

**Forage Research  
In Texas,  
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## Winter Annual Clover Evaluation at Beeville

W. R. OCUMPAUGH

### Summary

Several cultivars each of seven different species of clover have been evaluated in small plots since 1983. The desirable attributes of a clover are that: 1) it establishes easily and rapidly, 2) it is productive and sets sufficient hard seed for natural re-establishment, and 3) it is adapted to high pH soils (does not show severe iron chlorosis). The clovers that show the most promise for these characteristics include arrowleaf, subterranean, berseem, and rose. Enough was known about arrowleaf and subterranean clover that they are already being evaluated in grazing studies.

### Introduction

Winter annual clovers may provide quality feed during *the winter* and spring months in South Texas when the

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temperature and moisture is favorable. There are literally dozens of cultivars available from which to select, and they can best be initially screened in small plots. For an annual legume to be valuable in South Texas, it must germinate, establish, be productive, and set sufficient hard seed to insure natural re-establishment in the following growing season. It is assumed that these legumes will be grazed either interseeded with winter cereals and/or ryegrass or overseeded in perennial warm-season grasses such as Coastal bermudagrass. However, much information can be gained on these clovers by evaluating them as monocultures in small plots. Winter annual clovers have received intensive evaluation since fall 1983. The objectives are to identify the strengths and weaknesses of the various legumes for potential use in pastures in South Texas.

### Procedures

The standard procedures for evaluation of clovers in small plots is to prepare a seedbed in the late summer and early fall. A preplant incorporated herbicide like Balan or

Eptam is applied to suppress winter annual weeds. Phosphorus fertilizer is applied preplant at 100 lb/A of 0-46-0. Plantings are made between October 15 and November 15 at the rate of 12 lb/A of inoculated seed. Plots are five rows wide, 20-feet long with 12 inches between rows. The middle three rows are harvested. In most years, two harvests have been taken. Plots are permitted to set seed and stands and/or yield evaluations are taken in subsequent years. Since 1983 three cultivars of arrowleaf clover, one persian clover, four crimson clovers, one berseem clover, 12 rose clovers, 11 red clovers, and 12 subterranean clovers have been evaluated.

### Results and Discussion

Almost all clovers evaluated will grow in small plots (See Tables 1 through 6). However, all clovers evaluated seem to have one or more shortcomings that limit their adaptation to this environment. Production, of course, is important, but reseeding and re-establishment are critical to the long-term persistence and production in a pasture. Therefore, a great deal of emphasis is put on a clover's ability to re-establish year after year. The clovers that are good reseeders include subterranean, arrowleaf, and rose.

Recently, the need to select for adaptability to high pH soils has been identified. The clovers that are best adapted to the high pH soils are berseem, rose, and one cultivar of subterranean clover (Clare). The clovers that are best reseeders are not always adapted to high pH soils. The one species (rose clover) that is both a good reseed and adapted to high pH soils does not have a commercial cultivar that is very productive.

Crimson, red, and persian clovers have not shown any consistent advantage over rose, arrowleaf, subterranean, and berseem.

Because of their good yield and reseeding ability, arrowleaf and subterranean clover are already being evaluated in grazing studies. However, berseem and rose clover may be evaluated in grazing studies in the near future. Clare subterranean clover has recently been identified as having superior adaptability to high pH soils, and plans are being formulated for grazing studies.

TABLE 2. DRY MATTER YIELDS OF WINTER ANNUAL CLOVERS PLANTED NOVEMBER 1, 1984 AT TAES-BEEVILLE

Cultivar	1985		Total
	Mar 12	May 8	
	Pounds/Acre		
Amclo Arrowleaf	2,216	5,267	7,483
Meechee Arrowleaf	2,277	4,490	6,767
Yuchi Arrowleaf	2,230	5,774	8,004
Bigbee Berseem	2,863	4,253	7,115
Bigbee Berseem <sup>a</sup>	2,552	4,643	7,195
Autauga Crimson	2,048	2,246	4,294
Chief Crimson	1,529	3,411	4,940
Dixie Reseeding Crimson	2,936	2,665	5,601
Tibbee Crimson	2,672	2,476	5,148
Abon Persian	717	3,342	4,059
Kenstar Red	1,409	5,015	6,424
Cycle-5 Red <sup>b</sup>	1,948	4,283	6,231

<sup>a</sup>Planted at 6 lb/A.

<sup>b</sup>Cycle-5 Red Clover is a breeding line from University of Florida.

