



YUCHI—New Arrowleaf Clover

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YUCHI IS THE NAME given to a new variety of arrowleaf clover (*Trifolium vesiculosum Savi*) that has been released by Auburn University Agricultural Experiment Station. A reseeding winter annual legume, the new variety is adapted to well drained soils in Alabama. It makes high yields of forage in late winter and spring, maturing about 2 months later than crimson clover.

Named after an Indian tribe that once inhabited east-central Alabama, Yuchi is a selection of arrowleaf clover that

was introduced into the United States from Italy in 1956. Three strains of the clover, sometimes called blister clover, were planted at the Experiment Station Agronomy Farm in 1959. From these strains, P. I. 233816 was tested and increased as Yuchi. Seed of this strain have also been planted at many locations in Alabama by Soil Conservation Service personnel in connection with their plant materials work.

Performance of all introduced strains of arrowleaf tested by the Auburn Sta-

ion are reported in Leaflet 67, "Arrowleaf Clover," published in 1962.

VARIETY DESCRIPTION

Yuchi arrowleaf clover makes its early growth from a leafy rosette, similar to crimson clover, later producing branching stems that curve upward and attain a length of 24 to 40 inches. The stems are often purple and become fibrous and hard near maturity.

Leaf petioles are 3 to 8 inches long, at the base of which are long white stipules narrowed to a point. The leaves are large, each of the three leaflets being 1½ to 3 inches long and 1 to 1¼ inches wide. Each arrow-shaped, non-pinnate leaflet has pronounced veins and develops a white V-shaped mark as it matures. Considerable variation in plant type occurs within the variety.

The flower heads are conical; often

exceeding 2 inches in length and 1¼ inches in diameter. From 150 to 170 individual florets make up the head. Florets begin maturing at the base of the head, being white at first and later turning purple. This gives the head a purple and white striped appearance. Each of the florets produces 2 to 3 seeds. The rough brown seed are about twice the size of white clover seed. There are about 400,000 seed per pound.

PERFORMANCE OF YUCHI

Yuchi arrowleaf has been tested since 1960 at 10 Alabama locations by the Agricultural Experiment Station. It has been compared with crimson and ball clovers, and with Amclo arrowleaf clover (P. I. 234310 that was increased and released by the Georgia Agricultural Experiment Station). In these replicated tests, clipping was begun when the clo-

TABLE 1. COMPARISON OF TOTAL AND WINTER FORAGE PRODUCTION OF ARROWLEAF, CRIMSON, AND BALL CLOVERS

Location ¹	Season	Per acre yield of dry forage			
		Yuchi arrowleaf	Amclo arrowleaf	Autauga crimson	Ball
		Lb.	Lb.	Lb.	Lb.
V.A. Forage Research Area, Wilson Dam (Sango silt loam)	Winter	1,460	1,128	1,540	1,256
	Total	5,330	4,438	5,844	5,770
Alexandria Experiment Field Decatur clay)	Winter	1,907	1,551	2,602	1,348
	Total	3,726	3,320	4,697	4,180
Bedmont Substation Cecil sandy loam)	Winter	-----	415	800	960
	Total	-----	2,459	2,754	5,186
Prattville Experiment Field Greenville fine sandy loam)	Winter	845	516	1,010	477
	Total	3,866	2,528	2,770	2,702
Black Belt Substation Sumter clay)	Winter	538	416	-----	339
	Total	1,593	1,501	-----	2,121
Muskegee Experiment Field Boswell fine sandy loam)	Winter	456	-----	860	652
	Total	3,156	-----	4,243	4,452
Plant Breeding Unit Cahaba fine sandy loam)	Winter	838	684	1,577	1,020
	Total	3,461	2,745	3,688	4,450
Monroeville Experiment Field Magnolia fine sandy loam)	Winter	301	-----	1,020	-----
	Total	3,461	-----	2,730	3,013
Brewton Experiment Field Kalmia fine sandy loam)	Winter	207	-----	939	-----
	Total	3,116	-----	3,357	-----
Gulf Coast Substation Marlboro fine sandy loam)	Winter	1,107	739	1,585	958
	Total	4,568	3,835	4,166	2,922

¹ Data from Prattville Experiment Field and Gulf Coast Substation are for 2 years and from Plant Breeding Unit are for 3 years; all others are 1-year results.

vers, but lower than that of sericea. It is not known whether tannin content is high enough to cause any undesirable nutritive effects.

Livestock have grazed the new clover well. No animal gain data are available at present, although research on this question is in progress.

Seed Production

Yuchi arrowleaf begins blooming in late May or early June and matures seed in late June or July. The Amclo variety blooms about 2 to 3 weeks earlier, as shown in Figure 2.

The new variety is a good seed producer. Seed are borne in clustered pods produced at tips of stems, which remain erect. Direct combine harvesting of seed is satisfactory, although shattering may be a problem.

Since Yuchi arrowleaf is self-sterile, it must be cross pollinated by insects. Thus, seed growers must ensure an adequate population of bees for pollination. Seed yields of 200 pounds per acre should be possible.

SEEDING DETAILS

Certified seed of the Yuchi variety are available. Seeding rate is 5 to 8 pounds of scarified seed per acre.

