Regenerative or Sustainable Systems Agriculture Advisor

**Position:** This position is proposed as the first of a future cluster of regenerative/sustainable systems agriculture advisors working across the state. The advisor will serve clientele in the Central Valley (Mariposa, Merced, and Stanislaus Counties). The advisor will develop science-based information and farming practices that support a more holistic systems-based approach to commercial and small-scale agriculture production in organic or conventional annual crops, tree crops, and livestock production systems. Promoting a more integrated approach to agriculture production by testing regenerative agriculture practices that increase climate resilience and ecosystem sustainability – improving soil health, species diversity, beneficial and pollinator insect populations, and carbon sequestration—subsequently farm productivity and economic returns, while reducing the use of chemical inputs and water need. The advisor will develop, implement, and test regenerative agriculture practices appropriate to California – including but not limited to no or minimum till, mixed cropping systems, mixed farming systems (crops and livestock) and cover crops. The outreach program will focus on sharing proven innovative practices that promote sustainability and economic returns. In collaboration with other advisors, specialists, and external networks, the advisor will evaluate mixed farming practices viability and concerns, and test solutions. This will include developing appropriate equipment for mixed production systems, researching food safety concerns and solutions in mixed livestock cropping systems, evaluating disease and pest reduction and nutrient enhancing or balancing potential of integrated farming systems.

The minimum qualification is a master’s degree in agricultural sciences, sustainable agriculture, sustainable farming systems, integrated farming systems or related fields. Experience working in organic or conventional mixed farming systems, or integrated farming systems, and multiple cropping systems is desirable. As the first of the foreseen cluster of regenerative ag advisors this person must be an innovator, visionary, self-starter who can pave a way for a new approach to agriculture production and extension. A collaborator, a coordinator and seeker of knowledge. This position will report to the Mariposa County Director. This position will advance the condition changes ‘Building climate-resilient communities and ecosystems’ and ‘Safeguarding abundant and healthy food for all Californians.’

**Justification:** Monoculture cropping, and single species livestock production are the predominant production systems, which have over time created nutrient imbalance in soils that increase demand for fertilizers; low soil organic matter which reduces infiltration rates, increases runoff and irrigation water needs; and increases in need pesticide application that compromises beneficial insect populations; overall threatening agriculture sustainability. The growing climate crisis, the associated frequent drought as well as environmental legislation limiting water allocations for agriculture is leading to more land going fallow and perennial crops taken out of production. Now, there is an urgent need to explore alternative more innovative practices that takes a more systems approach to promote climate resilience agriculture.

The proposed 3 county area covered by this position has more than 3.3 million acres under crops and rangelands, and a farm gate value of more than about $3 billion from crops and $1.4 billion from livestock production. The economy of this region hinges on sustainable agriculture production. Regenerative agriculture practices are moving away from single commodity-based production to a more integrated approach to farming, creating an opportunity to restore the natural ecosystems balance and improve environmental sustainability and climate resilience. Farming communities are embracing the practices based on promised water requirement reduction for crops production, more carbon sequestration and increased income. With the onset of California’s Sustainable Groundwater Management Act (SGMA) some water districts in the Central Valley are threatened with a 20% reduction in irrigation water allocations. These levels of water cuts will mostly impact viability of small-scale, family-owned farms, if more proactive measures to improve water use efficiency are not taken.
Initial results from regenerative agriculture research, in California, showed up to 30% increase in soil organic matter, 6X higher infiltration rates, 6X more insect species and similar yields (Jonathan Lundgren). Regenerative agriculture will present better returns for producers on the growing Ecosystem Service Market, reduces water needed for irrigation, which may in turn reduce farmland going fallow or undergoing perennial crop removal. Regenerative or system-based agriculture improves efficiencies in on-farm by-product recycling e.g. (crop residues for livestock feed and manure for organic fertilizers), reduces external inputs (fertilizers, feeds, energy); and provide opportunities for multiple year-round income sources (e.g., different crops, eggs, meat sales, and honey).

Many organizations and Universities in California (CSU Chico, CSU SLO, and UC Davis) and worldwide have jumped into working in this area. Without advisors dedicated to working on this approach helping with on-farm research and trials, producers are experimenting with practices that are not based on robust science specific to California ecosystems. With the promise this approach has on agriculture sustainability it will be a missed opportunity for ANR to not be the leader in this area both in research activity and outreach.

**Extension:** This position will extend science-based information to clientele on regenerative agriculture systems to enhance climate resilience, diversify production, and improve whole farm profitability. The position will serve producers venturing into a niche integrated production system, serving farmers and ranchers in conventional and organic farming. Extension tools should include workshops, field days, seminars, social media, other web-based resources, blogs, podcasts, and producer-oriented and peer-reviewed publications.

**Research:** Applied research will be strongly based on identified needs, issues, and concerns, since this will be a new area of focus. A robust needs assessment will be critical to identify issues and priority areas as well as identify more collaborators being the first such position. Research topics could include no or minimum till, best cover crops, viable integrated cropping practices, mixed farming practices, and best transitional strategies to regenerative agriculture. Collaboratively investigating effects of proposed or researched practices will be important. Collaborative research could include food safety concerns and possible solutions; appropriate equipment for recommended integrated farming practices, differences in soil characteristics and water needs between systems. Cost benefit and environmental analysis would be very critical to better understand how these practices compare to monoculture systems.

**ANR Network:** UC ANR academics in the areas of Commodity Crop, Livestock and Natural Resources, IPM, Sustainable Agriculture, Research and Extension Program (SAREP), UC’s Organic Agriculture Institute, Climate Smart agriculture, California Naturalist Program’s Climate Stewardship, Diversified Farming and Food Systems Program Team, Small Farm Workgroup, the Ag Production Management Systems Program Team. The advisor can be a member of 3 Strategic Initiatives (Sustainable Natural Ecosystems, the Sustainable Food Systems Initiative, and Endemic and Invasive Pests and Diseases).

**Collaborators External to ANR:** The Advisor will collaborate with all crop commodity boards and Cattleman’s Association, NRCS, local RCD, UC Merced, CSU Chico’s Center for Regenerative Agriculture and Resilient Systems, CSU Fresno, local Farm Bureaus, Water Districts, State Department Agencies (to understand and inform policy), CAL CAN – Cal Climate and Agriculture Network and agencies that promote keeping small farmers on the land.

**Support:** The position will be supported by Mariposa County which will provide funding to cover transportation, supplies, equipment, and office space.

**Other support:** Possible funding sources include Commodity Boards, RREA, Funding Climate Resilience, California Cattleman’s Association, Healthy Soils Program, CDFA, USDA, and Western SARE.

**Headquarters and Coverage Area:** Headquartered in Mariposa County and serves Merced and Stanislaus Counties.

**Developed by:** Proposed by Fadzayi Mashiri (Director Mariposa County) with input from Gail Feenstra (Director of the UC ANR Sustainable Agriculture Research and Education Program (SAREP), James Farrar (Director, Statewide IPM Program), and Houston Wilson (Director of UC Organic Agriculture Institute).