Pipeline Safety and Good Agricultural Practices

Presenters:

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Original slides by: Mark Landefeld, Dan Lima (OSUE Belmont), and Clif Little (OSUE Guernsey)
4.5 Year Trend (Permits)
Horizontal Wells in Eastern OH

http://oilandgas.ohiodnr.gov/well-information/oil-gas-well-locator
• Pipeline Easement Agreement?
  – Also referred to as a Right-of-Way (ROW) agreement
  – Terminology
    • Grantor – Property owner
    • Grantee – Company requesting use of land
  – Allows Grantee certain rights specified in the agreement
  – Put everything in writing
Possible Challenges:

1. Compaction
2. Erosion
3. Crop Yields
4. Weeds
5. Reseeding
A landowner can include the ODNR “Recommended Pipeline Standards and Construction Specifications” in the easement document, which will require the company to adhere to these best management practices. Visit:

Soil Compaction can be a major issue in Topsoil & Subsoil Type soil and moisture content can make huge differences

“Deeply rooted cover crops, such as oil seed radish, cereal rye and annual ryegrass (as cover crops) seem to be good tools to penetrate compacted soil, perhaps equal to a subsoiler. Plus, cover crops protect against erosion and build soil quality.”

CONSIDER ADDING deep-rooted crops like alfalfa to your rotation.
FINAL GRADING

Photo by Art Brate
OHIO STATE UNIVERSITY EXTENSION

Photo by Art Brate

POCK RAKE
Yield Loss Can be Significant

The adverse effects of compaction include restricted root growth, reduced aeration, reduced availability of nutrients, reduced infiltration and reduced drainage as discussed by Larsen et al. (1994), Batey (2000), Raper & Kirby (2006) and Batey (2009).

Loss up to 25% has been documented

170 bu. corn x 20% loss = 34 bu/A

34 bu. X $4.00 = $136/A

125’ x 1320’ = 165000 ft² ÷ 43560 = 3.8A x $516/A = $516 per each ¼ mile of line
FAIRFIELD COUNTY FARM

Slide:
Courtesy of Art Brate
• Control Erosion
WARNING
PETROLEUM PIPELINE
IN AN EMERGENCY CALL
ENTERPRISE PRODUCTS 1-800-530-5050
The pipeline company will most likely seed once.

Mind set should be:
“What is the best way to mitigate the possible re-seeding issues”
Weed Challenges
Steps to Reseeding

1. What is the field being used for?
2. Soil testing and amendments
3. The more species present, the greater the stability of the re-seeding
4. Verify that what you want is what is being used!
# Growth Characteristics of Legumes

<table>
<thead>
<tr>
<th>Species</th>
<th>Drought Tolerance</th>
<th>Persist</th>
<th>Seedling Vigor</th>
<th>Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alfalfa</td>
<td>High</td>
<td>High</td>
<td>High</td>
<td>Bunch</td>
</tr>
<tr>
<td>Red Clover</td>
<td>Med</td>
<td>Low</td>
<td>High</td>
<td>Bunch</td>
</tr>
<tr>
<td>WC Dutch</td>
<td>Low</td>
<td>High</td>
<td>Low</td>
<td>Spread</td>
</tr>
</tbody>
</table>
# Grass – Legume Mixtures

<table>
<thead>
<tr>
<th>Legumes</th>
<th>Grasses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provide nitrogen</td>
<td>Adapted to range of conditions</td>
</tr>
<tr>
<td>Improve quality</td>
<td>Reduce erosion</td>
</tr>
<tr>
<td>Improve animal performance</td>
<td>Reduce heaving</td>
</tr>
<tr>
<td>Improve carrying capacity</td>
<td>Reduce bloat</td>
</tr>
<tr>
<td>Reduce grass tetany</td>
<td>Improve hay drying</td>
</tr>
</tbody>
</table>

Mixtures provide more uniform production
### Species Differ in Tolerance to Frequent Close Grazing

<table>
<thead>
<tr>
<th>Intolerant (hay type)</th>
<th>Tolerant (pasture type)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smooth bromegrass</td>
<td>Tall fescue</td>
</tr>
<tr>
<td>Timothy</td>
<td>Orchardgrass</td>
</tr>
<tr>
<td>Reed canarygrass</td>
<td>Perennial ryegrass</td>
</tr>
<tr>
<td>Quackgrass</td>
<td>Kentucky bluegrass</td>
</tr>
<tr>
<td>Red clover (+/-)</td>
<td>White clover</td>
</tr>
<tr>
<td>Alfalfa</td>
<td></td>
</tr>
<tr>
<td>Birdsfoot trefoil</td>
<td></td>
</tr>
<tr>
<td>Native WS grasses</td>
<td></td>
</tr>
</tbody>
</table>
Growing Point

Timothy

Growing Point

Orchardgrass
Commonly Used Mixtures:

1. Annual Rye, Orchard, Timothy, Alfalfa?, Red Clover, White clover
2. Brome Grass, Orchard grass, Timothy, Alfalfa and Red Clover. "NO FESCUE OR CROWN VETCH be seeded in our hay fields."

3. 40% Orchardgrass, 20% Red Clover Coated, 11% Per. Rye, 4% Annual Rye, 15% Timothy, 5% KY Bluegrass, 5% Ladino Clover

4. 25% - Fawn, 20% - Potomac Orchardgrass, 20% - NUI Per Rye, 10% - Climax Timothy, 10% - Med Red Clover Coated, 5% - Mighty White Clover Coated, 5% - Birdsfoot Trefoil Coated, 5% - Annual Rye

5. 20% - Beefeater Tetraploid Per Rye, 20% - Atlas Tall Fescue, 15% - Climax Timothy, 10% - Birdsfoot Trefoil, 10% - Potomac Orchardgrass, 5% - Medium Red Clover, 5% - Alsike Clover, 5% - Synergy Ladino Clover, 5% - Vernal Alfalfa, 5% - 85/80 Kentucky Bluegrass
Shale Gas Resources

- Refer to “Seeding Recommendations Following Pipeline Construction” Fact Sheet
  - by OSUE Educators, Mark Landefeld and Chris Zoller
- Other OSUE factsheets
  - [http://go.osu.edu/shalelibrary](http://go.osu.edu/shalelibrary)
The Biggest Reseeding Challenge

- The time in which the farmer wants to reseed may not coincide with when the company wants to reclaim the land.

“The issue is that the majority of pastures and hayfields in Ohio are composed of perennial cool-season grasses and legumes. The reseeding of perennial cool-season grasses that occur during late June thru July 31 and Sept. 15 thru Oct. 30 will likely result in the failed establishment of a perennial cool season forage.

“While in most cases, the shale gas and oil companies are the ones doing the actual reseeding, farmers should try to make sure that they are in charge of the type of forages that are reseeded and if they can, also when the reseeding is to occur.”

-Clif Little, OSUE, Guernsey ANR
“This is good for the farmer and the pipeline reclamation because both parties want the seeding to take and be successful the first time around.”
- Clif Little
Questions?

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http://shalegas.osu.edu
Be prepared for an emergency…
Have a Contingency Plan in Place