

AGRONOMIC Spotlight



Volunteer Corn Control: Pre-plant, Replant and In-crop

Volunteer corn is generally not a major threat to yield potential of corn and soybeans if managed properly. Various management options are available to help prevent and/or control volunteer corn as well as remove an existing stand of corn in a replant situation.

Effect of Volunteer Corn on Yield Potential

Volunteer corn generally has a minimal effect on corn yield potential, especially if management tools are employed (Table 1). A study in Indiana indicated significant soybean yield loss starts to occur at 12 plants per 20 square feet (or 26,136 plants per acre). Research in South Dakota indicated soybean yield reductions of 50 to 60% at densities of 26 plants per 20 square feet (or 56,635 plants per acre). Remember to consider the distribution of volunteer corn when evaluating the potential yield loss. While 12 plants per 20 square feet may be realistic in a small area of the field, volunteer corn densities are less likely to be that high throughout the entire field.

Volunteer Corn Distribution

Volunteers can emerge as single plants usually due to kernel loss from the combine, or in clumps resulting from dropped ears or lodging. When controlling volunteer corn clumps with an herbicide, it can be beneficial to have enough volume and pressure to get adequate coverage and penetration of the volunteer corn vegetation. The volume and pressure need to maximize penetration, while minimizing drift.

Tips for Managing Volunteer Corn:

Prevention:

- 1) Corn hybrids should be selected with good standability, stalk strength and ear retention characteristics.
- 2) Insect protection traits can help reduce ear drop along with ear and kernel loss.

Table 1. Predicted competitive effects of volunteer corn in field corn based on testing conducted at 8 locations in 2007.

| Volunteer Corn Plants/Acre | Average % Yd Loss |
|----------------------------|-------------------|
| 1000 | 0.6 |
| 5000 | 3.0 |
| 10000 | 5.9 |
| 20000 | 11.8 |

Univ. of MN, SD State Univ., IA State Univ., Univ. of NE, KS State Univ., and CO State Univ. test locations.



Figure 2. Effect of tillage on prevalence of volunteer corn. Monsanto research trial, Auburn, IL, 2001.

- 3) Harvesting early can help minimize lodging.
- 4) Making proper adjustments to the combine can help minimize harvest loss.

Pre-plant:

- 1) Using no-till practices can minimize seed to soil contact, thereby hindering germination (Figure 2).
- 2) In conventional till situations, early fall tillage can stimulate germination and emergence prior to a winter freeze, thus reducing the potential amount of emergence the following spring.
- 3) If the volunteer corn pressure is extremely high, consider planting soybeans versus corn. There are more herbicides labeled for soybeans that offer good control of volunteer corn.
- 4) If there is a field with particularly high volunteer corn pressure, consider planting it last to allow as much of the volunteer corn to germinate prior to the final control measures (tillage, herbicides, etc) prior to planting.
- 5) Herbicide options for controlling volunteer corn pre-plant or in a burndown situation for continuous corn and soybeans can be found on page 2.

Replant

- 1) Tillage can help remove poor stand of corn.
- 2) Herbicide options for controlling volunteer corn

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Herbicide Options for Controlling Volunteer Corn In Continuous Corn:
The following recommendations apply to burndown and replant situations. Control prior to crop emergence is critical as post-emergence options are limited.

Option 1:

| | |
|----------------------|--------------------|
| Select Max® | 6 oz/acre |
| Non-ionic Surfactant | 0.25% v/v |
| Ammonium Sulfate | 2.5 to 4 lbs./acre |

- May be applied as a tank mixture with Roundup® brand agricultural herbicides.
- Application should be made prior to volunteer corn reaching 12 inches in height.
- Do not use a crop oil concentrate (COC) or methylated seed oil (MSO).
- Plant or replant corn no sooner than 6 days after application.
- Care must be taken to avoid in-field boom (spray) overlaps or excessive crop injury may occur.

Option 2:

| | |
|-------------------|--|
| Gramoxone Inteon® | 2.25 pt/acre (for corn 1 to 3" tall) OR 2.5 pt/acre (for corn 3 to 6" tall) |
| | plus |

| | |
|----------------|--------------|
| Metribuzin DF® | 3 oz/acre OR |
| Atrazine | 1 lb/acre |

plus

| | |
|-----|--------|
| COC | 1% v/v |
|-----|--------|

- Apply in 10 to 15 gallons of water.
- There are no plant back restrictions.
- Clarity® herbicide may be added at 8 oz/acre for enhanced control of marehail and other tough-to-control broadleaves.
- 2,4-D at 1 pt/acre may be added, but typically requires a 7 day plant back interval.
- Check the Clarity and 2,4-D labels for specific instructions.

in a replant situation can be found to the left. A plant back restriction of 6 days makes Select Max® a favorable option for controlling corn in a continuous corn replant situation. Other graminicides, such as Assure® II and Fusion®, have plant back restrictions of 60 to 120 days, which is not feasible in many burndown or replant situations.

Glufosinate can be a tool to help manage glyphosate tolerant volunteer corn if the corn crop contains LibertyLink® technology, such as with Genuity™ SmartStax™ corn. Be sure that the refuge also is tolerant to glufosinate. Follow all label directions, as control can be variable depending on corn growth stage and environmental conditions.

Integrating management tools for prevention can help relieve the need for the rescue situations in crop. Using prevention and control tactics will likely provide the best results.

Sources: J. Alms, et al. 2007. Competitive ability of volunteer corn in corn and soybeans. South Dakota State University. North Central Weed Science Society Proceedings 62:14.

L. Stahl, et al. 2007. Effect of glyphosate-resistant volunteer corn on glyphosate-resistant corn. University of Minnesota. North Central Weed Science Society Proceedings 62:48.

V. Davis. 2009. Volunteer Corn Can Be More than an Eyesore. University of Illinois Extension. The Bulletin. No. 21, Article 4. August 14, 2009.

Herbicide Options for Controlling Volunteer Corn In Soybeans:
The following recommendations apply to burndown and in-crop applications.

Select Max® grass herbicide can be tank mixed with Roundup® brand agricultural herbicides to control volunteer corn in Roundup Ready® soybeans.

Select Max use rate depends on volunteer corn height:

- Corn 12 inches or less—6 oz/acre
- Corn 24 inches or less—9 oz/acre
- Corn 36 inches or less—12 oz/acre

Select Max does not require additional surfactant with Roundup® agricultural herbicides.

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