



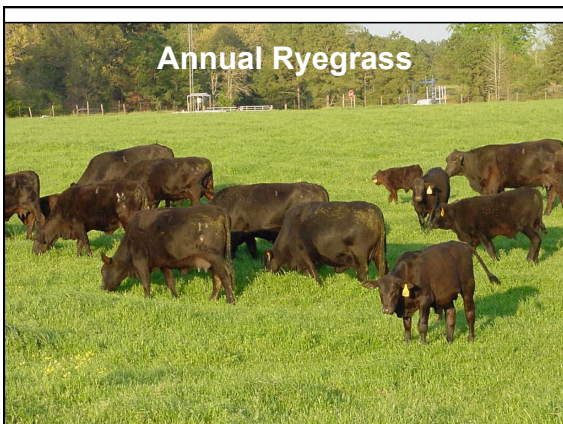
Winter Forage Options:

Annual Ryegrass, Rye, Oats, Wheat, Legumes, etc.

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Planting Options

	Seeding Rate (lb/ac)	Planting Depth	Months of Use
Ryegrass Only	25-30	0-0.5 in	Feb to May
Small Grain Only	90-100	1-1.5 in	Dec to April
Ryegrass & Small Grain	15-20 (ryegrass)	See above	Dec to May
	90-100 (small grain)		
Ryegrass & Legume	15-20 (ryegrass)	0-0.5 in (ryegrass)	Feb to May
	2/3 of pure stand seeding rate (legume)	0-1.0 in depending on legume	



Ryegrass


- Later maturity
 - Graze short to prevent competition when over-seeded into bermudagrass pastures
- Plant: Sept- Oct (25-30 lbs/acre)
- Graze: March-May
- Varieties:
 - Nelson
 - TAMTBO
 - TAM 90
 - Marshall
 - Passerel Plus

Ryegrass Forage Yields Overton

Variety	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015
Big Boss	6,757	10,813	5,530	7,563	7,124
Diamond T	6,577	9,438	5,170	8,186	7,288
TAMTBO	7,457	9,315	5,936	8,220	8,265
Prine	6,556	9,175	5,542	6,236	7,033
Nelson	7,274	9,165	6,177	7,104	7,639
Maximus	6,946	9,107	5,064	6,052	6,417
Passerel Plus	6,387	8,493	4,900	6,338	6,268
TAM 90	6,503	8,018	4,485	7,140	6,754
Marshall	6,245	7,969	5,789	7,851	7,412
Gulf	5,993	6,290	4,961	6,625	6,515

Small grains have earlier forage production than annual ryegrass and legumes



Rye

- Ryegrass Mixture
- Most cold tolerant
- More winter forage than other small grains
- Graze: Dec-April
- Plant: Sept-Oct (90-100 lbs/acre)
- Varieties:
 - Elbon
 - Bates
 - Wintergrazer



Rye Forage Yields Overton

Variety	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014
Maton II	6,760	5,440	7,706	5,103	-
Maton	6,968	-	-	5,570	3,487
NF Bates	5,808	5,721	-	-	-
Elbon	-	6,141	8,304	5,258	3,763

Small Grains 2014-2015

Variety/Line		Harvest 1	Harvest 2	Harvest 3	Total Season Yield
TX-RYE-12	Rye	247	1666	4767	6680
Heavy Grazer	Oats	188	1222	4650	6060
Elbon	Rye	245	1781	2893	4919
Rymin	Rye	103	719	3206	4028

Oats

- More productive in the fall
- Lacks cold tolerance
- Apply N after oats are up
 - 60-80 lb N/ton for forage
- Graze: Nov-Dec, Feb-Apr
- Plant: Sept-Oct (90-100 lbs/acre)
- Varieties:
 - Heavy Grazer
 - Horizon 474
 - Dallas



Oat Forage Yields Overton

Variety	2009-2010	2010-2011	2011-2012	2013-2014
Dallas	5,558	-	-	-
Heavy Grazer	5,016	5,662	6,854	3052
Harrison	6,305	5,367	-	-
Bob	4,084	4,830	-	-
Horizon	5,333	-	-	-

Wheat

- Plant: Sept-Oct (90-100 lbs/acre)
- Graze: Dec-April
- Cold tolerant
- Varieties:
 - Coker
 - Savage
 - Pioneer



Wheat Forage Yields Overton

Variety	2009-2010	2010-2011	2011-2012	2013-2014
Heavy Grazer	5,498	4,091	-	2264
Ranger	-	4,271	-	-
Sturdy	5,354	4,413	-	-
Fannin	4,939	5,241	-	-
Endurance	-	-	7,711	-
Coker	5,219	4,526	-	-

Triticale

- Cross between wheat and rye
- Cold tolerant with good winter production
- Higher forage yield than wheat; lower quality
- Rainfall: 15-50"
- Plant: Sept-Oct (90-100 lbs/acre)
- Graze: Dec-April





Advantages of Legumes

- Reduction/elimination of inorganic N fertilizer
- Reduction in winter feeding costs
- Improved animal performance
- Lengthened grazing season
- Improved soil tilth
- Wildlife (white-tailed deer) programs
- Weed suppression/reduced herbicide

Forage Legumes as Nitrogen Source

- Nitrogen is the first limiting nutrient for crop production.
- Forage legumes fix atmospheric N through symbiosis with *Rhizobium* bacteria.
- A healthy stand of arrowleaf or crimson clover overseeded on warm season perennial grass pasture in East Texas:
 - Can provide a nitrogen input of 50 to 100 lbs N/acre/year.
- This is accomplished through a grazing system with recycling of animal wastes.

