

Evaluation of “Recovery” Treatments for Dicamba-Injured Soybean

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INTRODUCTION

In 2017, off-target movement of dicamba resulted in injury to an estimated 1.5 million hectares of non-dicamba tolerant (non-DT) soybean across the United States. This situation left many producers with questions regarding the ability of non-DT soybean to recover without sustaining yield loss. Previous research has shown soybean yield loss following dicamba-induced injury is dependent on growth stage and exposure dosage.

OBJECTIVE

To determine if yield-promoting tactics in soybean can influence recovery of non-DT soybean injured by dicamba at the V3 or R2 stages of growth.

MATERIALS AND METHODS

- In 2017, a field experiment was conducted in Columbia, Missouri.
- Glufosinate-tolerant soybean were planted at 56,600 seeds per ha with 76 cm row spacing on May 30, 2017 and harvested October 26, 2017
- A single application of dicamba at 1/100th of the labeled use rate (5.6 g ae/ha) was applied to non-DT soybean at the V3 or R2 stages of growth (Figure 4).
- 10 different yield-promoting treatments were applied 14 days following the V3 or R2 dicamba applications.

Treatments Included:

- PercPlus 1.76 L/ha
- Megafol (3-0-8) 1.75 L/ha
- Ele-Max Hi-Phos LC 4.67 L/ha
- Megafol + Ele-Max Hi-Phos 1.17 + 2.34 L/ha
- YieldOn 2.34 L/ha
- Awaken 4.67 L/ha
- Radiate 0.109 L/ha
- Priaxor 0.292 L/ha
- Urea w/ Agrotain 122 kg/ha
- Irrigated Weekly 2.5-5 cm/week

- A non-injured control and a dicamba-injured control treatment without a corresponding recovery treatment were included for comparison.
- The experiment was conducted in a RCB design. Individual plots were 3 by 9 m. Each treatment was replicated six times.
- Visual soybean injury and average soybean height were assessed 7 and 21 days after application of recovery treatments (DAT).
- Yield, visual injury and soybean height data were analyzed in SAS utilizing the PROC GLIMMIX procedure at the 0.05 level of significance.

