

Agriculture in Utah 2018



League of Women Voters of Utah

September 2018

AGRICULTURE IN UTAH 2018

COMMITTEE MEMBERS

Linda Clark
Naomi Franklin
Wendy Molteni
Ann O'Connell
Marilyn O'Dell
Jan Striefel
Jo Lynn Wilson

EDITORS

Sandra Peck
Sherilyn Bennion

INTERVIEWS CONDUCTED

United States Department of Agriculture

John Hilton USDA, Director, Utah Agricultural Statistics

Utah State University College of Agriculture and Applied Sciences

DeeVon Bailey, PhD, Applied Economics, Commodity Marketing and Agribusiness

Kynda Curtis, PhD, Agriculture and Food Marketing, Consumer Economics, Program Impact Evaluation

Dillon Feuz, PhD, Applied Economics: Agricultural Commodity Marketing, Risk Management

Ruby Ward, PhD, Agriculture Tax, Agriculture Entrepreneurship, Community Development

Utah Farm Bureau

Sterling Brown, Vice President - Public Policy

Spencer Gibbons, Director of Field Services & Northern Regional Manager

Envision Utah

Ryan Beck, MRLS, Vice President of Planning

TABLE OF CONTENTS

INTRODUCTION	1
CURRENT UTAH AGRICULTURE	1
The Two Agricultural Sectors	2
Products of Utah Agriculture	
VALUE OF UTAH AGRICULTURAL PRODUCTS FOR EXPORT	4
AGRICULTURE’S CONTRIBUTION TO THE UTAH ECONOMY	6
AGRICULTURAL SUSTAINABILITY –	7
Will Utah Continue to Have an Agricultural Sector?	
ISSUES OF CONCERN TO FARMERS AND RANCHERS	9
FOOD SUSTAINABILITY IN UTAH	10
WHAT FACTORS LIMIT UTAH FOOD PRODUCTION	11
AGRICULTURAL LAND PRESERVATION STRATEGIES FOR UTAH	13
THE ENVIRONMENTAL COST OF FARMING AND RANCHING	17
APPENDIX A	18
Land Preservation Techniques in Other Countries	
APPENDIX B	19
More Detailed Information on Utah Agriculture Products	
APPENDIX C	22
Agriculture Position of LWV US (adopted in 2014)	
LWV UT Position on Water	
BIBLIOGRAPHY	24

INTRODUCTION

The League of Women Voters of Utah initiated a study of Utah agriculture with an appreciation of farming and ranching lifestyles, the esthetic values of farms and farmland, and a community-expressed preference for eating food grown locally. We began our research with concern for the future of Utah farming and ranching and whether it will be a viable occupation in the future, and with skepticism about resident's hopes for food sustainability and the ability to grow enough food to sustain a growing population.

It was a difficult task and we did not find all the information we sought. We found data on crops and animal products, agriculture industry's contribution to the state economy, challenges to the future of farming and ranching, and strategies for preserving agriculture. We did not find data on importation of food into Utah, probably because import data are considered proprietary information.

CURRENT UTAH AGRICULTURE

THE TWO AGRICULTURAL SECTORS

Two important agricultural sectors are represented in the economy of Utah: Commodities, and Local and Specialty Markets. Both are important to Utah, but they are very different.

Commodities are generally those agricultural products - grains, animals, feed that are grown on a larger scale, some of which are consumed or used locally, and some of which are exported. The largest of these is alfalfa which is used as feed for livestock within the state and also exported. Commodities are typically grown on larger farms and ranches that may range from 20 to several hundred acres and are located in rural areas of the state. Commodities generally include alfalfa hay and other feed crops such as corn; animals including hogs, cattle, sheep, turkeys and chickens; dairy products; grains including wheat and corn; and some nursery crops. Many agricultural commodities require some form of processing, some of which occurs in Utah and some of which is provided elsewhere. For example, pigs raised in Utah factory farms are exported, slaughtered, and packaged elsewhere. (D. News, 1998)

Local and specialty markets include primarily fruits and vegetables for human consumption. These are generally grown on acreages as small as one or two acres and up to five and larger and generally located in suburban and urban areas. The produce is primarily consumed in Utah. These are the products found at Farmer's Markets or distributed through CSAs (Community Supported Agriculture), and other farm-to-table opportunities for direct marketing to individuals and food service establishments. The range of fruits and vegetables produced in Utah is large and generally suited to our climate — peaches, apples, pears, berries, tomatoes, pumpkins and squash, onions, sweet corn, peppers, and many, many more. Today, more of these crops are grown under cover, which extends the growing season and the range of crops

available. While this sector of the agricultural economy is growing in Utah, it still represents only 3 percent of the fruits consumed and 2 percent of the vegetables.

PRODUCTS OF UTAH AGRICULTURE

All data in this section comes from the Utah Annual Bulletin, 2016 provided by the US Department of Agriculture, National Agricultural Statistics Service (USDA, NASS). The USDA, NASS provides statistics for US agriculture by conducting hundreds of surveys every year, some of which cover production, prices, and wages. Every five years they conduct a Census of Agriculture. The department was established in 1863 by President Abraham Lincoln as a Division of Statistics with field offices throughout the United States. On their web site (www.nass.usda.gov) one can explore the available statistics down to the county level.

CROPS

Alfalfa hay is by far the largest crop in Utah both in acres planted and cash value of production. Utah ranks 13th in alfalfa production across the country. It represents almost 60% of the 2015 value of crop production in the state and more than 20 percent of the value of crops and animal products. Although alfalfa is a large percentage of the farm output of the state it is not a highly processed crop and does not require extensive labor. Some alfalfa is pelletized and exported as animal feed.

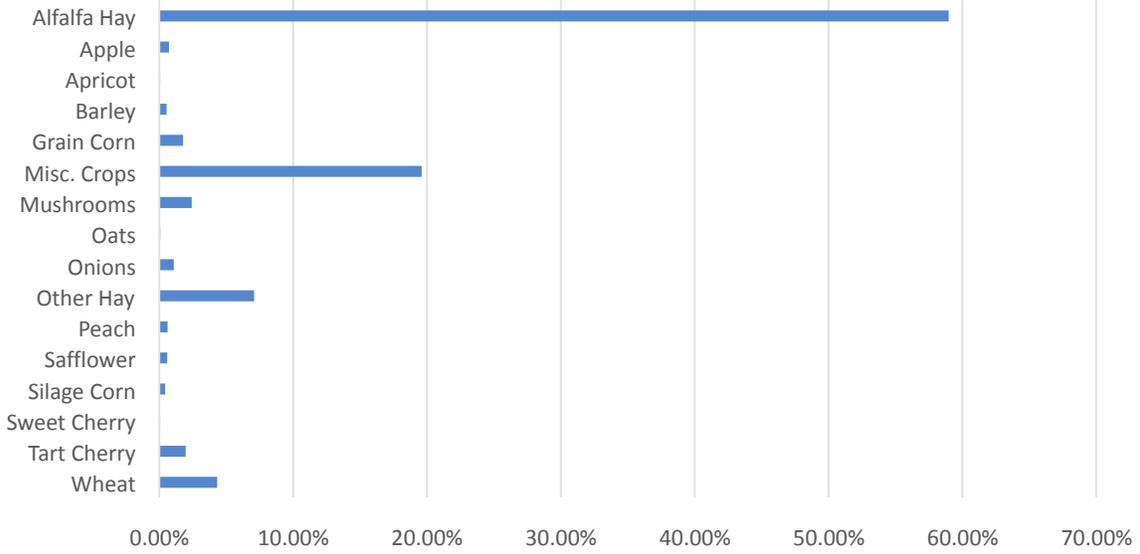
The 40 percent of crops grown in addition to alfalfa include a wide variety of products that grow in our environment. Fruit production returns more value per acre than alfalfa but is limited due to a limited availability of suitable soil, relatively heavy water consumption, and increased urbanization which has diminished planted acreage.

