Forage Variety Selection for Horses

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Putting knowledge to work for SC

Establishing a Forage Crop

What to consider:

A. Forage Quality
B. Yield
C. Persistence
D. Production Distribution
E. Establishment Costs

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Points to Consider

- What will be the use of this forage?
  - Pasture
  - Hayfield
    - For sale or feed to own
- What is the availability of moisture?
- What is the soil type?

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Selecting a Forage Variety

Points to Consider:

- What is my management style?
  - High input, fertilize etc.
  - Low input, “take what comes”
- Acreage to establish
- When do I need the grass?

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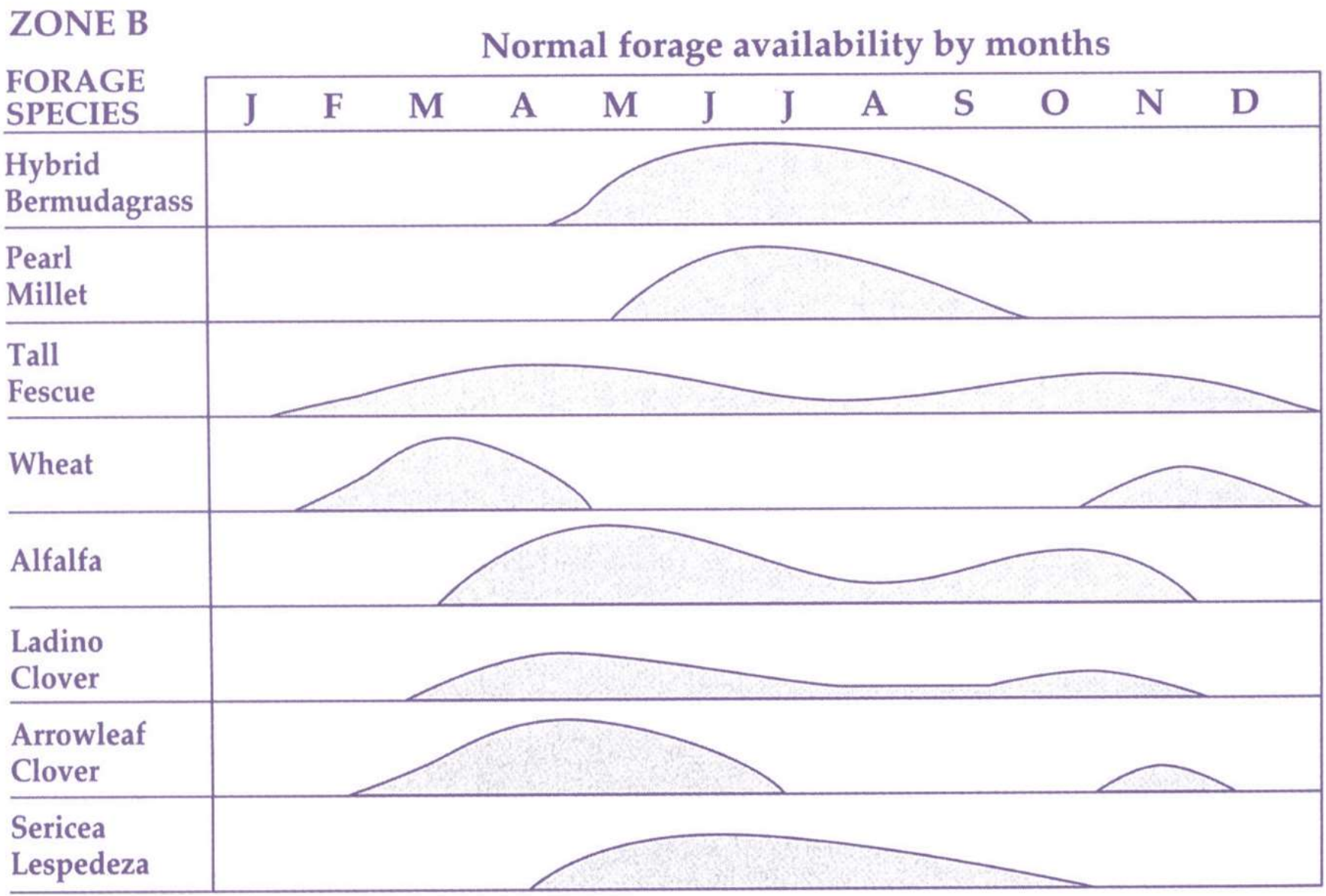
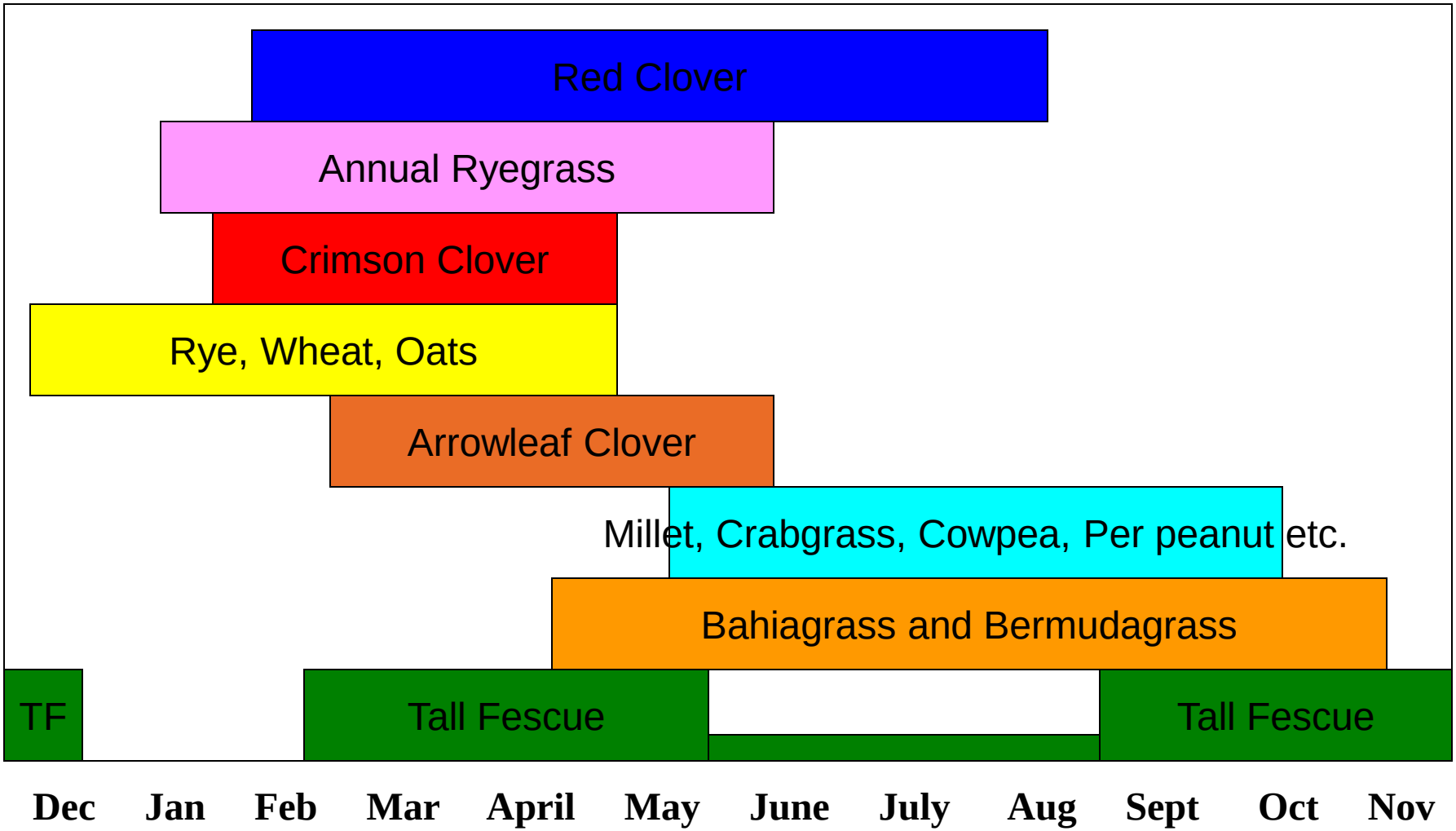


