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Evaluation of BAS-662 and BAS-654 for leafy spurge control

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Abstract:

BAS-662 (formally known as SAN-1269) is a combination of dicamba plus BAS-654 (formally SAN-836) in a ratio of 2.5:1 dicamba: BAS-654. BAS-654 is called an auxin transport inhibitor (ATI), because it inhibits the transport of naturally occurring IAA and synthetic auxin-like compounds in plants. In general, BAS-654 interferes with the auxin balance needed for plant growth. The purpose of this research was to evaluate BAS-654 alone and in combination with dicamba and other herbicides for leafy spurge control in a series of greenhouse studies.

In the initial study, BAS-662 was applied to leafy spurge plants to achieve dicamba rates of 0.5 to 4 oz/A. The treatments were compared to dicamba applied alone. The plants were evaluated for top growth injury 1 and 2 weeks after treatment (WAT) Then all top growth was removed and the plants were allowed to regrow for 4 weeks (6 WAT), at which time the leafy spurge regrowth was harvested, oven dried, and weighed.

There were no visible differences in injury symptoms between dicamba applied alone or with BAS-654. However, leafy spurge regrowth was much less when dicamba was applied with BAS-654 compared to dicamba applied alone at the same dicamba rate. For example, leafy spurge regrowth averaged 385 mg/plant 6 WAT with dicamba at 4 oz/A and with BAS-662 that included dicamba at only 0.5 oz/A plus BAS-654. Leafy spurge did not regrow when dicamba at 4 oz/A plus BAS-654 was applied.

Leafy spurge control also increased when BAS-662 was applied with picloram, 2,4-D, and picloram plus 2,4-D, but not with quinclorac. In general, leafy spurge regrowth was reduced nearly 50% when picloram or 2,4-D was applied with BAS-662 compared to either herbicide alone and by 98% when picloram plus 2,4-D was applied with BAS-662 compared to the herbicide combination alone. It is not known what amount, if any, the dicamba portion was contributing to the increase in control when BAS-662 was applied with these herbicides. The combination of quinclorac plus BAS-662 resulted in precipitate formation, which probably reduced leafy spurge control. Perhaps this problem could be overcome if quinclorac was applied with just the ATI (BAS-654).

Research is in progress comparing perennial weed control with various auxinic herbicides applied alone or with BAS-662 or BAS-654. The addition of the ATI does not alter the visible topgrowth injury but seems to increase root kill. Perennial weed control would greatly increase if the greenhouse results are reproduced in the field.