



# Forage Research in Texas

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THE EVALUATION OF TEMPERATE LEGUME INTRODUCTIONS

OBJECTIVE:

To determine the potential of temperate legumes introduced from the Mediterranean area for use in the Upper Gulf Coast and South Texas.

PROCEDURE:

Approximately 900 accessions of Trifolium and Medicago species were planted in single row plots at Beeville in the fall of 1977. The Medicago accessions (approximately 400) were also planted at College Station. The plantings were observed and rated for winter growth, growth habit, vigor, seed production, and date of maturity.

Based on ratings at Beeville and College Station, 150 accessions, largely Trifoliums, were selected for planting in the fall of 1978. Single row plots, 15 feet long, replicated twice were planted at College Station and Beeville in October 1978.

Evaluations at Beeville included height measurements, crown spread, winter damage, earliness (flowering), and dry weight. Height, spread and dry weight were measured at intervals beginning in early March. The production values in Table 1 are g/0.62m<sup>2</sup> for samples taken at the ground level.

Severe winter damage occurred at College Station. Evaluations consisted of an estimate of ground cover and general observations on vigor, seed production, and growth habit.

RESULTS:

Based on early production, maximum production, height, and winter damage at Beeville, and stand survival and general appearance at College Station, 45 accessions were selected for further evaluation in 1979-80. Data on these accessions are presented in Table 1. Early production on the selected accession varied from less than 100 pounds per acre to more than 600 pounds per acre at the Mid-March evaluation; total production varied from 900 to 3100 pounds per acre at or near maturity. Maturity based on peak accumulated dry matter production varied from late March for some of the Medicago accessions to late May for some of the Trifolium accessions.

There was some winter damage at Beeville in the form of leaf burn and stem die-back but all of the accessions shown in the table made satisfactory recovery. Some of the accessions were completely killed at College Station; however, most of the accessions recovered and made satisfactory growth at College Station. Minimum temperatures were 21, 20, 21F on December 9, 10, 12, 1978 when some damage occurred and 19F on January 3, 1979, when additional winter damage occurred.

Keywords: legume, PI

TABLE 1

Legume introduction evaluations (accessions selected for more detailed study in 1979-80)

Species	P. I.	Common Name	Beeville Performance - 1979			Col. Sta. % Stand 6/7/79	Observations (College Station)	
			Production 3/14/79	Max. prod. Amount	Max. ht.			% Winter Damage (%)
T. alexandrium	251213	Berseem	8.70	64.2	5/9	17.3	98	30 cm tall, exc. cover, good seed prod.
T. dasyurum	263248		15.15	134.6	5/9	48.2	5	30 cm tall, exc. cover, seed prod. almost as good as T. dasyurum
T. globosum	244678		10.35	123.4	5/9	66.7	40	poor stand and growth
T. "	287172		26.00	71.6	4/25	16.2	20	37.5 cm tall, green on 6/7, dense cover, one of best plots in nursery
T. mutabile	269053		16.20	124.6	5/24	54.2	15	45 cm tall, best arrow-leaf in nursery
T. vesiculosum	233782	Arrowleaf	18.40	153.25	5/24	75.7	5	very weak
T. "	279948	"	7.85	125.6	5/24	42.3	25	20 cm tall, exc. seed prod., prostrate
T. lappaceum	120129	lappa	27.05	82.45	4/25	43.7	5	15 cm tall, prostrate, heavy seed producer, moderate density
T. resupinatum	120195	Persian	19.30	81.00	5/9	65.0	10	12.5 cm tall, prostrate, dense, full bloom 6/7, heavy seed prod.
T. "	141503	"	29.20	137.80	5/9	88.0	5	23.5 cm tall, most seed mature
T. "	173974	"	14.85	130.95	5/9	51.2	15	25 cm tall, full bloom 6/7
T. "	204932	"	19.95	97.90	5/9	35.7	20	12-25 cm tall, heavy seed producer, prostrate
T. "	223827	"	9.55	137.70	5/9	50.5	25	

