Identifying and controlling diseases in forage crops

Theme: What to watch for and efficacy of products available for control.

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Corn Silage and Forage Field Day
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Disease management if often limited for forage and pasture crops.

- **Resistance**
  - Check with breeder
  - Environment can be important

- **Fungicides**
  - Limits for feeding (read label)
  - Better as preventive

- **Rotation**

- **Irrigation/Fertilization**
Take-all root rot (Bermudagrass decline)

- Fungal disease caused by *Gaeumannomyces graminis var. graminis*

- Key diagnostics are yellow symptoms in spring and lobed hyphopodia on stolons

Phil Harmon, UF IFAS
Reduced root mass
Lack of root hairs
Dark lesions on stolon/stem

Phil Harmon, UF IFAS
It can look like or be associated with cold/freeze damage.
Take-all can be found with other diseases and pests (i.e. stem maggot).

So, it is important to consider these problems in your management strategies.
Best management plan is to avoid stressing the plants.

- Minimal herbicide use is important
- Use acidified fertilizers & do not
- Do not over fertilize
- Mow & regrow to manage this pest
- Fungicides minimal impact

When it is cold and dry, expect this pathogen to appear. No resistant varieties available.

Phil Harmon, UF IFAS
There are many foliar disease that can occur on forage crops.

These diseases *can be a problem*, but often no extra management is needed.
Bipolaris is a common problem on oats, & can cause significant reductions.

Can move to roots under right conditions.

Often found on debris and dying leaves.
Crown rust on oats, an old disease but re-emerging problem in Florida.

Favored under cool (50 to 75 F) and wet (dew & rain) conditions.
Both Bipolaris and Rust can be found at the same time!
Questions: Do I need a fungicide on my oats (forage)? How many & when should I spray?

- **Answer:** Maybe, and don’t miss the opportunity if the environment is right.

- **Fungicides can reduce disease**, especially when applied early.
  - Severity can be reduced by 50%
  - Consider only 2 sprays in a season
  - LABEL RESTRICTIONS
There are multiple available options for disease control, but watch label restrictions.

