Corn Yield Challenge Improves Efficiency and Profitability

By Ron Akin

A dealer-organized Corn Yield Challenge has aided farmers in learning more about new techniques for corn production and how to produce higher, more profitable yields while conserving soil resources.

FARMERS Grain and Agri-Center of Union City, TN, has sponsored a Corn Yield Challenge for its farmer customers for seven years, dating back to 1986. The objective of the Yield Challenge was to demonstrate to farmers how their production input practices influenced corn yields and profitability, and how those practices compared to other systems. The Yield Challenge has taught farmers to plan and develop production input programs, learn all they can about new production techniques and to keep records.

One of the objectives of the Yield Challenge has been the generation of highest net return, not just highest yield, so entrants must plan their inputs to keep yields high and production costs per bushel low . . . emphasizing production efficiency. Fixed costs were not included because of variation among entrants.

Rules of the Yield Challenge do not permit irrigation, but do require soil tests of the challenge area and records on all inputs. The yields are certified by a staff member of the local cooperative Extension office or Farmers Grain. Either no-till or conventional tillage systems are eligible. The entrant must select 10 acres in one contiguous block for yield measurements.

Yield and net return records of the entrants are impressive. Production costs for fertilizer, crop protection chemicals and seed are summarized in **Table 1**. Costs for 1992 were lower than recent years because of lower fertilizer prices. The net results of the seven years are summarized in **Table 2**.

In 1992, the Yield Challenge farmers had an average plant population of 23,120 plants per acre (ppa), ranging from 16,400 to 27,350 ppa. The highest yield was 226 bu/A. The average yield for entrants was 183 bu/A. The highest net return to land, machinery and labor was $360.58/A, with a yield of 210 bu/A. The winner's corn was produced in a no-till production system in 36 inch rows.

Summary

The Yield Challenge has remained popular with Obion County farmers. Each

Table 1. Average per acre expenses for Corn Yield Challenge entrants, 1986-92.

	Input cost, $/A			
Year	Fertilizer	Crop protection chemicals	Seed	Total
1992	58.89	21.10	21.10	101.09
1991	75.80	21.00	20.52	117.32
1990	80.26	19.53	20.01	119.80
1989	84.25	18.25	21.36	123.86
1988	81.64	17.21	18.95	117.80
1987	67.35	16.15	19.70	103.20
1986	67.98	17.93	21.04	106.95

Ron Akin is Agronomist for Farmers Grain and Agri-Center in Union City, TN.

Table 2. Corn Yield Challenge data summary, 7-year average.

Year	Yield, bu/A	Market price, $/bu	Revenue, $/A[1]	Expenses, $/A[2]	Expenses, $/bu	Net return, $/A[3]
1992	183	2.10	383.99	101.09	0.55	282.90
1991	145	2.50	362.32	117.32	0.81	245.00
1990	158	2.30	363.20	119.80	0.76	243.40
1989	170	2.38	403.98	123.86	0.73	280.12
1988	155	2.74	423.59	117.80	0.76	305.79
1987	168	1.53	256.75	103.20	0.61	153.55
1986	145	1.38	200.59	106.95	0.73	93.64
Average	160	2.13	342.06	112.86	0.70	229.20

[1]Yield (bu/A) x Market Price
[2]Fertilizer, Seed & Chemical Expenses Only
[3]Revenue–Expenses

year about 30 individuals participate. There are rewards for the winners with the highest yields and highest profits. There is also a prize and recognition for the highest no-till yield. This promotes conservation of the most important resource, the soil.

In the final analysis, Yield Challenge entrants have gained from the experience . . . in terms of learning more about production input efficiency, higher profitability and resource conservation. The Yield Challenge is continuing in 1993. ■

Nitrogen Loss . . . from page 17

The mechanisms and reasons why volatile N losses occur from plants is not understood. Some researchers attribute N losses mainly to inefficient N translocation and reassimilation within the plant.

However, this does not explain why large losses are noted in some studies while only negligible amounts are detected in others. Research is needed to determine which environmental and physiological factors affect or control N loss processes. Nitrogen availability and moisture stress are two factors which appear to do so.

Summary

It may seem inconsequential whether N losses are coming from the soil or plants, but it becomes important as we continue to look for ways to improve N fertilizer use efficiencies. For example, failure to consider volatile plant N losses will result in overestimation of N losses from the soil by denitrification and leaching. Proper accounting of all N losses from the soil-plant system is needed to fully assess each loss component. This information is necessary as we attempt to develop appropriate means to improve N fertilizer use efficiencies and to properly evaluate any proposed new management strategies. ■

Soil Fertility Manual Slide Sets Available

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