
UTAH
DNR
WATER RESOURCES

November 7-8, 2023

UACD Convention

Agricultural Water Optimization Task Force

Aaron Austin | Task Force Admin Support
Division of Water Resources

Water-Related Land Use Program

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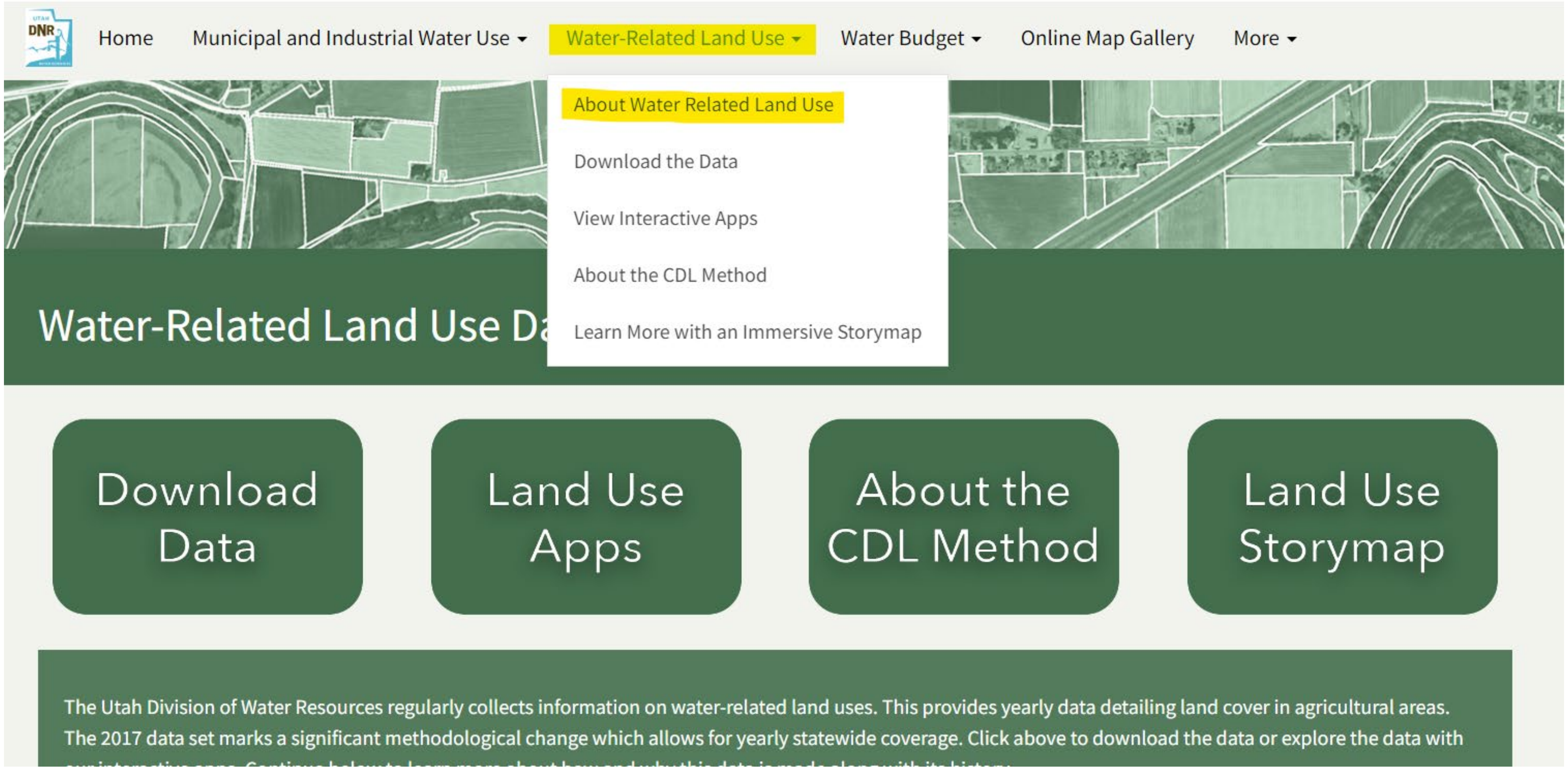


water.utah.gov/opendata

Accomplishments of the Ag Water Optimization Task Force

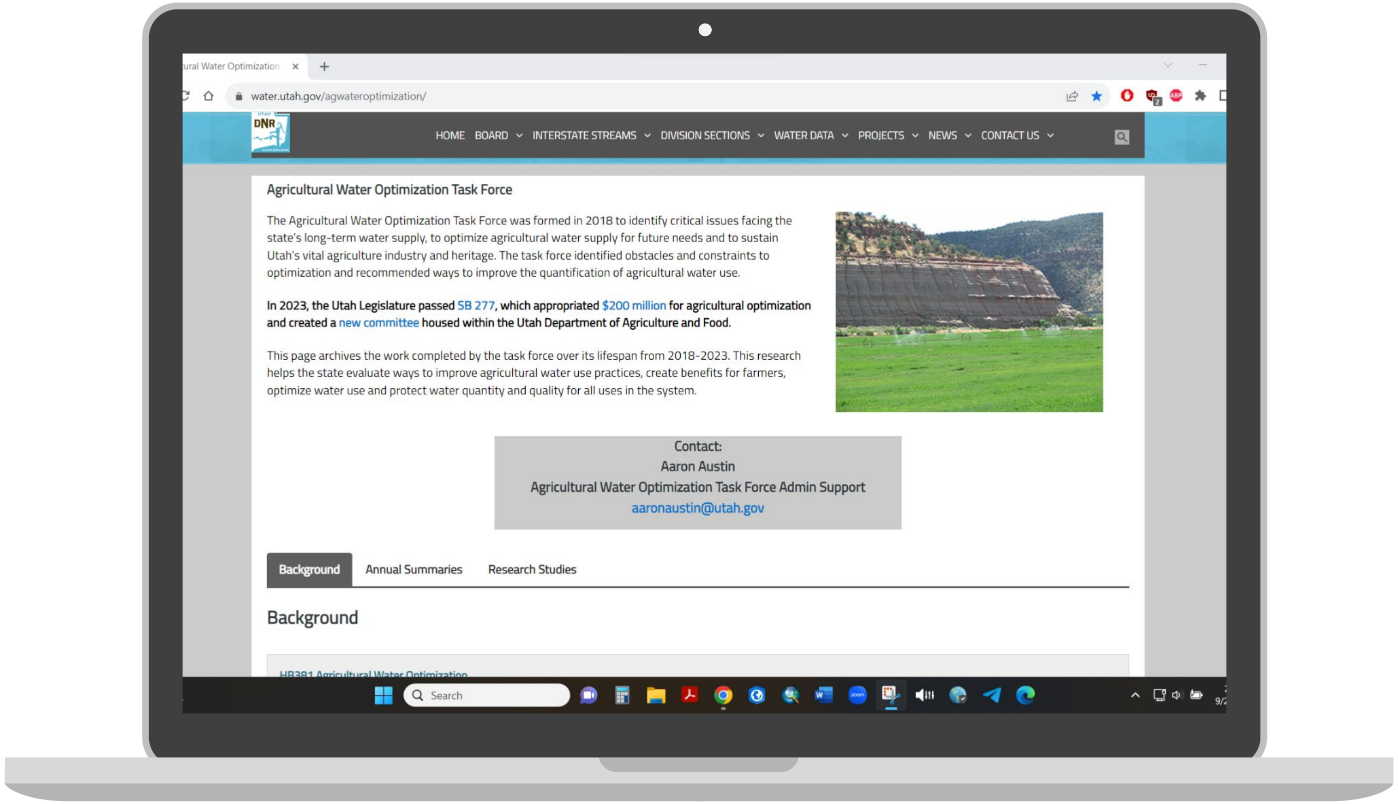
"Oh, me? I make e-mails."

UTAH DNR WATER RESOURCES

Where can I find out more?

