

LOTUS RESEARCH IN GEORGIA

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Lotus research began when I was in Alabama and has continued after moving to Georgia. At present, there are only small plantings of Fergus birdsfoot trefoil in north Georgia but the extension service encourages further planting, especially in the mountain areas. Fergus is the only recommended cultivar with seed available. AU Dewey, developed at Auburn University from Yugoslavian germplasm, has performed very well and seed is being increased by International Seeds for marketing in the Southeast. GA-1 germplasm was released from the Georgia Agricultural Experiment Station because of good persistence in the Piedmont area.

Cultivars

Birdsfoot trefoil is best adapted in the mountains at higher elevations with yields of over 4 tons per acre annually in association with tall fescue (Table 1). Stand persistence has been excellent. Further south in the

Table 1. Total 3-year average forage yield and legume persistence of tall fescue-legume mixtures at three Georgia locations.

Grass	N rate lb/acre	Legume	Dry forage yield			Legume stand at end of third year		
			Mountains	Piedmont	Cen. Ga.	Mountains	Piedmont	Cen. Ga.
			Lb/acre			%		
AU Triumph tall fescue	150	None	6,050 c*	5,170 b	8,050 a
AU Triumph tall fescue	0	Apollo alfalfa	10,040 a	7,080 a	6,930 b	75	41	65
AU Triumph tall fescue	0	Arcadia ladino clover	6,200 c	5,360 b	7,060 b	20	5	16
AU Triumph tall fescue	0	Florie red clover	5,790 c	5,300 b	6,940 b	4	0	0
AU Triumph tall fescue	0	fergus birdsfoot trefoil	8,670 b	5,110 b	6,190 b	89	90	22

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

Piedmont and central Georgia under more stressful summer conditions, the yields are lower but comparable to red or ladino clover. Because of natural reseeding, trefoil stands have been better than the clovers after 3 years. AU Dewey has been the most productive cultivar at Athens in the Piedmont area (Table 2). Late winter and early spring growth of AU Dewey and GA-1 were substantially higher than the northern cultivars Fergus and Dawn.

Table 2. Spring production and total yield of birdsfoot trefoil cultivars in monoculture and in association with Ky 31 tall fescue and Hallmark orchardgrass in the Piedmont area, Athens, Georgia, 3-year average.

<u>Trefoil cultivar</u>	<u>Dry forage yield</u>	
	<u>Yield by late April</u>	<u>Total yield</u>
	Lb/acre	
No associated grass		
AU Dewey	2180 a*	7360 a
GA 1	1760 ab	6140 bc
Fergus	1160 d	5940 c
Dawn	1290 cd	5260 cd
In association with tall fescue		
AU Dewey	1680 b	6710 ab
GA 1	1860 ab	6390 b
Fergus	1080 d	5520 c
Dawn	1370 cd	5580 c
In association with orchardgrass		
AU Dewey	1650 bc	6520 ab
GA 1	1730 ab	6060 b
Fergus	790 e	5030 d
Dawn	1050 d	5030 d

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

Sod-seeding trefoil

Fergus trefoil drilled with a Tye Pasture Pleaser drill in a tall fescue sod resulted in good stands of trefoil, especially when the grass was suppressed with paraquat (Table 3).

Table 3. Fergus birdsfoot trefoil stands in tall fescue sod at 3 Georgia locations.

<u>Overseeding treatment</u>	<u>Trefoil plants per square foot</u>		
	<u>Mountains</u>	<u>NW Georgia</u>	<u>Central Georgia</u>
	no		
Paraquat + Furadan	16	4	15
Paraquat	18	4	15
None	10	2	5

Soil Acidity Tolerance

In a greenhouse trial, AU Dewey root development in acid subsurface soil (pH 4.9) was much greater than Fergus or Norcen cultivars. Relative

herbage yields of AU Dewey, Norcen, GA 1, and Fergus with acid subsurface soil were 100, 68, 64, and 24% respectively. A subsequent trial with pH 4.9 surface and subsurface soil, just completed, also substantiates the superior acid soil tolerance of AU Dewey.

Beef Steer Grazing

Beef steers were grazed on perennial and annual cool season pastures from late winter through spring for 3 years in northwest Georgia. Results of this study show that endophyte-free tall fescue with birdsfoot trefoil or ladino clover furnished the lowest cost per pound of steer gain (Table 4).

Table 4. Performance of beef steers and cost per pound of gain on perennial vs annual cool season grass and grass-legume pastures during late winter and early spring in northwest Georgia, 3-year average.

<u>Pasture species</u>	<u>Average daily gain</u> lb	<u>Total gain per acre</u> lb	<u>Stocking rate, steers/acre</u> no.	<u>Cost per lb of gain</u> ¢
Tall fescue + 120 lb N/acre	1.93 c*	394 b	1.79 b	26.0 c
Tall fescue + birdsfoot trefoil	2.27 b	330 b	1.23 c	17.5 a
Tall fescue + ladino clover	2.31 b	367 b	1.34 c	19.5 a
Rye-ryegrass-crimson clover + 120 lb N/acre	2.59 a	521 a	2.14 a	27.2 c

*Means within a column having the same letter are not significantly different at 5% level. Cultivars: AU Triumph tall fescue (endophyte-free), Regal ladino clover, Fergus birdsfoot trefoil.

Total gain per acre and average daily gain were highest for the winter annual pasture but at higher cost. Birdsfoot trefoil stands remained good the third year in spite of severe drought the second and third years while ladino clover was nearly eliminated. A problem with Fergus trefoil was late spring growth as compared to ladino clover. It is likely that AU Dewey would have been more suitable because of its earliness.

Publications

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