2005 New Kent Cover Crop Study

Cooperators:
Producer: Boogie and Wayne Davis
Extension: Paul Davis, New Kent/Charles City VCE; Wade Thomason, Grain Specialist, Virginia Tech
Agribusiness: Brian Noyes, District Director and Jim Wallace, Water Quality Specialist, Colonial Soil and Water Conservation District

Tillage: None, No-Till drilled into harvested corn stalks
Soil Type: Altavista, fine sandy loam
Variety: Rye – Early Graze Barley – Barsoy
Triticale – Trical 485 Oats – Brooks

Previous Crop: NO-TILL corn
Fertilization: Broadcast - None
Winter N - See graph – Either 0#, 25# or 50# February 19, 2005
Herbicides: Burn down 1.5pts Gramoxone Extra May 5, 2005

Following Crop: Full season soybeans planted May 12, 2005
Fungicides: None
Insecticides: None

Planted: Early – October 4, 2004/Mid – October 18, 2004/Late – November 10, 2004
Harvested: June 24, 2005

New Kent Cover Crop Nitrate Samples

<table>
<thead>
<tr>
<th>Small Grain</th>
<th>DOP</th>
<th>0 - 12&quot;</th>
<th>13 - 24&quot;</th>
<th>25 - 36&quot;</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rye Early</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Rye Mid</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Rye Late</td>
<td>4</td>
<td>2</td>
<td>6</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>Trical Early</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Trical Mid</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Trical Late</td>
<td>4</td>
<td>3</td>
<td>8</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>Barley Early</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Barley Mid</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Barley Late</td>
<td>4</td>
<td>3</td>
<td>5</td>
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</tr>
<tr>
<td>Oats Early</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>9</td>
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</tr>
<tr>
<td>Oats Mid</td>
<td>3</td>
<td>2</td>
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<td>8</td>
<td></td>
</tr>
<tr>
<td>Oats Late</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>12</td>
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</table>

<table>
<thead>
<tr>
<th>DOP</th>
<th>Samples taken 2/3/2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early - 10/4/04</td>
<td></td>
</tr>
<tr>
<td>Mid - 10/18/04</td>
<td></td>
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<tr>
<td>Late - 11/10/04</td>
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</table>
2005 Cover Crop Study Plot Outline
New Kent, VA

Varieties | Seeding Rate lbs/Ac
---|---
Rye - Early Graze | 50#
Barley - Barsoy | 60#
Oats - Brooks | 60#
Triticale - Trical 485 | 50#
2005 New Kent Cover Crop Study Yield Results

Average From All Cover Crops

Crop and time of planting

GRAPH I

N Rate, lb ac-1

Yield, ton ac-1

0 0.5 1 1.5 2 2.5 3 3.5 4 4.5 5 5.5 6 6.5 7

Early Barley  Mid Barley  Late Barley  Early Oats  Mid Oats  Late Oats  Early Rye  Mid Rye  Late Rye  Early Triticale  Mid Triticale  Late Triticale

GRAPH II

Yield, ton ac-1

0 2 4 6 8 10

N rate, lb ac-1

Early  Mid  Late

N applied
2/19/2005

Effective Yield:

Rye only

GRAPH III

N rate, lb ac-1

Yield, ton ac-1

0 2 4 6 8 10
Discussion:

Small grains make good cover crops that reduce erosion, trap unused nutrients and improve soil quality by producing biomass that increases soil organic matter. This study looked at four different small grains at three planting dates and three nitrogen fertilizer rates.

Graph I on the preceding page shows rye planted either October 4 or October 18 yielded over 6 tons of dry matter per acre. Rye planted on November 11 yielded nearly 4.5 tons of dry matter which was more than the early plantings of oats, barley and triticale. The late planted rye showed the greatest response to nitrogen fertilizer in February. All three planting dates yielded nearly 6 tons of dry matter per acre at 25 lbs. of nitrogen per acre in February. This is just a one year study at a single location and much more work needs to be done before blanket small grain cover crop recommendation can be made.

Other barley and triticale cultivars would work better than Barsoy (too short) and Trical 485 (not winter hardy enough). Taller the better because these cover crops will be planted into and killed before lodging problems might occur.

Caution should be taken anytime you are following one small grain crop, wheat, for example, after a small grain cover crop in the same year. There is an increased risk of Take-All disease which in a soil borne fungus that kills small grain roots and causes white seed heads. This is mainly a problem in poorly drained, wet soils and/or low fertility soils.

Please take advantage of both small grain and legume winter cover crops to improve your soil quality. Virginia has a new Cover Crop BMP Cost-Share program for this year. I hope it will work into your farming operation.