

WEED SCIENCE

RESPONSE OF BOLT™ SOYBEAN CULTIVARS TO RICE HERBICIDES

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WHILE TOOLS TO LESSEN THE NEGATIVE EFFECTS OF OFF-TARGET MOVEMENT SHOULD NOT BE USED AS AN EXCUSE TO APPLY HERBICIDES INCORRECTLY, THE BOLT™ TECHNOLOGY CAN OFFER A LEVEL OF REASSURANCE TO APPLICATORS MAKING HERBICIDE APPLICATIONS TO RICE.

Pesticide spray drift is physical movement of pesticide particles away from the target site to an unintended area. Acetolactate synthase (ALS)-inhibiting herbicides are utilized for control of annual and perennial broadleaf weeds and sedges in rice and soybean in Mississippi. Although ALS herbicide are commonly used in both soybean and rice, none of the ALS herbicides used in conventional rice are labeled for soybean. Soybean are susceptible to herbicide drift from rice because these crops are often grown in close proximity. Significant soybean yield loss due to drift can occur depending on the herbicide concentration and the soybean growth stage.

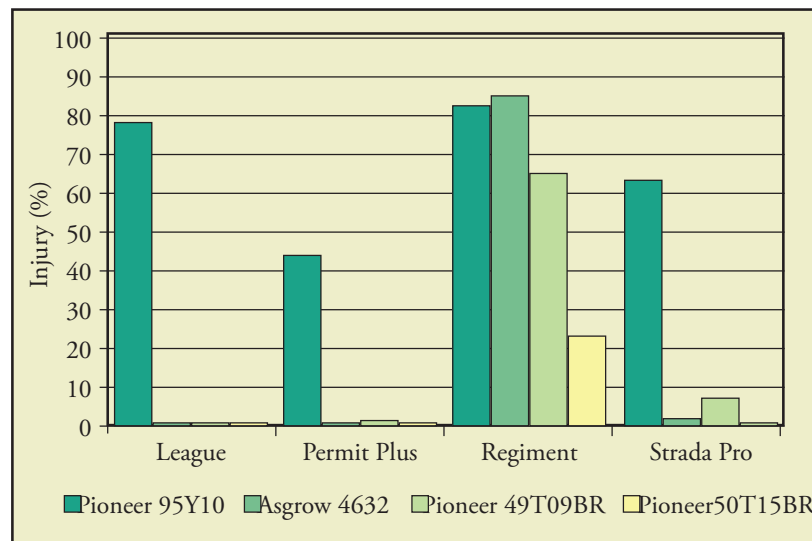
Sulfonylurea tolerant (STS) soybean, the first herbicide-resistant crop, were introduced in 1993 and were developed to tolerate higher rates of some sulfonylurea herbicides already in use in soybean. In 2015, DuPont

Pioneer released a new soybean herbicide resistance trait that will be marketed as BOLT™. The BOLT™ technology enhances soybean tolerance to sulfonylurea herbicides and possibly other ALS herbicides. If injury to BOLT™ cultivars from ALS herbicides

used in rice was less than that on soybean cultivars without the BOLT™ technology, the new cultivars could be utilized adjacent to rice fields to mitigate the effect of spray drift from rice herbicide applications. Research was conducted at the Mississippi State University Delta Research and Extension Center in Stoneville, MS, to

compare the response of Roundup Ready, STS, and BOLT™ soybean cultivars to low rates of ALS herbicides common in southern U.S. rice production.

Four soybean cultivars were treated with low rates of common ALS rice herbicides when the majority of soybean plants in each plot had one to two fully



expanded trifoliolate leaves. Soybean cultivars included 'Pioneer P49T09BR' and 'Pioneer P50T15BR' (BOLT™ cultivars), 'Asgrow AG4632' (STS cultivar) and 'Pioneer P95Y10' (Roundup Ready cultivar). Herbicide treatments were applied at 12.5% of the labeled rates of League (3.2 oz/ac), Permit Plus (0.75 oz/ac), Regiment (0.67 oz/ac), and Strada Pro (2.5 oz/ac). Soybean injury was visually estimated at 7, 14, and 28 days after treatment (DAT).

Pioneer 95Y10 was injured more than BOLT™ cultivars with each herbicide 7, 14, and 28 DAT. Although the magnitude was >40%, Permit Plus injured Pioneer 95Y10 less than other herbicides 14 and 28 DAT. Injury to Pioneer 95Y10 and Asgrow 4632 was similar with Regiment 7, 14, and 28 DAT, and the level of injury was greater than that exhibited by the BOLT™ cultivars. Regiment injured Asgrow 4632 and both BOLT™ cultivars more than other herbicides at all evaluations. Asgrow 4632 was injured more with Strada Pro 7 DAT than the BOLT™ cultivars; however, the response of Asgrow 4632 to League, Permit Plus, and Strada Pro was similar to Pioneer 50T15BR 14 and

28 DAT. Injury to Pioneer 49T09BR was greater than that for Asgrow 4632 and Pioneer 50T15BR with Strada Pro 14 DAT. Problematically, the response to

some of the herbicides evaluated in the current research varied between the BOLT™ cultivars. Injury to Pioneer 49T09BR with Regiment was greater than that for Pioneer 50T15BR at all evaluations. The same trend was observed with Strada Pro 14 DAT.

Roundup Ready, STS, and BOLT™ soybean cultivars responded differently to ALS herbicides used in southern U.S. rice. The STS cultivar Asgrow 4632 was as tolerant as the BOLT™ cultivar Pioneer 50T15BR following applications League, Permit Plus, and Strada Pro applied at 12.5% of labeled rates. Among the four cultivars evaluated, response to Regiment was most variable with injury ranging from 23 to 85% 28 DAT. Although it was not completely tolerant to all herbicides evaluated, Pioneer 50T15BR could be planted adjacent to rice fields

and lessen the potential negative effects from drift of ALS herbicides.

