

GLYPHOSATE-RESISTANT HORSEWEED: AN EMERGING PROBLEM IN THE SOUTH CENTRAL VALLEY

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Glyphosate-resistant horseweed biotypes have been reported in 10 states in the U.S., mainly in annual row-crop systems. However, we found that glyphosate-resistant (R biotype) horseweed also exists on canal banks in the southern San Joaquin Valley (SJV) and California is now the 11th state to report glyphosate-resistant horseweed. Our study showed that horseweed plants were resistant to at least four times the labeled rate of glyphosate. The level of resistance to glyphosate, however, was influenced by the stage of growth of horseweed at the time of glyphosate application. There was a probability of controlling some of the 'R' biotype horseweeds at the 5-8 leaf stage with a 2 or 4 lb ai/ac rate of glyphosate. After the 18-21 leaf stage, the horseweed plants were able to survive glyphosate application rates up to 4 lb ai/ac. At later stages, even some plants of the susceptible (S) biotype escaped the lower rates of glyphosate. Therefore, it is important to control horseweed at an early stage of growth. This is the first case of a glyphosate-resistant horseweed population in a non-crop situation. The irrigation canal borders numerous orchards and vineyards and growers have reported difficulties in controlling horseweed with recommended rates of glyphosate in these perennial cropping systems. Although, existence of glyphosate-resistant horseweed has not been tested in these orchards and vineyards, glyphosate escapes of horseweed have shown similar injury symptoms as the resistant populations along the canal banks. Therefore, it is suspected that these orchards and vineyards may contain glyphosate-resistant populations of horseweed. Growers who solely rely on postemergence products, such as glyphosate, for weed control in environmentally-sensitive areas may have to modify their weed control strategy to prevent the spread of these resistant horseweed populations. Close monitoring and an integrated weed management program will have to be implemented to manage glyphosate-resistant horseweed biotypes in the SJV.