

1963

## EC63-158 Certified Alfalfa : Quality from Seed to Feed

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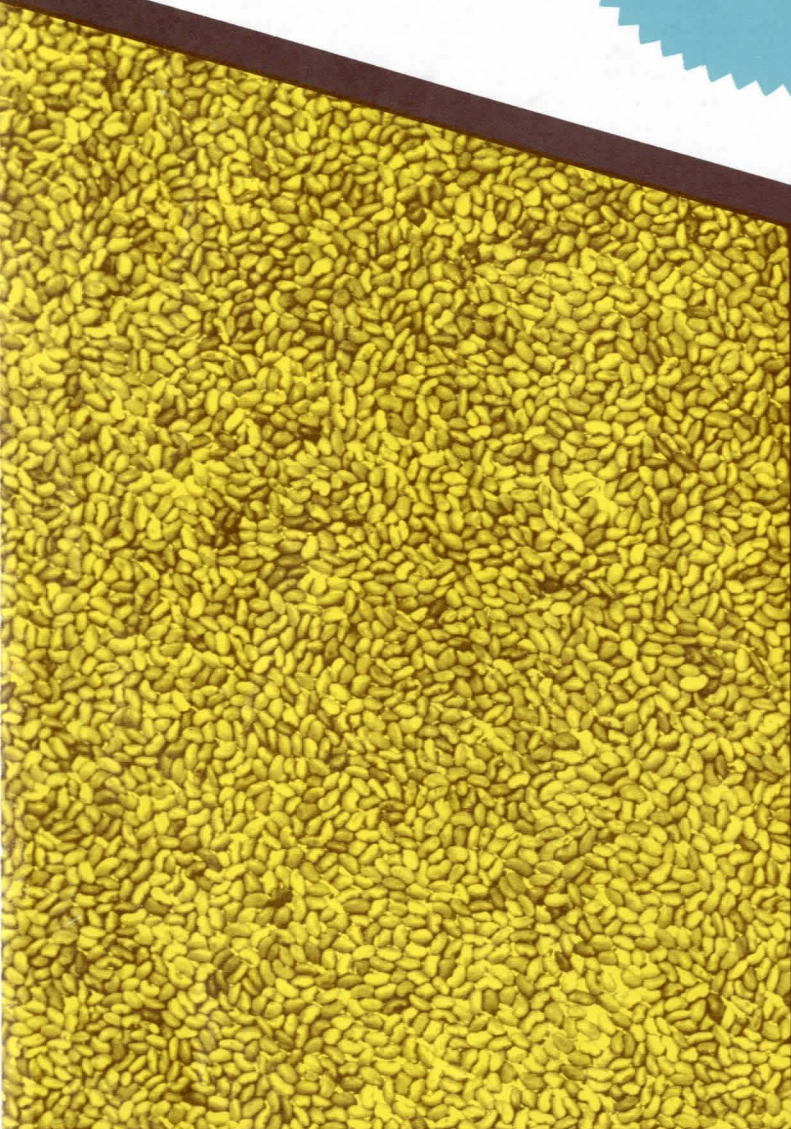
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# CERTIFIED ALFALFA

QUALITY

FROM SEED TO FEED

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**EC 63-158**  
**Extension Service**  
**University of Nebraska**

*College of Agriculture and Home Economics  
and U.S. Department of Agriculture Cooperating  
E. F. Frolik, Dean E. W. Janike, Director*



# ALFALFA...Vital to Nebraska Agriculture

Nebraska's nearly two million acres of alfalfa provide the backbone of soil improvement and livestock rations in the state.

The crop can be harvested in many forms. As pasture, hay, silage, haylage, wafers or dehydrated pellets, alfalfa is tops for nearly all classes of livestock. It yields a high level of energy per acre and contains generous amounts of protein, vitamins, amino acids, minerals and unknown growth factors.

Alfalfa can be grown on a wide variety of soils. It contributes nitrogen and organic matter to the soil, increases the water infiltration rate and improves soil structure. Its deep root system enables it to utilize subsoil moisture . . . an insurance against drought.

For more profitable production of alfalfa, follow these five steps to quality.

