Utah's Coordinated Action Plan for Water

Productive Agriculture

July 2022

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Released July 2022

Utah is committed to optimizing the use and management of finite water supplies in order to preserve the state's agricultural economy and sustain future growth opportunities.

Introduction

Agriculture, or the production of food, fiber, and resources, is an essential industry that makes our modern economy and civilization possible. It is a defining element of Utah's heritage, culture, and quality of life, providing significant non-agricultural benefits like wildlife habitats, open space, and places to recreate—in addition to the obvious benefit of food production. It continues to play a vital role in communities throughout the state. For agriculture to be productive in Utah's semi-arid climate, it requires significant amounts of water through irrigation. However, Utah's water supply is limited. Approximately 75% of the state's diverted water is used for agriculture. Consequently, any discussion of water in Utah is incomplete without including agriculture.

Utah contains much more arable land than can be watered from incoming mountain streams. Dating back to 1847, the early Mormon pioneers established the first laws and social customs that consequently regulated the beneficial use of Utah's limited water supplies. The principle was established that those who first made beneficial use of water should be entitled to continued use in preference to those who came later. This fundamental principle was later adopted in law and is known as the Doctrine of Prior Appropriation. This means those holding water rights (the right to divert, or remove from its natural source, and beneficially use water) with the earliest priority dates, and who have continued beneficial use of the water, have the right to water from a certain source before others with water rights having later priority dates. Many understand the concept of prior appropriation to mean "first in time, first in right." Utah's agricultural producers commonly hold the state's oldest water rights, and because of prior appropriation, have a higher priority to Utah's water supplies. These priority rights also represent significant financial value for the water right holder.

Utah stands at a crossroads in terms of its water use and management. Competition for our state's limited water resources is rapidly increasing due to rapid population growth, urbanization, and long-term climate trends—all with the potential to have a significant impact on agriculture. At the same time, Utahns have indicated they want to both protect and even increase local food

production in Utah.[1] As the industry which diverts the greatest percentage of water, Utah agriculture is facing enormous pressure to optimize water usage.

A common perception is that to address these pressures, we must shrink our state's agricultural sector. This is a misconception. Utah has ample water to meet all the life-sustaining needs of current residents, and with proper management, the needs of future residents as well. Indoor water use comprises a fraction of the state's overall water consumption. Focused reductions in outdoor water use within our communities have the potential to make enough water available to easily support the state's growing population. By continuing to invest in agricultural water optimization practices that result in reduced consumptive use and deploying other strategies to better use and manage our water supply, we can meet both agricultural and non-agricultural water needs in Utah. Further action to optimize Utah's agricultural water use and management is needed to preserve the state's agricultural economy, sustain future growth opportunities, and ensure productive agriculture.

The role of the state

Optimizing the use and management of finite water supplies to ensure continued productive agriculture in Utah will require effective policy decisions and collaborative partnerships with state agencies and our agricultural water users.

The state of Utah has three primary roles in supporting Utah agriculture and agricultural water use.

1. **Preparing the state for growth.** To support productive agriculture and sustain future growth opportunities, Utah must continue to invest in strategies that optimize agricultural water use and management. All sectors of the economy need access to safe and reliable water resources. To help ensure this, the state can continue to fund agricultural water optimization projects using emerging technologies that result in reduced consumptive use, while simultaneously maintaining or even increasing agricultural productivity.

2. **Protecting important public resources.** While water in Utah is public, a regulated system of water rights governs the use of this public resource. Agricultural water users are stewards of the state's water supply. The state plays a key role in helping agricultural water users understand the connection between the quantity and quality of water leaving their land and its impact on a wide range of beneficial uses, including recreation, drinking water, and aquatic species.

   As part of its statutory mandate, the Department of Natural Resources' Division of Water Rights maintains a publicly available central repository for all rights to the use of Utah's water. Administrative supervision of water rights protects resources and provides order and certainty of use. The state's management of this system creates the foundation upon which water markets function. The Division of Water Resources maintains a yearly land use dataset of the crops being grown, fallow/idle rotations, and irrigation methods. These yearly datasets are fed into models to better understand how the use of water is impacted by local climate and agricultural practices, providing an understanding of agricultural water use from year to year. These model results and management of water rights provide means for the state to manage the balance between the interest of public water and the private ownership of water rights.

   Specific to agricultural water use, the Utah Department of Agriculture and Food's (UDAF) Conservation Division helps protect water quantity and quality for all by offering farmers and ranchers conservation planning, technical

1 Sun, T. (2016, January 8). *Your Utah, your future - agriculture survey results*. Your Utah, Your Future - Home. Retrieved July 14, 2022, from https://yourutahyourfuture.org/topics/agriculture/item/31-your-utah-your-future-survey-results

assistance, and grant and loan programs. Additionally, the Department of Environmental Quality (DEQ)'s Division of Water Quality is responsible for water quality regulation and works with the agricultural industry to voluntarily reduce nonpoint source pollution through its Nonpoint Source Program.

3. **Assisting in the development of projects that require the convening and facilitation power of the state.** Agriculture is generally a high-risk, low-margin industry. Just like everyone else, producers need to make money to support themselves and their families. For an agricultural operation to take on additional risk, such as investing in new and often expensive water optimization practices, it must have a reasonable expectation of earning a profit after doing so. The state can help alleviate this risk by providing the necessary capital and information to make water optimization practices more feasible for producers. This role can also include agricultural water optimization education, development of technical assistance tools, promotion of best practices, and discussion forums specifically tailored to our agricultural community. The state may also be able to help bring together a variety of partners (e.g. federal agencies like the National Resources Conservation Service, state, local, adjacent landowners, downstream water users, and non-profit organizations) to tackle water challenges on agricultural lands.

