

LEAFY SPURGE CONTROL WITH TANK-MIXES OF IMAZAPIC AND SAFLUFENACIL. Stevan Z. Knezevic, Ryan E. Rapp*, Avishek Datta, Jon Scott, Leo D. Charvat, and Joseph Zawierucha, Associate Professor, Graduate Student, Post Doctoral Fellow, Research Tcehnologist, University of Nebraska, Concord, NE 68728; Biology Area Manager, BASF Corporation, Lincoln, NE 68523 and Biology Project Leader, BASF Corporation, RTP, NC 27709.

Saflufenacil (BAS 800H) is a new herbicide being primarily developed for pre-plant and PRE broadleaf weed control in field crops (corn, soybean, sorghum, and wheat). Saflufenacil is PPO inhibitor, and has both contact (burndown) and residual activity against variety of broadleaf weeds, thus there is an interest in testing it for use in non-crop areas. Leafy spurge is a serious weed problem in North America infesting over 5 million ha of rangeland and pasture. Imazapic is commonly used for leafy spurge control as a fall treatment only, because spring applications do not provide satisfactory control. Our hypothesis was that there might be synergism between imazapic and saflufenacil if applied in spring. Therefore, field experiments were conducted during spring of 2007 and 2008 with the objective to describe dose response curves of imazapic and saflufenacil applied alone and tank-mixed. Study was arranged in a RCBD with 21 treatments and three replications at O'Neill (North Central Nebraska). Treatments were applied to plots of 3×9 meters with a back sprayer delivering 187 L/ha aqueous solution through TeeJet 11003 flat fan nozzles at 234 kPa. Saflufenacil rates were: 0, 12.5, 25, 50, and 100 g ai/ha, and imazapic rates were: 0, 52.6, 105, and 158 g ai/ha. Dose-response curves based on log-logistic model were used to determine the ED₉₀ (effective dose that provides 90% control) values of saflufenacil for each imazapic level utilizing the visual injury response variable. In general, none of the imazapic rates applied alone provided satisfactory leafy spurge control. In contrary, saflufenacil applied alone provided excellent leafy spurge control for about 30-90 DAT depending on the rates used, then the spurge started re-growing. The level of leafy spurge control was much longer lasting in the tank-mixes of the two herbicides, especially as the rates of both herbicides increased. The ED₉₀ values of saflufenacil in the tank-mix with imazapic rate of 52.6 g ai/ha increased from 30 g to 340 g ai/ha with later rating dates, indicating that spurge was slowly regrowing over time (25-457 DAT). However, the ED₉₀ values of saflufenacil in the tank-mix with imazapic rate of 105 g ai/ha were much more stable, and stayed around 25-30 g ai/ha for control up to 380 DAT, whereas 50 g ai/ha rate was needed for longer control up to 457 DAT. Similar trend occurred for ED₉₀ values of saflufenacil tank-mixed with 158 g ai/ha rate of imazapic. Preliminary curve analysis suggested that the longest control of leafy spurge (400 DAT) was achieved with saflufenacil ED₉₀ rate of about 25 g ai/ha tank mixed with 105 g ai/ha of imazapic. There was also cool season grass injury (10- 30%) with 158 g ai/ha of imazapic, which lasted for six weeks only. Results from this study indicated that indeed there is a synergism between the two herbicides, however additional studies are needed to determine the mechanism of such synergy.