

### Soil Tools for Rangeland Management

This story was featured in the May-June 2019 issue of *The Progressive Rancher* - read the entirety of the story by googling *Progressive Rancher May-June 2019*

Major land resource areas (MLRAs) (map above) are maybe the best-known building block of the Natural Resources Conservation Service (NRCS) hierarchy that houses soil survey and ecological sites (ES). They are based on the basic premise that natural vegetation is a result of the combination of geography, soils and climate. Early in human history, people learned that soils with productive native plant communities were also favorable for crops. This idea resulted in a natural progression as agriculture production drove early soil mapping. Soil scientists divided the land into units with similar soils, climate and vegetation/crops. This allowed for the development of soil interpretations that are useful for many landowners and producers in a region, instead of individuals.

As of 2019, Ag Handbook 296 is under revision based on recent and on-going soil survey and ecological site work. The current update includes the development and delineation of Land Resource Units (LRUs). LRUs are subdivisions of MLRAs that have one or more unique features making them more homogenous than the surrounding area. LRU determinations are based on dominant topography, soil moisture and soil temperature regimes, and the amount of effective precipitation the site receives on a climatological basis (not annual weather fluctuations).

LRUs provide a valuable resource to land managers at an intermediate scale between the MRLA and the soil survey map-unit (MU). Management decisions frequently occur on a watershed or allotment basis encompassing multiple MUs, soil types and ecological sites, but much smaller than the MLRA. Well-defined LRUs share important abiotic factors—or non-living parts of the environment that affect living organisms and ecosystem function—such as soil climate, effective precipitation and geomorphology.

The current effort to update Ag Handbook 296 has allowed for the development of LRUs throughout the Great Basin. LRU breaks are based on interactions between elevation and soil properties, the same characteristics that determine how an ecological site responds to, and recovers from, a disturbance like wildfire. Ecological sites (ES), or as they were previously known: range and forest sites, are likely the best-known soil survey interpretation. Ecological sites are defined as a documented group of dominant controlling abiotic factors including soil properties, landscape position, etc. These factors are used to differentiate similar ESs during the development of soil-vegetation correlations, by determining the limits (boundaries) within which the specific ecological site occurs. It is important to note: LRU determinations cannot and should not be made by solely evaluating individual ecological sites or the present plant community.

From a management perspective, the abiotic factors defining the ES, nested within the LRU, are important. Range management questions of stocking rate, soil health and invasive species occur at multiple temporal and spatial scales.

Information used to develop LRU concepts includes published soil surveys, EPA ecoregions and climate information. The building blocks of LRUs are not biotic characteristics—or the living parts of the environment—that are ephemeral in nature, making them valuable for landscape level management decisions. For example, they can be used to make restoration recommendations for a watershed, with the goal of conserving resources and improving success. LRUs are differentiated by their ability to respond to natural and anthropogenic disturbance, and differences are reflected in mappable soil properties.

#### How can NRCS soil survey and ecological sites information benefit you?

Soil survey and ecological sites are used by public and private land managers to make important decisions. The addition of LRUs has increased the utility of this tool by providing soils formation at multiple scales, ranging from the field or pasture, to the grazing allotment, to the whole county. Search for soils information helpful to you at: [www.nrcs.usda.gov](http://www.nrcs.usda.gov) and click on the Topics tab, then choose soils. If you are interested in LRU information for your area, please contact Erin Hourihan, Rangeland Management Specialist, NRCS-USA, 775.224.3842 or [erin.hourihan@nv.usda.gov](mailto:erin.hourihan@nv.usda.gov).

### Top 10 Most Contracted Conservation Practices

1. Structure for Water Control
2. Irrigation Water Management
3. Watering Facility
4. Livestock Pipeline
5. Irrigation Pipeline
6. Pumping Plant
7. Sprinkler System
8. Structures for Wildlife
9. Fence
10. High Tunnel System

### Irrigation Improvements at a Glance



Practices ..... 10 different types of irrigation practices  
 Contracts ..... 54  
 Acres ..... 52,948  
 Dollars ..... \$5.467 million

### Nevada Quick Facts

88% of Nevada is Public Land

12% of Nevada is Private Land

#### Top 3 Commodities by Sales

1. Cattle/ Calves
2. Hay
3. Dairy Production

3,423 Farms in Nevada

1,790 acres average farm size



6.1 million acres of farmland



\$665.7 million total ag production market value

\* Sources: 2017 Nevada Department of Agriculture Economic Analysis and USDA, National Agricultural Statistics Service (NASS) Ag Census Data

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Natural Resources Conservation Service helping people help the land

## 2019 NRCS Nevada Annual Report

THE USDA NATURAL RESOURCES CONSERVATION SERVICE (NRCS) PROVIDES INNOVATIVE CONSERVATION SOLUTIONS TO RESTORE, ENHANCE AND PROTECT NEVADA'S WORKING AGRICULTURAL LANDS. Our voluntary Farm Bill programs provide technical and financial assistance to help farmers and ranchers address natural resource concerns such as water quality, soil erosion, wildlife habitat, and much more. NRCS leverages partnerships across Nevada to invest in landscape-scale conservation. This report captures NRCS Nevada's investments and successes throughout fiscal year 2019, which extends from Oct. 1, 2018 to Sept. 30, 2019.

