

## University of California

# Fertigation Trials in Almond

## Sampling & Analysis

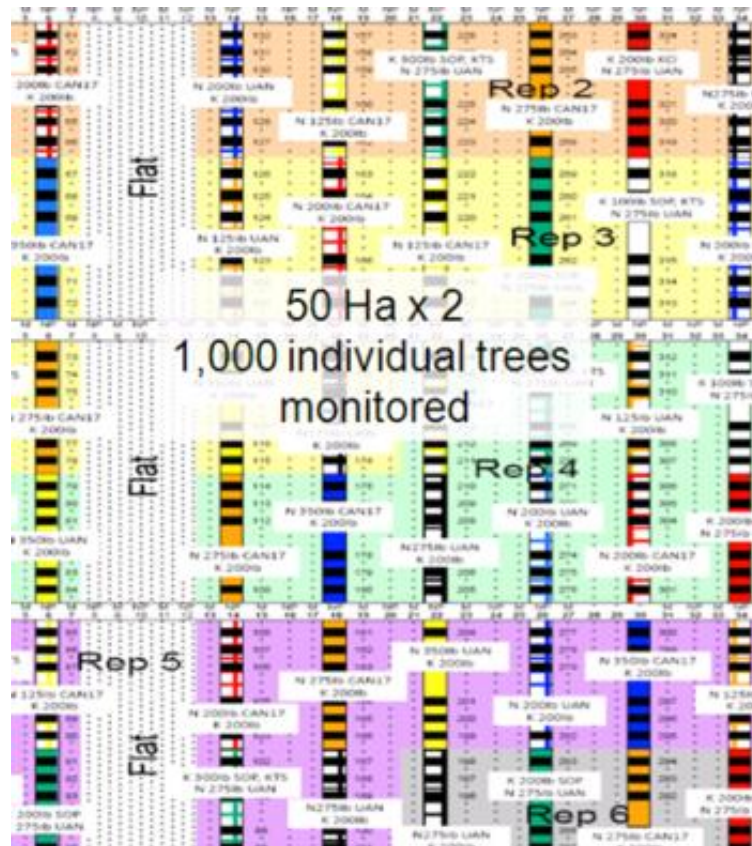
A four-year fertigation trial of nitrogen and potassium treatments is underway in almond at a Kern Co. site. The trial was replicated under two irrigation systems, FanJet microsprinklers and Drip. N treatments:

- Two N sources: CAN17 & UAN32
- Four N rates: 125, 200, 275 & 350 lbs/ac.
- K as SOP+KTS applied to N treatments

Potassium treatments:

- Three K sources (SOP, SOP+KTS & KCI) at 200 lbs/ac
- Three rates of SOP+KTS (100, 200 & 300 lbs/ac)
- N as UAN32 applied to K treatments

Leaf samples are taken five times during the season. Nut samples are also taken and individual tree yields recorded for the season. Samples are analyzed for N, P, K, B, Zn, Ca, Mn, Mg, Fe, S, Cu at the UC Davis DANR lab. Spatial interpolation, analysis of variance, and regression analysis are applied to the data.



Layout of sampling replicates in experimental almond orchard in Kern Co.

## Preliminary Results For First Two Years (2008-09)

Only data for one sampling season has been fully evaluated, and long-term effects are not yet established. For nitrogen, nutrient uptake appears to be systematically correlated with N application rate (Fig. 1).

