

## Alfalfa Management Decisions for Early Spring: Planting, Evaluating and Managing Existing Stands, Managing Alfalfa Weevil

### Tips for Spring-Seeded Alfalfa

**Variety selection:** Base variety selection on winter-hardiness and genetic resistance to common diseases such as Phytophthora root rot, bacterial wilt, and Fusarium wilt.

**Fertilization:** Apply **potassium** well ahead of seeding to avoid injury during germination (salt effect).

**Phosphorous** is critical for healthy root development.

**Soil pH** of 6.2 - 7.0 is critical for nodulating rhizobia to fix nitrogen and maximize nutrient availability.

**Field preparation:** Prepare a firm seedbed. Your shoe should only sink about ¼ inch. This helps prevent seed from being buried too deep and allows for good seed-to-soil contact. No-till planting also provides a firm seedbed and topsoil moisture is generally good.

**Planting depth:** Seed should not be planted too deep or too shallow! Planting depth is critical for a successful stand. Planting depth on clay or loam soils should be ¼ to ½ inch and on sandy soils ½ to 1 inch.

**Planting rate:** Seeding rates should be between 18 and 21 lb of **pure live seed/acre** if conditions are favorable and proper equipment is used (pure live seed = % purity x % germination ÷ 100).

**Planting date:** Spring seeding is best achieved **April 1 - May 15**. Alfalfa seed starts to germinate at soil temperatures above 37° F. Early seeded alfalfa will generally encounter less moisture stress and crusting during germination.



Newly emerged alfalfa seedling

**Weed control:** Alfalfa is a tender plant to establish. Weed competition can kill a stand. Whether using pre-emergence weed control or conventional tillage followed by postemergence weed control, scout the field and plan your weed management strategy.

### Use of a nurse crop –

**Advantages:** Erosion control and weed control

**Disadvantages:** Competition for water, nutrients and sunlight

### Time to Assess Alfalfa Stands

Being able to diagnose and manage winter-damaged stands may help prolong stand life and increase production.

#### Diagnosing winter injury

**Slow green-up** - One of the most evident results of winter injury is slow green-up. If other fields in the area are starting to grow and yours are still brown, it is time to check those stands for injury.

**Asymmetrical growth** - Buds for spring growth are formed during the previous fall. If parts of an alfalfa root are killed and others are not, only the living portion of the crown will give rise to new shoots, resulting in a crown with shoots on only one side—or asymmetrical growth.

**Uneven growth** - During winter, some buds on a plant crown may be killed and others may not. The uninjured buds will start growth early while the injured buds must be replaced by new buds formed in spring. This results in the shoots from buds formed in spring several inches shorter than the shoots arising from fall buds.

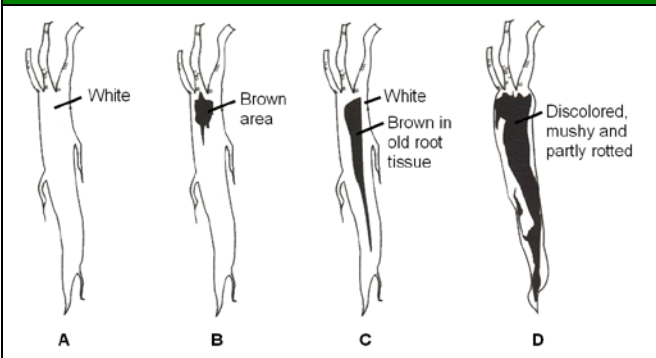
**Root problems** - Probably the best way to diagnose winter injury is by digging up plants and examining roots. Healthy roots should be firm and white with little evidence of root rot; winter-injured roots have a gray, water-soaked appearance and/or a brown discoloration. If the root is soft and water can be easily squeezed from the root, it is most likely winterkilled. If the root is firm but showing signs of rot, it may still produce. If over 50% of the root is damaged, the plant will most likely die that year. If less than 50% is injured, the plant will likely survive for one or two years. The following tables may help determine the likelihood of survival.

Table 1. Using stem density to evaluate alfalfa stands	
Density (Stems/ft <sup>2</sup> )	Action
Over 55	Stem density not limiting yield
40 to 55	Stem density limiting yield potential
Under 40	Stem density severely limiting yield. Consider replacing.

