Agriculture Around a Desert City: Perspectives on Decisions for Water, Land, and Livelihoods

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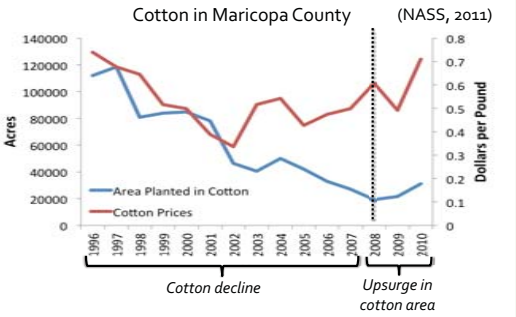
Farming Around A Desert City

Climate change and population growth have far-reaching implications for water resources in the arid American Southwest. The Groundwater Management Act of 1980 (GMA) codified the goal of safe yield of groundwater (extraction=recharge) by 2025 in the Phoenix Active Management Area (AMA). A component of the GMA is phasing out agriculture as urban population grows. Despite rapid urbanization in Central Arizona, agriculture still accounts for 47% of water use in the Phoenix AMA (ADWR, 2010).

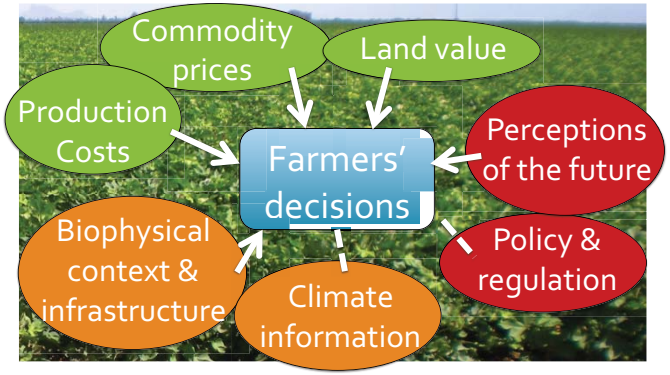
Using agricultural census data and semi-structured interviews within an institutional analysis framework, we examined how the current recession, rise in commodity prices, and drought have influenced cotton farmers' decisions in the Phoenix AMA, and what they imply for the future of agriculture and water management in Central Arizona. We conducted 22 interviews with farmers, water managers, input suppliers, water lawyers, climate experts, and extension agents from July-December 2011.



"Two years ago if you were getting $0.80 for cotton that was a lot. Now it's $1.00 plus… During the last few years there was a steep decrease in the cotton acreage here. But now you hardly find any fallow lands, and growers are trying to get as much out of the land as they can, whether they own it or lease it."
–Arizona Cotton Expert

Commodity Prices & Land Value

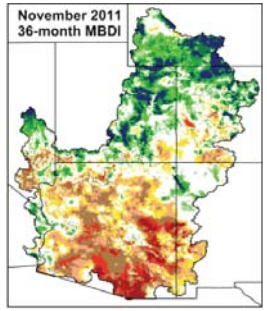
- **Finding:** Retirement of agricultural land and water rights was the norm until recently. Since 2008, high commodity prices and a lagging housing market have motivated many farmers to lease back land and expand production.
- **Take-away:** The increase in leasing demonstrates that farming continues to be viable. Tenure uncertainty, however, could discourage investment in water conservation technology.



"Farmers in the lower Colorado River Valley have a limited appetite for climate services information… They are more interested in it being hot and dry… as long as the water is still coming down the Colorado and their CAP allocation is stable, and for the most part it is because of their water rights. So it becomes a-climatic, as long as the overall system is still delivering water the way it's designed to."
– Arizona Climate Expert

Drought & Farm Water Use

- **Finding:** Drought conditions do not seem to influence farmers' decisions about water use. A diversity of water sources (CAP, groundwater, local surface water) and infrastructure have made farmers robust to climatic variability. Climate change is not a priority concern.
- **Take-away:** Central Arizona has not yet experienced climate-related water scarcity. Water policies allow farmers to use their codified rights to water, regardless of availability, but do not guarantee that water prices will be reasonable for farmers.

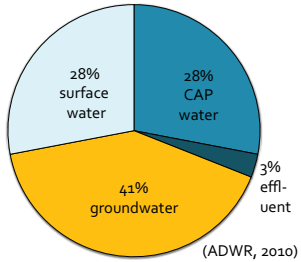


Moisture balance drought index across the Colorado River Basin. Note drought (brown/red) in Phoenix area, and wetness (green/blue) of the northern basin (ASCO, 2010).

"I think agriculture will continue for many, many years… The farmers are pretty much set with their water rights… they can literally farm forever. I don't think there is going to be a rapid demise of farming because there is a demand to access the water rights that are currently being utilized by farmers for agricultural production."
–Arizona Water Expert

Policy & Perceptions of the Future

- **Finding:** Policy has been developed with the assumption that agriculture will absorb "excess" CAP water in near-term, while over the long term land will be retired from agricultural use, making CAP water available for urban growth.
- **Take-away:** If farmers' access to CAP water decreases (high prices, increased urban demand, and/or low availability), farmers may increasingly rely on groundwater.



Agricultural Water Sources in Phoenix AMA

Conclusion

The expansion of area planted since 2008 demonstrates the vitality and dynamism of agriculture in Central Arizona, and calls into question the assumption of a linear decline in agriculture. Leasing land from developers is one way farmers are making use of current market opportunities. This flexibility, however, may discourage long-term investment in water conservation. Our analysis points to the diversity of interacting factors that influence the agricultural sector, and the need to understand farmers' behavior to enhance the sustainability of agriculture and water resources in Central Arizona.

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