

Crops Information

Table 1. Forage Realistic Yield Potential

Crops	Yield Units	Realistic Yields/Acre
Alfalfa	tons	4-6
Bahiagrass	tons	3-5
Bahiagrass with Legume	tons	3-5
Clovers (all)	tons	2-4
Common Bermudagrass (pasture)	tons	3-5
Common Bermudagrass / with Legume (pasture)	tons	3-5
Eastern Gamagrass	tons	6-8
Hybrid Bermudagrass (hay)	tons	5-6
Hybrid Bermudagrass / Legume (hay)	tons	5-6
Lespedeza	tons	2-4
Mixed Summer Perennial Grass (Bahia / Bermudagrass / Dallisgrass)	tons	3-5
Mixed Summer Perennial Grass (Bahia / Bermudagrass) with Legume	tons	3-5
Perennial Winter Grass (Tall Fescue)	tons	2-4
Perennial Winter Grass (Tall Fescue) / with Legume	tons	2-4
Ryegrass monocrop	tons	4-5
Ryegrass over seeded	tons	3-4
Ryegrass / with Legume	tons	3-4
Small Grains for forage (Oats, Rye, Wheat, Barley)	tons	2-4
Switchgrass	tons	6-8
Temporary Summer Grasses (Millets, Sorghum-Sudan Hybrids, Crabgrass)	tons	4-8

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Table 2. Row Crop Realistic Yield Potential

Crop	Yield Units	Realistic Yields/Acre
Corn (grain)	bushels	100-250
Corn (silage)	wet tons	12-18
Cotton	bales	1-3
Peanuts	lbs	3,200
Rice	bushels	144 -164
Sorghum (grain)	bushels	80 - 140
Sorghum (silage)	wet tons	12-18
Soybeans	bushels	25-55
Sweet Potatoes	cwt ^A	150-160
Watermelons	cwt	100-200
Wheat (grain)	bushels	40-80

^A cwt: hundred weight

Sources: Mississippi State University Extension Service Soil Tests Recommendations Manual;
Mississippi State University Extension Service Agronomy Handbook

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Table 3. Nitrogen Credit from Previous Legume Crop

Cover Crop	lbs of nitrogen/acre	
	Potential	Expected
Alfalfa	250	125
Crimson Clover	100	30-50
Hairy Vetch	150	50-70
Winter Peas	80	30-50
Arrowleaf Clover	100	30-50
Austrian Winter Pea	195	70-90
Ball Clover	90	30-50
Berseem Clover	105	30-50
Red Clover	110	30-50
Sub Clover	105	50-70
White Clover	130	50-70
Lespedeza	150	50-75

Note: Potential nitrogen production will only be obtained when clover is in full bloom. Most cover crops are killed prior to full bloom resulting in much less nitrogen production. The values shown in the expected column should be used when clovers are killed prior to full bloom. The maximum amount of available nitrogen to a following crop that is provided by legumes at full bloom and small grain or ryegrass in the boot stage. These values should be reduced according to account for less than optimum growth or if grazed, they should be reduced by one-half. Due to the fact that nitrogen released from legumes is not readily available and is associated with organic matter; nitrogen credit from legumes should be given during the following growing season for crop uptake.

Source: Mississippi State University Extension- CES Publication 1552; University of Florida Extension- Nitrogen Fixation and Inoculation of Forage Legume

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Table 4. Row Crop Nutrient Recommendations for Row Crops