UDAF's Conservation Division is a key facilitator for the state's roles in preserving agriculture and optimizing water usage. Programs within the Division include the following:

- The Agriculture Resource Development (ARDL) Program provides low interest loans to farmers and ranchers for projects that meet certain conservation and pollution control goals. The goal of the program is to help farmers and ranchers to: conserve soil and water, increase agricultural yields, maintain and improve water quality, conserve and improve wildlife habitats, prevent flooding, develop on-farm energy projects, and mitigate damages resulting from natural disasters (flooding, drought, etc.)

- The Agricultural Voluntary Incentives Program (Ag VIP) incentivizes farming operations to develop Comprehensive Nutrient Management Plans that will allow them to implement practices that can increase crop yields, improve soil health, and add value to operations while improving water quality.

- The Soil Health Program promotes the adoption of soil health practices through increasing our understanding of soil health and its impacts on productivity, economics, and environmental aspects of agriculture.

- The Water Optimization Program improves water optimization by reducing consumptive water use and providing increased operation flexibility for agricultural water users. It also improves water quantification by showing accurate, real-time measurement of diverted water to demonstrate actual water saving in cubic feet per second (CFS) or acre foot.

- The Invasive Species Mitigation Program (within UDAF's Division of Plant Industry) awards competitive grants to combat noxious and invasive weeds throughout Utah. The grants are awarded to projects based on water, agricultural, economic, environmental, and wildlife impact.

Policy issues

Agricultural water optimization

Agricultural water optimization is the implementation of agricultural and water management practices that maintain or increase viable agriculture while minimizing negative impacts on water supply, water quality, and the environment. The current strain on Utah's water supply is significant. With agriculture accounting for roughly 75% of Utah's diverted water, rapid

population growth increasing demand for water, long-term climate trends decreasing our water supply, and the public continuing to desire local food production, the need to optimize agricultural water usage to benefit all water users in the system is greater than ever.

There is ample opportunity to optimize agricultural water usage. Utah's Agricultural Water Optimization Task Force recently identified over $1 billion in need to upgrade antiquated irrigation systems (such as outdated flood irrigation systems) to more-efficient, innovative systems (such as sprinkler/drip systems and laser-leveled flood technology). The Task Force also identified over $5 billion in need to improve conveyance systems (lining or piping canals or ditches) to prevent seepage and evaporation loss.[2] To help begin addressing this need, the legislature created UDAF's Water Optimization Program in 2019 and has allocated $76 million to the program since then. Funding is provided as a matching grant to eligible applicants.[3] The purposes of the grant are to reduce consumptive water use, improve water quality, provide increased operational flexibility for agricultural water users, and show accurate, real-time measurement of diverted water to demonstrate actual water savings. Grant recipients are required to install meters on all diversions and to report data on the program for three years following implementation of their project. Figure 1 displays the variety of general irrigation types used on crops throughout the state.[4] While highly efficient technologies exist within each of these broad irrigation types (such as laser-leveled, surge flood irrigation), the amount of acreage

2 Utah Agricultural Water Optimization Task Force. (2021) Cultivating Agriculture Water Resiliency in Utah. Utah Agricultural Water Optimization Task Force. Retrieved July 19, 2022, from https://water.utah.gov/wp-content/uploads/2021/12/2021AgWaterOptTF-AnnualReport.pdf

3 Appropriations include: $20M from first ARPA allocation, $50M from second ARPA allocation, $3M in general funds from the 2021 General Session, and $3M in general funds from the 2019 General Session.

4 Utah Division of Water Resources . (n.d.). Utah DNR Online Maps. Open Data. Retrieved July 14, 2022, from http://water.utah.gov/opendata

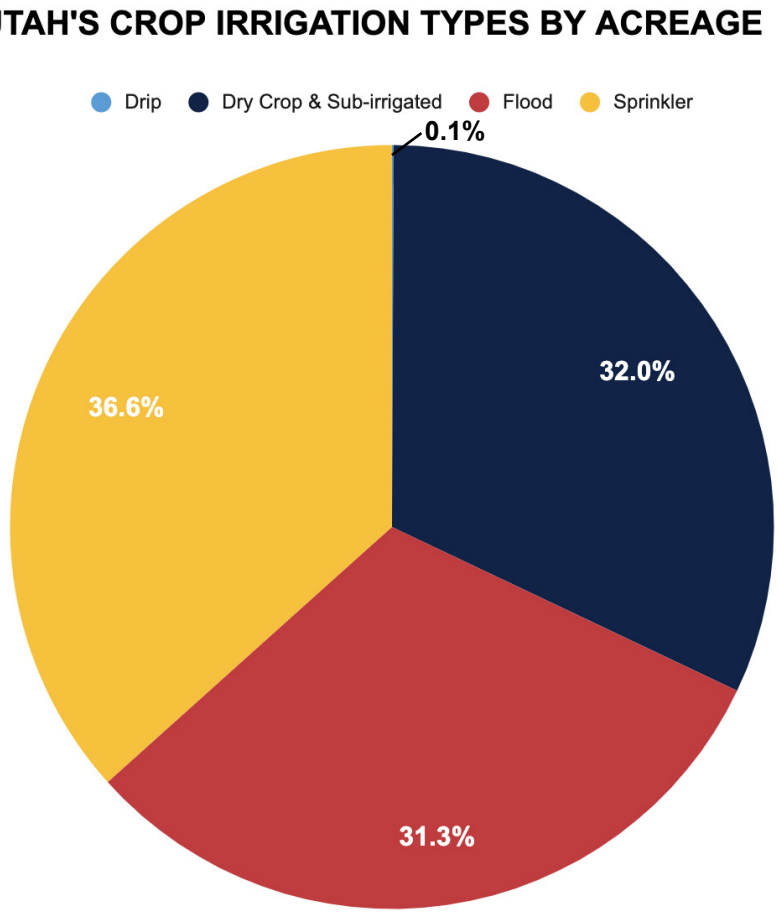

FIGURE 1 Utah Crop Irrigation Types by Acerage (Source: UDAF)

using flood irrigation suggests that further water savings could be realized through water optimization efforts.

