

New Herbicides Broadworks & Zeus: Where's the Fit for Tree & Vines?

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For decades, herbicides have been used for weed management in perennial tree and vine crops in California. When used under the right conditions, herbicides provide effective control of a large variety of weeds both summer and winter and aid crop growth and productivity. The nut and grape industry in California continues to grow at a significant pace, with almonds leading the way as the largest tree crop estimated at 1,000,020 acres followed by walnuts, 400,000 and pistachios, 215,000 acres. Vineyard acreage is 928,000 as of 2014. The production areas occur in the San Joaquin and Sacramento valleys from Butte County in the north to Kern County in the south. New orchard and vineyard developments continue to expand in coastal regions and the east side of the valleys into the rolling hills. The registration of new herbicide mode of action is important as the industry continues to grow and typically uses multiple herbicide applications per season. California orchards and vineyards are beginning to see resistant weed issues occurring similar to other areas of the U.S. Glyphosate and paraquat are foundation post herbicides used repeatedly in pre and post herbicide applications. The frequent and repeated use of these two products is increasing efficacy issues and confirmed resistant's developing on conyza species fleabane and horseweed.

New Herbicides

Broadworks™ *mesotrione* is new active ingredient registered in California nuts and pome fruits in 2015. It is not registered in grapes! It is a class of HPPD inhibitor (group 27) that is designed for preemergent programs controlling broadleaf weeds. It will not control grasses so a tank mixture with a grass active herbicide is highly desirable. It does have some post activity on select type of broadleaf weeds such as fleabane, marestail, annual clover, which is seen as a secondary benefit. Table 1. There is one use rate of 6 oz per acre recommended at the winter weed germination window between November and February. There are also summer weeds it controls such as lambsquarter, knotweed and more to be determined. It has shown suppression of bindweed, when used in combination with glyphosate or glufosinate. Trees need to be established for 12 months and it has a 30 PHI. Having a new mode of action that controls fleabane and marestail is especially important as glyphosate and paraquat resistant's is spreading in these two species. The tank mixtures with either Princep, Prowl, Surflan, Matrix, Alion and Chateau, all having different mode of action, offer a flexible resistant management program while increasing control of many more weeds. Table 2.

Zeus *sulfentrazone* is a new active ingredient for California registered in 2014 for use in nut crops and vineyards. Crops include grape, lemon, orange, pistachio and walnut, but not almonds. It is a group 14 herbicide classified as a PPO inhibitor. Other herbicides in this class are Goal, Chateau and Shark to name a few but all have a unique weed spectrum at different levels of post and pre emergent activity. It has a use rate is 10-12 fl oz/A. Zeus has some post activity on broadleaf's and sedges but is recommended together with Roundup, Rely or Gramoxone aiding in better control of emerged weeds. Crops must be established for 3 years, the PHI is 3 days and at least a 0.5" or more of rain or sprinkler irrigation is needed for herbicide placement within the seed zone and overall weed performance. Zeus shows some interesting activity on yellow

nutsedge ranging from moderate to excellent control in trials. In our research, the variability of nutsedge control was determined to be the amount of water after herbicide application to incorporate the herbicide into the zone of nutlets. So timing to nutsedge emergence and enough water is very important for maximizing control. Table 3. Trials in San Joaquin County and Kearney research station have also shown good efficacy on fleabane and marestail. Tank mixing with other preemergent herbicides is an integral part to improve grass control and provide a longer interval of general weed control. Some of the best tank mix programs include Prowl, Alion and Matrix. Table 4.

Summary. The addition of two new registered herbicides Zeus and Broadworks, brings new opportunities for weed control in an expanding market of crops that are moving into new agricultural areas which bring new challenges. Both herbicides offer solutions to help manage against herbicide resistant's, improve weed efficacy, while opening new possibilities to control some of our more difficult perennial species. Like all new tools, we remain on a learning curve to develop better effectiveness and understand how they best fit into our cultural practices.

Table 1.

