

Field Day: **Chico**

Title: Spring Almond Nutrient and Water Management Field Day

Exact Location: **Chico State University Farm** Address (will not direct you to correct parking): 311 Nicholas C Shouten Ln, Chico, CA

Direction to correct location on the farm: Enter the farm on Nicholas C Shouten Ln and stay straight on that road (DO NOT TURN RIGHT towards the farm office/pavilion/dairy unit. Continue straight past the greenhouses and continue straight towards the back of the farm (past a farm gate) and to the location circled by "Pecans" on the map.

Timing: Tuesday, March 26th (8:30-12:30pm)

9:00-9:30

1. Welcome! Grower/management conversation about goals and practices

Description: This session will 1) provide the method of developing the farm's almond nutrient plans, 2) describe how and when nutrients are applied, 3) discuss the results of the farm's nutrient and irrigation plan and implementation with detail about the farm's irrigation scheduling procedure.

Bio: Patrick Brown and Chico Farm Representative

9:30-9:50

2. ABC Overview and Almond Sustainability Program (large group talk)

Description: The ABC Overview and Almond Sustainability program will be an overview of the current industry as well as look at why being involved in the Almond Sustainability Program is so important to the entire supply from the grower to the consumer.

Bios: **Spencer Cooper** is the Senior Manager of Irrigation and Water Efficiency with the Almond Board of California. He works with growers on increasing water efficiency through adoption of irrigation technologies. Spencer also works with growers on the California Almond Sustainability Program.

Rotating Stations (10:00-12:30) each 30 minutes.

3. Forward tissue sampling and overview of BMP trials to manage N and water

Description: Dr. Brown will present results from trials in Almond contrasting different approaches to N management and the implementation of the improved nutrient management protocols (early leaf sampling, yield based nutrient forecasting, 4 R's nutrient management).

Patrick Brown is Professor of Plant Nutrition at the University of California, Davis specializing the management of nutrients in Almond, Walnut and Pistachio. With 30 years of experience at UC Davis, Dr. Brown has been at the forefront of research to increase the efficiency of nutrient use in orchards.

4. Barriers to Adoption of Nitrogen Management Practices

Description: This group share findings from grower surveys on nitrogen management collected by UC Davis in winter 2017 in the northern Central Valley. We will discuss nitrogen management practices and barriers to adoption of those practices. This will be an interactive session in which we facilitate conversation between participants on how these barriers may be experienced in their own operations. We will discuss the next stages in our research project, that includes a large survey UC Davis is

fielding in 2018 to ask growers across the Central Valley about barriers and motivations to adopting N management practices, including fertilizer, soil and irrigation management practices, and their experiences with education, outreach and policy around N management.

Bio: **Sat Darshan S. Khalsa** is a Project Scientist in the Department of Plant Sciences, UC Davis.

5. Incorporating pressure chamber readings to refine irrigation management

Description: Incorporating a plant-based irrigation approach like pressure chamber midday stem water potential readings can help refine irrigation management in tree crops. Background information on the technique as well as more advanced instruction on reading interpretation and the opportunity for hands-on practice with the device will be provided.

Bio: **Luke Milliron** is a UC Cooperative Extension Orchard Systems Advisor in Butte, Tehama, and Glenn Counties. His primary crop responsibilities are walnut, prune, and almond. Current research topics include variety and rootstock trials, nematicide efficacy and a whole orchard recycling demonstration.

6. Hull rots, their biologies and management

Description: The presentation will address three different hull rot pathogens (rhizopus, monilinia, and aspergillus), their management and, especially, the role of nitrogen and irrigation management in hull rot.

Bios: **Franz Niederholzer** is a UC Cooperative Extension Orchard Systems Advisor in Colusa, Sutter and Yuba Counties. His primary crop responsibilities are almond and prune. Current research topics include orchard spacing and rootstock trials, cropload management, orchard recycling and nutrient management.

5. High Frequency Low Nitrogen (HFLC) fertigation.

Description: Growers face emerging regulatory requirements to minimize nitrogen fertilizer use and to monitor impacts on groundwater quality. In this session, we will talk about an ongoing trial aimed to improve groundwater sustainability using "high frequency low concentration" (HFLC) fertigation in orchards, and by performing a comparative assessment of three monitoring models that measure nitrate loss to groundwater: 1.mass balance (NUE), 2.water and nitrogen flux monitoring in the vadose zone, and 3. groundwater quality monitoring.

Bio: **Christine Stockert** is a Staff Research Associate in Patrick H. Brown's lab at UC Davis specializing in soil-plant-atmosphere nitrogen dynamics. She is working with a team of scientist on a project designed to determine, at the management-relevant orchard scale, whether Best Management Practices (BMPs) achieve superior nitrogen use efficiency (NUE) in almond production while minimizing both, offsite emissions of N₂O, CH₄, and CO₂ and leaching of NO₃⁻ into groundwater.