

# Small Acreage Alfalfa for West Texas

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**P**roducers with 20 or fewer acres of alfalfa may not have the equipment, time, or ability to monitor and manage their crop as closely as do large forage producers. As a consequence, small-acreage producers may fare best by managing their fields as simply as possible. The degree of effort required will depend on the quality of hay you want to produce. The highest quality alfalfa must be cut near initial bloom and harvested often. On the other hand, horse hay is still very good forage but requires fewer cuttings.

## Preparing the land and establishing a stand

Have your soil analyzed in July or early August, then fertilize based on the soil test results and recommendations. Fertilize before planting because you can't till fertilizer into the soil once a permanent crop like alfalfa is established.

Fertilization before planting is especially important with regard to phosphorus (P). Alfalfa requires about 12 to 14 pounds of phosphorus, expressed as "P<sub>2</sub>O<sub>5</sub>" equivalent (which is how P fertilizer is marketed), per ton of hay production; it is hard to get phosphorus into the root zone unless

you put it there before you plant the seed. Spreading a phosphorus fertilizer on the surface of the soil after the field is established produces little benefit. For this reason, we suggest you consider applying and incorporating up to 100 pounds of P<sub>2</sub>O<sub>5</sub> equivalent per acre above what is recommended in your soil test report.

Contact your county Extension office for assistance or review the Texas AgriLife Extension Service soil testing guidelines at <http://soiltesting.tamu.edu>

For alfalfa to establish well, it needs a firm seedbed. Ideally, the heel of your shoe should sink into the soil no more than 3/8 inch at seeding time. As long as weeds don't become a problem, prepare your seeding area well ahead of time. This increases your chance of having a packing rainfall just before planting.

Seed only in the fall, even if you must have someone else do it. Spring seedings are more susceptible

to insects, weeds and wind damage. Planting in the spring in order to produce hay one crop season sooner is not worth the risk and will cost more in the long run.

Approximated seeding dates:

- Texas Panhandle, from about August 25 to September 10
- South Plains from September 1 to 20
- Southerly regions of West Texas, September 7 to 28



Fig. 1. This small acreage alfalfa field in Yoakum Co. is approximately 6 years old. The aging stand is thinning and productivity is declining.

## Selecting a variety and seeding rate

Select a variety that resists common alfalfa insects and diseases. Updated insect and pest ratings on most commercial varieties are available at <http://www.alfalfa.org> (look for the annual 'Alfalfa Variety Leaflet.'). This information will help you compare varieties that are available locally.

Roundup Ready (RR) alfalfa is widely available for planting beginning fall 2011. These varieties tolerate glyphosate herbicides and make weed control simpler.

Select a variety with a fall dormancy (FD) rating that is appropriate for your area. Fall dormancy is rated from 1 to 11 and relates to how soon an alfalfa variety stops growing in the fall and how early it begins regrowing in spring. FD 1 alfalfa is the most fall dormant and 11 the least. Seed rated FD 6 or lower is appropriate for the Lubbock and the southeastern Panhandle area; varieties with a higher rating will be more prone to winterkill and reduced stand longevity. Northwest of Lubbock toward Clovis and to the top of the Panhandle, use seed rated FD 4 or 5. For the Midland area, consider seed with an FD 7 rating, and up to FD 8 in the Trans-Pecos region. Always err on the side of caution when considering FD. The more dormant varieties typically last longer and may reduce the need to reestablish the stand.

Many alfalfa varieties are now rated for winter survival (WS); 1 represents the highest and 6 the lowest survival rating. Seed with a WS rating of 2 or 3 is less likely to suffer winter injury.

Only choose seed that is treated with *Rhizobium* inoculant to increase nitrogen (N) fixation by the plants. Alfalfa requires about 50 pounds of N per ton of yield; these bacteria enable alfalfa to meet most of its needs by converting N from the atmosphere into a form the plant can use.

Alfalfa seeding rates can be as low as 10 pounds per acre, if conditions are good and soil is firm. However, to ensure a good stand, consider planting 20 to 25 pounds of live seed per acre to compensate for variations in seeding equipment. Although lower seeding rates may be appropriate for the Panhandle, up to 30 pounds of seed per acre is recommended for the Midland and Trans-Pecos areas.

Calibrate your seeder or drill to ensure that it seeds at an appropriate rate for your location. If in doubt, add a few more pounds of seed per acre.

## Irrigating

Except for during rainy summers, rain-fed or dry-land alfalfa is hard to establish and produces little. Alfalfa that is not irrigated yields much less per cut and may be better suited for grazing.

