Valuable Soil Survey Data for Managing Soil Resource in RM of Ritchot

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RM of Ritchot

✓ South edge of Wpg
✓ 3.7 twp ~ 85,000 acres
✓ 4 rivers ~ Red, Rat, LaSalle, Seine Rrs

Detailed soil survey
~ 1:20,000 scale
~ 3.2 inches to 1 mile
Very flat landscape
  ~ Glacial Lake Agassiz’s bottom

Soil mat.
✓ deposited by glacial Lake Agassiz
✓ Mainly ~ deep, clayey lacustrine sediments
✓ some areas ~ clay soils underlain by silty sediments
✓ variable textured, stratified alluvial deposits
  occur in Red River floodplain
94% of lands rated in:
“x” Topography Class
slope 0-0.5%

“Clays” area - Red River Valley
Soil Survey Results ~

16 series are classified and mapped in 3.7 twp

Clay soils ~ imperfectly drained Black Chernozems
  ➔ Scanterbury, Red River, Morris
  ~ poorly drained Rego Humic Gleysols
    ➔ Osborne

Clay soils ~ Well drained Dark Gray Chernozems
  ➔ St. Norbert
  ➔ developed in wooded areas along Rr channels
Soil Survey Results ~

Clay soils underlain by silty deposits

~ well drained Black Chernozems ➔ Fort Garry

~ imperfectly drained Gleyed Chernozems ➔ Hoddinott, Dencross

~ poorly drained Gleysols ➔ Glenmoor

Regosolic soils

~ Developed in alluvial mat.
~ occur on terrace and floodplain deposits
~ along rivers and streams

~ Well drained ➔ Hodgson, Black Lake

~ Imperfectly drained ➔ Fisher, Seine River
### Six main soil series ~

<table>
<thead>
<tr>
<th>Soil Series</th>
<th>%</th>
<th>Drainage</th>
<th>Mat. &amp; Surface texture</th>
<th>Ag Cap</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scanterbury</td>
<td>25.7</td>
<td>imperfect</td>
<td>Deep clay</td>
<td>2W</td>
</tr>
<tr>
<td>Osborne</td>
<td>25.4</td>
<td>Poor</td>
<td>Deep clay</td>
<td>3W, 6W</td>
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<tr>
<td>Red River</td>
<td>19.0</td>
<td>imperfect</td>
<td>Deep clay</td>
<td>2W</td>
</tr>
<tr>
<td>Dencross</td>
<td>10.7</td>
<td>Imperfect</td>
<td>Clay w/ strongly calca. Silty strata</td>
<td>2W</td>
</tr>
<tr>
<td>St. Norbert</td>
<td>5.3</td>
<td>Well</td>
<td>Deep clay</td>
<td>2D</td>
</tr>
<tr>
<td>Glenmoor</td>
<td>4.0</td>
<td>poor</td>
<td>Clay w/ strongly calca. Silty strata</td>
<td>3W</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Overall</th>
<th>90.1</th>
<th>85%</th>
<th>Fine</th>
<th>95 %</th>
<th>~ 90 %</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Poor, imperfect</td>
<td>Mod. fine</td>
<td>1.6 %</td>
<td></td>
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</tbody>
</table>
Soil Drainage

Most lands in RM

✓ Imperfect 58%
✓ Poor 28.2%

- Excessive water content in soil
- Limiting O2 supply
- Decreasing efficiency of nutrient uptake
- Delaying spring seeding
Soil Ag Capability

Most of the soils:

Class 2 64%
Class 3 29%

→ moderate to mod. severe limitations
Agricultural drainage

Excessive rainfalls adversely affect agricultural production in Manitoba

http://lizettedeklerk.wordpress.com/2011/05/

House near St. Agathe, RM of Ritchot
Ag drainage needs systematic soil data

Wetness in clay soils

3W

2W

5W to 6W
2011 ~ spring flooding ➔ summer dryness

Red River Valley area
Landform

Flooding

Dryness

in Red River Valley area

Apr 28, 2011
Most important mgt considerations ~

- Soil compaction mgt
- Moisture mgt
- Fertilizer Mgt
Soil Compaction

→ an increasing problem on the Prairies

✓ create a less desirable root environ.
✓ restrict root growth
✓ reduce yield potential
✓ Increase surface runoff on compacted soil
✓ accelerate topsoil erosion

→ Traffic Compaction Affects Productivity

Factors Influencing Compaction

→ wtr % ~ most susceptible at nearing field capacity
→ applied load ~ Heavier, larger machines

→ Reduce tillage operations
→ Avoiding wet fields in operation
Moisture Management

- using extensive surface drainage to remove excess water from land

- Increase crop production
- Improve field access
- timely spring seeding
Fertilizer Management

- timing, rate, method

- More spring fertilization  ➔ less fall application
- Spring midrow band w/ NH3
- Increased dry or liquid at time of seeding

- Trend  
  ~ eliminate broadcast dry or liquid in fall
  ~ less banded dry fertilizer, less NH3 in fall

- Sustainability
- Profitability
- Environ. quality
Thank you!

Questions and Comments?