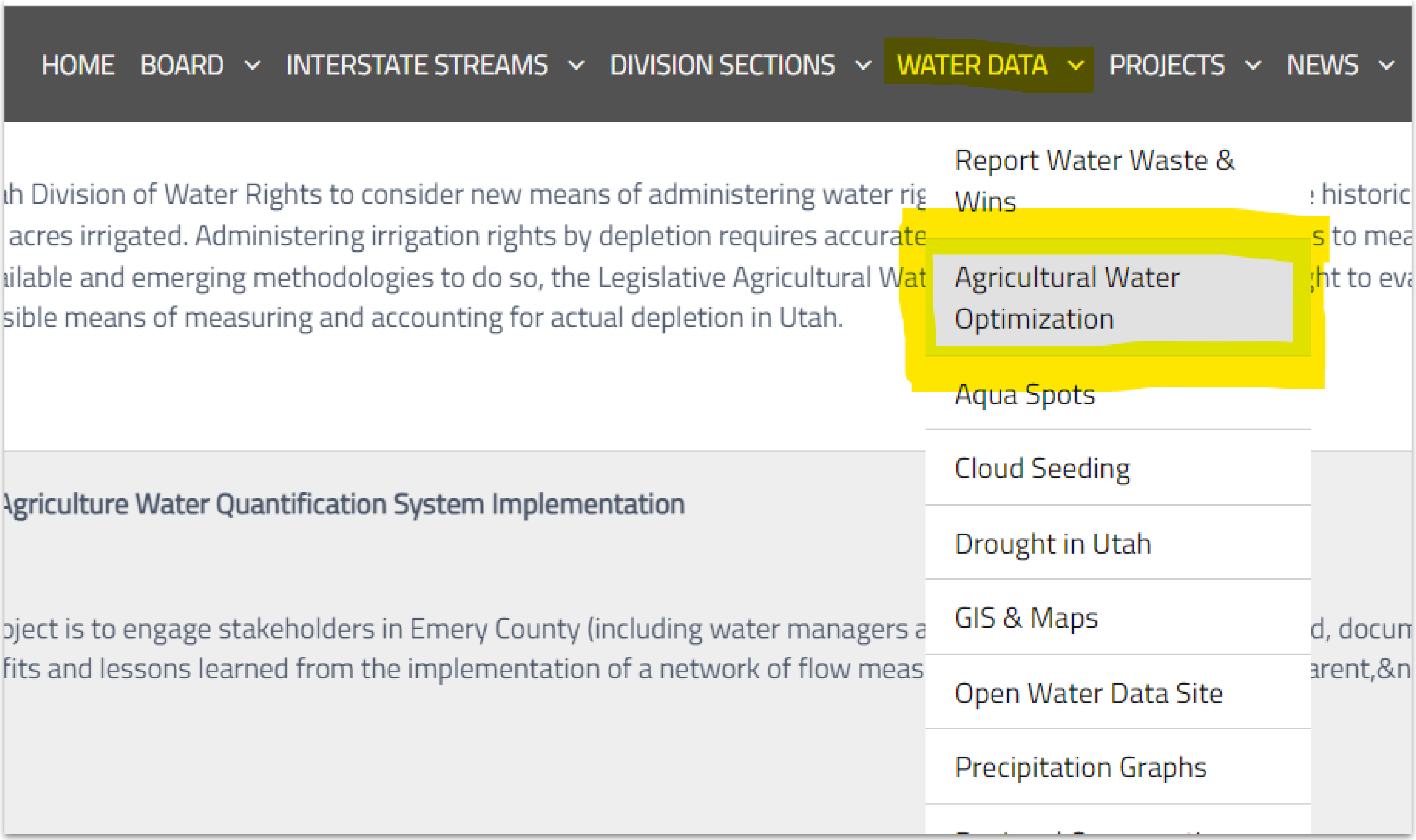
Website

- Background
- Summaries
- Reports



water.utah.gov/agwateroptimization/

UTAH DNR WATER RESOURCES



water.utah.gov

Key Conclusions (2018-2021)

1. Utah must innovate and adapt to address acute drought and chronic water supply and demand challenges

Key Conclusions (2018-2021)

2. There are readily available and proven tools and approaches that can be implemented to incentivize and make progress toward agricultural water optimization and resiliency

Key Conclusions (2018-2021)

3. The State of Utah must invest now to preserve agriculture in Utah and enable the growth that is envisioned.

How were those conclusions reached?

- Research Plan
- Case Study: Ag Water Quantification Systems
- Trial: Stacked Conservation Practices
- Literature Review
- Studies
  - Depletion Accounting for Irrigation Water Rights
  - Water Savings from Drip Irrigation

Research Plan

Identify and initiate research to:

1. Optimize agricultural water supply and use
2. Improve quantification of agricultural water use

Research Plan

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1. Optimize agricultural water supply and use
2. Improve quantification of agricultural water use

2019 Research Plan for Agricultural Water Optimization in Utah

JACOBS

Memorandum

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Subject	**2019 Research Plan for Agricultural Water Optimization in Utah**
Attention	Agricultural Water Optimization Task Force
From	Jeff DenBleyker
Date	February 22, 2019

House Bill 381 formed the Agricultural Water Optimization Task Force to identify and initiate research that identifies how the state could 1) optimize agricultural water supply and use and 2) improve quantification of agricultural water use on a basin level. House Bill 381 further directed that recommendations to accomplish these goals should "maintain or increase agricultural production while reducing the agriculture industry's water diversion and consumption." The Task Force summarized these duties in the form of one question encapsulating the primary objective and focus for research:

> ***What water and agricultural management practices can maintain or increase agricultural production while minimizing impacts upon water supply, water quality and the environment?***

The objective of this memorandum is to outline a research framework designed to answer this question at the both the basin and on-farm scale in Utah.

1. Research Needs

All eight task force members and nine people representing water users, industry, researchers and state agencies attended a workshop on January 18, 2019 with the goal of discussing and identifying research needs that would serve to answer the program objective. The task force heard presentations from the Division of Water resources, Division of Water Rights, Utah State University, Clearwater Supply (industry), and the Rural Water Technology Alliance (nongovernmental organization) regarding existing irrigation and water management practices, observed challenges and important research needs. The Task Force then summarized observed challenges and developed its own list of research needs. Meeting attendees then provided an initial prioritization of those needs. Table 1 provides a summary of the identified research needs and how they were prioritized by Task Force members and workshop attendees. Each attendee was able to independently vote a total of three times in this exercise. One Task Force member was excused and had to leave the workshop prior to the prioritization exercise.

2. Research Framework

The Task Force was charged with the responsibility to identify and oversee the studies required to address the question listed above. This question represents the overall program objective.

water.utah.gov/agwateroptimization/

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Background | Annual Summaries | Research Studies

Background

HB381 Agricultural Water Optimization

Initial legislation forming the task force and providing funds for research.

HB39 Agricultural Water Optimization Task Force Amendments

Legislation amending the makeup of the task force and clarifying funding.

