Yield Monitors Could Hold Key To Improved Corn Productivity

Rob Ratvasky, representative of Hoober Equipment, spoke about the effectiveness of combine yield monitors at the crops conference.

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CARLISLE (Cumberland Co.) — Designer corn may be the "wave of the future." But the "wave of the present" is in precision farming.

Part of precision farming is using technology to observe corn yields as they are harvested, according to Rob Ratvasky, representative of Hoober Equipment, at the corn growing segment at last week's Pennsylvania Crops Conference.

Ratvasky presented a demonstration of the operation of yield monitor technology at the conference.

Yield monitors are becoming increasingly more precise and reliable, according to Ratvasky, and are working with existing technology to more accurately pinpoint yields on farms.

The heart of the technology is a special "flow sensor" that measures the amount of grain taken off a field by the combine. Hoober and other equipment dealers are working with manufacturers in using the global positioning system (GPS) to more accurately reflect what fields can provide the best harvests.

In the future, using this information will help growers "place the right variety on the right field for maximum yield," said Ratvasky.

In one field day held in the fall by Hoober, a "picture" was provided of how well certain fields harvested. However, the data had to be more effectively "massaged" to produce an accurate view because of the complexities of field terrain and other variables.

Growers can use this kind of technology to "put what you need where, rather than use one treatment for the entire field," he said. This could allow growers to change the fertilization and "other practices where it will benefit you most."

The details of working with GPS are still being worked out. More accuracy now requires more money spent on complex equipment. Also, working with the flow sensors can be difficult because of accumulations of dirt in the combine, including green material that "insulates the fin and auger from the sensor."

One grower, Daryl Alger from Palmyra, purchased a yield monitor device to see how it can help identify certain fields in terms of productivity.

Alger was impressed with the device. "It really showed me things," he said. "Where I think I had good yields, there wasn't."

Some of the challanges Alger faced in harvest was the difficulty with pokeweed material in corn and the sensor devices. In harvesting soybeans, there were problems with green lambsquarters material clogging up the flow meter.

But, when working well, Alger said he was "really amazed at the accuracy" of the monitor. But for growers, calibration is essential to provide more accurate information.

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Comparison Of 15- And 30-Inch Row Spacings For No-Till Corn Planted On Drought-Prone Soils

Various references (Vogel, 1995 and Shoener 1995) report from 5 to 10 percent yield advantage when corn row spacing is reduced from the traditional 30-inch spacing.

Shoener, (1995) in his overview of narrow row corn production practices, presents several conflicting opinions. Data from 1993 Penn State research suggests that narrow row corn may not be suitable for shallow soils or those subject to late season moisture stress.

On-farm conditions in Michigan shows a greater response to narrow row spacing on poorer soils under poorer growing conditions than on better soils under more suitable growing conditions. This project was designed to see if this consensus on just what specialized equipment is necessary for narrow row corn production. The farmer already owned an 11 row 15-inch John Deere 7240 corn planter. Would it be possible to harvest 15-inch rows with a 6-row 30-inch corn head?

The site was laid out on a sloping field with Matapeake silt loam soils with 2 to 5 percent slopes near the top and 5-10 percent slopes near the bottom. The farmer considered the top half of the field to be "good" soils and the bottom half to be poorer soils with much more gravel and less water holding capacity. The experiment was laid out as a randomized complete block design with plots running along the slope. Plots were 465 feet long and 15 feet wide. Two corn hybrids (Pioneer 3163-119RM and Ciba 5190X-112RM) and two row spacings (15 inches and 30 inches) were used giving a total of four treatments which were replicated four times.

Corn was no-till planted on April 26, 1995. Each plot had six 30-inch rows or eleven 15-inch rows and seeding rates of 27,100/acre and 26,800/acre, respectively. A standard pre-emerge residual and burn down herbicide program was used.

Starter fertilizer was 40.7 #N/A, 40.7 #P/A, 13.6 #K/A, 2.7 #S/A, 0.14 #B/A, and 0.54 #Zn/A applied ½ banded and ½ dribbled over the row on the six 30-inch rows. Corn was side dressed on June 8, 1995 with 100 #N/A as 30 percent UAN solution dribbled every 30 inches by a custom applicator using a high clearance sprayer with 60 foot booms. The plots were arranged so that the sprayer followed the 30-inch rows for each pass. In an adjacent field planted to all 15-inch rows, there was little damage observed from the sidedress N application.

Although starter and sidedress fertilizer were applied only to every other 15-inch row differences in growth observed early in the season were not observed by mid summer. Plant population counts were made in June and averaged 24,416 for 30-inch rows and 25,083 for 15-inch rows. When analyzed by analysis of variance for a 2 by 2 factorial design, plant population was not significantly different across blocks, row spacing, or hybrids at the 0.05 probability level. Weed control remained good throughout the season and no differences were observed.

Plots were harvested on October 11, 1995 with a John Deere 7720 combine and a 6-row 30-inch corn head. At planting the corn planter

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