Figure 4.5. Seasonal forage availability of common forage species in Zone B.

Seasonal Distribution of Growth



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Pasture Grasses

- Perennial grasses should be the base for all horse pastures.
  - Bermudagrass
  - Bahiagrass
  - Fescue (upstate)

  - Pay attention to the climate in your area before choosing a perennial.

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Forage Options

- Backbone:
  - Warm Season Perennial Grasses
    - Bahiagrass
    - Bermudagrass
    - Natives?
  - Cool Season Perennial
    - Tall Fescue
    - *Possibly others in Upstate*
- Supplements:
  - Cool Season Annuals
    - Cereals and annual ryegrass
  - Warm Season Annuals
    - Millets
    - Crabgrass

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Cool Season Perennial Grasses

- Tall fescue is only persistent and productive species for this area.
  - Select soils for tall fescue carefully.
- Orchardgrass will NOT persist in this area
  - Timothy and KY Bluegrass are NOT an option either

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Tall fescue overview

- Tall fescue is an excellent fall forage to compliment bermudagrass
- Fall forage production exceeds small grains
- No annual establishment costs
- Excellent weathering

USDA Salem Rd Farm near Farmington GA April 2001

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Tall fescue overview

- **MUST** be established on heavier soils
- Should defer grazing in summer where possible
- Must be endophyte-infected to persist
- Pure stands or mixtures
- Stockpile for fall needs