Because agricultural water users generally operate on relatively low profit margins, some are hesitant to take on additional risk, such as implementing new and often expensive agricultural water optimization practices. Agriculture is already a high-risk, capital-intensive, price-sensitive industry. On top of that, producers' current irrigation practices are likely working well. In order to prompt more agricultural water users to implement water optimization practices, they need to know the practices are both viable and profitable. They also need the right incentives and data to further embrace water optimization. Accessible data tools like Utah State University's Irrigation Technology Cost/Benefit Analysis Calculator can help agricultural water users analyze the profitability of water optimization in their unique circumstances. Empowering agricultural water users with data can help maximize crops and irrigation water while simultaneously saving water and earning more money for their communities and families.

Agricultural water optimization will be essential in supporting and sustaining Utah's overall economy and quality of life moving into the future. During the 2022 General Session alone, the legislature appropriated an unprecedented $70 million of federal American Rescue Plan Act (ARPA) funding to UDAF's Water Optimization Program, on top of the previously appropriated $6 million for the program.[5] UDAF now has the incredible task of judiciously obligating this funding by the end of calendar year 2024, and ensuring the funds are spent by the end of calendar year 2026. To help accomplish this task, the state should implement strategies to increase the number of quality grant applications, such as making data from past water optimization projects publicly available, continuing to host site visits with potential grantees at current and past water optimization projects, and promoting tools that help producers understand the value of water optimization practices. Continued investment and implementation of current funding in the Water Optimization Program will protect water quantity and quality for all users in the system for generations to come.

In addition, there are exciting advancements in farm practices, soil science, and technology that have the potential to provide more water savings. These include no-till seeding, hydroponics, utilization of cover crops, and interseeding.

Understanding water rights

All waters in Utah are public property. Consequently, an individual must possess a water right to legally divert (remove from its natural source) water. A "water right" is a right to divert and beneficially use water. "Beneficial use" is the purpose to which water diverted under a water right is applied and the amount of that beneficial use. Examples include, but are not limited to, irrigation (amounts measured in acres); stock watering (amounts measured in numbers of equivalent livestock units); domestic (indoor residential - amounts measured in numbers of equivalent domestic units); and commercial, industrial, and municipal. The defining elements of a typical water right will include a:

- defined nature and extent of beneficial use,
- priority date,
- defined quantity of water allowed for diversion by flow rate (cfs) and/or by volume (acre-feet),
- specified point of diversion and source of water,
- specified period of use, and
- specified place of beneficial use.

Another term associated with irrigation watering (any outside watering) is the "duty" of water. This refers to the quantity of water, as determined by the Division of Water Rights, that is required

5 Appropriations include: $20 million from first ARPA allocation, $50 million from second ARPA allocation, $3 million in general funds from the 2021 General Session, and $3 million in general funds from the 2019 General Session.

to satisfy the irrigation water requirements in a certain area. For example, the "duty" of irrigation water ranges from two acre-feet per acre in cool, mountain meadow areas to six acre-feet per acre in low, hot southern areas of the state. The underlying concept is that only so much water can be beneficially used for an authorized purpose, such as watering crops, in a geographical area.

Further, many producers' water rights are in the form of shares of an irrigation company. The irrigation company is the official holder of the water rights, and shareholders in the cooperative own the ability to utilize a portion of these rights. An individual producer's "turn" may be limited to a specific volume of water and specific irrigation schedule.

The state should continue to educate all water right holders regarding what a water right is and allows. Doing so will help ensure proper usage and understanding of Utah's limited water resources.

Incentivizing conservation and protecting water rights

Because water in Utah is a scarce and valuable public resource, Utah's laws have been designed to place water to full beneficial use. Consequently, the law stipulates that those who acquire rights to the use of Utah's water must place it to beneficial use (see page 8 for more on beneficial use). Utah Code Section 73-1-4(2)(a) states the following:

> ". . . when an appropriator or the appropriator's successor in interest abandons or ceases to use all or a portion of a water right for a period of seven years, the water right or the unused portion of that water right is subject to forfeiture in accordance with Subsection (2)(c) . . ."

In other words, Utah law provides that when a water user fails to use all of or a portion of their water right for a period of at least seven years (except under certain circumstances), the water user is in danger of losing the water right. This is commonly known as the "use it or lose it" principle.

Water rights are the lifeblood of an agricultural water user's operation. Due to the risk of water right forfeiture, Utah agricultural water users feel immense pressure to use their entire water allocation to retain the water rights essential to sustaining their livelihood. This pressure often causes a disinclination to optimize agricultural water usage.

In recent years, the state has approved a wave of water-related legislation to help address this issue and more:

- **Water Banking -** SB 26, *Water Banking Amendments*, (J. Iwamoto) authorizes the Board of Water Resources to approve the creation of formal water banks, which can also be understood as local water markets. Water banks facilitate the voluntary, temporary transfer of a water right from one user to another through low-cost transactions. Water banking enables a financial incentive for farmers and ranchers to invest in water-saving technologies that reduce consumption because they can financially benefit from leasing their water rights through the water bank, while also providing more flexibility within the water community. Further, the concept has the potential to lower transaction costs, streamline the allocation of water rights to their most efficient uses, and spur the creation of innovative water markets. Agricultural water users who participate in water banking can rest assured that their water rights are not subject to forfeiture for the period of time the State Engineer authorizes them to be used within the bank (see Utah Code 73-1-4(2)(e)(xi)). Because of this, there is no danger of "buy and dry" schemes permanently taking water away from agriculture. This assurance, coupled

with the financial incentive, should be leveraged to further encourage producers to participate in water banking and optimization.

