CONTROL OF VOLUNTEER COTTON WITH DICAMBA AND 2,4-D

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Abstract

Volunteer cotton has developed as a problem with the increase in no-till and reduced-till systems and where in-season cultivation has also been eliminated. This is especially true in the southwest production region where the lack of winter rainfall reduces deterioration of the seed prior to the next season's planting. This combined with a monocrop cotton system can lead to severe issues in which volunteer cotton competes for resources with the subsequent cotton crop (Figure 1). Additionally, if left uncontrolled volunteer cotton can cause harvesting issues. Therefore, studies were initiated to investigate the new technologies (Enlist and Xtend) in controlling volunteer cotton that does not contain that technology. Trials were conducted near Tipton, OK, New Deal, TX and Corpus Christi, TX during the 2020 growing season. Both Enlist and Xtend cotton technologies were planted at each location. Within the Enlist technology, Xtend cotton was hand spread within each plot and Enlist cotton was hand spread in the Xtend technology. Enlist One was applied at 32 fl oz/A and Xtendimax at 22 fl oz/A in their respective technologies. Treatments were applied POST1 (1-2 leaf), POST2 (4-5 leaf), POST3 (Square), or POST4 (Bloom). Plots were visually evaluated for volunteer control. Plots were harvested with a commercial cotton stripper to determine yield. Volunteer cotton control was generally more effective with Enlist One compared to Xtendimax. Enlist One controlled volunteer cotton at least 88% late season when applied at the 1-2 or 4-5 leaf growth stage at both Tipton and Corpus Christi. Volunteer cotton control decreased to 75% or less at similar timings with Xtendimax at those same locations. The exception being the POST2 at Tipton (88%). Single applications were not as affective controlling volunteer cotton with either technology at Lubbock. Volunteer cotton control was 70% or less with a single application at Lubbock regardless of technology. The most affective single application timing at Lubbock was the POST3 application while POST2 were more effective at Tipton. All 4 application timings controlled volunteer cotton over 90% in the Enlist system at Corpus Christi. The POST 1 and 2 timings were most effective at Corpus Christi in the Xtend technology controlling over 70% of the volunteer cotton. Three of the four sequential applications of Enlist One controlled at least 90% of volunteer cotton at Tipton and Lubbock. However, the first three timings were more effective at Tipton while later applications were more effective at Lubbock. All sequential applications controlled volunteer cotton 100% at Corpus Christi with Enlist One. Xtendimax applied at either the POST 1 followed by POST 2 or POST 2 followed by POST 3 controlled volunteer cotton 90% or greater at Tipton. The POST 1 followed by POST 3 applications of Xtendimax was the only application timing that controlled 80% volunteer cotton at Lubbock. All other sequential applications were lower at these two locations. All sequential applications of Xtendimax controlled volunteer cotton at least 80% at Corpus Christi. The POST 1 followed by POST 2 and the POST 3 followed by POST 4 controlled volunteer cotton over 90%. It is clear from these studies that environment has a major impact on volunteer cotton control as control varied across locations. This may partially be due to variation in emergence of volunteer cotton at each location and then subsequently affected by environmental conditions at the time of POST application. Timing is critical with smaller volunteer cotton generally being more effectively controlled. However, as illustrated in these studies sequential applications may be needed to effectively manage volunteer cotton.