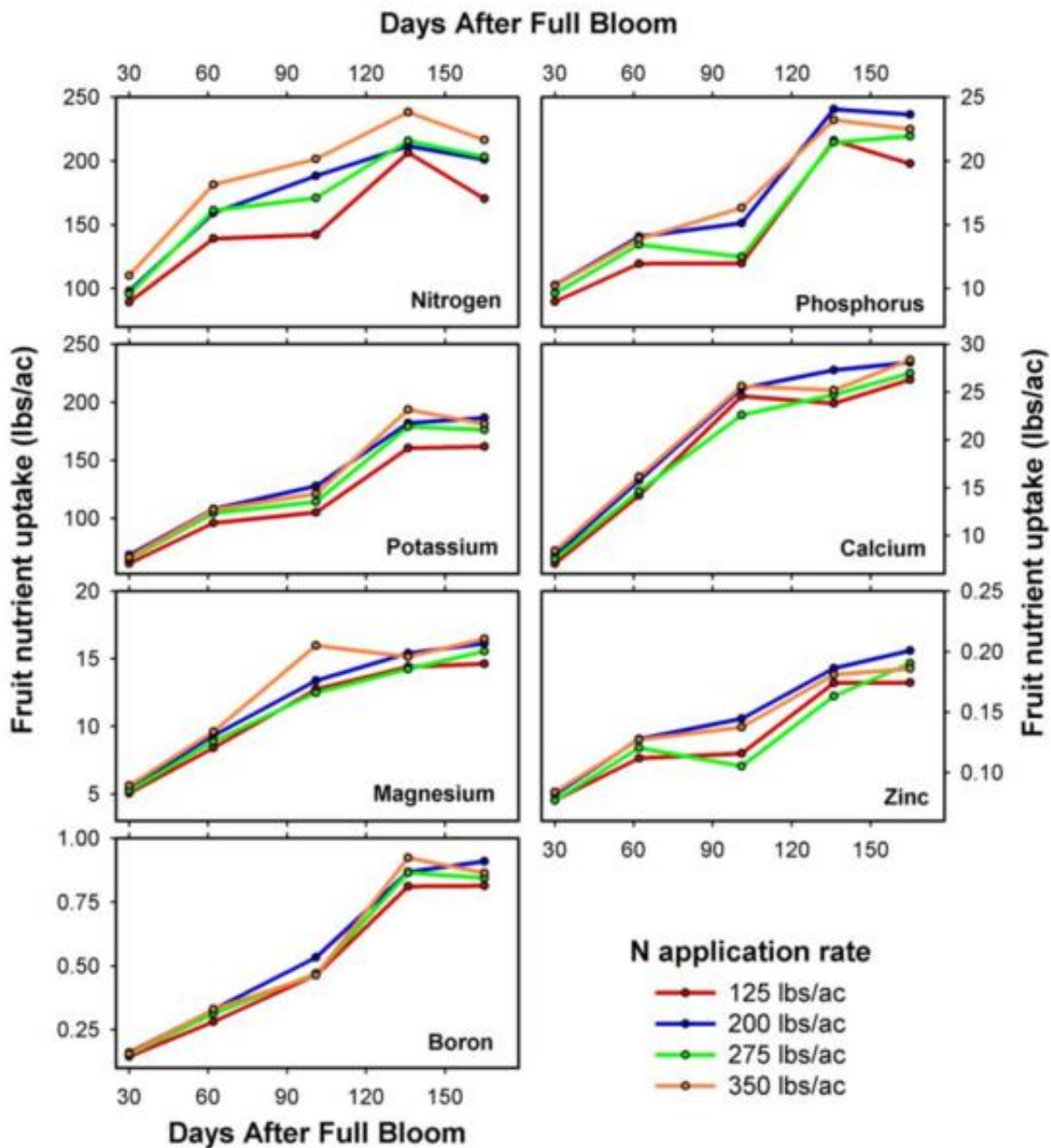


Fig. 1. N uptake dynamics. Site 1. 2008.

Potassium uptake was lowest at the highest K rate (100 lbs/ac), while application of 200 and 300 lbs/ac resulted in similar K uptake. (Fig. 2).

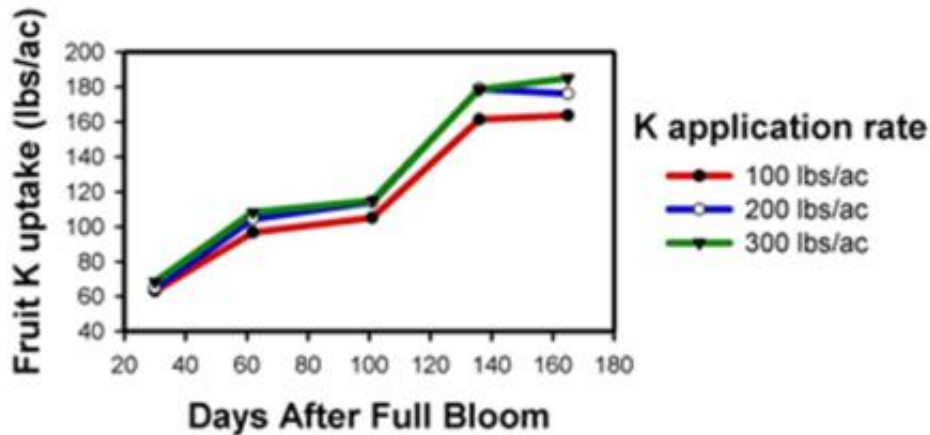


Fig. 2. K application rates and uptake. Site 1. 2008.

### Preliminary Conclusions

Apparent nitrogen use efficiencies per treatment, calculated as the ratio of removed/applied N ranged from 61% in the highest N treatment to 136% in the lowest N treatment. Nutrient use efficiencies of >100% suggest that trees are mobilizing stored nutrients rather than depending exclusively on fertilizer applied in that season. Over the long term, this must result in tree and soil N depletion and contribute to yield decline.

[top of page](#)

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