

STAPLE USE IN LIBERTY—AND ROUNDUP-TOLERANT COTTON

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Abstract

Staple (pyrithiobac) received a Federal 3 label for use in cotton in 1996. Staple provides broad-spectrum, over-the-top weed control with both foliar and soil activity. The use of Staple in cotton has been limited because of weed size restrictions when applied postemergence. Rotational crop restrictions and herbicide cost per acre have additionally limited its use in the Texas High Plains. The development of Roundup Ready and LibertyLink cotton may provide new opportunities for Staple and other herbicides that have soil residual activity because neither Roundup (glyphosate) nor Ignite (glufosinate) possess soil activity and most weed management systems can benefit from a residual herbicide in the “system”. Field experiments were conducted in 2002 and 2003 to evaluate the use of Staple in Roundup Ready and LibertyLink cotton weed management systems. Most of these studies were conducted in grower fields to target specific weeds that have been labeled “difficult-to-control” in cotton. Traditional small plot techniques were used at all locations. Near Lamesa, Staple PRE at 0.0312 lb ai/A (0.6 oz) followed by (fb) Staple (0.6 oz) + Ignite at 0.42 lb ai/A (32 oz) applied postemergence (POST) at 4-leaf cotton controlled ivyleaf morningglory (*Ipomoea hederaceae*) 92% at the end of the growing season in 2003. Similar control was observed following Staple (0.4 oz) + Ignite (32 oz) applied POST at cotyledon cotton (COT) fb Staple + Ignite POST to 4-leaf cotton. Less effective control was observed when Staple + Ignite were used once in a tank mix applied POST to 2- to 3-leaf cotton. Lint yield from FM 958 LL cotton ranged from 1348 to 1463 pounds per acre in plots that received these PRE fb POST or POST fb POST combinations. Plots that received one Staple + Ignite POST application or the weedy check produced 1059 to 1250 or 354 pounds of lint per acre, respectively. Staple PRE fb Staple + Roundup applied POST to 4-leaf cotton or Staple + Roundup applied POST to COT fb a second POST application to 4-leaf cotton controlled ivyleaf morningglory at least 83%. Similar to the LibertyLink system, less effective ivyleaf morningglory control was observed following Staple + Roundup applied POST once to 2- to 3-leaf cotton. Lint yield from FM 800 BGRR ranged from 1241 to 1385 pounds per acre in plots that received these PRE fb POST or POST fb POST combinations. Plots that received one Staple + Roundup POST application or the weedy check produced 1115 to 1209 or 511 pounds of lint per acre, respectively. Near New Deal, common cocklebur (*Xanthium strumarium*) was controlled 88 to 95% on August 12 following the PRE fb POST or POST fb POST Staple/Ignite combinations in the LibertyLink cotton system. In the Roundup Ready system, Staple/Roundup PRE fb POST or POST fb POST combinations controlled common cocklebur 87 to 90%. In other LibertyLink studies, Caparol (prometryn) PRE at 1.2 lb ai/A (1.2 qt) fb Ignite (32 oz) or Ignite fb Ignite + Staple controlled lanceleaf sage (*Salvia reflexa*), ivyleaf morningglory, and Palmer amaranth (*Amaranthus palmeri*) at least 80% and devil’s-claw (*Proboscidea louisianica*) nearly 70%. In studies conducted in the Texas Rolling Plains in 2002, Staple PRE (0.6 oz) fb Staple + Roundup (1.5 pt) applied mid-postemergence (MP) controlled Palmer amaranth 78% on August 2. Staple (0.4 oz) + Roundup (1 pt) applied early-postemergence (EP) fb MP controlled Palmer amaranth 94%. In 2003, Staple (0.6 oz) + Roundup (1.5 pt) EP fb MP controlled Palmer amaranth 99% on August 13. These studies suggest that Staple use in LibertyLink and Roundup Ready cotton “systems” may help manage difficult to control weeds in the Texas High and Rolling Plains.