

require about 800 or more hours below 45 degrees F. during the dormant season and are much more critical in their soil and moisture requirements, first generation hybrids might be expected to be poorly adapted to southern conditions.

Unfortunately, tests of second generation material of such a cross have apparently not been made in the Deep South. The first generation seedlings under observation at Tifton (1) have died after a few years. Superior selections of *V. myrsinites* may still be of value because they are tetraploid and offer a method of introducing the high fruit quality of northern varieties. Its fruit is usually black or near black and selections so far observed have not been especially early ripening. For these reasons, other ways of improving the range and quality of Florida blueberries appear of more promise as noted below.

3. *Vaccinium darrowi* Camp. Common name: Darrow's evergreen blueberry. Diploid. Mostly blue fruited, some markedly so, this species is found extensively in central Florida. Usually small fruited, some plants produce fruit up to 9 mm. in diameter of good quality. Since 1950, the author has been interested in selection of outstanding wild plants of this species for use in crosses with the best varieties of *V. ashei*. It was possible to make the first crosses in 1952, using three selections. In 1953, ten selections were used as the female parent in crosses with Coastal, Calloway and other selections of *V. ashei*.

Initial objectives of these crosses are tetraploid seedlings which might serve as foundation material for further breeding work. Eventual objectives are good blue-fruited evergreen plants with much wider adaptation than the presently available horticultural varieties of *V. ashei*. Both species can stand considerable drought, are accustomed to warm humid sum-

mers and mild winters and the seedlings should show good climatic adaptation. Though most selections were found to take nearly as long as *V. ashei* to mature fruit, one ripened its fruit in 64 to 72 days from pollination. This offers promise that earlier ripening selections might also result from use of this material.

Some rather striking specimens of possible ornamental value have been noted in this species. In several selections, younger leaves are very glaucous, and one selection develops a pronounced reddish coloration during cool weather. The plants are usually under three feet in height at maturity. Leaves are small, evergreen and densely arranged when grown in full sun. Combinations of these characters with improved fruit size would produce a valuable plant for both ornamental and fruiting use.

SUMMARY

Striking progress has already been made in the development of horticulturally promising blueberries of the rabbiteye type, *V. ashei* of north Florida. The use of other species, especially *V. darrowi*, in extending the range and usefulness of blueberries in Florida appears a promising field for further breeding work.

LITERATURE CITED

1. Brightwell, W. T. 1953. Horticulturist, Georgia Coastal Plains Experiment Station, Personal Conversation.
2. Camp, W. H. 1945. The North American blueberries with notes on other groups of Vacciniaceae. *Brittonia* 5 (3): 203-275.
3. Coville, F. V. 1937. Improving the wild blueberry. U.S. Dept. of Agr. Yearbook, 1937. 559-574.
4. Darrow, George N. and W. H. Camp. 1945. *Vaccinium* hybrids and the development of new horticultural material. *Torrey Botanical Club* 72 (1): 1-21.
5. Darrow, George N., J. B. Demaree and W. E. Tomlinson, Jr. 1951. Blueberry growing. U.S.D.A. Farmers' Bulletin 1951, 53 pages.
6. Georgia Coastal Plains Experiment Station. 1950. The Calloway and Coastal blueberries. Mimeograph paper 67. 2 pages.
7. Mowry, Harold and A. F. Camp. 1928. Blueberry culture in Florida. Fla. Agr. Exp. Sta. Bul. 194. 15 pages (out-of-print; consult in libraries).

TWO NEW FRUITS FOR SOUTH FLORIDA

GEO. D. RUEHLE
Sub-Tropical Experiment Station
Homestead

Florida is still far from exhausting the possibilities for introduction and testing of new fruits. New ones are gradually being added

to the already long list of species that have been found to be adapted or promising enough to be included for trial in Florida gardens. Two such promising new species are *Antidesma dallachyanum* Baill. and *Dovyalis abyssinica* (A. Rich.) Warb. They are included in the 1953 revision of the bulletin "Miscellaneous Tropical and Sub-Tropical Florida Fruits" (Fla. Agr. Ext. Ser. Bull. 156).

