Partnerships in Forage Trials and Growth Curves for C-Graz Grazing Modeling

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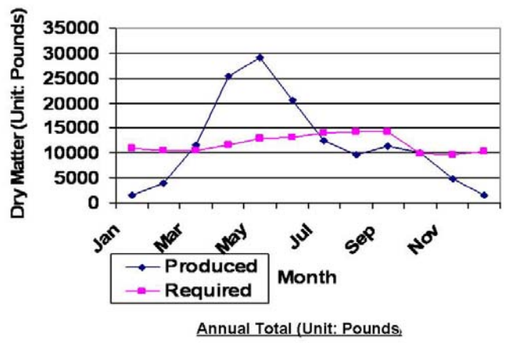
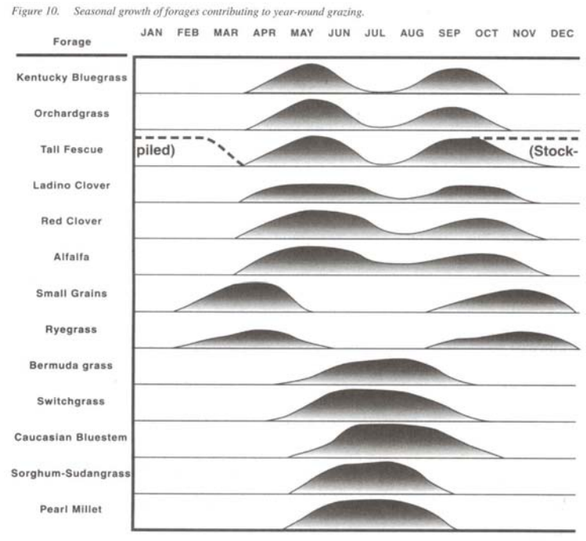
Hosting Maryland Forage Production Trial Simulating A Rotational Grazing System

C- Graz Graphic of Forage Supply and Demand

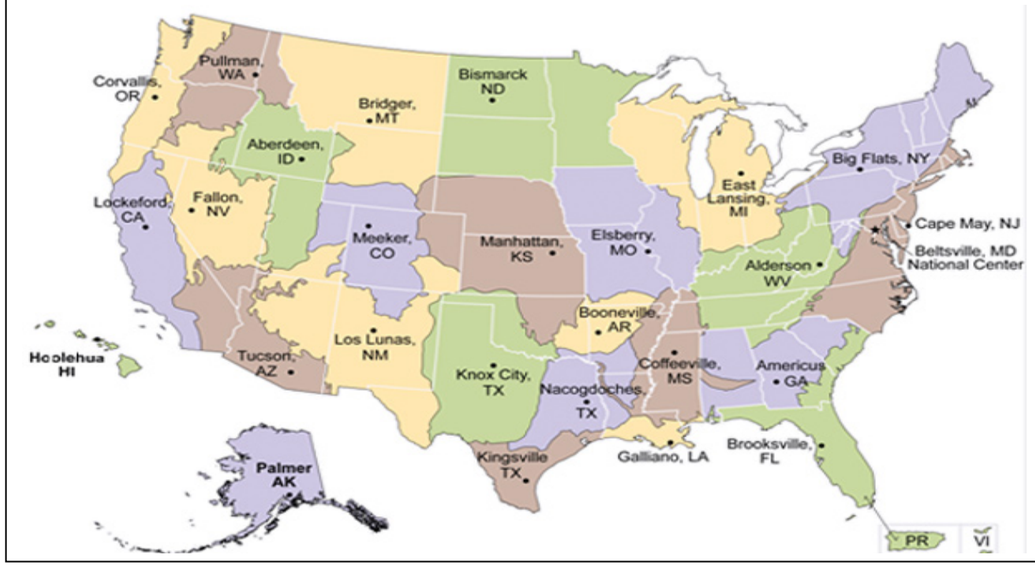


Produced: 142200 **Required:** 141677 **Balance:** 523



Identified Need:

Grazing Computer Models need to be calibrated using real data from clipping studies that model rotational grazing systems for the region the model is being used in.



Parameters and Assumptions for the Study

1. Growth cures vary by climatic region of country. Latitude /day length / temperatures change the cure

Need Regional Data

2. Grazing or harvest times and heights will influence the forage production curve. Most data has not been collected under a grazing model of management.

