Preplant

- Fertile, moderately-deep to deep, well-drained soils are ideal for cotton.
- Sub-soiling is only beneficial if tillage pan is present.
- No-till can diminish an in-row pan in three to four years.
- If conventionally tilled, prepare ground:
  - Early enough for seedbed to settle, but
  - Late enough to reduce erosion potential.
- Cover crops can provide additional erosion control.
  - Small grains (rye) most commonly planted.

Variety Selection

- Yield stability, fiber quality, maturity, and value-added traits should be considered in selection.
- If conventionally tilled, prepare ground:
  - Early enough for seedbed to settle, but
  - Late enough to reduce erosion potential.
- Cover crops can provide additional erosion control.
  - Small grains (rye) most commonly planted.

Planting

- Ideal planting dates in Tennessee typically fall between April 20 and May 10.
- Planting after May 20 generally results in greater input costs and lower yields.
- Ideal depth is between 0.5 to 1.5 inches depending upon depth to moisture, soil texture, and crusting potential.
- Best to plant when soil at 3-inch depth at 10AM = 65°F and the forecasted DD60 accumulation for the five days following planting >=25 DD60s.
- Target plant population should fall between 30,000 and 55,000 plants/ac, with:
  - Higher populations in heavier-textured soils
  - 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 percent preferred.
- Increase rates by 10 percent 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.
- 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.

Weed Control

- Most successful programs consist of:
  1. Pre-plant burndown with or without residual.
  2. At-plant burndown with residual.
  3. Postemergence with residual.
  4. Post-directed with or without residual.
  5. Layby.
  6. Pre-harvest herbicide applications.
- Residuals play a significant role in the resistance era. Overlap and monitor for breaks/escapes.

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 with 30-50 percent 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.
Deficiencies have been found in some Tennessee fields recently.

**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 Tennessee fields recently.
  - If deficiency has been noted in field, apply 8-12 lb S/ac of the most convenient, cheapest source.

**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 three to five 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.

**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>

**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 percent.
  - 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.

**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 (> .25") /100 plants, post bloom- >4 larvae (> .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

Insect Thresholds/Control

**Thrips:** Use recommended at-planting treatment. Consider foliar application at or before second true leaf stage under adverse growing conditions.

**Selected variety characteristics:**

<table>
<thead>
<tr>
<th>Variety</th>
<th>Maturity</th>
<th>PGR mgmt</th>
</tr>
</thead>
<tbody>
<tr>
<td>DG 2570 B2RF</td>
<td>Early-mid</td>
<td>Moderate</td>
</tr>
<tr>
<td>FM 1944 GLB2</td>
<td>Early-mid</td>
<td>Passive</td>
</tr>
<tr>
<td>ST 4946 GLB2</td>
<td>Early</td>
<td>Moderate</td>
</tr>
<tr>
<td>DP 0912 B2RF</td>
<td>Early</td>
<td>Moderate</td>
</tr>
<tr>
<td>DP 1321 B2RF</td>
<td>Early-mid</td>
<td>Moderate</td>
</tr>
<tr>
<td>PHY 333 WRF</td>
<td>Early</td>
<td>Moderate</td>
</tr>
<tr>
<td>PHY 375 WRF</td>
<td>Early-mid</td>
<td>Moderate</td>
</tr>
<tr>
<td>PHY 499 WRF</td>
<td>Mid</td>
<td>Aggressive</td>
</tr>
</tbody>
</table>

Insecticide termination

**NAWF5 + Heat Units (DD60s)**

<table>
<thead>
<tr>
<th>Heat Units</th>
<th>Insecticides</th>
</tr>
</thead>
<tbody>
<tr>
<td>350-450</td>
<td>Bollworm, tobacco budworm, plant bugs, stink bugs</td>
</tr>
<tr>
<td>850</td>
<td>Spider mites, loopers, armyworms</td>
</tr>
</tbody>
</table>

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