KALO RESEARCH REPORT

2021 Wetting Agent Study

KALO 2021-1-UNL-

University of Nebraska - West Central Research and Extension Center

North Platte/NE

2021

KALO, Inc.
13200 Metcalf Ave, Suite 250
Overland Park, KS 66213

1. Research objectives

The objective of this study is to evaluate pre-emerge herbicide retention in the upper level of the soil after rainfall using Variant Soil Adjuvant.

2. Materials and methods

This study was conducted at the Pesticide Application Technology (PAT) Lab in North Platte, NE. Soil was collected from a field located on the research center, and was mixed 50-50 with Mountain West brand topsoil to obtain a final sandy loam soil classification (57-32-11). This soil mixture was then placed into 8 x 8 inch plastic buckets and watered to field capacity on March 31, 2021. Three buckets per treatment were arranged to represent three individual replications.

Treatments listed in Table 1 were applied April 1, 2021 with a three nozzle track sprayer (DeVries Manufacturing, Hollandale, MN, Figure 1). The nozzle used was a Teejet AIXR11004 at 40 PSI, 20 inch spacing and 8 MPH speed to achieve a carrier volume of 15 GPA. Buckets were removed from the spray chamber 10 seconds after spraying and relocated to a greenhouse under climate-controlled conditions.

Irrigation was simulated approximately 24 hours after treatment application using a single nozzle track sprayer (DeVries Manufacturing, Hollandale MN, Figure 2). A Hypro HF15 nozzle was fitted on the sprayer to apply 0.75 inches of water to each treatment. The buckets were then transported back into the greenhouse and watered lightly on a daily basis to prevent the soil from drying out completely. 3 soil samples from each bucket at 2- and 3-inch depths were collected April 8, 2021; 7 days after treatment for each bucket. The collected samples were placed into an appropriately labeled Falcon tube and shipped to the Mississippi State Chemical Laboratory in Starkville, Mississippi for analysis of the applied active ingredient (metribuzin or pendimethalin) for each treatment.

Buckets were irrigated with 0.5 inches water again on April 29, and samples collected May 6.

When laboratory results were received, data was subjected to ANOVA using a mixed model with replication set to random and means separated using Tukey HSD at α=0.05.

Figure 1. Three nozzle spray chamber located at the PAT lab used to apply treatments.

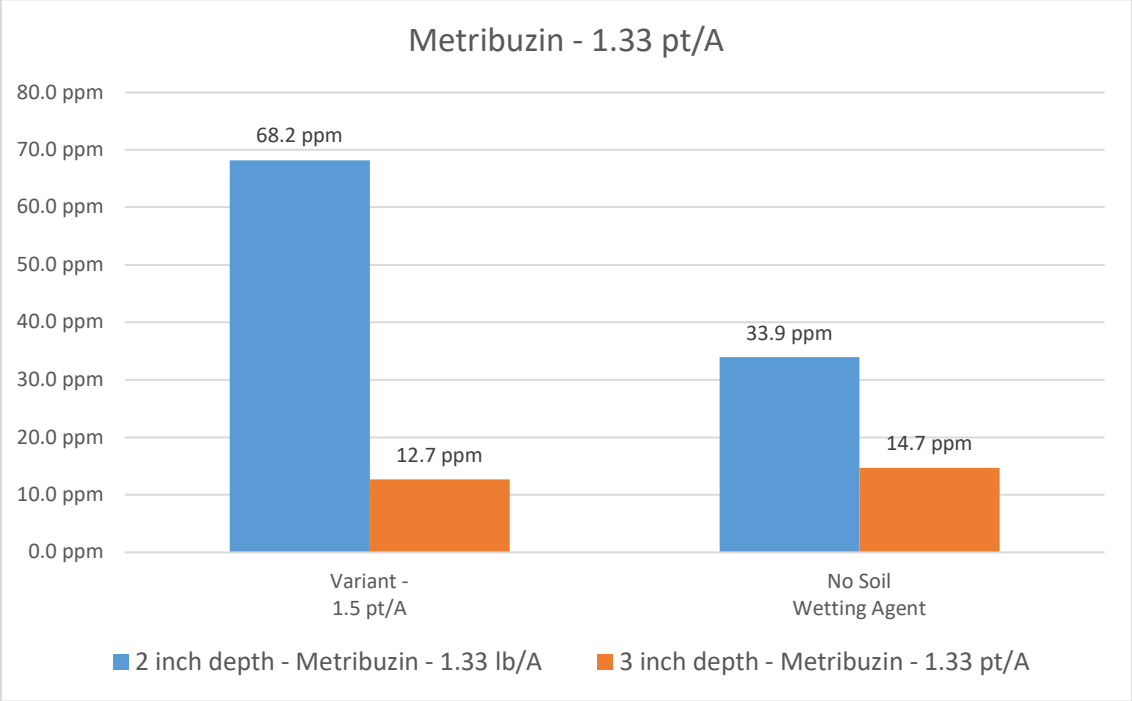
Figure 2. Single nozzle spray chamber located at the PAT lab used to simulate rainfall.