Need Grazing Forage Growth curves

3. Data can be interpolated from a known soil and climate within a Region.

Data can and needs to be interpreted across sub regions due to cost constraints.
But some is better than none.

The National Plant Material Center is a great location to develop this data due to the existing skill sets and equipment there and the opportunity to strengthen both the Plant Materials Program and the GLCI Program in Maryland.

Forages Evaluated:

Cool Season Species –

What is typically available and improved selections.

Warm Season Species

Native species that are available and adaptable.

Simple Mixes

What is typically available and simple mixes we recommend with legumes.

Public and Private

Involve private companies for support and cutting edge new selections. Put public varieties of Native Warm Season Grasses in study.

Cool Season Trials

Scientific Name	Common Name	Release Name	Purity	Germ
Bromus sitchensis	alaska brome	Hakari		
Bromus valdivianus	pasture brome	Bareno		
Dactylis glomerata	orchardgrass	Athos		
Dactylis glomerata	orchardgrass	Barexcel		
Dactylis glomerata	orchardgrass	Benchmark Plus	92.45%	85.00%
Dactylis glomerata	orchardgrass	Extend	92.45%	85.00%
Dactylis glomerata	orchardgrass	Intensiv		
Lolium arundinaceum	tall fescue	BAR FA 6FRD		
Lolium arundinaceum	tall fescue	BAR FA 9301A		
Lolium arundinaceum	tall fescue	BAR FA BTR9		
Lolium arundinaceum	tall fescue	Enhance	98.40%	85.00%
Lolium arundinaceum	tall fescue	Kora		
Lolium arundinaceum	tall fescue	Select	98.40%	85.00%
Lolium arundinaceum	tall fescue	Max Q		
Lolium arundinaceum	tall fescue	KY-31		
Lolium perenne	perennial ryegrass (tet.)	Grand Daddy		
Lolium perenne	perennial ryegrass (tet.)	Remington		
	festulolium (Italian)	Perun		
	festulolium	Duo		
Dactylis glomerata	orchardgrass	Persist	93.44%	90.00%
Dactylis glomerata	orchardgrass	Tekapo	96.55%	85.00%
1	tall fescue max-Q			
	KY bluegrass			
	red clover			
	ladino clover			
2	tall fescue max-Q			
	red clover			
	ladino clover			
3	tall fescue			
	red clover			
4	tall fescue max-Q			
	white clover			
5	orchardgrass			
	KY bluegrass			
	red clover			
	ladino clover			
6	orchardgrass			
	KY bluegrass			
	red clover			
7	orchardgrass			
	KY bluegrass			
	ladino clover			
8	orchardgrass			
	KY bluegrass			
9	orchardgrass			
	red clover			
10	orchardgrass			
	ladino clover			
			%mix	**lbs**

Mix	11	KY bluegrass		40.00%	8.8	
	horse	perennial rye		20.00%	4.4	
		orchardgrass		19.00%	4.18	
		timothy		10.00%	2.2	
		ladino clover		5.00%	1.1	
Mix	12	orchard		43.00%	9.46	
	renovator	tall fescue		35.00%	7.7	
		timothy		15.00%	3.3	
		alfalfa		5.00%	1.1	
NDPMC	*Thinopyrum intermedium*	intermediate wheatgrass	Manska	97.33%	87.00%	
NYPMC	*Thinopyrum intermedium*	intermediate wheatgrass	NY Unreleased	65.72%	91.00%	
NDPMC	*Thinopyrum intermedium*	intermediate wheatgrass	Reliant	97.34%	94.00%	
MIPMC	*Elymus canadensis*	Canada wildrye	Eureka	97.39%	94.00%	
NDPMC	*Elymus canadensis*	Canada wildrye	Mandan	95.82%	86.00%	
Sharp 5	*Elymus virginicus*	Virginia wildrye	Cuivre River Germplasm	95.05%	83.00%	
GAPMC	*Elymus virginicus*	Virginia wildrye	Kinchafoonee Germplasm	90.00%	75.00%	

Success Stores - What Has Worked:

Remember as a forage crop you need a thick stand fast or farmers will reject warm season grasses, they need the economics to work. It can be done, we have done it. They need to stay off grass till it has started to set seed. As little as a year to 9 months is possible.

