

Environmental and Soil Factors Influencing Pre-emergent Herbicide Activity.

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Observations were made on the influence of delayed rainfall for pre-emergence incorporation as well as the level or type of debris or trash on the orchard floor and its effect on pre-emergence herbicide activity. Pre-emergence herbicides applied to a tree fruit, nut or vine crop must be incorporated through rainfall or irrigation in order to be absorbed by the germinating seed, or developing root or shoot. Without incorporation, left on the soil surface for an extended period of time can lead to the eventual degradation of that product. Herbicide labels have specific instructions or warnings for the duration of time before and usually how much rainfall or irrigation is needed for incorporation before the chemical will begin to degrade. From 2011 through 2015 our fall and winter rains were erratic and at times too low to meet the label suggestions for the needed rainfall. Trials established during periods of low rainfall helped us understand that even during these reduced rainfall periods as long as some level of moisture was obtained the products were able to provide partial control across species and that when tank mixed (different modes of action) control across all species in the field was usually obtained. Differences in control during periods of reduced rainfall were noted in different soil types. Improved weed control was seen in clay loam soils versus sandy loam soils where only specific tank mixes provided uniform control across species. In clay loam soils Matrix, Chateau or a tank mix of the two gave excellent weed control despite not having the required rainfall in a timely period. In a lighter sandy loam soil Alion + Pindar GT or Chateau + Matrix were needed to provide control across all species rated in the trial. In the sandy loam soils we noted a reduction in Alion's ability to control panicle willowherb, a weed which it normally controls easily. At this site Alion controlled the shallow germinating weed seeds, fleabane and red stem filaree, but we feel that with the herbicides low water solubility and reduced rainfall it was not incorporated to a sufficient depth to be absorbed by the germinating panicle willowherb. Finally we also made observations on the effect of debris on the orchard floor. Various trials had applications go out where it was noted that old weed carcasses did impact certain products ability to control certain weeds but not all. For instances where old bindweed carcasses were present Pindar GT provided better control of fleabane versus Alion. At another site with old fluvellin carcasses Alion or Chateau both gave good overall weed control (including fluvellin) compared to Zeus + Matrix or Goal 2 XL + Prowl H2O which did not.