



Chill Portions on the Westside of the San Joaquin Valley

By Robert Smith, Agronomist

The 20/21 season for pistachios is well underway. December and January are high chill accumulation months. While the eastside of the San Joaquin Valley has enjoyed some foggy days, the westside and southern San Joaquin Valley (SJV) has been much warmer. Almond and pistachios trees rely on enough chilling for fruit and leaf buds to develop normally.

While the physiological changes in terms of carbohydrate dynamics a tree undergoes in preparation for dormancy is still poorly understood, the effects of poor chill accumulation are well documented. If the buds do not receive sufficient chilling temperatures during winter to completely release dormancy, trees develop physiological symptoms such as delayed and extended bloom (too little altogether can result in bud death), delayed foliation, reduced fruit set and reduced fruit quality.

During the fall of the year (post-harvest) the trees accumulate non-structural carbohydrates (NSCs), i.e., sugar and starch. Carbohydrates provide the energy for growth, defense, and healthy flowering, and yield. Chill accumulation preserves the accumulated carbohydrates during the dormant period.

Healthier Orchards going into the fall/post-harvest season accumulate higher carbohydrate production and storage than those that enter under stress. The orchards that have higher carbohydrate levels during the dormant period can withstand lower chill accumulation while still maintaining high yield levels.

The eastside of the SJV looks to will achieve adequate accumulated chill and is looking forward to a nice crop this year. The weather outlook for the westside of the SJV has been warm (little fog) and the forecast shows warmer than normal temperatures. This not good in achieving chill portion accumulation of 60 to 65 chill portions needed for the pistachio orchard to meet its yield potential.



Accumulative Chill Hours Thru 1/28/21		
Location/Station	Chill Portions (Deficit)	Chill Hours Needed
Arvin #125	47 (-13)	Kerman 54-58 Peters 58-65
Belridge #146	45 (-15)	
Coalinga #205	44 (-16)	
Five Points #002	37 (-23)	
Westlands #105	50 (-10)	
Panoche #124	34 (-26)	

With few weeks left to the magic number of 60 Chill Portions, their needs to be a radical shift in the weather to achieve the Chill Portions need on the west and southside of the SJV. The most recent storms have been immensely helpful with both chill accumulation and much need rain. The average weekly accumulation for the previous week has been in the 3-5 chill portions per week. In other words, we are rapidly running out of time.

Orchards that are healthier, well maintained, fertilized, and properly irrigated overcome stress in the spring. We can influence this with properly fertilizing your orchard. Yes, there is a right and a wrong time to fertilize your orchard. Just before bud break is the perfect time. This is when the orchard is beginning their root flush and start to utilize the nutrients in the soil. You can fertilize up to a month before this to have an adequate at beginning of root flush.

Ultra Gro 2-17-17 is an exceptional product containing plant readily available Phosphorus and Potassium. Phosphorus is particularly important for root development, flower initiation and energy transport within the tree. Phosphorus is crucial for the ATP component. This is the energy compound in the plant system. Potassium is a paramount macro-element for overall survival of living things. It is an abundant mineral macronutrient present in plant tissues. The rate of respiration by plants is largely the determining factor for proper uptake and transport of potassium by plants. Its uptake is



dependent on sufficient energy (ATP). Potassium plays a vital role in the trans-location of essential nutrients, water, and other substances from the roots through the stem to the leaves.

Ultra Gro 2-17-17 can be mixed with a various Zinc and Boron products as needed and can be applied through your irrigations system or foliar at bud break.

Elizabeth Fichtner (UCCE Tulare County) offered the disclaimer that the models for calculating chill is just that. She said, "It's a model, not a law of nature," meaning reaching some magic numbers – or not doing so - is not an assurance of crop size.