Eastern Gamagrass

Always use a corn planter plate planters are the best.

Plant at high rates -10- 12 lbs pls per acre – seed is much cheaper than doing it over again.

Clean the drill first including tubes and drill shanks – spider webs and trash.

Take time to insure accurate planter calibration and seed placement – 3/4 “ for heavy soils and 1” for lighter soils.

Be there to get details right.

Gamagrass Corn Gamagrass Corn

Eastern Gamagrass planted between the rows in a corn silage planting at the Bob and Danny Reed farm in Greensboro, MD. Were able to harvest hay the next year.

Eastern Gamagrass

1.-Spring planting with corn–

Corn planting time, Germ Tech II dry treated seed to have all dormancy broken for spring plantings.
85%vs 50% germination.

Light corn silage with corn herbicides as a nurse crop for Eastern Gamagrass planted at the same time.

Know Eastern Gamagrass herbicide sensitivity.

Eastern Gamagrass 2. Spring Planting – into Residue

At corn planting time sow Germ Tech II into corn residue that was herbicide grown and then be ready to rope wick and / or clip above the Eastern Gamagrass depending on the weeds, but do not let the weeds get above the Eastern Gamagrass for long or set seed.

Clark and George Aist Upper Marboro , MD–
Dormant Eastern Gamagrasss Planting 10 months after planting - Fully mature plants beginning to flower.

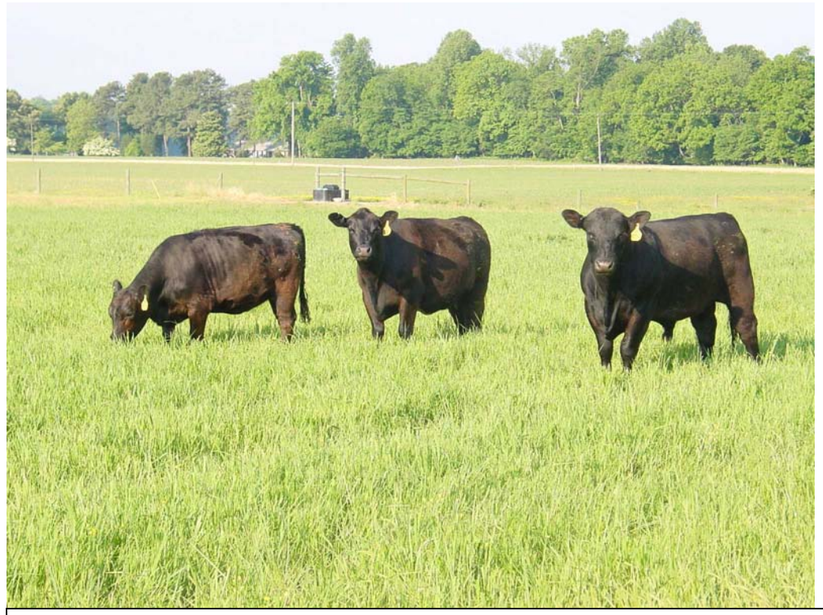
Eastern Gamagrass 3. Dormant fall plantings

After soil temps drop to 50-55 Degrees.

Use herbicides preplant and early post-plant in Spring before germination –WARNING germination it will be early!
Early April in Maryland. Big jump on summer weeds, which will cause you the most problems.

Best with good residue, seeded at high Rates, and clipped

Residue is the key.



Switchgrass at Wye Angus Farm, University of Maryland

Switchgrass

Native grass drill or regular grass drill with suitable boxes.

Seed depth placement is critical and drill calibration. Actual not off the drill box. Drills are like people – unique.

Use varieties selected for good stand establishment In the East, Cave in Rock seems to be the best at this. Again higher rates of seeding 10-12 lbs pls per acre.

1. Spring planted into light corn silage using herbicides planted as a nurse crop

   Know switchgrass herbicide sensitivity.