## STEP 1. START WITH QUALITY SEED

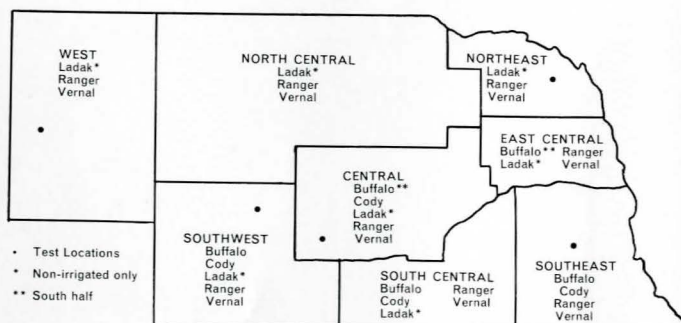
Use CERTIFIED seed of recommended varieties as the first step in the profitable production of any crop.

Growing a bumper crop of alfalfa represents a chain of carefully planned events. Like any other chain, one weak link in alfalfa production can be costly.

Planting CERTIFIED seed gives you the best chance for success with the least risk. CERTIFIED seed is pure, free of weed seed, adapted to Nebraska conditions and is of known quality and germination. Non-certified seed may or may not have these characteristics.

After spending money and valuable time on seedbed preparation and fertilizers, few modern farmers can afford the risk of planting poorly adapted seed of unknown quality.

Fig. #1 Certified Seed of Recommended Varieties for Various Sections of Nebraska



Ranger, Vernal, Buffalo and Cody are all resistant to bacterial wilt. Ranger and Vernal are adequately winterhardy for all parts of Nebraska. Buffalo and Cody are sufficiently winterhardy for the southern half of the state. Cody has an added

feature in its resistance to the spotted alfalfa aphid. Ladak is recommended where wilt is not a factor and where only one principal cutting per year is expected.

These variety recommendations are based on the assumption that long-term stands are desired.

## STEP 2. DETERMINE SOIL QUALITY

Production of big yields of quality alfalfa depends on a generous supply of nutrient minerals in the soil. Tests on soil samples can tell you whether or not it will pay to apply lime, phosphate, potassium or sulfur.

Acid soils are deficient in lime. Liming acid soils several months to a year before planting produces a more uniform stand of alfalfa, heavier yields, higher protein content, better quality forage.

Alfalfa needs a generous supply of available phosphorus. In soils not naturally well supplied, phosphate fertilizer applied before seeding or at planting time ensures fast seedling growth, higher yield and protein content of forage.

Some Nebraska soils are seriously deficient in sulfur. On these soils the application of fertilizers containing sulfur, gypsum or other soluble sulfate increases the yield and greatly increases the protein content and quality of the forage.

In all cases the first step in determining soil quality begins with a soil test.

## STEP 3. ASSURE QUALITY STANDS

Plant on clean ground that is well supplied with essential nutrients. Prepare the seedbed well in advance of seeding. Work it frequently . . . this encourages weed seed germination and firms the soil. Plant shallow . . .  $\frac{1}{2}$  inch deep on medium to heavy textured soils; slightly deeper . . . ( $\frac{1}{2}$  to 1 inch deep) on lighter soils.

Plant 8 to 12 pounds of high quality seed per acre. Late summer seeding . . . August 15 to September 15 . . . is preferred in southeastern and southern parts of Nebraska. Early spring seeding, April 1 to 20, is preferred westward and northward in the state.

Inoculate the seed . . . this assures the presence of superior strains of nitrogen-fixing bacteria capable of adding extra amounts of nitrogen to the soil.

For quick establishment of weed-free stands during the spring and summer, consider a pre-emergence soil treatment with EPTC (Eptam). Three pounds of Eptam per acre incorporated into the soil immediately before planting controls foxtail and other grassy weeds. Higher rates are required for broadleaf weed control.

After weeds have emerged, grassy types can be controlled with two to three pounds of dalapon per acre applied two to four weeks after alfalfa emergence. Higher rates are required if weedy grasses are more than two inches tall.

