Southern Maryland Hay & Pasture Conference

Tackling the Orchardgrass Dilemma in Southern Maryland
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Good Old Days

Remember when orchardgrass grew taller than the corn!
Area farmers met with faculty from the University of Maryland Extension and NRCS colleagues to participate in the Orchardgrass Strategy Round-Table.

They came together to develop hay and pasture strategies that address the continued orchardgrass decline in our region.

Farmers shared their current hay and pasture seeding practices that have been successful or unsuccessful, with the goal of answering the following questions:

1) Do we need to develop a grass based forage rotation that relies less on orchardgrass to break the current disease and insect cycles in our fields?

2) Should we strive to incorporate other forage species that may be productive in our hay and pasture systems such as: bluegrass, smooth bromegrass, fescues, oats, timothy, millets, sorghums, lespedezas, clovers, alfalfa and others?
What strategy do we need to develop that especially focus on the following key pests?

**Key Insect Pests:** white grubs, wireworms, billbugs, curculio, mites, thrips, aphids and nematodes.

**Key Diseases:** anthracnose, septoria leaf spot, brown stripe and yellow barley dwarf.
Summary of Shared Observations:

✓ Older established stands of orchardgrass are still surviving well, while newer establishments are failing at establishment or within a year or two.

✓ Everyone agreed that they were still planting the same old orchardgrass varieties: Hallmark, Benchmark and Potomac.
Summary of Shared Observations:

- Newly seeded orchardgrass fields seem to be growing better and surviving along the fence edges and field borders that are not cut or trampled.

- The group of farmers preferred fall seeding, however, often overseed in the spring. All agreed that the severe heat in April of this year was especially damaging too young stands.
Summary of Shared Observations:

✓ It was often observed that low organic matter soils and compaction led to poor root system development of newly established orchardgrass.

✓ One grower stated that manure application seemed to stimulate plant vigor.
Decision Making Skills

1. Problem Identified
2. Solution Found
3. Decision
4. Tactical Implementation

Value $
Orchardgrass Strategy:

- Choose your best fields with deep well drained soils that have organic matter and are friable for the expensive seeding packages.

- Make manure applications to increase organic matter, combined with sub-soiling, chiseling or no-till ripping may be advantageous.

- Utilize green manuring, the practice of turning down a lush cover crop for soil building may also be valuable.
Tillage affects the location of OM

Soil Tillage and Microflora

Decomposition and Mineralization of Crop Residue

Soil Biota:
- earthworms
- microarthropods
- insects
- nematodes
- fungi
- bacteria

Mixed Soil

Stratified Soil

Soil Skin
Orchardgrass Strategy Round-Table

Orchardgrass Strategy:

✓ Watch the root development of the newly seeded orchardgrass stand, not just the top growth.

✓ Allow the roots to establish deep into the plow layer before heavy cutting or grazing pressure is applied.
Innovative cover cropping
Zone Commander®
No-Till Zone Ripper

- The Brillion Zone Commander is Brillion’s latest innovative primary tillage tool.
- The massive straight leg shanks eliminate compacted layers to 24 inches deep.
- Surface residue and soil remains relatively undisturbed to minimize soil erosion, while the soil is lifted enough to promote air and water absorption.
- Drawbar Horsepower Required: 35-45 HP per shank.
Fertilizer Options?

- Manure
- Commercial Fertilizer
- Bio-Solids
- Legumes
Basic Soil Testing

Phosphorus, Potassium, Calcium, and Magnesium Recommendations

Liebig’s Law of the Minimum

Crop growth will be limited by the nutrient which is of minimum availability.
16 Essential Plant Nutrients

Macronutrients
Non-Mineral: Carbon, Hydrogen, Oxygen
Mineral:
  Primary - Nitrogen, Phosphorus, Potassium
  Secondary - Calcium, Magnesium, Sulfur

Micronutrients
Iron, Manganese, Boron, Molybdenum, Copper, Zinc, Chlorine
USNAD, Gambrills MD: No-Tillage System

Average Manure Analysis 1989-1997

<table>
<thead>
<tr>
<th>Available Nutrient</th>
<th>Stockpile lbs/ton</th>
<th>Lagoon lbs/1000gal</th>
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<tbody>
<tr>
<td>N</td>
<td>3.0</td>
<td>0.24</td>
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<tr>
<td>P</td>
<td>7.0</td>
<td>1.34</td>
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<tr>
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<tr>
<td>Mg</td>
<td>3.0</td>
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<tr>
<td>S</td>
<td>1.5</td>
<td>0.05</td>
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<tr>
<td>Mn</td>
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<td>0.004</td>
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<tr>
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<td>0.002</td>
</tr>
<tr>
<td>Cu</td>
<td>0.02</td>
<td>0.003</td>
</tr>
</tbody>
</table>
Liming: Often Neglected
pH & Nutrient Availability

Most plant nutrients are sufficiently available at pH 6.0 to 7.0.