## Legume introduction evaluations (accessions selected for more detailed study in 1979-80)

Species	P. I.	Common Name	Production 3/14/79	Beeville Performance - 1979 Max. Prod. Amount	Max. nt.	% Winter Damage (%)	Col. Sta. % Stand 6/7/79	Observations (College Station)
T. diffusum	120144		27.25	117.65	5/9	49.3	100	35 cm tall, good seed producer, green on 6/7
"	238362		14.95	161.9	5/9	54.2	100	35 cm tall, fair seed prod., slightly later than 120144
T. glomeratum	287970	cluster	19.10	141.6	5/9	15.3	0	25 cm tall, blooming, green foliage 6/7, moderately prostrate
T. pallidum	249868		4.20	86.8	5/24	52.2	60	20 cm tall, v. dense foliage, blooming to immature seed 6/7
T. argutum	179056		24.45	134.2	5/24	23.7	100	12 cm tall, bloom to mature seed 6/7
T. ba lansae	120159		25.40	126.95	5/9	34.3	100	25 cm tall, fairly dense, bloom to mature seed and green foliage 6/7
T. cherangenense	226101		8.25	99.1	5/9	31.3	80	mature seed, mature veg., stemmy
T. cherleri	249865		21.85	192.8	5/24	22.3	0	bloom to mature seed, mature veg., good seed prod.
T. isthmocarpum	197741		33.55	148.1	5/9	30.7	10	25 cm tall, fully mature 6/7, good seed prod.
T. pauciflorum	369076		40.05	108.6	5/9	33.0	20	
T. petrisavii	279926		28.20	148.0	5/9	25.5	10	

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Legume introduction evaluations (accessions selected for more detailed study in 1979-80)

Species	P. I.	Common Name	Beeville Performance - 1979			Col. Sta. % Stand 6/7/79	Observations (College Station)	
			Production 3/14/79	Max. prod. Amount	Max. ht.			% Winter Damage (%)
T. steudneri	262239		6.35	130.9	5/24	26.5	40	17 cm tall, green to mature, prostrate, good forage
T. striatum	226676		6.23	85.45	5/24	27.8	37	25 cm tall, blooming to immature, good + forage
T. sp.	383738		29.30	125.9	5/9	43.7	15	33 cm tall, dense, good seed prod., seed in soft dough 6/7
T. hirtum	8N 9873-58	rose	39.80	121.3	5/9	28.2	20	plants and seed mature 6/7
T. "	311485	"	26.00	149.7	5/9	51.5	10	plants and seed mature
T. subterraneum	158387	subterranean	35.90	185.4	5/24	22.8	25	weak plants
T. "	190568	"	43.00	163.55	5/24	15.2	30	15 cm tall, light green, dense
T. "	233966	"	46.60	176.8	5/24	17.0	25	12 cm tall, dense, beginning to mature 6/7
T. "	230904	"	34.65	152.4	5/9	16.5	45	good + forage (relative to subclovers)
T. "	239906	"	26.05	171.8	5/24	15.5	40	weak plants and stand
T. "	241461	"	45.50	214.4	5/9	14.8	40	weak plants and stand
T. "	277439	"	41.05	130.75	5/24	14.5	35	fair forage, beginning to mature 6/7
T. "	287998	"	39.45	137.1	5/24	16.8	40	very weak

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			Production 3/14/79 Amount	Max. prod. Date	Max. ht.			% Winter Damage (%)	
T. vesiculosum	233816	arrowleaf	9.5	173.0	5/24	80.8	25	95	40 cm tall, full bloom, v. dense, exc. forage
M. tubinata	382783		31.25	109.8	5/9	59.0	20		20-25 cm tall, green, good to exc. forage, dense cover; few seed heads beginning to mature (not tubinata)
M. "	319049		3.15	196.9	5/9	12.7	90		mature seed and plants, v. early
M. obicularis	249830	button	19.90	62.7	3/28	38.3	30		very heavy seed producer
M. "	197351	"	27.90	71.0	3/28	19.0	45		green, dense, heavy seed producer
M. "	170540	"	22.30	74.10	3/28	20.3	20	100	v. early, good seed prod.
M. "	163394	"	21.75	57.00	3/28	18.8	20	100	mature and dormant but heavy forage cover
M. lupulina	220064	black medic	-----	-----	-----	-----	---	95	30 cm tall, dense cover, good forage, bloom to mature seed