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Seasonal Production of Annual Forage Legumes at Overton, 1986-87

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Summary

Twenty-seven annual clovers, including arrowleaf, crimson, subterranean, berseem, ball, and six vetches were evaluated for forage production and adaptation at Overton in 1986-87. Mt. Barker subterranean clover was the most productive annual clover with 5,126 lbs DM/A, while Meechee arrowleaf produced 1,077 lbs DM/A. Woodford vetch produced 4,316 lbs DM/A in 1986-87 while Vantage produced 204 lbs DM/A.

Introduction

Reseeding winter-annual legumes have the potential to provide high quality grazing during late fall, winter, and spring without the costs of nitrogen fertilizer. The distribution of forage production from these legumes is a direct complement to warm-season perennial grasses. The objectives of these experiments were: 1) to determine seasonal distribution of annual forage legume dry matter production; and 2) to determine the general adaptation of annual forage legumes to East Texas soil and climatic conditions.

Procedure

Twelve annual clovers and six vetches were drilled into a native sod of common bermudagrass and *Paspalum setaceum* on October 7, 1986. A small-plot drill with six double disk openers, spaced nine inches apart, was used to place the seed one-half inch deep in the 5 × 10-ft plots. All plots were fertilized according to soil tests prior to planting. Fertilizer applied was 100 lbs P₂O₅, 180 lbs K₂O, and 1.5 lbs B/A. The clovers were harvested at 2.25 inches and the vetch at 1.75 inches with a rotary mower.

Fifteen varieties of sub clover were established on October 10, 1986 in a prepared seedbed. The 4 × 4-ft plots were harvested at 1.5 inches. Fertilizer applied was the same as the annual clovers.

Seeding rates and Rhizobium inoculants for each legume species are shown in Table 1. Peat inoculant, supplied by the Nitragin Co., was applied at 1.6 oz per pound of seed with Pelgel solution used as adhesive to stick inoculant to the seed.

Each experiment was arranged in a randomized complete block design with four replications for the annual clover and vetch evaluations and three replications for the sub clover tests. At each harvest, subsamples were weighed, dried at 60°C for 48 hours and weighed again, to calculate dry matter yield per acre.

Results

Mt. Barker sub was the most productive forage legume in 1986-87 (Table 2). Sub clover production ranged from

5,126 lbs DM/A for Mt. Barker to 1,727 lbs DM/A for Daliak. Peak production was in the March 31 harvest with Nangeela and Koala producing 2,363 and 2,242 lbs DM/A, respectively. The earlier varieties, Nungarin, Dalkeith, Daliak, Geraldton, and others, decreased in yield by the April 27 harvest. Tallarook, a later variety, topped the other varieties in the April 27 harvest.

Production of Woodford vetch was higher than the previous season with 4,316 lbs DM/A (Table 3). Hairy vetch followed with 3,055 lbs DM/A, a drop from the previous season yield. The common vetches, Vanguard, Cahaba White, Nova II, and Vantage, are not well-adapted to east Texas growing conditions. Production of these vetches is generally well below that of Woodford and Hairy vetch.

Annual clover forage production in 1986-87 ranged from 3,549 to 1,077 lbs DM/A for Dixie crimson and Meechee arrowleaf, respectively (Table 4). This is a reversal of the expected forage production potential for crimson and arrowleaf at Overton. Forage production of arrowleaf and ball clover was depressed relative to crimson and berseem. Both crimson and berseem clover maintained their expected seasonal yield relative to previous years.

TABLE 1. SEEDING RATES AND *RHIZOBIUM* INOCULANTS USED IN EVALUATION OF ANNUAL FORAGE LEGUMES

Species	Seeding Rate		Inoculant Type ¹
	--- lbs/A ---		
Arrowleaf	14.3		0
Ball	3.6		B
Berseem and Crimson	19.6		R
Rose and Subterranean	19.6		WR
Common Vetch	35.0		C
Hairy and Bigflower Vetch	25.0		C

¹Supplied by the Nitragin Co., Milwaukee, WI. Applied at 1.0 oz per pound of seed with Pelgel solution as an adhesive.

TABLE 2. SEASONAL FORAGE PRODUCTION OF SUBTERRANEAN CLOVER AT OVERTON, 1986-87

Variety	Harvest Date			Total
	----- lbs DM/A -----			
	2-11-87	3-31-87	4-27-87	
Mt. Barker	1,291	1,950	1,885	5,126
Nangeela	869	2,363	1,757	4,989
Tallarook	830	1,945	2,058	4,833
Enfield	1,328	1,920	1,291	4,539
Esperance	1,061	2,051	1,419	4,531
Larisa	615	2,139	1,755	4,509
Karridale	746	2,033	1,364	4,143
Koala	1,091	2,242	708	4,041
Miss. Ecotype	303	1,673	2,011	3,987
Meteora	347	1,754	1,879	3,980
Wooenellup	1,193	1,635	787	3,615
Geraldton	1,239	1,545	267	3,051
Dalkeith	995	1,904	75	2,974
Nungarin	980	1,181	0	2,161
Daliak	145	1,331	251	1,727

C.V.=11.3%

LSD (0.05) = 732

TABLE 3. SEASONAL FORAGE PRODUCTION OF SOD-SEEDED VETCH AT OVERTON, 1986-87

Variety	Harvest Date		Total
	3-20-87	4-24-87	
	----- lbs DM/A -----		
Woodford	2,117	2,199	4,316
Hairy	1,067	1,988	3,055
Vanguard	368		368
Cahaba White	367		367
Nova II	267		267
Vantage	203		204

C.V.=25.7%

LSD (0.05) = 549

TABLE 4. SEASONAL FORAGE PRODUCTION OF SOD-SEEDED ANNUAL CLOVERS AT OVERTON, 1986-87

Variety	Harvest Date			Total
	2-13-87	3-24-87	4-30-87	
	----- lbs DM/A -----			
Dixie	512	2,523	514	3,549
Chief	357	1,922	862	3,141
Tibbee	521	1,931	319	2,771
Bigbee	348	1,454	555	2,357
Bigbee (84)	498	1,306	550	2,354
Bigbee (85)	453	1,293	603	2,349
OVB-1	311	1,390	492	2,193
Common Ball		1,044	889	1,933
Segrest Ball		1,122	702	1,824
Yuchi		415	990	1,405
Amclo		299	782	1,081
Meechee		256	821	1,077

C.V.=12.8%

LSD (0.05) = 401