To date, the Division of Water Resources has received $800,000 from federal and state sources to develop a statewide strategy to set up and operate water banks. Utah currently has one approved pilot water bank, but it is facing protests. Other water bank proposals are being explored, but all require further development. Water banks are locally formed, voluntary to participate in, and the leases are temporary in nature. Information gathered from these water bank pilots will be used to develop a statewide water banking strategy to incentivize agricultural water users to optimize water usage. Targeted efforts should be made to educate agricultural water users about availability, mechanics, and assurances of Utah's water banking system.

- **Instream Flows -** HB 33, *Instream Flow Amendments*, (J. Ferry) allows water right holders, including farmers and ranchers, to temporarily lease their rights to organizations for certain statutorily authorized purposes. Organizations are permitted to pay producers to keep the water in the source, which allows more water to stay in the system, increases flexibility in water sharing, and provides another financial incentive for producers to conserve.

It is important to note that both these laws allow for water to be used for another purpose temporarily. The temporary nature of these programs means that agricultural water made available through optimization, banking, or leasing cannot be counted on as a permanent solution to shortages in municipal, industrial, or ecological water needs.

While these mechanisms represent significant strides in further incentivizing conservation and protecting water rights, the state should continue exploring and testing various mechanisms. Potential mechanisms include, but are not limited to, the following:

- **Split Season Leasing -** Consumptive water uses such as irrigation water would be used for their designated beneficial use during the first part of the irrigation season, but then be leased for instream purposes after a designated time. Late season water is typically less productive in producing a hay crop than early season water. Late season water is also important for water quality and the health of streams because this is when temperatures can become too warm or flows reach critical low levels. Split season leasing may improve base flow conditions, but larger-scale testing would be needed to determine if enough water could be delivered to meet objectives such as delivering meaningful amounts of water to the Great Salt Lake or Lake Powell. However, a reactive leasing program such as this may not be attractive to agricultural producers due to relative unpredictability.

- **Triggered Water Leasing or Banking Based on Drought Index -** A potential evolution of the current leasing program could be leasing triggered by a hydrological parameter, such as a drought index. An early warning system, such as a Standardized Precipitation Index (SPI) may be viable to provide needed information early in the water year to trigger leasing or banking. Similar to the split season leasing, a triggered program would have more lead time, which would allow agricultural producers to enroll in a temporary leasing program earlier in the year.

- **Demand Management System Applied**

Consistently in Wet and Dry Years - A demand management program would set consumptive demand reduction goals and work with water rights holders to reduce their consumptive use at a basin level. Water Banking could be an example of this, as long as a substantial amount of the transactions are for instream flow. This would also provide a consistent market to provide certainty to producers. However, it would require consistent and stable funding. It would also need to provide enough funding per acre to producers to incentivize temporary fallowing or leasing. This could potentially be the most effective way to get meaningful amounts of water to critical bodies of water or tributaries like the Great Salt Lake or the Colorado River.

Using these tools leverages one of the notable benefits to well-managed agricultural land: the potential flexibility of water leasing or voluntary reduction of water use during times of drought. Residential homes and commercial facilities continuously use water throughout the year with very little variation in demand for indoor water use. By contrast, agricultural irrigation demands can be altered by fallowing fields, planting less water-intensive crops, or reducing the number of hay cuttings. The water savings from these temporary adjustments can be leased, banked, or left in storage to create flexibility for other beneficial uses during times of drought. Once farmland is developed, much of that water flexibility goes with it. In other words, as our prime agricultural lands are developed, our water demand hardens.

Addressing nonpoint sources of water pollution

Nonpoint source pollution includes all pollutants that are picked up and carried to water bodies by runoff moving over a wide variety of landscapes (i.e., agriculture lands, forestry lands, urban areas) and has negative impacts on water quality. Whereas the Utah Division of Water Quality regulates point sources of pollution (i.e., a concentrated source of discharge, including certain classes of concentrated animal feeding operations) through a system of permits, nonpoint source pollution is not regulated through permits. Instead it is managed on a best practices and voluntary basis, requiring cooperation among individuals and organizations seeking to protect and improve the quality of their water resources.

Nonpoint source pollution is not normally regulated because the contributors are innumerable and irregular in the way they distribute pollutants into water. In truth, everyone contributes to nonpoint source pollution to a certain extent through our day-to-day activities. Therefore, reducing nonpoint source pollution depends on voluntary changes in behavior and land management.

Agricultural lands are a contributor to nonpoint source pollution. Fertilizer and manure application to crops help maximize yields and improve soil health. However, the over application of nutrients can lead to their runoff, polluting water and adversely impacting its downstream beneficial uses, including the environment.

Various state programs are available to agricultural producers who desire to decrease possible nonpoint source pollution, including UDAF's Agricultural Voluntary Incentive Program (AgVIP). This program encourages farmers and ranchers to develop Comprehensive Nutrient Management Plans (CNMPs) that help maximize crop yields while minimizing losses and protecting water quality. DEQ's Division of Water Quality manages the Nonpoint Source Program, which is a voluntary incentive-based program that works with partners to reduce nonpoint sources of pollution. The Nonpoint Source Program offers financial incentives to implement a broad range of on-the-ground Best Management Practices. These are investments that property owners and land managers can make to reduce nonpoint sources of pollution and improve their land and production. The Nonpoint Source Program also supports education and outreach activities that

raise public awareness of water quality issues in the state and how to solve them.