Aluminum toxicity can occur below pH 5.
Percentage of total root mass at various depths 1 year after gypsum application (Georgia Extension)
What are the Reasons for These Gypsum Results?

✓ High aluminum in subsoil replaced by calcium from gypsum.

✓ Roots now capable of exploring subsoil.

✓ Enhanced water and nutrient supply.

✓ Particularly important in droughty years.
Orchardgrass Strategy:

- Treat the seed with Captan®, Thiram® or Allegiance® for control of the seedling damping-off diseases: Phytophthora, Pythium and Rhizoctonia.

- Encourage Seed Companies to offer commercially treated seed with systemic neonicotinoids and metalaxyl products (already in some turf grasses).
Integrated Crop Management
Planter Box Seed Treatment

Damping-Off Organisms: *Rhizoctonia* sp., *Phytophora* sp., and *Pythium* sp.

**Metalaxyl:** Allegiance® Apron®
- Systemic control of Phytophora & Pythium only.

**Thiram® or Captan®**
- Non-Systemic control of all three damping-off organisms.
Orchardgrass Strategy:

✓ Plant New Varieties of Orchardgrass: Persist a new variety from King's AgriSeed of orchardgrass may be a viable option.

✓ Also be sure to buy certified tagged germination tested seed like Benchmark⁺.
Orchardgrass Strategy:

- Seed orchardgrass mixtures that include novel endophyte tall fescues such as Max Q and BarOptima Plus E34, a new leafy type from Barenbrug Seed, with Kentucky bluegrass, Timothy and a legume.
**Fescue Diagnostic Laboratory**

The Fescue Diagnostic Laboratory was implemented in 1983 to serve the needs of Alabama cattle producers who needed to have pastures and seed of tall fescue tested for the presence of the endophyte which causes “fescue toxicosis” in cattle. The rough hair coat and poor weight gain characteristic of this problem can be seen in the steer on the right, compared to the healthy steer on the left.

![Image of steers with and without fescue toxicosis](image)

This *Neotyphodium coenophialum*, formerly *Acremonium coenophialum*, is a fungus which lives within some fescue plants and produces ergot alkaloids. The dark serpentine lines on the picture below shows the fungus growing inside the tissues of a fescue plant.

![Image of fescue plant tissue with fungus](image)
Services Offered

- **Bacterial Strain-Identification & Mutant Analysis Service (BSI - MAS)**
  The BSI-MAS is a microbial identification service in the laboratory of Professor Joseph Kloepper. The service has been in operation since 1991 and is performed by John McInroy.

- **Fescue Diagnostics**
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- **Plant Diagnostic Lab**
  The Plant Diagnostic Lab provides three major services:
  - Plant samples are examined for disease, insect, nutrient, cultural, and herbicide problems.
  - Soil samples are analyzed for plant parasitic nematodes.
  - Insect samples are identified.
Current Schedule of Fees

• Staining Test for Plants or Seeds
  – Alabama Residents - $20.00
  – Out of State - $30.00

• Growout Test for Seeds
  – Alabama Residents - $30.00
  – Out of State - $35.00
Phytoscreen seed endophyte detection kit

This immunoblot test kit tests 100 seeds for endophyte presence.

SKU Number: ENDO797-1  Price: $45.00
Orchardgrass, Tall Fescue & Ladino Clover
Orchardgrass Strategy:

- Monitor for the key insects and diseases of orchardgrass, have them laboratory identified, and rotate out of orchardgrass for at least a year before re-establishing.

