Preplant

- Fertile, moderately-deep to deep, well-drained soils are ideal for cotton.
- Sub-soiling is only beneficial if tillage pan is present.
- If conventionally tilled, prepare ground:
  - Early enough for seedbed to settle, but
  - Late enough to reduce erosion potential.
- Crop rotation and/or incorporating cotton residue can encourage decomposition of infected debris and reduce inoculum.
- Cover crops can provide additional erosion control.

Variety Selection

<table>
<thead>
<tr>
<th>Variety</th>
<th>Lint Yield (lb/ac)</th>
<th>Mic</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHY 333 WRF</td>
<td>1519</td>
<td>4.2</td>
</tr>
<tr>
<td>PHY 499 WRF</td>
<td>1519</td>
<td>4.6</td>
</tr>
<tr>
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<td>1499</td>
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<tr>
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<td>1483</td>
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</tr>
<tr>
<td>NG 3405 B2XF</td>
<td>1476</td>
<td>4.4</td>
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</table>

<table>
<thead>
<tr>
<th>Variety</th>
<th>Lint Yield (lb/ac)</th>
<th>Mic</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHY 312 WRF</td>
<td>1325</td>
<td>4.2</td>
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<tr>
<td>DP 1522 B2XF</td>
<td>1277</td>
<td>4.7</td>
</tr>
<tr>
<td>PHY 444 WRF</td>
<td>1276</td>
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<td>DP 1518 B2XF</td>
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<td>4.1</td>
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<tr>
<td>DP 1321 B2RF</td>
<td>1231</td>
<td>4.6</td>
</tr>
</tbody>
</table>

Plantage

- Ideal planting dates typically between Apr 20 & May 10.
  - Planting after May 20 generally results in greater input costs and lower yields.
- Ideal depth is between 0.5 to 1.5” depending upon depth to moisture, soil texture, & crusting potential.
- Best to plant when soil at 3” depth at 10AM = 65°F and the forecasted DD60 accumulation for the 5 days following planting ≥25 DD60s.
  - Avoid planting in wet, cool soils
- Target plant population should fall between 30,000 and 55,000 plants/ac, with:
  - Higher populations in heavier-textured soils and
  - Lower populations in coarser-textured soils.
- Determine seeding rate for target plant population (P#/ac) with germination test as follows:
  \[(\text{Target P#/ac}) / (\% \text{germ}) * 100 = \text{seed/ac}\]
  \[\text{Ex:} (48,000 \text{ P#/ac}) / (80(\% \text{ germ})) * 100 = 60,000 \text{ sd/ac}\]
- Check cold germ test results. >50%-60% preferred.
- Increase rates by 10% if planting in late May.
- Seed treatments of insecticides and fungicides or in-furrow applications are recommended.
- Nematicides should be applied if threshold populations are present.

Weed Control

- Most successful programs consist of:
  1. Pre-plant burndown w/ or w/o residual.
  2. At-plant burndown w/residual.
  3. Postemergence w/residual.
  4. Post-directed w/ or w/o residual.
  5. Layby.
  6. Pre-harvest herbicide applications.
- Residuals play a significant role in the resistance era. Overlap and monitor for breaks/escapes.
- Timeliness is critical to maximizing control while reducing herbicide rates and costs.
- Alternate chemistries and avoid low rates to prevent further development of resistance.

Consult UT Extension PB 1580 for additional information on weed control.

Fertility

Soil Sampling

- Soil tests are critical to understanding soil nutrient status and forming fertilizer application decisions.
- Samples should be collected either on a geometrical grid or by management zones.
- Samples should be collected:
  - By proper, clean equipment
  - In a zig-zag pattern across the grid/zone
  - Consist of an adequate sample number
  - Be handled properly

Lime and pH

- Cotton yields are greatest between pHs 5.7 and 6.5.
- Lime if pH < 5.7 to prevent yield reductions.
- Base lime source on magnesium soil test, price, availability and Relative Neutralizing Value (RNV).
  - Dolomitic lime preferred for Mg deficient soils.
  - Calcitic lime preferred if soil test Mg is sufficient or high.

Nitrogen (N)

- A 60-80 lb N rate is recommended.
- Split application w/ 30-50% at planting and the remainder near first square to increase N use efficiency and reduce N loss potential.
- Beyond increasing costs, excessive rates increase need for PGRs, complicate defoliation and reduce harvest efficiencies.
Potassium (K) and Phosphorus (P)

<table>
<thead>
<tr>
<th>Soil Test Level</th>
<th>Potash (K₂O) lb/ac</th>
<th>Phosphate (P₂O₅) lb/ac</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>120</td>
<td>90</td>
</tr>
<tr>
<td>Medium</td>
<td>90</td>
<td>60</td>
</tr>
<tr>
<td>High</td>
<td>60</td>
<td>30</td>
</tr>
<tr>
<td>Very High</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Foliar Applications

- **Boron (B)**
  - Typically not noted in heavier textured soils, but can occur after soil is limed.
  - Apply 0.5 lb B/ac when pH is greater than 6.0 or soils have been limed.

