

**EFFECT OF ROUNDUP ULTRA APPLICATIONS
ON BOLL RETENTION IN ROUNDUP READY
COTTON IN GREENHOUSE AND FIELD CONDITIONS**
Wendy Pline, Keith Edmisten, John Wilcut and Randy Wells
North Carolina State University
Raleigh, NC

Abstract

Field and greenhouse studies were conducted investigating the affect of Roundup Ultra applications on cavitation and boll shed in Roundup Ready (RR) cotton. Two greenhouse studies were conducted. In the first study, the varieties DP 50, DP 90, DP 5415, DP 5415RR, DP 458BG/RR were compared. Roundup-Ready varieties were either untreated, treated with 4-lf POST application of Roundup Ultra at 1 qt/A, or treated with a 4-lf POST application followed by an 8-lf post-directed application (PD) of Roundup Ultra at 1 qt/A. Plants were mapped at 2 weeks after first bloom (2 WAFB). The study was repeated. Roundup-Ready cotton plants treated with 4 and 8 leaf applications of Roundup had 10-25% more of total fruiting positions as aborts than untreated RR plants as well as significantly less positions as bolls 2 WAFB. Even one application (4 leaf POST) of Roundup reduced the number of bolls significantly from untreated plants mapped at 2 WAFB. A separate greenhouse study showed that a 4 leaf POST and 8 leaf PD Roundup application increased the number of days to first bloom by 4-7 days over untreated plants. This was likely due to square loss on lower fruiting branches due to Roundup applications.

A field study was conducted in Greene County, North Carolina in a field with a previous history of boll retention and cavitation problems in Roundup Ready cotton. DP 5415RR cotton was used and treatments included: untreated, 4 lf POST, 4 lf POST + 8 lf PD, 6 lf PD, 6 lf POST, 4 lf POST + 6 lf POST applications of 1 qt/A Roundup Ultra. Plants were mapped at midbloom. All applications of Roundup except the 6 lf PD application significantly reduced the number of bolls on node 1-10 compared to the untreated. The off-label 6 lf POST and the 4 lf POST+6 lf POST applications were the most severe, resulting in an average loss of 4 bolls in the lower portion of the plant compared to the untreated. These same applications increased the number of cavitations (bolls that have died, yet remain attached to the plant) per plant by 2-3 over the untreated. The number of aborted positions or squares remaining were not affected by Roundup applications.

A separate field study in Wayne County, North Carolina compared PD applications of Roundup Ultra and a conventional herbicides (MSMA+Caparol) PD application on 7 different Roundup Ready cotton varieties. In only one out of the seven varieties, DP 451RR was there a significant difference in boll retention on nodes 1-10 between the Roundup Ultra and Conventional PD applications. In DP 451RR, bolls on nodes 1-10 were reduced by 2.3 bolls in Roundup Ultra PD applications compared to the conventional PD application. Seed cotton yield was not affected by Roundup Ultra applications in either the Greene County or Wayne County field studies. Both the greenhouse and field studies suggest that labeled Roundup Ultra applications may affect boll retention, maturity, and cavitation of Roundup Ready cotton. However, the lack of yield reduction suggests that in the 2000 growing season, the cotton which was affected early in the season was able to compensate by later season growth.