Dark Tobacco Topics

- Dark variety update
- Black shank control
- Angular leaf spot
- Supplemental products
- Tobacco fertility
  - Potassium
  - Boron
  - Nutrient prices
<table>
<thead>
<tr>
<th>Variety</th>
<th>Maturity</th>
<th>Black Shank (0-10)¹</th>
<th>Use²</th>
<th>Relative Yield Score³</th>
<th>Relative Quality Score³</th>
<th>Black Root Rot</th>
<th>Fusarium Wilt⁴</th>
<th>TMV</th>
<th>Wildfire</th>
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<tbody>
<tr>
<td>NL Mad LC</td>
<td>Med-Late</td>
<td>0</td>
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<td>9</td>
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<td>None</td>
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<tr>
<td>TR Madole</td>
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<td>0</td>
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<td>None</td>
<td>None</td>
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<td>A/F</td>
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<td>0</td>
<td>A</td>
<td>3</td>
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<td>None</td>
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<td>KY 171</td>
<td>Medium</td>
<td>0</td>
<td>A/F</td>
<td>7</td>
<td>7</td>
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<td>Med</td>
<td>High</td>
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</tr>
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<td>VA 309</td>
<td>Early-Med</td>
<td>2</td>
<td>A/F</td>
<td>6</td>
<td>8</td>
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<td>VA 359</td>
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<td>1</td>
<td>A/F</td>
<td>6</td>
<td>8</td>
<td>Low</td>
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<td>None</td>
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<tr>
<td>TN D950</td>
<td>Early</td>
<td>3</td>
<td>F</td>
<td>8</td>
<td>6</td>
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<td>None</td>
<td>High</td>
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<tr>
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<td>Medium</td>
<td>4</td>
<td>F/A</td>
<td>9</td>
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<td>-</td>
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<td>DT 538 LC</td>
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<td>F/A</td>
<td>8</td>
<td>6</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<tr>
<td>DT 558 LC</td>
<td>Medium</td>
<td>4</td>
<td>F/A</td>
<td>8</td>
<td>7</td>
<td>High</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<tr>
<td>KT D6 LC</td>
<td>Early-Med</td>
<td>3</td>
<td>F</td>
<td>8</td>
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<td>PD 7312 LC</td>
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<td>0</td>
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<td>PD 7302 LC</td>
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<td>10</td>
<td>F/A</td>
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<td>Med</td>
<td>High</td>
<td>-</td>
</tr>
<tr>
<td>PD 7309LC</td>
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<td>None</td>
<td>-</td>
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<td>KT D8LC</td>
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<td>9</td>
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<td>None</td>
<td>-</td>
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<td>F/A</td>
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<td>High</td>
<td>-</td>
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<td>PD 7305LC</td>
<td>Early</td>
<td>10</td>
<td>F</td>
<td>8</td>
<td>6</td>
<td>High</td>
<td>None</td>
<td>High</td>
<td>High</td>
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<tr>
<td>PD 7319LC</td>
<td>Medium</td>
<td>10</td>
<td>F/A</td>
<td>8</td>
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<td>-</td>
<td>-</td>
<td>High</td>
<td>-</td>
</tr>
<tr>
<td>KT D14 LC</td>
<td>Medium</td>
<td>10</td>
<td>F/A</td>
<td>8</td>
<td>7</td>
<td>High</td>
<td>-</td>
<td>High</td>
<td>High</td>
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</tbody>
</table>
New Variety Available for 2015

KT D14 LC

- UK/UT tobacco breeding
- Released for use in 2015
- Highest black shank resistance of any dark variety
  - Level 10 to race 0
  - Level 5 to race 1
- Black root rot resistant
- Average quality scores in 2013 variety display

Cheatham Co. TN 2014
• KT D14 most similar to KT D6
  – Except later maturing
  – Less spotting prior to harvest than KT D6
  – Yield and quality most comparable to KT D6
  – Quality:
    • Not like Madole or PD varieties but better than KT D8
Some Future Dark Tobacco Varieties

• “E3” or “Z” varieties of dark tobacco containing Zyvert technology will also be released, likely 1-2 years following burley.