For these and other related programs to be successful, the state needs willing partners and landowners to improve water quality. However, producers who suspect they may have a nonpoint source pollution problem are sometimes hesitant to reach out to the state, which oversees water quality. This is due to a misperception that if they approach the state for a grant to address a potential nonpoint source pollution problem, they might be regulated, fined, or required to address the issue at their own cost if a water quality issue is identified.

Producers who contact the state for help managing nonpoint source pollution will not face regulatory action or mandatory costs as a result of reaching out for help. The state must find ways to help producers overcome this misperception and communicate the benefits to producers clearly. Doing so will encourage more participation in the state's Ag VIP and nonpoint source pollution programs and improve our water quality, ultimately benefiting our water quality for a healthy and prosperous Utah.

Agricultural land preservation

Protecting our agricultural land is crucial to maintaining local food production and a high quality of life throughout the state. The value of local and secure food supplies has become increasingly apparent over the past few years that have been riddled with supply chain disruption. As land values increase in some of our most productive agricultural areas, the risk of paving over our prime agricultural soils becomes ever greater. In fact, according to the latest Census of Agriculture, approximately 1.2 million acres of farmland were lost in Utah from 1997 to 2017.[6] The LeRay McAllister Critical Lands Conservation Fund (a state program which recently moved from the Governor's Office of Planning & Budget (GOPB) to UDAF) provides willing landowners, including farmers and ranchers, the opportunity to benefit financially from their land by selling the development rights and placing their land in a conservation easement. The public receives the benefit of locally produced food, open space, watershed protection, wildlife habitat, and the rural character that reminds us of our agricultural heritage.

Compared to developed land, a properly managed agricultural landscape produces a more natural hydrologic system. Well-managed agricultural land allows both irrigation water and stormwater to infiltrate more naturally into the soil. By contrast, impenetrable surfaces associated with developed land often cause water to rapidly run off into rivers and streams–often increasing the flashiness and magnitude of runoff events, carrying sediment and potential pollutants that impact water quality.

Highest and best use of Utah's water and farmland

Much of the state's agricultural water goes toward alfalfa irrigation–Utah's largest crop by acreage (see Figure 2).[7] Alfalfa is a thirsty crop that requires more water than other potential crops. Some question whether Utah farmers should consider growing a different crop that utilizes less water. Further, some critique the fact that a portion of Utah's alfalfa hay is exported to out-of-state or international markets, arguing that the state is exporting its water.

We live in a global economy. Utah products and labor of all types flow across state and international boundaries every day. Utah has a significant tech industry along the Wasatch Front that exports data products across the nation and world. This industry uses significant amounts of water to cool computer servers. To an extent, water is embedded in every product that Utah exports. Conversations about exporting Utah's

6 USDA. (n.d.). United States Department of Agriculture. Census of Agriculture. Retrieved July 14, 2022, from https://www.nass.usda.gov/Publications/AgCensus/2017/Full_Report/Volume_1,_Chapter_1_State_Level/Utah/

7 Utah Division of Water Resources. (n.d.). Utah DNR Online Maps. Open Data. Retrieved July 14, 2022, from http://water.utah.gov/opendata

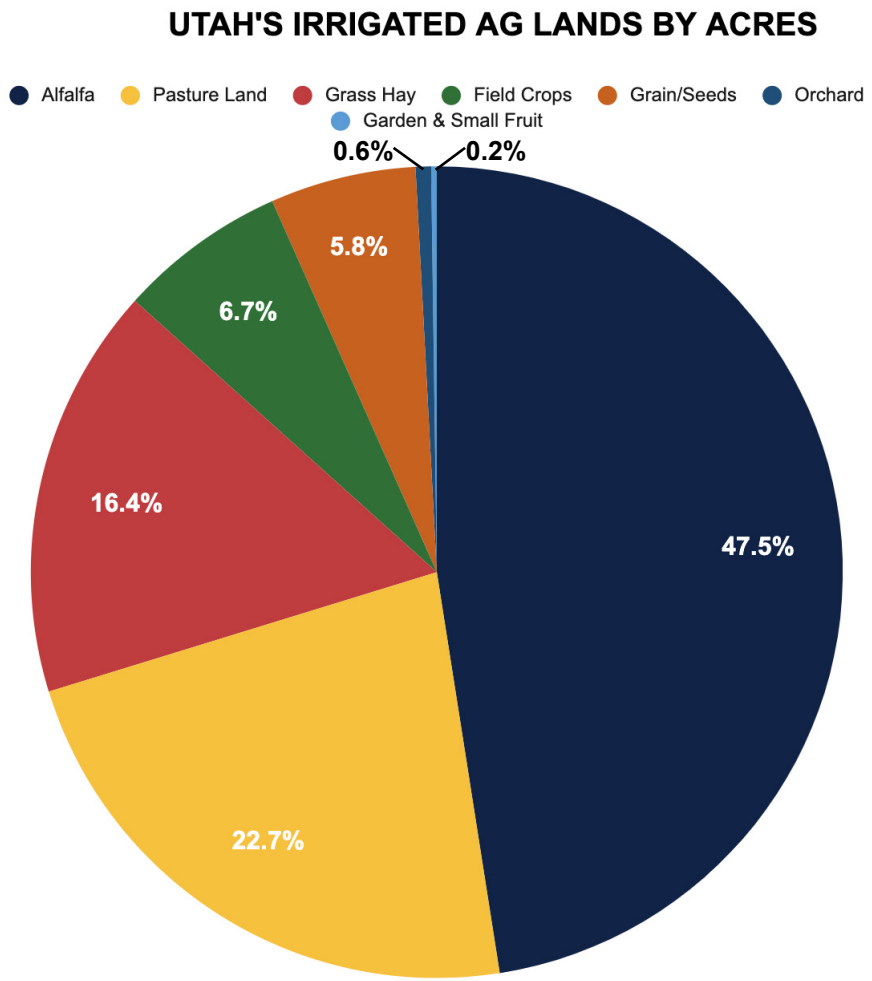

FIGURE 2 Utah's Irrigated Lands by Acres (Source: USDA)

water should be considered in the context of a global economy, which includes ancillary benefits to Utah derived from trade partnerships with other states and countries. For example, Utah has a reciprocal agricultural trade relationship with California. Utah exports hay to support dairies in California, and Utah imports fruits and vegetables from California to feed Utahns.

