



Forage Research in Texas

1984

SEASONAL FORAGE PRODUCTION OF ANNUAL CLOVERS

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SUMMARY

Forty-nine varieties or experimental lines of annual clover were evaluated for seasonal forage production at Overton in 1982-83. Sixteen entries of subterranean clover were evaluated as reseeding stands on plots established in 1981. Fifteen experimental lines and 3 standard varieties of sub clover were established in 1982. Yields of reseeding sub clover ranged from 4186 to 2748 lbs DM/acre. Yields of newly established sub clover ranged from 2945 to 1729 lbs DM/acre. Twenty annual clover varieties of arrowleaf, crimson, rose, ball, berseem and persian clover were evaluated with total yields from four harvests ranging from 4758 to 2448 lbs DM/acre.

INTRODUCTION

Annual clovers have the potential for improving forage quality and cool-season production of Texas forage systems without increased inputs of fertilizer nitrogen. Commercial clover varieties, experimental germplasm and breeding lines are evaluated each year at Overton to provide current information for producers and to support the forage legume breeding program. The objectives of these experiments were: 1) to determine seasonal dry matter yield of annual clover varieties and experimental lines; and 2) to determine reseeding ability of subterranean clover varieties and experimental lines.

PROCEDURE

Twenty annual clovers were drilled into a native sod (common bermuda and Paspalum setaceum) in 5x7 foot plots October 13, 1982. Six double-disk openers, spaced nine inches apart, on a small-plot drill were used to place the seed at a one-half inch depth. Soil test ratings of phosphorus and potassium were low and medium, respectively. Soil pH (0-6 inches) was 7.1. Prior to planting, 450 lbs/acre of 0-20-20 fertilizer were applied to the Bowie fine sandy loam soil. The grass was mowed to two inches prior to sod-seeding.

Fifteen experimental lines and three standard varieties of sub clover were broadcast seeded in 5x7 foot plots on a prepared seedbed October 13, 1982. Two-foot borders were left between plots to help prevent variety mixing. Soil test ratings were very low and medium for phosphorus and potassium, respectively. Soil pH (0-6 inches) was 7.1. Four hundred and fifty pounds per acre of 0-20-20 fertilizer

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KEYWORDS: Annual clover/forage production/sodseeding/reseeding

were applied and incorporated prior to planting. Reseeding plots of sub clover were fertilized at the same rate and summer growth of grass and weeds removed by mowing at two inches.

Seeding rates and Rhizobium inoculant type for each clover species in all three experiments are shown in Table 1. Peat inoculant was supplied by the Nitragin Co. Pelgel solution was used as an adhesive to stick inoculant to the seed and 0.15 grams of inoculant was applied per gram of seed.

The clover lines in all three experiments were arranged in randomized complete block designs with four replications. The sub clover plots were harvested at 1.25 inches and the annual clover plots harvested at 2.25 inches, both with a rotary mower. Plot fresh weights were recorded in the field. Subsamples were weighed, dried at 70°C for 48 hours and weighed again. Percent dry matter of subsamples was used to calculate dry matter yield per acre.

RESULTS AND DISCUSSION

Total production in the sod-seeded annual clover test ranged from 4758 to 2448 lbs DM/acre for Meechee arrowleaf and Segrest ball clover, respectively (Table 2). All the annual clover varieties or lines produced their largest yield at the May 9 harvest with most yields at this harvest higher than 2000 lbs DM/acre. Crimson and rose clover were the highest producing species at the April 19 harvest followed by arrowleaf. Tibbee and Dixie crimson and Amclo arrowleaf were the highest yielding at the first harvest. Poor stands affected the performance of 287973 rose clover and Abon persian clover.

From the thirteen new sub clover experimental lines seeded in 1982, yields ranged from 2781 to 1729 lbs DM/acre for LO 589 and LO 993, respectively (Table 3). Twelve of these lines were selected in 1981-82 from 133 sub clover plant introductions from Spain. Yields were low in these newly established plots compared to production from reseeding stands (Table 4). These plots will be managed for reseeding and evaluation continued.

Production of sub clover varieties and lines in their first reseeding stand ranged from 4186 to 2748 lbs DM/acre for line 209924 and 311498, respectively. The reseeding sub clover test (first reseeding year) was harvested four times compared to three harvests on the newly established sub clover (Table 4). While weather conditions are not favorable for this early production of sub clover every year, thick stands are required to take advantage of this potential growth. In the 1982-83 growing season reseeded stands of Woogenellup sub clover produced 2362 lbs DM/acre by March 7 compared to total season production of 2945 lbs DM/acre for the same variety newly established in the fall.

