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Eliminating Fallow: What is the Best Transition Crop Back to Winter Wheat?

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Cornhusker Economics

Cooperative Extension

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Market Report	Yr Ago	4 Wks Ago	7/4/03
Livestock and Products, Average Prices for Week Ending			
Slaughter Steers, Ch. 204, 1100-1300 lb Omaha, cwt	$63.16	$80.40	$75.06
Feeder Steers, Med. Frame, 600-650 lb Dodge City, KS, cwt	*	*	93.00
Feeder Steers, Med. Frame 600-650 lb, Nebraska Auction Wght. Avg	89.63	104.17	*
Carcass Price, Ch. 1-3, 550-700 lb Cent. US, Equiv. Index Value, cwt	99.83	132.74	117.76
Hogs, US 1-2, 220-230 lb Sioux Falls, SD, cwt	41.00	46.00	45.00
Feeder Pigs, US 1-2, 40-45 lb Sioux Falls, SD, hd	17.71	*	30.00
Vacuum Packed Pork Loins, Wholesale, 13-19 lb, 1/4" Trim, Cent. US, cwt	109.76	122.18	102.17
Slaughter Lambs, Ch. & Pr., 115-125 lb Sioux Falls, SD, cwt	83.25	103.00	90.00
Carcass Lambs, Ch. & Pr., 1-4, 55-65 lb FOB Midwest, cwt	160.82	208.46	197.61
Crops, Cash Truck Prices for Date Shown			
Wheat, No. 1, H.W. Omaha, bu	3.49	3.31	3.10
Corn, No. 2, Yellow Omaha, bu	2.14	2.28	2.17
Soybeans, No. 1, Yellow Omaha, bu	5.36	6.25	6.12
Grain Sorghum, No. 2, Yellow Kansas City, cwt	3.96	3.91	3.75
Oats, No. 2, Heavy Minneapolis, MN , bu	2.29	1.75	1.58
Hay, First Day of Week Pile Prices			
Alfalfa, Sm. Square, RFV 150 or better Platte Valley, ton	112.50	122.50	127.50
Alfalfa, Lg. Round, Good Northeast Nebraska, ton	72.50	62.50	70.00
Prairie, Sm. Square, Good Northeast Nebraska, ton	95.00	117.50	*

No market.

Dryland crop production has been a key component in the economy of the Central Great Plains for over 100 years. Although the river valleys and some underground water sources have provided small areas of irrigation, dryland crop production is dominant. With additional demands on the limited water resource in this region, dryland crop production is expected to increase in importance in the future.

With annual rainfall under eighteen inches per year, the ability to conserve and utilize this limited resource has become paramount in the dryland cropping areas. Focus on the efficient use of water has become the primary driving force behind many of the changes in dryland cropping systems. Changes in federal agriculture policy have increased the flexibility with which farmers are able to make planting decisions, and thus shift toward more intensive crop rotations.

Historically, this region has depended upon the hard red winter wheat crop as the key component in any cropping system. Much of the winter wheat is grown in a traditional wheat-fallow rotation, where the land is left out of production for nearly 14 months between the harvest of one crop in July to the seeding of the next winter wheat crop in September of the following year. This practice has been used to store water during the fallow period for the succeeding crop of winter wheat, allowing the farmer to produce a viable crop every other year as opposed to producing a limited crop in each year. This system has been used as a risk management tool by dryland farms concerned that the crop would be a failure in years of low rainfall if a crop were harvested every year. It has been determined that storage efficiency of rainfall received during the fallow period is only 25 percent, with the remaining 75 percent of the annual rainfall lost. This translates into an annual loss of 10-12 inches of water during the fallow period. Crop rotations that can use the moisture lost in the fallow period have been a challenge for producers over the past several years.

Numerous crop rotations have been considered and implemented throughout the region to attempt to utilize the annual rainfall and combat additional challenges attributed to the monoculture wheat-fallow system. More intensive systems have been shown to increase water utilization, decrease disease, increase soil organic matter, decrease winter annual grass pressure and add diversity to the crop mix. Development of a continuous dryland cropping systems is limited by the lack of a key crop to allow planting winter wheat in a timely manner after the production of a summer crop immediately prior to the fall seeding of winter wheat. A number of crops have been considered including; spring wheat, dry edible beans (pinto), corn, spring canola, spring wheat, proso millet, sunflowers, pea and oat mixes and numerous forage crops. There are significant challenges present with each of these crops, and no specific "best" crop for this purpose has been discovered at this time.

