



# Forage Research in Texas

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## 1983

## Winter Annual Legume Evaluations at Beeville

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### SUMMARY

Twenty-seven annual legumes representing 12 species were evaluated in 1981-82. Eight varieties produced in excess of 2,000 pounds of dry matter by early March including varieties of arrowleaf, rose, persian, berseem, subterranean and button bur clovers. Total production was lower than usual because of moisture limitations. Yuchi arrowleaf and Winterhardy berseem clovers each produced a season total of over 4,000 pounds per acre of dry matter while Abon persian and RRPS-5 arrowleaf each produced approximately 3,500 pounds. None of the plant introductions (PI's) were among the highest yielding sources and none produced more than commercially available varieties of the same species.

### INTRODUCTION

Cool-season annual legumes may provide some winter and spring forage in areas with mild winter temperatures and adequate moisture. Previous research has evaluated a large number of *Trifolium* (clover) plant introductions and identified those with some promise. These plant introductions (PI's) and commercially available varieties were evaluated in pure stands for winter and spring production in 1981-82. It is assumed that these types of legumes will be used primarily to overseed perennial warm-season grasses or planted with an annual grass such as ryegrass. However, information on growth pattern and production potential is needed as a basis for identifying those species and varieties to include in management studies.

### MATERIALS AND METHODS

Twenty-seven annual legumes were planted on October 28, 1981 in plots consisting of 5 12-inch rows, 20 feet long with 4 replications. Soil moisture was good at planting time. Rainfall was erratic during the winter and spring (Table 1) and an all-time low temperature of 14° F occurred in January. The plots were harvested on March 8, April 15 and May 10, 1982.

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KEY WORDS: legumes, *Trifoliums*, Winter growth

Table 1. Rainfall during clover growing season in 1981-82.

Month	Rainfall (inches)	Month	Rainfall (inches)
October	7.45	March	.38
November	1.68	April	1.23
December	1.48	May	5.30
January	.47	June	0
February	3.62		

## RESULTS

Production through early March was excellent and especially considering the very low temperatures that occurred in January. Winter growth in excess of 2,000 pounds per acre could make a valuable contribution to winter forage supply. Ten legumes approached or exceeded 2,000 pounds of production by March 8. Winterhardy berseem exceeded 3,000 pounds on March 8. Production in March and early April, which is usually a peak growth period for cool-season legumes in this area, averaged only 342 pounds. Very low rainfall in these months (Table 1) no doubt accounts for the low production. Production from April 15 to May 10 also was limited by moisture availability. Only a few of the legumes produced in excess of 1,000 pounds during this usual high growth period. Thus, total production was low primarily because of the poor spring growth. Only Winterhardy berseem and Yuchi arrowleaf clover exceeded 4,000 pounds per acre.

Observations made in mid-June indicated that most of the arrowleaf clover varieties were still green and maturing some seed. Winterhardy berseem and Tallarook subterranean clover also had made some growth but were not as active as the arrowleaf clovers. All other legumes were dead or dormant by mid-June.

This study confirms previous results that the winter legumes with the most promise are berseem, arrowleaf, subterranean, persian and rose clovers. While some of the plant introductions within these species have some desirable characteristics, none exceed the available cultivars in either early or total production. New species which have not been grown under Texas conditions, such as T. balansae, T. diffusum, and T. petrisarvi, may have some potential but none exceeded the species listed earlier in either early or total production.

Volunteer stand establishment in succeeding season is an important characteristic of annual legumes. Unfortunately a clipping study such as this one does not permit evaluation of reseeding characteristics.

## Acknowledgement

The Nitragin Company, Milwaukee Wisconsin, provided the inoculum for this study.

Table 2. Forage yield of cool season annual Trifolium legumes at Beeville, 1981-82.

Species and variety or source	Pounds dry forage per acre				Height (in.) March 8
	March 8	April 15	May 10	Total	
1. <i>T. balansae</i> PI 120159	1031	480	598	2109efgh <sup>1</sup>	3.4
2. <i>T. diffusum</i> PI 120144	1523	376	530	2429defg	2.8
4. <i>T. lappaceum</i> PI 120153	819	257	206	1281h	1.8
5. <i>T. petrisarvi</i> PI 279926	1333	589	327	2249efgh	3.5
8. <i>T. sp.</i> PI 383738	1067	405	282	1754gh	2.3
11. <i>Medicago obicularis</i> PI 197351 button	2611	233	0	2844bcdef	2.3
16. <i>T. alexandrium</i> - Winter- hardy berseem	3048	258	1007	4313a	8.7
26. Common ball clover	36	190	55	281i	2.0
3. <i>T. hirtum</i> PI 311485	2223	351	255	2829bcdef	5.0
18. <i>T. hirtum</i> - Kondinin rose	2946	208	115	3269	6.7
19. <i>T. hirtum</i> - Wilton rose	1825	279	195	2299defg	4.1
6. <i>T. resumpinatum</i> PI 141503 persian	574	391	924	1689fgh	2.4
7. <i>T. resumpinatum</i> PI 173974 persian	1628	428	752	2808bcdef	4.7
17. <i>T. resupinatum</i> - Abon persian	2140	382	1008	3530ab	8.5
23. <i>T. resupinatum</i> - Abon (Reselected 2) persian	1917	504	935	3256abcd	7.3
9. <i>T. vesiculosum</i> PI 233782 arrowleaf	1934	292	811	3037bcde	4.4
10. <i>T. vesiculosum</i> PI 233816 arrowleaf	1356	410	1047	2813bcdef	4.8
12. <i>T. vesiculosum</i> - Yuchi arrowleaf	2757	319	1021	4097a	6.5
14. <i>T. vesiculosum</i> - Amclo arrowleaf	1329	362	1269	2960bcde	5.5
15. <i>T. vesiculosum</i> - Meechee arrowleaf	1182	332	731	2245defg	3.5
24. <i>T. vesiculosum</i> - RRPS-5 arrowleaf	1800	336	1339	3475abc	4.3
25. <i>T. vesiculosum</i> - BE-1 arrowleaf	1180	313	1210	2703cdef	4.0
13. <i>T. subterraneum</i> - Miss. Ecotype Subclover	946	134	201	1281h	2.8
20. <i>T. subterraneum</i> - Woogenellup Subclover	1748	415	100	2263efgh	4.0
21. <i>T. subterraneum</i> - Nangella Subclover	2329	331	170	2830bcdef	3.4
22. <i>T. subterraneum</i> - Mt. Barker Subclover	1778	420	103	2301defg	4.0
27. <i>T. subterraneum</i> - Tallarook Subclover	2066	229	271	2506cdefg	2.9

<sup>1</sup> Total yields followed by a common letter are not significantly different at the 5% level.