2. Spring planted into good corn residue raised with herbicides can work well.

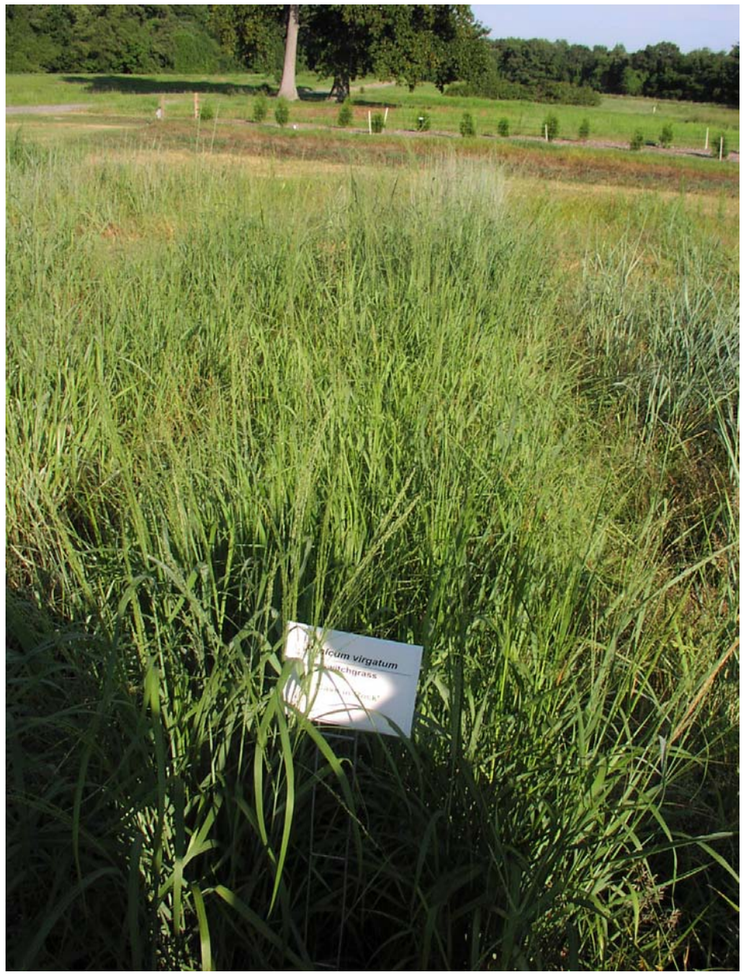
Switchgrass Dormant Fall Planted

3. **Dormant Fall planted into good corn residue raised with herbicides** will probably work better. Be ready to mow or rope wick to prevent shading of seedlings and weed seed production.

Switchgrass, Big Bluestem, Indian Grass, and Little Bluestem Mix

Morris Farm, Baltimore County, Corn residue with spring weeds at planting SPRING PLANTING 40 acre stand was planted in late May using a warm season grass drill from the National PMC/GLCI with seed provided by Maryland GLCI for this demonstration of native warm season grasses for a bison grazing system.

Early September Morris planting is almost a solid stand with many a good mixture of all grasses present with many flowering. Stand was mowed twice, but reside and corn herbicide residual helped stand get started. Will be able to graze or hay next year when correct grass removal heights are reached.



Uniform Cave in Rock
Switch Grass Planting
Part of forage production trial simulating prescribed grazing to develop growth cure data at the NRCS National Plant Materials Center

CRITICAL TOOLS FOR SUCCESS

1. Practice good weed control for forage production. Rope wick use, herbicide residue and nurse crop plantings using herbicides, and clipping to prevent shading and weed seed production and competition for moisture are necessary in all forage plantings to get high stand density and early yielding fields.

2. Be Conservative when managing warm season grass heights. Over grazing and cutting to low with hay equipment will quickly set stands back.

3. Seed at higher rates than traditional warm season wildlife plantings to reduce weed problems and delays in getting a field into forage production.

4. Higher pH's are better for forage production.

5. Regular applications of fertilizer will provide more forage production and value and vigor to the stand after the stand is up.

