**2011 Southeast Hay Convention**

**Alfalfa and Perennial Peanut Production in the South**

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**Legumes and Their Optimum Soil pH**

<table>
<thead>
<tr>
<th>pH</th>
<th>Alfalfa</th>
<th>Red Clover</th>
<th>White Clover</th>
<th>Perennial Peanut</th>
<th>Sericea Lesp.</th>
<th>Annual Medics</th>
<th>Arrowleaf Clover</th>
<th>Berseem</th>
<th>Crimson Clover</th>
<th>Hairy Vetch</th>
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</thead>
<tbody>
<tr>
<td>5.5</td>
<td><img src="image" alt="Alfalfa" /></td>
<td><img src="image" alt="Red Clover" /></td>
<td><img src="image" alt="White Clover" /></td>
<td><img src="image" alt="Perennial Peanut" /></td>
<td><img src="image" alt="Sericea Lesp." /></td>
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<td><img src="image" alt="Crimson Clover" /></td>
<td><img src="image" alt="Hairy Vetch" /></td>
</tr>
</tbody>
</table>

**Alfalfa**

- **Adaptation**: Well-drained soils, if soil is fertile and management is good. Best if irrigated.
- **Lifespan**: 4-7 years in LVM & Pied; 3-5 years in Coastal Plain
- **Yield**: 4-6 tons/A (dry); 5-8 tons/A (irrigated)
- **Soil Considerations**: Soil pH ≥ 6.5 (4-6 in. depth); Subsoil pH ≥ 5.5 (down to 4 ft.)
- **Mold Potential**: High
- **Uses**: 1) Hay, 2) Silage, 3) Grazing
- **Establishment**: Drill: 20-25 lbs/A; Broadcast: 22-25 lbs/A
- **Varieties**: North GA – Bulldog 505; South GA – Bulldog 805
- **Comments**: Very valuable ($140-200+ per ton). Highest quality forage. Best for dairy or horse hay.

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**SO WHY NOT ALFALFA?**

- **Blister Beetle**
- **Drying Conditions**
- **Diseases**: It’s Too NEEDY
- **Lack of Marketing Skill**
- **Not Enough Labor**
- **Pest Control**
- **Poor Soil Fertility**: Too Risky

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**Dr. Dennis Hancock**

Extension Forage Specialist

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Extension Forage Specialist
Soil Conditions for Alfalfa

- Well-drained, deep soils
- Deep taproot
- Soil pH maintained > 6.5 (6.2)
- Major nutrients should be balanced P-K

Aluminum Toxicity – Low Soil pH

Selecting the Right Alfalfa Variety

- Dormancy rating of 5 to 8.
  - Rating (1-10) based on growth after September 1.
  - Winter survival in the North.
- Disease resistance: > MR to
  - Phytophthora root rot (PRR), anthracnose (An), bacterial wilt (Bw), and fusarium wilt (Fw), as well as a R rating to aphanomyces root rot (APH).
- Varieties:
  - Attention II (CP); Bara - 503 (P,M); Bulldog 505 (S); Bulldog 805 (CP); CW 500 (P,M); Evermore (P,M); Hybri Force 600 (CP); Hybri Force 700 (CP); PGI 801 (CP); Phoenix (P,M); TS 4010 (P,M); TS 8031 (CP)
  - Bolded variety names = highest in yield and/or stand density

Selecting the Right Alfalfa Variety

- Persistence
  - Particularly if to be grazed
- Yields

<table>
<thead>
<tr>
<th>Variety</th>
<th>Est. Yr</th>
<th>Yr. 2</th>
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<tr>
<td>CV %</td>
<td>9</td>
<td>10</td>
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</tr>
<tr>
<td>LSD</td>
<td>NS</td>
<td>1127</td>
<td>674</td>
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Alfalfa Variety Trial - Tifton

<table>
<thead>
<tr>
<th>Variety</th>
<th>Est. Year</th>
<th>2010</th>
<th>3-yr Avg</th>
<th>Stand</th>
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<td>9841 a*</td>
<td>9362 a</td>
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<td>8202 cd</td>
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<td>8183</td>
<td>8508 bc</td>
<td>77.0 b</td>
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<td>5040</td>
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<td>LSD</td>
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<td>674</td>
<td>11.5</td>
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</tbody>
</table>
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### Roundup Ready Alfalfa
- Herbicide efficiency
  - Cost is less
  - Safe herbicide
  - Shelf-ready, multi-purpose
  - Broad window of application
- Less herbicide damage
  - Up to 0.6 t/a yield advantage of RR alfalfa over same varieties treated with Pursuit or Raptor
- Control winter annuals and other special problems
- Allows establishment innovations.

### Roundup Ready Alfalfa
- Recommended varieties:
  - Alfagraze 300 RR (P, M)
  - Alfagraze 600 RR (P, CP)
- Several new varieties expected in next 2-3 yrs
  - Pent-up demand
- Variety trial data in GA will lag behind by 4-5 yrs

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### Planting Alfalfa: Coastal Plain
1) Well-prepared, firm seedbed
   - Pack-plant-pack method
     - Broadcast or Drilled
     - Cultipacking seeder (Brillion)
2) (Distant) No-till into suppressed sod
   - Acceptable if interseeding into bermudagrass sod

Timing: **mid-Oct to Nov.**

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### Inoculate Legume Seed
The population of the specific Rhizobium (*Rhizobium meliloti*) is likely to be very low in the soil.