• Will likely be 4-5 dark varieties:
  – PD 7309, 7312, 7318, 7305, 7319
Dark-Fired – 3 Year Average over 3 Locations

Dark-Fired Variety Trials – Springfield TN, Princeton and Murray KY
2012-2014 – Total Yield

<table>
<thead>
<tr>
<th>Variety</th>
<th>Yield (lbs/A)</th>
</tr>
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<tbody>
<tr>
<td>KTD8</td>
<td>3583</td>
</tr>
<tr>
<td>KTD6</td>
<td>3576</td>
</tr>
<tr>
<td>DT538</td>
<td>3403</td>
</tr>
<tr>
<td>KTD14</td>
<td>3380</td>
</tr>
<tr>
<td>PD7318</td>
<td>3330</td>
</tr>
<tr>
<td>DT558</td>
<td>3327</td>
</tr>
<tr>
<td>TND950</td>
<td>3313</td>
</tr>
<tr>
<td>PD7312</td>
<td>3301</td>
</tr>
<tr>
<td>PD7319</td>
<td>3287</td>
</tr>
<tr>
<td>PD7305</td>
<td>3247</td>
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<tr>
<td>NLMAD</td>
<td>3195</td>
</tr>
<tr>
<td>PD7309</td>
<td>3169</td>
</tr>
<tr>
<td>PD7302</td>
<td>3106</td>
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<tr>
<td>VA309</td>
<td>3018</td>
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Dark-Fired – 3 Year Average over 3 Locations
Dark-Fired Variety Trials – Springfield TN, Princeton and Murray KY
2012-2014 – Quality Grade Index
Dark Air-Cured – 3 Year Average over 2 Locations

Dark Air-Cured Variety Trials – Springfield TN and Princeton KY

2012-2014 – Total Yield

<table>
<thead>
<tr>
<th>Variety</th>
<th>Yield (lbs/A)</th>
</tr>
</thead>
<tbody>
<tr>
<td>KTD6</td>
<td>3241</td>
</tr>
<tr>
<td>KTD8</td>
<td>3224</td>
</tr>
<tr>
<td>PD7312</td>
<td>3143</td>
</tr>
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<td>DT538</td>
<td>3033</td>
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<tr>
<td>KY171</td>
<td>3003</td>
</tr>
<tr>
<td>PD7319</td>
<td>2990</td>
</tr>
<tr>
<td>KTD14</td>
<td>2989</td>
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<td>NLMAD</td>
<td>2985</td>
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<td>PD7318</td>
<td>2935</td>
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<tr>
<td>DT558</td>
<td>2929</td>
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<td>LITCRIT</td>
<td>2810</td>
</tr>
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<td>VA359</td>
<td>2767</td>
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<tr>
<td>PD7302</td>
<td>2766</td>
</tr>
<tr>
<td>PD7309</td>
<td>2741</td>
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</table>

*Total Yield*
Dark Air-Cured – 3 Year Average over 2 Locations
Dark Air-Cured Variety Trials – Springfield TN and Princeton KY
2012-2014 – Quality Grade Index

**Quality Grade Index (0-100)**

- PD7312: 47.5
- PD7309: 44.5
- LITCRIT: 43.6
- PD7318: 43.5
- NLMAD: 43.4
- DT558: 40.6
- PD7319: 40.2
- KY171: 40.2
- VA359: 37.7
- KTD6: 37.3
- PD7302: 36.9
- DT538: 36.7
- KTD14: 36.4
- KTD8: 34.9
Black Shank & Resistant Varieties

“Classic” Symptoms
• Wilting and yellowing
• Roots & lower stalk rotted
• Black/greasy lower stalk
• Disking of pith

“Hidden” Black Shank (resistant varieties)
• Infection limited to lower stem
• External symptoms masked by
  • High resistance
  • Good growing conditions
• Yield reductions
2014 Black Shank Variety Trial
Kent Boyd Farm – Hopkinsville KY

- Continuous tobacco plots at site for last 9 yrs.
- Strong BS race 0 and 1 at site
- Tobacco set June 23
- No Ridomil
- Stands evaluated every 2-3 wks
- Harvested October 30
- Stripped January 13

