# Can early spring foliar N+K sprays increase almond yield in the Sacramento Valley?

**Franz Niederholzer,** UCCE Farm Advisor, Colusa/Sutter/Yuba Counties

## Introduction

Wet cool spring weather, not uncommon in the Sacramento Valley, may affect almond production in the following ways:

- Delay irrigation (and hence fertilizer application), especially in drip irrigated orchards, possibly reducing nutrient availability in the spring during a period crucial to nut set.
- Potentially reduce nutrient availability/uptake by trees due to reduced ET and mass flow of nutrients to root surfaces.
- Potentially reduce soil biological activity (mineralization, etc.), nutrient availability, and root activity due to cool (wet) soils.
- Increase nitrate leaching risk of fertilizer nitrogen and so reduce plant available soil nitrogen.

Application of significant amounts of foliar nitrogen and potassium fertilizer soon after bloom may allow growers to increase yield and manage the potential leaching risk from early season (Feb-Mar) soil N application in a region where significant spring rains can occur.

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**Table 1. Treatment materials and timings**

| Treatment/spray | Feb 5 (pink bud) | Feb 18 (petal-fall) | Mar 13 | April 9 |
|---|---|---|---|---|
| 7.8 lb N & 4 lb $K_2O$/a | | | X | X |
| 7.5 lb N/a | | | X | X |
| 4 lb $K_2O$/a | | | X | X |
| Seaweed (2 qt/a) | X | X | X | X |
| Seaweed (2 qt/a) + 7.5 lb N/a | X | X | X | X |
| Seaweed (2 qt/a) + 7.5 lb N/a | | | X | X |

N source = 28-0-0 specialty slow release material. K source =2-0-25 specialty fertilizer (urea + potassium acetate)

## Methods

The study was conducted in a 7th leaf planting (Aldrich, NP, Fritz), using only NP trees on Krymsk 86 rootstock. Treatments appear in Table 1, plus untreated controls. A total of 49 trees were used, with 7 reps of each treatment. The study was blocked by tree size, based on trunk cross-sectional area, determined prior to spraying. Each block contained one tree from each treatment. Trees were individually sprayed with a motorized backpack prayer. Trees were individually harvested in late August.

**Table 2. Treatment results vs. materials and timings. Results followed by the same letter are not significantly different (5%)**

| Treatment/spray | Yield (lbs./tree) | % Leaf N | % K |
|---|---|---|---|
| Control | 23.9 a | 2.50 a | 2.17 a |
| 7.8 lb N & 4 lb $K_2O$/a | 22.1 a | 2.49 a | 2.20 a |
| 7.5 lb N/a | 23.2 a | 2.48 a | 2.34 a |
| 4 lb $K_2O$/a | 22.0 a | 2.53 a | 2.14 a |
| Seaweed (2 qt/a) | 22.2 a | 2.54 a | 2.11 a |
| Seaweed (2 qt/a) + 7.5 lb N/a | 22.2 a | 2.52 a | 2.09 a |
| Seaweed (2 qt/a) + 7.5 lb N/a | 23.5 a | 2.49 a | 2.26 a |

## Results

Large trees produced more nuts than smaller trees (data not presented), but no treatment differences were measured in yield, leaf N, or leaf K (Table 2). Study trees were well fertilized with N, K, B, and Zn and carefully irrigated (relatively stress free).