Seed of Yuchi arrowleaf germinate well at low temperatures, Table 3. This means that it can be expected to germi-

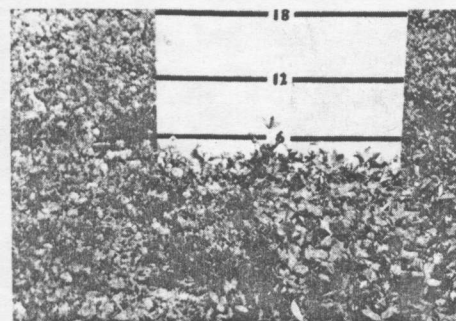


FIG. 2. Amclo arrowleaf (left) in bloom is compared with Yuchi variety (right) still in vegetative stage. The photo was made May 18 at Plant Breeding Unit, Tallahassee.

TABLE 3. GERMINATION OF SCARIFIED CLOVER SEED AS AFFECTED BY TEMPERATURE

Temperature (F.)	Per cent germination		
	Crimson	Ball	Arrowleaf
Continuous 70°.....	96	94	98
Alternating			
100°-8 hr., 70°-16 hr.....	62	20	24
40°-8 hr., 70°-16 hr.....	42	98	96

nate better in late fall when moisture conditions in Alabama are generally more favorable than during early fall. At high temperatures, however, Yuchi germination is considerably less than that of crimson clover.

A special inoculant for arrowleaf clover is available commercially and should be used for Yuchi. Poor inoculation is sometimes a problem with arrowleaf the first year on sandy soil. However, reseeding stands generally have been well inoculated.

Yuchi has shown excellent reseeding ability. Hard seed content of combine harvested seed may exceed 80 per cent. At Auburn, Yuchi arrowleaf has reseeded for 4 years.

INSECTS AND DISEASES

No important insect or disease problems have been noted on Yuchi arrowleaf clover. Alfalfa weevil (*Hypera postica*, Gyll.) numbers have been extremely low on arrowleaf plots adjacent to mink clover, which was severely damaged by large numbers of weevils. Clover head weevil (*Hypera meles*) populations were much lower on Yuchi than on ball or crimson clover when weevil counts were made weekly.

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ver was 6 inches tall and plots were clipped thereafter at approximately monthly intervals.

Forage Yields

Total yields of Yuchi arrowleaf under the frequent clipping schedule have generally equalled those of crimson clover, Table 1. When cut only one time in the hay stage, Yuchi yields have averaged 2 to 3 times those of crimson clover.

Winter forage production of Yuchi arrowleaf has been lower than that of crimson clover since it makes its growth later. Winter forage yields listed in Table 1 are for production before early March. If moisture conditions are favorable, Yuchi arrowleaf will continue to grow for about 2 months longer than crimson and 1 month after ball clover matures.

Yuchi grown in combination with rye or ryegrass has been productive over a longer period than crimson clover, Table 2. Since arrowleaf clover makes much of its growth in late spring, it may suffer during hot, dry weather in May. However, drought resistance of the new variety appears to be excellent and recovery is rapid after rains. Poor recovery growth has been observed when it was cut close in late spring.

Yuchi has made more winter growth and greater total production than the Amclo variety of arrowleaf. It has also

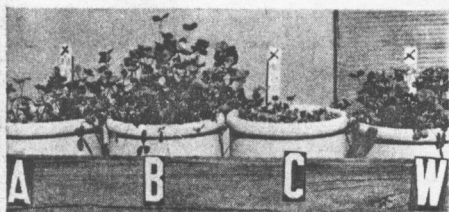


FIG. 1. Effect of 3 months' continuous flooding on growth of clovers in greenhouse is illustrated. Left to right are arrowleaf, ball, crimson, and white clovers.

remained leafy later in the spring than Amclo.

Poor growth of arrowleaf clovers has resulted on soils that are poorly drained. Field and greenhouse observations indicate that Yuchi is less tolerant of poor drainage than ball or white clovers, Figure 1.

Like crimson clover, Yuchi arrowleaf is not adapted to lime soils of the Black Belt. On Sumter clay at the Black Belt Substation, Yuchi plants were chlorotic and made little growth until late spring.

Forage Quality

Forage of Yuchi arrowleaf clipped at monthly intervals contained 24 to 29 per cent crude protein in March and April, which is similar to that of crimson clover. Forage quality can be expected to decline during May and June. Leaf tannin content is higher than that of other clo-

TABLE 2. WINTER FORAGE PRODUCTION OF CLOVER-GRASS MIXTURES AT PRATTVILLE, 1963-64

Mixture	Date growth measured					Total
	Jan. 4	Mar. 6	Mar. 30	Apr. 23	May 28	
Abruzzi rye and Yuchi arrowleaf						
Dry forage per acre, pounds.....	1,430	1,355	1,510	1,841	689	6,825
Per cent clover	0	6	60	95	99	
Abruzzi rye and crimson clover						
Dry forage per acre, pounds.....	1,355	1,524	1,991	799	0	5,669
Per cent clover	1	6	68	94	0	
Rescuegrass and Yuchi arrowleaf						
Dry forage per acre, pounds	0	754	2,848	1,056	1,514	6,172
Per cent clover	0	50	72	82	72	
Rescuegrass and crimson clover						
Dry forage per acre, pounds	0	681	3,263	323	572	4,839
Per cent clover	0	50	78	11	0	