This debate is rooted on how water is viewed as an economic input and how the use of Utah's farmland and water may be maximized to produce the greatest value relative to the water and land used. For example, some question whether western water law prevents producers from realizing the true value of their water by treating water rights as a property right, rather than a priced commodity. This may cause producers to sell crops at a price that does not reflect the opportunity costs of their water use relative to other potential uses, such as its sale on the water market. Introducing market forces, like water banking and split season leases (as referenced above), may allow producers to make alternative financial decisions—particularly during times of high water demand or dwindling supplies that increase the value of water.

While the state continues to grapple with optimizing water law to achieve the highest and best use of Utah's water and farmland and determining the desired balance between pricing, agricultural water use, economic output, and the need for a local food supply, the state can continue to help producers optimize their water usage through the Water Optimization Program, and grow more produce with less water. It can also focus on strategies to continue developing programs and ideas like Community Supported Agriculture (CSA), Farmers Feeding

Utah, and UDAF's Utah's Own and Pilot Food Security Processing Grant programs, which help strengthen our state's local food security. Emphasizing the less quantifiable benefits of agriculture, such as open space, wildlife habitats, and protecting the state's culture and heritage, are important as well. Lastly, water markets created through water banks can help disincentivize the inefficient use of water. Fully realizing the benefits of the state's new water banking and leasing options will take time as producers become aware of and confident enough to utilize these programs. Broader adoption of these programs will hopefully reassure producers that fears of forfeiture of unused water are unwarranted.

Public lands and grazing

While irrigated cropland receives a majority of the attention in agricultural water discussions, two-thirds of the state's land area is managed by the federal government. These lands are typically unavailable for traditional cultivation or irrigation; however, they produce significant agricultural output with very little supplemental water. As of 2011, nearly 45 million acres were available for livestock grazing in Utah and 73 percent were on federal lands.[8] Grazing on public lands takes advantage of millions of acres of native, drought-adapted forage and higher elevation areas in our state that receive significantly more precipitation (see Figure 3). It also reduces the risk of wildfire by removing the fine fuels that easily ignite and provide an ignition source for heavier fuels. However, because these lands are only available during specific seasons to protect watersheds (typically the summer months), supplemental feed is often required to sustain livestock herds during the winter months.

Relatively small monetary and resource investments can enable significant amounts of available forage on public lands. For instance, installing stock watering tanks in areas with inadequate water supplies opens up new grazing opportunities, more efficiently distributes livestock, and protects riparian areas. Programs like the Grazing Improvement Program (GIP), the Nonpoint Source Program and the Watershed Restoration Initiative (WRI) can improve or develop water sources, install stock watering tanks, improve range conditions, and increase forage productivity to increase feed and improve water quality and quantity. These active management practices also benefit wildlife populations.

Despite historical resource degradation, rangeland health and riparian conditions continue to improve due to effective vegetation treatments, improved management practices, and implementation of the best available science. Additionally, the GIP, WRI, and Nonpoint Source programs have provided land managers and producers with additional tools and funding to improve watershed management on both private and public lands. The programs have shown that being active, not passive, is the quickest way to achieve measurable and sustainable watershed improvements and results. Because many of the state's rangelands (both private and public) are the primary water source for almost all of our communities, active and strategic rangeland management is critical to water supply resiliency, water yield, and water quality.

Action plan

Previous water planning efforts have identified more than 200 unique recommendations to better secure Utah's water future. The implementation of many of these recommendations will require changes to state water law, other legislative actions, or partnerships with non-state entities. The intent of this report is to identify specific actions that Utah's executive branch can undertake immediately to help move some of these many recommendations forward.

Many of the water needs of the agricultural community are infrastructure related. The Investing in Infrastructure chapter of this report addresses these needs. As previously mentioned,

8 Utah Department of Agriculture and Food. (n.d.). Utah Department of Agriculture and Food. Ag Task Force. Retrieved July 14, 2022, from https://ag.utah.gov/documents/Agtaskforce.pdf