ANIMAL PRODUCTS

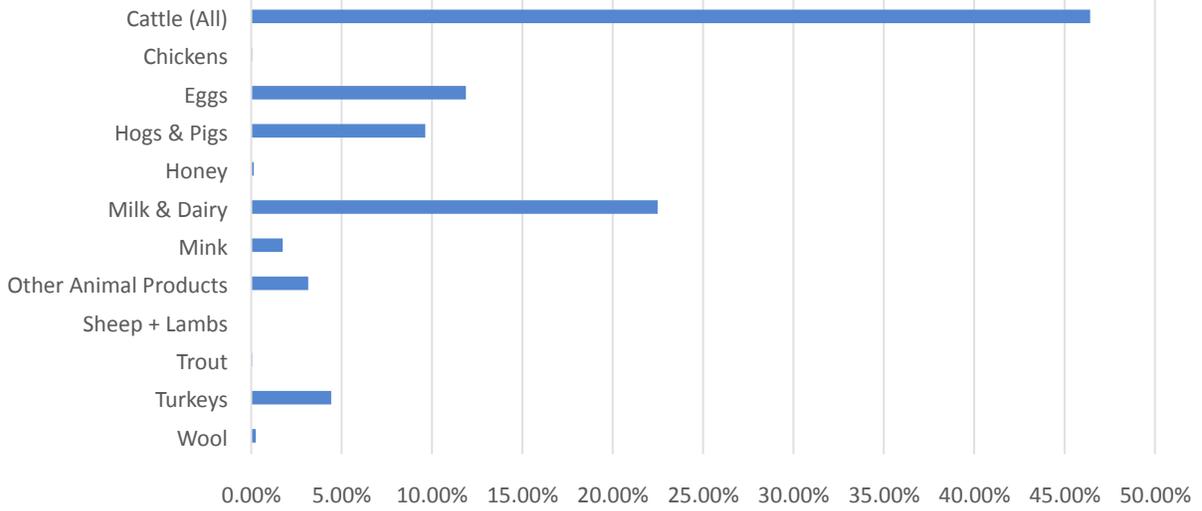
Cattle, including dairy, is the largest animal commodity in the state. The value of Cattle products makes up 58 percent of the total production value of all agricultural products in the state. Eggs account for 10 percent of the production value. Utah ranks 2nd in the country for mink production although the total cash value is comparatively low. Utah is also among the top 5 states for sheep, lambs and wool production.

The following charts show the range of crops and animal products produced in Utah and percentage of each.

Percentage grown by crop



Percentage Raised by Animal Product

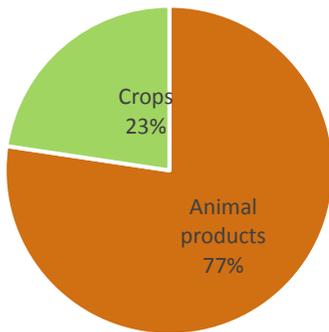


VALUE OF UTAH AGRICULTURAL PRODUCTS FOR EXPORT

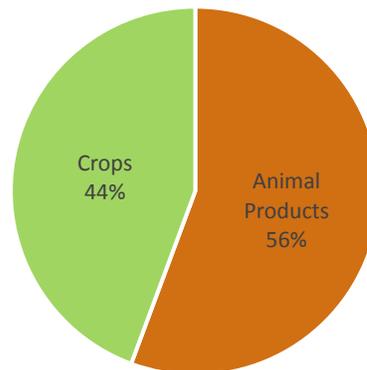
As seen in the pie charts below, expressed in percentages, far more crops (shown in green) than animal products (shown in brown) are exported. Much of the cattle products, dairy products and eggs raised in Utah is consumed in state. Animal products make up more than three-quarters of total farm receipts but only 15 percent of the exports (by \$ value).

	<u>2015 Farm Receipts</u>		<u>2015 Estimated Value of Export</u>	
Animal Products	\$1,536,523,000	77%	\$233,800,000	56%
Total Crops	\$449,571,000	23%	\$186,300,000	44%
Total	\$1,986,094,000		\$420,100,000	

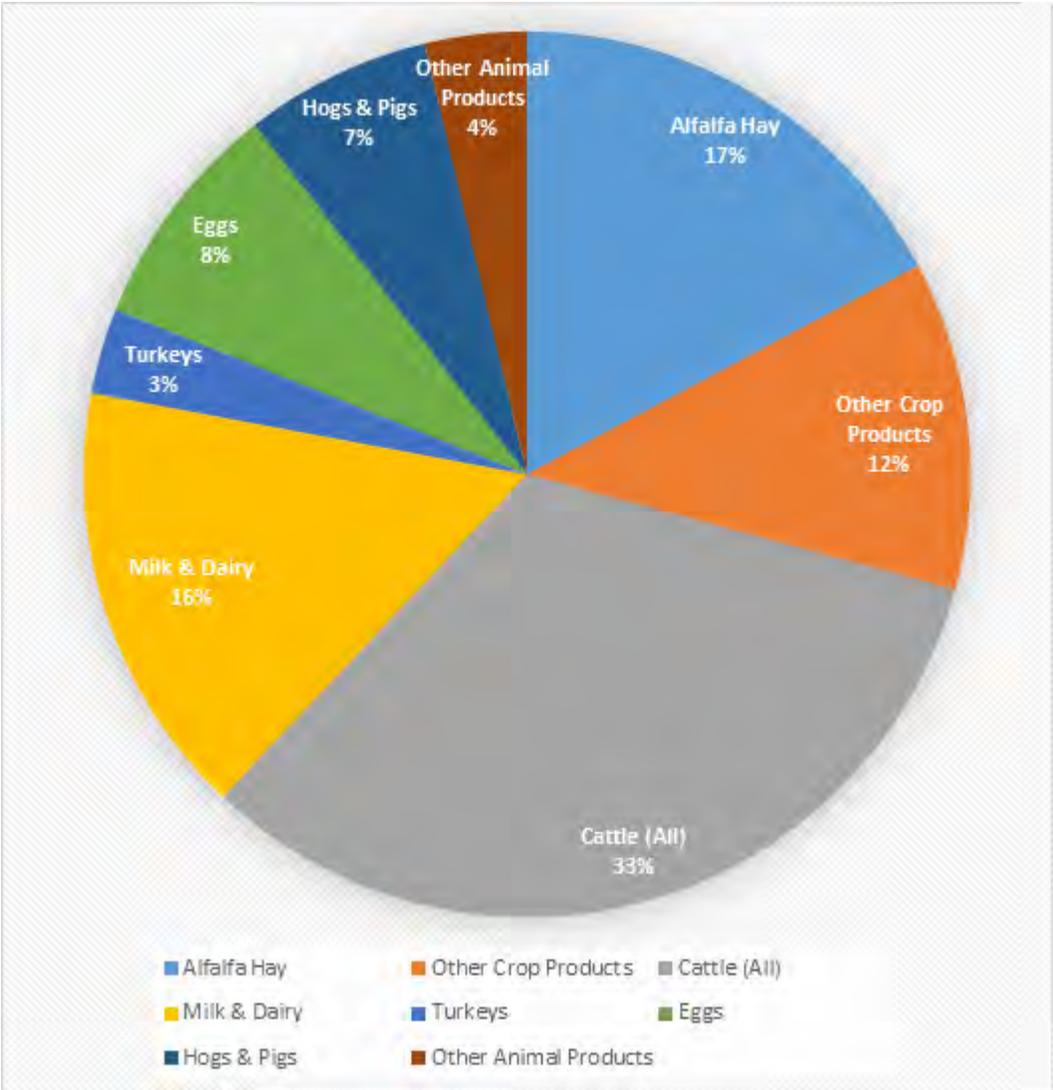
2015
Total Receipts for Domestic &
Export Sales



2015
Proportions of Receipts for
Exported Products



The pie chart below shows all agricultural output for the State of Utah.



