

2020 CA-ASA Honoree: LOUISE JACKSON

Professor and Cooperative Extension Specialist

Louise Jackson was a faculty member at UC Davis from 1989 to 2016, initially in the Dept. of Vegetable Crops, and later in the Dept. of Land, Air and Water Resources. As a Professor and Cooperative Extension Specialist, she balanced her time between classroom teaching on ecology and ecosystems, research on vegetable farms and upland rangelands, and outreach to a wide range of stakeholders on soil quality, agricultural biodiversity, and adaptation to climate change.



Louise Jackson, Professor and Cooperative Extension Specialist, UC-Davis

Louise grew up in the Santa Clara Valley in the 1950s and 60s. Her father was a geologist with the US Geological Survey and her mother was from a Basque ranching family. Her degrees are in Biology from UC Santa Cruz, and in Botany from the Univ. of Washington. Her PhD research was in the High Sierra, where she described the unique adaptations to drought in alpine plants, camping for months each summer near treeline.

In the 1980s, Louise recognized the opportunity to use her ecological training to solve environmental problems on farms and ranches. She had a NATO fellowship to study California's annual rangeland grasses in their Mediterranean homeland. She then was a Lecturer at UC Berkeley, and with a group of soil scientists, showed that soil microbes were excellent competitors with plants for nitrogen in rangelands. An unexpected outcome was highly efficient recycling of soil nitrogen and very little overall loss.

Louise next moved to UC Davis, shifting to work on high-input crops. Through the next 30 years, the physiology and ecology of tomatoes were a mainstay of her research program aimed at sustainable soil management and productivity. The availability of genetic resources for tomato made it possible to test ideas about traits affecting yield, water use efficiency, nitrogen acquisition, and mycorrhizae. This would become the basis for many projects generated by PhD students and postdocs in her UC Davis Soil & Root Ecology Lab.

Louise began her UC Davis faculty position in the Salinas Valley at the USDA-ARS station in 1989. Local lettuce growers saw the potential for 'sustainable agriculture' and supported her collaborative research with the farm advisors in Monterey County. As an example, on-farm studies on cover crops to reduce nitrate leaching also considered the effects on yield and quality of subsequent vegetable crops, potential disease and pest problems, and economic analysis.

In 1995, back at UC Davis, her lab grew to include many talented graduate students and postdocs. The next few years were a time of intense learning and creativity, spurred on by motivated students and faculty collaborations. Using novel tools to apply ecological concepts to agricultural research, her research ranged from on-farm experiments with stable isotopes, gene

expression, and growth measurements to understand tomato root responses to nitrogen, to utilizing landscape transects and GIS to determine spatial variation in soil quality, according to the type of crop or rangeland system.

In the early 2000s, 'ecosystem services' was introduced as a framework for quantitatively assessing the value of natural ecosystems. Louise's interest was in participatory approaches within communities to evaluate biodiversity and ecosystem services across agricultural landscapes. She led an international network on agrobiodiversity for the DIVERSITAS program for many years.

Meanwhile, the state of California initiated an assessment program to forecast climate change and identify ways to decrease greenhouse gas emissions. For several years, Louise led a group of colleagues in a series of projects showing the vulnerability of agriculture to increased temperature and drought, and the value of preserving farmland to minimize greenhouse gas emissions and support agricultural communities. This work was a justification for creation of the Sustainable Agriculture Land Conservation Program, which allocates several million dollars each year to prevent urbanization of agricultural lands. She also contributed to the development of California's climate change programs for agriculture, recognizing the potential for win-wins for both agriculture and the environment.

During her career, Louise gave frequent presentations, published many scientific papers, and received several awards. She would like to express her gratitude to the dozens of farmers and ranchers who participated in field experiments, as well as to UC Cooperative Extension, NGOs, and industry for their support over the years. She is happy that young scientists in her lab group have gone on to become leaders in agricultural ecology in the West, as professors at UC Berkeley, UC Davis, Univ. of Nevada, Univ. of British Columbia, and at CDFA, USDA-ARS, and in other states and countries.

Louise retired in 2016 and now lives in the Sierra Foothills, where she is active in watershed issues. She likes to visit her family's ranch and hike in the Sierra Nevada. She is interested in new developments in California agriculture and stays involved in minor ways.