UTAH'S CROPLAND AND PUBLIC LAND GRAZING ALLOTMENTS

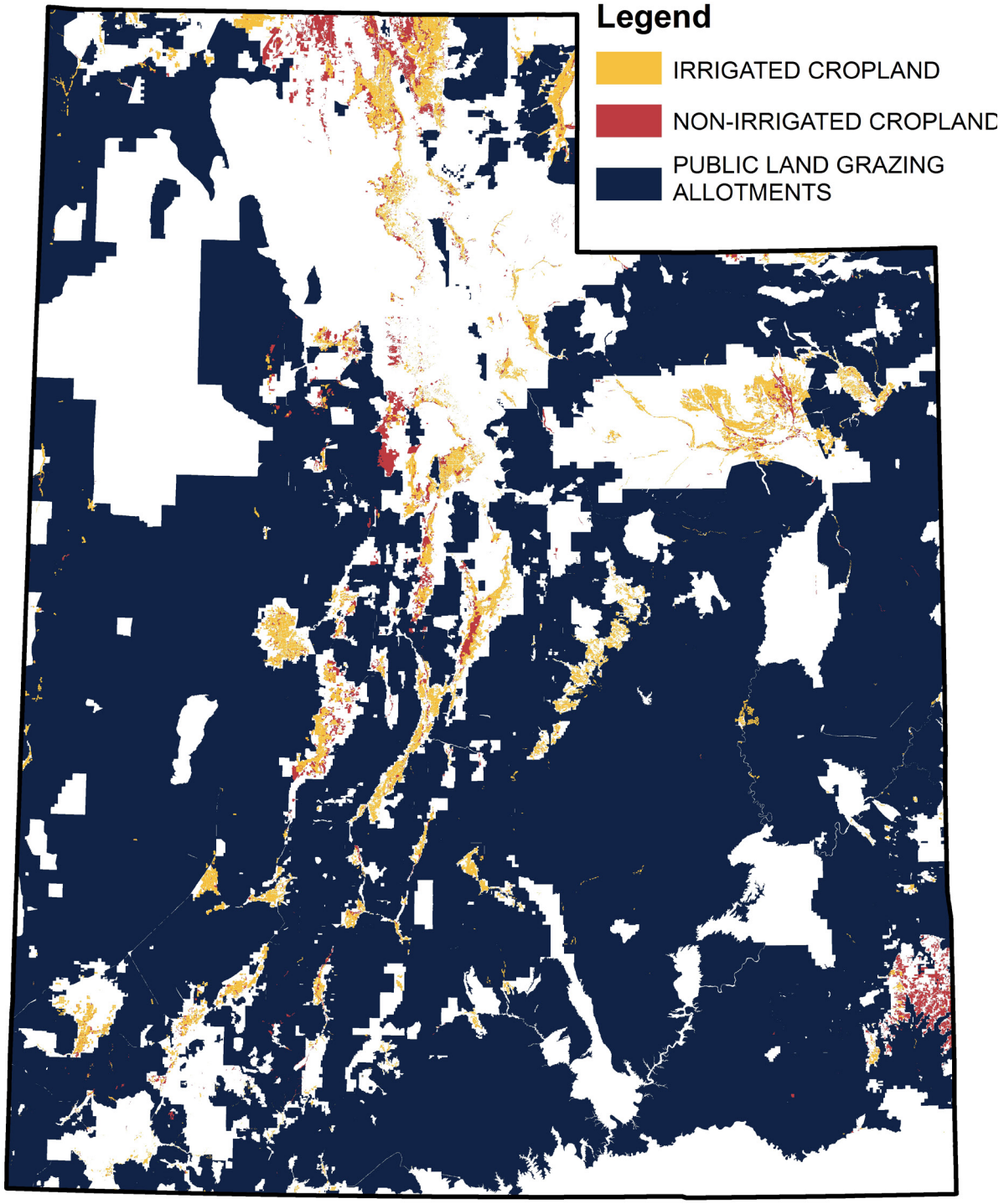

FIGURE 3 Utah's Cropland and Public Land Grazing Allotments (Source: Utah's State Geographic Information Database. Water Related Land Use Layer as maintained by the Utah Division of Water Resources: Summer 2022; USDA Forest Services Range: Allotment Feature Layer, Summer 2022; US Dept. of Interior Bureau of Land management (BLM) BLM UT Grazing Pastures Layer, Summer 2022.)

the legislature has appropriated an unprecedented $76 million to UDAF's Water Optimization Program, which will also help address infrastructure needs, such as piping canals to prevent seepage and evaporative loss, and updating antiquated on-farm irrigation systems to ensure more water-efficient irrigation methods. This chapter includes action plans for continuing to invest in water infrastructure and implementing strategies to protect water quantity and quality for all.

The state has identified five key priority actions, and associated implementation steps, to support productive agriculture:

ACTION 1 **Continue to execute and invest in agricultural infrastructure, including water optimization program projects, irrigation system automation, metering, and data storage and dissemination.**

ACTION 2 **Deploy strategies such as water banking, split season leases, and in-stream flows to create water use flexibility and protect critical habitats.**

ACTION 3 **Continue to invest in water quality programs related to agriculture.**

ACTION 4 **Educate and engage producers and the public to improve understanding of water rights, and their role in maintaining water quality and conservation.**

ACTION 5 **Invest in agricultural research and data collection to ensure decisions and investments are based on the most accurate information and best practices.**

ACTION 1 Continue to execute and invest in agricultural infrastructure, including water optimization program projects, irrigation system automation, metering, and data collection and dissemination.

TASK Identify agricultural water measurement data collection and dissemination needs, and determine if the state's existing water data platforms could be expanded to include additional agricultural water data.

Champion: DNR Executive Director, UDAF Commissioner, DEQ Executive Director
Timeline: 2023
Resources needed: Existing staff time
Benchmark: Status report

TASK If determined feasible, expand current water data platforms to include additional agricultural data. If not, develop a proposal for the development of a new open-data platform to collect and disseminate agricultural water data.

Champion: DNR Executive Director, UDAF Commissioner, DEQ Executive Director
Timeline: 2025
Resources needed: Existing staff time, potential DTS/contractor assistance
Benchmark: Creation of the platform

TASK Successfully execute agricultural water optimization projects.

Champion: UDAF Commissioner
Timeline: All funding obligated by 2024, all projects completed by 2026
Resources needed: Existing staff time
Benchmark: Projects completed, being monitored, and outcomes demonstrated

TASK Expand education efforts to help the public and producers understand the value of agricultural water optimization projects.

Champion: UDAF Commissioner
Timeline: 2023
Resources needed: Existing staff time
Benchmark: Campaign visibility metric (impressions, website hits, etc)

ACTION 2 Deploy strategies such as water banking, split season leases, and in-stream flows to create water use flexibility and protect critical habitats.

TASK Evaluate the process to develop water banks to determine if there are procedural changes necessary to streamline approvals and address concerns.

Champion: DNR Executive Director
Timeline: 2023
Resources needed: Existing staff time
Benchmark: Evaluation completed

TASK Provide technical assistance to support producers and irrigation companies in the development and utilization of water banks in new basins.