TABLE 3. ACCUMULATED DRY MATTER YIELD OF ROSE CLOVERS PLANTED AT TAES-BEEVILLE NOVEMBER 15, 1984

Cultivar or Exp. line	3-29-85	4-12-85	4-25-85	5-10-85
	Pounds/Acre <sup>1</sup>			
Hykon	2,768	3,203	3,398	2,851
Kondinin (Ramsey)	2,827	3,171	3,928	2,912
Overton Kondinin	2,082	3,245	4,212	2,858
H-7	1,566	2,550	5,057	4,730
O-15	1,912	3,538	4,734	5,119
J-3	2,489	3,066	5,800	5,657
D-17	2,607	3,617	6,638	5,235
H-18	2,489	2,976	6,496	6,242
M-13	2,474	4,024	5,247	6,395
M-16	2,087	3,600	6,035	6,327
D-3	1,999	3,165	5,333	4,366
F-20	2,988	4,009	5,826	5,976
R-12	1,741	2,176	3,176	5,294

<sup>1</sup>Each harvest was taken from a previously uncut area.

TABLE 1. DRY MATTER YIELDS OF WINTER ANNUAL CLOVERS PLANTED NOVEMBER 10, 1983 AT TAES-BEEVILLE AND HARVESTED IN 1984 AND 1985

Cultivar	1984			1985		
	Mar 28	May 10	Total	Mar 28	May 6	Total
	Pounds/Acre					
Autauga Crimson	1,533	557	2,090	2,272	419	2,691
Dixie Reseeding Crimson	2,097	366	2,463	2,024	833	2,857
Tibbee Crimson	2,438	372	2,810	2,156	482	2,638
Chief Crimson	1,429	670	2,099	2,171	0	2,171
Bigbee Berseem	2,089	929	3,018	0	1,468	1,468
Meechee Arrowleaf	627	594	1,221	3,018	1,741	4,759
Amclo Arrowleaf	1,357	1,132	2,489	2,929	1,765	4,694
Yuchi Arrowleaf	1,524	1,080	2,604	3,321	1,444	4,765
Abon Persian	334	0	334	1,844	1,750	3,594



**TABLE 4. DRY MATTER YIELDS OF SUB CLOVER CULTIVARS PLANTED NOVEMBER 10, 1983 AT TAES-BEEVILLE**

Cultivar	1984		1985	
	Apr. 4	Mar. 3	Apr. 23	Total
	Pounds/Acre			
Woogenellup	1,654	1,506	2,680	4,186
Nangeela	988	1,208	2,176	3,384
Clare	523	1,440	3,110	4,550
Nungarin	600	1,096	0	1,096
Northan	1,092	901	0	901
Trikkala	1,238	972	2,102	3,074
Meteora	1,073	1,672	3,101	4,773
Mississippi Ecotype	477	979	2,558	3,537
Mt. Barker	823	1,037	2,526	3,563
Tallarook	838	1,701	2,577	4,278
Woogenellup <sup>a</sup>	1,328	1,451	2,573	4,024
Yuchi Arrowleaf	1,468	1,470	3,114	4,584

<sup>a</sup>Planted at 6 lb/A.

**TABLE 5. DRY MATTER YIELDS OF SUB CLOVER CULTIVARS PLANTED NOVEMBER 1, 1984 AND HARVESTED MARCH 25, 1985**

Cultivar	Planting Rate	
	12 lb/A	6 lb/A
	Pounds/Acre	
Metora	2,782	2,471
Mt. Barker	3,048	3,083
Nangeela	3,176	2,708
Tallarook	2,446	2,521
Woogenellup	2,938	2,791

**TABLE 6. DRY MATTER YIELDS OF RED CLOVER CULTIVARS PLANTED NOVEMBER 10, 1983 AND HARVESTED IN 1984 AND 1985**

Cultivar or Breeding line	1984			1985 <sup>a</sup>		
	Mar. 29	May 11	Total	Apr. 18	Jun. 6	Total
	Pounds/Acre					
Redland II	784	1,102	1,886	4,551	4,452	9,003
Kenstar	865	1,382	2,247	3,812	4,312	8,124
Redman	1,004	1,337	2,341	4,258	4,187	8,445
Florie	704	1,295	1,999	3,598	4,170	7,768
Kenland	698	1,077	1,775	3,767	3,701	7,468
Tensas	321	887	1,208	3,777	4,154	7,931
Cycle-0 <sup>b</sup>	1,660	1,091	2,751	4,605	3,939	8,544
Cycle-1 <sup>b</sup>	1,703	1,218	2,921	4,663	3,453	8,116
Cycle-2 <sup>b</sup>	1,692	1,285	2,977	4,500	3,938	8,438
Cycle-4 <sup>b</sup>	1,474	1,103	2,577	4,775	3,454	8,229
Cycle-5 <sup>b</sup>	1,667	861	2,528	4,957	4,408	9,365
Yuchi arrowleaf	1,311	1,269	2,580	4,295	0	4,295

<sup>a</sup>The 1985 yields are from natural reseeding stands (not from live-over plants), and considerable cross contamination of cultivars was evident.

<sup>b</sup>Cycle-0, -1, -2, -4, and -5 are breeding lines from University of Florida.