ANTIDESMA DALLACHYANUM

At the 49th Annual Meeting of the Society held at Deland, Florida, in 1936, a paper by Dr. David Fairchild¹ was read which first brought the *Antidesma*, and particularly *A. bunius*, to the attention of Florida horticulturists. Since then, *A. bunius* or the bignay, although not grown commercially, has been planted in many gardens in South Florida and has become quite well known. The tree has ornamental value and an excellent red jelly is made from a mixture of ripe and nearly ripe fruit with the addition of commercial pectin. In a later paper, Fairchild² quotes Guilfoil in "Australian Plants Suitable for Gardens, Parks, Timber Preserves, etc." as writing of *A. dallachyanum*, a large fruited species known in Australia as the Herbert River Cherry, Queensland Cherry or Je-jo. This species was introduced as seed in 1941 by the Sub-Tropical Experiment Station, and trees of this accession have been fruiting for several years.

A. dallachyanum, native to Queensland, forms a small, sometimes shrubby tree very similar to *A. bunius* and quite as ornamental, but with smaller leaves and larger fruit. The leaves are ovate to elliptical, obtuse or obtusely short-acuminate, 3 to 6 inches long. Flowers are produced from April to June in axillary spikes, male and female being borne on separate trees; male spikes are mostly panicle but sometimes are solitary. Female spikes on the few trees examined were solitary.

The fruits are red to very dark red, usually with a deeper shade on the exposed side, in clusters of 10 to 30, each about 5/8 inch in diameter and globose to ovoid in shape (Fig. 1). Fruits of a single cluster ripen fairly evenly. The season of maturity is September and October. The fruits are quite tart at maturity and an attractive deep red jelly can be made from them with the addition of pectin. They appear to have somewhat better jelling properties than fruit of the bignay.

Propagation is by seeds, cutting, air layering, or grafting. Seedlings of *A. bunius* may be used as understocks, but it is still not known whether this combination is desirable for fruit production. It also has not been determined

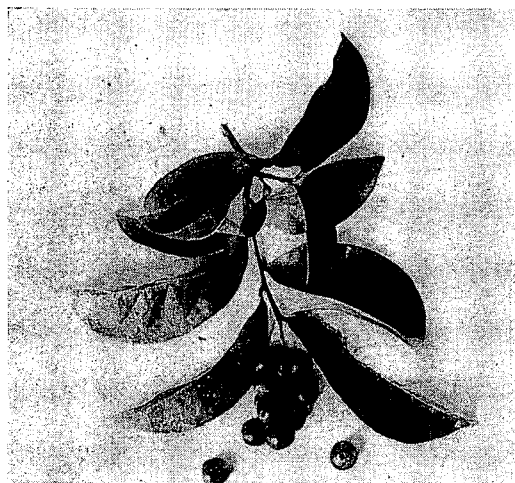


Fig. 1. Foliage and fruit of *Antidesma dallachyanum*.

whether pistillate trees will produce fruit without pollen from staminate trees.

As a fruit tree, *A. dallachyanum* is perhaps somewhat superior to the bignay. As an ornamental, it is equal to bignay but, like the latter, has the same undesirable characteristics. The flowers, particularly the staminate ones, emit a strong and rather disagreeable odor. Scale insects and mealybugs frequently become troublesome on both species. The trees are made unsightly by the growth of sooty mold following infestations of these pests. These insects can be controlled by applications of oil emulsions or parathion.

Seedlings of *A. dallachyanum* are now available for limited distribution, and at least one nursery is known to be propagating this species.

DOVYALIS ABYSSINICA

Two species of the genus *Dovyalis* are fairly well known in South Florida. These are the fruitful kitembilla (*D. hebecarpa* Warb.) from Ceylon and the kei-apple (*D. caffra* Warb.) from South Africa. Both produce acid fruits that are considered too tart for eating out of hand by most persons. In recent years the little known *D. abyssinica* from Ethiopia has fruited at the U.S.D.A. Plant Introduction Garden near Miami.

The fruit is superior in quality for eating out of hand to that of the kitembilla and kei-apple, and when it becomes better known probably will become more popular than either of these.

¹/Fairchild, David. The jaboticaba and the antidesma. Proc. Fla. State Hort. Society for 1936: 117-123.

²/Fairchild, David. The antidesmas as promising fruit trees for Florida. Fairchild Tropical Garden Occasional Paper No. 6: 9-16. 1939.

