We are recruiting for 1 PhD student position to start in the Fall of 2021 to work on exploring the socio-environmental implications of a sustainable solution for our food and energy systems. For the last seven years, we have been studying the potential for co-locating agriculture and photovoltaics "agrivoltaics " as an untapped opportunity to simultaneously increase food and energy production while reducing water use.
The position includes funding for four years through a combination of research and teaching assistantships.

The challenge

We have significant vulnerabilities across our food, energy, and water systems – all of which could undermine societal resilience in light of growing populations and climatic change. Food systems are vulnerable to projected climatic changes – primarily alterations in the timing and amount of precipitation and rising air temperatures, and these environmental pressures are already straining food production. At the same time, renewable energy production from photovoltaic (PV) is vulnerable to these same warming trends that threaten food systems. Average PV panel efficiencies decrease by ~0.6% for each degree above 25°C. Despite this vulnerability, PV installations have increased exponentially in recent decades. With growing demand for ground-mounted PV, land-use conflicts for these two primary needs – food and energy – have arisen around the country. Is it possible to achieve sustainable development while simultaneously improving both food and renewable energy production security and reduce water use? An 'either-or' discourse between food and PV energy production unnecessarily compounds issues related to allocating space, water, and capital for development of resilience strategies.

Our efforts towards solutions

Improving resilience in food and renewable energy production and water use – critical sustainability metrics – requires research from a socio-environmental systems perspective that resolves bio-technical trade-offs and opportunities at the field scale, while also rigorously assessing the socio-political barriers and how to overcome them at the level of individuals and of broader policies. For the last five years, we have been studying the potential for co-locating agriculture and photovoltaics " agrivoltaics " as an untapped opportunity to simultaneously increase food and energy production while reducing water use. With this PhD position, we will engage with more of the social science research questions associated with pathways and barriers to agrivoltaic adoption.

Benefits for the student

* ***Interdisciplinarity in practice***: **This student will be co-advised by Dr. Andrea Gerlak** – a prominent researcher on the causes of and innovative solutions to environmental challenges and a leader in environmental policy and planning – **and Dr. Greg Barron-Gafford** – a pioneer in dryland agrivoltaic research and an ecosystem scientist. This project will provide students an opportunity to be part of a larger interdisciplinary team and learn about integrating physical and social sciences in an applied setting, working on a real-world problem.

* ***NSF-funded program***: This position includes tuition, graduate stipend, summer employment, and travel to research sites.

**** Broad spatial context:*** We are working with food producers in California and Colorado, in addition to existing efforts in Arizona, and the student will work across this region to capture the complex and dynamic potential barriers and opportunities for adoption of agrivoltaics as a climate adaptation solution.

Preferred qualifications

We are looking for an incoming student with experience broadly in the human dimensions of the environment, including research experience and familiarity with environmental policy and governance. The ideal candidate will have prior experience working with stakeholders and conducting interviews, and have insights into climatic pressures on food and/or renewable energy systems. Experience in dryland ecosystems is a plus.

Further details

We are a diverse research group looking to make meaningful change in the world. We are committed to fostering an inclusive learning and working environment that embraces the diversity of experiences and interests represented in our communities and the broader world.

You can learn more about our work at: http://www.TheSolarFarm.org/

You can also check out a short video about our research across Arizona and Colorado at: https://tinyurl.com/agrivoltaics

Reach out to us asap to learn more:

Andrea K. Gerlak: agerlak@arizona.edu
Greg Barron-Gafford: gregbg@arizona.edu

Apply! The deadline for fall admission is **January 19th** for both domestic and international applicants: https://geography.arizona.edu/maphd-program/apply