



Selecting Alfalfa Varieties

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Site selection, proper weed management, good fertilization and seed preparation are all crucial steps for a successful alfalfa stand establishment. However, selecting the right variety will dictate yield, quality, potential, degree of insect and disease resistance, as well as longevity of the stand. Variety is one of the few irreversible management decisions because the variety cannot be changed once the seeds are planted. Several factors should be considered when choosing to place an alfalfa variety in a specific site. These include winter survival, fall dormancy, disease resistance, persistence and yield potential. The purpose of this publication is to provide a guide for producers to select an appropriate alfalfa variety to their specific site.

Winter Survival

Winter survival is mainly dictated by winter hardiness. Winter hardiness is defined as a measure of the alfalfa plants' ability to survive the winter without injury. It ranges on a scale of 1 (extremely winter hardy) to 6 (non-winter hardy). As fall approaches and day length and temperature decline, alfalfa plants begin changing their physiology. Allowing alfalfa to acclimate and thrive through the winter. The greater the extent of this acclimation, the greater the alfalfa survival throughout the winter. Even though survival during the winter is a real concern, great yield losses can happen if alfalfa survives, but sustains severe bud injury. New alfalfa buds, where spring growth occurs, were formed during the previous fall;

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consequently, alfalfa plants must be winter hardy to survive the winter with the majority of their buds alive.

On the other hand, extreme winter hardiness results in lower yield potential, which limits forage production. Thus, the appropriate alfalfa variety to a specific location must be winter hardy enough to allow alfalfa survival with minimal bud injuries, but without limiting yields. The most appropriate winter hardiness scores for Oklahoma are 3 (winter-hardy) and 4 (moderately winter-hardy).

Fall Dormancy

Fall dormancy is determined by measuring how tall the alfalfa regrows from early fall to first killing frost, which allows 25 to 30 days of growth at minimal temperatures. Alfalfa varieties that remains very short are considered fall dormancy 1 (very dormant), while varieties that can grow a couple of feet in height are considered fall dormancy 11 (very non-dormant). Typically, alfalfa varieties that are less fall dormant (higher fall dormancy score) will yield more than more fall-dormant alfalfa. Less dormant varieties will break dormancy earlier in the spring and turn dormant later in the fall, allowing more growing days. In the past, winter hardiness and fall dormancy were genetically interrelated; and fall dormancy was used to infer winter hardiness. However, alfalfa breeders untangled those two traits, and producers can select less fall-dormant

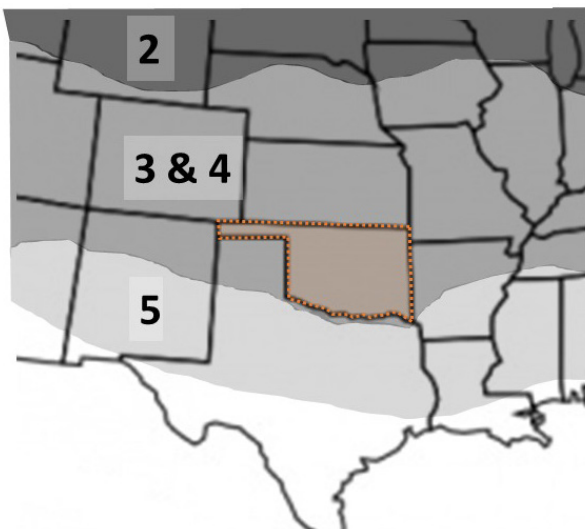


Figure 1. Winter hardiness.

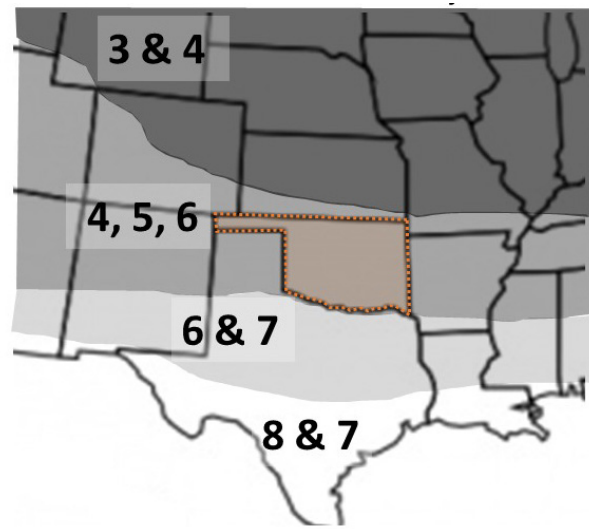


Figure 2. Fall dormancy.

varieties that meet their winter hardiness requirements. Alfalfa varieties within fall dormancy 4 and 6 are appropriate for Oklahoma.

