

ECONOMIC COMPARISON OF LIBERTY LINK COTTON

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Abstract

Tolerance studies conducted since 1995 on LibertyLink cotton have shown no visible injury or reductions in yield when Liberty (glufosinate) was sprayed over the top. In addition, studies have shown broad-spectrum control of various weeds with a LibertyLink cotton system. The objectives of this research were to compare the efficacy and costs of weed control systems in LibertyLink, Roundup Ready, and conventional cotton. Studies were conducted in 2003 at the Texas Agricultural Experiment Station near Lubbock, TX in a randomized block design with a split-plot arrangement and four replications. The main plot factors were the variety of cotton: FM 989, FM 989 RR, or FM 981 LL. The subplot factors were the treatment within a variety: weed control system, weed-free, and weedy check. All plots received a blanket application of Treflan (trifluralin) preplant incorporated (PPI), and weed-free plots were maintained by hand hoeing, plus minimal cultivation. Applications for each weed control system within a variety were applied as needed according to labeled recommendations. In an irrigated study, the LibertyLink weed control system included Treflan at 1.5 pt/A PPI followed by (fb) Liberty at 32 oz/A postemergence-topical (POST) fb Liberty at 32 oz/A POST fb cultivation fb hand hoeing. The Roundup Ready weed control system included Treflan at 1.5 pt/A PPI fb Roundup WeatherMAX (glyphosate) at 22 oz/A POST fb Roundup WeatherMAX at 22 oz/A postemergence-directed (PDIR), while the conventional cotton weed control system included Treflan at 1.5 pt/A PPI fb Staple (pyrithiobac) at 1.2 oz/A + MSMA at 16 oz/A POST fb cultivation fb cultivation fb hand hoeing. Devil's-claw (*Proboscidea louisianica*), Palmer amaranth (*Amaranthus palmeri*), and silverleaf nightshade (*Solanum elaeagnifolium*) control was recorded, and lint yields and weed control costs were determined to calculate net revenues above weed control costs.

All systems controlled devil's-claw and Palmer amaranth at least 95% at harvest; however, the Roundup Ready weed control system achieved 90% control of silverleaf nightshade, while the LibertyLink system and the conventional system controlled silverleaf nightshade 49% and 3%, respectively. Lint yields from the Roundup Ready system, LibertyLink system, and conventional system were 1050 lbs/A, 821 lbs/A, and 736lbs/A, respectively. Weed control system costs were calculated using seed costs including technology fees, herbicide and application costs, and mechanical inputs. The overall weed control system cost for LibertyLink, Roundup Ready, and conventional cotton were \$88/A, \$69/A, and \$99/A, respectively. The net revenues above weed control cost in the Roundup Ready system were \$522/A, while the LibertyLink system and conventional system were \$374/A and \$291/A, respectively.

This study suggests that the Roundup Ready system required the least number of weed control inputs and had the highest lint yields and net revenues above weed control cost when compared to the LibertyLink or conventional systems. However, additional studies over years are needed to determine the consistency of these findings. With the release of LibertyLink cotton, further comparisons of LibertyLink varieties to other cotton varieties are also needed.