In West Texas, you will need to irrigate to produce acceptable yields. To reach top production, alfalfa requires more inches of water per acre than any other crop grown in West Texas.

- Texas High Plains, alfalfa requires about 5 to 7 inches of water (rain, irrigation, and water already in the soil) per ton of yield if the irrigation is reasonably efficient.
- Alfalfa in the Trans-Pecos region requires an extra 1 to 2 inches per ton of yield.

Plant only acreage that you can irrigate at a rate of at least 7 gallons per minute per acre. You will need more pumping capacity if you are using a side-roll. Many producers prefer a capacity of 10 gallons of irrigation water per minute per acre. Alfalfa can grow with less water, but yields will decrease.

One watering of up to 2 inches every 5 to 7 days is probably sufficient for small acreages. More water and appropriate fertilization will increase yields, but excessive irrigation, especially water-logging, increases the potential for disease.

Suspend irrigation for a couple days before mowing. This allows the soil surface to dry so the hay on the bottom of each row will dry more efficiently and your equipment won't create tracks.

## Weeds and pests

Weed problems can include broadleaves and grasses as well as pesky perennials such as blueweed, whiteweed (silverleaf nightshade), and lakeweed (woolly leaf bursage).

Minimize weeds with tillage and herbicides before seeding. Afterward, act on weed problems immediately; they are easier to control when they are small, but establish quickly if ignored. On just a few acres, you may be able to eliminate scattered weeds with a hoe.

Though it is important to control weeds before planting alfalfa, there are more herbicide options once the stand is established. For current herbicide recommendations see <http://lubbock.tamu.edu/othercrops>.

After alfalfa is established, a “yellow” herbicide such as trifluralin will control weeds well. These foundational herbicides kill weeds before they emerge. Trifluralin may be applied in granular or liquid form then watered in before weeds emerge in the late winter or early spring.

If weeds appear that you cannot identify, take digital pictures or actual samples to your county agent or farm supplier for herbicide recommendations. Read and follow all chemical label directions. For planning and safety purposes, you may review the labels of approved herbicides for alfalfa by clicking on ‘Services’ at <http://www.cdms.net> or <http://www.greenbook.net>

Roundup Ready alfalfa will tolerate Roundup and other glyphosate-based herbicides during and after the establishment phase. RR alfalfa will therefore allow broad-spectrum weed control across the field any time it is needed.

Most herbicides used on alfalfa require a waiting period before the treated field can be baled or grazed. This waiting period is indicated on product labels and can range from 7 to 60 days and needs to be considered when selecting the product.

Schedule an early-season spray program for insects.

## Fertilizing

Most commercial farmers apply little to no nitrogen to alfalfa, though this crop might require additional nitrogen fertilizer. Alfalfa seeds treated with a *Rhizobium* inoculant form round nodules on the roots that measure 1/16 to 1/8 inch and are the first and best choice to supply N to your crop. However, this process does not guarantee adequate nitrogen. If you don’t find these nodules on root samples, you may need to apply additional nitrogen.

If supplement nitrogen is added, use any form that is cost effective. Unlike phosphorus fertilizers, nitrogen fertilizer dissolves with rain or irrigation then moves into the root zone. Apply any additional nitrogen early in the season, with a possible second

application after a mid-season cut. Regard all post-planting nitrogen applications as supplemental. Fertilizing more than 50 to 100 pounds per year is not likely to produce an economic benefit.

Though phosphorus fertilizers are not efficient when applied to the soil surface after alfalfa is established, supplemental phosphorus can benefit somewhat when applied after the second year of production. If you fertilized with little or no extra phosphorus before seeding, some surface-applied phosphorus fertilizers can reach the roots of the alfalfa. These include broadcast granular 0-46-0 and liquid 10-34-0 if it is placed in acidified irrigation water.

Alfalfa also requires potash, or potassium (K), and most soils in West Texas are naturally high in K. If a soil test recommends additional potassium, apply and incorporate it before seeding as there is little benefit from surface applications once the stand is established.

Soil nutrients such as calcium, sulfur, iron, zinc, and manganese are seldom a problem with alfalfa. The crop’s deep rooting can usually scavenge enough of any limited nutrient to adequately supply the crop. Soil testing can identify nutrient deficiencies which need to be addressed with fertilizers before planting.

## Cutting and harvesting

Alfalfa yields vary widely according to irrigation and rainfall, nutrients, and soil condition.

Let alfalfa reach as much as 25 percent bloom in the spring before the first cutting. This period gives the plant time to replenish its energy after being dormant. In spite of the delay, this is often the highest quality cutting because the alfalfa has not yet been exposed to significant heat.