AGRICULTURE'S CONTRIBUTION TO THE UTAH ECONOMY

Utah agriculture's contribution to the state's economy is calculated in three steps.

First is a sum of the receipts for sales of products such as hay, milk, and calves plus purchases made by farmers and ranchers in subsidiary industries such as for seed or farm equipment. This category is called **production agriculture**.

The second step adds the forward momentum of the profits from farmers and their suppliers that are spent in the non-farm economy such as house payments, clothing, food and entertainment. It includes a **multiplier effect**¹ which accounts for a series of transactions as this money moves forward multiple times through the economy from one business or individual to the next.

The third step is the **value added** by processing, such as adding value to beef by freezing and packaging.

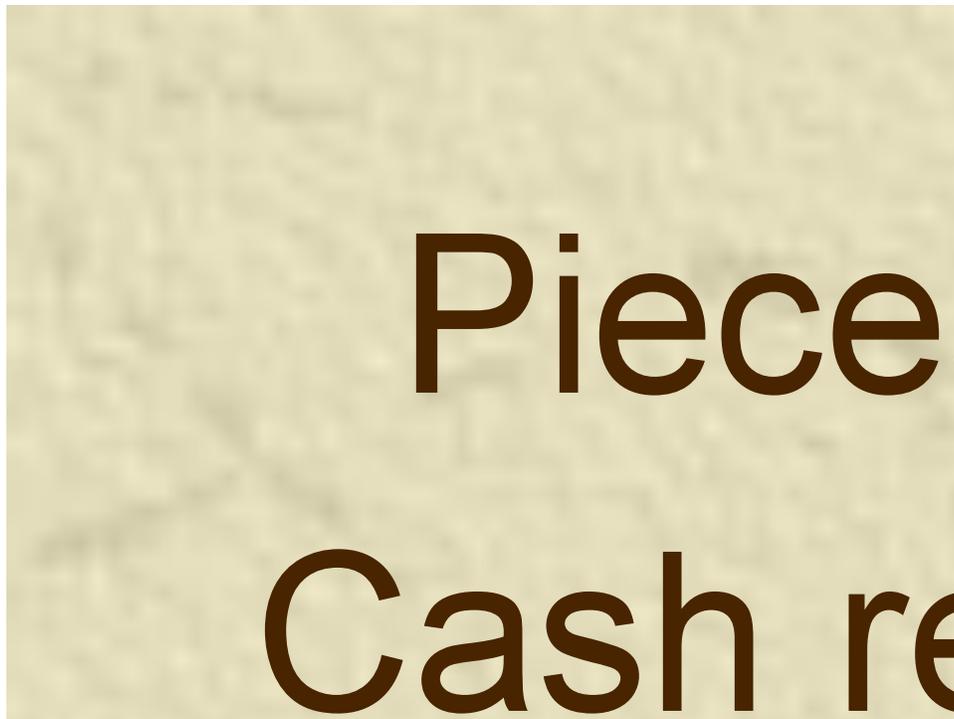
In 2014 production agriculture's direct sales were \$2.4 billion. The multiplier added \$3.5 billion. The added value of processing agriculture contributed \$10.7 billion to the Utah economy. This is 15.1 percent of total state output. For perspective, the Gross State Product for 2014 was \$140 billion. (Ward. 2014)

An example may clarify the concepts of "production agriculture" and the "multiplier effect": Utah ranchers/farmers are able to maintain a profitable operation by selling alfalfa pellets to China. (If they raised only cattle, they probably could not.) A rancher would need to use some of his profit from alfalfa sales to buy seed for next year's crop. That is a contribution to the accounting of "production agriculture." The rest he can spend as he chooses. If he shops locally his money passes on through the local economy creating a multiplier effect in the local economy and in taxes collected locally and by the state of Utah.

However, it is difficult to measure the value of buying local. Most multipliers are not impressively large. Often as unimpressive as a factor of 1.3. This may be due to the fact that most of the products we buy are imported from other states and nations which means the money goes to these other places, so even shopping locally is not a straight forward contribution to our city or state economy.

The chart that follows summarizes Utah agriculture production and its contribution to the economy.

¹ **IMPLAN and the multiplier effect:** IMPLAN is an economic impact assessment software system. The system was originally developed and is now maintained by the Minnesota IMPLAN Group (MIG). It combines a set of extensive databases concerning economic factors, multipliers and demographic statistics with a highly refined and detailed system of modeling software. It is used by universities, private companies, federal agencies, the Utah Department of Natural Resources, and the Department of Applied Economics at Utah State University. (RESI)



Source Utah Ag. Classroom

AGRICULTURAL SUSTAINABILITY –Will Utah Continue to Have an Agricultural Sector?

Changes in agricultural land and urbanization

Utah is one of the most urbanized states in America, with over 90 percent of its population living in urbanized areas located along the Wasatch Front. Unfortunately, this is where the most productive farm land occurs and where the highest-quality crops can be grown. As the population continues to increase, even more of this most productive farmland is destined for development. (Envision Utah 2014)

Number of farm and farm acres

The 2011 Utah Agricultural Statistics Report recorded 16,600 farms in Utah. This is an increase of 24 percent in total farms over the number in the 1990s, but the size of farms has decreased. Today the average farm size in Utah is 664 acres (down from 820 in 1978 - a 19 percent decrease).

Interestingly, the number of certified organic farms increased from 3 to 46 between 1997 and 2007, and the number of small specialty farms is also on the rise. These provide produce and products usually found in specialty markets and farmer's markets.

More small-scale farmers and specialty market growers are innovating and experimenting with ways to extend the growing season by using green houses and hoop and tunnel houses, and

they are experimenting with different crops. Educational opportunities for farmers to explore more of these innovations are necessary (SLC, 2013).

Demographics of farmers

Today, the average age of a farmer is 57, and many farm children are choosing alternative occupations as they find it more difficult to continue to farm. Eighty-eight percent of farmers are male; 12 percent female. Ninety-one percent are Caucasian; 4 percent Hispanic; 4 percent Native American; and 1 percent Asian, African/American, and other. (Utah Agricultural Statistics, 2011)

Farm employment

Utah food growers, processors, and other agriculture related businesses employ 66,000 people and contribute about 14 percent to Utah’s economy. But finding employees to work in the seasonal farm jobs is difficult and largely dependent on the availability of workers from Mexico who want to work in the U.S. seasonally, but return to Mexico when the growing and harvesting season is over. As a consequence, the status of immigrant labor in the U.S. is critical to the viability of Utah farms that are dependent on the temporary work visa program to fill the employment gap that local workers simply will not fill. Labor shortages are a central focus of the Utah Farm Bureau and its national counterpart. Year-round labor shortages in the farming/ranching sector are also of concern, especially in dairy production which requires a daily labor force.

