

IMPACTS OF DROUGHT ON SMALL-SCALE AND SOCIALLY DISADVANTAGED FARMERS IN THE SAN JOAQUIN VALLEY

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Impacts of the Previous Drought on Small-Scale Farms

The 2012 – 2016 California drought had considerable impacts on small-scale farms in the San Joaquin Valley, particularly for immigrant and refugee farmers with limited access to capital and other resources. In 2015, we conducted a survey of 68 Southeast Asian small-scale farmers in Fresno County to learn more about the challenges they faced during the drought. Some highlights of our results were:

- Typical wells were shallow (80 – 120 feet deep)
- 96% of farmers relied entirely on groundwater
- 22% of farmers had lost their well
- 51% of farmers had a reduced flow rate when pumping groundwater
- 87% of farmers reported higher electric bills

Without intervention during current drought conditions, these farmers may again face the loss of wells, reduction in water available to irrigate crops, and higher energy costs, with potential mental health consequences and impacts on food security for immigrant communities.



Figure 1. Flood irrigation on a Southeast Asian diversified vegetable farm in Fresno County. During drought, lower flow rates increase pumping time needed to move water all the way down a row.

Policy Recommendations:

- **Fund a well mitigation program** to provide direct relief to small-scale farmers needing to deepen a well or drill a new well.
- **Provide zero-interest loans for well drilling on small-scale farms** with technical assistance and flexible loan requirements through existing nonprofit organizations offering loan services.
- **Include lowering pump shafts and drilling deeper wells for small farms in SWEEP** (State Water Efficiency and Enhancement Program) in combination with water and energy efficiency improvements.
- **Expand existing programs for domestic well improvements** to support use of a domestic well to irrigate small acreages.
- **Incorporate incentives or credits for crops with lower water use** into grants, loans, or other assistance programs.
- **Coordinate with PG&E to make pump efficiency rebates and on-bill financing for pump repairs more accessible** to small-scale farmers, particularly those needing bilingual assistance.
- **Support technical assistance providers** to assist small-scale and socially disadvantaged farmers in accessing resources and support, such as resource conservation districts, nonprofit organizations, and extension programs.

Southeast Asian Farms in Crisis in Fresno County, CA

Fresno County is home to a large population of Southeast Asian refugee farmers with diversified vegetable farms of 0.5 – 60 acres. They sell at farmers markets and wholesale, and also supply culturally important produce to extended family and local vendors. In 2007, a UCCE survey identified over 1300 Southeast Asian farmers in Fresno County alone, approximately 900 of whom were Hmong. Sales of Asian specialty vegetables in Fresno County average around \$17.5 million annually.

In 2014, Hmong bilingual staff at Fresno County offices of the USDA and the University of California Cooperative Extension (UCCE) received calls for emergency assistance from farmers whose wells were going dry, some on the verge of suicide. Following an emergency meeting convened by USDA, we began a survey to determine needs and challenges and potential methods of assistance.

Survey of Drought Impacts

Loss of wells and reduced flow rate

In our survey, 22% of farmers reported that their well had gone dry, and 51% of farmers reported a reduction in their irrigation water flow rate. 32% of farmers found it difficult to irrigate at the same time as their neighbors, indicating competition for groundwater moving horizontally in the aquifer. Typical wells were 80 – 120 feet deep, compared to new wells being drilled in the area of 250 – 350 feet.

Energy bills and longer pumping times

87% of farmers reported higher electric bills during the drought. Dropping groundwater levels resulted in more energy required to lift groundwater to the farm. Lower flow rates of irrigation water required longer pumping times, especially for farms using flood irrigation where water must travel to the end of a row. In our survey, 52% of farmers relied on flood irrigation in furrows between crops. Additionally, many small-scale farms have older pumps with lower efficiencies. These factors likely combined to increase utility costs for farmers in our survey.

This policy brief is drawn from a paper submitted to California Agriculture and currently under review: R. Dahlquist-Willard, J. Sowerwine, X. Chang, D. Bostic, and M. Yang. Dropping groundwater levels during drought threaten long-term viability of small-scale Southeast Asian farms in Fresno County.



Figure 2. Turbine pump on a small-scale Southeast Asian farm, before and after improvements to increase energy efficiency funded by SWEET

Need to Expand Current Resources

Funding for new or deeper wells

Current resources to deepen or drill a new agricultural well include loans from USDA or nonprofit organizations such as California FarmLink or Feed the Hunger Foundation. Programs such as the Fresno County Housing Assistance Rehabilitation Program (HARP) or Self-Help Enterprises offer zero- or low-interest loans to deepen domestic wells. For very small-scale farms, a domestic well could be used to irrigate a small acreage next to a home. However, small-scale farmers may have difficulty meeting qualifications such as collateral, credit, or income requirements for these programs. These programs could be expanded and modified to increase resources available to small-scale farmers facing well loss. A well mitigation program or other direct relief funding, combined with technical assistance, would help address barriers to access.

Funding for pump efficiency improvements

The State Water Efficiency and Enhancement Program funds pump repair or replacement to improve energy efficiency as well as water savings improvements such as conversion to drip irrigation. Also, PG&E has had programs such as rebates for repairing small (<25 hp) pumps and zero-interest loans for pump repairs through on-bill financing. Expanding funding for SWEET targeting small farms and providing additional technical assistance for PG&E programs could assist in lowering energy bills during drought for small farms.