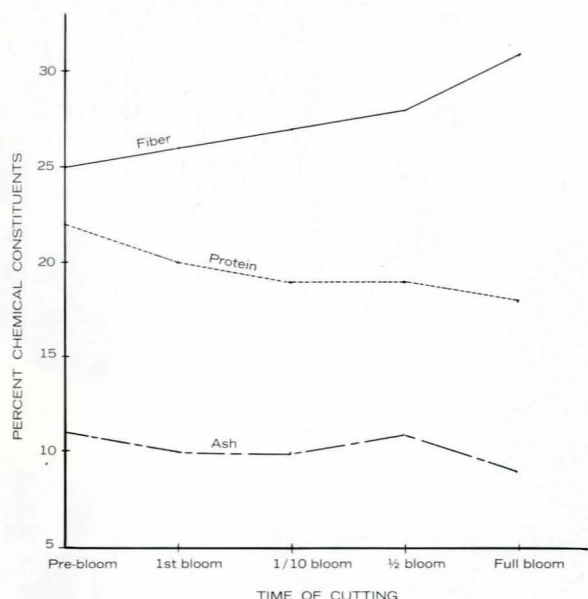
Use 4-(2, 4-DB) for broadleaf weed control. Apply when the weeds are small . . . two to three weeks after alfalfa emergence. Dalapon and 2, 4-DB can be combined for both broadleaf and grassy weed control.

## STEP 4. MANAGE FOR QUALITY

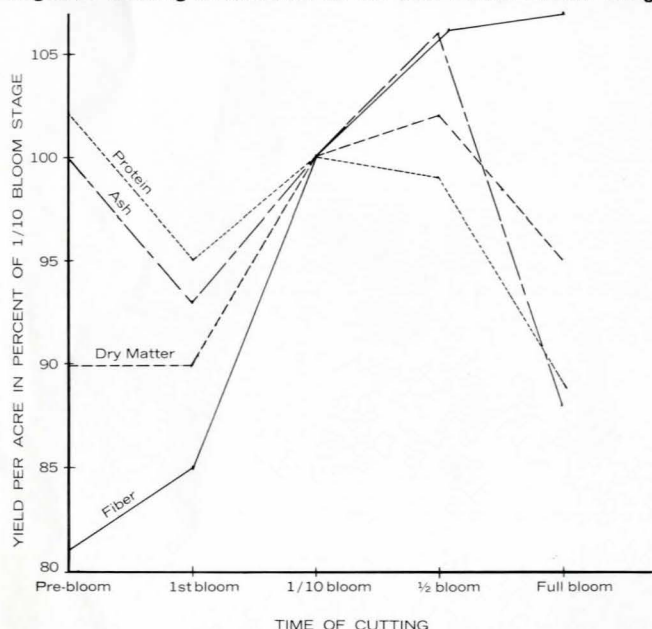
The correct cutting time is important in quality alfalfa production. Research has repeatedly shown that cutting at the 1/10 bloom stage is best from the standpoint of percentage of chemical constituents, yield of dry matter and chemical constituents, and stand persistence. Allow a month's growth in the fall before frost . . . to accumulate food reserves in the root system. These reserves are essential to winter survival and to start new growth in the spring. Rotational grazing is recommended to obtain maximum forage production and maintain alfalfa in grass/alfalfa pastures.



### Forage Quality of Alfalfa (Chemical Constituents) in Relation to the Time of Cutting



### Relative Acre Yields of Chemical Constituents at Different Stages of Cutting In Relation to the One-Tenth Bloom Stage



Alfalfa needs a lot of water. A deep silt loam or clay loam soil filled with water assures high alfalfa yields for five or six years without irrigation. On non-irrigated land, it is desirable to keep stands for this long a time or until the yield of hay falls below a satisfactory amount.

Irrigation makes it possible to grow alfalfa successfully on a wide variety of soils. Yields under irrigation can be maintained at four to eight tons per acre per year. On deep soils, late fall or early spring irrigation can fill the soil with water for summer use by alfalfa while summer irrigation water is applied to shallow-rooted crops. If off-season irrigation is not practiced, be prepared to irrigate every 12 to 14 days during the growing season.

Use a soil tube, or other methods, to determine how much moisture the soil contains. Irrigate when 50 percent of the readily available moisture is gone from the top 4 to 5 feet on deep medium-textured soils. On shallow, sandy soils less water will need to be applied at each irrigation, irrigations will need to be more frequent and off-season irrigation will be less practical than on deep soils.

### STEP 5. PRESERVE QUALITY

Mechanize hay making with the best system for your farm. Cut at the best time. Process rapidly to keep leaves. Leaves contain about 75 percent of the protein and 90 percent of the carotene (provitamin A) contents of the entire plant.