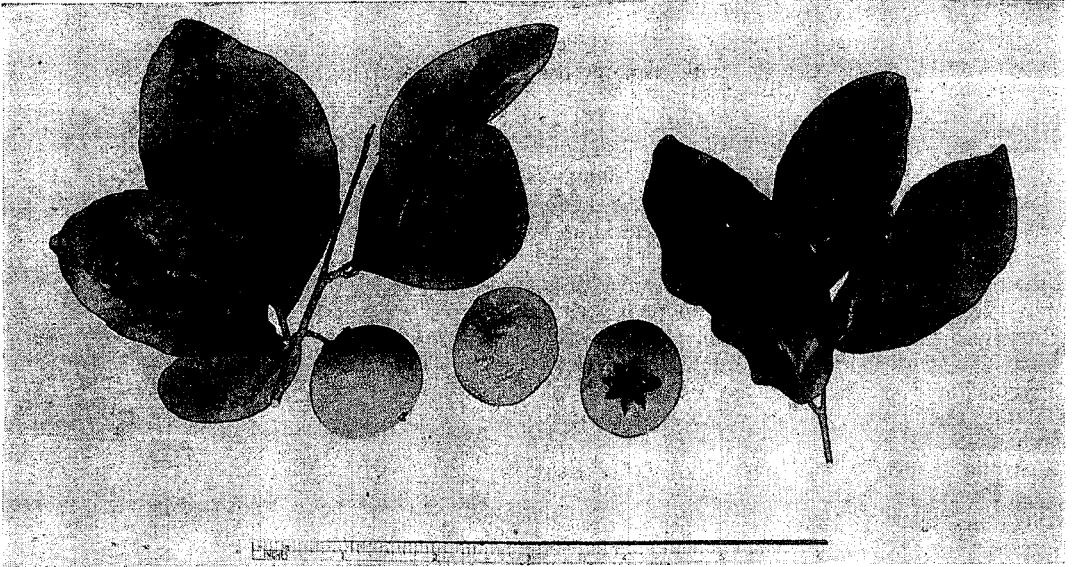


Fig. 2. Foliage and fruit of *Dovyalis abyssinica*

D. abyssinica was introduced by the U.S.D.A. in 1935 under P.I. No. 112086. Two plants of this accession were obtained by the Sub-Tropical Station in 1936. One of these failed to survive and the other was staminate and, of course, never produced fruit. The two bearing plants of this accession growing at the U.S.D.A. Plant Introduction Garden are pistillate and, since they were isolated from other *Dovyalis* plants until recently, failed to fruit earlier, presumably because the flowers were not pollinated. A young staminate bush of *kitembilla* some 50 to 60 feet from these plants may account for these rather old *abyssinica* specimens suddenly beginning to fruit. A scion from one of them grafted onto the staminate plant at the Sub-Tropical Station produced several fruits less than one year after the graft was made.

The plant is a bushy shrub up to 10 feet in height with the bark on young wood bearing numerous, conspicuous, raised, brown lenticels. The leaves are ovate, glabrous, shiny light green, 1 to 3 inches long, arranged alternately on long, rather slender twigs, either unarmed or nearly so, or armed with straight slender spines at the leaf axils. Pistillate and staminate flowers are borne on separate plants. For fruit production, it is necessary to have one staminate to several pistillate plants. Grafting scions of staminate plants onto pistillate, or vice versa, is feasible. The flowers are small,

greenish-white and inconspicuous, borne in the leaf axils, the staminate in clusters, the pistillate solitary. The main flowering season is September to January, but scattered bloom has been observed also from April to June.

The oblate-globose fruits (Fig. 2) are about one inch in diameter and apricot in color, having a thin, tender skin, orange-yellow melting juicy flesh, and few small flattened seeds. The fruit is tart with aroma and flavor suggesting fresh apricot.

Old bearing plants show considerable dying back of small branches. This may be caused by infestations of a scale insect which is quite common on *D. abyssinica*, or by nematodes. Root galls caused by nematodes have been found on the roots of bushes showing dying back of twigs.

Propagation of *D. abyssinica* is by seed and by grafting. The possibility of propagation by cuttings is being investigated. Plants of this species are still not available for general distribution by the Sub-Tropical Station. Seedlings from the plants at the U.S.D.A. Plant Introduction Garden, obtained in 1951, matured some fruit at the Sub-Tropical Station in October, 1953. These seedlings in fruit and foliage characters show evidence of being natural hybrids of *D. abyssinica* and *D. hebecarpa*. One of these seedlings produces perfect flowers in small clusters.