<table>
<thead>
<tr>
<th>Var #</th>
<th>Variety</th>
<th>Race 0 (0-10)</th>
<th>Race 1 (0-10)</th>
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<tbody>
<tr>
<td>1</td>
<td>NL Madole</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>PD 7318</td>
<td>10</td>
<td>0</td>
</tr>
<tr>
<td>3</td>
<td>DT 558</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>4</td>
<td>PD 7305</td>
<td>10</td>
<td>3</td>
</tr>
<tr>
<td>5</td>
<td>PD 7319</td>
<td>10</td>
<td>2</td>
</tr>
<tr>
<td>6</td>
<td>KT D14</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>7</td>
<td>D14 (experimental)</td>
<td>10</td>
<td>?</td>
</tr>
<tr>
<td>8</td>
<td>D15 (experimental)</td>
<td>10</td>
<td>?</td>
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</table>
2014 Black Shank Variety Trial
Kent Boyd Farm – Hopkinsville KY - Yield

LSD(0.10) = 234 1113

Total Yield (lbs/A):

<table>
<thead>
<tr>
<th>Variety</th>
<th>Yield (lbs/A)</th>
<th>LSD(0.10)</th>
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<tr>
<td>NL Mad</td>
<td>497</td>
<td></td>
</tr>
<tr>
<td>PD7318</td>
<td>729</td>
<td></td>
</tr>
<tr>
<td>DT558</td>
<td>2019</td>
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<tr>
<td>PD7305</td>
<td>2758</td>
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</tr>
<tr>
<td>PD7319</td>
<td>1313</td>
<td></td>
</tr>
<tr>
<td>KTD14</td>
<td>3051</td>
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<tr>
<td>D14(exp)</td>
<td>2849</td>
<td></td>
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<tr>
<td>D15(exp)</td>
<td>2419</td>
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Final % Stand at Harvest:

<table>
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<th>Variety</th>
<th>Final % Stand</th>
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<tbody>
<tr>
<td>NL Mad</td>
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<td>PD7318</td>
<td>23.9</td>
</tr>
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<td>DT558</td>
<td>80.2</td>
</tr>
<tr>
<td>PD7305</td>
<td>99.2</td>
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<td>PD7319</td>
<td>44.7</td>
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<tr>
<td>D14(exp)</td>
<td>96.8</td>
</tr>
<tr>
<td>D15(exp)</td>
<td>95.0</td>
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Evaluation of Ridomil Additives to Improve Black Shank Control in Dark-Fired Tobacco
2014 – Kent Boyd Farm – Hopkinsville KY

- Strong BS races 0 and 1 at site.
- PD7309LC set June 23
  - Level 10 to race 0
  - No resistance to race 1
  - 42” x 32” = 4667 plants/A
- Pretransplant broadcast app. made June 23 at 15 gal/A
- 1st cultivation applications made July 8 as 15” bands to each side of all 4 rows (20 gal/A)
- Layby applications made July 23 as 15” bands to each side of all 4 rows (20 gal/A)

<table>
<thead>
<tr>
<th>Trt</th>
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<th>Rate/A</th>
<th>Timing</th>
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</tr>
<tr>
<td>2</td>
<td>Ridomil Gold</td>
<td>1 pt/A</td>
<td>PreTP</td>
</tr>
<tr>
<td></td>
<td>Ridomil Gold</td>
<td>1 pt/A</td>
<td>1st Cult</td>
</tr>
<tr>
<td></td>
<td>Ridomil Gold</td>
<td>1 pt/A</td>
<td>Layby</td>
</tr>
<tr>
<td>3</td>
<td>Ridomil Gold + HM0303</td>
<td>1 pt/A + 1 qt/A</td>
<td>PreTP</td>
</tr>
<tr>
<td></td>
<td>Ridomil Gold + HM0303</td>
<td>1 pt/A + 1 qt/A</td>
<td>1st Cult</td>
</tr>
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<td>Ridomil Gold + HM0303</td>
<td>1 pt/A + 1 qt/A</td>
<td>Layby</td>
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<tr>
<td>4</td>
<td>Ridomil Gold + HM 1028</td>
<td>1 pt/A + 1 qt/A</td>
<td>PreTP</td>
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<tr>
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<td>Ridomil Gold + HM 1028</td>
<td>1 pt/A + 1 qt/A</td>
<td>1st Cult</td>
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<td>Ridomil Gold + HM 1028</td>
<td>1 pt/A + 1 qt/A</td>
<td>Layby</td>
</tr>
</tbody>
</table>
Evaluation of Ridomil Additives to Improve Black Shank Control in Dark-Fired Tobacco
2014 – Kent Boyd Farm – Hopkinsville KY