Disease and Insect Resistance

The best disease and pest management strategy is to select varieties resistant to the most recurring pests and diseases to a specific location. Resistant varieties will save money and time by eliminating or drastically reducing the need of chemical control. To select the most appropriate variety, assess the most common alfalfa pests and diseases that occur at your location in past years. In Oklahoma, the OSU Pest e-Alerts (<http://entopl.okstate.edu/pddl/advisory.htm/>) is a reliable source that contains reports of the occurring alfalfa pests and diseases through Oklahoma. The archived reports can be used to assess the most recurring pests and diseases through Oklahoma.

Persistence

An alfalfa variety that can keep consistent yields up to its fourth and fifth year is considered a persistent variety. In northern locations, persistence is greatly related to winter hardiness due to winter severity and duration. However, in more southern locations including Oklahoma, alfalfa disease and insect resistance becomes as important as winter hardiness in terms of alfalfa stand persistence. To find appropriate varieties to your specific location based on all traits discussed so far, consult the alfalfa variety ratings from National Alfalfa & Forage Alliance (NAFA) available at <https://www.alfalfa.org/varietyratings.php>. Their database contains the majority of the alfalfa varieties with their respective winter survival, fall dormancy and pest resistances.

When searching for varieties, keep in mind that four- to five-year-old stands are not necessarily the most profitable choice. Alfalfa fields in a four-year rotation with three years of alfalfa may result in higher yields that justify early establishment of a new stand rather than lingering on an old, less productive stand for five or more years.

Yield Potential

After the appropriate alfalfa varieties are identified based on winter hardiness, fall dormancy, insects and diseases, the next step is to identify among the selected varieties which have the highest yield potential to the targeted location.

Even though every alfalfa variety has its own yield potential dictated by its genetics, the actual forage yield that each variety can achieve is limited by field conditions and management practices. The pasture's latitude, length of the growing season, temperature, rainfall amount, distribution, soil texture, fertility and other management practices are the major factors that dictate the final forage yield of a specific alfalfa variety. Therefore, choosing a variety by the yield promised on the seed bag is not the wisest decision. Seed companies test their products in the best weather, soil conditions and use the best management practices possible to show the full potential of their products. The odds that your pasture will replicate these same conditions are very low. A more applicable alfalfa variety



Figure 3. Alfalfa variety trial, Chickasha.

selection would be by viewing how each variety performs close to your location.

A very common, but often unreliable, approach used by many producers is by word of mouth. "If my neighbors are telling good stories about the newly released variety, I better buy it." Even though a consistent number of good testimonials from different neighbors is positive evidence, this is a very subjective evaluation and, perhaps, inaccurate. These testimonials may not include fertilization levels, irrigation amounts, herbicides expenses, accurate yields, etc.

An impartial approach for selecting the best variety to a specific pasture is looking at the public alfalfa variety trial closest to your location. Public variety trials are managed by state universities, which is an unbiased source of information to the public. Furthermore, public variety trials use proper scientific methodology to compare different varieties and disclose all pasture management to the public, allowing the most objective and accurate evaluation. Past OSU alfalfa variety performance trial reports at the Oklahoma Crop Variety Trials can be found at: <http://croptrials.okstate.edu/alfalfa/>. Future reports will be available as research is completed. Questions about those reports can be directed to the local county Extension educator. You can find your county extension office staff at <http://countyext2.okstate.edu/front-page#D>

Reduced-lignin Alfalfa

Lignin is not digestible and blocks digestible fibers utilization by the livestock. Therefore, high lignin concentrations are undesirable. Recently, alfalfa with reduced lignin concentrations has been released to the market. There are two types of reduced-lignin alfalfa: Hi-Gest® (Alforex™ seeds) and HarvXtra® (Forage Genetics International) The Hi-Gest® was conventionally bred having a 7 to 10 percent reduction in lignin. The HarvXtra® was genetically modified, having a 10 to 15 percent lignin reduction. Both types are combined with other desirable traits, e.g., HarvXtra® + Round-up Ready®. The lignin reduction can benefit farmers by producing higher forage quality, allowing later harvest with higher yields and the same quality; or allowing greater harvest flexibility by extending the cutting window. Unfortunately, the reduced-lignin varieties were not tested in Oklahoma conditions, and all information available to date are from northern states.

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