- Inoculate seed with fresh inoculant before seeding.
  - 1 bag of inoculant per bag of seed.
  - Use a “sticker” material.
- Alfalfa seed often comes pre-inoculated.
  - coated with an inert material, usually lime,
  - saves time and helps to ensure inoculation
  - check expiration date

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### Weed Control Tools
**Pre-Emergents:**
- *e.g.*, Treflan, Balan, Eptam

**Broadleaves:**
- *e.g.*, Pursuit, Raptor (wild mustard), Butyrac (2,4 – DB)

**Grasses:**
- *e.g.*, Poast, Select

**In-between Cuttings:**
- *e.g.*, Gramaxone (w/in 5 days of cutting)

**Proper Cutting Management**

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### Specific Weed Problem?
Visit the Pest Management Page on [www.georgiaforages.com](http://www.georgiaforages.com)
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in the South

Alfalfa Weevil

Potato Leafhopper

Potato Leafhopper

Potassium Deficiency

Potassium Deficiency

Balancing Yield, Quality, and Persistence

Balancing Yield, Quality, and Persistence

Dr. Dennis Hancock
Extension Forage Specialist
Perennial Peanut

Adaptation
Areas south of south of 31.5°N parallel (roughly a line from Albany to Jesup).

Lifespan
Many years

Yield
2-5 tons/A (dry); 3-6 tons/A (irrigated)

Soil Considerations
Soil pH ≥ 6.0 (0-6 in. depth) Medium well- to well-drained

Bloat Potential
Low

Uses
1) Hay, 2) Rotational Grazing

Establishment
Sprigged: 60-80 bs/A

Varieties
Florigraze, Arbrook

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Uses
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Establishment
Sprigged: 60-80 bs/A

Varieties
Florigraze, Arbrook

Comments
Very valuable ($140-200++ per ton). Best if irrigated. Long (18-24 months) establishment phase. Infection with Peanut Stunt Virus is widespread.

Estimated Perennial Peanut Growing Zones

P & K Fertilization Recommendations for Perennial Peanut

Potassium

<table>
<thead>
<tr>
<th>Phosphorus</th>
<th>Low K</th>
<th>Medium K</th>
<th>High K</th>
<th>Very High K</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low P 0-15 lbs/A</td>
<td>0-100-175</td>
<td>0-100-130</td>
<td>0-100-75</td>
<td>0-100-0</td>
</tr>
<tr>
<td>Medium P 16-30 lbs/A</td>
<td>0-60-175</td>
<td>0-60-130</td>
<td>0-60-75</td>
<td>0-60-0</td>
</tr>
<tr>
<td>High P 31-60 lbs/A</td>
<td>0-30-175</td>
<td>0-30-130</td>
<td>0-30-75</td>
<td>0-30-0</td>
</tr>
<tr>
<td>Very High P 60+ lbs/A</td>
<td>0-0-175</td>
<td>0-0-130</td>
<td>0-0-75</td>
<td>0-0-0</td>
</tr>
</tbody>
</table>

Phosphorus

Recommendation

Peanut Stunt Virus

Reduces yield by as much as one-third, particularly in regions with shorter growing season and cooler night temperatures.

Additional Fertilization Recommendations for Perennial Peanut

• Soil pH range should be ~6.0.
  • Florigraze tends to perform better on poor pH sites
• 10-20 lbs of sulfur (sulfate-form) per acre may be necessary annually.
• Calcium and Magnesium requirements for PPNut are high
  • Soils low in Ca/Mg may require supplementation (?)
  • Tissue sampling prior to second cutting can help guide nutrition decisions
  • Role for Gypsum (CaSO_4)? KMag?

Herbicides Labeled for Use in Perennial Peanut Production

Very Few Options

• 2,4-D Ame for fair control of annual broadleaf weeds
  • Must catch them small
• Imazapic (Impose) good control of annual grasses, nutsedges, johnsongrass, and substantial number of broadleaf weeds.
• Clethodim (Select Max) excellent control of most annual and perennial grasses (incl. common bermudagrass).
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Establishment Considerations

- Site Selection
  - Medium to well-drained is best
  - Flatwoods (wet) soils are undesirable
  - Low weed pressure
  - Well-managed cropland
  - New ground, etc.

Effect of POE herbicide application during the establishment year on the yield and weed pressure in year 2.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Perennial Peanut</th>
<th>Grass</th>
<th>Broadleaf Weeds</th>
</tr>
</thead>
<tbody>
<tr>
<td>No weed control</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Broadleaf weeds controlled</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Broadleaf weeds &amp; grasses controlled</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

1 Averages within a column sharing the same letter are not significantly different (P< 0.05)

Establishment Considerations

- Identify Source of Rhizomes/Planter
  - Establishing Pnut is a MAJOR investment!
  - Ensure your source/planter is competent, fair, and reputable
  - Distance is not as big of an obstacle as it is with bermudagrass

Digging and Planting Pnut Rhizomes

- One acre of Pnut nursery should provide enough rhizomes to plant 20-30 acres
  - @ planting rate of 80 bu/acre
  - Used for planting material again in ~3 yrs

- A "healthy rhizome" is:
  - ≥1/8" in diameter, ≥9" in length
  - Do not graze nursery field and take no hay cuttings after late June/early July
  - Root CHO's peak late in growing season
  - End of season hay harvest is OK.