Utah Department of Agriculture and Food (UDAF) Water Optimization Funding Program

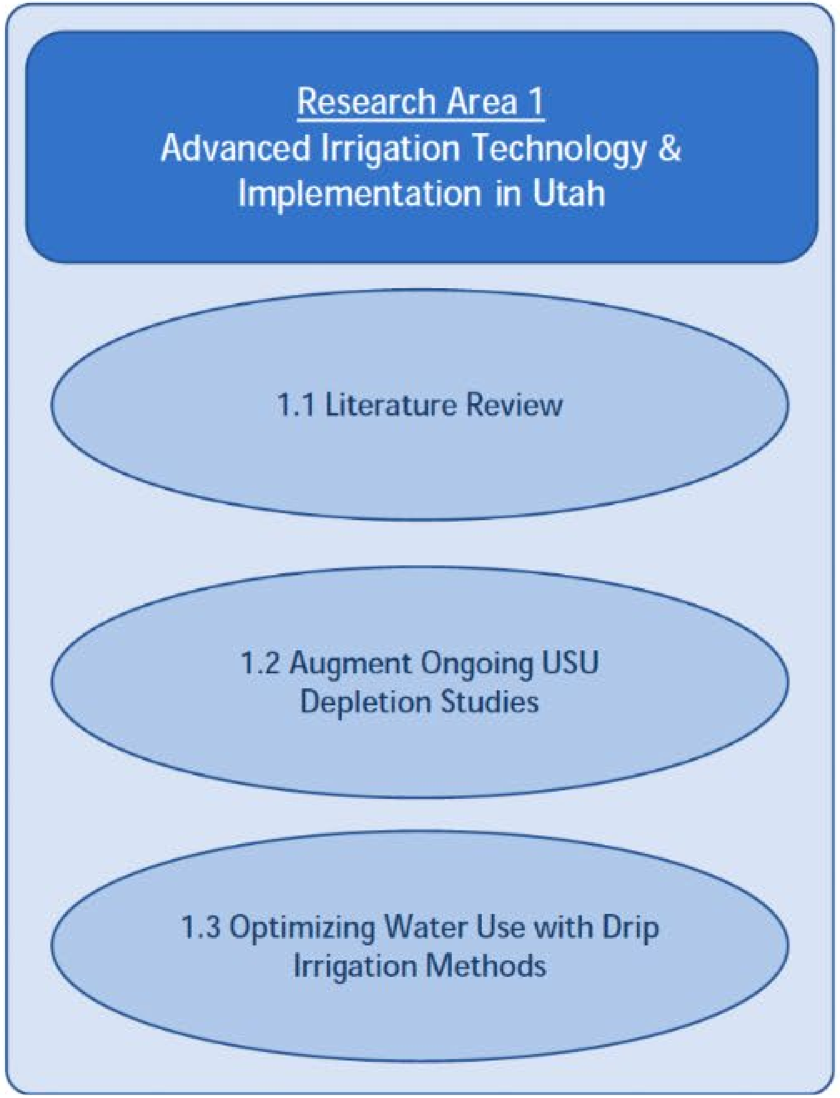
A partner program created by the Utah Department of Agriculture and Food to implement agricultural water optimization projects with Legislative funding.

Research Plan for Agricultural Water Optimization in Utah
(February 2019)

This memorandum takes a look at what water and agricultural management practices can maintain or increase agricultural production while minimizing impacts upon w
supply, water quality and the environment. The report outlines a research framework at both the basin and on-farm scale in Utah.

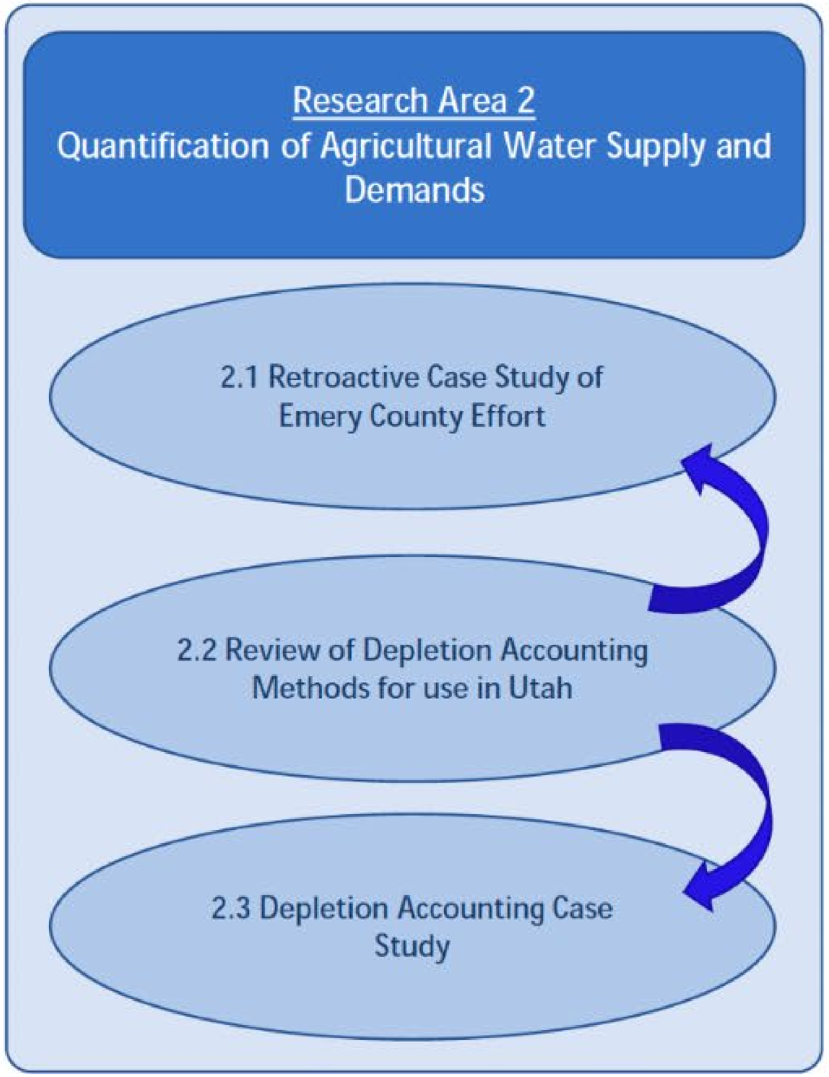
Research Needs
(December 2022)

Advanced Irrigation Technology & Implementation in Utah



1. Literature Review
   - Proven technologies and methods for optimizing irrigation, cropping, and tillage already exist that can reduce water consumption and maintain agricultural production. These can be leveraged, improved and implemented in Utah.
2. Augment USU Depletion Studies
   - Field testing of different combinations of LEPA/LESA sprinkler systems, tillage, crops, cover crops, and deficit irrigation have proven the feasibility of reducing water consumption and maintaining agricultural production in Utah.
3. Optimizing Water Use with Drip Irrigation
   - Drip irrigation works, is less consumptive, requires less diversion, and maintains yield vs. surface irrigation.

Quantification of Agricultural Water Supply and Demands



1. Retroactive Case Study of Emery County Effort
   - Understand the risks and benefits from and evaluate how water users in Emery County successfully improved quantification of available water supply and use to improve water management and increase water productivity

2. Depletion Accounting Methods
   - To investigate [and demonstrate in a future pilot program] possible methods the [DWRi] could implement to manage irrigation water rights by depletion rather than the historic method of Irrigation Diversion Duty and the number of acres irrigated."
   - Complete a pilot program

How were those conclusions reached?

- Research Plan
- Case Study: Ag Water Quantification Systems
- Trial: Stacked Conservation Practices
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Background Annual Summaries Research Studies

Research Studies

Case Study: Validating Methods for Measuring Evapotranspiration and Accounting for Actual Depletion in Utah
(June 2023)

The objective of this study was to validate ground-based and remote-sensing methodologies for measuring evapotranspiration and calculating depletion from an irrigat alfalfa field near Modena, Utah. Results were promising, however, further study should be completed to validate the results in other geographies and climates within Ut

EXECUTIVE SUMMARY | CHRISTIANSEN 2022 | HARGREAVES 2022 | HIPPS 2023 | ALLEN ET AL 2022

Utah Agricultural Water Optimization – Water Savings from Drip Irrigation
(December 2021)

Agricultural water optimization is important in Utah due to increased water needs, limited water supply, and uncertain climate changes that may affect water supplies. V shortages can dramatically affect agricultural, municipal, and environmental users. Agriculture diverts about 80% of all diversion in Utah. This Agricultural Water Optimiz study, which began in 2019, is to determine differences in consumptive water use or depletion between drip and surface irrigation onions. Onions were selected becaus growers currently use both drip and surface irrigation.