Final % Stand at Harvest: 8.2 49.1 32.9 56.6

LSD(0.10) = 170 1276 1378 (total)

Yield (lbs/A):

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<thead>
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<th>Treatment</th>
<th>Lug</th>
<th>Leaf</th>
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<td>77</td>
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<tr>
<td>Ridomil (3)</td>
<td>252</td>
<td>797</td>
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<tr>
<td>Ridomil + HM0303 (3)</td>
<td>78</td>
<td>771</td>
</tr>
<tr>
<td>Ridomil + HM1028 (3)</td>
<td>226</td>
<td>1360</td>
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</table>

Total Yield (lbs/A):

<table>
<thead>
<tr>
<th>Treatment</th>
<th>203</th>
<th>1049</th>
<th>848</th>
<th>1586</th>
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<tbody>
<tr>
<td>Untreated</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>Ridomil (3)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ridomil + HM0303 (3)</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ridomil + HM1028 (3)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

LSD(0.10) = 46.7
Angular Leaf Spot

- **Bacterial disease**
  - Boxy, dark spot, not round, with yellow halo
- **More prevalent in dark than burley**
- **More common later in the season following events that may cause leaf damage**
  - Weather events, overhead irrigation?

- **Streptomycin is only product registered**
  - Very limited control, requires several sprays
Streptomycin Additives for Angular Leaf Spot Control in Dark-Fired Tobacco 2014 - Ronnie Miller Farm – Sedalia KY

- KT D8LC set June 22
  - 40” x 32” = 4900 plants/A
- 3 foliar spray applications:
  - July 10 – 15 gal/A
  - August 22 – 25 gal/A
  - September 23 – 40 gal/A
- Hollow cone nozzles
- Harvested October 8
- Fire-cured
- Stripped early December

<table>
<thead>
<tr>
<th>Trt</th>
<th>Treatment</th>
<th>Rate/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Untreated Check</td>
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</tr>
<tr>
<td>2</td>
<td>AgriMycin</td>
<td>1 lb/100 gal</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 qt/A</td>
</tr>
<tr>
<td>3</td>
<td>AgriMycin + HM0303</td>
<td>1 lb/100 gal 1 qt/A</td>
</tr>
<tr>
<td>4</td>
<td>AgriMycin + HM1028</td>
<td>1 lb/100 gal 1 qt/A</td>
</tr>
<tr>
<td>5</td>
<td>AgriMycin + HM0303 + HM0128</td>
<td>1 lb/100 gal 1 qt/A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2 qt/A</td>
</tr>
<tr>
<td>6</td>
<td>AgriMycin + HM1028 + HM0128</td>
<td>1 lb/100 gal 1 qt/A</td>
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<tr>
<td></td>
<td></td>
<td>2 qt/A</td>
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</table>

*Angular leaf spot intensity in trial was light.*
Streptomycin Additives for Angular Leaf Spot Control in Dark-Fired Tobacco

2014 - Ronnie Miller Farm – Sedalia KY

Preharvest Angular Leafspot Rating (0-10, 10 worst)

LSD (0.10) = 0.29

ALS severity (0-10, 10 worst)
Streptomycin Additives for Angular Leaf Spot Control in Dark-Fired Tobacco