Factors Affecting *Rhizobium* N-Fixation

- Low soil pH
- Low soil nutrient status
- High temperatures
- Low/high soil moisture
- Improper inoculation
- Improper treatment of *Rhizobium*
- Wrong inoculant

Pineywoods

- **Crimson clover**
 - Bottomland to uplands
- **Arrowleaf clover**
 - Uplands
- **Ball clover**
 - Bottomland
- **White clover**
 - Bottomland
- **Rose clover**
 - Uplands
- **Hairy vetch**
 - Poor Grazing Tolerance
- **Alfalfa**



Arrowleaf Clover

- Can be managed for reseeding
- **Apache Arrowleaf (TAMU-Overton)**
 - Disease tolerant
- **Black Hawk (TAMU- Overton)**
- Plant: 8-10 lbs/ac
- Prefers well drained soils
- Forage production season starts (almost) as early as crimson and continues through May



Crimson Clover

- Best combination of cold tolerance and early spring forage production
- Can be managed for reseeding, but has less hard seed than arrowleaf or white
- Plant: 16-20 lbs/ac
- Prefers well drained soils
- Less expensive seed (common)



Rose Clover

- Overton R18
- Early spring forage production, not as good as crimson
- Good choice for reliable reseeding on upland sites
- Not adapted to wet, poorly drained sites



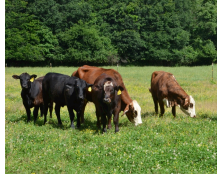
Ball Clover

- Soil type: loam, clay-loam
- Soil pH: 6.5-8
- Adapted to wetter sites
- High bloat potential
- Use: over-seeding pastures 2-3 lb/acre
- Excellent reseeding



White Clover

- Best adapted to bottomland sites
- Generally a reseeding annual in east Texas
- Late spring forage production
- Economical establishment (3-4 lbs/ac)
- **Neches White Clover**



Hairy Vetch

- Broad soil adaptation
 - Sandy loam to clay
 - Will tolerate high pH of Blacklands
- Use: over-seeding pastures 20-25 lb/A
- Soil pH: 6-8
- Grazing tolerance poor
- Reseeding not reliable
- Great cover crop





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Planting Methods

- Prepared Seedbed
 - Destroy Existing Vegetation
 - Smoothing Seedbed
 - Rolling (Packing)



Planting Methods



- Light Disking (1-2" deep)
 - Used on bermudagrass and bahiagrass
 - Only one trip with disk
 - Summer grasses need to be short
 - Provides loose soil to cover seed
 - Reduces summer grass competition







Planting Methods

- **Undisturbed Sod-Drilled**
 - Planting date is several weeks later than other methods
 - Requires expensive seeders to put seed in the soil
 - Pasture should be short (2")



Planting Methods

- **Undisturbed Sod-Broadcast**
 - Limited to annual ryegrass and small seeded clovers
 - Pastures should be short (2")
 - Planting date is several weeks later
 - Planting equipment not necessary



Establishment of Ryegrass

- Primarily used east of I-35 because of higher rainfall requirements
- Broadcasting ryegrass on undisturbed sod:
 - Requires min. planting equipment
 - Planting date is later b/c of summer grass competition
 - Sufficient forage for grazing is not available until Feb
- Late maturity of ryegrass interferes with warm-season grass recovery
 - Do not overseed hay meadows

Establishment of Small Grains

- Seeding Rates and Dates
 - Drilled at 90-100 lbs/acre
- Planting Depth
 - 1.0-1.5 inches
 - Plant to soil moisture



Fertilization of Winter Pasture

- Selection of planting site, soil test and liming should be done in spring before planting winter pasture
- Small grains and ryegrass grow well on soils with pH 6-6.5
- P & K fertilization should be based on soil test recommendations.
- N fertilization of overseeded small grain-ryegrass
 - Split into 3-4 applications of 50-60 lbs N/acre
 - Initial application delayed until after frost
 - Additional N applied about every 6 weeks




Legume Establishment Principles

- Choose the appropriate species.
- Buy coated/inoculated seed.
- Prepare site in Autumn
 - Appropriate timing
 - 6-8 weeks prior to first frost
 - Short sod
 - Lightly disk
- Use best seeding method available
 - Drill
 - Broadcast, followed by dragging.

Coated vs. Uncoated Seed

- Arrowleaf and Crimson Clover Coated Seed
 - Coating = 1/3 of weight
 - Increase seeding rate (lb/ac) by 25%
- White and Ball Clover Coated Seed
 - Coating = 1/2 of weight
 - Increase seeding rate (lb/ac) by 50%
- For EQIP
 - Plant based on PLS (pure live seed)
 - Not economical to plant coated seed
 - Must inoculate seed yourself



After planting...

- **DO NOT** apply N fertilizer to a pure legume stand
- Ryegrass-legume mixture:
 - 60 lb N/acre applied ~ Thanksgiving
- If over-seeding an undisturbed sod:
 - Graze until daily low temps ~40° F





Clover Reseeding

- Can you afford to defer grazing?
 - What is the value of the crop for grazing?
 - Do you have additional forage cattle can use in the late spring?
 - Can you accept a slow start on your warm season grass?
 - Requires 30 days from bloom to seed set.

Pasture Herbicides to Consider

- Legume Program

- 2,4-D
- Weedmaster
- Outlaw (Agri Star)
- Range Star (Agri Star)
 - Generic Weedmaster



- Non-Legume Program

- GrazonNext HL (Dow)
- Grazon P+D (Dow)
- Pastora (Bayer)
- Gunslinger (Agri Star)
 - Generic Grazon P+D
- Cimarron anything (Bayer)
- Tordon 22K (Dow)
- Sendero (Dow)
- Chaparral (Dow)
- Redeem (Dow)