Agriculture Water Optimization

February 8, 2023

Agriculture water optimization provides immediate and improved resilience to producers and builds the foundation of flexibility, infrastructure, and methods required to make more water available for Great Salt Lake.

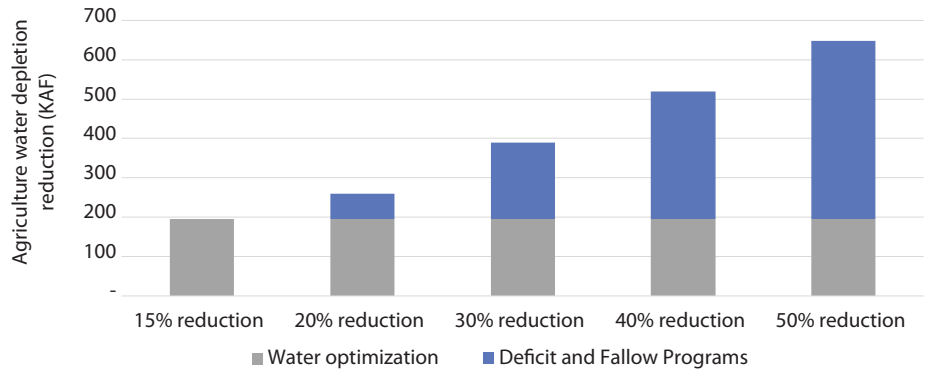
Summary

Reducing agriculture depletions annually by 10-15% through agriculture optimization makes farming more resilient to drought and could supply nearly 180,000 acre-feet of water annually to the lake without reducing crop production. It could be achieved through strategic agriculture water optimization that includes improving conveyance systems that deliver water to the farm, and a variety of on-farm improvements in water, crop, and soil management. Greater reductions in depletion are possible but would require compensated strategic deficit irrigation or fallowing. This optimization comes at various costs ranging from about $60-400 per acre-feet of water per year, based on which practices are implemented.

Key Facts and Insights

- **Begin with on-farm optimization** - Reductions of approximately 10-15% in water consumption could be achieved through on-farm optimization without reducing production.
- **Additional gains are possible** - Voluntary, temporary, and compensated short-term water banks and leases that may facilitate deficit irrigation/fallowing programs, which might be necessary to help gain additional water for the lake, depending on the degree of effectiveness of other options.
- **Difficult and costly task** - Reducing agriculture water depletion is difficult without reducing crop production. Most water used in agriculture is "beneficially used" through crop consumption or returns to natural systems. Agricultural optimization requires capital-intensive changes that often exceed producers' capacity to perform without assistance.
- **Other pieces required** – Quantification of water savings, as well as other legal mechanisms, including water leasing and/or banking, and shepherding will be required to ensure agricultural optimization delivers water to the lake.

Figure 16: Estimated Reductions in Agriculture Depletions through Optimization and Deficit/Fallow Programs



Note: Proposed water optimization would have minimal damage to food production
Source: Analysis by Matt Yost, 2022

Expert Assessment Scorecard Results

	Low				High
Benefits					
Water brought to the lake	1	2	**3**	4	5
Air quality improvements	1	2	**3**	4	5
Biological health	1	2	**3**	4	5
Costs, Challenges, and Adaptations					
Financial cost	1	2	**3**	4	5
Agriculture changes	1	2	3	4	**5**
Extractive industry changes	**1**	2	3	4	5
Cultural shift	1	2	3	4	**5**
Feasibility					
Speed of implementation	1	2	3	**4**	5
Legal/regulatory feasibility	1	2	3	**4**	5

Source: Great Salt Lake Strike Team

Policy Options and Tradeoffs

On-farm optimization could save up to 180,000 acre-feet per year (assuming 15% reduction in total water use) with minimal crop losses. This assumes that farmers willingly participate and are compensated for loss.

Policy Options

- Increased financial and technical support for on-farm optimization
- M&I water conservation and other solutions could help offset agriculture reductions
- Investment in water measurement would aid in the refinement of what the possible and feasible reductions are for agriculture
- Enhanced capacity of Division of Water Rights to rapidly and accurately track and approve use changes

Tradeoffs

- Lost agriculture production and profit
- On-farm optimization or fallowing incurs high ongoing costs
- Reductions in Utah food security
- Damages rural communities and industries that rely on agriculture