- **Sulfur (S)**
  - Deficiencies have been found in some TN fields recently.
  - If deficiency has been noted in field, apply 10-20 lb S/ac of the most convenient, cheapest source.

- **Potassium (K)**

Foliar Applications

- Only serve to supplement solid, soil-applied fertilizer programs.
- Can help under deficient conditions, but stress reduces efficiency of applications.
- Target bloom/boll fill period, as demand is greatest and leaf coverage is high.
- Foliar burn can occur at rates in excess of 5-7 lb N/ac (~10-15 lb Urea/ac).
- Slow-release has not shown benefit over standard.
- B- Most effective frequency is 3 to 5 weekly foliar applications of 0.1 lb B/ac beginning at early flower.
- S- Apply magnesium sulfate twice foliarly at 4 lb S/ac to ameliorate in-season S deficiency.

Plant Growth Regulators

- Management influenced by variety and by environment.
- No difference has been found in differing mepiquat products, given they are applied at equivalent rates.
- Single/dual application regime:
  - Apply 8-16 oz mepiquat at early bloom, varying rate based on growth potential.
  - Apply a second application 2 to 3 weeks after if conditions are favorable for excessive growth.

- Multiple, low-rate application regime:
  - Apply 2 to 4 oz. every 14 days beginning at pinhead square, or when excessive elongation occurs.
  - Increase rates as needed as plant matures.

<table>
<thead>
<tr>
<th>Very Responsive</th>
<th>Responsive</th>
<th>Less Responsive</th>
</tr>
</thead>
<tbody>
<tr>
<td>DP 1518 B2XF</td>
<td>DG 3385 B2XF</td>
<td>NG 3406 B2XF</td>
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<tr>
<td>DP 1311 B2RF</td>
<td>DP 1522 B2XF</td>
<td>PHY 339 WRF</td>
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<tr>
<td>ST 4747 GLB2</td>
<td>DP 0912 B2RF</td>
<td>PHY 495 W3RF</td>
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<td>NG 3405 B2XF</td>
<td>NG 3405 B2XF</td>
<td>PHY 499 WRF</td>
</tr>
<tr>
<td>PHY 312 WRF</td>
<td>PHY 333 WRF</td>
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</tr>
<tr>
<td>ST 4946 GLB2</td>
<td>ST 5032 GLT</td>
<td></td>
</tr>
</tbody>
</table>

Insect Thresholds/Control

- **Thrips**: use recommended at-planting treatment. Consider foliar application at or before second true leaf stage under adverse growing conditions.
- **Tarnished Plant Bugs**:  
  - 1st, 2nd wk of square- 8 per 100 sweeps  
  - 3rd wk square to 1st bloom- 15 per 100 sweeps  
  - After first bloom- >3 per drop cloth  
  - Maintain > 80% square retention into early bloom
- **Aphids**: very numerous, honeydew present, plants appear stressed, natural control agents failing
- **Bollworm/Tobacco Budworm**:  
  - Non-Bt, pre bloom- > 8 per 100 plants, post bloom- >4 per 100 plants  
  - Bt- pre bloom- >8 larvae (>0.25") /100 plants, post bloom- >4 larvae (>0.25") /100 plants
- **Stink Bugs**: >1 / 6 row ft, injury of 20% or more of thumb-sized bolls (warts/stained lint)
- **Spider Mites**: 30-50% plants affected, mites present
- **Fall Armyworm**: ≥4/100 blooms or 10-20 larvae/100 plants

Insecticide termination

<table>
<thead>
<tr>
<th>NAWF5 + Heat Units (DD60s)</th>
<th>Bollworm, tobacco budworm, plant bugs, stink bugs</th>
</tr>
</thead>
<tbody>
<tr>
<td>350-450</td>
<td></td>
</tr>
<tr>
<td>650-750</td>
<td></td>
</tr>
</tbody>
</table>

Defoliation

- **Timing methods**:  
  - Node Above White Flower (NAWF) + 850 DD60s: can trigger too early- should be validated by another method  
  - Percent open boll: divide open boll # by total harvestable boll #, typically trigger when 60%  
  - Sharp-knife technique: Slice uppermost yield-contributing boll- trigger if mature.
  - Mature boll will be difficult to cut, seeds will have dark coats, will contain folded cotyledons and an absence of jelly.
  - Node Above Cracked Boll (NACB): Count up from uppermost, 1st position cracked boll to uppermost harvestable boll.
  - Generally safe to defoliate when NACB=4, but if uppermost harvestable boll is immature, delay til NACB=3.

- **Application**:  
  - Two-pass system is preferred over a one pass.  
  - Adequate coverage is important as many products are not translocated within the plant.

Consult the **2015 Mid-South Defoliation Guide** for additional information.

Consult **UT Extension PB 1768** for additional information on insect control.

Additional information on these and other issues/crops can be found at:  
news.utcrops.com OR  
utcrops.com

ag.tennessee.edu

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