Champion: DNR Executive Director in partnership with private water users
Timeline: Ongoing
Resources needed: Existing staff time
Benchmark: Number of producers and irrigation companies helped

TASK Evaluate existing water banks to determine if they are working as intended.

Champion: DNR Executive Director
Timeline: Initiate one year following the establishment of the first water bank
Resources needed: Existing staff time
Benchmark: Evaluation completed

TASK Identify stakeholders that have interest in maximizing instream flows and actively work to facilitate partnerships between stakeholders.

Champion: DNR Executive Director, UDAF Commissioner, DEQ Executive Director (Stakeholders include producers irrigation companies, environmental groups, Utah Code 73-3-30 identified "Divisions," etc.)
Timeline: 2022
Resources needed: Existing staff time
Benchmark: List of stakeholders interested in in-stream flows

TASK Collaborate across state agencies to ensure instream flow rights are being monitored and that banked water is remaining within the stream as intended.

Champion: DNR Executive Director

Timeline: Initiate as soon as instream flow rights are approved
Resources needed: Existing staff time
Benchmark: List of monitored instream slow rights with distribution accounting on the quantity of water

ACTION 3 Continue to invest in water quality programs related to agriculture.

TASK Assess current programs (AgVIP, Soil Health, GIP, Nonpoint Source, Ag Water Optimization) addressing agricultural water quality to determine their capacity, demand, and effectiveness.

Champion: UDAF Commissioner and DEQ Executive Director
Timeline: 2023
Resources needed: Existing staff time
Benchmark: Inventory of state programs, funding levels, number of applications received v. funded

TASK Report on the outcomes and water quality benefits achieved through the implementation of these programs.

Champion: UDAF Commissioner and DEQ Executive Director
Timeline: Ongoing
Resources needed: Existing staff time
Benchmark: Number of acres enrolled each year (AgVIP), Total water savings realized, acres treated, total load reductions (Agricultural Water Optimization), animal unit/ month (AUM) reported by the program (GIP), number of acres implementing soil health practices (Soil Health)

TASK Continue to invest in programs that benefit agricultural producers while improving water quality/quantity, and recruit additional partners to leverage state and federal funding.

Champion: UDAF Commissioner and DEQ Executive Director
Timeline: Ongoing
Resources needed: Existing staff time, potential program-specific funding requests

ACTION 4 Educate and engage producers and the public to improve understanding of water rights, and their role in maintaining water quality and conservation.

TASK Design and resource a broad stakeholder engagement process to identify, sustain, and advance the multiple values associated with agricultural water use.

Champion: Ag Optimization Task Force (Stakeholders include state Watershed Councils, Utah Conservation Commission, USU Extension)
Timeline: 2022
Resources needed: Existing staff time
Benchmark: Completed stakeholder engagement process, presentations to all agricultural producer industry groups, such as the Dairy Commission, UACD, Woolgrowers Association, and Cattlemen's Association

TASK Explore the feasibility of establishing an education center dedicated to providing information on agriculture, water, and food production.

Champion: UDAF Commissioner, DNR Executive Director
Timeline: 2023
Resources needed: Existing staff time
Benchmark: Completed feasibility study

TASK Update the Utah Water Quality Partners website. Improve the connectivity of this site with other educational resources regarding agriculture's role in protecting and improving water quality.

Champion: DEQ Executive Director in partnership with Utah State University
Timeline: 2023
Resources needed: Existing staff time
Benchmark: Website updated

ACTION 5 Invest in agricultural research and data collection to ensure decisions and investments are based on the most accurate information and best practices.

TASK Build a partnership with Utah's Land Grant Universities, such as USU Center for Land Water and Air, to identify potential research projects.

Champion: UDAF Commissioner, Ag Water Optimization Task Force, USU Extension
Timeline: 2023
Resources needed: Existing staff time
Benchmark: Coordination meetings with partners held quarterly to begin the partnership, and less often thereafter

TASK Develop and implement a research proposal to obtain more recent and credible information regarding the type and quantity (acreage and tonnage) of crops produced in Utah.

Champion: UDAF Commissioner, USU Extension, other Universities
Timeline: Initiate in 2023
Resources needed: Existing staff time
Benchmark: Report on research findings

TASK Collaboratively develop and implement research proposals looking into quantifying the markets for different types and quantities of crops produced in Utah.

Champion: UDAF Commissioner, DNR Executive Director, DEQ Executive Director, USU Extension, and other Universities, Ag Water Optimization Task Force
Timeline: Initiate in 2023
Resources needed: Existing staff time, potential funding requests
Benchmark: Reports on research findings

TASK Collaboratively develop and implement research proposals looking into identifying the water needs of specific crops produced in Utah.

Champion: UDAF Commissioner, DNR Executive Director, DEQ Executive Director, USU Extension, and other Universities, Ag Water Optimization Task Force
Timeline: Initiate in 2023
Resources needed: Existing staff time, potential funding requests
Benchmark: Reports on research findings

TASK Collaboratively develop and implement research proposals looking into identifying the economic value of agriculture and agriculture water use in Utah.

Champion: UDAF Commissioner, DNR Executive Director, DEQ Executive Director, USU Extension, and other Universities, Ag Water Optimization Task Force
Timeline: Initiate in 2023
Resources needed: Existing staff time, potential funding requests
Benchmark: Reports on research findings

TASK Collaboratively develop and implement research proposals looking into identifying the impact of agricultural water optimization projects on the in-stream water budget.

Champion: UDAF Commissioner, DNR Executive Director, DEQ Executive Director, USU Extension, and other Universities, Ag Water Optimization Task Force
Timeline: Initiate in 2023
Resources needed: Existing staff time, potential funding requests
Benchmark: Reports on research findings