

## Upcoming Events

### Continuing Education for Pest Management Pros

*August 29th, 2026*

*October 6th, 2026*

*October 13th, 2026*

*October 20th, 2026*

*October 27th, 2026\**

*Time:* 8:00 AM – 12:00 PM

*Location:* 2145 Wardrobe Ave,  
Merced, CA 95341

*Fee:* \$50 per day or \$225 for all  
Online payment pending with  
cash or check in-person.

No pre-registration required.

Continuing education pending.

### \*Orchard Crop Continuing Education Day

*October 27th, 2026*

This event held as part of CE for  
Pest Management Pros, so time,  
location, and fee are same. Topics  
specifically pertaining to orchard  
crops.

Above events planned by or in collaboration  
with the Merced County Farm Bureau



## Bulleled Summary of Issue

### Resources from Local Advisors

- UC Cooperative Extension Advisors local to your area create different material to help educate the public. Included in this issue are a few from Advisors working in the northern San Joaquin Valley.

### Almond Irrigation Management from Hull Split Through Postharvest

- Different water stress levels should be maintained prior to hull split, during hull split, and at later stages of hull split. This can be monitored with a pressure chamber.
- Delaying irrigation after harvest can negatively affect the following season's crop as an important stage in flower bud development occur in late August to early September.

### Understanding Cost and Losses from Tree Loss

- Tree loss calculator are provided by the University of California at <https://coststudies.ucdavis.edu/tree-and-vine-loss-calculators>
- For appropriate calculation for almonds update cost of planting, cost of replant tree, expected yield loss over orchard life, and reduced costs from fewer harvests.

### Other Items Included

- Link provided to an article summarizing some of the knowledge accumulated to date on livestock grazing in orchards and vineyards.
- Information on upcoming events including an orchard specific event.
- Information and contacts provided if looking for information on SGMA in the Merced Irrigation-Urban GSA.

## Resources from Local Advisors

Advisors work locally across California and provide information in various formats. Please consider checking some featured ones below from Advisors who work in the northern San Joaquin Valley. Links provided as QR codes may be limited use.

### YouTube IPM Corner

Jhalendra Rijal post videos to the IPM Corner which is a resource for combating pests in orchards and vineyards in California sustainably and effectively. IPM promotes pest management approaches that balance biological, cultural, and chemical methods to reduce pest pressure while minimizing environmental impact.



<https://www.youtube.com/@ipmcorner>

### Young Orchard Handbook

Moneim Mohamed and others have developed a handbook that delves into the intricacies of irrigation and nutrient management strategies tailored specifically for young orchards. Handbooks are provided in English, Spanish, and Punjabi.



<https://ucanr.edu/county/stanislaus-county/moneim-mohamed-irrigation-and-soils>

### Regenerative Agriculture Report

Sara Rosenberg performed an assessment to evaluate how farming communities perceive and understand regenerative agriculture. The report provides insight into how farming communities in these regions are experiencing, thinking about, and managing for different agronomic, economic, and ecological priorities.



<https://ucanr.edu/county/mariposa-county/research>

# Almond Irrigation Management from Hull Split Through Postharvest

By Moniem Mohamed<sup>1</sup>

The goal of good irrigation management through the season is to match crop water use with water supply while avoiding over-irrigation and/or excessive tree stress.

Standing water and increased humidity from over-irrigation can increase the risk of diseases such as *Phytophthora* root rot, hull rot, and *Alternaria*. It can also reduce oxygen in the root zone, leading to poor root function and reduced tree growth. In addition, over-irrigation will increase pumping costs and fertilizer losses through leaching, which may require additional fertilizer applications to compensate. Excess irrigation can also increase the time needed for the soil profile to dry out, making it more difficult to apply deficit irrigation when needed.