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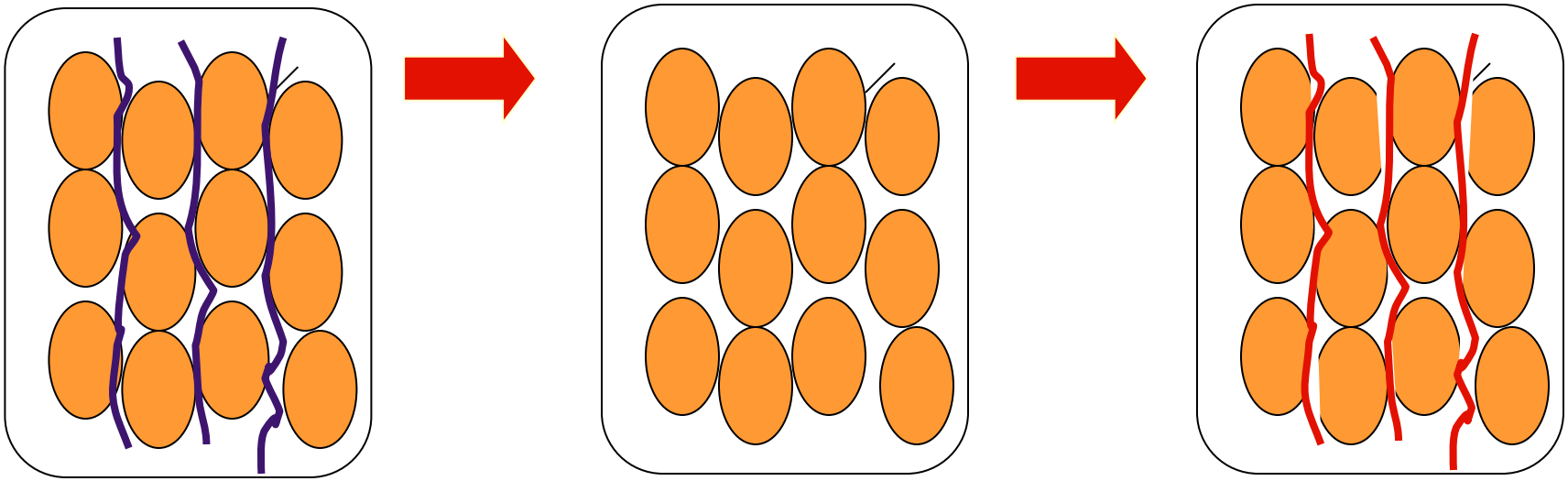
Novel Endophytes Take the Best from both E+ and E-

Remove Toxic Endophyte

Add a Non-toxic Endophyte



Toxic Endophyte

Endophyte Free

Novel Endophyte

Craig Roberts, University of Missouri

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Warm Season Perennials

- All base forages should be perennials!
- Warm season plants produce in summer months
- Productive late April – first frost
- Very drought tolerant and most are grazing and treading tolerant
- Bahiagrass and Bermudagrass

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Bermudagrass Variety Selection

1. Persistence
2. Establishment method
3. Disease resistance
4. Yield and Quality

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Hybrid Bermudagrass

- Must be established from sprigs
- Slow
- Expensive
- Hard to contract small acreages