REPORT | FACT SHEET

Literature Review of Current & Upcoming Irrigation Technologies and Practices Applicable to Utah
(November 2020)

Case Study of Emery County Real-time Monitoring and Control System Implementation

Case Study of Emery County
Real-time Monitoring and Control System Implementation
March 2020

Authors: Amy Green, Roger Hansen, Rangesan Narayanan, and Colby Green

Focus Question: How can quantification of available water supply and agricultural use be improved to increase water productivity and improve water management?
Key Finding: Quantification of diverted and applied water significantly benefits the producer, the community, and the environment and is desired by both water users and managers. The Emery County case study is proof positive that this system works in Utah.

The goal for this project was to engage stakeholders in Emery County (including water managers and producers) and to understand, document, and evaluate the drivers, methods, costs, benefits, and lessons learned from the implementation of a network of flow measurement structures with a transparent Real-time Monitoring and Control System (RTMCS). Is quantification of water supplies and diversions beneficial?

Background

The Emery Water Conservancy District (District) began installation of a real-time monitoring system in 1992 and continues to expand it for its agricultural service area. The District is also moving toward fully automating many of its diversion structures. Citizens in Emery County recognize the value of the system and voted to enact an ad valorem tax to augment funding from federal grants and continue expanding the system.

Key Findings

Costs. The cost for a simple monitoring station is between $3,000 and $5,000. For a control site, costs range above $7,000, depending on the complexity of the installation.

Cost Benefits. Under even the most conservative assumptions, the agricultural benefits of RTMCS are evident. Using an ex-ante analysis, the net present value is $4.75 million with a 32.38 % internal rate of return. In this analysis, the benefit-cost ratio measure is 1.93.

Other Benefits. Stakeholders perceive the benefits of improved crop production (because of the lengthened irrigation season of up to 1 month) and increased transparency. Benefits to the environment include reduced salt loading to the Colorado River and reductions in fertilizer, herbicide, and pesticide loads to the water system.

Figure 1. Fully automated Swasey Diversion Structure with flow and water level monitoring

Conclusions

1. Real-time and transparent data describing actual water use resulted in reduced water diversions and consumption.
2. An RTMCS is a cost-effective and environmentally sound method to improve agricultural irrigation delivery systems and conserve water throughout the state. The RTMCS has helped justify transitioning from open canal to pipeline systems.
3. An RTMCS provides transparency and improves trust between all water users.

Recommendations

Areas considering an RTMCS should consider the following: financial means and personnel to install and maintain the system; buy-in from water users; a basin-wide system; federal and state grants where available; and standardized equipment and software for ease of installation and maintenance.

Statewide Action. The State of Utah Divisions of Water Resources and Water Rights should consider the following actions: increase technical support staff; provide grants to encourage RTMCS; develop operational and water rights models to interface with real-time information; and install a statewide, real-time website.

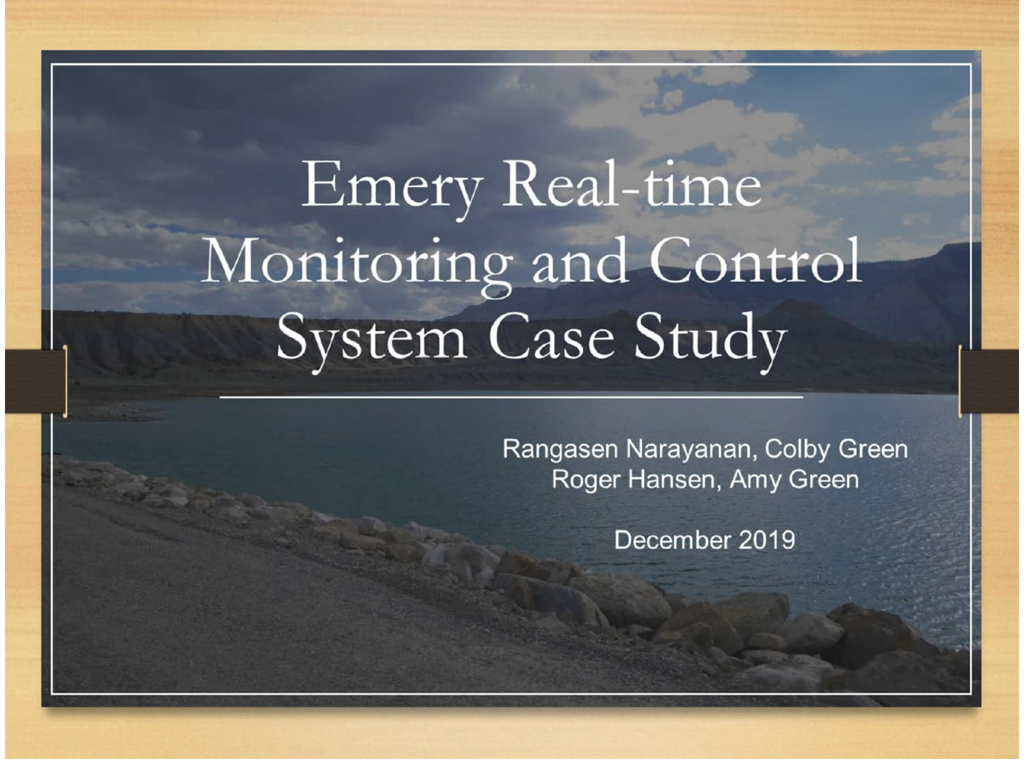
Utah Agricultural Water Optimization Task Force
For additional information, please visit https://water.utah.gov/agwateroptimization/.

Case Study

Reviewed the history

Identified lessons learned

Evaluated benefits and costs



Conclusions

− Significant benefits to both water users and managers

- Increased water conservation - reduced losses
- Reduced diversions – yet, more water delivered at take-outs
- Significant Return on Investment
- Improved crop production (longer season)
- Increased transparency – community benefit
- Less fertilizer, herbicide, pesticide and salt loading – improved water quality

− Merits statewide implementation - need $$, staff, training, link operational models to real-time data

Long-term Water Optimization Trials: Stacking Conservation Practices

Long-term Water Optimization Trials:
Stacking Conservation Practices
July 2021

Authors: Matt Yost, Earl Creech, Niel Allen, Boyd Kitchen, and Randall Violett – Utah State University

Focus Question: What irrigation and agricultural management practices can increase water productivity (that is, increase the beneficial output or yield per volume of water consumed) in Utah?
Key Finding: Field testing of LEPA/LESA sprinkler system combinations, tillage, crops, cover crops, and deficit irrigation have proven the feasibility of reducing water consumption and maintaining agricultural production in Utah.

This project seeks to provide agricultural producers and water managers with tools for agriculture water-use optimization. Can water optimization practices reduce water use and maintain or increase yields?

Figure 1. Water optimization trial (20 acres) at the Utah State University Wellsville Farm

Utah State University (USU) is partnering with Southern Utah University, the irrigation industry, water conservancy districts, soil and water conservation districts, Utah water agencies, and several other federal and state organizations to evaluate and demonstrate more than 25 water optimization practices (Figure 1). The major objective is to "*identify which combinations of pivot irrigation and crop management practices result in optimized use of limited water supplies, reduced consumptive use, and the best yield and profit outcomes for producers.*" The trials include evaluations of pivot irrigation technologies (such as MDI, LEPA, and LESA) and how the best available drought-tolerant crop genetics, cover crops, tillage practices, and alternative crops influence water optimization. These side-by-side evaluations are the first of their kind and were established in Logan in 2019, Vernal in 2020, and Cedar City in 2021 (Figure 2). This information should be especially useful in guiding water conservation planning at the farm level, which would in turn have large impacts on planning efforts at watershed and basin levels. It will also help irrigators prepare to effectively participate in water demand and banking programs, should they be developed and necessary.

See https://extension.usu.edu/crops/irrigation-pivots-laterals for additional information.

Results

- LEPA/LESA systems have shown that they can maintain production using 25% less water. Although water users are already installing these systems, they are typically not reducing application rates as the improved efficiency can improve their yields.
- Mobile drip systems have been a challenge due to the quality of water, among other things.
- USU has not observed any remarkable benefit from different plant genetics; it is likely not worth the investment.
- Not enough time has transpired at this point to observe the effects of no-till and cover crops.
- Deficit irrigation strategies during key growth periods have not shown much of an impact; it is probably the same for a producer to apply half the water throughout the year than during key periods.
- USU has been tracking actual depletion via soil moisture sensors. There were some initial challenges but systems are operating well now. These datasets have not been analyzed at this stage.