Farm Economics

Utah ranks 37th in the nation in agricultural receipts — \$1.5 billion in cash receipts from farms and ranches:

Cattle	\$ 319 million
Dairy Products	\$ 301 million
Hay	\$ 216 million
Hogs	\$ 168 million
Poultry/Eggs	\$ 140 million
Sheep	\$ 18 million

(Agricultural Sustainability Task Force, 2012, data for 2011)

Some Interesting Facts

- Americans spend less for food than many other countries — just 10 percent of disposable income.
- Farms have become much more efficient, producing 360 percent more tons per acre than in 1950.
- In Salt Lake City (2012), food waste made up 22.17 percent of all waste.

ISSUES OF CONCERN TO FARMERS AND RANCHERS

Conversations with the Utah Farm Bureau, USU College of Agriculture and Applied Sciences, Envision Utah, and others have identified some key issues that are of concern to ranchers and farmers in Utah.

Water

Both the quality and quantity of water available to farmers and ranchers is concerning as more and more water is diverted from agricultural land to metropolitan growth areas of the state. Water law is complicated, contentious, and extremely politically charged; thus water rights are constantly debated and litigated, often to the disadvantage of farmers and ranchers. Farmers and ranchers are often tempted to use more water than actually needed in fear of losing water rights due to the “Use it or lose it” doctrine of Utah water law.

Legislation and tax codes

How agricultural land is taxed as property affects the economic viability of farming and ranching. Taxing land near urban areas based on development potential and zoning rather than actual agricultural use adversely affects profitability.

Employment

Finding and keeping a reliable labor force is increasingly difficult due to immigration laws and pending legislation. Temporary worker visas for seasonal labor, from Mexico in particular, are in jeopardy and will have national impact on agriculture.

Zoning and land Use

Increasingly, conflicts between growth areas and agricultural areas are common, often resulting in the squeezing-out of agricultural uses in favor of more dense development with higher property values. The pressure to sell agricultural land for development is increasingly attractive and a source of retirement income for many farmers and ranchers.

Loss of farmers

Fewer young people from farming families are electing to continue in agriculture because of pressures to develop land, the lack of interest in farming, the year-round and daily commitment an agricultural career requires in time and energy, and the economic and political barriers to sustaining farm and ranch operations.

Markets and processing

When farmers and ranchers must transport their products long distances for processing before they can be marketed, the costs increase and profits fall. Providing and assuring infrastructure that supports agriculture and its products is essential.

Farm incomes

Efficiencies of scale and modern farming techniques have worked together to create a vicious cycle for farmers and ranchers. Modern techniques for growing crops and raising animals have

resulted in economies of scale and thin profit margins. Farmers and ranchers compete against each other to produce the lowest priced products as do those in other sectors of the economy. Farmers must create operations large enough for cost effective mechanization and chemical use in order to produce enough to earn a livable income. And, this seems to require putting each other out of business.

Competition from other states and countries

Utah is mostly high desert. Other states and countries have climates and soils better suited to much of the produce we prefer today. (We no longer rely on onions and turnips to get us through the winter.) For example, California produces 80 percent of the nation's produce and Utah imports much of the food we eat.

SOME PROGRAMS THAT CAN HELP

In addition to the strategies that can help to preserve and protect agricultural land a few programs and ideas are emerging to support those interested in continuing or starting up farm and ranching operations.

Farm Link

This program matches older farmers and ranchers with younger people who are interested in an agricultural career. The veterans provide mentorship to the young with valuable advice, experience and guidance.

Agri-Tourism

Farmers and ranchers are finding unique ways to increase incomes and sustain their farming operations by providing tourism and educational opportunities to people and families who wish to experience a farm or ranch first-hand. Additionally, schools often bring classes to participating nearby farms for a rural experience and to learn about food and where it comes from.

FOOD SUSTAINABILITY IN UTAH

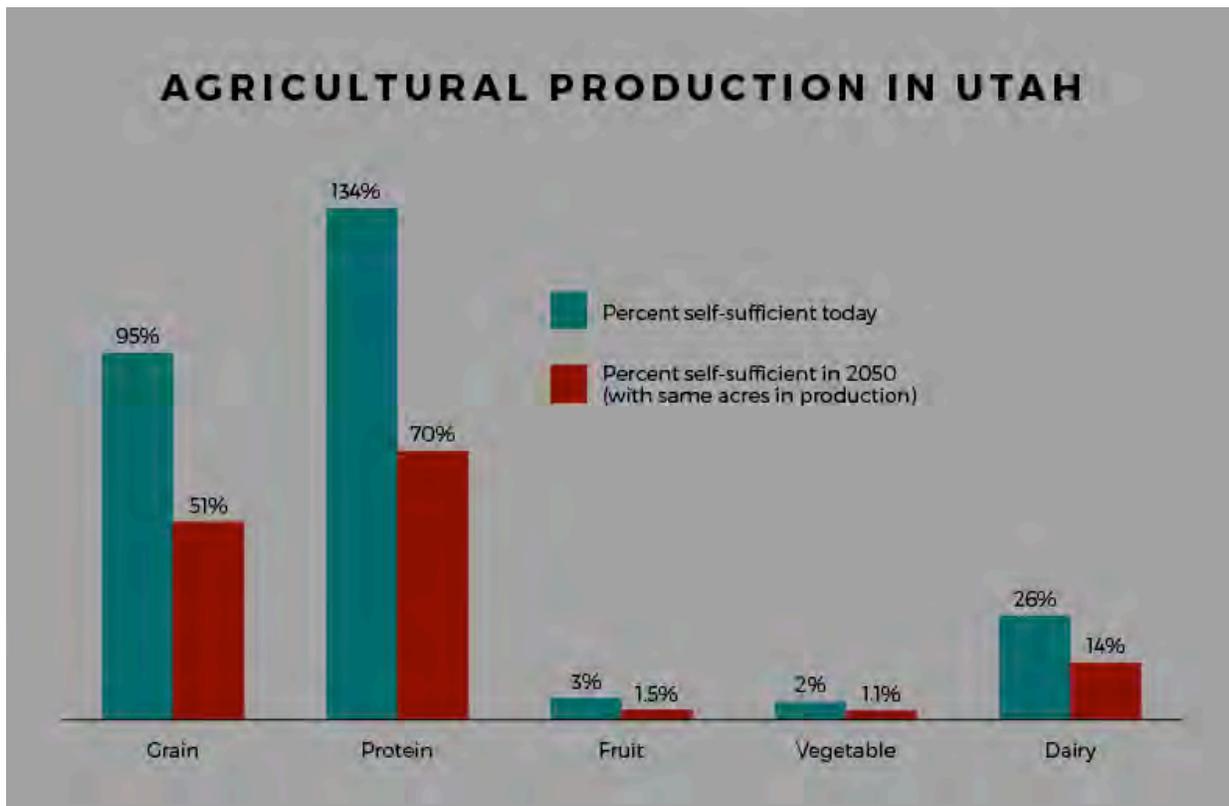
What is agricultural sustainability?

Traditionally a **sustainable agriculture** has been defined as one that meets society's food and fiber needs in the present without compromising the ability of future generations to meet their own needs. However, in current usage, a **sustainable food system** is one that promotes locally grown food. In Utah, we produce and consume 2 percent of our vegetables and 3 percent of our fruits; 95 percent of grains; 134 percent of protein (beef, pork, chicken, turkey, eggs); and 26 percent of our dairy (Envision Utah 2014). As the population grows and if current production levels remain the same, the percent of our diet that is produced in the state can only decrease dramatically.