<table>
<thead>
<tr>
<th>Product</th>
<th>FRAC #</th>
<th>Active</th>
<th>Rate per Acre</th>
<th>Max amount per year</th>
<th>Crown Rust</th>
<th>Leaf Rust</th>
<th>Stem Rust</th>
<th>Label Remarks (Always consult label for proper directions and restrictions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Headline SC</td>
<td>11</td>
<td>pyraclostrobin</td>
<td>6 - 9 fl oz</td>
<td>18 fl oz/A</td>
<td>Very Good</td>
<td>Excellent</td>
<td>Good</td>
<td>DO NOT harvest cut hay or feed green-chopped oats within 14 days of last application. Apply no later than the beginning of flowering.</td>
</tr>
<tr>
<td>Quadris</td>
<td>11</td>
<td>azoxystrobin</td>
<td>6 - 12 fl oz</td>
<td>24 fl oz/A</td>
<td>Fair</td>
<td>--</td>
<td>--</td>
<td>DO NOT apply within 7 days of harvest (7-day PHI) for forage and hay. 2 applications per season. Do not apply after Feekes 10.54</td>
</tr>
<tr>
<td>Stratego</td>
<td>11+3</td>
<td>trifloxystrobin + propiconazole</td>
<td>7 fl oz</td>
<td>14 fl oz/A</td>
<td>Very Good</td>
<td>--</td>
<td>--</td>
<td>Grazing Restrictions: a) if 1 application or total of 7 fl oz of Stratego per season are applied do not allow livestock to graze within the treated area within 30 days after application. Do not harvest the treated area for within 30 days after application or for hay within 45 days after application. b) Do not harvest for forage or hay if 14 fl oz are applied. Do not apply after Feekes stage 8 (the ligule of the flag leaf emerges).</td>
</tr>
<tr>
<td>Tilt 3.6 EC</td>
<td>3</td>
<td>propiconazole</td>
<td>4 fl oz</td>
<td>8 fl oz/A</td>
<td>Very Good</td>
<td>Very Good</td>
<td>Very Good</td>
<td>DO NOT apply more than 4 fl oz/A per season of Tilt if forage or hay will be harvested. Do not apply within 7 days of harvest (7-day PHI) for forage and hay. Limit: 2 applications per season.</td>
</tr>
<tr>
<td>Proline 480 SC</td>
<td>3</td>
<td>prothioconazole</td>
<td>5.0 - 5.7 fl oz</td>
<td>5.7 fl oz/A</td>
<td>--</td>
<td>Very Good</td>
<td>Very Good</td>
<td>DO NOT apply within 30 days of harvest. 7 day grazing restriction. Only 1 application per year.</td>
</tr>
<tr>
<td>Quilt 200 SC</td>
<td>11 + 3</td>
<td>propiconazole + azoxystrobin</td>
<td>10.5 - 14.0 fl oz</td>
<td>28 fl oz/A</td>
<td>Very Good</td>
<td>Excellent</td>
<td>Very Good</td>
<td>DO NOT apply within 7 days of harvest (7-day PHI) for forage and hay. No more than 2 applications per season. Do not apply after full head emergence (Feekes 10.5).</td>
</tr>
<tr>
<td>Twinline</td>
<td>11 + 3</td>
<td>metaconazole + pyraclostrobin</td>
<td>7 - 9 fl oz</td>
<td>18 fl oz/A</td>
<td>--</td>
<td>Excellent</td>
<td>Very Good</td>
<td>Only 2 applications per season. Barley hay harvest restriction of 24 days. Apply no later than the beginning of flowering (Feekes 10.5). Minimum retreatment is 6 to 8 days after first application.</td>
</tr>
</tbody>
</table>
Fungicides can manage crown rust effectively, but can vary in their efficacy.

Coker 227, 2008 in Alabama; Hagan et al. 2013. PDMR
Timing is critical to effective disease control with early sprays more effective.
Not all systemic fungicides are the same.

Oat Rust Fungicides

- STRATEGO
- PROLINE
- TILT
- Headline
- Quilt
- Twinline
Some are locally systemic (translaminar) and only move across the leaf.

Locally (translaminar)

Leaves produced after the application are not protected
No chemical = no protection

Droplets spread out and are absorbed by plant tissue

D. Mueller, Iowa State Univ.
Some can move up the plant (acropetal movement)

**Systemic:**
(ii) acropetal

Leaves produced after the application MAY be protected

No chemical = rely on fungicide via xylem

Droplets spread out and are absorbed by leaf tissue. Fungicide moves upwards in the xylem to edge of leaves and new growth

D. Mueller, Iowa State Univ.
It is critical to maintain proper fungicide rotations.
FRAC group 3 fungicides include:

- Proline
- Stratego
- Tilt
- Quilt
- Quadris
- Headline
FRAC group 11 fungicides include:

- Proline
- Stratego
- Tilt
- Quadris
- Quilt
- Twinline
Premix fungicides (3 and 11) include:

- Proline
- Stratego
- Tilt
- Quilt
- Quadris
- Headline
Pay attention to FRAC groupings when selecting fungicide products

- Patent expires for azoxystrobin in 2014.
- Azoxystrobin off-patent in China since 2010.
- The strobilurin class (FRAC 11) is among most important.
- Resistance to this class develops fairly easily.

[custodia logo]
If resistance develops to FRAC 11 group, we will rely on group 3 fungicides.
What is the best management options we have for forage diseases?

• Host resistance will be key!

• If resistance is not present:
  – Rotate away from previous crop
  – Intercrop (e.g. rye)
  – Use fungicides sparingly

Disease will appear every year, avoid stressing plants to minimize impact.
Questions?