7-2007

W164 Replanting Corn - In a Failed Roundup™ Ready Corn Stand

The University of Tennessee Agricultural Extension Service

UT Extension
W164

Replanting Corn

In a Failed Roundup Ready™ Corn Stand

Angela Thompson and Larry Steckel, Assistant Professors, Plant Sciences

In spring 2007, a widespread freeze occurred that led to the replanting of about 200,000 acres of corn in Tennessee. In most years, replant decisions have to be made on a limited number of acres when corn fields have insufficient stands for optimum yields. Producers are then forced to make a number of decisions quickly, because planting delays, particularly into mid-May, can greatly affect yield potential of the replanted crop.

First, a producer must decide if replanting the first crop is justified. It may be desirable to keep a uniform lower population of 19,000 to 20,000 plants per acre, particularly if the decision to replant is being made close to May. If replanting seems the best solution, the next decision to make is whether some kind of action is needed to destroy the old stand. Replanted corn crops that compete with as many as 5,000 plants/acre of the original corn planting can reduce overall yield. Typically, any replanted corn growing near a surviving corn plant will not produce an ear due to the earlier-planted corn having a more extensive root system and maturity advantage. Therefore, it is important to eradicate the established stand if replanting is necessary.

Tillage is an effective way to destroy an existing stand. Typically, this tillage will need to be aggressive to keep the first-planted corn from re-rooting. Running a disk or Triple K™ one or more times perpendicular to the old rows may increase the effectiveness of tillage. Tillage is not an option in upland fields with highly erodible soils, which leaves control with herbicides as the only option.

Freeze-injured corn

Corn regrowing from freeze injury

Prior to the era of Roundup Ready (RR)™ corn hybrids, destroying an old corn stand was simply a matter of spraying the surviving stand with glyphosate, which essentially provided complete control. Injury to the replanted corn was not an issue since glyphosate has no soil residual activity. In 2007, more than 60 percent of Tennessee's planted corn acres contained the RR trait, and this trend is expected to continue. Therefore, other herbicide alternatives will be needed to destroy weak stands of RR corn. One option is to replant to a Liberty Link™ or Imadazolinone-tolerant corn hybrid and apply Liberty™ or Lightning™ herbicides accordingly. These options have been used less often due to the limited supply of hybrids with these traits.

Burndown-herbicide options for control of existing RR corn stands have not been examined recently. Research was conducted in 2007 on freeze-injured corn in three locations to determine which herbicide(s) provided good control of the partial stands of freeze-injured corn and did not injure the replanted corn. Gramoxone Inteon™, Select Max™ and Ignite™ were the main products tested for controlling the old corn stand.

The results of the research showed that there are several good options to control RR corn prior to replanting corn. Gramoxone Inteon™ was generally more effective than Ignite (Table 1). Select Max three days after application (DAA) showed very little control of the RR corn, but by 14 DAA provided very good control (98 percent). The Gramoxone Inteon™ tank-mix combinations with one of the photosystem II inhibitors (Aatrex™, Direx™, Sencor™, Lorox™ or Princep™) provided good control (>95 percent) by 14 DAA. These photosystem II inhibitors are not added to control the corn, but are needed to slow down the Gramoxone Inteon™ activity, which helps provide more consistent control. The treatments that provided very poor control were the Ignite™ and lower rates of Gramoxone Inteon™ treatments. The treatments that provided an intermediate level of control were the 40 oz/A rate of Gramoxone Inteon™ tank-mixed with either atrazine or Princep™ along with the high rate of Gramoxone Inteon™ treatment. No injury or stand reduction was observed for the replanted corn regardless of the herbicide treatments.

Table 1. Control of Roundup Ready™ Corn Prior to Replant			
	3 DAA	14 DAA	14 DAA[a]
Herbicide	——— % ———		plants/acre
Select Max 4oz	33	98	1000
Gramoxone Inteon 32 oz	62	67	8000
Gramoxone Inteon 40 oz	71	82	4000
Gramoxone Inteon 48 oz	86	91	3000
Gramoxone Inteon 40 oz + Aatrex 16 oz	86	90	3000
Gramoxone Inteon 40 oz + Direx 16 oz	96	97	1000
Gramoxone Inteon 40 oz + Sencor 4 oz	95	98	1000
Gramoxone Inteon 40 oz + Lorox 16 oz	89	96	1000
Gramoxone Inteon 40 oz + Princep 16 oz	94	—	—
Ignite 29 oz	41	64	11000
Ignite 29 oz + Sencor 4 oz	57	83	8000
Non treated	0	0	18000
$LSD_{0.05}$	5	6	4000

[a]Abbreviations: DAA, days after application

W164-7/07 08-0017