

Continuous Corn Management

- While challenging, it is possible to obtain high yields in continuous corn.
- Several management strategies are recommended to reduce the risks associated with corn after corn.
- Select a highly productive field, the correct corn product, the correct insect trait protection, and optimal seeding rates.
- Residue, nitrogen, and volunteer corn, should be managed appropriately.
- Consider seed treatments that can help protect yield potential from early-season diseases and insects.

Field Selection

Only highly productive fields should be placed into continuous corn production. Fields to consider for continuous corn production should have good drainage/water holding capacity, good fertility, no compaction problems, and low insect and disease pressure.

Product Selection

Selecting the correct corn product is very important for successful continuous corn production. Products should be selected with special attention given to plant characteristics including high ratings for emergence, seedling vigor, disease resistance, and root and stalk strength. Continuous corn production can increase the likelihood of certain insect pests; therefore, products with insect resistant trait technology should be used to provide additional protection.

Select products with multiple modes of insect protection. Genuity® SmartStax® technology products offer above and below ground insect protection. It is the preferred product for continuous corn acres with high rootworm populations.

Fertility

When planting corn following corn, a higher nitrogen (N) application is recommended to help reduce the potential for N deficiency (Figure 1). An additional 30 to 50 lbs/A of N may need to be applied to continuous corn acres when compared to a corn-soybean rotation. Different forms of N can be applied at different timings throughout the season, such as N applied preplant and/or sidedressed, may help increase continuous corn yield potential. Corn plants remove more phosphorus and less potassium from the soil than soybean plants; therefore, fertilizer applications should be adjusted according to crop usage.



Figure 1. Corn leaf displaying symptoms of nitrogen deficiency.

Managing Residue

Managing crop residue can help with stand establishment and early plant vigor by providing a uniform and

homogeneous seedbed (Figure 2). Tillage may contribute to the success of continuous corn acres by breaking up residue, reducing compaction, and incorporating fertilizer and chemicals. Fall tillage can fracture corn residue, which can help jumpstart decomposition. Spring tillage can prepare the seedbed for planting and improve the ability for the soil to warm up, which can help with germination and seedling growth.



Figure 2. Seedling emergence due to excessive corn residue can be a potential problem.

Planters should be equipped with row cleaners to help push aside residue. In addition, down force should be adjusted to allow for proper seed depth placement. Planting speed along with planting equipment should be continually monitored to provide the best possible settings for seed singulation and uniform plant spacing.

For strip-till, row cleaners are essential for creating a desirable seedbed. Depending on the environment and field conditions, no-till may not be an option when planting corn after corn.

Planting Rates

There is an increased chance for reduced populations in continuous corn because of emergence and/or seedling growth issues. Therefore, consideration might be given to increasing planting rates; however, other management decisions, such as seed selection and use of seed treatments, may help reduce the effect of cooler soils, residue, and other establishment issues and negate the need to increase planting rates. The recommended planting rate for each product should be identified.

Consideration should also be given to delaying the planting of continuous corn acres until soil temperatures increase and the forecast is favorable for germination and early growth. Planting any rotated acres first may be a better option.

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Insect and Disease Control

Increased insect and disease pressure is expected when planting the same crop the following year. Fields with surface residue may not warm up or dry out as early in the spring, creating ideal conditions for seedling diseases. Tillage may help break up and bury residue, encouraging faster decomposition and helping to destroy disease pathogens.

Seed treatments, such as Acceleron® Seed Treatment Products for Corn, can aid in the prevention of early-season diseases and insect damage. Acceleron® Seed Treatment Products for Corn with the addition of Poncho®/VOTIVO® can provide protection for corn nematodes, which have the potential to increase in continuous corn systems.

Genuity® SmartStax® technology provides protection for below and above ground insects, including corn rootworm, cutworm, corn borer, and armyworm. Genuity® VT Double PRO® technology products provide protection for above ground insects, including corn borers and armyworm. Regardless of protection provided by either technology, scouting can help determine if rescue treatments are needed to help protect yield potential.

Depending on the product being grown, the growing region, and environmental conditions, the application of an in-season foliar fungicide, such as Headline AMP® fungicide at VT-R2 growth stages, can help protect plants from labeled fungal pathogens. Fields with heavier disease pressure planted with products that have moderate to moderately susceptible reactions to foliar fungal diseases may require a sequential fungicide program, such as Priaxor® fungicide applied pre-tassel followed by Headline AMP®. Diseases that tend to be more frequent in continuous corn include gray leaf spot, Northern corn leaf blight, Goss's Wilt, and stalk and ear rots (Figure 3).

Weed Management

Herbicide selection is more limited when planting corn after corn. Corn residue can reduce herbicide efficacy of many soil applied herbicides and/or shield young weed seedlings, allowing certain species to thrive.

A soil-applied residual herbicide should be applied either preplant (PP) or pre-emergence (PRE) to decrease weed pressure and reduce selection of herbicide-tolerant weeds. Providing early-season weed control can widen the post-emergence (POST) application window. For the most effective weed control, POST herbicide applications should be made when weeds are still small.

Control of volunteer corn is especially problematic in continuous corn cropping systems. If continuous corn is planted with the same herbicide-resistant traits from year-to-year, the only means of volunteer corn control is cultivation. Any volunteer corn that emerges prior to planting should be controlled with a burndown or preplant herbicide application.

Additional information for weed management in continuous corn systems can be found at www.roundupreadyPLUS.com.

Managing Harvest

Increased continuous corn acres may mean more corn acres to manage and harvest. Corn planting should be staggered or products with different relative maturities should be selected to spread out harvest. More harvesting equipment, drying facilities, storage, and man power may be needed to harvest additional corn acres in a timely fashion.



Figure 3. Northern corn leaf blight (top left), gray leaf spot (top right), Diplodia stalk and ear rot (bottom left), Goss's Wilt with bacterial exudates on leaf surface (bottom right). Goss's Wilt photo courtesy of Dr. Jerald Pataky, University of Illinois.

For additional agronomic information, please contact your local seed representative.

Sources: Erickson, B. and Alexander, C. 2008. How are producers managing their corn after corn acres? Top Farmer Crop Workshop Newsletter. Purdue University. <http://www.agecon.purdue.edu>.
Nielsen, R. L., Johnson, B., Krupke, C. and Shaner, G. 2007. Mitigate the downside risks of corn following corn. Purdue University Department of Agriculture. <http://www.agry.purdue.edu/>.
Owen, M. 2007. Weed management in continuous corn. Integrated Crop Management. Iowa State University Extension. <http://www.ipm.iastate.edu/>.
Sundermeier, A., Thomison, P., Reeder, R., Dick, W., and Mullen, R. 2007. Managing tillage and crop rotation in northwest Ohio. AGF—506—07. Ohio State University Extension Fact Sheet. <http://ohioline.osu.edu/>.
Vitosh, M. L., Johnson, J.W. and Mengel, D.B. 1995. Tri-state nitrogen recommendations for corn, soybean, wheat and alfalfa. Michigan State, The Ohio State University and Purdue University. <http://www.agry.purdue.edu/>.
Web sources verified 10/21/14.

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