2014 - Ronnie Miller Farm – Sedalia KY

Dark-Fired Yield Data

LSD(0.10) = 161  299  367 (total)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Total Yield (lbs/A)</th>
<th>LSD(0.10)</th>
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<tbody>
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</tr>
<tr>
<td>AgriMycin</td>
<td>3618</td>
<td>161</td>
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<tr>
<td>AgriMycin + HM0303</td>
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<td>299</td>
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</tr>
<tr>
<td>AgriMycin + HM1028 + HM0128</td>
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</tbody>
</table>

Yield (lbs/A)

Yield (lbs/A)

*Average total yield for trial = 4186 lbs/A
Streptomycin Additives for Angular Leaf Spot Control in Dark-Fired Tobacco

2014 - Ronnie Miller Farm – Sedalia KY
Dark-Fired Quality Grade Index Data (Leaf)

LSD(0.10) = 19

Quality Grade Index (Leaf)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Quality Grade Index (0-100)</th>
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<tbody>
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<tr>
<td>AgriMycin</td>
<td>79</td>
</tr>
<tr>
<td>AgriMycin + HM0303</td>
<td>74</td>
</tr>
<tr>
<td>AgriMycin + HM1028</td>
<td>69</td>
</tr>
<tr>
<td>AgriMycin + HM0303 + HM0128</td>
<td>72</td>
</tr>
<tr>
<td>AgriMycin + HM1028 + HM0128</td>
<td>69</td>
</tr>
</tbody>
</table>
Effect of Supplemental Additive Products on Dark-Fired Tobacco Yield
2014 – Jason Barnett Farm – Cheatham Co. TN

- PD7318LC set mid-June
- 40” x 35” = 4481 plants/A
- Objective: Compare supplemental treatments to standard grower practice (no supplemental treatments)
- Plots 4 rows, 50 ft. long
- 3 replications
- Transplant water (TPW) applications made to simulate 200 gal/A
- Foliar applications at 20 gal/A

<table>
<thead>
<tr>
<th>Trt</th>
<th>Treatment</th>
<th>Timing</th>
<th>Rate/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Hydra Hume + Trafix Zn + Megafol</td>
<td>TPW</td>
<td>1 gal/A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TPW</td>
<td>1 qt/A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TPW</td>
<td>10 oz/A</td>
</tr>
<tr>
<td></td>
<td>Axilo Ca</td>
<td>3 wk FOL</td>
<td>1 lb/A</td>
</tr>
<tr>
<td></td>
<td>ENC + Megafol</td>
<td>5 wk FOL</td>
<td>1 qt/A</td>
</tr>
<tr>
<td></td>
<td>ENC + Utilize</td>
<td>Post-Top</td>
<td>1 pt/A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Post-Top</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Standard Grower Practice</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

*Entire trial received any needed pesticide applications. Standard grower practice (Trt 2) received no additional.*
Effect of Supplemental Additive Products on Dark-Fired Tobacco Yield

2014 – Jason Barnett Farm – Cheatham Co. TN - Yield

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Trash</th>
<th>Lug</th>
<th>Leaf</th>
<th>LSD(0.10)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Yield (lbs/A)</td>
<td>3354</td>
<td>3431</td>
<td></td>
<td>22</td>
</tr>
<tr>
<td>TPW + 3 wk FOL + 5 wk FOL + Post-Top FOL</td>
<td>2560</td>
<td></td>
<td>83</td>
<td>83</td>
</tr>
<tr>
<td>Standard Grower Practice (untreated)</td>
<td>2695</td>
<td>699</td>
<td>159</td>
<td>147 (total)</td>
</tr>
</tbody>
</table>

Total Yield (lbs/A):

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Trash</th>
<th>Lug</th>
<th>Leaf</th>
<th>LSD(0.10)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TPW + 3 wk FOL + 5 wk FOL + Post-Top FOL</td>
<td>761</td>
<td></td>
<td></td>
<td>22</td>
</tr>
<tr>
<td>Standard Grower Practice (untreated)</td>
<td>699</td>
<td></td>
<td></td>
<td>83</td>
</tr>
</tbody>
</table>
Phosphorus and Potassium Fertilization

- Use soil test to determine need
  - 70% of KY tobacco fields do not need additional P
  - 30% of KY tobacco fields do not need additional K

