Equipment considerations for producing corn after corn

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Equipment considerations for producing corn after corn

Abstract
When shifting from a corn-soybean rotation to growing corn after corn, there are several equipment considerations. They include residue spreading, possible use of tillage implements, planter operation, and adjustments in the harvesting system. Following is a general overview.

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**Residue spreading**

Heavy residue amounts from good corn production generally have little effect on soybeans planted the next spring. Planting corn into corn residue, however, can be more challenging with potential effects on corn seed placement, early growth, and development. Residue management starts with spreading residue behind the combine as uniformly as possible. Only the top portion of the stalk goes through the combine, but when using the chopper, drive and blades should be well maintained and spreading vanes (if present) adjusted. If a chaff spreader is used behind the cleaning shoe, vanes on discs should be maintained and angled appropriately and the drive maintained for appropriate speed. A decision on whether to chop stalks attached to the ground often depends on if they will interfere with subsequent tillage equipment.

**Tillage implements**

In warm and dry soils, tillage seems to have minor effects on yields. In wetter and colder soils, however, continuous corn yields often increase somewhat with tillage. Implement selection will depend on tillage depth and the ability of residue to flow through the implement without plugging as well as environmental (i.e., erosion) concerns. Large diameter discs are commonly used for cutting and sizing stalks. A disc implement may be considered for shallow tillage. If deep tillage is required, combination subsoiler implements with a front gang of discs, subsoiler shanks, a rolling rear leveling device, and spacious clearance between these may be used. Strip tillage (i.e., tilling only in the row zone) may gain much of the benefit in cold and wet soils without excessive tillage.

**Planter**

Increased residue at or near the surface, particularly in minimum- or no-till systems, puts a premium on maintenance and operation of soil-engaging parts of the planter (i.e., seed opener, front attachments, and closing system). Because ability to cut through residue at or near the surface is important, the seed opener should be maintained to present a very narrow profile at the soil entry point. As opener edges wear, disc blades need to be repositioned to maintain this narrow profile. Row cleaners, adjusted to move primarily residue but little soil, help corn to get a more uniform early start, particularly in tillage systems with high levels of surface residue. Remember to adjust down pressure of closing wheels or discs for good seed-to-soil contact. Make sure the planter frame is leveled, otherwise it will be virtually impossible to maintain proper height of front attachments or correct closing wheel pressure.

Hard soil conditions or uneven residue piles on the surface can cause shallow seed depth. Check to ensure that depth-gauge wheels on row units are in firm contact with the soil and that surface residue is either spread evenly or pushed away from the row zone by row cleaners.
Harvest

Depending on environmental conditions, there may be greater potential for disease on corn kernels during harvest when corn is raised following corn. Generation of further disease and storability are affected by excessive damage to the seed coat. Use the lowest combine rotor or cylinder speed to maintain adequate threshing without excessive harvest machine loss.

Assess capacity of harvest equipment, grain transport from the field, drying, and storage. Acres moved from soybean to corn production produce roughly three times the volume of material that must be removed from the field. If field dry-down is not sufficient, corn acres place an additional load on the drying system.

Mark Hanna is an extension agricultural engineer in agricultural and biosystems engineering with responsibilities in field machinery.

Insects and Mites

Western bean cutworm management in 2006

by Rich Pope, Departments of Entomology and Plant Pathology

Western bean cutworm is a corn pest that has become an economic concern in some parts of Iowa in the past decade. Iowa State University led a pheromone trapping network to monitor the presence and timing of emergence of adults in Iowa. The map shows the reported data on moth captures for the season.

ISU Corn and Soybean Initiative partner agronomists were surveyed in December about pest management issues in corn and soybean in the 2006 growing season. Here are summarized results of the survey concerning western bean cutworm, and results involving soybean pests will be presented soon in the ICM newsletter. There were 17 usable responses from 28 companies polled, and responses geographically covered most parts of the state except extreme south-central Iowa.

Number of producers who provided agronomic services (Estimated) ———— 13,900
Number of acres those producers farmed (Estimated) ———— 7.4 million
Percentage of acreage using corn varieties with the Herculex® trait ———— 2.5 to 15%

Both the incidence of western bean cutworm and yield losses from damaged ears varied considerably from field to field and from area to area. Those who estimated losses generally reported 2 to 5 bushels per acre, with one report of losses in a few fields that reached 10 percent. The agronomists were asked how farmers they worked with managed for western bean cutworm, and most reported using the suggested economic threshold of 8 percent of plants with egg masses or newly hatched larvae present; however, two reported that scouting was frustrating to do. It was noted that there were scouted fields that never reached threshold yet suffered apparent economic losses from western bean cutworm damage. Complicating scouting is the difficulty in scouting fields around silking. In addition, one respondent specifically requested information about thresholds for multiple pests (in corn, that could include western bean cutworm and corn rootworm beetle adults, among others).

Rich Pope is an extension program specialist in entomology with responsibilities in integrated pest management and pesticide applicator training.