### NRCS Nevada FY19 Investments on Private Working Agricultural Lands



Environmental Quality Incentives Program  
 Contracts ..... 62  
 Acres ..... 171,645  
 Dollars ..... \$6.154 million



Conservation Stewardship Program  
 Contracts ..... 6  
 Acres ..... 1,257  
 Dollars ..... \$183,786



Regional Conservation Partnership Program  
 Contracts ..... 4  
 Acres ..... 3,182.5  
 Dollars ..... \$917,465



Voluntary conservation works [www.nv.nrcs.usda.gov](http://www.nv.nrcs.usda.gov)

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## Snapshots of Success

### NRCS Nevada FY19 Investments on Private Working Agricultural Lands



Rick Lattin, of Fallon, Nevada's Lattin Farms (right) shows off the fruits of his labor with NRCS District Conservationist Albert Mulder in his high tunnel he obtained through an NRCS contract. "These tomatoes were planted in mid-April and picked the first half of July. If I had these outside, I would only be able to pick from about the first of August to the middle of September, but here inside the hoop house, I can pick from early July through mid-October," said Rick. "Plus the hoop houses have the capability of protecting from some of the viruses we have here like curly top."

#### Have You Made Your New Year's Solutions?

Did you know that New Year's resolutions have ancient roots? According to the History Channel, the first people were the Babylonians, more than 4,000 years ago. They were also the first to hold recorded celebrations in honor of the new year—though for them the year began in mid-March when the crops were planted, which may make more sense to today's farmers.

As we start the new year, many of us make an assessment: we look to the past to learn from our mistakes or to see how far we've come, and then we assess our current situation to determine our goals and look to the future to accomplish them.

So, how about making New Year's solutions this year, instead of resolutions? At NRCS, we can offer a great place to start: new year, new conservation plan.



#### NRCS Nevada Initiatives

##### Sage Grouse Initiative

Contracts . . . . 11  
Acres . . . . . 140,577  
Dollars . . . . . \$1,360,305



##### High Tunnel Initiative (AMA)

Contracts . . . . 24  
Acres . . . . . 9.8  
Dollars . . . . . \$168,539

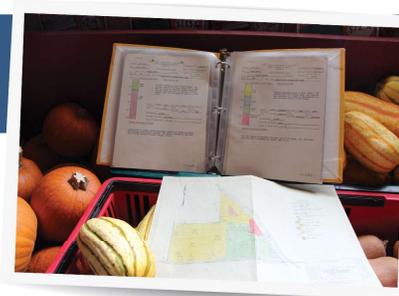
If your goals include: starting a new farm, improving the one you have, building relationships in your community and maybe having more family time, NRCS may be able to help you reach your goals. Through the Farm Bill, NRCS offers free advice to help with developing a conservation plan as well as financial assistance programs to help cover the cost of adopting conservation practices.

#### A Family Tradition

For example, meet Rick Lattin and his family, who have been farming in the Lahontan Valley of Nevada since 1909. Rick discovered, when sorting through his father's things, that his grandfather cultivated a relationship with NRCS in the early 40s (then the Soil Conservation Service), as evidenced by a 1942 conservation plan he uncovered. Like a time capsule, the conservation plan is a great reference book for Rick to look into the history of his family's farm.

Thumbing through the delicate pages, it indicates what types of soil they have with hand-colored charts, what and how many animals they had, what types of crops they were growing, and what suggestions NRCS, in cooperation with Cooperative Extension, gave to conserve and improve the farm.

"It's interesting looking through here to see what things have changed, and what has not changed. There's just an incredible amount of information in this book. It lists some of the practices we still do today," said Rick.



Rick Lattin's grandfather's 1942 conservation plan.

#### Enhancing the Farm

Rick has continued the family's relationship with NRCS, enabling him to find solutions to combatting drought, extending growing seasons with high tunnels, and getting available water to plants more effectively and efficiently. These efforts provide for more profitability over an extended growing season, and the water efficiency provides more time for other things.

"One of the things that struck me when I discovered this conservation plan is that our family has been working with the agency for almost 100 years to make this work. And I can attest to being the fourth generation on the land," said Rick. "We still use the NRCS to help us make our farm more productive, and even more importantly to us farmers, more capable of providing a living for folks—because if we can't make a living and make this a sustainable business, we have no business being here." Water is very important in the Lahontan Valley—and sometimes scarce. The Lattins worked with NRCS over the years to install concrete-lined ditches.

"There's no way we could have done that without the assistance of NRCS," said Rick. "NRCS also helped us put in an underground tile system that allows us to catch the excess water that goes into the ground when we irrigate. We've figured out how to pick that up and reuse it to run our drip systems, which allows us to save water and use less water." Now, they're only using about two-acre feet per year of water, where their allotment is three and a half. The underground system allows them to pick that excess water up and pump it through their drip lines to about 200 acres on the farm.



"The hoop houses have become very versatile for us with the kind of products we can grow, the number of products we can grow and the season in which we can grow them."

Many of Rick's high tunnels, or hoop houses, were acquired through NRCS' Environmental Quality Incentives Program and Agricultural Management Assistance program.

"We found that the hoop houses extended our season, increased our yields, and let us sell crops that don't do well outside due to our weather conditions. We have a rotational program that includes cover cropping with rye in some of the winters and then we do double cropping when we can: early season greens and root crops, and then main season we do tomatoes, peppers, eggplant and a little bit of squash and cucumbers for our roadside stand," said Rick.



"We have an ongoing relationship with NRCS. It goes back decades—they've been very important to the success of our farms," said Rick. "NRCS helps us forward think and look at what we need to stay competitively positioned to provide food and fiber."



At left, Rick with his grandfather's 1942 conservation plan. Above, Rick in one of his high tunnels with his tomatoes. Watch the video of this story on the NRCS Nevada YouTube channel, called "Harvesting a Lasting Relationship with NRCS."



## Sage Grouse Initiative

# 544%

percent increase in acres targeted for habitat improvement over last fiscal year. In FY2018, we spent almost \$550,000 more than last year on sage grouse habitat improvements such as removing or moving fences away from lek areas, pinyon-juniper removal and fence marking. That's an increase of 118,744 acres!