- Benefits:
- Higher yields
- Good quality
- Excellent for hay production

- Hybrids:
- Coastal, Russell, Tifton 85
- Tifton 44 – slow to establish

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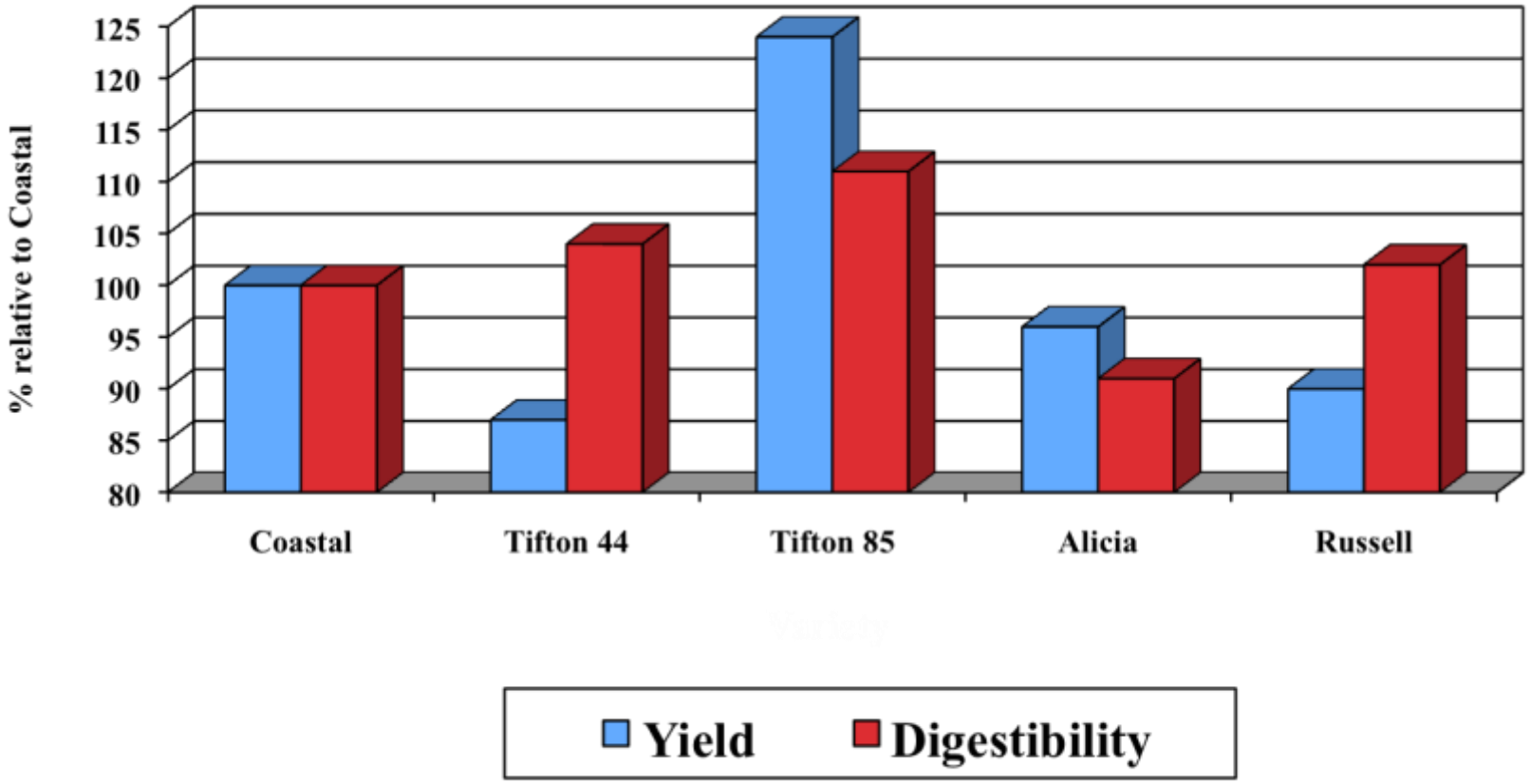
Yield & Digestibility of Bermudagrass Hybrids



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Seeded bermudagrass can fit…

- Not as high yielding as hybrids
- How do yields compare at marginal fertility levels?
- Particularly appropriate for rented land, steep land, small acreages
- **Use caution on sandy soils**
  - Difficult to establish

Seeded Bermudagrass Varieties

- Common
  - Dense sod
  - Good quality
  - Yields approximately 60-70% of hybrids
  - Unfortunately, you'll never know what you'll get…
- Cheyenne II
  - Excellent alternatives to Common and hybrids
  - Yields can approach Coastal
  - Weed problems at establishment

Seeded Bermudagrass Varieties

- Laredo
  - Southern States blend
  - CD90160 and Mirage?
- Giant
  - Does not survive more than one or two years!!!
  - Commonly only available in blends
- Mohawk
  - Cold tolerant (developed in VA)
  - High yielding
  - Little research on subsistence
- More varieties on horizon, multiple blends on market

Blends of Seeded Bermudagrasses	
Trade Name	**Components**
Morhay	Common, Giant
Pasture Supreme	Common, Giant
Pasto Rico	Common, Giant
Ranchero Frio	Cheyenne, Mohawk, Giant
Sungrazer 777	KF 194, CD90160, Jackpot
Sungrazer Plus	KF 194, CD90160, Giant
Texas Tough	Common, Giant
Tierra Verde	Common, Giant
Vaquero	Mirage, Pyramid, CD90160

UGA "Selecting a Forage Bermudagrass Variety"

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Seeded Bermudagrass 3 yr yields

Variety	Tifton GA	Griffin GA	Calhoun Ga
Cheyenne	9156	10225	11691
CD90160	8697	10739	11744
Vaquero	9180	9815	10483
Wrangler	DNS	11075	10996
Coastal	14383	14624	16012

75 lbs N at greenup and after each cutting
Est summer 2002 and harvested 2003-05

Seeded Bermudagrass

Standard Planting Guide

1. Plant in a firm seed bed
   a) Use disc harrow to level
   b) Cultipack to firm the seed bed
2. Plant ~12 lbs. coated seed per acre
3. If broadcast- repack after spreading
4. Do not plant deeper than 1/4 inch

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Seeded Bermudagrass

Standard Planting Guide Cont.