- Break insect and disease cycles by utilizing cover crops and rotational crops prior to establishment like alfalfa, clover, oats, rye, millets and sudax.
Japanese Beetle
Green June Beetle
Crawls on its back
Tunnels to surface

Spines forming
two parallel
lines

May or June Beetle
Two lobes on butt

Oriental Beetle
Rarely found in crops
One lobe on butt

Chafers
Random pattern

V pattern or half
moon shaped

Japanese Beetle
Asiatic Garden
Beetle
GREENBUG
Barley yellow dwarf virus

- BYDV, luteovirus
- Aphid transmitted
- Infection adds stress to orchardgrass
- Cumulative effect over life of stand
Orchardgrass Billbug Injury

Although billbugs have been a significant problem in Virginia and West Virginia fields for the last few years, this is the first season that we have documented significant damage from this insect in the Delaware/Maryland Eastern Shore region. Dr. Rod Youngman from Virginia Tech has taken the lead in developing sampling and treatment timings for this insect. He has just posted a presentation on his website that gives good information on the biology of this pest, sampling methods, treatment timing and control options. http://connect.ag.vt.edu/billbugipm2
Orchardgrass and Alfalfa
German Foxtail Millet
65 Days AP
Orchardgrass Strategy:

- Consider applying labeled fungicides and insecticides to orchardgrass stands that are economically producing such as Kumulus®, Fosphite®, Malathion®, Sevin® etc.

- A recent Supplemental label has been approved for Quadris® in some states applied at 10 oz/A for disease management in orchardgrass clover stands.
When Stagonospora or Septoria leaf spot or blotch is prevalent, the infected leaves turn brown, wither, and die. The lower 30 to 40 percent of a severely damaged plant is often completely defoliated. Uncut plants are usually affected to a greater extent.

Leaf Spot

Causal organism: *Stagonospora arenaria* Saccardo, *Septoria* *spp.* Imperfect fungi

Stagonospora leaf spots are often confused with those produced by species of the fungus Septoria.
Anthracnose of Orchardgrass
Causal organism: *Colletotrichum graminicola* (Cesati) G.W.Wilson, Imperfect fungi

Spot-causing fungal disease which causes summer depression of grasses in the warm regions. The lesions are at first water-soaked small spots and then expands to faint reddish brown to orange, oval to spindle shaped ones of 5-10mm in length and 2-4mm in width. The fungal tissues, setae, are produced in the center of the old lesion and looks black moldy. Orange masses of spores are formed on the lesion under wet conditions and they disperse by wind and rain. The disease often occurs from the end of a rainy spring season into summer.
Brown stripe
Causal organism: *Scoleocotrichum graminis* Fuckel, Imperfect fungi

Spot-causing fungal disease occurring all over the country. The disease prohibits the seed production. The lesion of brown to purple brown, short line shaped, 2-3mm in length and 0.5-1mm in width appears between the leaf veins at first. They gradually expand to 2-3cm in length and fuse one another. At last, the whole leaf becomes ash white and killed. The spores which look like small black molds are produced on the old lesion, and they disperse and spread. The pathogen can infect timothy, tall oatgrass and etc., but the pathogenicity is considered to be differentiated.
Orchardgrass Fungicides

- **Fosphite®** – (phosphorous acid) Soil born diseases Rhizoctonia, Phytophthora, Pythium and Fusarium.

- **Kumulus®** – (Sulfur) Septoria Leaf Spot and Mite suppression.

- **Thiolux Jet®** – (Sulfur) Septoria Leaf Spot and Mite suppression.
Orchardgrass Strategy:

- Always keep the cutter bar height high, manage harvests to reduce compaction and provide 45-day rest and regrowth interval between hay harvests.

- Adjust grazing intervals to allow visible plant leaf recovery, including new crown tillering.
**Cut Dates**

<table>
<thead>
<tr>
<th>1st Cut Date</th>
<th>2nd Cut Date</th>
<th>3rd Cut Date</th>
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<tbody>
<tr>
<td>May 5th</td>
<td>June 20th</td>
<td>September 20th</td>
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**Regrowth Interval**

- 45 Days
- 45 Days

**Orchardgrass Notes:**

- Winter dormancy: December 1st to March 15th.
- Summer dormancy: July 1st to August 1st (30-day rest period).
- 18% Crude Protein (12% Digestible Protein) for regrowth cutting interval of 42 to 56 days when orchardgrass is actively growing.
Thank You!
Any Questions?

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