Taking Care of Pnut Rhizomes - Planting

- Rhizomes should be planted asap after digging.
  - Overnight storage (winter) is not extremely problematic
  - January/February is ideal

- Store in cool, shaded location
  - Shaded
  - Cover, particularly during transport
  - Do not make it air-tight
  - Don’t allow rhizomes to freeze

- Bermuda sprigger is best
  - 80 bu/acre (1.25 ft³ = 1 bu)
  - Inc. by 25% if using Arbrook
  - If rhizomes are cheap, use rate of 100-120 bu/acre

First Year Management

- Irrigate it whenever needed
- Control weeds
  - Especially grassy weeds
- Don’t graze it and best not to mow it.

- What is a good stand?
  - Viable sprouts/plants within a normal stride from one to another.
Selecting the Right Perennial Peanut Variety

- Disease resistance:
  - Peanut Stunt Virus – all are susceptible.

- Varieties: Florigraze, Arbrook
  - Florigraze is more cold-hardy and responsive to irrigation.
    - Generally best if in N latitudes
  - Arbrook is slightly faster to establish, but is slower to spread laterally.
    - Arbrook is more tolerant of droughty soil types

- Stem size: Arbrook > Florigraze

Varieties:
- Ecoturf
  - does well with lower soil pH

- UF Tito
  - slightly faster to establish, but is slower to spread laterally

- UF Peace
  - tolerant of droughty soil types

- Florigraze
  - is more cold-hardy and responsive to irrigation

- Arbrook
  - faster to establish, but is slower to spread laterally

Selecting the Right Perennial Peanut Variety

<table>
<thead>
<tr>
<th>Variety</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>5-yr avg.</th>
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<tr>
<td>Ecoturf</td>
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<td>8,150&lt;sup&gt;c&lt;/sup&gt;</td>
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<td>9,980&lt;sup&gt;d&lt;/sup&gt;</td>
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<tr>
<td>UF Tito</td>
<td>10,160</td>
<td>&lt;sup&gt;b&lt;/sup&gt;</td>
<td>11,540&lt;sup&gt;b&lt;/sup&gt;</td>
<td>10,090&lt;sup&gt;b&lt;/sup&gt;</td>
<td>13,460&lt;sup&gt;e&lt;/sup&gt;</td>
<td>11,090&lt;sup&gt;b&lt;/sup&gt;</td>
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<tr>
<td>UF Peace</td>
<td>10,160</td>
<td>&lt;sup&gt;b&lt;/sup&gt;</td>
<td>11,540&lt;sup&gt;b&lt;/sup&gt;</td>
<td>10,090&lt;sup&gt;b&lt;/sup&gt;</td>
<td>13,460&lt;sup&gt;e&lt;/sup&gt;</td>
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<td>Florigraze</td>
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<td>11,650&lt;sup&gt;cd&lt;/sup&gt;</td>
<td>10,530&lt;sup&gt;b&lt;/sup&gt;</td>
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<tr>
<td>Arbrook</td>
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<td>13,240&lt;sup&gt;a&lt;/sup&gt;</td>
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</table>

Total Seasonal Yield of Perennial Peanut in Response to the Number of Weeks between Cuttings.

Forage Yield (dry lbs/acre)

<table>
<thead>
<tr>
<th>Cutting Interval (weeks)</th>
<th>0</th>
<th>2</th>
<th>4</th>
<th>6</th>
<th>8</th>
<th>10</th>
<th>12</th>
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Forage Quality of Perennial Peanut in Response to the Number of Weeks between Cuttings.

Crude Protein (% DM)

<table>
<thead>
<tr>
<th>Cutting Interval (weeks)</th>
<th>0</th>
<th>2</th>
<th>4</th>
<th>6</th>
<th>8</th>
<th>10</th>
<th>12</th>
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<tr>
<td>0.2</td>
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<tr>
<td>0.3</td>
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</table>

Proportion of Perennial Peanut Biomass that is Leaf Material as Affected by the Number of Weeks between Cuttings.

Leaf Mass (% of total biomass)

<table>
<thead>
<tr>
<th>Cutting Interval (weeks)</th>
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<th>2</th>
<th>4</th>
<th>6</th>
<th>8</th>
<th>10</th>
<th>12</th>
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<tbody>
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</table>

Leaf, Stem, & Total Yield of Alfalfa & Perennial Peanut in the 1st 3-years (Ft. Valley, GA)

<table>
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Dr. Dennis Hancock
Extension Forage Specialist
2011 Southeast Hay Convention
Alfalfa and Perennial Peanut Production
in the South

Questions?

www.georgiaforages.com