



Alfalfa Product Selection - Fall Dormancy and Winterhardiness

- Winterhardiness and fall dormancy are key factors that can affect the alfalfa stand, longevity, and forage yield potential.
- When selecting an alfalfa product, consider both fall dormancy and winterhardiness ratings, as these ratings are not the same and should not be substituted for each other.
- Winterhardiness is the ability of an alfalfa product to withstand winter temperatures; fall dormancy relates to the timing and length of dormancy.

Fall Dormancy

Fall dormancy relates to how soon an alfalfa product stops growing in the fall and how early it begins growing in the spring or late winter. Nondormant alfalfa products have quicker shoot elongation after harvest and erect shoot growth in the fall. In contrast, fall dormant products produce shorter, prostrate shoots in the fall and have slower shoot elongation after harvest.¹

A higher fall dormancy rating indicates increased fall growth and a longer the growing season (Table 1). The length of dormancy affects yield as well as winterhardiness. Because fall dormant products have slower re-growth after harvest, the number of cuttings per year and yield may be reduced.

Winterhardiness

In the northern United States, winterhardiness is the primary factor in determining alfalfa stand longevity and forage yield.² The winterhardiness rating indicates how well a product survives cold temperatures. The lower the winterhardiness rating, the greater the ability of the product to withstand cold temperatures (Table 2).

Because early fall dormant products tend to be more winterhardy than non-dormant products, the early-fall dormancy characteristic has traditionally been used as an indicator of winterhardiness. However, winterhardiness ratings indicate the potential longevity of the alfalfa stand, while fall dormancy ratings are related to the recovery rate in the fall.



Figure 1. Alfalfa field breaking dormancy in the spring.

Photo courtesy of Howard F. Schwartz, Colorado State University, Bugwood.org.

Product Selection

When selecting alfalfa products, base your decisions on the classifications for fall dormancy and winterhardiness for your area. Although fall dormancy is somewhat related to winterhardiness, it is not an accurate measure of winterhardiness. Winterhardiness should be considered as a separate characteristic from fall dormancy when selecting alfalfa products.

Breeders have been successful at disconnecting winterhardiness from fall dormancy, as the two traits tended to be closely related. Now it is possible to have a product with a fall dormancy (FD) of 4 or 5 with a winterhardiness below 2. Some alfalfa products are capable of surviving lower temperatures than indicated by their fall dormancy rating. In other cases,

Alfalfa Product Selection - Fall Dormancy and Winterhardiness

products that have lower fall dormancy ratings may not be capable of withstanding cold temperatures over multiple years.

Depending on the region, if an alfalfa stand is considered to be for shortterm, a moderate winterhardiness rating may be adequate. For long-term stands, alfalfa products with lower winterhardiness ratings should be considered. In areas that usually receive good snow cover (four inches or more), planting products with very low winterhardiness ratings may not provide much additional protection. However, snowfall can be unpredictable and protection from a snow cover should not be relied upon. In areas with less snowfall, products with lower winterhardiness ratings should be considered.

Alfalfa products with lower fall dormancy ratings go dormant earlier in the fall, which can limit productivity and yield for the season. However, singleyear productivity can be balanced by the greater likelihood of fall dormant and winterhardy products surviving multiple winters and thereby adding years to the life, overall productivity, and total yield potential of the stand.

Table 1. Fall dormancy (FD) ratings and descriptions

FD Rating	Description
1, 2	Very dormant
3, 4	Dormant
5	Moderately dormant
6, 7	Semi-dormant
8, 9	Non-dormant
10, 11	Very non-dormant

Source: National Alfalfa & Forage Alliance (NAFA)

Table 2. Winterhardiness ratings and descriptions

Rating	Description
1	Extremely winterhardy
2	Very winterhardy
3	Winterhardy
4	Moderately winterhardy
5	Slightly winterhardy
6	Non-winterhardy

Source: National Alfalfa & Forage Alliance (NAFA)

Sources

¹ Haagenson, D. 2000. Improving winter survival of alfalfa without sacrificing yield—What we know. Purdue University. <http://www.agry.purdue.edu>.

² Cash, D., Ditterline, R., and Dunn, R. 1993. Alfalfa variety selection. Montana State University. MT 9303. <http://co.yellowstone.mt.gov>.

Additional sources: Kaatz, P. 2011. Selecting the right alfalfa variety. Michigan State https://www.canr.msu.edu/news/selecting_the_right_alfalfa_variety.

Winter survival, fall dormancy & pest resistance ratings for alfalfa varieties. 2018. National Alfalfa & Forage Alliance (NAFA). <http://www.alfalfa.org>.

Web sources verified 2/1/21.

Legals

Performance may vary, from location to location and from year to year, as local growing, soil and weather conditions may vary. Growers should evaluate data from multiple locations and years whenever possible and should consider the impacts of these conditions on the grower's fields.

©2021 Bayer Group. All rights reserved. 1028_S1

