

Marsha L. Campbell – CA-ASA Honoree
University of California Cooperative Extension Farm Advisor

Marsha grew up in Orange County, CA, when there was still a citrus industry in the county. She started at UC Davis intending to study writing and filmmaking but once she took an agronomy class she was hooked. Having had previous experience re-writing technical articles for a non-technical audience, working on campus with visual media and UCCE Specialist Ron Voss, and summer interning with a Farm Advisor, she set her sights on becoming a UC Cooperative Extension Farm Advisor, which combined her agronomy expertise with her skills in visual media. After finishing her BS degree in Plant Science (1976) and her Masters at UC Davis in agronomy/soils (1978), she immediately started working for UCCE as the field crops Farm Advisor in Stanislaus County, a position from which she retired 39 years later. Marsha was one of the first, if not the first, woman to be hired as a UC Farm Advisor, and the first to make it her career.



Her position in Stanislaus County covered mainly forage crops grown for dairy feed. This area of CA has some very sandy soils, uncommon in the rest of the Central Valley, and irrigation systems that are unique for their very high application flow rates. Early in her career Marsha identified several previously unidentified nutrient deficiencies in forages grown in the northern San Joaquin Valley such as potassium in alfalfa, sulfur in winter cereals and alfalfa, and zinc and phosphorus in corn. She evaluated and introduced several new oat varieties, one of which (Swan oats) continues to be popular after thirty years. Based on her work, the practice of growing high yielding, late-maturing winter forages for harvest in the boot stage of growth became established in the northern San Joaquin Valley.

In the 1980's most dairy producers didn't consider Johnson grass as detrimental to silage corn yield or quality. Marsha conducted trials proving this weed reduced both yields and feed quality. She conducted efficacy trials and successfully encouraged the manufacturer to register the herbicide "Accent" for controlling Johnson grass in corn. This interest in forage quality led to Marsha developing a method, validated with the help of Dr. P. Robinson (Animal Science, UCD), for keeping rumen fluid microbes viable during transport. Their published paper showing that rumen fluid could be successfully transported was instrumental in making this In Vitro Total Digestibility (IVTD) procedure for evaluating forage fiber digestibility an analysis routinely offered by commercial testing laboratories.

In the late 1990's nitrate in groundwater associated with dairy practices became a focus of concern in California. Sandy soils and high water tables where many dairies are located in Stanislaus and Merced Counties, were prime areas for nitrate leaching. Up to that time, the nutrient value of dairy lagoon water had not been appreciated and it was managed for disposal rather than as a nutrient source. Marsha and UCCE Specialist Thomas Harter documented nitrate leaching due to applications of dairy water on the sandy soils with high water tables. From that time Marsha focused her research and extension on developing innovative and practical methods of applying dairy manures, especially lagoon water, to cropland in ways that maintained yields while minimizing environmental impacts. This was a tremendous undertaking,

and not without controversy. The dairy/cropping system is complex with many interrelated variables and complex biological systems. Distributing lagoon water to fields and applying it to provide appropriate rates of crop nutrients uniformly in a surface irrigation system, and at the right time in terms of crop uptake, on a whole farm basis is more than daunting. Add to that scenario the variability among dairies in their physical facilities, feeding management, waste management, farming practices, land resources, and water supply and distribution infrastructure, one can easily appreciate her efforts and accomplishments in this area.

Marsha collected samples from scores of lagoons to demonstrate that the amounts of ammonium and potassium contained in lagoon water were significant and of value as a fertilizer (especially when fertilizer prices increased). To help growers and consultants calculate the amount of nutrients being applied, she developed reference tables and spreadsheets for use in conjunction with lab results to calculate run times and volumes for lagoon discharge. She spearheaded the use of portable insertion and other meters for measuring flow of lagoon water and throttling valves to adjust application rates. Working with engineers she developed training materials and conducted workshops specifically for dairy design engineers and flow meter installers.

Marsha developed and confirmed nutrient uptake curves for corn, winter silages, and Sudan grass to help with timing and rates of application. With UCCE Specialist David Crohn she worked on quantifying nitrogen mineralization rates from organic nitrogen in liquid and “dry” dairy manures in an effort to help account for mineralization over years from both liquid and solid manure applications.

Marsha organized scores of workshops for growers and consultants and developed numerous excel spreadsheets to help dairy producers, farmers, and consultants implement the information and practices she pioneered. Her website linked to these spreadsheets, reference tables, and articles. Her presentations were known for her enthusiasm and outstanding visuals. Dairies in the sandy soils on Stanislaus and Merced Counties have in particular been able to adopt practices Marsha developed while concepts and various components of her programs are useful throughout the San Joaquin Valley.

Marsha was a member of the UC Committee of Experts on Dairy Manure Management that wrote “Groundwater Quality Protection: Managing Dairy Manure in the Central Valley of California. She provided training for NRCS engineers and technical service providers. Prior to retiring she worked very closely with the Central Valley Dairy Representative Monitoring Program.

Marsha truly made her mark on the forage industry in the northern San Joaquin Valley. Her research and extension influenced the selection of varieties and fertilization practices of winter forages and alfalfa. Her work on utilizing dairy wastewater as a nutrient resource, while trying to minimize environmental impacts, greatly influenced and changed traditional practices.

In retirement, Marsha is enjoying camping, canoeing, and working on her mountain cabin. She has also taken up several new hobbies and is active in many church activities, including international ministry trips.