

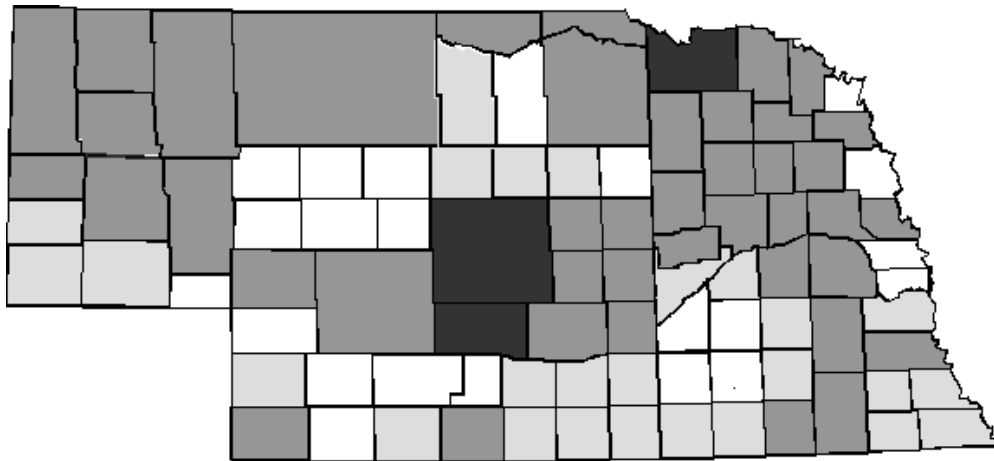
Crop Profile for Alfalfa in Nebraska

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General Production Information

- Nebraska is ranked second in the nation for alfalfa meal production and fifth for alfalfa hay production in 1998.
- In 1999, approximately 1,400,000 acres of alfalfa were harvested in Nebraska.
- Nebraska produced 5,180,000 tons of alfalfa hay in 1999. Average yield was 3.7 tons per acre.
- Nebraska produced 148,200 tons of alfalfa meal in 1998.

Production Regions



Alfalfa is produced across the entire state of Nebraska, each county growing alfalfa on 1000 or more acres.

Cultural Practices

Nebraska has a temperate climate with soils that range from the wind-blown sand in the west to the deep loess soils of the east. Precipitation ranges from less than 13.8 inches in the northwest to over 33.5 inches in the southeast.

Alfalfa prefers a deep, well-drained loam, silt loam, or clay loam soils with a pH between 6.2 and 7.5. Sandy soils are suitable if properly irrigated and fertilized. Alfalfa is usually seeded in the fall (August 1 to September 15) or spring (March 15 to April 30) for dry land production. Under irrigation, alfalfa can be seeded any time from April through September.

Adequate soil fertility is necessary for optimum alfalfa production. Because alfalfa is a legume, nitrogen is seldom needed on non-sandy soils if the seed is properly inoculated with nitrogen fixing bacteria. A small amount of nitrogen may be needed on sandy soils to help establishment. In the eastern third of Nebraska where the pH is 6.2 or less, lime may be required for stand establishment. Potassium and sulfur may be needed on sandy soils. Phosphorus is required on many Nebraska soils.

Pastures of alfalfa-grass mixtures are common and do well on dry land in eastern Nebraska and under irrigation across the state. Mixtures may include orchardgrass, smooth bromegrass, or intermediate wheatgrass.

Under proper management and favorable growing conditions, alfalfa stands in Nebraska can last for ten years or more. Most alfalfa fields in Nebraska receive three to four cuttings.

Insect Pests

Alfalfa weevil is the primary pest of alfalfa in Nebraska. Alfalfa weevil larvae first appear during April and May, injuring alfalfa by chewing small holes in leaves at the growing tips. Severely damaged fields have a light grayish appearance. Adults rarely cause significant damage, although they may delay green-up after cutting. There are several alfalfa varieties that are promoted as resistant to alfalfa weevil. If economic thresholds are reached, immediate cutting can be effective at managing the weevil. Chemical controls for larvae include products containing the active ingredients azinphos-methyl, carbaryl, carbofuran, chlorpyrifos, cyfluthrin, lambda-cyhalothrin, malathion, methyl parathion, methomyl, permethrin, and phosmet.

Potato leafhopper is generally a pest in only the eastern portion of Nebraska. They overwinter in the Gulf States and migrate to Nebraska on winds that move gulf moisture northward in the spring. Yearly

infestation patterns are variable and dependent on weather systems. Damage is a yellow discoloration of the leaflets that begins at the tips and progresses to the base in a v-shaped pattern. Resistant alfalfa varieties are available. If economic thresholds are reached, immediate cutting can be effective at managing the insect. Chemical controls include products containing the active ingredients carbaryl, carbofuran, cyfluthrin, chlorpyrifos, lambda-cyhalothrin, malathion, methyl parathion, permethrin, and phosmet.