TABLE 1. SEEDING RATES AND RHIZOBIUM INOCULANT USED IN EVALUATION OF ANNUAL CLOVERS

Species	Seeding Rate	Inoculant Type ¹
	--lbs/acre--	
Arrowleaf	14.2	O
Crimson	19.6	R
Subterranean	19.6	WR
Rose	19.6	WR
Berseem	19.6	R
Ball	3.5	B
Persian	7.1	R

¹ Supplied by the Nitragin Co., Milwaukee, WI.

TABLE 2. SEASONAL PRODUCTION OF SOD-SEEDED ANNUAL CLOVERS AT OVERTON, TX. 1982-83

Variety	Harvest Date				Total
	3-18	4-19	5-9	6-8	
	-----lbs DM/acre-----				
Meechee ²	460	1062	3236	0	4758 a ¹
Kondinin Rose	735	1304	2700	0	4739 a
Dixie ³	802	1576	2312	0	4690 ab
Yuchi ²	713	1131	2821	0	4665 ab
RRPS-5 ²	668	1234	2672	0	4574 ab
Overton-2 ²	689	1173	2660	0	4522 ab
Tibbee ³	820	1617	2044	0	4481 ab
Overton-3 ²	741	1125	2606	0	4472 ab
Amclo ²	834	1186	2378	0	4398 ab
Wood Co. ³	383	1362	2651	0	4396 ab
Autauga ³	620	1620	2150	0	4390 ab
CH-N ³	446	1428	2428	0	4302 ab
Chief ³	517	1456	2308	0	4281 ab
Wilton Rose	349	1311	2520	0	4180 abc
BE-1 ²	506	986	2567	0	4059 abc
W. H. Berseem	390	736	1975	736	3837 abc
287973 Rose	236	830	2414	0	3480 abcd
Abon Persian	238	481	1758	818	3295 bcd
Comm. Ball	0	0	2789	0	2789 cd
Segrest Ball	0	0	2448	0	2448 d

C.V. = 13.4%

¹ Yields followed by the same letters are not significantly different at the 0.01 level using Student Newman-Keuls Multiple Range Test.

² Arrowleaf clover

³ Crimson clover

TABLE 3. SEASONAL PRODUCTION OF SUBTERRANEAN CLOVER AT OVERTON, TX. 1982-83

Variety	Harvest Date			Total
	3-14	4-11	5-19	
	-----lbs DM/acre-----			
Woogenellup	968	1799	178	2945 a ¹
LO 589	646	1593	542	2781 ab
LO 712	593	1729	363	2685 ab
Nangeela	723	1680	267	2670 ab
401567	768	1664	235	2667 ab
LO 32	451	1571	596	2618 ab
LO 593	476	1416	709	2601 ab
LO 596	624	1428	547	2599 ab
401573	446	1426	596	2468 ab
Mt. Barker	540	1617	222	2379 ab
209927	127	1288	799	2214 ab
Meteora	163	1415	577	2155 ab
401568	504	1479	110	2093 ab
291917	341	1489	255	2085 ab
233868	440	1612	0	2052 ab
209924	422	1478	149	2049 ab
LO 1598	332	1480	173	1985 ab
LO 993	99	1056	574	1729 b

C.V. = 18.6%

¹Yields followed by the same letter are not significantly different at the 0.01 level using Student Newman-Keuls Multiple Range Test.

TABLE 4. SEASONAL PRODUCTION OF RESEEDING SUBTERRANEAN CLOVER AT OVERTON, TX. 1982-83

Variety	Harvest Date				Total
	12-6	3-7	4-11	5-18	
	-----lbs DM/acre-----				
209924	575	1491	2120	0	4186 a ¹
Miss. Ecotype	541	946	2255	356	4098 a
Woogenellup	593	1769	1632	97	4091 a
Nangeela	518	1032	2009	382	3941 a
209927	301	364	2374	795	3834 a
311499	412	907	2060	385	3764 a
291917	674	635	1853	576	3738 a
Tallarook	701	596	1987	421	3705 a
168638	349	791	2020	531	3691 a
Mt. Barker	380	1004	2062	231	3677 a
184962	364	936	2008	193	3501 a
319146	359	792	1804	417	3372 a
239907	723	610	1426	432	3191 a
319145	244	671	1749	340	3004 a
311498	184	708	1472	384	2748 a
Nungarin	0 ²	0	0	0	

C.V. = 22.1%

¹Yields followed by the same letter are not significantly different at the 0.01 level using Student Newman-Keuls Multiple Range Test.

²Did not reseed in 1981-82.