- Lower price and more available in Fall

- P and K Rates based on soil test
  - $P_2O_5$: 0 to 230 lbs/A; $K_2O$: 0-400 (burley), 0-300 (dark)
Potassium

- Potassium sulfate (0-0-50) is preferred potassium source for tobacco.
- Potassium sulfate supply has been short for last several seasons.
  - Shortage mostly due to transportation issues
  - Alternative potassium sources:
    - K-Mag (0-0-22)
    - Rainbow (6-12-18)
    - Potassium chloride (Muriate-of-potash, 0-0-60)

- Do not use muriate of potash in spring (after Jan. 1) at rates greater than 50 lbs of chloride per acre.
  - Chloride is detrimental to leaf quality
# Current Prices of Nutrients

<table>
<thead>
<tr>
<th>Source</th>
<th>$/ton</th>
<th>$/lb nutrient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urea (46-0-0)</td>
<td>$425/ton</td>
<td>$0.46/lb N</td>
</tr>
<tr>
<td>Ammonium Nitrate (34-0-0)</td>
<td>$475/ton</td>
<td>$0.70/lb N</td>
</tr>
<tr>
<td>Potassium Sulfate (0-0-50)</td>
<td>$850/ton</td>
<td>$0.85/lb K₂O</td>
</tr>
<tr>
<td>Rainbow Complete (6-12-18)</td>
<td>$675/ton</td>
<td>$0.94/lb nutrient</td>
</tr>
</tbody>
</table>
Potassium Deficiency
Dark Tobacco Response to Potassium
2014 – MSU West Farm, Murray KY

- Soil sample taken March 2014
- Soil test K = 212 (medium-low)
- 190 lbs $K_2O/A$ recommended
- PD7309LC set June 19
  - 40” x 32” = 4900 plants/A
- Plots 4-rows, 40 ft. long
- 4 replications
- Broadcast applications made prior to transplanting on June 18
- Band applications made after transplanting on June 27
  - 2 bands per row, 6-8” from row
- Tobacco harvested late September
- Fire-cured

<table>
<thead>
<tr>
<th>Trt</th>
<th>$K_2O$ timing</th>
<th>$K_2O$ rate (lbs/A)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 untreated (no $K_2O$)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2 Broadcast</td>
<td>95</td>
<td></td>
</tr>
<tr>
<td>3 Broadcast</td>
<td>190</td>
<td></td>
</tr>
<tr>
<td>4 Broadcast</td>
<td>285</td>
<td></td>
</tr>
<tr>
<td>5 Band</td>
<td>95</td>
<td></td>
</tr>
<tr>
<td>6 Band</td>
<td>190</td>
<td></td>
</tr>
<tr>
<td>7 Band</td>
<td>285</td>
<td></td>
</tr>
</tbody>
</table>

N and $P_2O_5$ applied to all plots according to soil test:
275 lbs N/A (150 urea pretransplant, 125 UAN sidedress)
100 lbs $P_2O_5$ pretransplant
Dark Tobacco Response to Potassium
2014 – MSU West Farm, Murray KY - Yield

Total Yield (lbs/A):

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Yield (lbs/A)</th>
<th>LSD (0.10)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 K2O</td>
<td>2975</td>
<td>55</td>
</tr>
<tr>
<td>95 K2O BC</td>
<td>3062</td>
<td>115</td>
</tr>
<tr>
<td>190 K2O BC</td>
<td>3158</td>
<td>234</td>
</tr>
<tr>
<td>285 K2O BC</td>
<td>3118</td>
<td>234</td>
</tr>
<tr>
<td>95 K2O BAND</td>
<td>3108</td>
<td></td>
</tr>
<tr>
<td>190 K2O BAND</td>
<td>3022</td>
<td></td>
</tr>
<tr>
<td>285 K2O BAND</td>
<td>3156</td>
<td></td>
</tr>
</tbody>
</table>

LSD (0.10) = 55, 115, 234, total 234
Dark Tobacco Response to Potassium

2014 – MSU West Farm, Murray KY
Main Effect of K application timing on total yield
(averaged over K rate)
Dark Tobacco Response to Potassium

