

## LOTUS RESEARCH IN GEORGIA

Carl S. Hoveland  
Agronomy Dept., University of Georgia  
Athens, GA 30602

### Birdsfoot Trefoil (*Lotus corniculatus*) cultivars

Forage yields were obtained on four birdsfoot trefoil cultivars at three Georgia locations: Mountains, Blairsville (2200 feet elevation); Piedmont, Athens (980 feet); and Central, Eatonton (490 feet). Plots 4 x 20 feet with 4 replications were planted in September 1989 on prepared land.

Table 1. Forage yield of birdsfoot trefoil cultivars at the Mountain Branch Station, Blairsville, GA. 1990-92.

Entry	Yield at 1st harvest as % of Norcen	Pounds/acre oven dry forage			
		1990	1991	1992	3-yr mean
	%				
AU Dewey	254	7738 a*	4147 a	3004 a	4963 a
Bonnie	171	5617 b	3794 ab	3053 a	4155 a
Georgia 1	170	5773 b	3405 b	1236 b	3471 b
Norcen	-	3581 c	2683 c	2953 a	3072 b
Number of harvests		5	3	3	

\*Means within a column followed by the same letter are not significantly different at the 5% level.

Table 2. Forage yield of birdsfoot trefoil cultivars at Plant Sciences Farm in the Piedmont, Athens, GA. 1990-92.

Entry	Yield at 1st harvest as % of Norcen	Pounds/acre oven dry forage			
		1990	1991	1992	3-yr mean
	%				
AU Dewey	258	6480 a*	3288	4459 ab	4742 a
Bonnie	192	5246 b	3177	5127 a	4516 a
Georgia 1	211	5101 b	3061	4908 a	4357 a
Norcen	-	2836 c	3032	3272 b	3047 b
Number of harvests		3	3	4	

\*Means within a column followed by the same letter are not significantly different at the 5% level.

Table 3. Forage yield of birdsfoot trefoil cultivars at Central Georgia Branch Station, Eatonton, GA. 1990-91.

Entry	Yield at 1st harvest as % of Norcen	Pounds/acre oven dry forage		
		1990	1991	2-yr mean
	%			
AU Dewey	739	6393	4811	5602 a*
Bonnie	586	6295	3943	5118 a
Georgia 1	729	5776	4250	5014 ab
Norcen	-	4562	3202	3882 b
Number of harvests		4	4	

\*Means within a column followed by the same letter are not significantly different at the 5% level. Cultivar yields in 1990 and 1991 were not significantly different.

Trefoil stands were excellent at all locations the first year but thinned the second year. Stand losses were severe the third year at the Mountain location from root rot diseases during a very wet year. At the southernmost location at Eatonton, trefoil stands were especially poor the third year as bermudagrass and crabgrass dominated the plots, resulting in no harvest data. Trefoil does not compete well with warm season grasses.

Over the period of these tests, AU Dewey, Bonnie, and Georgia 1 were generally similar in total yield and superior to Norcen (Tables 1, 2, and 3). There was a tendency for AU Dewey to be more productive than other cultivars the establishment year. AU Dewey made more early season growth than Bonnie or Georgia 1, and all of these cultivars generally produced 170 to 700% more forage at first harvest than Norcen. The extreme winter dormancy of Norcen results in a very short productive season at lower latitudes with a long growing season.

#### Big Trefoil (*Lotus uliginosus*) introductions

Superior accessions were selected from a *Lotus* nursery that had been monitored for two years. Nine of these accessions were vegetatively established in rows 1 foot apart in small plots with 4 replications in April 1990. Plants were allowed to cover in 1990 and then harvested for yields in 1991 and 1992.

By November of the establishment year, 376219 and 282150 had nearly a complete ground cover with other entries ranging from 45 to 62%. 'Grasslands 4705' from New Zealand was the most productive over the two years (Table 4). Surprisingly, 282147, which had a good rating in the nursery, was much lower yielding. Although total yields were not especially high, the modest production during summer and autumn would be attractive in a pasture situation. Some disease problems caused dieback during hot wet periods, but plants recovered well in autumn. Major problems of this legume are very poor seedling vigor and low seed production. If some improvement of these

could be made, *Lotus uliginosus* could be a useful pasture legume.

Table 4. Forage yield of *Lotus uliginosus* accessions at Plant Sciences Farm, Athens, GA. 1991-92.

P.I.	Source	Pounds/acre oven dry forage					
		1992				1991 Total	2-yr mean
		May 28	July 28	Oct. 19	Total		
376219	'Grasslands 4705', DSIR, New Zealand	853 ab*	1366 ab	1895 a	4114 a	4129 ab	4122 a
407473	'Grasslands Maku', DSIR, New Zealand	1101 a	629 c	1282 b	3012 b	4189 a	3601 ab
316274	PI from CSIRO, Canberra, Australia	802 bc	1321 b	1167 bc	3290 b	3371 abc	3331 bc
282158	Pilmaiquen, Osorno province, Chile	446 de	1218 b	931 bcd	2595 c	4045 ab	3320 bc
316273	PI from CSIRO, Canberra, Australia	1105 a	1250 b	969 bc	3324 b	3301 bc	3313 bc
282150	15 Km NE of Loncoche, Chile	563 cde	1710 a	687 cd	2960 b	3584 abc	3272 bc
282153	7 Km north of Temuco, Chile	712 bcd	1209 b	721 cd	2642 b	3267 bc	2955 cd
281829	Austria	351 e	502 c	752 cd	1605 c	3145 c	2375 de
282147	20 Km NE of Valdivia at Pelchuquin, Chile	482 de	560 c	536 d	1578 c	2143 d	1861 e

\*Means within a column followed by the same letter are not significantly different at 5% level.

**Publication:**

Hoveland, C. S. and M. D. Richardson. 1992. Nitrogen fertilization of tall fescue-birdsfoot trefoil mixtures. *Agron. J.* 84:621-627.