During hull split, irrigation management becomes one of the most important tools growers can use to sustain yield, promote proper hull split, reduce disease risk, and prepare for harvest. Regulated deficit irrigation (RDI) is the planned reduction of irrigation during specific crop growth stages when almond trees are less sensitive to moderate water stress. Although any deficit irrigation can potentially reduce yield, hull split is one of the best times to apply RDI because moderate stress can help reduce hull rot, synchronize ripening, improve harvestability, and save water with minimal impact on yield when managed correctly.

Midday stem water potential, measured with a pressure chamber, is a useful tool to guide irrigation decisions during this period (Table 1). Moderate stress levels vary by orchard, soil type, irrigation system, root zone depth, and irrigation history, but the following values can be used as general targets.

A practical hull split irrigation management strategy is to begin deficit irrigation just prior any hull split when you expect hull split to begin soon. The goal is to have trees already at mild-moderate stress when nuts begin hull split. A good strategy is to reduce irrigation by about 20 to 50% at approximately 1% hull split (One approach is to gradually reduce irrigation until trees reach about -15 bars of midday stem water potential near the beginning of hull split) and

Table 1. Generalized recommended measurements of midday stem water potential (bars) during different stages for almond production. More detailed recommendations during hull split stages leading to harvest.

| Strategy        | Up until mid-June | 1% hull split through 90% hull split | 90% hull split to leaf drop |
|-----------------|-------------------|--------------------------------------|-----------------------------|
| Moderate Stress | -8 to -12 bars    | -14 to -18 bars                      | -10 to -14 bars             |

continue until about 90% hull split. However, the appropriate percent reduction varies with soil conditions and irrigation system, so it should be evaluated separately for each orchard.

This RDI period typically lasts about two to three weeks. After that point, irrigation should return to full crop demand. Maintaining stress for a longer period will not force nuts to split faster. Instead, prolonged or severe stress will stop hull split and result in hull-tights. Also, it can reduce kernel size and vegetative growth, and negatively affect next year's crop potential. Growers should keep in mind that this strategy is not a one-size-fits-all. Soil texture, soil depth, rooting depth, irrigation system design, and stored soil moisture should be considered.

Growers should be careful not to impose too much stress. Excessive water stress during this period can reduce yield and affect tree growth. RDI should be managed using evapotranspiration (ET), pressure chamber readings, soil moisture sensors, field observations, and consideration of the orchard's soil and irrigation system.

Applying moderate to severe water stress 20% to 50% of ET for one week before harvest is generally enough to help minimize bark damage during shaking. Water applications should be resumed as soon as orchard conditions allow after harvest. Studies have found that delaying or withholding irrigation after harvest can negatively affect the following season's crop by reducing fruit set and, to a smaller degree, bloom intensity. A study by Goldhamer and Viveros (2000) reported that postharvest deficit irrigation is more harmful than preharvest deficit irrigation and resulted in reduced kernel yield by 73.6% in the following season. This is explained by the damage to primordial flower parts that prevent the pollen tube from reaching the ovary. Almond is sensitive tree crop to postharvest deficit irrigation due to late fruit bud differentia-

tion that occurs from late August to early September in California. Therefore, growers should plan ahead and keep at least three to four acre-inches per acre available from the typical eight acre-inches needed for postharvest irrigation especially in dry years. Growers with drip irrigation may consider making one sweeper pass to remove nuts from the berm area before irrigating or using a single drip line to limit surface wetting. Using a conditioner can help improve drying before pickup.

For young almond trees less than three years old, do not apply deficit irrigation, as this can delay the time it takes for the trees to reach full production.

*This article was written by Moneim Mohamed. Contact and programmatic information for Dr. Mohamed can be found at <https://ucanr.edu/county/stanislaus-county/moneim-mohamed-irrigation-and-soils-advisor>*

## Reference

Goldhamer, D., Viveros, M. Effects of preharvest irrigation cutoff durations and postharvest water deprivation on almond tree performance. *Irrig Sci* 19, 125–131 (2000). <https://doi.org/10.1007/s002710000013>

# Understanding Cost and Losses from Tree Loss

By Cameron Zuber<sup>1</sup> & Domena A. Agyeman<sup>2</sup>

It can hurt if a tree dies or needs to be removed towards the beginning of an orchard's life as a lot of resources went towards growing and training the tree (Figure 1). The University of California provides tools to help the public calculate these expected costs and losses when replacing a tree (<https://coststudies.ucdavis.edu/tree-and-vine-loss-calculators>). There are tools for a variety of tree crops (e.g., peach, lemon, olive, etc.), but this article will be using almond as the example.