2014 – MSU West Farm, Murray KY

Main Effect of K application rate on total yield (averaged over K timing)

Yield (lbs/A)

95 lbs K2O/A: 3085
190 lbs K2O/A: 3090
285 lbs K2O/A: 3137
Boron Deficiency

Burley

Dark

Foliar Boron may Alleviate
0.25 lbs/A Boron = 1.5 Solubor DF/A foliar

Soil pH = 7.5
Plant Boron = 24 ppm

Soil pH = 7.3
Plant Boron = 14 ppm
Effect of Boron Application Timing and Rate in a B-deficient Field

2014 - Chris Rodgers Farm – Hickory KY

- Field had evidence of B deficiency in 2012 (soybean) and 2013 (tobacco)
- pH 7.6 in May 2014
- PD7309 set June 26
- Transplant water simulations applied June 27 at 120 gal/A
- Foliar applications made July 21 at 15 gal/A (3.5 weeks)
- Harvested early October
- Stripped mid-November

<table>
<thead>
<tr>
<th>Trt</th>
<th>Timing</th>
<th>Borosol* Rate/A</th>
<th>B Rate/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>TPW</td>
<td>29 oz</td>
<td>0.25 lb</td>
</tr>
<tr>
<td>2</td>
<td>TPW</td>
<td>58 oz</td>
<td>0.5 lb</td>
</tr>
<tr>
<td>3</td>
<td>TPW</td>
<td>116 oz</td>
<td>1.0 lb</td>
</tr>
<tr>
<td>4</td>
<td>Foliar</td>
<td>29 oz</td>
<td>0.25 lb</td>
</tr>
<tr>
<td>5</td>
<td>Foliar</td>
<td>58 oz</td>
<td>0.5 lb</td>
</tr>
<tr>
<td>6</td>
<td>Foliar</td>
<td>116 oz</td>
<td>1.0 lb</td>
</tr>
<tr>
<td>7</td>
<td>Untreated</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

*Boron product used was Borosol, 10% B (11 lbs/gal, 1.1 lbs B/gal)
Effect of Boron Application Timing and Rate in a B-deficient Field

2014 - Chris Rodgers Farm – Hickory KY - Yield

Yield (lbs/A)

LSD(0.10) = 49, 97, 439, 504 (total)

Total Yield (lbs/A):

- 3434
- 3084
- 2074
- 2990
- 3167
- 3484
- 3345

0.25 lb B/A TPW
- 2576
- 1491
- 2247
- 2247
- 2481
- 2654
- 2624

0.5 lb B/A TPW
- 2358
- 619
- 613
- 613
- 567
- 713
- 605

1.0 lb B/A TPW
- 2074
- 487
- 129
- 567
- 117
- 116

0.25 lb B/A FOL
- 2990
- 613
- 129
- 117

0.5 lb B/A FOL
- 3167
- 567
- 119

1.0 lb B/A FOL
- 3484
- 713

Untreated
- 3345
- 605

Trash
- 743
- 619
- 487
- 613
- 567
- 713
- 605

Lug
- 116
- 107
- 96
- 129
- 119
- 117
- 116

Leaf
- 107
- 96
- 129
- 119
- 117
- 116
Boron Recommendations

- Confirm that B deficiency is occurring
- Do not use more than 0.25 lb B/A in Transplant water
- Still recommend 0.25 to 0.5 lb B/A as foliar spray
- Make sure B product used has enough B to deliver 0.25 lbs B/A with one application
Continuing Research Areas

• CPA/Pesticide Residue Reduction

• TSNA (Tobacco Specific Nitrosamine) reduction

• Reduction of Benzo-α-pyrene (BaP) in dark-fired
Dark Tobacco Website:
http://dark tobacco.ca.uky.edu

See Agent’s page on dark tobacco website

Facebook: Dark Tobacco in Kentucky and Tennessee

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UK/UT Dark Tobacco Extension Specialist
University of Kentucky Research & Education Center
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Cell phone: 270-625-1560
E-mail:abailey@uky.edu