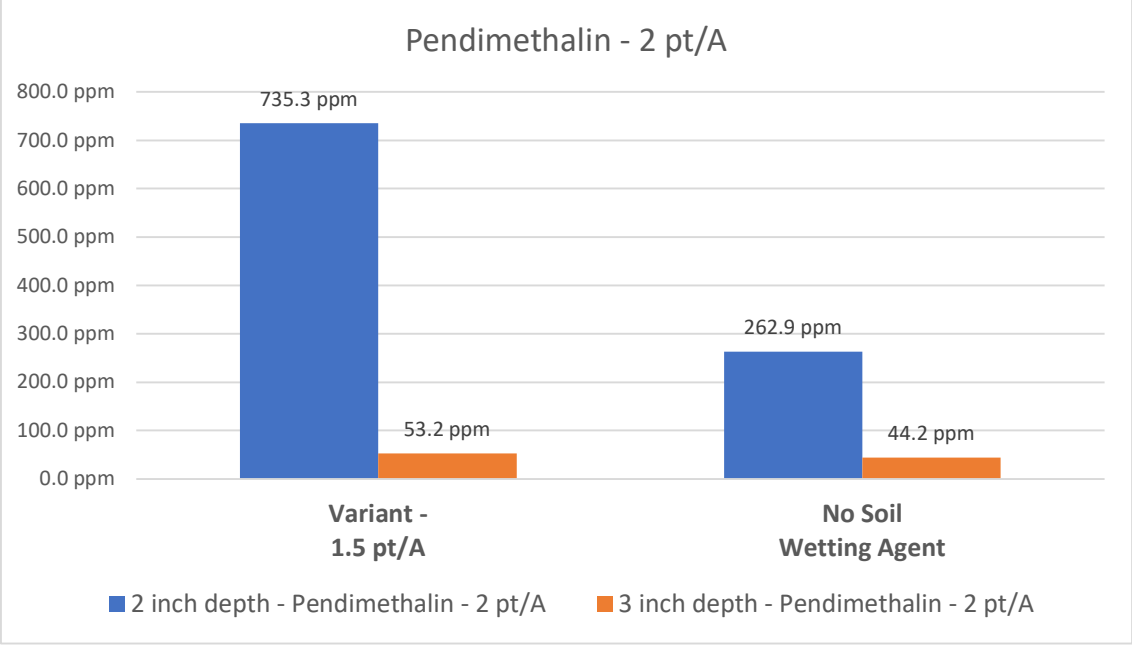
Table 1. List of treatments

Products	Rate	Rate Units
Tricor 75DF (metribuzin)	1.33	Lb/ac
Tricor 75DF (metribuzin)	1.33	Lb/ac
+ Variant	1.5	pint/ac
Prowl H20 (pendimethalin)	2.0	pint/ac
Prowl H20 (pendimethalin)	2.0	pint/ac
+ Variant	1.5	pint/ac

Results – Evaluations of Tricor (metribuzen) and Prowl H20 (pendimethalin)

Evaluations of Tricor (metribuzen) and Prowl H20 (pendimethalin) at 2 and 3 inches depth





Conclusion

When used with pre-emerge herbicides, Variant Soil Surfactant held the pre-emerge active ingredient closer to the soil surface (2-inch depth) when compared to the pre-emerge treatments without Variant Soil Surfactant.