

# Nevada

## Hay Production



### Vocabulary

<b>Annual</b>	A plant that completes its lifecycle within one year. (examples: oat, Sudan grass, and rye)
<b>Forage</b>	Edible parts of plants, other than separated grain, that can provide feed for grazing animals or can be harvested for feeding.
<b>Harvesting</b>	The process of cutting, curing and preserving. Methods of preserving are baling and chopping. Chopped hay can be put in mounds or made into haylage (fermented hay) in pits or huge plastic bags (8 feet in diameter by over 100 feet long).
<b>Hay</b>	Any grass, clover, alfalfa, or other herbaceous plant that is cut, dried, and used as a source of forage for animals. Can be harvested from either annual or perennial plants.
<b>Herbaceous</b>	Any plant than is not a woody plant (trees or brush) or that is grass-like. (examples: Alfalfa, peas, and flowers like daisies)
<b>Legumes</b>	Plants that remove nitrogen from the air, process or <b>fix</b> the nitrogen and put it into the soil. Nitrogen in an essential nutrient for plants.
<b>Perennial</b>	A plant that has a life cycle of more than two years. (examples: alfalfa, grass)
<b>Swath</b>	A row of hay that has been cut and laid in the field to cure and dry.

### Nevada Hay

Hay is produced on nearly 500,000 acres located throughout Nevada. Hay is the second most valuable agricultural commodity, accounting for nearly 20% of the total agricultural value produced (2001). Production per acre can vary from as low as 1 ton for rye to 10 tons for irrigated alfalfa.

### General Information

Hay and other forages are a miracle of nature. While growing, they are able to use sunlight, gases in the air, water and soil minerals to produce a crop that is crucial to animal production throughout the world. Nevada's top-quality hay is used to feed dairy cows not only in Nevada, but also in surrounding states and in other countries such as Japan. In Nevada, almost all of the beef cattle produced rely on lower-quality hay to eat during the winter months. Horses and even pets such as rabbits and guinea pigs are fed hay. So although humans do not use large amounts of hay directly, it is a very important part of our lives.

Hays can be produced from perennial or annual plants. They can be cut 3 to 8 times each year, similar to the way lawn grasses are cut. Annual hays are usually cut only one time each year.

## Environmental Impacts

Growing hay improves air quality by removing carbon dioxide and adding oxygen. Hay improves the soil by providing organic matter and in the case of legumes, like alfalfa and clovers, by returning natural nitrogen for use by other plants. Hay production also protects the soil from erosion by providing a cover of vegetation and forming roots that hold the soil in place. It is not only domestic animals that find hay tasty—deer and other wildlife also enjoy the benefits.

Nevada hay requires irrigation. This enables the water to be applied at the most beneficial time, enhancing the quality and amount of the hay. In the western United States, water laws and rights were established for different uses. In Nevada, these rights and laws apply to water used in city homes, businesses, and the water farmers use to grow food for city people. These property rights are similar to property rights to own a home and lot. However, water rights have the stipulation that water cannot be wasted or used improperly.

## Alfalfa Hay

Alfalfa, which means “best fodder” in the Arabic language, is also known as Lucerne in most of the world. It is called “queen of the forages” because it is a long-lived perennial legume. Most animals prefer to eat alfalfa to all other types of hay. It is the most valuable hay grown in Nevada because of its importance to milk producers. Alfalfa is also one of the few hay plants eaten by humans. Alfalfa sprouts are used on sandwiches, in salads, and as flavorings or garnish on meals.

Alfalfa hay, grown in northern Nevada at high altitudes, is especially nutritious because of the growing conditions. Warm, sunny days along with cool nights reduce plant growth rates, letting the plants store sugars that are very nutritious and easy for animals to digest. Sugars are made during the day and used for growth during the night in a process called **respiration**. Very hot days and warm nights such as in low-altitude, warmer areas of other states increase the growth rate of alfalfa tremendously. However, these high growth rates “burn up” more of the sugars that are so important in producing high-quality forage, which shortens the life of the plant. This is why Nevada hay is more valuable than hay grown where the days are hot and nights are warm.

## Alfalfa Cycle

Alfalfa is normally seeded in the spring or fall, and harvest begins a year later. Alfalfa grows very fast once it is established, and farmers harvest it about every 30 days from late spring to winter. In warm areas in southern Nevada, the alfalfa is harvested 7 or 8 times per year, making replanting necessary every 2 to 3 years. In central and northern Nevada, which has a much shorter growing period, alfalfa is usually cut 3 or 4 times. These alfalfa stands last much longer and they are replanted every 5 to 10 years.

Alfalfa is cut and left in rows in the field to dry or **cure**. When the alfalfa is dry enough, it is placed into bales that are tied together with twine, or it is chopped and stored to be fed later. Bales can be small (70 lbs.) or very large (2000 lbs.) They can be round or rectangular. The bales are trucked to dairy farms in surrounding states, or they are compressed even more to ship to foreign countries. Dairy farmers use alfalfa as their cows’ main feed source for milk production.

## Grass Hay

Hay can be made from many different types of grasses. Most of the grass hay produced in Nevada is grown from perennial grasses. Grass hay is usually not as nutritious as alfalfa hay, but is valuable for feeding beef cattle, horses and pets. Grass hay does not grow as fast as alfalfa and is normally harvested only 1 or 2 times each year. It does not add nitrogen to the soil and must be fertilized with nitrogen each year.

Timothy grass is highly valued by people who raise racehorses. It keeps these valuable horses healthy and athletically fit. Timothy hay has become the most expensive hay produced by Nevada farmers because of this market. Other grass hays are produced from annuals, such as wheat, barley, oats and Sudan grass or sorghum.

## Activities

1. **Make a sequence paper quilt** using student drawings of a series of pictures illustrating the relationship between growing alfalfa and the production of dairy products. Place on bright colored background paper.  
**Discussion:** Talk about the importance of alfalfa hay in the production of dairy products such as milk, cheese, ice cream, etc.
2. **Demonstrate the importance of sunlight to plant growth.** Plant several alfalfa or other fast-growing seeds 1/2 inch deep in soil in several Dixie cups. After they emerge and are actively growing, cover one-half of the cups with a can or other container that excludes light.  
**Discussion:** Compare the differences in the look, color and health of the plants that were covered to the control group. Tall, spindly, and light green plants indicate that they are not making enough sugar for

proper growth. Is sunlight essential for plant growth?

**Variation:** When plants are growing and healthy, over-water one group, leave a control group and under-water the third group. Observe differences.

### **Additional Resources**

Contact your local county, University of Nevada Cooperative Extension, or your USDA Natural Resource Conservation Service.

*"Swathing Hay,"* Churchill County, Nevada, photo courtesy of **Sonya Johnson**.

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