Figure 2. Comparing low elevation sprinklers with a mobile drip system

Utah Agricultural Water Optimization Task Force
For additional information, please visit https://water.utah.gov/agwateroptimization/.

USU 2019/2020 Depletion & Center Pivot Optimization Studies

- Is there benefit to combining water conservation practices?
- Multi-year study: 2019 – ongoing
- Study sites in Logan, Vernal and Cedar City

- Evaluating combinations of :
  - Advanced irrigation methods
  - Tillage
  - Different crops including different genetics
  - Cover crops
  - Deficit irrigation

UTAH DNR WATER RESOURCES

Literature Review of Current and Upcoming Irrigation Technologies and Practices Applicable to Utah

Literature Review of Current and Upcoming Irrigation Technologies and Practices Applicable to Utah

November 2020

Authors: Michael Barber, Rajendra Khanal, and Troy Peters

Focus Question: What irrigation and agricultural management practices can increase water productivity (that is, the beneficial output or yield per volume of water consumed) in Utah?

Key Finding: Proven technologies and methods for optimizing irrigation, cropping, and tillage already exist that can reduce consumption and maintain agricultural production. These technologies can be leveraged, improved, and implemented in Utah.

Irrigation is essential for economical agriculture production in western semi-arid regions, such as Utah. The effects of droughts and competition for water due to population growth mean that more effective use of agricultural water supplies will be needed in the future. This document examines the historical, current, and upcoming irrigation technologies and practices applicable to the State of Utah. Can we feasibly optimize agricultural water use in Utah? How?

Background

Irrigators in the state continue to make steady improvements toward adopting technologies that enable them to improve both water use efficiency and overall crop productivity while protecting the environment. Recent trends show an increase in sprinkler adoption from 53% to 56% between 2013 and 2018 and a subsequent reduction in surface (furrow) irrigation. While Utah's adoption rate is below several western states, given the significant upfront costs associated with center pivot sprinkler systems, this 3% increase represents a considerable investment by the irrigation community.

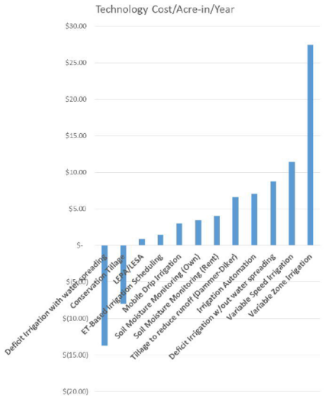


Figure 1. Summary of the estimated costs per acre-inch of water conserved per year for each technology (lower is better)

Results

Twelve strategies for reducing agriculture water demand were examined. As shown on Figure 1, deficit irrigation with water spreading and conservation tillage are the only two profitable options for irrigators (negative costs). Each of the other 10 options resulted in some additional costs to irrigators. Several low-cost options, such as Low Energy Precision Application, evapotranspiration-based irrigation scheduling, and mobile drip irrigation have adoption potential in areas with water shortages. Financial incentives for implementing these strategies could be modest.

Recommendations

1. Learn from the past. Hype does not always translate to success. Understand what motivates a water user to change how they irrigate. Simple is often better.
2. Continue support for irrigation management education and demonstration projects. Knowledge is power.
3. Prioritize the "biggest bang for the buck" (Figure 1).
4. Continue to educate and demonstrate no-till and strip-till.
5. Move toward on-demand water delivery to maximize water productivity.
6. Allow water spreading (that is, use conserved water or at least a portion of it to irrigate additional acreage).
7. Consider that surface irrigation is not always bad.
8. Move center pivot sprinklers as close to the ground as possible.
9. Avoid big guns when possible.
10. Encourage urban water users to be more efficient.
11. Implement drip irrigation for high-value crops.
12. Obtain good irrigation system designs completed by certified irrigation designers.

Utah Agricultural Water Optimization Task Force

For additional information, please visit https://water.utah.gov/agwateroptimization/.

Literature Review

- *Historic and Current Irrigation/Tillage Practices*
- *Upcoming Technologies*

  1. Irrigation System Conversions

  2. Data-based Irrigation Scheduling

  3. Irrigation Automation

  4. Variable Rate Irrigation

  5. Low Elev Spray Application/Low Energy Precision Application for Center Pivots

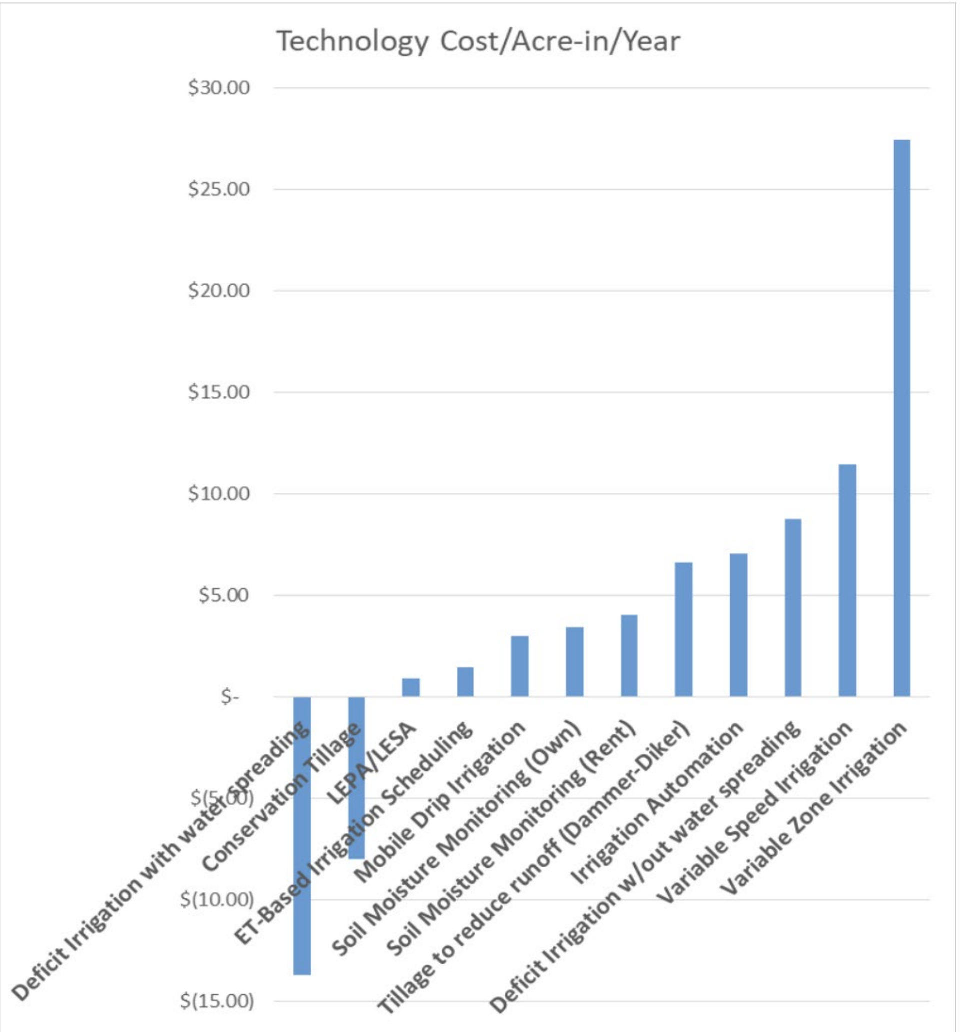
  6. Mobile Drip Irrigation for Center Pivots

  7. Deficit Irrigation

  8. Tillage to Control Runoff

  9. Conservation Tillage (No-Till & Strip-Till)

1. Options
2. Cost
3. Calculator



Irrigation Technology Cost/Benefit Analysis Calculator

Select an irrigation technology to evaluate. Mouse over the parameter names to get more information about the values to be entered in the text boxes. Selecting a technology will populate the values with some defaults (estimates from 2020) to get you started. Mouse over the ** next to the values for some notes about the assumptions used for the chosen technology. More information on the assumptions behind the defaults is available here. *Your system and fields and costs will be different! You should revise the values to match your situation and so that they are realistic for you.* After changing any of the values hit enter, or click out of the text box to recalculate the totals. After changing some values, re-selecting a new technology will overwrite any entered values in the text boxes with new defaults. To be meaningful, the costs should be the *difference* between what you are currently doing. i.e. the costs more or less than your current practices, not total absolute costs. This is just a calculator and the output depends entirely on the assumptions being correct for your situation.

