

Continuous Corn Management

While challenging, it is possible to obtain high yields in continuous corn when residue, nitrogen, and volunteer corn are managed appropriately. Several management strategies including selecting highly productive fields, the correct corn product, the correct insect trait package, and optimal seeding rates are recommended to reduce the risks associated with corn after corn. Consider seed treatments to help protect yield potential from early-season diseases and insects.

Field Selection

Fields to consider for continuous corn production should be highly productive and have:

- Very good drainage
- Good water holding capacity or excellent irrigation
- Excellent soil fertility levels
- No soil compaction problems
- A history of 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 with high ratings for:

- Emergence
- Seedling vigor
- Disease resistance
- Root and stalk strength.

Continuous corn production can increase the likelihood of certain insect pests; therefore, select products with multiple modes of insect protection including those that have both above and below ground insect protection. This is especially important for continuous corn acres with high rootworm populations. Work with your local brand representative for selection of the best products and insect trait protection for your continuous corn fields.

Fertility

When planting corn following corn, a higher nitrogen application is recommended to help reduce the potential for nitrogen deficiency (Figure 1). An additional 30 to 50 lbs/acre of nitrogen may need to be applied to continuous corn acres when compared to a corn soybean rotation. Different forms of nitrogen can be applied at different times throughout the season, such as nitrogen applied preplant and/or sidedressed, which 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. Check with your local extension office for nitrogen rate recommendations for your area.

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 early seedling growth. 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.



Figure 1. Corn leaf displaying symptoms of nitrogen deficiency.

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Planting Rates

There is an increased chance for reduced populations in continuous corn because of emergence and/or seedling growth issues. 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 reduce the need to increase planting rates.



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

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

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 can aid in the prevention of early-season diseases and insect damage. Seed treatment options are also available to help provide protection against corn nematodes, which have the potential to increase their populations in continuous corn systems.

Trait technology is available to provide protection for below and above ground insects, including corn rootworm, cutworm, corn borer, and armyworm. Select trait technology based on insects that may be problematic in your field. Regular scouting and documentation can help identify recurrent insect problems and 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 at VT-R2 growth stages can help protect plants from certain 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. 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.



Figure 3. Northern corn leaf blight (top left), gray leaf spot (top right). Diplodia stalk and ear rot (bottom left), Goss's wilt (bottom right).

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 in-season is cultivation. Any volunteer corn that emerges prior to planting should be controlled with a burndown or preplant herbicide application.

Work with your local brand representative for help identifying best management practices for continuous corn production systems.

Managing Harvest

Increased continuous corn acres may mean more corn acres that need to be managed closely for 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.

Sources:

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Performance may vary from location to location and from year to year, as local growing, soil and weather conditions may vary. Growers should evaluate data from multiple locations and years whenever possible and should consider the impacts of these conditions on the grower's fields. 130719070121 072018RDH.