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# Factors Considered to Decide Nitrogen Application Rate

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What do farmers consider when they are deciding what level of nitrogen to apply to their crops each year? A recent survey of Nebraska irrigated and dryland farmers which focused on their 1994 crop year asked them this question. The sample of farmers for this survey was drawn from the Nebraska Agricultural Statistics Service lists of dryland and irrigated farmers.

The factors used by most farmers in the two groups were quite similar (*Figure 1*). In both groups, nearly all farmers used yield goals, previous experience, and the crop grown in the previous year. Slightly fewer farmers considered the soil test results, the yield of last year's crop, and the spring weather. A smaller proportion of the farmers used dealer recommendations, observation of neighbors, and crop consultants to reach a decision on the amount of nitrogen to apply.

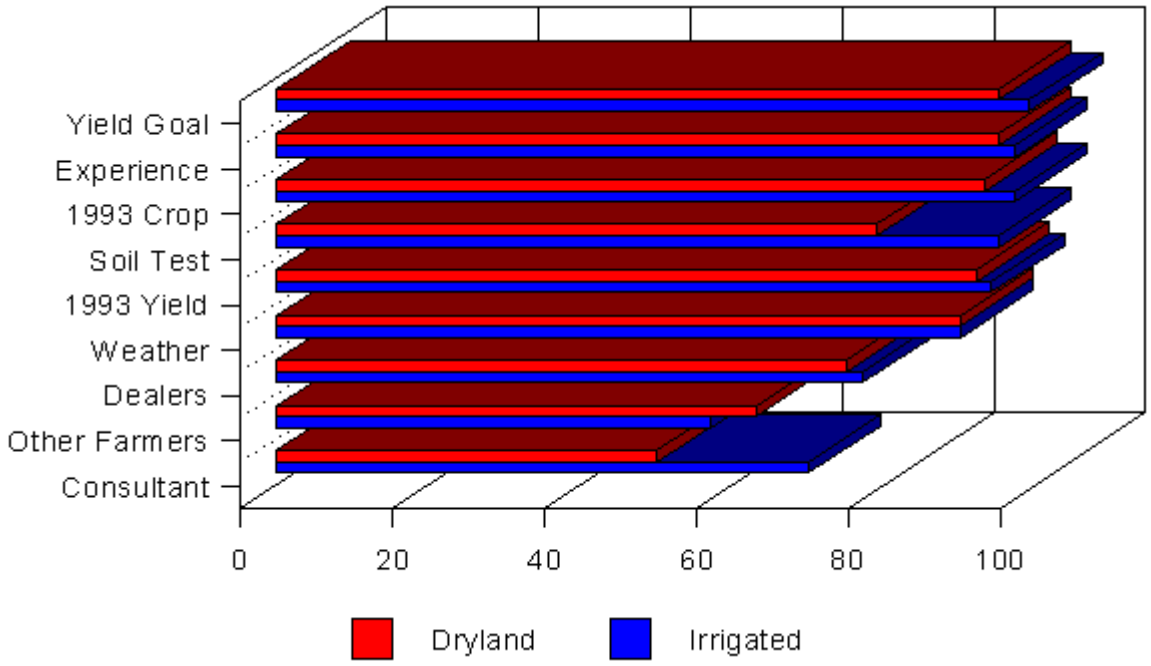
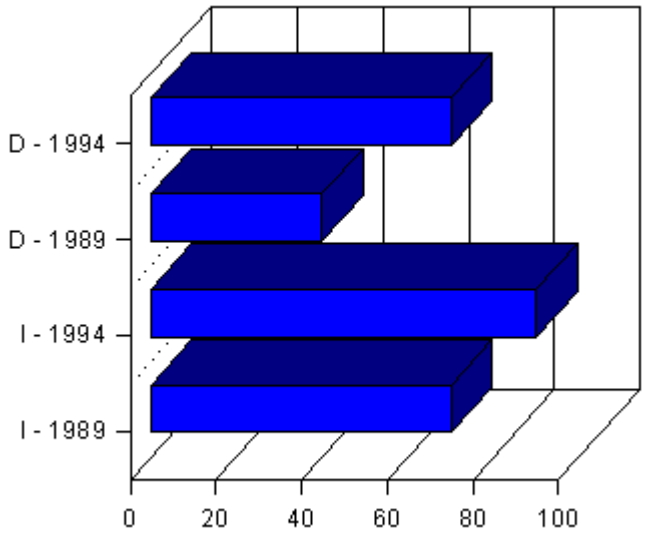



**Figure 1. Irrigated-Nitrogen and Dryland-Nitrogen Rate Factors (percentage).**

The farmers were also asked which factors were only slightly considered, which were important, and which were very important in influencing their decision about the appropriate amount of nitrogen to apply. Once again, most farmers selected yield goals, previous experience, and the crop grown last year as either important or very important in making the decision.

Some differences were noted between irrigated and dryland farmers. A higher proportion of irrigated farmers used the factors listed than did the dryland farmers. Nearly all irrigated farmers (96 percent) considered soil tests while fewer dryland farmers (79 percent) considered them (*Figure 2*). Proportionately more irrigated farmers used information from crop consultants (71 percent) than did dryland farmers (47 percent).




The differences between dryland and irrigated farmers might reflect differences in cropping patterns, cost of inputs, and the need for consultants rather than any difference in management skill or environmental sensitivity.

Irrigators usually spend more per acre on all purchased inputs and grow primarily corn which has a high nitrogen requirement. Since crop consultants often provide irrigation scheduling, pest control, and fertilization advice, irrigators have more opportunities to use consultant services. The combined effect of these factors is to increase the potential payoff from crop consultants and soil testing for irrigators as is reflected in the use rates for

**Figure 2. Farmers Using Soil Tests (percentage).**

these services.

Because the Nebraska Cooperative Extension Service completed a survey of Nebraska farmers in 1989, it is possible to compare changes over time in the proportion of farmers using certain factors to determine the appropriate amount of fertilizer to apply. For example, in 1989 only 44 percent of the dryland farmers were using soil tests to reach fertilizer application decisions, but by 1994 79 percent used soil tests to determine nitrogen application rates. In 1989 82 percent of the irrigated farmers used soil tests, but by 1994 this had increased to 96 percent. This change is a significant increase in the number of farmers using soil tests. This might be explained in part because a Natural Resource District may have required farmers to begin taking soil tests during this period. But in most of the state, information and experience available during the five year period may have been what convinced many Nebraska farmers of the importance of using soil test information to make fertilizer application decisions.

Other changes that have occurred between the 1989 survey and the 1994 survey include: a greater proportion of farmers now use yield goals, previous experience, and dealer recommendations than was the case in 1989. The greater use of these factors today might reflect more environmental awareness, improved knowledge, and continuing pressure to reduce costs.

## References:


1. Survey data from about 1,800 Nebraska farmers collected in 1995 about the 1994 crop year.
2. S. K. Rockwell, et. al. *Agricultural Producers' Opinions and Production Practices Related to Soil and Water Quality Issues*, UNL Cooperative Extension, May, 1992.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