When using these tools, users should enter their operation-specific costs and conditions to obtain



Figure 1. Almond tree fall at edge of orchard in February. Orchard planted approximately three years prior.

representative estimates. Costs may also need to be adjusted based on the age or variety of tree lost. For example, cost of tree removal that was planted within a year since orchard establishment would be much lower than that of an older tree as a larger tree, stump, and root mass would need to be removed.

When assessing the costs for a tree loss, there are four factors to consider: 1) cost of replacing the tree, 2) costs to train the replant, 3) expected revenue loss due to reduced cumulative yield over the life of the orchard, and 4) reduced costs when replant is not harvested. The cost of tree loss extends beyond the expense of purchasing and planting a replacement tree. While removal, purchasing, and planting costs are incurred upfront, a substantial portion of the economic impact often results from years of reduced production while the replacement tree matures. Because these costs and revenue losses occur over time, converting future losses into their present value (today's dollars) accounts for the time value of money when estimating the economic impact of tree loss. The loss calculator allows users to determine the present value of tree loss.

First, costs of replacing the tree include purchasing the new tree, planting the new tree, and removing the prior tree. Tree costs are variable and each variety has their own pricing and some come with

an additional royalty fee. Cost can range for tree and stump removal based on age of the tree lost. Planting costs for a new tree are dependent on each operation.

Second, almond trees require higher level of management and training within the first three years since planting, but can extend to five years depending on variety. If a tree is lost after this period, all this maintenance needs to be performed again on the replant. This includes pruning of select branches, wrapping the canopy with ties, installing and tying trunk to stake, and suckering. Each of these have a different cost and what year they occur depends on the growth stage of the tree. It is important to implement these techniques as they provide an appropriate structure to the tree to reduce branch breakage, allow safe equipment access, and other factors that can positively affect production. However, it is up to the individual operation how much training is implemented for replants and therefore to also account for associated costs year-to-year.

Third is understanding the expected total revenue loss from cumulative yield losses. Almonds are a perennial crop that can be harvested starting around three years since planting. Initial crop yields start low as the tree is smaller and then progressively increase until yields stabilize. When a tree is lost after orchard establishment, there is a staggered yield amount and therefore a total loss to cumulative yield as all trees will eventually be removed at the same time. This represents the future net income that is forgone while the replacement tree progresses through its establishment period. For almonds, orchard removal can be 20 to 25 years after establishment. Replanted trees then result in a loss to expected total revenue as the prior tree would have produced more over the life of the orchard when compared to the replant (Figure 2; top).

However, the conceptual amount in the top graph of Figure 2 is assuming the replant is producing at the same amount as if it was planted with the rest of the orchard, just staggered by a few years. In practice, replants may not achieve full productivity because they tend to be planted between existing trees of larger size. Shade from neighboring trees, along with irrigation and fertilizer practices tailored to older surrounding trees can result in reduced production of replants. While not quantified, conceptually this can result in a greater reduction to

cumulative yields (Figure 2; bottom).

Finally, there can be some cost savings with replants as they do not need to be harvested the same amount. However, this tends to amount to a few cents per kernel pound harvested and therefore is relatively much less value compared to costs and expected revenue losses described prior.