5. Plant in the spring after soil has warmed to 65^{o} F.
    a) In most areas mid April through June.
6. *No early weed control options*

Proper Firmness

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Bahiagrass

- Slower to establish than hybrid bermudagrass
- Denser sod
  - Treading and grazing tolerant
- Longer grazing season
- Tolerant of low fertility lower pH and wet soils
- Lower producing

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Bahiagrass Varieties

1. **Pensacola (1926, 1937, 1944)**
2. **Tifton 9 (1987)**
3. **Sand Mountain (2001)**
4. **Tifquick (2009?)**
5. **Riata (2009?)**

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Pensacola Bahiagrass

- Has long narrow leaves and is the most widely-grown variety
- Introduced into the United States from South America
- Growth begins early in the spring and continues until mid-summer when the seed heads mature
- Late summer growth is slow and low-quality
- Fairly resistant to ergot

Tifton 9

- *Tifton-9* is a selection from Pensacola bahiagrass
- Developed at the Georgia Coastal Plain Experiment Station
- Tifton-9 is *higher-yielding*, *more vigorous* and has *better seedling vigor* than Pensacola
- More open sod so may work better with legumes and sod seeding

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Bahiagrass Establishment

- Bahiagrass is best established on a well-prepared seedbed in early spring on upland soils or in late spring on low, moist soils.
- Allow the seedling plants to become established before grazing.
- Broadcast or drill 12 to 15 pounds of seed per acre and cover seed 1/4 to 1/2 inch deep.
- A cultipacker-seeder works well

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Bahiagrass Establishment

1. Apply 40 to 50 lbs N per acre after seedlings start to grow
2. Graze or mow to prevent crabgrass from shading seedlings
3. Under cutting produces lower yields than bermudagrass
   a) Usually grazed rather than hayed
4. Apply 100 pounds of N in split applications during the grazing season
   a) Base the N rate on the quantity of forage needed

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What about native species?

- Native species do not tolerate continuous grazing
- These species are more difficult to manage
  - Introduced species offer more advantages to livestock producers

Switchgrass

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SUMMER ANNUAL FORAGE CHOICES

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Pearl Millet

- Grows 3-6 feet tall
- Likes well-drained sandy soils, pH of 5.8 or better
- Tolerates acid soils
- 150 to 200 lbs N/Ac/yr
- 45 to 60 lbs at planting and then 45 to 60 lbs every 4 weeks
- If moisture is limited, reduce N applications
  - *Nitrate accumulator*

Pearl Millet Varieties

1. Tifleaf-3
   a) Dwarf type – more leafy
2. Pennleaf
   a) Improved rust resistance
3. Mil-Hy-500
4. Mil-Hy-300
5. Sunny State
6. PP102M

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Browntop Millet

Pros

- Can be used for hay or grazing
- Very tolerant to low pH and low fertility
- Excellent seed producer

Cons

- May become a weed on crop land
  - Has reseeding ability
  - Long period of seed viability
- Produces less forage than other millets, 60 day maturity

1. Best if broadcast at 20 to 25 lbs seed/Ac
2. Plant late April/early May through August

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Crabgrass

- **Commercial**
  - **'Red River' and 'Quick n Big'**
    - **Reported 3 to 5 tons yield**
- **Common**
  - **2 to 4 ton yields**
- **Pros**
  - **Easy to establish**
  - **Responds to fertilization**
  - **Flourishes in open areas following rainfall**
  - **Better quality than most summer forages**
  - **Will reseed naturally**
- **Con**
  - **Needs moisture**

- Establishment:

1. Lightly harrow and apply 40 lbs N/Ac
1. Plant mid-April to May
2. Plant 3 to 4 lbs seed/Ac
3. Fertilize 40 lbs N/Ac at planting and 40 to 60 lbs N/Ac every 4 weeks.
4. Begin grazing before 8 to 10 inches of growth and graze down to no less than 3 inches

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Teff

- Plant in clean till situations in May/June
- One tested variety ‘Tiffany’
- Grazing in 30-45 days
- Hay analysis in SC has been surprisingly low (9-12% CP and low 50s TDN)
- Some producers use hay/grazing management system to minimize risk of pulling up plants

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Cool Season Annuals

- Can overseed annuals for winter grazing:
  - Ryegrass
  - Oats
  - Wheat
  - Legumes

  - Drill into dormant perennial sod.

Cool Season Annual Grasses

- Best utilized as a complimentary species
- Perform well in dormant bermudagrass pastures
- Broadcasting 25 lbs/ac of annual ryegrass on closely grazed bermudagrass is economical and effective
- *Do not* overseed annual grasses into tall fescue

Annual ryegrass + white clover sod-seeded in dormant bermudagrass

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Legumes for this Region

Legumes for this Region

- Clovers can be a valuable addition to perennial pastures
  - Fix nitrogen
  - Improve grazing season
  - Improve forage production
  - Improve quality
- White clover in tall fescue
- Some winter annuals in bermudagrass
  - Arrowleaf and vetch highly unpalatable

