http://extension.psu.edu/plants/crops/forages/management/winter-alfalfa-survival

# Winter Alfalfa Survival

## Survival and high production of an alfalfa stand begins with an understanding of photosynthesis, carbohydrate production and root reserves.

Alfalfa is a perennial forage crop. Alfalfa leaves use sunlight to produce sugars and starches. These carbohydrates are used by the plant to support new growth. Quickly levels of carbohydrates exceed the need for regrowth and excess amounts are transported to the tap root and stored for future regrowth. Following mowing or grazing, when leaves and stems are removed, the new regrowth uses taproot stored carbohydrates to provide energy to the plant until adequate leaves are formed. Growing high producing alfalfa involves considerations for above ground and below.

## Winter survivability of alfalfa stands is influenced by many factors

### Stand Age

Younger stands (18–36 months) are more stress tolerant when compared to older stands of alfalfa. Younger stands have lower levels of disease incidence and less physical damage from wheel traffic.

### Soil Fertility

Stands with high levels of potassium (K) are less likely to experience extensive winter injury than stands grown on low fertility sites. K is vital for carbohydrate movement to the tap root. K levels must be present before the fall rest period. Topdressing in October/November is too late for optimum conditions. Top hay producers maintain soil fertility levels throughout the crop rotation. Soil pH above 6.5 is preferred.

### Soil Moisture

Most winter injury is actually caused by the plant drying out. High soil moisture levels increase freezing and thawing cycles which “heave” the crowns out of the soil. This heaving tears small roots off, cutting off the uptake of moisture and loss of a secure

anchor of the plant. Eventually the crowns can be lifted out of the soil and exposed to cold, drying winds.

## Cutting Management

The shorter the interval between cuttings during the growing season, the greater the risk of winter injury. This is related to the total amount of carbohydrates that are translocated to the roots during the growing season. Similarly a fall harvest forces the plant to use stored reserves to initiate new growth. If growing conditions following this later harvest do not allow reserves to be replenished the plant enters the long, high risk, winter period with low root reserve supplies. Allowing at least one cutting to reach bloom improves winter survival odds.