Farmers' Resilience to Socio-Ecological Change in Central Arizona

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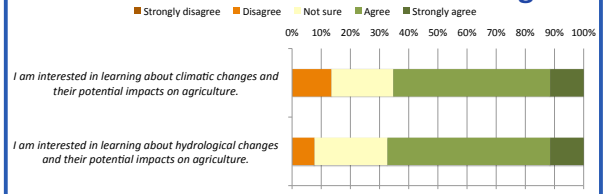
Are farmers resilient to socio-ecological change?

Arizona's future water resources and water management are likely to be challenged by climate variability, change, and population growth.[1,2,3] Nevertheless, it is not clear the extent to which farmers—who consume 70% of the state's water resources[4]—are concerned with water scarcity, or perceive themselves capable of responding to hydro-climatic changes.[5,6] Effective responses depend in part on aspects of cognition, attitudes, and perception.[7]

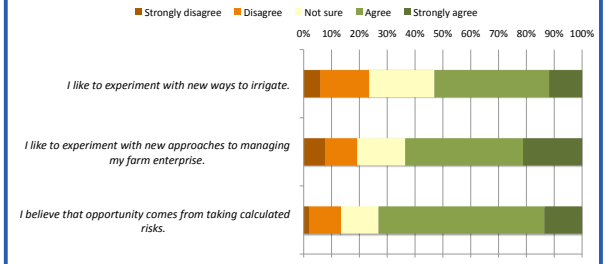
Methods. Following Marshall and Marshall,[8] in an online and mailed survey (n=52) we measured the social resilience of irrigated farmers in Central Arizona (CAZ) through the concepts of occupational flexibility, attachment to place, attitudes about risk, perception of self-efficacy, and interest in learning and engagement with knowledge networks. Here, we present select initial results of this survey.

Farmers are interested in learning



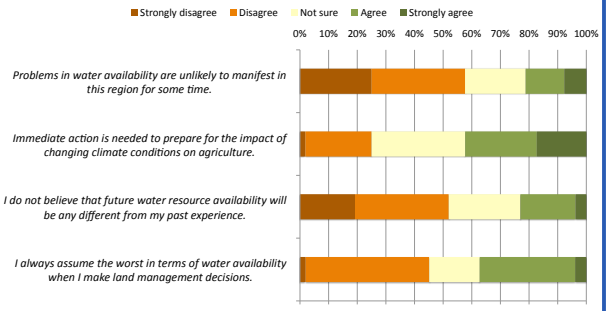
- ~66% of respondents are interested in learning about climatic and hydrological changes and their potential impacts on agriculture.

Farmers are experimental



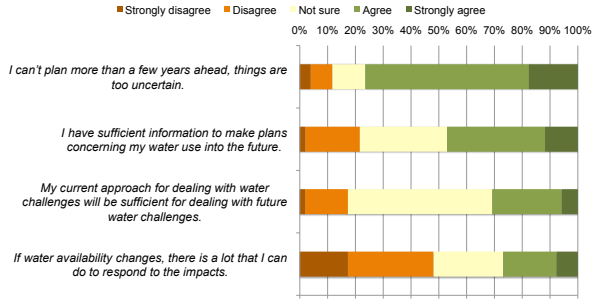
- 53% and 64% of respondents are interested in experimenting with irrigation and farm management practices, respectively.
- 73% see opportunity as coming from taking calculated risks.

Farmers are concerned about water risk



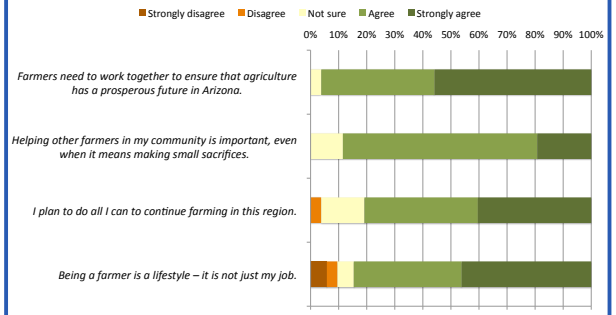
- 58% of respondents believe problems with water availability are likely to manifest Central Arizona sooner rather than later.
- Despite concern about water risk, they are divided over whether immediate action is needed to prepare for climate change impacts.

Farmers are uncertain about ability to manage drought



- 75% of respondents reported that uncertainty limits their ability to make long term plans.
- 52% feel unsure that their current strategies for dealing with water challenges will be sufficient in the future.

Farmers expressed strong attachment to place and community



- Respondents expressed strong commitment to their profession, the region, and the agricultural community.
- 88% believe that farmers must work together to ensure a prosperous future for agriculture.

Farmers appear to manifest characteristics of social resilience

- The majority of respondents are interested in learning, seek advice from neighbors and universities, and express strong attachment to their community. Many demonstrate an entrepreneurial attitude. They are more concerned about future water risk than we expected.
- While attachment to place has been considered a potentially limiting factor for adaptation, in this case it may signal a willingness of the farm community to grapple with pending challenges associated with climate change.

Our findings indicate that CAZ farmers are capable of responding to new stressors in flexible and entrepreneurial ways. However, farmers may need improved information and targeted support on adaptation options. Instead of representing a barrier to change, place attachment here may be indicative of capacity to invest and innovate in order to stay viable.

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