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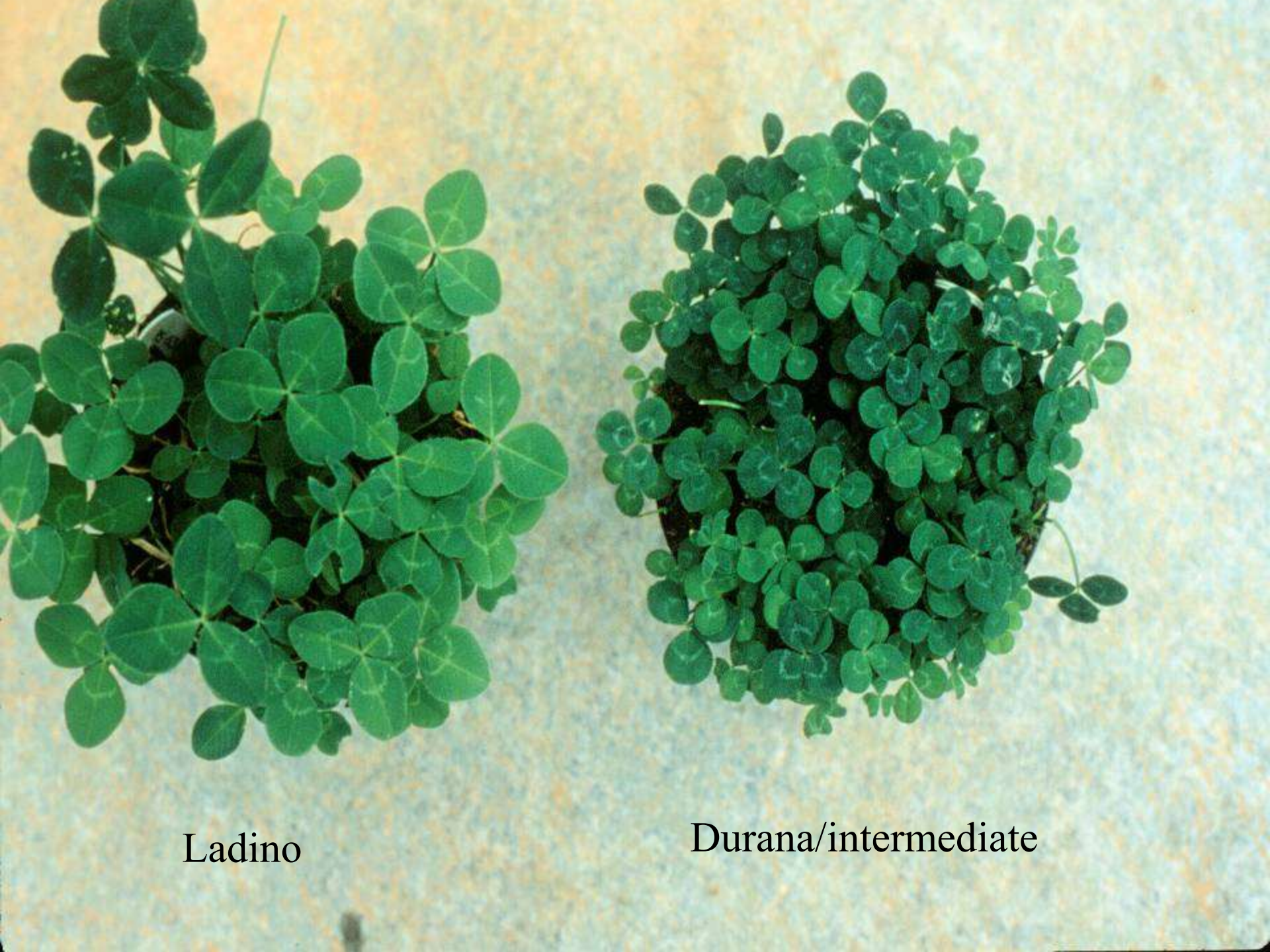
Ladino
Durana/intermediate

Annual Clovers for WS Perennials

- Crimson clover
  - Early spring production
  - Performs well in combination with ryegrass -best choice
- Ball clover
  - Dependable re-seeder and performs well on poorly drained soils
- Subterranean clover
  - Good re-seeder but low production
- Arrowleaf clover
  - Previously one of the most popular annuals
  - Extremely unpalatable for equines

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Clovers and “slobbers”

- Often associated with red clovers, but can occur in any clover variety
  - Rhizoctonia leguminicola a.k.a. black patch
  - Produces an alkaloid known as slaframine
- Occurs normally in cool, wet springs
- Decreases after 10 mo. in hay
- Disappears with feed change after 48-72 hrs
- Normally a cosmetic problem

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Alfalfa

- Typically only persists for a few years
  - Three to four years realistic in Upstate
- Grazing tolerant varieties are available.
- Past Clemson research demonstrates that it can be inter-seeded and grown in combination with bermudagrass for hay production.
  - Furnished at least 200 lbs N /A in this system
- This system is being implemented by progressive hay producers in S. GA

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Soil Nutrient Management

Why do we need nutrient management in forages?

- Improve soil nutrient availability
- Improve forage quality
- Improve yields
- Increase persistence of desirable species
- Increase competition of desirable species with weeds

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Soil Nutrient Management

How do I start managing soil nutrients on my farm?