6. Spray out cool season grasses in the early spring before warm season grasses start growing. Do it regularly.

IMMEDIATE NEEDS

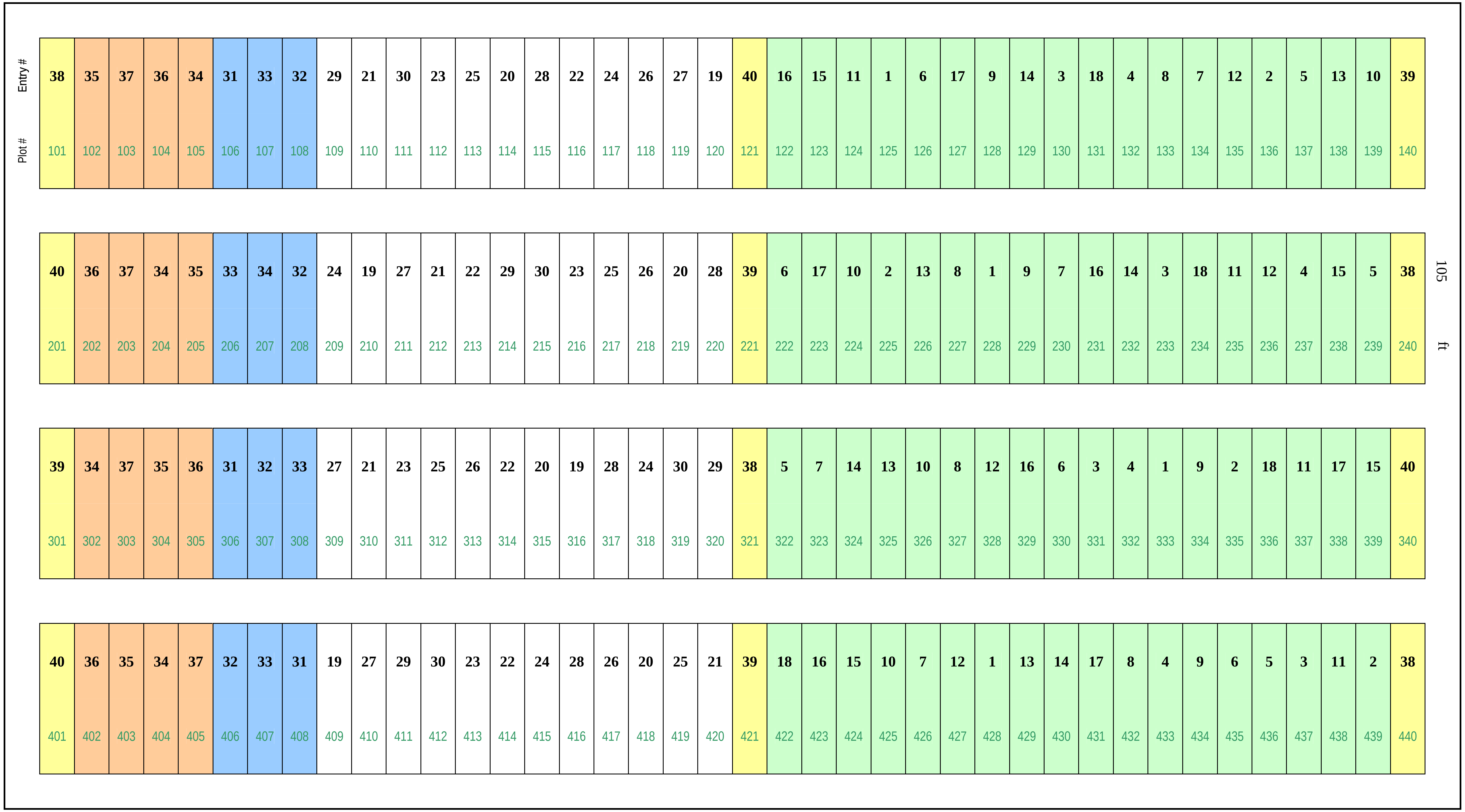
1. Herbicides for warm season grass pasture establishment alone.
2. Forage legumes for warm season grasses
3. Cultivars selected for ease in establishment first then forage needs.

Sample Plot Lay out Details

Cool-Season Grass Forage Variety Trial Location: National Plant Materials Center, P.G. County MD Seeded: 9/23/2005

Plots: 6 rows, 6-inch spacing, 20 feet long with 12 Inches between plots and 5-foot alleys, 15 center alley 42 inch plot width

Farm Rd ^ 137 ft



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Plot #	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140
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