Technology: -- select an option --

General Assumptions	Value		Intermediate Results
Management Cost Rate ($/hr):		**	
Labor Cost Rate ($/hr):		**	
Operating or Equip Loan Interest Rate (%):		**	
Inflation Rate (%):		**	
Irrigation Season Length (weeks):		**	
Field Size (acres):		**	

extension.usu.edu/crops/tools/irrigation-technology-cost-benefit-calculator

Depletion Accounting for Irrigation Water Rights in Utah: A Review of Potential Agricultural Depletion Accounting Methods

Depletion Accounting for Irrigation Water Rights in Utah: A Review of Potential Agricultural Depletion Accounting Methods

June 2020

Authors: Jacobs, Utah State University, Evapotranspiration Plus, Utah Division of Water Resources, and Utah Division of Water Rights

Focus Question: How can quantification of available water supply and agricultural use be improved to increase water productivity and improve water management?

Key Finding: Ground-based and remote sensing technology exists to provide water users and water managers with the water diversion, application, and depletion information they need.

Producers asked the State of Utah to consider a new means of administering water rights by depletion rather than the historical method of irrigation diversion duty and number of acres irrigated. This requires an accurate, effective, and defensible means to measure and account for actual depletion. With numerous available and emerging methodologies, the Agricultural Water Optimization Task Force sought to evaluate and identify the most practical, effective, and defensible means of measuring and accounting for actual depletion in Utah. Depletion accounting provides a means to quantify water use and incentivize and enable water optimization at the field scale and basin scale. The objectives of this project were to identify, evaluate, and recommend available methodologies for depletion accounting to be validated for use in Utah via a pilot program. Is it possible to quantify actual consumptive use of water in agriculture? How?

Methods

An Expert Panel was formed in January 2020 to identify and evaluate numerous available and emerging methodologies to measure and account for actual depletion. Eight ground-based methods and three remote sensing methods were investigated in detail and organized for each of three applications: (1) Ground-based Methods for Field-scale Depletion Reporting, (2) Ground-based Methods for Field-scale Depletion Validation, and (3) Remote Sensing Methods for Field-scale to Basin-scale Depletion Assessment. The Expert Panel also discussed the benefits and disadvantages of each method and provided recommendations for implementation in Utah and for validation in a Case Study (Figure 1).

Recommendations

The Expert Panel developed and recommended a layered approach that identifies the most effective depletion accounting method for a given application and provides validation of results from the other applications (Figure 1). The approach integrates the applications to provide scalability and defensibility and maximize value to water users, water managers, and the State of Utah over time. For example, the State of Utah could implement the three methods in the following order: (1) Ground-based Methods for Field-scale Depletion Reporting, (2) Remote Sensing Methods for Field-scale to Basin-scale Depletion Assessments, and as funds become available, (3) Ground-based Methods for Field-scale Depletion Validation. All three applications are complementary and provide additional utility and defensibility as they are each implemented.

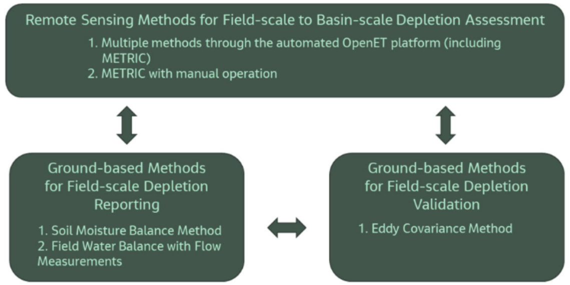


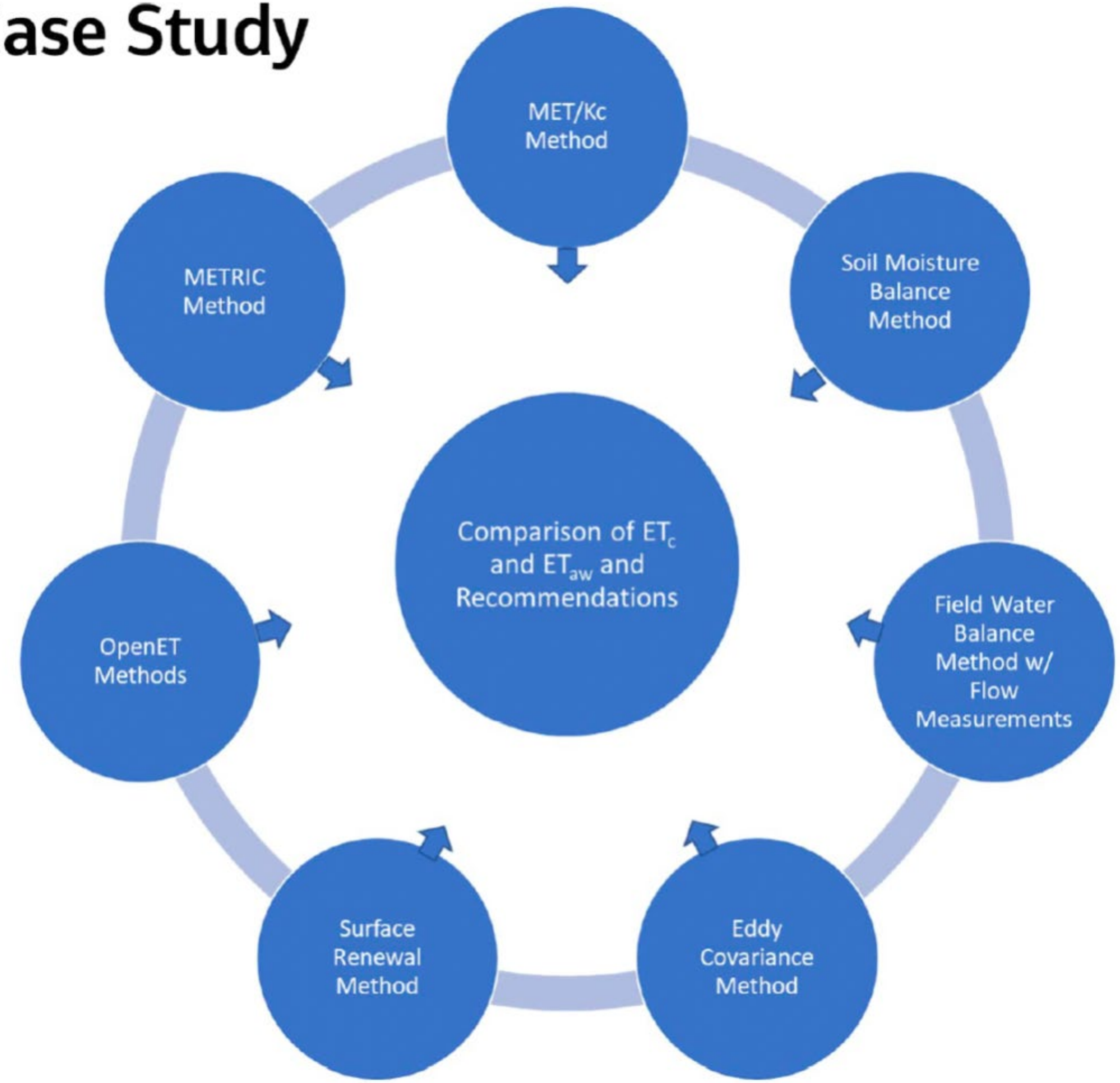
Figure 1. Recommended Layered Approach and Depletion Accounting Methods to be Validated in the Case Study for Use in Utah (2021-2022)

The Expert Panel narrowed the list of alternative methods, made final recommendations for methods to measure and account for actual depletion of agricultural water use in Utah (Figure 1), and recommended a Case Study designed to validate the recommended methodologies for use in Utah. The Case Study was initiated in 2020 and is expected to be completed in 2022.