Need to start Soil Sampling

1. Determine soil pH
2. Evaluate level of soil nutrients
3. Determine Application Rates of Fertilizer and lime

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Tools for Soil Sampling

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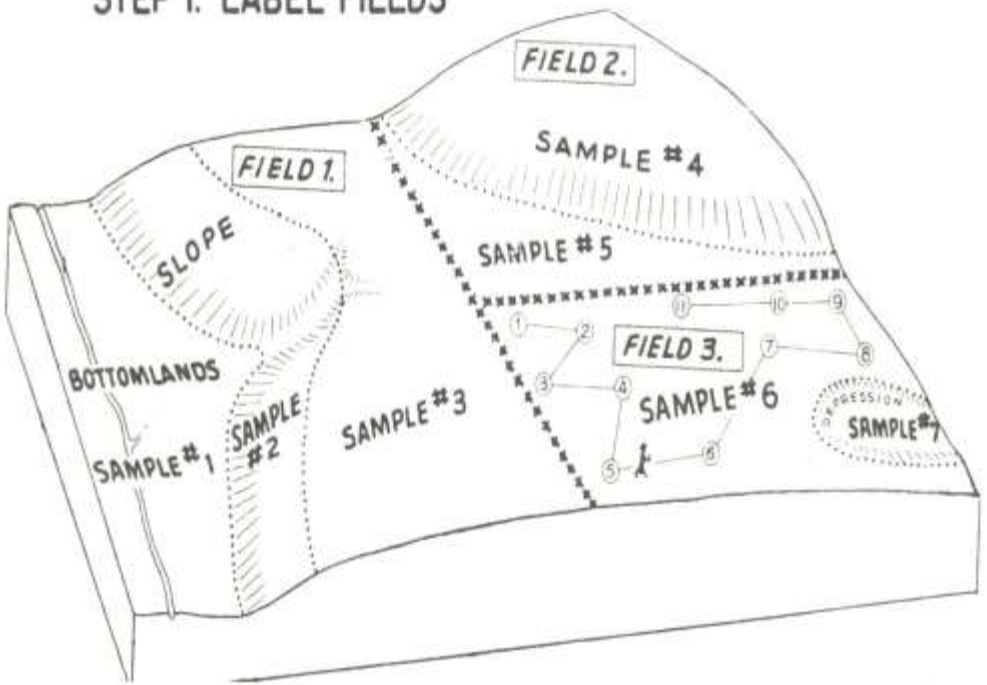
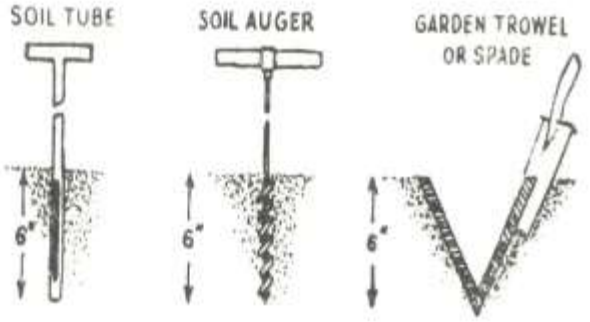
How to Take Soil Samples

STEP I. LABEL FIELDS



Areas cropped or fertilized differently should be sampled separately.

STEP 2. SELECT PROPER TESTING TOOLS



STEP 3. TAKE A COMPOSITE SAMPLE

A COMPOSITE SAMPLE IS A MIXTURE OF SOIL FROM 10 TO 20 PLACES IN THE SAME FIELD AREA AS DIAGRAMED.

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Taking Soil Samples

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Taking Soil Samples

Key Items On Soil Reports

1. Nutrient Levels
2. Soil pH
3. Recommendations

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Plant Nutrients

Macro Nutrients	Micro nutrients
Nitrogen (N)	Manganese (Mn)
Phosphorus (P)	Iron (Fe)
Potassium (K)	Boron (B)
Sulfur (S)	Zinc (Zn)
Calcium (Ca)	Copper (Cu)
Magnesium (Mg)	Molybdenum (Mo)
	Chlorine (Cl)

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Nitrogen (N)

- Essential for amino acids to form protein
- Healthy green color (chlorophyll)
- Highly water soluble makes N highly leachable on deep sandy soils
- Yellow leaves and slow weak growth signs of deficiency

Phosphorus (P)

Component of Plant Membranes
Does not leach (compared to N and K)
Energy Source in Plant

Low Phosphorus

Poor crop growth

- Critical for energy conversions in plant
- Affects all aspects of growth

Poor legume growth

- Reduced survival and activity of N fixing bacteria

Potassium (K)

- Component of cell walls
- Involved in plant enzymes that control photosynthesis and respiration
- Promotes disease resistance/tolerance

Low Potassium

Poor crop growth

- Inhibition through reduced enzyme activity
- Impaired water uptake

Reduced disease resistance/tolerance

Reduced winter hardiness

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What is Soil pH?