Many producers balance quality and yield by cutting when 10 percent of the plants are in bloom. Small-acreage producers may wish to harvest only four or five times a year, perhaps every 32 to 35 days compared to a regular producer who often cuts on a 28-day cycle for higher quality forage.

Small-acreage alfalfa producers who do not own mowing equipment or balers must arrange for custom harvesting. As you schedule harvests:

- Minimize the possibility of cut alfalfa being rained on. Rain can degrade the quality and fade the bright green color, making the hay harder to sell for full value.



- Bale the hay before it becomes too dry. Over-dry alfalfa will lose significant leaf matter during baling resulting in lower quality forage. In areas with low humidity, commercial producers often bale at night to reduce leaf loss.

Don't take the last cutting near the end of the growing season when alfalfa may have significant regrowth. Let alfalfa grow for at least 6 weeks after a major fall cutting. During the regrowth period leading up to dormancy, alfalfa stores root carbohydrates for surviving the winter and initiating next year's growth. Wait on a final cutting until near the first freeze so alfalfa regrowth is minimal thus conserving stored carbohydrate energy as alfalfa goes dormant. Cutting in late October and early November once plants have stopped growing will not negatively impact stored energy reserves.

A final cutting, if feasible, near these thirty year average first freeze dates in West Texas will conserve root carbohydrate resource for future growth:

- Perryton, 10/17
- Amarillo, 10/20
- Muleshoe, 10/21
- Clarendon, 10/25
- Lubbock, 11/1
- Snyder, 11/7
- Midland, 11/12

After several years of production, yields normally decline as individual plants die. As the stand thins, weeds may increase. If cut often, the stand may thin more quickly.

Alfalfa varieties with lower crowns are marketed as more suitable for grazing because they are less susceptible to damage from hoof traffic. Because alfalfa is rich forage, limit cattle grazing time to avoid bloat and even death.

### Helping your stand last

Choose a slightly more winter-dormant alfalfa. Alfalfas with a FD 4 or 5 green up and actively grow 1 to 2 weeks later in the spring, then slow and stop growing a little sooner in the fall. These varieties may produce 1 to 2 years longer than alfalfa with a dormancy rating of 7 or 8. Alfalfa yields are not necessarily lower just because a variety has greater dormancy. Early-spring insects also may be less of a problem in alfalfa that greens up a little later.



Fig. 2. As alfalfa stands thin with age, invasive weeds such as annual grasses may infest bare spots in the field. This leads to reduced yields and poorer quality hay.

Choose a good fertility program before you seed the crop.

Eliminate weeds as they appear. Over time, alfalfa stands will develop bare spots where weeds can invade and spread if not controlled (Fig. 2).

Cutting more often than every 28 days can reduce the stand life over time.

Minimize wheel traffic on the field to avoid injuring the plant crowns and spreading disease.

### When is a stand finished?

Decreasing yields and increasing weed problems indicate a field needs to be reestablished. Generally, consider replacing the alfalfa stand once the crop produces less than about 50 stems per square foot. However, if a stand is thin but still has large plants, it can produce for another year. If producing hay is not a priority, older stands can be grazed.

Alfalfa fields in the Texas High Plains should produce for at least of 4 years; many will produce for up to 6 years. Some fields have produced for 8 years or longer but are increasingly thin, weedy, and less productive. Stand longevity is likely shorter to the south.

### Reestablishing alfalfa

The soil should be free of alfalfa for at least 1 year because chemicals from alfalfa leaf and stem residues build up in the soil and limit germination, making it difficult to establish a new stand right away.

Kill the stand with tillage or herbicides once alfalfa is harvested for the final season. Do not reseed until at least the following fall.

During this time off, you could plant fall wheat, oats in late winter, or sorghum/sudan and hybrid pearl millet in late spring. These crops will provide some interim forage, and should reduce disease potential that may have developed while growing alfalfa.

## Further alfalfa information

Contact the local county Extension agent:

*<http://agrilifeextension.tamu.edu>*

On-line resources for Texas alfalfa, including

*Texas Alfalfa Production:*

*<http://lubbock.tamu.edu/othercrops>*

New Mexico State University alfalfa resources, including extensive variety trials:

*<http://aces.nmsu.edu/pubs/howto/howto.html>*

Oklahoma State University alfalfa resources:

*<http://alfalfa.okstate.edu>*

*Managing Insect and Mite Pests of Texas Forage Crops*

E-238: *<http://agrilifebookstore.org>*

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