Realistically, it is unlikely that Utah could ever achieve a completely sustainable agricultural economy because of limitations on highly productive farm land, climate, and water resources. The answer to maintaining or increasing our sustainability will rely on preserving as much productive agricultural land as possible, increasing production efficiencies, and perhaps increasing the variety of agricultural products grown and produced.

The bar graph below from Envision Utah shows how well we might do in feeding ourselves if we ate only all the food produced in Utah. Note that we currently produce more protein than we need. The protein food group includes meat, fish, eggs, beans, nuts, seeds, and soy products. It does not include dairy products. Utah protein production is mainly meat and eggs. It may come as a surprise that we do not produce enough milk products for ourselves. It is not surprising that we do not produce enough fruits and vegetable. (See the discussions of climate, soils, and water below.)

Note that the graph does not say we are eating all of our own food products. For example, it just suggests we could fulfill our own protein needs. Although we raise more meat and eggs than we need, much of the meat we eat is imported from out of state.



(Envision Utah)

WHAT FACTORS LIMIT UTAH FOOD PRODUCTION

Utah climate and topography limit the food the state can produce.

Utah has a limited amount of farmland due to climate and topography. Utah is the second driest state in the Union. Most of its land is not suitable for high value agriculture. Thirty-three

percent of the state is desert found in the Canyonlands, the southwest Mohave Desert corner of the state, and the Great Basin. Sagebrush in the Great Basin indicates the soil is somewhat suitable for crops but agriculture is limited by accessible water and cold winters. Forty percent of Utah is steppe land found between desert and mountains supporting grasses suitable for grazing. Three percent of Utah is prime farmland found along the Wasatch Front from the Cache Valley south to Nephi.

Water is the determining factor in what and how much we can grow.

Eighty percent of Utah's accessible water is allocated to agriculture. It is distributed through historical precedents such as "first in time first in line," the "highest and best use" dictum, and contractual arrangements governed by state statutes and legal maneuvering.

Even along the Wasatch Front, agriculture is dependent upon irrigation. Therefore, what is grown in Utah is dependent upon water availability and quality even more than upon soil type and temperatures. Growing more fruits and vegetables in more parts of the state would mean redirecting water and often improving water quality. Changes in water distribution and management are difficult, contentious, and expensive.

Shrinking farmland threatens high value crop production.

High value crops are those that bring in highest profit per acre. The USDA has three categories of high value crops but the one discussed here is unprocessed fruits and vegetables (and eggs), the kind of products found at the farmers market. The most obvious problem for high value crops everywhere is urban sprawl or other development patterns. Homes, factories and stores, and transportation corridors are more easily constructed on the very flatlands that accumulate the best soils. Any map of Utah that shows mountains and river valleys plus cities and towns illustrates this competition for the same prime land.

Population increase and economic development exacerbate the imbalance between food production and dietary requirements and preferences. Utah's population is expected to double by 2050. There is little discussion about what will happen after that date. More people means that there is a need to produce more food with the contradiction that there will be less farmland. More people could also mean less water for agriculture. The balance between agriculture and household and industrial uses will depend upon future lifestyle choices and political decisions.

Climate change will mostly be harmful to Utah agriculture.

Climate scientists agree that the southern, drier parts of the state will be drier and hotter in the future. The climate future of Northern Utah is more uncertain. There is agreement that it will be warmer and that therefore the snow pack will be smaller if not erratic. There is a possibility of more rain but what that might mean for farmers is unclear because timing is so critical for reliance upon rainfall. It does seem reasonable to predict that there will be less water for irrigation and perhaps a need for construction of more dams and reservoirs for more water storage and diversion.

Dietary expectations may need to change if Utahns wish to eat local foods.

Prosperous people expect a year-round diet that includes fresh fruit and vegetables. Utah's climate does not provide that so we import these foods from the states and countries that can grow them during the months we cannot. Both Native American and early European settlers subsisted on what they found or raised here. History may be telling us Utah citizens could live more sustainably by adapting their diets to the seasons.

Food processing in Utah is a significant gap in the eating local food chain.

Much of Utah agriculture is exported from the state to be processed. There are two reasons for this: Prices of the end products may be higher in other market, and Utah does not have sufficient food processing plants to keep products from leaving the state. While there are a number of these establishments in Utah, mainly around Logan, in Ogden, and some in the Salt Lake Valley, Utah formerly had many. It would keep more Utah grown food in Utah to have more processing closer to farms.

AGRICULTURAL LAND PRESERVATION STRATEGIES FOR UTAH

The viability of the agricultural economy in Utah is dependent on good land on which to grow crops, graze animals, and produce food. But Utah residents value agricultural land for other reasons as well. The value often expressed is preservation of "rural quality," usually defined as open space, wildlife habitat, feelings of openness, protection of vistas and views, and places to escape urbanization and congestion. These are important qualities that add value to the concern and need for the preservation of agricultural land and our quality of life.

In spite of these concerns, there are few protections for agricultural land available in Utah, and those that are available require the purchase of easements or the outright purchase of land, and in some cases land use controls like planning and zoning, which to date have been largely ineffective and unacceptable to the public. So, it is a dilemma, a challenge, and a continuing topic of conversation regarding property rights, the role of government and the conflicting emotions such a discussion evokes.

The following identifies some of the tools available for the preservation and protection of valuable agricultural land in Utah.

Conservation easements

A conservation easement is a legal agreement between a landowner and a land trust or government agency that permanently limits uses of land in order to protect its conservation values. It allows the owner to continue to own and use the land and to sell it or pass it on to heirs, with development restrictions. Granting an easement to a conservation organization that qualifies under the Internal Revenue Code as a "public charity" - which nearly all land trusts do - can yield income and estate tax savings. This also allows landowners to receive some compensation for the restricted use of property while protecting the land's valuable resources and relinquishing future development rights.

Unless the contract includes a fee title purchase, the property remains in the hands of its original private owner. The easement itself is held by a land trust such as The Nature Conservancy or a government agency such as the Utah Department of Natural Resources or Department of Agriculture and Food. The easement holder then extinguishes development rights and certain other uses in order to protect the valuable resources the property provides. Conservation easements are the most effective means of preserving agricultural land in Utah.

LeRay McAllister Critical Land Conservation Fund

The LeRay McAllister Critical Land Conservation Fund is an incentive program providing grants to encourage communities and landowners to work together to conserve land. The fund targets lands that are deemed important to the community such as agricultural lands, wildlife habitat, watershed protection, and other culturally or historically unique landscapes. Monies from the fund can be used to obtain a conservation easement or to purchase and extinguish development rights.

Funding is typically available to Utah counties, cities, towns, the Utah Department of Natural Resources, the Utah Department of Agriculture and Food, and charitable organizations that qualify as tax exempt under Section 501(c)(3) of the Internal Revenue Code. The LeRay McAllister Fund can only provide up to 50 percent of a project's total cost. Applicants must provide the remaining 50 percent or more of matching funds. In 2017 \$500,000 was available; however in the past funding has been sporadic and often unavailable.

Examples: Several conservation easement programs exist in Utah including the Bear River Land Conservancy, the Ogden Valley Land Trust, the Summit Land Conservancy Easement Program, the Nature Conservancy Easement Program, and Utah Open Lands Easement Program.

Conservation Easements are funded in a number of ways: Property taxes, federal and state matching grants, bonding, tax credits, real estate transfer taxes, sales taxes, special taxing districts, etc.