For this study, five summer crops were planted following sunflowers in the spring of 1999, 2000 and 2001, and then harvested at maturity during the summer and fall of the respective growing seasons. The crops used for this experiment were spring canola, proso millet, dry edible beans (pinto), corn and an oat/forage pea combination. In addition, a fallow treatment was included to be used as a check. Upon completion of the harvest, a winter wheat crop was planted and harvested in the following summer. The yield of each crop and the succeeding winter wheat crop were measured and tested for quality measures where appropriate.

Gross returns for each system were determined by using the actual yield data and the five year average price for each crop. Enterprise budgets were completed for each crop, including the winter wheat and the fallow period. Using the gross returns and the enterprise budgets, return to land and management was calculated for each crop, and subsequently for each of the summer crops through winter wheat systems. The key decision making criteria for these producers is not necessarily that the summer crop has to have a positive net return, but has to have a lower overall net loss than the fallow presents. Each of these summer crops has some negative impact on the winter wheat yield when compared to fallow, resulting in the need to evaluate the returns over a two year period. The summer crop must be enough lower in cost than fallow to cover the shortfall in winter wheat yield before it becomes an economically viable alternative to fallow.

The winter wheat yield were reduced following each of the summer crops, when compared to fallow. However, these reductions in yield were offset by income generated from the sale of the summer crop. Annualized returns for the oat/pea for forage and proso millet are similar, or an improvement over the fallow treatment. Corn, spring canola and dry beans were not competitive with the fallow treatment due to the late harvest date for corn, and a lack of adapted varieties for spring canola and dry beans.

The results of this study suggest that there are viable alternatives to fallow for winter wheat producers in Western Nebraska. Development of adapted varieties of dry beans and spring canola would increase the number of alternatives for these producers. These results have initiated a new project that will evaluate a "flexible fallow" system, where agronomic and economic tolls will be used to determine whether to plant a crop or leave the land fallow. If a crop is planted, pricing and soil water at planting will be used to determine the crop to be seeded.

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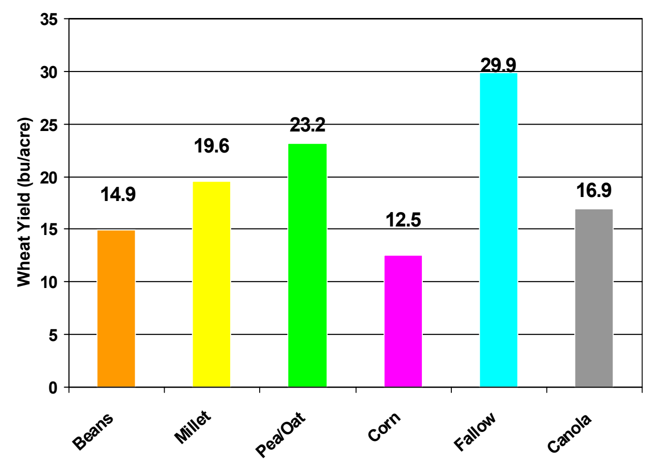

Figure 1. Winter wheat yields following transition crops, 3-year average.

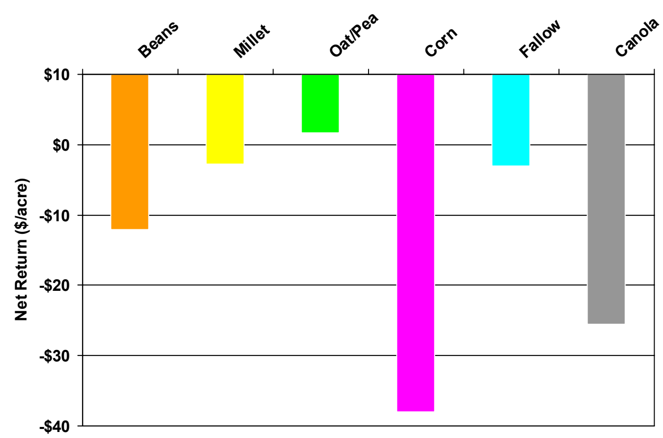

Figure 2. Annualized return to land and management for alternative crop systems.