

# **New Methods For Yellow And Purple Nutsedge Control In The San Joaquin Valley**

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## **Introduction**

Yellow and purple nutsedge are major weed pests in cotton. Previous studies show that a 6-week weed free period is needed after cotton emergence. This is because nutsedge competes with cotton for water, sunlight, space and nutrients, which can result in reduced vigor of the cotton causing reductions in yield and quality of the crop. Past research also shows that the only effective chemical method of controlling nutsedge is MSMA, but MSMA can cause serious injury to cotton in the early stages of growth. Consequently, there is a need for new materials that can effectively control Nutsedge without injuring the cotton.

## **Material And Methods**

Uniform fields of Acala DP6100RR and Riata cotton planted in early April 2002 and heavily infested with Nutsedge were divided into 4 replications of 4 to 17 treatments in a randomized complete block design. The trials were conducted in Firebaugh (Trial A & B), Madera (Trial C) and Visalia (Trial D). Trial A was treated on May 3<sup>rd</sup>, 13<sup>th</sup>, and 22<sup>nd</sup>. Trial B was treated on May 3<sup>rd</sup> and May 13<sup>th</sup>. Trial C was treated on May 16<sup>th</sup> and Trial D was treated on May 8<sup>th</sup> and June 4<sup>th</sup>. All treatments were applied with a CO<sub>2</sub> sprayer delivering 20 GPA at 30-40 psi. Nutsedge control and cotton injury was evaluated at 19, 25, 31, and 39 days after the 1<sup>st</sup> treatment (DA1<sup>st</sup>T) in fields A and B. Field C was evaluated at 7,15, and 22 DA1<sup>st</sup>T and field D was evaluated at 7,14 and 39 DA1<sup>st</sup>T

## **RESULTS**

### **Trial A**

At 19 DA1<sup>st</sup>T, no treatment exhibited satisfactory nutsedge control with the greatest control at 53% and the least at 3%. At 25 DA1<sup>st</sup>T, sequential applications of Touchdown IQ followed by CGA362622 exhibited the greatest nutsedge control at 72-80%. By 31 DA1<sup>st</sup>T, control had dropped below acceptable levels. At 39 DA1<sup>st</sup>T, most of the treatments exhibited less than 20% nutsedge control. Treatments 4, 14 & 10, exhibited 20-65% which, while better, was still unacceptable. Treatments 11, 12, 13 & 15 exhibited good nutsedge control at 80-100%. At 19 DA1<sup>st</sup>T, MSMA exhibited the greatest cotton injury at 15-20%. At 25 DA1<sup>st</sup>T, MSMA still exhibited the greatest injury. By 31 DA1<sup>st</sup>T, Roundup UltraMax exhibited slight injury at 16%, and at 39 DA1<sup>st</sup>T, all treatments except Touchdown IQ or Roundup UltraMax exhibited varying stages of cotton injury with a range of 2-16%.

### **Trial B**

At 19 DA1<sup>st</sup>T, no treatment exhibited acceptable nutsedge control, with a range of 4-48%. At 25 DA1<sup>st</sup>T, control by the Roundup UltraMax treatments had increased to acceptable levels ranging from 76-80%. By 30 DA1<sup>st</sup>T, control for all treatments had started to drop, and at 39 DA1<sup>st</sup>T, control continued to drop to unacceptable levels with Treatment 1 at 49%, Treatment 2 at 69%, Treatment 3 at 0%, and Treatment 4 at 11% control.

At 19 DA1<sup>st</sup>T, all treatments except the lowest rate of CGA362622 exhibited 9-13% cotton injury. By 25 DA1<sup>st</sup>T, Roundup Ultra Max treatment exhibited 13-15% injury. At 31 DA1<sup>st</sup>T, all treatments exhibited less than 5% injury, but by 39 DA1<sup>st</sup>T, injury from the CGA362622 treatments had increased ranging from 12-18%.

#### **Trial C**

At 7 DA1<sup>st</sup>T, the greatest nutsedge control was exhibited by MSMA at 11%. By 15 DA1<sup>st</sup>T, MSMA or MSMA tank mixed with Roundup UltraMax exhibited the greatest control at 49-45%. At 22 DA1<sup>st</sup>T MSMA tank mixed with Roundup UltraMax still exhibited the greatest control at 58%, but was not significantly different from either MSMA or Roundup Ultra Max tank mixed with ammonium sulfate at 38 and 45% respectively.

All treatments exhibited less than 13% cotton injury at 7 DA1<sup>st</sup>T, and continued to drop at 15 and 22 DA1<sup>st</sup>T, until the greatest cotton injury was 3% for the high rate of Staple and CGA362622.

#### **Trial D**

At 7 DA1<sup>st</sup>T the greatest nutsedge control was exhibited by CGA362622 at 48%. By 14 DA1<sup>st</sup>T treatments 1,2,5,9,12,13,and 14 were between 75-83% control and treatments 3,4,6,7,8,10,11,and 15 were between 68-73% control, By 39 DA1<sup>st</sup>T the treatments had all dropped below acceptable control levels except CGA 362622+Touchdown at 71% control.

All treatments exhibited less than 23% cotton injury at 7 DA1<sup>st</sup>T, and continued to drop at 15 and 39 DA1<sup>st</sup>T until there was 0% injury to the cotton

#### **Conclusion**

CGA 362622 alone does not provide effective control of nutsedge, however when used in rotation with glyphosate, CGA362622 may become an effective tool in nutsedge control. Presently there does not appear to be any advantage to tank mix CGA362622 with Staple or MSMA.

Glyphosate provides effective control of nutsedge when applied in sequential applications. However when used as a single application for nutsedge control, glyphosate does not provide effective control.