Table 2. Alfalfa root health effects on winter survival (ratings pertain to crown and roots)		
Rating	Condition	Winter Survival
0	Healthy	Excellent
1	Some discoloration	Excellent
2	Moderate discoloration	Good
3	Significant discoloration	Good/mild winter
		Poor/hard winter
4	> 50% discoloration	Good/mild winter
		Poor/hard winter
5	Dead	-----

Source: University of Wisconsin Extension Publication.

**Table 3. Alfalfa root symptoms and diagnosis**



- A. No injury.** Roots are solid white internally. Tillers are beginning to green and are solidly attached to the root.
- B. Moderate injury.** Roots are solid and white but brown damaged areas occur in old tissue of the crown down to 1 to 2 inches. Growth beginning. With favorable growing conditions and a delayed first cutting, many of these plants will survive.
- C. Severe injury.** Roots white on outside. Brown discoloration carries down in center of the root. The chances are not very good these plants will survive.
- D. Dead plants.** Roots are discolored, mushy and partly rotted. Top growth can be readily pulled from the crown.

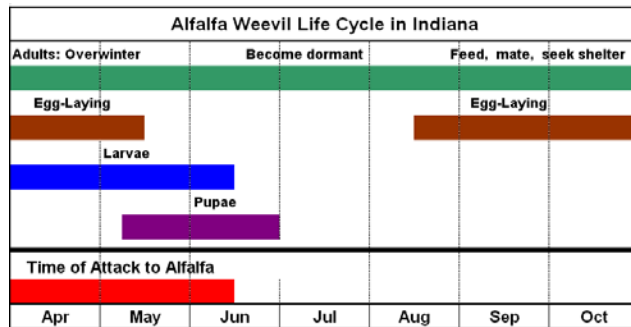
Source: Rohweder and Smith, 1978.

**Alfalfa Weevil Scouting and Control**

**Alfalfa weevil** is the first damaging insect to rob alfalfa yields with its early feeding. The following graphic outlines the typical alfalfa weevil life cycle in Indiana—Illinois would be very similar. In early spring, alfalfa weevil hatch from eggs deposited in the plant stems and begin feeding within the folded leaves. As larvae grow and feed, alfalfa leaves start to display a skeletonized look.



Alfalfa weevil larva and feeding damage on alfalfa leaf



Source: [Purdue University Entomology Dept., Field Crops IPM](http://Purdue University Entomology Dept., Field Crops IPM).

Keeping track of heat unit accumulation can help with scouting for this pest. Scouting should start when approximately 250 heat units (base 48° F) have been accumulated from January 1. Scouting recommendations follow for northern and southern Indiana. If treatment is warranted, contact your local pesticide dealer for insecticide options.

**Table 4. Alfalfa weevil management guidelines.**

Heat Units	% Tip Feeding*	Advisory
250		Begin sampling.
300	0-40 (30)*	<b>Northern Indiana</b> Re-evaluate in 7 to 10 days using the appropriate heat units or treat immediately with a residual insecticide if 3 or more larvae are seen per stem and tip feeding is above 50%.
300	0-50	<b>Southern Indiana</b> Re-evaluate in 7 to 10 days using the appropriate heat units or treat immediately with a residual insecticide if 3 or more larvae are seen per stem and tip feeding is above 50%.
400	60 (50)**	<b>Northern Indiana</b> Treat immediately with residual insecticide.
400	50	<b>Southern Indiana</b> Treat immediately with residual insecticide.
500	75	Treat immediately.
600	75+	If cutting is delayed for more than 5 days, treat immediately.
750		If harvested or harvesting soon, return to the field in 4 to 5 days after cutting and spray: 1) If there is no regrowth and weevil larvae are present, or 2) if feeding damage is apparent on 50% of the stubble and weevil larvae are present.

\*Note if larvae are still present, actively feeding, and/or diseased.

\*\*Shorter-than-normal growth at the beginning of the season.

Adapted from:

<http://extension.entm.purdue.edu/fieldcropsipm/insects/alfalfa-weevil.php>