Farmland Assessment Act (59-2-503) - Greenbelt Designation

The Farmland Assessment Act provides a means of taxing agricultural land based on the value the land has for agricultural purposes, not on its development potential or zoning. It is specifically targeted for agricultural lands near urban and developing areas. Parcels must be a minimum of five acres in size and actively devoted to agricultural use. This provides the farmer or rancher with a designation that permits a lower property tax assessment and intentionally provides some tax relief for land specifically devoted to agricultural purposes. The Greenbelt Designation is meant to more accurately reflect the value of agricultural land and operations, and lower tax rates to encourage maintaining the agricultural use rather than selling property for residential or other development.

The Urban Farming Assessment Act applies to smaller parcels between two and five acres and allows for more unconventional and specialty agricultural products. The program is administered by each county's assessor.

Agricultural Protection Areas

Agricultural Protection Areas (APAs), made possible by Utah state law, are designed to protect farming and ranching operations. Lands within an APA receive “highest priority use status,” meaning they are valued from a regulatory perspective above residential and commercial uses. APAs are established for 20 years and can be modified, renewed, or terminated at the end of the 20-year period.

APAs help protect farmers and ranchers from nuisance lawsuits, unreasonable use restrictions and zoning changes. A recommended change has been to lower the number of acres allowed to five. Currently, property owners must agree to enter into an APA which can be established and administered by each county.

Examples: Some counties have established APA Advisory Boards and have incorporated the programs into their county codes.

Transfer of Development Rights

Transfer of Development Rights (TDRs) programs allows counties and cities to transfer development rights from farmland to more appropriate development areas. TDR programs are voluntary and require government interaction to identify the areas where development should be restricted or controlled (sending areas) and where the development rights are more appropriately transferred (receiving areas). TDR programs allow farmers/ranchers to offer their development rights for sale to an entity who would use them in a more appropriate location, thus receiving compensation for the potential value of development on their land while continuing to engage in agricultural uses. TDR programs are complicated and require government oversight and involvement; consequently, they are infrequently implemented. There are a few examples in Utah in Mapleton and in Ogden Valley.

Examples: Mapleton, Utah, designates sending areas in their general plan, which allows for more density in those areas in exchange for the preservation of farm land and other critical lands such as steep hillsides and mountainsides, natural hazard areas, open space, and places where the delivery of services is difficult and expensive. The Ogden Valley has similar strategies.

Elsewhere, examples include Montgomery County, Maryland is considered successful. It has protected more than 93,000 acres within its designated Agricultural Reserve. King County, Washington, has protected 141,500 acres by establishing urban growth areas where growth is concentrated, and not allowed on prime agricultural land outside the boundary.

Land use planning and zoning

Zoning: Much of the existing agricultural land in Utah is currently zoned for small lot sizes (5 acres, or less) which does not promote efficient and productive agricultural use. Often Agricultural Zoning is considered a “holding zone” until a more profitable use is determined. Down-zoning agricultural land to larger lot sizes (40-acre minimum) would encourage more agricultural uses and preserve more land.

Down-zoning is generally not politically popular and is rarely implemented in Utah. Even farmers and ranchers are reluctant to down-zone because to do so decreases the potential value of their property for other uses in the event that continuing to farm or ranch is not an option. Down-zoning could best work combined with other programs such as identifying Agricultural Protection Areas or establishing Transfer of Development Rights programs.

Cluster development: Some communities are using cluster development ordinances to help preserve agricultural land and open space. These ordinances require that residential development be “clustered” in one area of a development area while the remaining acreage remains undeveloped. For example, if an area is zoned for 5 acre lots, rather than have a home on each five-acre parcel, the homes would be clustered together on much smaller lots and the remaining common area would be retained as open space, which could be used for agricultural purposes.

Densification: Encouraging denser development within cities and focusing on in-fill areas that are vacant is a means of directing development to more appropriate locations and can be implemented as a matter of policy in cities and counties. Policies such as these may temporarily re-direct development pressure to more appropriate locations but are not a long-term means of preserving and protecting agricultural land.

Examples: 1000 Friends of Oregon created an initiative called “The New Face of Farming,” which sought to find solutions to common farming problems. It included problems such as lot sizes, zoning, and farm stewardship, and began a dialog to solve complicated problems.

Farmington City, Utah, as well as many other communities in Utah and elsewhere, has cluster development ordinances which conserve farmland and protect open space and areas of critical vegetation. Other parts of the country where these are popular include Michigan, Virginia, and Wisconsin. Often, they are called agricultural conservation subdivisions, and encourage cluster development to preserve farmland and open space.

Placer Co., California uses Equivalent Dwelling Units (EDUs) to evaluate the cost of development based on how far away they are from existing services. In this scenario, developers pay a higher cost for developing agricultural land farther away from existing infrastructure.

Redevelopment Agencies (RDAs) in Utah such as those in Salt Lake City and Provo encourage infill development and provide economic incentives to do so.

Communities in North Carolina, Iowa, Kansas, Illinois, and California and others have integrated agricultural protection into comprehensive and general plans; some have specific Agricultural Elements that specifically address agricultural lands not just as a land use designation, but as a resource that deserves protection. Incorporating an agricultural element into a general plan gives strength to planning decisions that protect and preserve such lands.

THE ENVIRONMENTAL COST OF FARMING AND RANCHING

WATER USE – A COST OF GROWING FOOD

The most obvious use of water in providing our food in Utah is irrigation. Very few crops can be raised in our dry climate without applying irrigation water and the percentage of water used for irrigation in Utah is high.

Alfalfa has the reputation of being the biggest water user of any of the common Utah crops. A general definition of alfalfa's water use is that the crop requires about 4 to 6 inches for each ton. That would be equivalent to saying that an acre-foot of water would grow 2 to 3 tons of alfalfa. This amount is the water actually used by the crop, called consumptive use. Irrigators normally apply more than is needed because of the inefficiencies of irrigation systems. Very efficient, expensive systems are usually used only on high value crops or widely spaced plants like orchards.

The amount of water used by different crops varies by climate. However, we can compare the range of water used for various crops as shown in the following chart. Consumptive use of common crop per season of growth is as follows (www.fao.org/docrep).

Beans	12 – 20 inches
Grain	18 – 22 inches
Soybeans	18 – 27 inches
Tomatoes	16 –31 inches
Corn	20 – 31 inches
Alfalfa	24 –63 inches

This comparison indicates that alfalfa is the biggest irrigation water user among common Utah crops. Alfalfa will continue to grow as long as the weather is warm enough and it gets enough water. A field of alfalfa is usually cut more than once in a season.

However, crop irrigation does not tell the whole story of our use of water for food. Domestic animals raised for food require a large amount of water. While water for crops is usually expressed in acre-feet or inches, water used by animals is tracked by each type of animal and then expressed as water per pound of meat or other food factor. The total amount of water needed to produce an animal includes water used to raise the feed consumed by an animal, water consumed directly by the animal and water used in processing.

According to the Water Footprint Network, animal products generally have a larger water footprint than plant products. The water footprint per gram of protein for milk, eggs and chicken meat is about 1.5 times larger than a gram of protein from beans. For beef, the water footprint per gram of protein is 6 times larger than beans. The amount of water needed per pound of beef varies depending to some extent on how the animal is raised. However, the most common number is 1800 gallons per pound of beef. (<http://www.waternetwork.org>).

