UNIVERSITY RESEARCH EFFORTS IN THE DEVELOPMENT OF WEED CONTROL PROGRAMS UTILIZING BXN, ROUNDUP READY AND STAPLE TECHNOLOGIES: RESULTS, THOUGHTS, AND FUTURE RESEARCH NEEDS

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Abstract

Cotton weed control research has been very exciting for the past several years. Finally we have the technologies to control weeds with over-the-top herbicide applications. In the past, when no height difference was established for post-directed herbicide applications, only Cotoran at 0.5 lb ai/A plus a surfactant was available. Broadleaf control, primarily morningglories, was marginal at best with this treatment. In addition over-the-top applications of Cotoran caused moderate to severe cotton injury in many instances.

Roundup Ready, BXN and Staple all fill the immediate need for safe over-the-top broadleaf weed control. We have evaluated the Roundup Ready system for only one year. We have tested the BXN system for five years and Staple for seven years. Therefore, most of this discussion will deal with the BXN system and Staple.

Both the BXN and Roundup Ready systems require that a genetically engineered cotton variety by planted. Staple can be used on any commercially available variety. Staple has a distinct advantage for growers that are satisfied with the varieties they are presently growing. However, in the near future the varieties to choose from for the BXN and Roundup Ready systems will be expanded and will be better suited for a wide range of growing conditions.

With Buctril in the BXN system or Staple only broadleaf weeds will be controlled. Roundup in the Roundup Ready system offers both broadleaf and grass weed control. Buctril and Roundup provide no residual soil activity, whereas Staple does.

The strong points for Buctril have been morningglory and cocklebur control. Of the broadleaf weeds, pigweed has been the most difficult to control. Buctril desiccates broadleaf weeds very fast, and the remaining carcasses do not last long. Therefore, control evaluations must be made soon after application. Treflan or Prowl followed by one or two Buctril sprays followed by Bladex + MSMA applied post-directed has provided excellent weed control in most of our tests. However, in some tests the addition of a preemergence herbicide like Cotoran has been needed. Our yields with the BXN cotton have been fairly good with yields of 1400 lbs lint per acre being the top in 1994, a great cotton year. We have also observed that complete weed coverage is essential with Buctril. This is because it is a contact herbicide with no soil activity.

We have evaluated Staple primarily as a postemergence treatment, but we have also tested Staple applied preemergence. Staple has good soil activity on the small seeded broadleaf weeds; prickly sida, spurges, and pigweeds. Soil activity on morningglories has been fair and soil activity on cocklebur has been poor. Pigweeds are the most sensitive broadleaf weed to Staple. Morningglory control has been excellent, with the fuzzy leaf morningglories slightly more sensitive than pitted morningglory. Postemergence cocklebur control has been good, but reinfestation often occurs. As with Buctril, in most tests we have achieved good results with just a soil applied grass herbicide followed by Staple followed by Bladex + MSMA or Cobra + MSMA applied post-directed. However, in very heavy broadleaf weed pressure, especially cocklebur, the addition of Cotoran preemergence has been needed.

Broadleaf weeds that are not completely killed by Staple remain stunted while the cotton continues to grow. This establishes a height difference allowing for a post-directed herbicide application. We have conducted tests where we measured the height of weeds and cotton following a Staple application. In these tests we observed an adequate height difference for 21 days after treatment. By 28 days, if a weed had escaped the Staple application, it was too tall for safe post-directed sprays.

Staple can cause a very slight yellowing on the youngest sprayed cotton foliage. This discoloration is quickly outgrown. We have evaluated cotton tolerance to Staple in weed-free, high production tests since 1991. Maturity, yield, and fiber quality have not been affected by Staple applied at labeled rates in any of these tests.

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