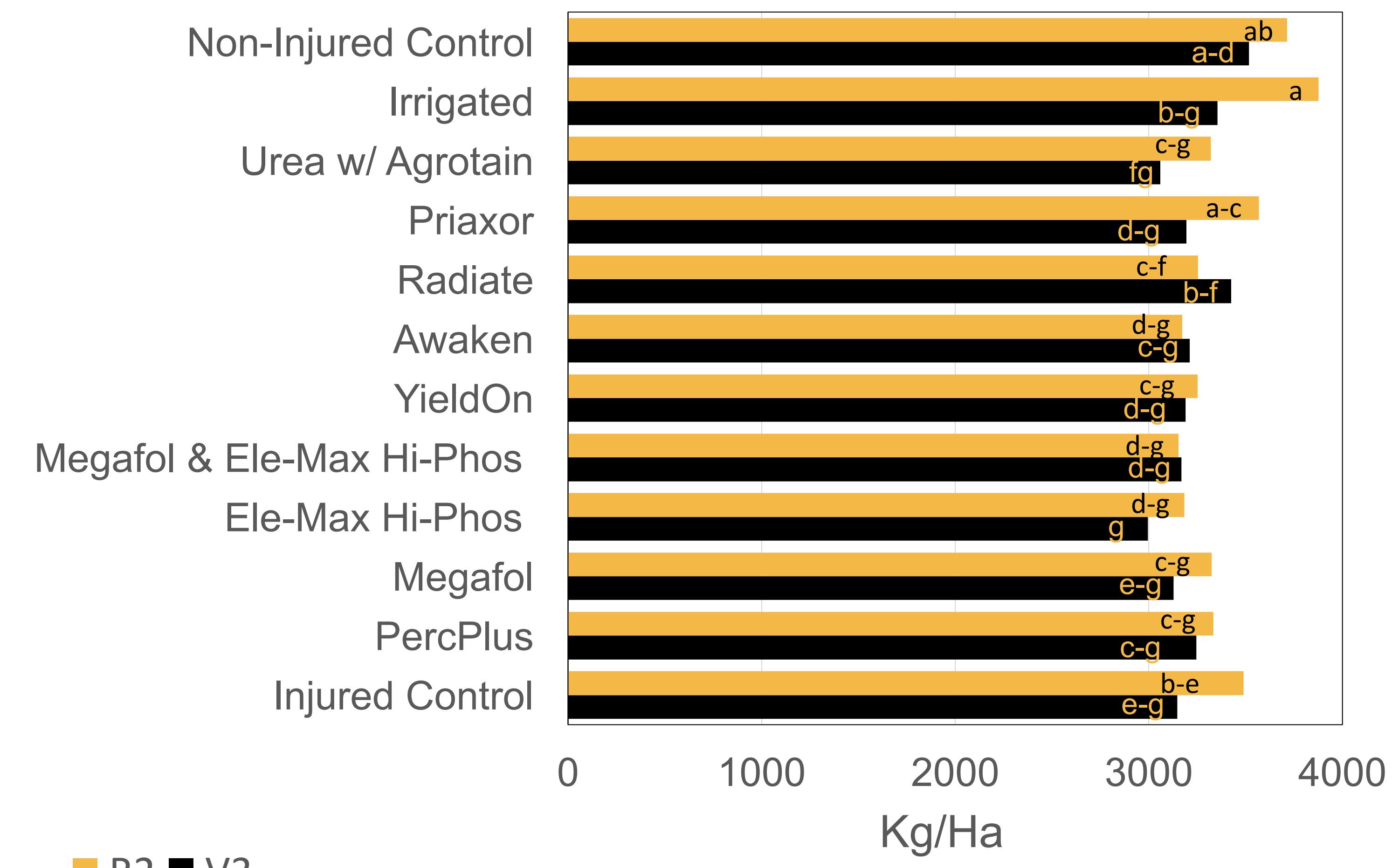
RESULTS & DISCUSSION

YIELD

- When soybean were injured with dicamba at V3, no recovery tactic resulted in soybean yields that were higher than the dicamba-injured control (Figure 3).
- On average, soybean injured at the R2 stages of growth yielded 168 kg/ha higher than plants injured at the V3 growth stages (Figure 3).

Figure 3

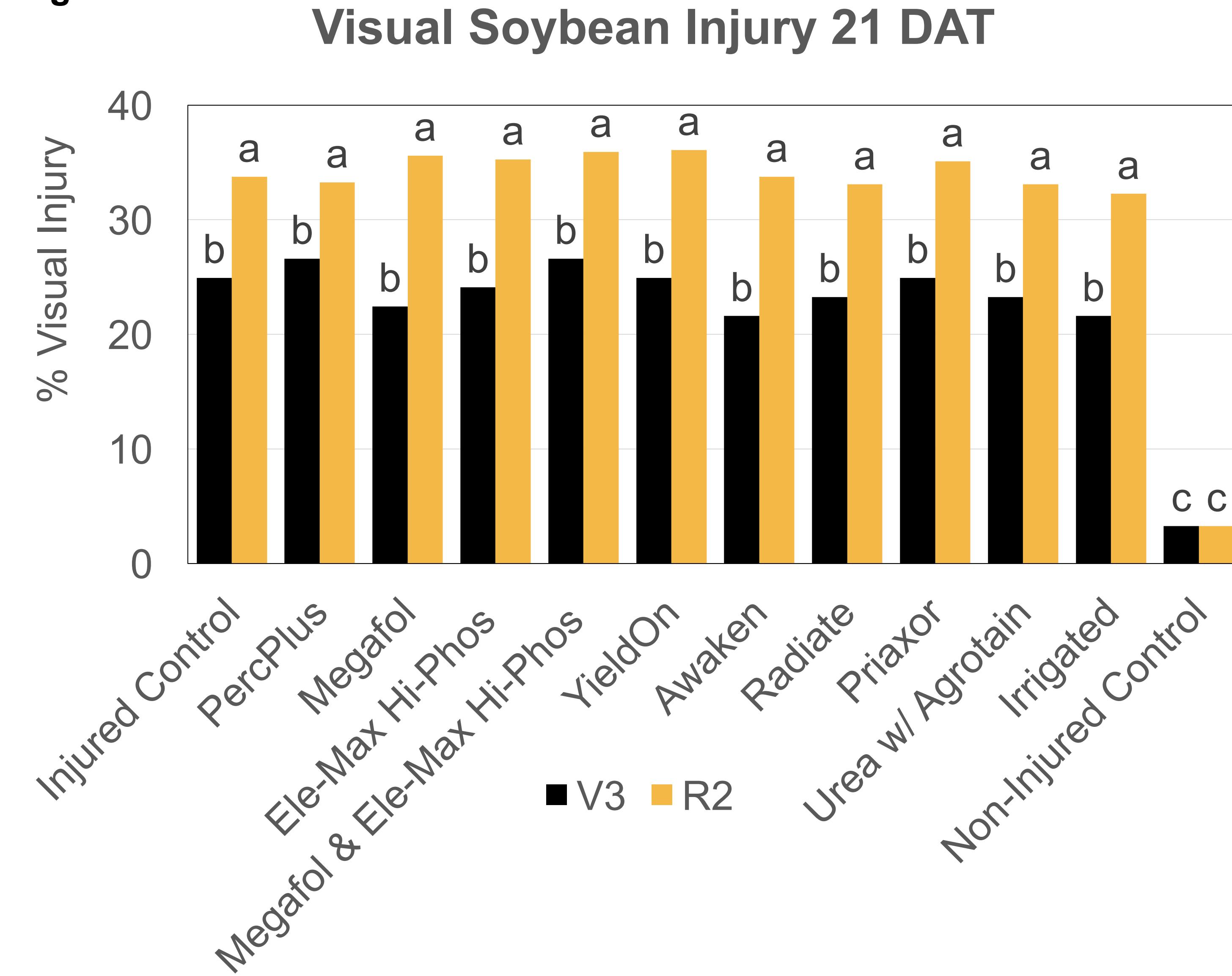
Soybean Yield (Kg/Ha)



VISUAL INJURY

- Across all recovery tactics, plants treated with dicamba at the V3 growth stage exhibited 22% visual injury while those treated at the R2 growth stage exhibited 32% injury (Figure 1).
- No recovery treatment resulted in visual injury levels different from the dicamba-injured control at all timings (Figure 1).