Army cutworm can be found throughout Nebraska, but is most common in the western half of the state. Partially grown larvae overwinter and become active in the late winter or early spring and feed through spring. Army cutworms feed at the soil line on developing new leaves just as they are emerging, resulting in a delay in green-up. If economic thresholds are reached, treatment may be necessary. Chemical controls include products containing the active ingredients carbaryl, chlorpyrifos, cyfluthrin, lambda-cyhalothrin, methyl parathion, methomyl, and permethrin.

Grasshoppers (several species) typically overwinter as eggs in undisturbed grassy areas and field margins. As grasses mature, grasshoppers may move into nearby alfalfa fields. Relatively dry weather in early and middle summer is favorable for grasshopper build-up. If economic thresholds are reached during seedling stages, treatment may be necessary. Chemical controls include products containing the active ingredients carbaryl, carbofuran, chlorpyrifos, dimethoate, malathion, methyl parathion, and parathion.

Other insect pests are found in Nebraska alfalfa fields, but are typically not in economically damaging numbers. Some of these insects are the blister beetle, clover leaf weevil, pea aphids, blue alfalfa aphid, spotted alfalfa aphid, lygus bug, tarnished and alfalfa plant bugs, variegated cutworm, and webworms.

Diseases

Several diseases threaten alfalfa in Nebraska. Those that most affect forage yield, quality, and stand persistence are crown and root rots, phytophthora root rot, anthracnose, and leaf and stem diseases.

Crown and root rots are major contributors to the progressive decline of alfalfa stands. Fungi, such as *Fusarium spp.* and *Rhizoctonia crocorum*, are the primary organisms involved in the alfalfa crown and root rot complex. Disease management is cultural in nature, and is directed at slowing the development of disease. Avoiding soil compaction, controlling possible insect vectors, utilizing proper fertilization and water management are several of the practices directed at reducing crown and root rot development and increasing stand longevity. Because crown and root rots exist and interact with other diseases, cold-tolerant alfalfa varieties resistant to bacterial wilt, anthracnose, and phytophthora root rot are also recommended to slow the development of the disease complex.

Phytophthora root rot is a major cause of seedling death in newly seeded alfalfa fields in Nebraska. It also causes the gradual decline of established stands. The disease is favored by wet, low areas and in soils with high clay content. Alfalfa stands suffering from phytophthora root rot are often thin, weedy, and have plants exhibiting irregular growth. Management practices include proper soil and water management and the use of resistant alfalfa varieties. Seed treated with metalaxyl also can reduce development of the disease.

Anthracnose can cause severe damage to established alfalfa stands in Nebraska. It can occur at any time of the growing season on seedling or established stands, however, it typically appears on stands two or more years old and after the second or third cutting. Infected stems curve at the tip, leaves wilt and turn tan, and the stem dies, leading to major stand reductions. Management is through sanitation, field rotation, and the use of resistant varieties.

Common leaf and stem diseases in Nebraska include spring black stem, summer black stem, and common leaf spot. Spring black stem is caused by the fungus *Phoma medicaginis* and is prevalent when cool, wet conditions are common. Summer black stem, caused by the fungus *Cercospora medicaginis*, is favored by warm-to-hot, wet or humid weather and occurs primarily in central and eastern Nebraska. Finally, common leaf spot, caused by the fungus *Pseudopeziza medicaginis*, can be present throughout the growing season. Copper hydroxide fungicide can be used to manage summer black spot and there are some alfalfa varieties that are resistant to common leaf spot.

Weeds

Effective weed control in alfalfa combines cultural practices and the possible use of herbicides. Establishing and maintaining a vigorous alfalfa stand is key to weed control, as healthy alfalfa competes well with weeds and reduces the need for other control measures. Weed control in alfalfa can be separated into two phases: controlling weeds in seedling stands and controlling weeds in established alfalfa.

Weed control in seedling alfalfa is essential, particularly in spring seedings. A properly prepared seedbed, use of adapted varieties free of weeds, and proper fertilization are important for establishing a competitive alfalfa stand. Use of a companion crop (small grain) or planting an alfalfa-grass mixture also will help control weeds. After seedling emergence, mowing can reduce broadleaf weed interference. Many weed problems can be avoided by fall seeding. Depending on the choice of planting strategy (companion crop, alfalfa-grass mixture, or pure alfalfa), preplant and/or postemergence herbicides can be used.

Maintaining a healthy, vigorous alfalfa stand is the most efficient way to control weeds in established alfalfa stands. When needed, cultural practices such as early spring tillage and timely cutting to reduce weed seed production can help reduce weed problems. Chemical control is usually applied late fall to early spring when the alfalfa is dormant.

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References

Information addressing soybean production in Nebraska can be obtained from Nebraska Cooperative Extension, Institute of Agriculture and Natural Resources, University of Nebraska-Lincoln. Most information is available at: <http://www.ianr.unl.edu/pubs/>

Statistical information can be obtained from the Nebraska Agricultural Statistics Service homepage:
<http://www.agr.state.ne.us/agstats/index.htm>

Database and web development by the [NSF Center for Integrated Pest Management](#) located at North Carolina State University. All materials may be used freely with credit to the USDA.