Control of Volunteer Cotton in the Southern Rolling Plains

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Introduction and Abstract

Volunteer or non-commercial cotton is an important pest in the southern rolling plains of Texas as a competitor in cotton and other crops and as a boll weevil host in fallow and non-crop areas where continued eradication efforts require control of host plants (Figure 1). Controlling volunteer cotton plants becomes more difficult with genetic tolerance to broad spectrum herbicides, such as glyphosate and glufosinate , and is expected to become more difficult as tolerance to additional herbicide chemistries is forthcoming. New management and herbicide chemistry options will be needed for future cotton production.

Herbicide trials were conducted in 2009 and 2010 in the Southern Rolling Plains of Texas to identify products that would control glyphosate tolerant cotton in rotational or fallow ground. Trials included new or novel use chemistries of Sharpen, Chaparrel, Milestone, and Huskie compared with more established products of Autumn, Buctril, Distinct, ET, and Ignite. Products were evaluated for percent control, regrowth, and boll weevil hostability. In 2009 Buctril, Ignite, and Huskie provided good initial control of larger plants but with favorable growing conditions the plants regrew and were considered boll weevil hostable after 37 days. Milestone and Chapparel provided good control in 2010 with smaller plants and poor initial control with larger plants but plants were not boll weevil hostable as fruit was aborted and growing points were killed. Sharpen at 1 oz per acre averaged 100 percent control of 3-5 leaf cotton. Sharpen and Distinct tank mixed with glyphosate provided excellent control of 3-5 leaf cotton at several rates. General annual grass and broad leaf weed control was also excellent with these treatments. These products show potential to control volunteer cotton and further work is needed to develop a viable management program.

Materials and Methods

- Herbicide treatments were established in a RBCD design with three replications. Plots consisted of comm ercial glyphosate tolerant cotton in 4 rows on 40 inch centers and 40 feet in length (Figure 2.)
- Treatments in 2009 consisted of Autumn, Buctril, Chapparel, Huskie, Ignite, and Milestone and were applied to large glyphosate resistant plants with 10-12 day old bolls. Treatments were evaluated for percent control and percent boll weevil hostable plants at 21 days after treatment (DAT) and 37 DAT.
- Treatments in 2010 consisted of Chapparel, Distinct, ET, Milestone, and Sharpen applied to 3-5 leaf glyphosate resistant plants. Treatments were evaluated for percent control and regrowth at 7 and 14 DAT. Sharpen, ET, and Distinct were also tank mixed with one pound per acre glyphosate.

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Figure 1. Volunteer cotton in wheat stubble near San Angelo ,TX.

Table 1. Control of large volunteer cotton in 2009 near San Angelo, TX

Treatment	% Control 21 DAT	% Hostable[2] 37 DAT
Chaparral[1] @ 3.3 oz/ac + NIS	20	0
Buctril @ 16 fl oz/ac + COC	76	100
Ignite @ 32 fl oz/ac + AMS	81	100
Autumn @ 0.3 oz /ac + COC	20	75
Milestone[1] @ 5 fl oz/ac + NIS	5	30
Huskie @ 16 oz/ac + AMS	88	90

[1]Not currently labeled for row crops.
[2]Hostable plants for boll weevil.

Table 2. Average percent control of 3-5 leaf cotton 14 days after treatment

Treatment	Ave. % Control 14 DAT
Sharpen @1 oz/ac + COC + AMS	100
Sharpen @ 1, 1.5, and 2 oz/ac + 1#/ac glyphosate + COC + AMS	100
Distinct @ 4 and 6 oz/ac + 1#/ac glyphosate + COC + AMS	100
Chapparel[1]@ 3.3 oz/ac + NIS	100
Milestone[1] @ 5 oz/ac + NIS	100
ET @ 1.5 oz/ac + 1#/ac glyphosate + NIS	75
Untreated Check	0

[1]Not currently labeled for row crops.

Figure 2. Randomized and replicated four row glyphosate tolerant cotton plots near Ballinger, TX

Results and Discussion

- In 2009 Buctril, Ignite, and Huskie provided good initial control of larger plants but with favorable growing conditions the plants regrew and were considered boll weevil hostable after 37 days.
- The hormone-type herbicides (Milestone and Chaparral) provided good control of smaller plants and poor initial control of larger plants but did cause the cotton plants to abort current fruit and prevented new fruit development. These herbicides are not labeled in row crops but may have utility in fallow and non-crop areas.
- Sharpen and Distinct tank mixed with glyphosate provided excellent control of 3-5 leaf cotton at several rates. General annual grass and broad leaf weed control was also excellent with these treatments. ET provided good control with a similar tank mix.

Conclusions

- Control of volunteer cotton by herbicides is significantly reduced as plant size increases.
- Several herbicides with potential to control glyphosate tolerant cotton have been identified and a viable management system needs to be further developed.