

Hawthorns as Edible Fruits

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THE various hawthorns may be the most populous genus of all the pome fruits, outnumbering apple, pear, and probably even *Cotoneaster* in numbers of wild plants as well as numbers of species in the North American, European and Asiatic temperate to subtropical regions. To the botanists they have been objects of contention between "species splitters" and "species lumpers"; and—more recently—they have proved material for some good cytogenetic studies. To American farmers they are a plain nuisance in pasture lands, but one species is being planted for fodder in South Africa. In England and more recently in America, some of them have been widely used as small ornamental trees and hedges. Horticulturists have from time to time used them as understocks for pears and other pomes, and interstock experiments by Dr. Karl Sax at Harvard may lead to the production of dwarf pears on hawthorn roots. The interstocks he used include the oriental *Photinia villosa* and *Cotoneaster multiflora*.

A few species are of value as edible fruits. The principal species of *Crataegus* which have been considered for human food include one each from north China, Ecuador, west-central Mexico, and southeastern United States.

The Ecuador hawthorn, *C. stipulosa*, is listed as a fruit in "Standardized Plant Names" with its native name, Manzanilla. But little other information is available on it. The Chinese hawthorn, *C. pinnatifida*, with its variety *major*, does not seem promising as a fruit for this country. Where

I saw it in Tennessee and Arkansas, it was susceptible to blight and rust.

May Haw

The finest flavored fruit of the native hawthorns, one of the largest, and the earliest ripening, is borne by the May haw, *C. aestivalis*. It really ripens in May in its habitat near ponds, from northern Florida to southern Arkansas and east Texas. The floating fruit in some localities is scooped (like cranberries) from drifts on the water and made into preserves and a much prized jelly. I have seen it offered for sale along the coastal highway in Mississippi. The aromatic red fruits yield a delicious juice, but their sub-acid flavor is a little tart for them to be eaten raw. The size varies from 1/2 to 3/4 inch or greater in diameter. Its fruitfulness also varies among different seedling trees. Like other trees of the swamps, the May haw can be grown on agricultural soils.

The late C. W. Stegall, orchardist at Montgomery, Ala., transplanted and grew for many years some seedlings of the May haw collected near Thomasville, Georgia. I introduced grafts from four of his trees to Norris, Tennessee, where they were apparently hardy in wood but flowered too early to be fruitful. The fruiting range may be considered a little greater than that of the tung nut, but where there is much freezing weather in late February and early March the May haw blossoms are likely to get nipped. At present, one Florida experimental substation is growing May haw seedlings for varietal selection, and I believe limited attention is being given to them far-

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ther west. They probably could be cultivated in California.

Mexican Hawthorn

The other species promising for its fruit is a native of Mexico, and the common name for it in English is Mexican hawthorn (see front cover). Two species may be included under this name, *C. mexicana* and *C. pubescens*, although "Standardized Plant Names" (1942) notes disagreement among some authors, who regard *mexicana* as a distinct species. The fruit goes by the name of "tejocote" in its native land and is called "Skaapvrug" in Afrikaans. At Cuernavaca, Morelos, Mexico, it is sometimes called a "plum".

The Afrikaans name, and the inspiration for these notes, come from a reprint recently received from South Africa entitled "The Mexican Hawthorn, An Investigation of its Possibilities for the Processing Industry" by Dr. W. H. K. Coetzee and others, of the Western Province Fruit Research Station, Stellenbosch, Union of South Africa. This may be of interest here, since the Mexican hawthorn trees have been grafted and distributed by California nurseries, and one from there has survived as far north as northern Virginia.*

According to the South African authors, *C. pubescens* has been planted in Transvaal on a fairly large scale as a fodder tree. Its high carotene content, equivalent to 6,500-7,000 International Units of Vitamin A per 100 g., compared to 3,000-8,000 I. U. Vitamin A for carrots, give it its outstanding quality as a supplementary feed for livestock when only dry grass is available. Workers at Stellenbosch re-

port good possibilities of using the Mexican hawthorn fruit for human consumption. It has high pectin content, and good qualities as canned fruit and jelly. As the taste of the canned hawthorn is more or less like a fifty-fifty mixture of apple and quince, they think it might best be accepted as a constituent of canned fruit salad.

The two oldest trees in the Transvaal, planted in 1907, are now about forty feet high and yield two tons of fruit per season. Bailey's "Cyclopedia" gives the size of the Mexican hawthorn tree as 30 feet and the fruit as $\frac{3}{4}$ to 1 inch. Larger fruited ones may have been selected in California. In this hemisphere it flowers in March, and the orange or dull-orange-red fruits ripen in October and November. At Ermelo, Transvaal, the ripening season is April. At that location the fruits kept until September in good condition, the winter season being dry. During two months storage at room temperature, in the humid climate of the western Cape Province, about half the fruit spoiled and Vitamin C content dropped from 140 to 40 mg. per 100 grams.

The Mexican hawthorn is thought to be a parent of the ornamental hybrid *C. Lavalleyi*, produced many years ago in France. The other parent is *C. Crus-galli*. The hybrid bears brick-red fruit, $\frac{1}{2}$ inch long, and is hardy. A great many other hybrid hawthorns are known, plus supposed intergeneric hybrids with medlar (*Mespilus*). What I'd like to see would be some hybrids between the Mexican and the May haw. Maybe a series of varieties could be obtained to ripen throughout the summer months in areas too warm for apples.

*A tree set at the Blandy Experimental Farm, Boyce, Va., in 1942 is about nine feet tall, according to Dr. W. S. Flory, Jr., who adds it "is anything but happy here, I should judge. The tree has not fruited. Leaves on it are usually quite bronzed as if badly infested by mites or some insect, but we don't seem to be able to remedy the condition." Perhaps the understock is at fault.