Alfalfa Germination & Growth

February, 2007

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**spring seeding dates**

- May 1–30
- April 15–May 15
- April 1–30
- March 15–April 15

**late-summer seeding dates**

- July 20–August 1
- August 1–15
- August 15–Sept. 1
- September 1–15
Regrowth from auxillary buds and crown buds
Alfalfa Cold Tolerance

- Depending on stage of growth and health, alfalfa may survive temperatures as low as 10° F or be killed by 40° F temperatures
- Commonly alfalfa survives temperatures as low as 15° F
- This is crown temperature not air temperature
Alfalfa Cold Tolerance

- Crown temperature varies based on:
  - If shoots are low in the soil
  - Insulation by plant residue
  - Moisture in the soil
Alfalfa Cold Tolerance

• Snow reduces effects of temperature swings
• Four inches of snow will allow up to a 20° F temperature difference between air & soil
• In general, well-managed, healthy, winterhardy plants will survive colder temperatures than other plants
In the spring watch for delayed green-up

- Typically spring buds are produced in the fall
- If fall buds are killed the plant needs to develop new buds in the spring
- If green-up is slow, wait/watch for new buds before plowing down
Alfalfa growth in the spring is predominantly from crown buds.
• A symptom of winter injury is uneven growth

• Damage is often found on older, diseased plants
• The plant on the left has suffered winter injury

• If crown buds are killed, the plant must form new buds
Winterkilled alfalfa plants
Alfalfa Stand Assessment: Is this stand good enough to keep (pub. A3620)
<table>
<thead>
<tr>
<th>Stand age</th>
<th>Plants/Sq Foot</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seeding year</td>
<td>20 or more</td>
</tr>
<tr>
<td>First year</td>
<td>12 or more</td>
</tr>
<tr>
<td>Second year</td>
<td>8 or more</td>
</tr>
<tr>
<td>Third year</td>
<td>5 or more</td>
</tr>
</tbody>
</table>
Plant Density

• Plant density is not a good indicator of yield
  – Stands should have at least 6 plants/ft$^2$

• Stems are a good indicator of yield potential
  – Stands should have at least 40 stems/ft$^2$
Alfalfa Stem Count and Yield Potential

![Graph showing the relationship between stems per square foot and dry matter yield (t/a). The graph indicates a linear increase in yield as stem count increases.](image)
STAND EVALUATION PROCESS

ASSESSING CROWN HEALTH

USE PHOTOS AND CHART TO RATE AND CATEGORIZE PLANTS

<table>
<thead>
<tr>
<th>rating</th>
<th>condition</th>
<th>winter survival</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>healthy</td>
<td>excellent</td>
</tr>
<tr>
<td>1</td>
<td>some discoloration</td>
<td>excellent</td>
</tr>
<tr>
<td>2</td>
<td>moderate discoloration/rot</td>
<td>good</td>
</tr>
<tr>
<td>3</td>
<td>significant discoloration/rot</td>
<td>good for mild winter; poor for hard winter</td>
</tr>
<tr>
<td>4</td>
<td>greater than 50% discoloration</td>
<td>poor</td>
</tr>
<tr>
<td>5</td>
<td>dead</td>
<td>—</td>
</tr>
</tbody>
</table>
rating 0

Large crown, symmetrical, many shoots.
Off-white roots with few signs of discoloration. Excellent winter survival.

rating 1

Large crown, less symmetry, many shoots.
Off-white roots beginning to show signs of discoloration. Excellent winter survival.

rating 2

Smaller crown, poor symmetry, fewer shoots.
Evidence of crown rot, vascular discoloration 3 to 4 inches deep. Roots may show one or both symptoms. Good winter survival.
**Rating 3**

Weak crown, less symmetry, fewer shoots.

Significant crown rot and root discoloration. Good survival in mild winters; poor survival in hard winters.

**Rating 4**

Complete lack of symmetry, few shoots.

Root rot affects more than 50% of the root's diameter, significant vascular discoloration. Not likely to survive winter.

**Rating 5**

Dead plants.
## Table 2. Stand density recommendations

<table>
<thead>
<tr>
<th>Stand density (stems/sq ft)</th>
<th>Action</th>
<th>Predicted yield potential (assuming no winterkill)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;55</td>
<td>Stem density not limiting yield</td>
<td>Same as current year</td>
</tr>
<tr>
<td>40–55</td>
<td>Some yield reduction expected</td>
<td>If good health, same as current year; If &gt;30% in category 4, significantly less</td>
</tr>
<tr>
<td>&lt;39</td>
<td>Consider replacing stand</td>
<td>If good health, same as current year; If &gt;30% in category 4, significantly less</td>
</tr>
</tbody>
</table>
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