SALINITY MANAGEMENT IN ORCHARDS

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Soil salinity, or the amount of salts contained in the soil has always been a concern for land owners on the west side of the Valley. This is because of the geologic origin of those soils which at one time were on the bottom of the Pacific Ocean and due to heavy clay layers several feet down which prevent deep percolation of water and causes salts to accumulate in the root zone. Home owners and farmers near Los Banos and Dos Palos will attest to the difficulty of growing sensitive plants without having the characteristic burning on the tips and edges of the leaves which is symptomatic of high salt levels and high pH.

UC Farm Advisors have been very concerned over the last few years by the increasing frequency of diagnosed salt problems on the east side of the Valley. This problem is especially common in almonds. This is cause for concern because a salt problem that takes 5 years to develop will take 10 years to cure. There are multiple causes for this worrisome trend. First is the increasing number of wells in the region. Growing cities and large numbers of homes in rural areas in addition to agriculture are increasing demand on the ground water. As demand increases so do salt and bicarbonate levels in the water.

Another trend is the conversion of orchards and vineyards to drip or micro-sprinkler irrigation. These fields are no longer being flood or furrow irrigated which helped to re-charge the ground water. Most of these orchards and vineyards converted to well water to reduce filtration problems which in turn placed more demand on the groundwater. Cooperative Extension Farm Advisors have been advising growers to switch back to irrigation district water if at all possible.

A third cause is the tendency to save water and energy costs by applying only the amount of water the crop is using. Doing so allows salts to accumulate in the root zone. Growers must apply more water than the crop actually uses in order to keep the salts moving down.

The fourth factor is the popularity of manures and composts as fertilizers and soil amendments. Manures and composts are very high in salts – especially in relation to their low nutrient content. The desire to add organic matter to the soil needs to be balanced with knowledge of the salts you are adding to the soil. Talk to your fertilizer salesperson about how the fertilizer program affects the salt content of the soil.

Winter offers the opportunity to leach salts if you use well water. Once the soil temperature declines, winter irrigation in combination with badly needed rain water can leach salts. This is also a good time to have a soil analysis done by an agricultural lab to check your soil chemistry. Take several samples at 12 inches and combine, then take several samples at 24 inches and combine and then again at 36 inches. This will help you determine if salts are accumulating lower in the soil profile. Have the lab check for total salts, sodium and chloride. In Westside soils also check for boron. Checking the soil for

nutrients such as nitrogen and potassium is not as reliable for trees as leaf analysis in July so skip those.