

Effects of Clarity, Distinct, and 2,4-D on Cotton Growth and Yield
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Abstract

Conservation tillage systems, which cotton producers on the Texas Southern High Plains have used successfully for several years, have created new weed problems including horseweed (*Conyza canadensis*) and Russian thistle (*Salsola iberica*). Herbicides that control these weeds; such as 2,4-D, Clarity, and Distinct all have current label restrictions limiting their use in cotton. The objectives of this study were: to evaluate cotton injury and yield from Clarity, 2,4-D, and Distinct applied 4,2,and 1 week(s) before planting (WBP); and to determine the minimum interval between application and planting to apply these herbicides without effecting yield.

Studies were initiated in 2003 and repeated in 2004 at the AG-CARES research facility near Lamesa, TX on an Amarillo fine sandy loam. Clarity at 0.125 lb ai/A and 0.25 lb ai/A, Distinct at 0.088 and 0.175 lb ai/A, and 2,4-D at 0.50 lb ai/A were applied 4,2, and 1 WBP. Cotton (PM 2326 RR) was planted on May 5 in 2003 and May 6 in 2004. Cotton injury ratings were recorded at monthly intervals during the growing season. Plots were mechanically harvested in mid-October for both years. Samples were collected and ginned to calculate lint yield per acre.

No injury was observed in either year when 2,4-D was applied at any preplant interval. Clarity applied 2 WBP resulted in injury <5%; however, significant crop injury resulted from the high rate of Clarity applied 1 WBP in both years. Distinct applied 1 or 2 WBP resulted in significant cotton injury in 2003; however, in 2004 only the high rate caused significant cotton injury. Cotton yields ranged from 750 to 925 lbs lint/A, and no differences in yield were recorded from any treatment in 2003; however, in 2004, cotton yields ranged from 800 to 1200 lbs lint/A, and the high rate of Distinct applied 1 or 2 WBP as well as Clarity at 0.25 lb ai/A applied 1 WBP reduced yields. In 2003, above average heat unit accumulation and excellent fall conditions appeared to allow cotton to compensate for early season injury.

Although injury observed in 2003 did not result in yield reduction, similar injury levels reduced yield in 2004. The timing of rainfall or irrigation must be considered in conjunction with the interval between herbicide application and planting.