

WINTER WHEAT TOLERANCE TO PRE AND POST APPLICATIONS OF SAFLUFENACIL. Stevan Z Knezevic, Jon Scott, Avishek Datta, and Leo D. Charvat, Associate Professor, Research Technologist, Post Doctoral Fellow, University of Nebraska, Concord, NE 68728; Biology Area Manager, BASF Corporation, Lincoln, NE 68523.

Saflufenacil is a new PPO inhibiting herbicide being developed for pre-plant burndown and PRE broadleaf weed control in field crops, including corn, soybean, sorghum, and wheat. As part of studying potential use pattern of this herbicide, field experiments were conducted in 2007 and 2008 at Concord, northeast Nebraska, with the objective to determine winter wheat tolerance to various rates of saflufenacil applied PRE, and POST. POST applications were conducted in the fall, after crop emergence (V2-V3 stage, 5cm height, Feeks1), and in the spring (4<sup>th</sup> node, 40cm height, ~ Feeks 7) with saflufenacil applied alone, or tank-mixed with NIS or COC. Dose-response curves based on log-logistic model were utilized to determine the ED (effective dose) values of saflufenacil for visual injury and relative yield loss of wheat with and without adjuvants. Applications rates of saflufenacil in PRE study included 25, 50, 100, 200, and 400 g ai/ha. The rates in POST studies were consisted of 6.25, 12.5, 25, 100, and 200 g ai/ha. There was no crop injury nor yield reduction in any of the rates tested with PRE application. That was also the case with the highest rate of 400g ai/ha, which could be as much as 8x higher than the proposed label rate (25-50g ai/a), suggesting high level of winter wheat tolerance to saflufenacil applied PRE. However, there was a range of crop injuries (5-95% in fall and 5-65% in spring) and yield reduction (21-66% in fall and 46-58% in spring) with POST application. Addition of adjuvants also increased crop injury levels. It appeared that wheat tolerated higher rates of saflufenacil applied POST in fall than in spring. For example, at 14DAT in the fall application, about 5% visual crop injury (ED<sub>5</sub>) was evident with 82, 67, and 10 g ai/ha of saflufenacil compared to 51, 30, and 11 g ai/ha in the spring, with no adjuvant, or NIS, or COC, respectively. There were similar effects on crop yields. About 5% yield reduction with fall POST application was evident with 54, 38, and 10 g ai/ha applied alone, or tank-mixed with NIS, or COC, respectively. Similar level of yield reduction was evident with much lower rate of saflufenacil applied POST in spring, including 24, 7, and 4 g ai/ha of saflufenacil applied alone, or tank-mixed with NIS, or COC, respectively. These results suggest that PRE applications of saflufenacil would be safe for use in winter wheat, which is similar to the proposed use pattern of this herbicide. In addition, the proposed label does not suggest the POST use of saflufenacil in winter wheat, nor any other cereal crop, which is similar to what we have concluded from this study. Additional testing is needed to determine wheat tolerance at several other growth stages, adjuvant types, formulation types and environmental conditions (eg. cool temperatures at the time of POST herbicide application).