Utah Agricultural Water Optimization Task Force

For additional information, please visit https://water.utah.gov/agwateroptimization/.

Case Study


MET/Kc Method
Soil Moisture Balance Method
Field Water Balance Method w/ Flow Measurements
Eddy Covariance Method
Surface Renewal Method
OpenET Methods
METRIC Method
Comparison of ET_c and ET_{aw} and Recommendations

Water Savings from Drip Irrigation

Utah Agricultural Water Optimization: Water Savings From Drip Irrigation

December 2021

Authors: L. Niel Allen, Alfonso Torres-Rua, Anastasia T. Hassett, Ryan Larsen, and Matt Yost – Utah State University

Focus Question: What irrigation and agricultural management practices can increase water productivity (that is, increase the beneficial output or yield per volume of water consumed) in Utah?
Key Finding: Drip irrigation works, is less consumptive, requires less diversion, and maintains yield versus surface irrigation.

Field studies in 2019 and 2020 evaluated differences in consumptive water use or depletion between drip and surface irrigated onions. Can drip irrigation effectively optimize agricultural water use in Utah?

Drip irrigation is a good irrigation water optimization technology and can reduce diversion by more than 50% and reduce consumptive use by about 20%. With good design and proper management, drip irrigation can result in high yields while conserving water. Providing tools and information on drip irrigation design and scheduling (when and how much to irrigate) is needed to optimize yields and returns on investments. Crop coefficients were developed that can be used for irrigation scheduling and estimating irrigation water use.

Key Benefits of Drip Irrigation

- Requires less than half of the diversion of surface irrigated onions.
- Reduces depletion by 0.25 to 0.40 acre-foot per acre for equivalent yields.
- Turning areas at ends of fields are not irrigated (3% to 5% less irrigated land in the field).
- Provides the capability to establish onions with uniform germination and good stands.
- Provides excellent irrigation and fertilization management capabilities.
- Reduces irrigation labor requirements during the irrigation season.
- Onion yield per unit of water applied is about twice that of surface irrigation.

Figure 1. Drip (left) versus Surface (right) Irrigation

Key Disadvantages of Drip Irrigation

- Under-irrigation can easily occur if not designed or scheduled appropriately.
- Drip system has a higher cost and energy requirements.
- More time is required to install, set up, and remove drip systems.

Limitation to Implementation of Drip Irrigation

- Water availability from a timing perspective can prevent proper irrigation scheduling and limit irrigation time. Most irrigation water-turn rotation schedules can limit the use of drip irrigation systems.
- On-farm water storage reservoirs may be required for on-demand irrigation scheduling.

Recommendations

The following items would encourage the use of drip irrigation:

- Existing canal systems impede increased implementation of drip irrigation. Piping existing canals and laterals and automating ditch systems can help an open canal system deliver water more efficiently and provide more flexibility in delivery quantities and timing.
- A cost-share program to provide funding can help encourage the use of drip irrigation. A system would also need to be in place so that decreased diversions and reduced consumptive use is available for alternative water uses that benefit the funders.
- Education on the best management practices, soil moisture monitoring, and irrigation scheduling for drip irrigation systems can help obtain good yields.
- Irrigation water delivery flexibility can help producers use their water shares in different locations to increase total production.

Utah Agricultural Water Optimization Task Force

For additional information, please visit https://water.utah.gov/agwateroptimization/.

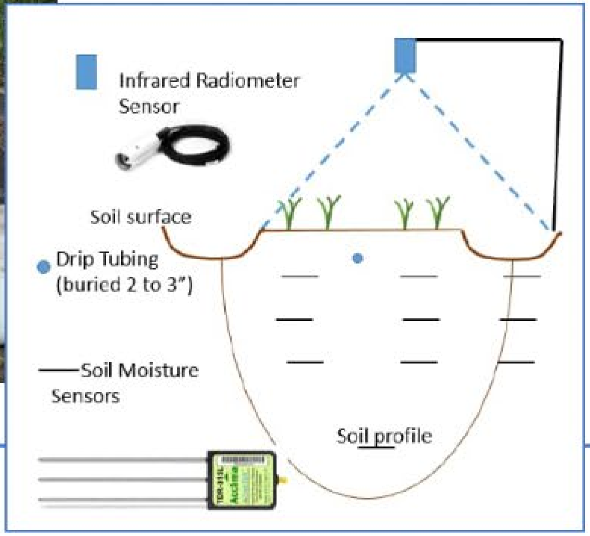
USU 2019/2020 Depletion & Center Pivot Optimization Studies

Previous 2019 Field Studies

1. Process 2019 Remote Sensing and Field Data
2. Economic Analysis
3. Interim 2019 Report (June 2020)

Takeaways

- Drip Irrigation
    - Less depletion
    - Less percolation
    - Less runoff
- Shows Promise



Reports and Recommendations to the Legislature

CULTIVATING AGRICULTURE WATER RESILIENCY IN UTAH

A Down Payment on the Future

The drought of 2021 threatened the viability of Utah's farms and ranches. Utah agriculture is facing relentless pressure from growth that is transforming agricultural lands and increasing demands on a limited water supply. Long-term climate trends are decreasing the supply of available water.

Immediate action that optimizes the use and management of our finite water supplies is needed to both preserve agriculture and sustain desired growth in Utah for future generations.

Utah must make a significant investment now in the tools and approaches needed to maintain or increase agricultural production while minimizing impacts upon water supply, water quality, and the environment.

PHASE I: ASSESSING THE POSSIBILITIES (2018 H.B. 381) ✓ COMPLETED

OBJECTIVE:

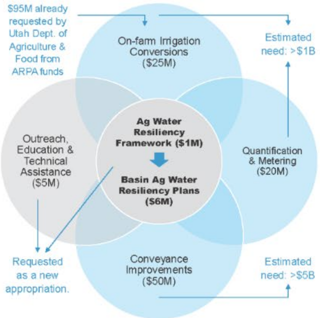
Determine if and how the State can optimize its agricultural water supply and use and improve the quantification of agricultural water use at a basin level.

HOW:

The Agricultural Water Optimization Task Force completed six investigations in 2019-2021 using funds appropriated by H.B. 381.

CONCLUSION:

Proven tools and approaches already exist that can be implemented to improve agricultural water optimization and resiliency in Utah. **The State of Utah must invest now** to preserve agriculture in Utah and support the growth that is envisioned.



PHASE II: PIVOT FROM RESEARCH TO ACTION

OBJECTIVE:

Invest in essential agricultural water infrastructure to optimize water use and boost the resilience of Utah's agriculture to anticipate, respond, and succeed in spite of drought and other impacts of climate change.

HOW:

- **"Move the Needle"** – Make a down payment of $100,000,000 on proven means of improving water optimization and agriculture water resilience
- Develop a Utah Agriculture Water Resiliency Plan ($1,000,000)
- Develop individual basin agriculture water resiliency plans ($6,000,000)
- Develop an ongoing funding source to effect positive and long-term change

Requested Funds for 2022: $107,000,000. UDAF has already requested $95M from ARPA funds. $12M in new appropriations is requested that are not eligible for ARPA funds.

https://water.utah.gov/agwateroptimization LEGISLATIVE AGRICULTURAL WATER OPTIMIZATION TASK FORCE **2021**

water.utah.gov/agwateroptimization/

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AGRICULTURAL WATER OPTIMIZATION

Agricultural Water Optimization Task Force

The Agricultural Water Optimization Task Force was formed in 2018 to identify critical issues facing the state's long-term water supply, to optimize agricultural water supply for future needs and to sustain Utah's vital agriculture industry and heritage. The task force identified obstacles and constraints to optimization and recommended ways to improve the quantification of agricultural water use.