Watch the five-day weather forecasts. Rain causes leaching of nutrients. Stack hay at about 20 percent moisture. Bale hay at 20-25 percent moisture. Allow hay to wilt to about 60-70 percent moisture before making silage, or 40-60 percent moisture for haylage. Feed green chop as soon as possible after chopping. Crimping or crushing hay hastens drying.

The best process of preserving nutritive value is through dehydration which is normally done commercially. Drying right after chopping, adding an anti-oxidant during processing, and storing of pellets under inert gas assures maximum retention of quality. Nebraska annually produces about 40 percent of the U.S. production of dehydrated alfalfa meal. Alfalfa meal, well known as "Dehy", is a basic ingredient and insurance factor in rations for nearly all classes of livestock.



### ALFALFA IN LIVESTOCK RATIONS

Alfalfa is effective in many kinds of rations. It has been used as the standard for comparing other roughages for feeding livestock. The use of quality alfalfa forage in livestock rations reduces the need for supplementing the ration with protein, calcium, phosphorus, trace minerals and vitamin A as compared to other sources of roughage. In fattening beef cattle, alfalfa forage can reduce the amount of supplemented protein needed in many situations by 0.25 pound or more. Where higher levels of alfalfa are fed, the entire need for protein can be met by proper use of alfalfa in combination with other grain or roughages. When alfalfa is used to supplement other roughages or grains, the nutritive value of the entire ration may be raised.

Alfalfa forage can serve as the entire feed for the growing or wintering ration for cattle and sheep. It is a wise practice in many situations to use a combination of alfalfa with lower quality forages to reduce the amount of supplemental nutrients needed to balance the ration.

The following points should be considered in feeding alfalfa to cattle and sheep.

1. Alfalfa should be used in a manner to get the most from its high nutritive content.
2. Alfalfa as the roughage in beef cattle rations can effectively supply the physical balance needed in high concentrate rations.
3. Alfalfa harvested and handled to maintain quality will supply 1½ to 2 times as much protein as most grass hays.
4. Dehydrated alfalfa can, in many feeding programs, effectively supply a supplemental source of protein, calcium, phosphorus, trace minerals and carotene.



# 5 STEPS TO QUALITY ALFALFA

## START WITH QUALITY SEED

- plant certified alfalfa seed of an adapted variety



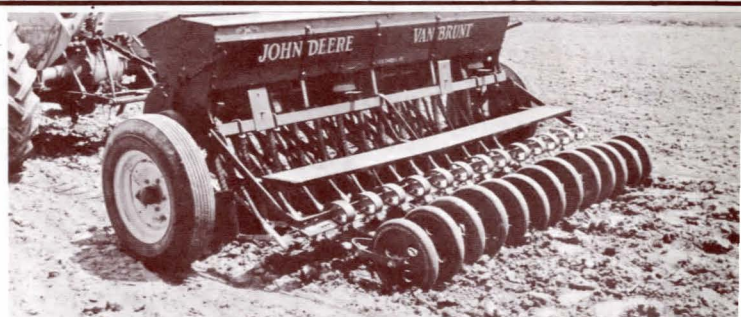
## DETERMINE SOIL QUALITY

- test your soil
- lime and fertilize according to soil needs



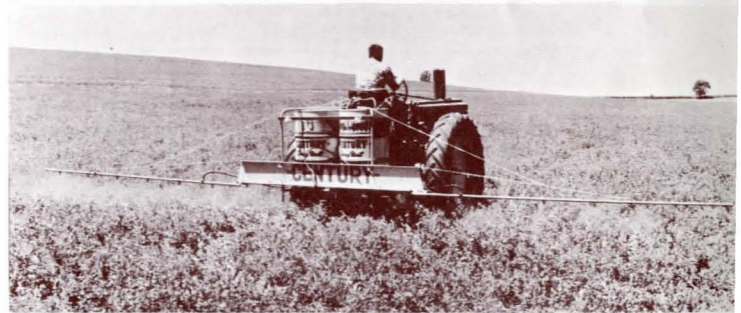
## ASSURE QUALITY STANDS

- plant on firm seed bed
- plant inoculated seed
- place seed at proper depth
- control weeds



## MANAGE FOR QUALITY

- maintain soil fertility
- control weeds and insects
- cut at right time
- schedule last cutting to best maintain stand



## PRESERVE QUALITY

- preserve quality by proper handling and storage