Appendix A

Report from Marilyn O'Dell on FARMLAND PRESERVATION IN GERMANY

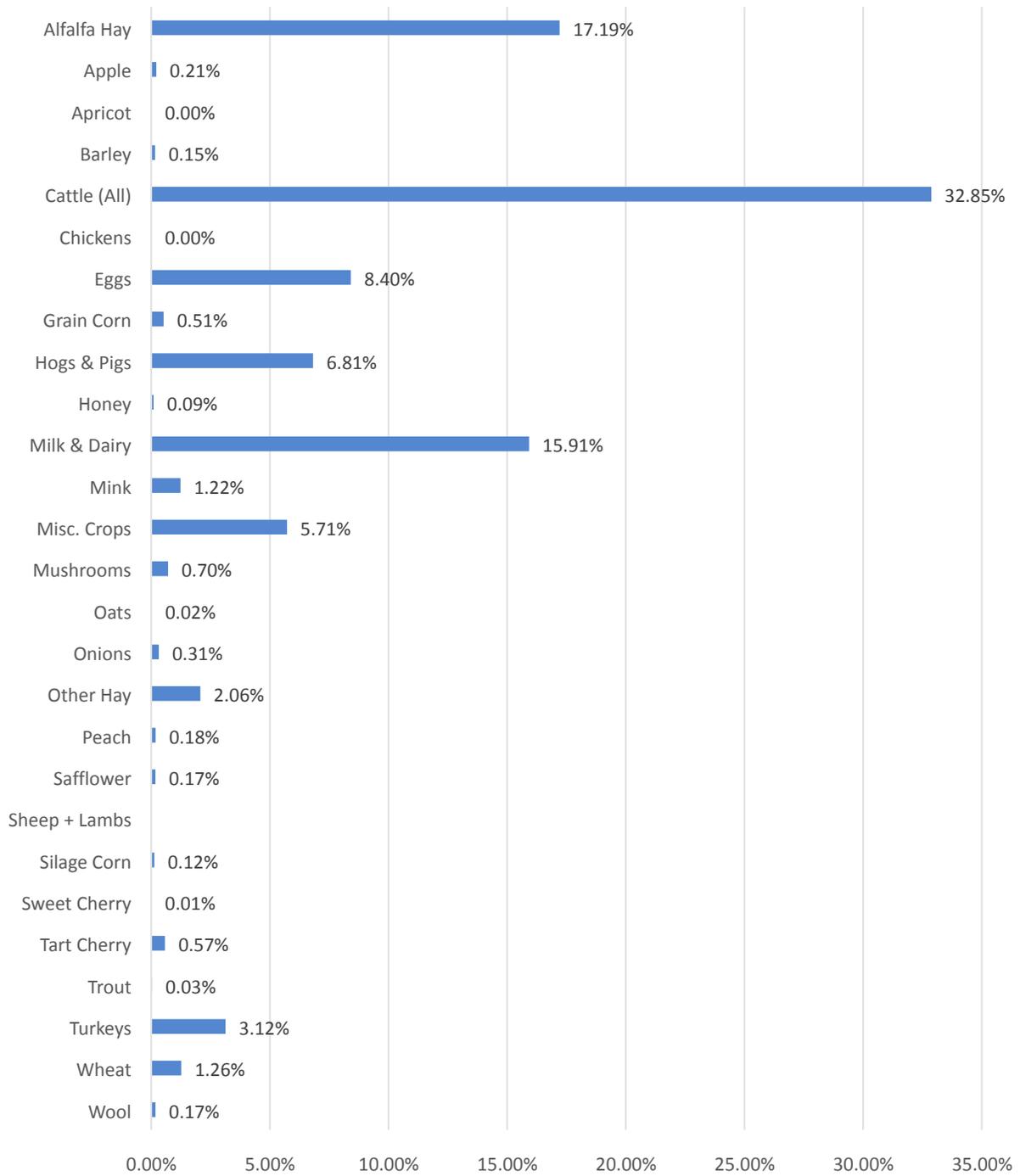
From personal observation Germany appears to have a very neat land use pattern with definite boundaries for towns and cities, trees lining highways and unbroken farmland. The size of the entire area used for agriculture, which currently amounts to approximately 17 million hectares, is reduced only slightly from 1999 to 2007 by 1.2 percent. (German Ag. Facts)

Carl Wolfram, an Ogden resident originally from Germany, explained that German law prohibits an individual from buying farmland in order to build anything on it. New houses have to be built in developed communities. When a community is built out the municipal government can buy some agricultural land adjacent to the municipality's boundary. The municipal government puts in streets and lots with utilities. The government will then sell the lots for houses. This keeps developments compact and preserves farmland. According to the Sustainability journal, land development offset has been one of the main concerns of German planners since the 1970s. Carl said Germans have not been able to build on agricultural land since his grandfather's time.

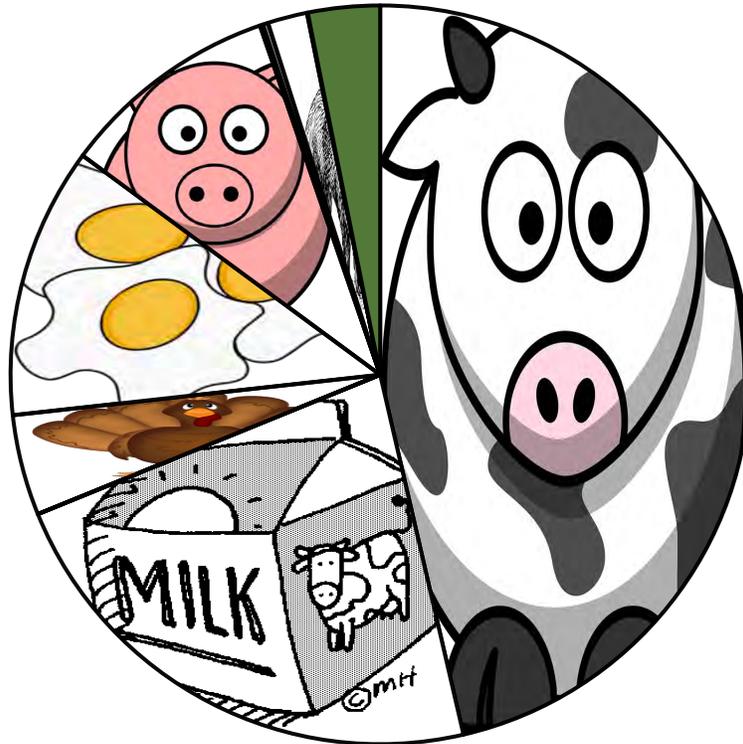
Appendix B More Detailed Information on Utah Agriculture Products

The following three charts show the percentage of total value of each commodity raised in the State of Utah. “Cattle is King”

Commodity	% of Total Crops & Animal Products
Alfalfa Hay	17.19%
Apple	0.21%
Apricot	0.00%
Barley	0.15%
Cattle (All)	32.85%
Chickens	0.00%
Eggs	8.40%
Grain Corn	0.51%
Hogs & Pigs	6.81%
Honey	0.09%
Milk & Dairy	15.91%
Mink	1.22%
Misc. Crops	5.71%
Mushrooms	0.70%
Oats	0.02%
Onions	0.31%
Other Hay	2.06%
Peach	0.18%
Safflower	0.17%
Sheep + Lambs	
Silage Corn	0.12%
Sweet Cherry	0.01%
Tart Cherry	0.57%
Trout	0.03%
Turkeys	3.12%
Wheat	1.26%
Wool	0.17%



Percentage raised by Animal Product



- | | | |
|--------------|---------------|-------------|
| Cattle (All) | Milk & Dairy | Chickens |
| Turkeys | Eggs | Hogs & Pigs |
| Honey | Sheep + Lambs | Wool |

Appendix C – League Positions

Agriculture Position of LWV US (adopted in 2014)

“Promote adequate supplies of food and fiber at reasonable prices to consumers and support economically viable farms, environmentally sound farm practices, and increased reliance on the free market. Provide financial support to subsidize agriculture in specific instances, enforce federal anti-trust laws to ensure competitive agricultural markets and apply clean air and water regulations to all animal and aquaculture production. The federal government should fund basic agricultural research to provide adequate safety of our food supply.”