Specific dollar amounts for each of these factors are dependent on the operation, variety replanted, region, etc. Having accurate values for these factors helps to understand the monetary costs to expect from tree loss. As an orchard ages, the economic benefit of replacing a lost tree declines because the replacement tree has less time to recover establishment costs and generates enough revenue before the orchard is removed. However, knowing the expected costs and losses is an important step in determining if a replant is worth-

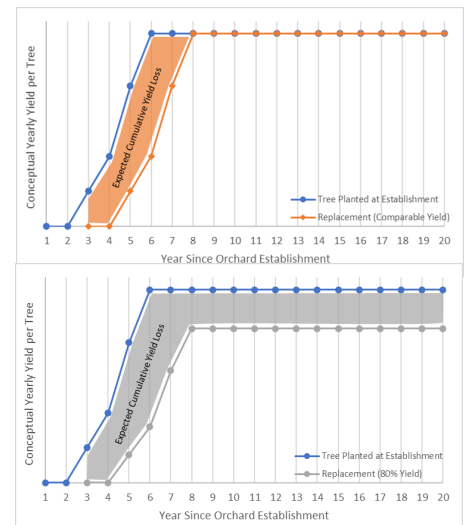


Figure 2. Conceptual models for cumulative yield revenue loss for almond tree planted three years since orchard establishment assuming same (orange polygon) and 80% reduction (grey polygon) in yield per tree with assumed harvest period and orchard removal. Percent used in bottom figure is a conceptual value, as exact yield reduction for replants not documented.

while and how much to invest in the replacement. The tree loss worksheet allows users to estimate and compare the expected economic outcomes of replanting versus not replanting under their own orchard conditions, providing a practical framework for evaluating whether replanting is economically justified.

Please note that there are limits to the Loss Calculator. It does not explicitly account for the potential reduction in yields (if any) that replants may experience as seen in the bottom of Figure 2. Additionally, costs of damage to associated infrastructure (e.g., irrigation systems) are not accounted for. These factors should be considered separately when evaluating tree loss.

# Livestock Grazing in Orchards and Vineyards

Integrating livestock into agriculture systems, known as Integrative Crop Livestock Systems (ICLS), is becoming ever more popular in orchard systems and vineyards in California. Particularly in nut tree crops, in San Joaquin Counties. Much of our understanding about how grazing supports soil health and affects tree and vine health can be in part due to UC Davis Gaudin Agroecology Lab (Brewer et al., 2023; Brewer & Gaudin, 2020; Marshall et al., 2025; Fenster et al.; Ji et al.; Peterson et al., 2020). An article attempts to summarize some of the knowledge we have accumulated to date about how livestock grazing in orchards and vineyards can support carbon and nitrogen dynamics in the soil and the agronomic benefits experienced by growers.

The full article from Ellie Coon, Sara Rosenberg, and Amelie Gaudin from the University of California Davis and University of California Cooperative Extension and cited literature can be found by scanning the QR Code to the right or by going to the URL provided. QR Code may be limited use.



<https://drive.google.com/file/d/1XrJgp2XssUbUUYS-BtrvUclxIS2VmjaUA/view>

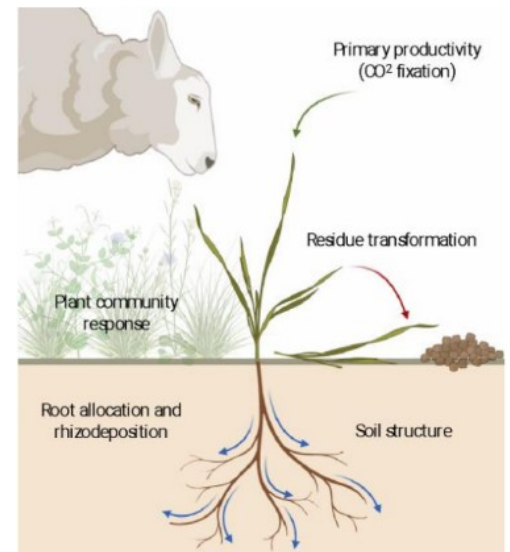


Figure 1. Shifts in carbon and nutrient cycling pathways with introduction of understory grazing in vineyards (Brewer et al., 2022).