

## **Tillage and Planting Options for Unintended Corn Following Wheat Cover**

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Tillage options for corn planted after frozen wheat have to be considered in light of trying to make the best out of a challenging situation. Some of the unique features about trying to establish corn into wheat versus soybean or corn stubble from the previous year are that wheat may have negatively affected the soil physical (moisture and temperature) and chemical (nitrogen availability and potential allelopathic substances) environment for corn. Just how well corn will perform depends on the quantity of wheat biomass cover, soil conditions, and the weather conditions following wheat kill or incorporation and subsequent corn planting. We don't have much experience with spring tillage options for corn following wheat cover crops, but we know from previous research with corn following wheat and rye cover crops in Ontario (Raimbault et al., 1990; Raimbault et al., 1991; Tollenaar et al., 1993) that there are some things we can do to help corn get off to a good start.

Our recommendations are as follows:

1. **Early Kill for No-till Corn.** If you are intending on no-till, chemically kill the wheat as soon as the decision has been made to plant the field to corn. Early kill reduces further soil moisture loss from the seedbed zone, starts the wheat decomposition process sooner, limits further wheat dry matter production, and may reduce the presence of any allelopathic substances. Although we wouldn't recommend delaying corn planting past the optimum date range, allowing some time between chemical kill of the wheat and planting corn will be helpful to the early corn establishment (and particularly so in a cool, wet spring).
2. **Row Cleaners for No-till Corn.** Row cleaners are even more helpful for no-till corn following an unintended wheat cover crop than they are for no-till corn after soybean or wheat stubble from a previous year. Set the row cleaners aggressively, it may be helpful to remove a bit of soil in the row rather than just simply trying to brush aside decaying wheat plants. Simple coulters ahead of seed openers are not as effective as row cleaners when seeding corn following cereal cover crops (Raimbault et al., 1991).
3. **Early Tillage for Conventional-till Corn.** If the objective is to use tandem disks or combination tillage tools to establish your seedbed, try to till at least a week in advance of corn seeding to help reduce the negative effects of high volumes of decomposing wheat on production of potential allelopathic substances.
4. **Seedbed Optimization for Conventional-till Corn.** It is essential to avoid soil compaction (resulting from working the soil when it really is too wet) and to avoid seedbed moisture loss to the extent that it is possible. Moisture evaporation from the soil surface will be slower from below a wheat canopy than it would be from a bare soil. Try to reduce tillage depth and to leave the seedbed in as firm a condition as possible to help retain moisture in the seedbed zone.
5. **Pre-plant N Application for both No-till and Conventional-till Corn.** As the former wheat plants decompose (and incorporation by tillage will speed up that

process), soil N availability to corn may be reduced even if the wheat has already received its optimum rate of N fertilizer. It may be helpful to ensure adequate N availability to the young corn crop by adding N in starter fertilizer, and by applying additional pre-plant N to meet the normal recommended N requirement for the 2007 corn crop.

**References:**

- Raimbault, B.A., T. J. Vyn, and M. Tollenaar. 1990. Corn response to rye cover crop management and spring tillage systems. *Agron. J.* 82:1088-1093.
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- Tollenaar, M., M. Mihajlovic, and T.J. Vyn. 1993. Corn growth following cover crops: Influence of cereal cultivar, cereal removal, and nitrogen rate. *Agron. J.* 85:251-255.