are converted to United States dollars for evaluation. In comparison Nebraska producers are in the $310.00 to $325.00 per acre range. However, the Manitoba and Saskatchewan producers are rainfed, resulting in lower expected yields. The budgets for those areas show an expected yield of 11 cwt per acre in Saskatchewan, and 17 cwt per acre in Manitoba. With these expected yield values, the break even prices for Saskatchewan and Manitoba are $17.90 and $11.73 per cwt respectively. The expected yield for Manitoba may be slightly overstated, since the 9-year average yield for the province is 15.1 cwt per acre and the expected yield in North Dakota is 13.4 cwt per acre in their budgets. If the cost of production for Manitoba were based on a 15 cwt per acre yield expectation, the break even price would be $13.29 per cwt. Alberta farmers are not as competitive as the other provinces in the dry bean production areas. The break even price for the Alberta farmers is $20.29 per cwt, some what higher then the Nebraska break even prices of $15.65 per cwt for gravity irrigated and $16.16 per cwt for the center pivot irrigated production. As stated previously, Nebraska dry bean producers are very competitive in the production of irrigated dry beans, and remain reasonably competitive with the dryland or rainfed producers.

Development of new upright, direct harvestable dry bean varieties in Western Canada have the potential to increase acreage and lower cost in both Alberta and Saskatchewan. These varieties are presently being tested in the pinto and black bean classes. Adaptation of these varieties will allow dryland producers to solid seed dry beans with their air drills and harvest the beans with a typical flex head as used for grain production.

Paul Burgener and Dillon Feuz, (308) 632-1232
Panhandle Research and Extension Center
University of Nebraska

Table 1. Summary of Dry Edible Bean Costs of Production for Gravity and Center Pivot Irrigation Systems*

	Gravity Irrigated			Center Pivot Irrigated		
	Average	**High**	**Low**	**Average**	**High**	**Low**
Preplant Tillage Passes	3.25	4	3	3.4	4	3
In-season Tillage Passes	2.875	1	2	2	1	1
Purchased Input Costs	$65.37	$104.36	$51.99	$68.65	$96.61	$51.99
Machinery Costs	$59.09	$58.61	$51.52	$51.82	$53.24	$49.02
Total Operating Costs	**$130.47**	**$162.68**	**$110.05**	**$143.36**	**$171.87**	**$125.66**
Total Fixed Costs	**$182.53**	**$188.53**	**$175.10**	**$179.92**	**$184.19**	**$175.87**
Total Costs	**$313.00**	**$351.21**	**$285.15**	**$323.28**	**$356.06**	**$301.53**

* Values represent the average cost of production, as well as the high and low cost producer from this study.

Table 2. Sensitivity Analysis for Different Cost of Production Scenarios Showing both Break Even Prices and Yields

	Gravity Irrigated			Center Pivot Irrigated		
	Average	**High**	**Low**	**Average**	**High**	**Low**
Total Costs	**$313.00**	**$351.21**	**$285.15**	**$328.28**	**$356.06**	**$301.53**

	Break Even Yields (cwt/acre)					
	Gravity Irrigated			Center Pivot Irrigated		
Expected Price ($/cwt)	**Average**	**High**	**Low**	**Average**	**High**	**Low**
$15.00	20.87	23.41	19.01	21.55	23.74	20.10
$17.00	**18.41**	**20.66**	**16.77**	**19.02**	**20.94**	**17.74**
$19.00	16.47	18.48	15.01	17.01	18.74	15.87
$21.00	14.90	16.72	13.58	15.39	16.96	14.36
$23.00	13.61	15.27	12.40	14.06	15.48	13.11
$25.00	12.52	14.05	11.41	12.93	14.24	12.06

	Break Even Price ($/cwt)					
	Gravity Irrigated			Center Pivot Irrigated		
Expected Yield	**Average**	**High**	**Low**	**Average**	**High**	**Low**
16	$19.56	$21.95	$17.82	$20.21	$22.25	$18.85
18	$17.39	$19.51	$15.84	$17.96	$19.78	$16.75
20	**$15.65**	**$17.56**	**$14.26**	**$16.16**	**$17.80**	**$15.08**
22	$14.23	$15.96	$12.96	$14.69	$16.18	$13.71
24	$13.04	$14.63	$11.88	$13.47	$14.84	$12.56
26	$12.04	$13.51	$10.97	$12.43	$13.69	$11.60

Table 3. Comparison of Production Costs, Tillage Use and Break Even Prices for Eight States

	Nebraska								
	Average Gravity	Average Pivot	Colorado Pivot	Wyoming Mixed	Kansas Pivot	Idaho Gravity	Calif. Gravity	Arizona Gravity	N. Dakota None
Preplant Till Passes	3.25	3.4	?	5	?	7	5	5	?
In-crop Till Passes	2.875	2	?	3	?	2	2	1	?
Purchase Input Costs	$65.37	$68.65	$104.88	$58.06	$96.79	$96.77	$270.00	$212.63	$63.26
Machinery Costs	$59.09	$51.82	$98.71	$130.83	$62.95	$111.20	$90.00	$149.71	$53.77
Total Operating Costs	**$130.47**	**$143.36**	**$289.13**	**$185.33**	**$236.83**	**$263.81**	**$416.00**	**$527.29**	**$113.47**
Total Fixed Costs	**$182.53**	**$179.92**	**$162.02**	**$217.27**	**$206.51**	**$231.96**	**$281.65**	**$244.95**	**$104.52**
Total Costs	**$313.00**	**$323.28**	**$451.15**	**$402.60**	**$443.34**	**$495.77**	**$697.65**	**$772.24**	**$217.99**
Expected Yield-cwt	20.00	20.00	23.00	18.00	20.00	22.00	19.20	18.00	13.40
Break-Even Price @ Ex. Yield	$15.65	$16.16	$19.62	$22.37	$22.17	$22.54	$36.34	$42.90	$16.27

Table 4. Cost of Production Comparison between Nebraska and Three Provinces in Canada

	Nebraska		Canada (in U. S. Dollars)*			Canada (in Canadian Dollars)		
	Average Gravity	Average Pivot	Manitoba None	Alberta Pivot	Saskatchewan Dryland	Manitoba None	Alberta Pivot	Saskatchewan Dryland
Preplant Tillage Passes	3.25	3.4	2	?	0	2	?	0
In-season Tillage Passes	2.875	2	1	?	0	1	?	0
Purchased Input Cost	$65.37	$68.65	$91.16	$112.58	$84.10	$139.20	$171.91	$128.43
Machinery Costs	$59.09	$51.82	$40.84	$79.38	$34.28	$62.36	$121.21	$52.35
Total Operating Costs	$130.47	$143.36	$129.04	$237.79	$105.59	$197.05	$363.12	$161.24
Total Fixed Costs	$182.53	$179.92	$70.29	$167.91	$83.43	$107.33	$256.40	$127.39
Total Costs	$313.00	$323.28	$199.33	$405.70	$189.02	$304.38	$619.52	$288.63
Expected Yield	20.00	20.00	17.00	20.00	11.00	17.00	20.00	11.00
Break-Even Price @ Expected Yield	$15.65	$16.16	$11.73	$20.29	$17.18	$17.90	$30.98	$26.24

* Canadian dollars converted to U.S. dollars at: $1.00 CAN = $0.654864 U.S.