Crop Type		Soil Test Index	Nutrient Recommendation		
			N (lbs/unit)	P (lbs/ac)	K (lbs/ac)
Corn (Grain)		Very low	1.3 lbs/bu	140	140
		low		100	100
		medium		70	70
Corn / Sorghum (Silage)		Very low	10 lbs/ton	120	120
		low		80	120
		medium		60	120
Cotton	CEC \leq 7 ^A	Very low	55 lbs/bale	120	120
		low		80	90
		medium		40	60
Cotton	CEC 7-14	Very low	65 lbs/bale	120	120
		low		80	90
		medium		40	60
Cotton	CEC 14-25	Very low	75 lbs/bale	120	120
		low		80	90
		medium		40	60
Peanuts ^B		Very low	50 lbs/acre	120	120
		low		80	120
		medium		60	120
Rice		Very low	1.3 lbs/bu	80	120
		low		40	120
		medium		30	80
Sorghum (Grain)		Very low	1.3 lbs/bu	120	120
		low		80	120
		medium		60	120
Soybeans ^B		Very low	none	120	120
		low		60	60
		medium		30	60
Sweet Potatoes		Very low	3.2 lbs/ cwt ^C	200	300
		low		200	300
		medium		100	200
Watermelons (non-irrigated) Watermelons (irrigated) Watermelons (plastic culture)		Very low	0.5 lbs/ cwt	150	200
		low	0.8 lbs/ cwt	150	200
		medium	0.7 lbs/ cwt	100	150
Wheat (grain)		Very low	2 lbs/bu	90	90
		low		60	60
		medium		30	30

^A Nitrogen recommendations for cotton are based on the soil Cation Exchange Capacity (CEC).

^B Peanuts and Soybeans can meet their own need for nitrogen with the proper Rhizobiu inoculant, but a good starter fertilizer should be used for Peanuts. ^C cwt: hundred weight

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Table 5. Crop Nutrient Recommendation for Maintaining Grazing Forages

Crop Type	Soil Test Index	Nutrient Recommendation		
		N *(lbs/unit)	P (lbs/ac)	K (lbs/ac)
Alfalfa	Very low	none	180	180
	low		120	120
	medium		60	120
Bahigrass	Very low	60 lbs/ton	100	100
	low		50	50
	medium		25	25
Bahigrass / with Legume	Very low	30 lbs/ton	90	90
	low		60	60
	medium		30	30
Clovers (All)	Very low	none	120	120
	low		60	60
	medium		30	30
Common Bermuda Grass	Very low	60 lbs/ton	100	100
	low		50	50
	medium		25	25
Common Bermuda Grass With Legume	Very low	30 lbs/ton	120	120
	low		60	60
	medium		30	30
Eastern Gamagrass	Very low	60 lbs/ton	120	120
	low		60	60
	medium		30	30
Perennial Pasture grass (Common Bermuda, Bahigrass, Dallisgrass)	Very low	60 lbs/ton	100	100
	low		50	50
	medium		25	25
Perennial Pasture grass (Common Bermuda, Bahigrass, Dallisgrass) With Legume	Very low	30 lbs/ton	90	90
	low		60	60
	medium		30	30
Perennial Winter Grass (T. Fescue)	Very low	50 lbs/ton	100	100
	low		50	50
	medium		25	25
Perennial Winter Grass (T. Fescue) With Legume	Very low	25 lbs/ton	120	120
	low		60	60
	medium		30	30

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Table 5. Crop Nutrient Recommendation for Maintaining Grazing Forages (con't)

Crop Type	Soil Test Index	Nutrient Recommendation		
		N (lbs/unit)	P (lbs/ac)	K (lbs/ac)
Ryegrass	Very low	50 lbs/ton	100	100
	low		50	50
	medium		25	25
Ryegrass With Legume	Very low	30 lbs/ton	120	120
	low		60	60
	medium		30	30
Small Grain (Oats, Rye, Wheat, Barley)	Very low	20 lbs/ton	90	90
	low		60	60
	medium		30	30
Switchgrass	Very low	60 lbs/ton	90	90
	low		60	60
	medium		30	30
Temporary Summer Grasses (Pearl Millet, Sorghum-Sudan Hybrids, Browntop Millet, Crabgrass)	Very low	60 lbs/ton	120	120
	low		60	60
	medium		30	30

Inoculate all legume seed with the proper bacteria to insure maximum nitrogen fixation. Legumes normally convert nitrogen from the atmosphere to a form used by plants, if they are properly inoculated with the correct soil bacteria. Clovers and other legumes supply some nitrogen fertilizer to the grass. Nitrogen fertilizer requirements for a grass growing with a legume can be reduced by 40 to 60 percent, compared to nitrogen recommendations for a grass growing without legumes.