For a more detailed position statement: <http://forum.lwv.org/member-resources/article/lwvus-position-federal-agriculture-policies>.

Other points of interest from the last LWV US study:

- Up to 70 percent of agriculture labor is estimated to be undocumented workers. State and Federal laws + inaction has caused a labor shortage resulting in an estimated \$9 billion loss in unharvested produce (2013-2014)
- All people are deserving of nutrition assistance if necessary. SNAP funding is tied to the Farm Bill.
- Regulations should apply to farms of all sizes
- More than half of our country’s private land is used for agriculture
- The league support federally provided farm credit but envisions the federal government as the lender of last resort, supports moving towards a freer market. Limit subsidies to larger farms
- The federal government must set minimum levels of environmental and pollution controls. Other levels of government may set more stringent standards, but if they do not enforce minimum standards then the federal government must.

Water Position of the LWV UT

LWV UT does not currently have a position of agriculture in Utah. The position on Water seemed most relevant.

WATER USE IN UTAH 2009

History

The League of Women Voters undertook a study of the waters of Utah in 2009. Members were concerned about the state’s water future in view of the high probability of water scarcity and population growth. We believe that current per capita water use is unsustainable but also believe it is unnecessary and even extravagant. We believe people can and will change their

ways with education, careful planning, and wise laws. Our member support both behavioral and technological changes as ways to reduce water use and protect the environment. We also wish to be strong advocates in all levels of government for the environment for its own sake and because it is essential to our wellbeing. In 2009 the League questions the state's reliance on the concept of water as private property as it did in the League water study of 1981. We recommend a rethinking of this historic water law. We find this and other of the 1981 study are as relevant today as they were then. As in 1981, all interested parties in Utah must revisit and revise existing water laws and institutions in order to create a system that will work for the future

The League's position with respect to water use –

Utah water policies should be structured to address human needs while protecting the integrity of water tables, lakes, streams, wetlands and their attendant wildlife. Instream flows and conservation pools should be established for the state's natural waters. Environmental safeguards must recognize the interrelationships among water, air, land resources and wildlife. Stringent controls must ensure protection of surface supplies and recharge areas for principal aquifers and the overall integrity of the surface and ground water in our water basins. The public must understand the limits of our water resources and the costs to the environment and the economy of our current and projected water use. Water conservation should preferentially result in enhancement of the natural environment rather than be directed only to growth and economic development. Sustainable economic development should be conditioned on the availability of water for projected use.

For a more detailed position statement:

http://www.lwvutah.org/get_informed/positions/2009.waterconsensusrevision.pdf

Relevant section of 1982 water position

Water Conservancy District Boards should be made more representative of the public they serve by use of criteria and guidelines for appointment, by direct election of members and/or by limiting the number of terms members may serve. The League believes that the state should maintain a current survey of all water resources, ground and surface, and a current adjudication of water rights. We support adequate state funding to implement these functions. The state of Utah should establish a policy for water rights conversions; this policy should incorporate land use considerations. The League supports changes in Utah water law to (1) permit "public interest" to take precedence over "first in time" as criteria for granting any remaining unappropriated water rights, (2) permit appropriation of water rights for a defined time period, and (3) include "instream flows" as a water right. The Utah Legislature should periodically establish a definition of "public interest". State and local government should encourage, and when necessary require, water conservation. Public education programs are a necessary first step towards conservation.

BIBLIOGRAPHY

Additional Interviews

Carl Wolfram, (Born and raised in Germany and sold the family home there within the past 10 years.), March, 2018

Sources

Agriculture in Utah, background in Your Utah, Your Future, Envision Utah
<http://yourutahyourfuture.org/topics/agriculture/item/27-background-agriculture-in-utah>

Bertone, Rachel, What's Growing in Utah, Farm Flavor, May 1, 2017
<https://www.farmflavor.com/utah/whats-growing-utah/> (On-line periodical on agriculture in Utah and other states published in Tennessee.)

German Agriculture, Facts and Figures, 2010
https://www.bmel.de/SharedDocs/Downloads/EN/Publications/GermanAgriculture.pdf?__blob=publicationFile

Germany: More than half is farmland, DW (Deutsche Welle): Made for minds.
www.dw.com/en/germany-more-than-half-is-farmland/a-5332352

Deseret News, Sunday, September 13, 1998, Gregory P. Katz
<https://www.deseretnews.com/article/855941/Circle-Four-Farms-series-Pig-Place.html>

Economic Policy Analysis RESI) of Towson University, What is IMPLAN?, Thursday June 15, 2006
<http://cier.umd.edu/RGGI/documents/IMPLAN.pdf>

Economics, Explaining the Multiplier Effect, Tutor2 The Exam Performance Specialists
<https://www.tutor2u.net/economics/reference/multiplier-effect>

Food and Agriculture Organization of the United Nations
<http://www.fao.org/organicag/oa-faq>

IRRIGATION WATER MANAGEMENT, Training manual no. 3
<http://www.fao.org/docrep/S2022E/S2022E00.htm>

Investopedia, The Multiplier Effect
<https://www.investopedia.com/exam-guide/cfa-level-1/macroeconomics/multiplier-effect.asp>

MDPI Open Access Journals, Sustainability
www.mdpi.com/journal/sustainability

Salt Lake City 2013 Community Food Assessment Food System Analysis
http://www.slcdocs.com/slccgreen/slc_food_assessment_report_complete.pdf

State of Utah Agriculture Sustainability Task, Force Planning for Agriculture 2012
<http://ag.utah.gov/documents/Agtaskforce.pdf>

USDA, Charts and Maps About Your State

<https://www.ers.usda.gov/data-products/farm-income-and-wealth-statistics/charts-and-maps-about-your-state/> (Not used in study but a useful reference for quick look at Utah agriculture statistics.

USDA Census of Agriculture, County Profiles - for county farm statistics

https://www.agcensus.usda.gov/Publications/2012/Online_Resources/County_Profiles/Utah/index.asp

Utah Agriculture Activity Map

http://utah.agclassroom.org/files/uploads/estore/UtahAgMap2014_combined.pdf

Utah Foundation, Hay! One Crop is Utah's Biggest Water Consumer, Dan Bammes. May 2015

<http://www.utahfoundation.org/uploads/Hay-One-Crop-is-Utahs-Largest-Water-Consumer.pdf>

Ward, Ruby, The Economic Contribution of Agriculture to the Utah Economy in 2014, Dept. of applied Economics, Utah State University

<http://www.ag.utah.gov/documents/Economic%20Contribution%20of%20Agriclture%20to%20the%20Utah%20Economy%202014.pdf>,

Water Footprint Network, Water footprint of crop and animal products: a comparison,

<http://waterfootprint.org/en/water-footprint/product-water-footprint/water-footprint-crop-and-animal-products>