The measure of the hydrogen ion concentration in the soil.

- Why is this important?

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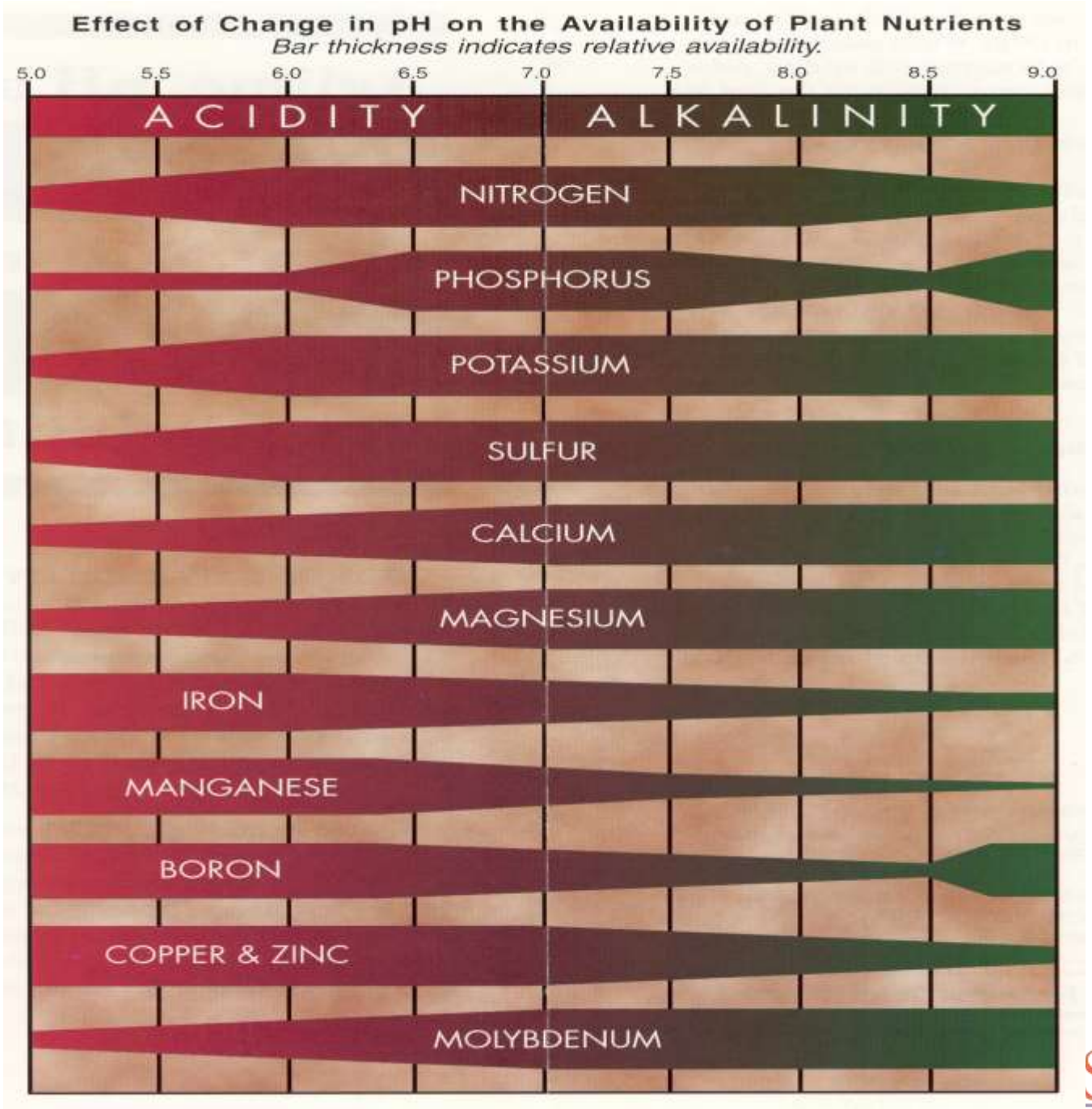

Low soil pH (below 5.5)

- Reduced nutrient availability
  - Phosphorous
- Increased aluminum solubility
  - Stunted root growth
  - Reduced nutrient uptake
- Poor legume growth
  - Survival and activity of N fixing bacteria reduced

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Lime Reaction

Movement into soil and reaction is a slow process (4-6 months)

When preparing land for forage establishment tilling in lime will increase the reaction rate

- Tilling with rotary tiller will give the most through mixing
- Harrows and cultivators usually only mix lime in the top two inches

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Summary

- Choose perennial “base” forage carefully
  - Dependability and grazing persistence are important!
  - Bermuda and Fescue are appropriate bases.
  - Compliment this base forage with appropriate species to improve cool season performance, minimize hay and decrease fertilizer needs.
  - Legumes or annual small grains/ryegrass
  - Stockpiling

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