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Determining Tree and Vine Crop Response to Simulated Florpyrauxifen-benzyl Drift

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Background

- ~A half-million acres of flooded rice is grown in the Sacramento Valley, where also produces many high-value trees and vineyards.
- Due to the diverse crops grown in the region, off-target herbicide drift is a recurring challenge.
- Florpyrauxifen-benzyl (FB) is a new picolinic acid herbicide anticipated to be registered in rice for the 2021 growing season.

Objective

- This study was conducted to develop data on tree and vine crop sensitivity to simulated drift rates of florpyrauxifen-benzyl to preemptively inform stewardship programs for the herbicide.

Figure 1. Newly planted almond tree response to 10% FB at 21 DAT.

Experimental Design

- A newly planted almond, peach, pistachio, prune, and walnut and an established vineyard were treated with FB.
- Drift rates were 0.5, 1, 3, and 10% of the full label rate in rice 1 pt/a (29.4 g ai ha^{-1}) to simulate a drift scenario in mid-June 2020.
- Treatments were conducted as RCBD with 4 replicates and applied from the top of each tree to the ground, on one side of the canopy.
- Ratings and evaluations were done at 6, 12, 24, 48 and 72 hours as well as at 7, 14, 21, 28, 35 and 56 days after treatment (DAT).
- Data analyzed using R software, and LS means at (α=0.05).

Figure 2. Established grape vine response to 10% FB at 21 DAT.

Results and Discussion

- FB symptoms were apparent on all trees; visual injury increased as the rate increased.
- The speed and severity of the symptoms was greatest on pistachio compared to the other tree crops.
- Pistachio symptoms included general chlorosis, chlorotic spots, leaf curling, leaf narrowing, leaf distortion, leaf malformation, leaf crinkling, shoot curling, stem coloring, stunting, terminal bud death, and twisting.

Figure 3. Newly planted prune tree response to 3% FB at 21 DAT.

Conclusions and Future Work

- Pistachio injury was the most severe and persisted for the remainder of the growing season.
- Crop injury effects will be evaluated at leaf-out in spring 2021 and treatments will be reapplied for a second growing season.

Figure 4. Newly planted pistachio tree response to 10% FB at 21 DAT.

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