* Note: Nitrogen recommendations are based the realistic yield goal in tons per acre for the given forage and are given in tons per acre of nitrogen required.

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Table 6. Crop Nutrient Recommendation for Maintaining Haying Forages

Crop Type	Soil Test Index	Nutrient Recommendation		
		N (lbs/unit)	P (lbs/ac)	K (lbs/ac)
Alfalfa	Very low	none	180	180
	low		120	120
	medium		60	120
Bahigrass	Very low	80 lbs/ton	80	120
	low		60	80
	medium		40	80
Bahigrass / with Legume	Very low	40 lbs/ton	80	120
	low		60	80
	medium		40	80
Clovers (All)	Very low	none	120	120
	low		60	60
	medium		30	30
Common Bermuda Grass	Very low	80 lbs/ton	80	120
	low		60	80
	medium		40	80
Common Bermuda Grass / with Legume	Very low	40 lbs/ton	80	120
	low		60	80
	medium		40	80
Hybrid Bermudagrass (Coastal, Alicia, Tifton, Sumrall, etc.)	Very low	80 lbs/ton	100	100
	low		60	80
	medium		40	80
Lespedeza	Very low	none	105	105
	low		70	70
	medium		35	70
Mixed Summer Perennial Grass (Common Bermuda, Bahigrass, Dallisgrass)	Very low	80 lbs/ton	80	120
	low		60	80
	medium		40	80
Mixed Summer Perennial Grass (Common Bermuda, Bahigrass, Dallisgrass) / with Legume	Very low	40 lbs/ton	80	120
	low		60	80
	medium		40	80
Perennial Winter Grass (T. Fescue)	Very low	60 lbs/ton	100	100
	low		50	50
	medium		25	25
Perennial Winter Grass (T. Fescue) / with Legume	Very low	25 lbs/ton	120	120
	low		60	60
	medium		30	30

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Table 6. Crop Nutrient Recommendation for Maintaining Haying Forages (con't)

Crop Type	Soil Test Index	Nutrient Recommendation		
		N *(lbs/unit)	P (lbs/ac)	K (lbs/ac)
Ryegrass	Very low	60 lbs/ton	120	120
	low		60	60
	medium		30	30
Ryegrass / with Legume	Very low	25 lbs/ton	120	120
	low		60	60
	medium		30	30
Small Grain (Oats, Rye, Wheat, Barley)	Very low	50 lbs/ton	90	90
	low		60	60
	medium		30	30
Temporary Summer Grasses (Pearl Millet, Sorghum-Sudan Hybrids, Browntop Millet, Crabgrass)	Very low	80 lbs/ton	120	120
	low		60	60
	medium		30	30

Inoculate all legume seed with the proper bacteria to insure maximum nitrogen fixation.

Legumes normally convert nitrogen from the atmosphere to a form used by plants, if they are properly inoculated with the correct soil bacteria. Clovers and other legumes supply some nitrogen fertilizer to the grass. Nitrogen fertilizer requirements for a grass growing with a legume can be reduced by 40 to 60 percent, compared to nitrogen recommendations for a grass growing without legumes.

* Note: Nitrogen recommendations are based the realistic yield goal in tons per acre for the given forage and are given in tons per acre of nitrogen required.

Sources: Mississippi State University Extension Service Soil Tests Recommendations Manual; Mississippi State University Extension Service Agronomy Handbook;

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Table 7. Crop Nutrient Recommendation for Establishing Perennial Forages