In 2023, the Utah Legislature passed SB 277, which appropriated $200 million for agricultural optimization and created a new committee housed within the Utah Department of Agriculture and Food.

This page archives the work completed by the task force over its lifespan from 2018-2023. This research helps the state evaluate ways to improve agricultural water use practices, create benefits for farmers, optimize water use and protect water quantity and quality for all uses in the system.

Contact:
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Agricultural Water Optimization Task Force Admin Support
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Background | Annual Summaries | Research Studies

Annual Summaries

Ag Water Optimization Task Force Overview 2018-2023
(June 2023)

This overview of the task force's work from 2018-2023 was provided by the facilitator at the task force's last meeting on June 9, 2023.

Key Conclusions (2018-2021)

1. Utah must innovate and adapt to address acute drought and chronic water supply and demand challenges
2. There are readily available and proven tools and approaches that can be implemented to incentivize and make progress toward agricultural water optimization and resiliency
3. The State of Utah must invest now to preserve agriculture in Utah and enable the growth that is envisioned.

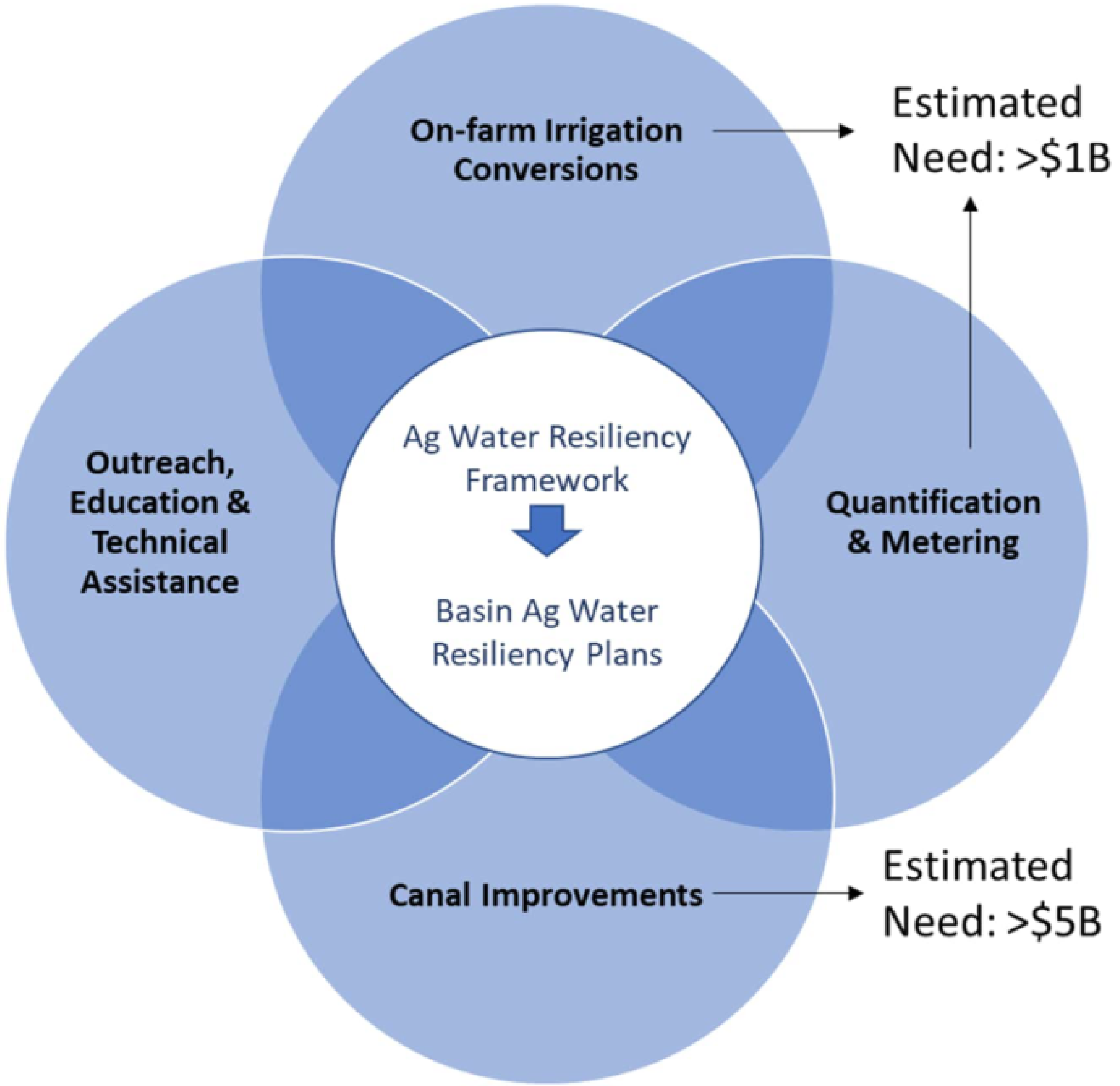
What resulted?

Action

1. Utah is innovating and adapting to address acute drought and chronic water supply and demand challenges
2. Utah is implementing readily available and proven tools and approaches to incentivize and make progress toward agricultural water optimization and resiliency
3. Utah is investing in ag optimization now.

Success!

- Ag Water Optimization
  - $76M appropriated through 2022
  - $200M appropriated in 2023
- Plus, other groups are moving forward with similar efforts
  - Div Water Resources
  - Div Water Rights
  - Col R Authority of Utah
  - Great Salt Lake Water Trust
  - Utah Water Ways



Agricultural Water Optimization Program

Awards for the FY 2023 ARPA Spring application period have been approved! Click here for a pdf list of approved applications.

At the Agricultural Water Optimization Program, we work with producers to help them optimize water use while maintaining or improving agriculture production.

AGRICULTURAL WATER OPTIMIZATION CONTACT INFORMATION

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Agriculture Water Optimization Assistant Program Manager
(385) 226-7808

What else was accomplished?

Validating Methods for Measuring Evapotranspiration and Accounting for Actual Depletion in Utah

Case Study: Validating Methods for Measuring Evapotranspiration and Accounting for Actual Depletion in Utah

Document no: *230605120859_636b7b4d*
Version: Final

Utah Department of Natural Resources
Legislative Agricultural Water Optimization Task Force

Depletion Accounting for Irrigation Water Rights in Utah
June 8, 2023

Monitoring the Impacts of LEPA Conversions (Ongoing)

What is next?

le.utah.gov/xcode/Title73/Chapter10G/73-10g-S205.html

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Effective 7/1/2023

73-10g-205. Agricultural Water Optimization Committee.

(1) There is created in the department a committee known as the "Agricultural Water Optimization Committee" that consists of:

(a) the commissioner of the department, or the commissioner's designee;

(b) the director of the division, or the director's designee;

(c) the director of the Division of Water Rights, or the director's designee;

(d) the dean of the College of Agriculture and Applied Science from Utah State University, or the dean's designee;

(e) one individual representing local conservation districts created by Title 17D, Chapter 3, Conservation District Act, appointed by the executive director of the Department of Natural Resources;

(f) one individual representing water conservancy districts, appointed by the executive director of the Department of Natural Resources; and

(g) three Utah residents representing the interests of the agriculture industry appointed by the executive director of the Department of Natural Resources.

Aaron Austin

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801-538-7291

UTAH DNR WATER RESOURCES

Thank you.

DIVISIONS | Utah DNR Geological Survey | Utah DNR Wildlife Resources | Utah DNR State Parks | Utah DNR Forestry | Utah DNR Recreation | Utah DNR Water Resources | Utah DNR Water Rights | Utah DNR Oil, Gas & Mining

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