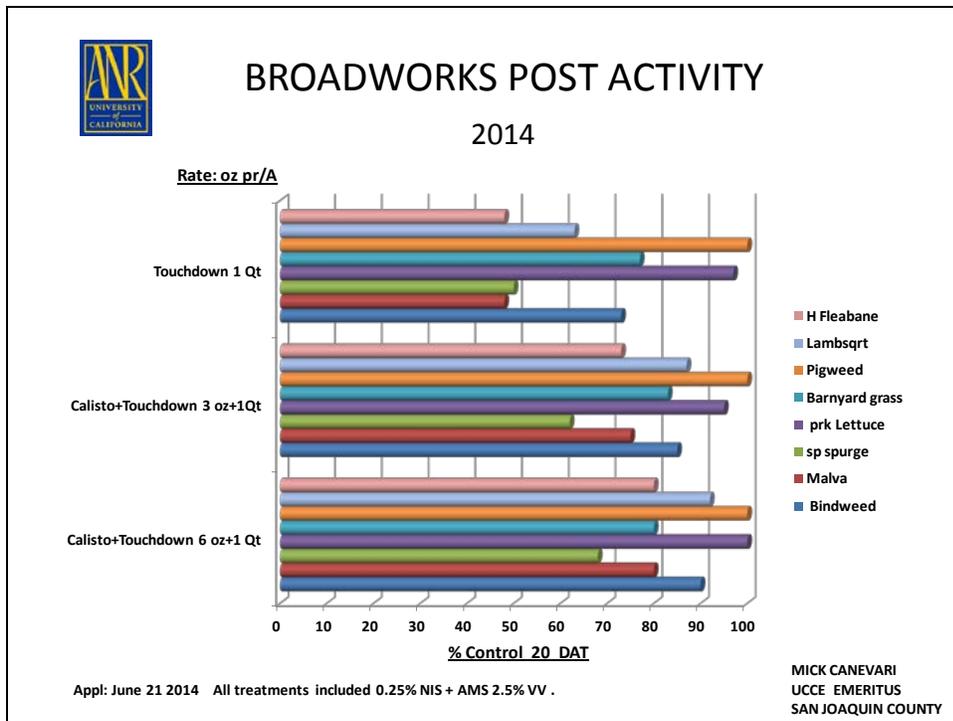


Table 2.

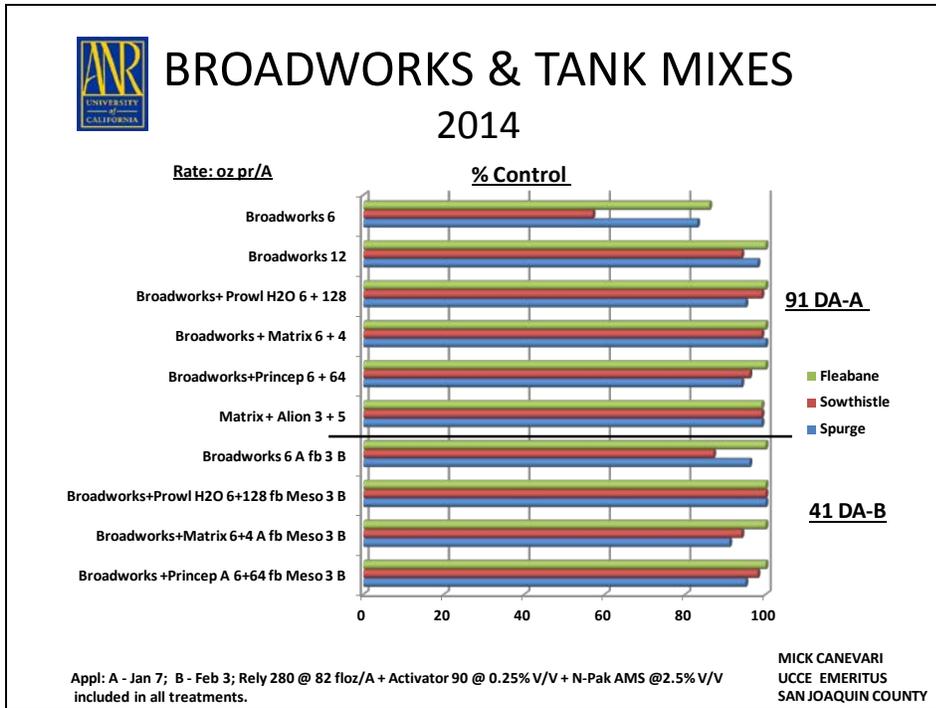


Table 3.

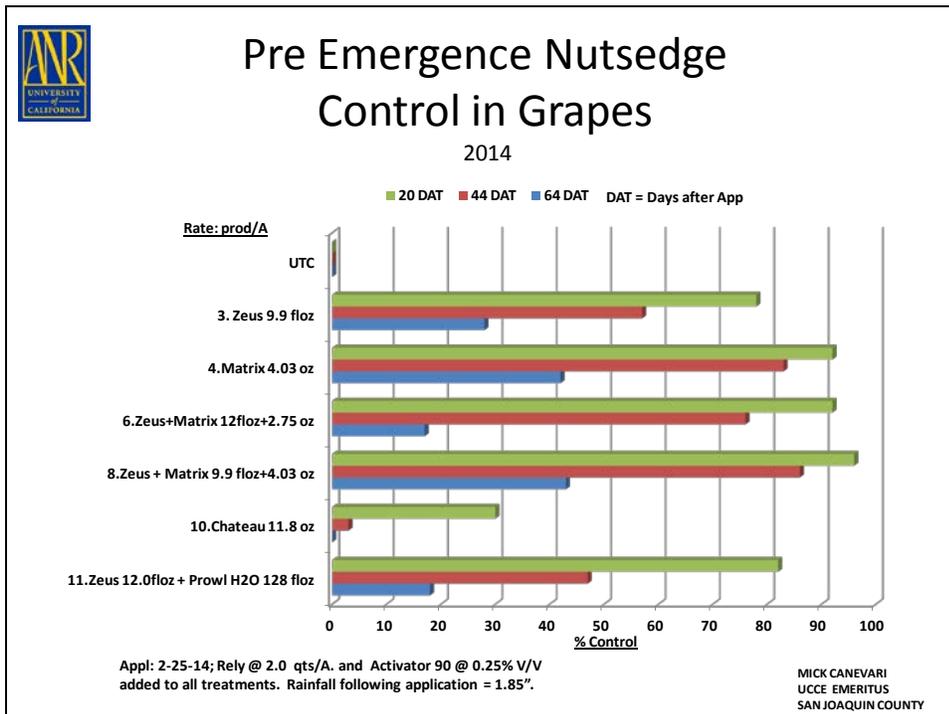


Table 4.