Crop Type	Soil Test Index	Nutrient Recommendation		
		N *(lbs/unit)	P (lbs/ac)	K (lbs/ac)
Bahigrass	Very low	30 lbs/ac	100	100
	low		50	50
	medium		25	25
Bahigrass / with Legume	Very low	30 lbs/ac	120	120
	low		60	60
	medium		30	30
Common Bermuda Grass	Very low	30 lbs/ac	80	120
	low		60	80
	medium		40	80
Common Bermuda Grass / with Legume	Very low	30 lbs/ac	80	120
	low		60	80
	medium		40	80
Eastern Gamagrass	Very low	30 lbs/ac	120	120
	low		60	60
	medium		30	30
Hybrid Bermudagrass (Coastal, Alicia, Tifton, Sumrall, etc.)	Very low	30 lbs/ac	100	100
	low		60	80
	medium		40	80
Mixed Summer Perennial Grass	Very low	30 lbs/ac	80	120
	low		60	80
	medium		40	80
Mixed Summer Perennial Grass / with Legume	Very low	30 lbs/ac	80	120
	low		60	80
	medium		40	80
Perennial Winter Grass (T. Fescue)	Very low	30 lbs/ac	100	100
	low		50	50
	medium		25	25
Perennial Winter Grass (T. Fescue) / with Legume	Very low	30 lbs/ac	120	120
	low		60	60
	medium		30	30
Switchgrass	Very low	30 lbs/ac	90	90
	low		60	60
	medium		30	30

* Note: Nitrogen recommendations are for establishing forages and are given in pounds per acre.

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Table 8. Crop Nutrient Recommendation for Establishing Legume Forages

Crop Type	Soil Test Index	Nutrient Recommendation		
		N (lbs/unit)	P (lbs/ac)	K (lbs/ac)
Alfalfa	Very low	none	180	180
	low		120	120
	medium		60	120
Clovers (All)	Very low	none	120	120
	low		60	60
	medium		30	30

Inoculate all legume seed with the proper bacteria to insure maximum nitrogen fixation. Legumes normally convert nitrogen from the atmosphere to a form used by plants, if they are properly inoculated with the correct soil bacteria. Clovers and other legumes supply some nitrogen fertilizer to the grass. Nitrogen fertilizer requirements for a grass growing with a legume can be reduced by 40 to 60 percent, compared to nitrogen recommendations for a grass growing without legumes.

Sources: Mississippi State University Extension Service Soil Tests Recommendations Manual; Mississippi State University Extension Service Agronomy Handbook;

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Table 9. Estimated Nutrient Removal Rates for Selected Crops

Crop Type	Yield Unit	lbs./acre/unit yield		
		N	P	K
Alfalfa (hay)	1 ton	52	12	50
Bahiagrass (hay)	1 ton	25	7	42
Barley	1 ton	15	5	30
Bermuda grass (hay)	1 ton	50	12	43
Clovers (hay)	1 ton	40	10	40
Corn (grain)	1 bushel	0.96	0.4	0.27
Corn (silage)	1 wet ton	10	4	10
Cotton (lint & seed)	1 bale	32	12	16
Eastern Gamagrass	1 ton	40	4.0	40
Lespedeza	1 ton		10	23
Peanuts	1 ton	70	11	16
Peanuts, nuts & vines	1 ton	140	15	150
Perennial Winter Grass (Tall Fescue) for hay	1 ton	40	9	48
Perennial Winter Grass (Tall Fescue) for pasture	1 ton	10	2.25	12
Oats (grain)	1 bushel	0.8	0.25	0.2
Oats (hay)	1 ton	13	8	40
Rice	1 bushel	0.57	0.30	0.15
Ryegrass (hay)	1 ton	60	16	50
Sorghum (grain)	bushels	0.79	0.45	0.23
Sorghum (silage)	wet tons	10.5	4.4	10
Soybeans	bushels	3.8	0.8	1.5
Sweet Potatoes	1 cwt ^A	0.52	0.23	1.00
Watermelon	1 cwt	0.42	0.12	0.74
Wheat (grain)	1 bushel	1.17	0.6	0.33
Wheat (straw)	1 bushel	13	3	23
Switchgrass	1 ton	22	9	46
Sorghum-Sudan grass	1 ton	40	6.6	47

Note: When forages are grazed by cattle the nutrient removal is roughly 25% of the removal rate when forages are cut for hay.

^A cwt: hundred weight

Sources: Mississippi State University Extension Service Agronomy Handbook; University of Missouri Extension- WQ Publication 430; North Carolina State University Extension- AG Publication 439-16W;