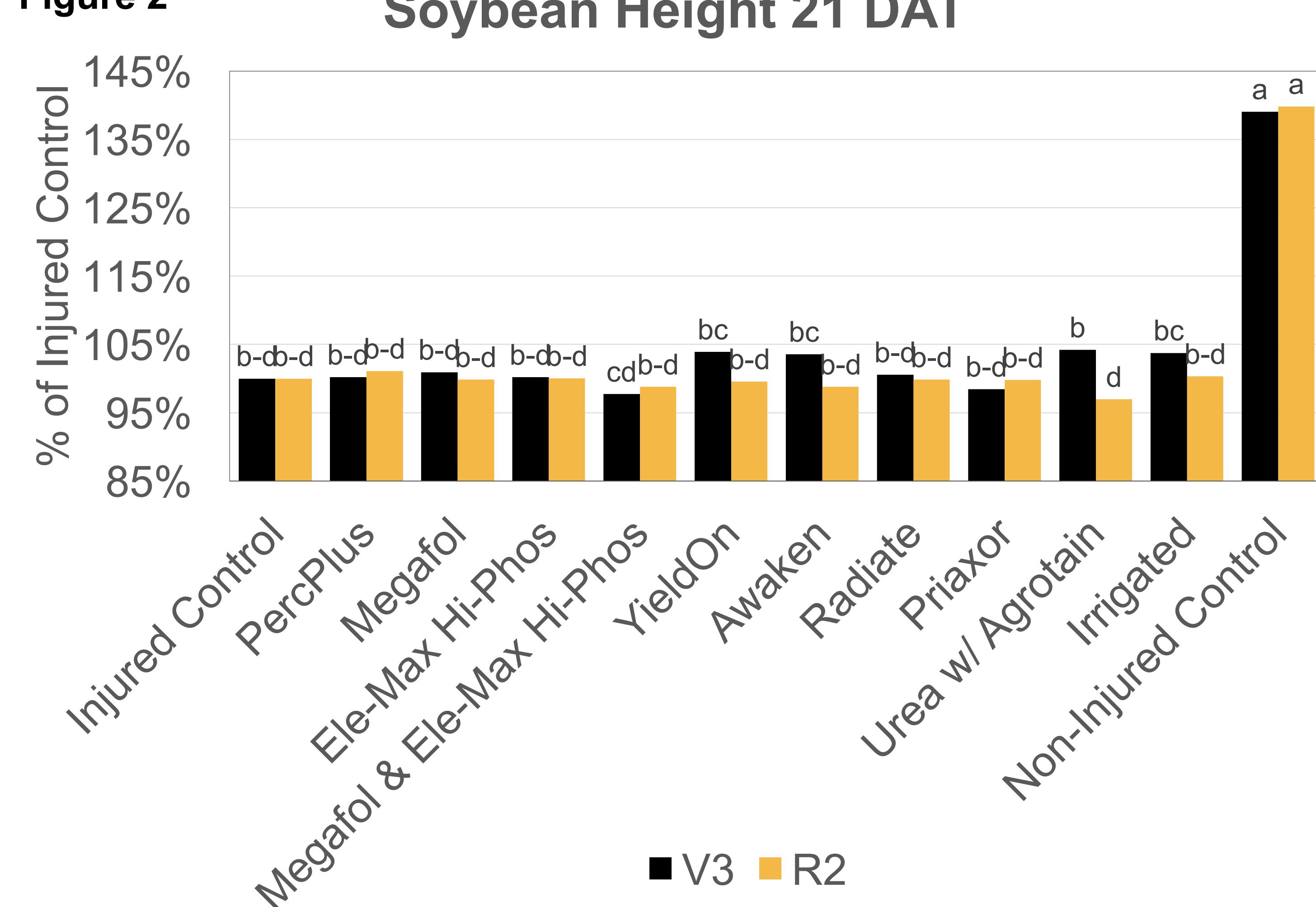
Figure 1



SOYBEAN HEIGHT

- Plant heights of soybean injured at the V3 and R2 growth stages were similar across all recovery treatments and to the dicamba-injured control 21 DAT (Figure 2).
- All dicamba-injured soybean, regardless of recovery treatment or application timing, experienced height reductions of 35 to 43% (34 to 39 cm) compared to the non-injured control.

Figure 2



YIELD

- When soybean were injured with dicamba at R2, irrigation was the only recovery tactic that resulted in higher soybean yields (389 kg/ha) than the dicamba-injured control (Figure 3).

CONCLUSIONS & FUTURE WORK

- These preliminary results indicate that the yield-promoting tactics evaluated here, except irrigation, are not candidates for enhancing soybean recovery following dicamba injury.
- Further analysis on yield components such as the number of nodes per plant, pods per plant, seeds per pod, etc. will be conducted on a subset of plants harvested from all plots.