

Growing Figs in Florida

Harold Mowry, Gainesville

The production of figs is at present of minor commercial importance in Florida. Data furnished by the Department of Agriculture at Tallahassee show total plantings of some 20,000 bearing trees of which about 75% are in the northern part of the state. Practically the whole of these plantings is made up of what might be termed door-yard plantings, there being no commercial orchards of importance. Figures furnished by the State Marketing Bureau give an annual production of about 25,000 crates which have an approximate valuation of \$70,000. These are sold in local markets, canned, or preserved. Owing to their perishable nature no fresh figs are shipped except for short distances. Some attempts have been made to place them in northern markets but evidently with little success as such shipments have not been continued. The canned product, if of good quality, is always in good demand.

Only varieties suitable for marketing while fresh, canning, or preserving, are grown. Little effort has been made to grow the Smyrna type for drying purposes. The time of ripening, which occurs during the summer rainy season, precludes the drying of the fruits successfully by open air methods. It is quite possible that were the fruit produced cheaply in large enough quantities ade-

quate methods of drying would be devised. To grow the Smyrna figs in Florida would necessitate the planting of the Capri fig also, as well as the introduction of the insect necessary to caprification. Until some of the handicaps now existing in field culture are overcome there is little likelihood that success would follow such plantings.

The varieties which compose the major portion of present plantings are among those which were recommended by the American Pomological Society during a meeting of that body held in Florida in 1889. These varieties are:

CELESTE (*Celestial, Sugar.*) Small to medium in size; pale violet to purplish brown in color; pulp firm, rose colored, sweet, good quality; season early, begins ripening latter part of June. Is probably the best for canning purposes.

TURKEY (*Brown Turkey.*) Medium to large in size; coppery brown in color; pulp firm, whitish shading to pink, good quality; season begins about mid-July.

BRUNSWICK. Large to very large in size; bluish-purple to dark-brown in color; pulp soft, white, shading to pink, fair to good quality; season begins mid-July or later.

LEMON. Medium to large in size; yellowish-green in color; pulp soft, white,

sweet, fair to good quality; season begins late June or early July.

ISCHIA (*White Ischia, Green Ischia.*) Medium in size; pale-green or greenish-yellow in color; pulp soft, rosy-red or crimson, sweet, good quality; season begins about August first.

BLACK ISCHIA. Medium in size; bluish-black in color; pulp violet red to crimson, soft, good quality; season begins about mid-July.

Of these, Celeste, Brunswick and Turkey are considered to be the most hardy.

The fig thrives best in a deep, moist soil that is well supplied with humus, such as is found in low, well-drained areas. Hammock soils also are satisfactory. When planted adjacent to buildings, thrifty trees are found on a variety of soil types.

Owing probably to the little success which has attended field plantings, no comprehensive fertilizer tests have been made in this state. There is no doubt that the application of phosphate and potash in varying forms is advisable. Lime would seem to be beneficial as some fine specimens of trees are found growing in shell mounds. Mulching is probably a good practice in that it helps to conserve soil moisture and adds to the humus content, but it is contended that if long continued such mulching will tend to cause the feeding roots to come to the surface of the soil, the tree suffering in consequence during periods of drought. Good trees are found in yards where soil is kept swept clean and is packed quite hard by continued trampling. Any cultivation, other than very shallow, must be avoided owing to the shallow rooting habit of the

tree. No interplantings of crops which require deep cultivation or are susceptible to nematode attack should be made.

The fig is hardy throughout Florida, withstanding temperatures of 18 degrees normally to as low as 12 or 14 degrees when completely dormant.

According to Dr. G. F. Weber of the Agricultural Experiment Station, the most important diseases found on the fig tree in Florida are, Rust (*Physopella ficis* (Cast.) Arth.), Leaf blight (*Rhizoctonia microsclerotia* Matz), Anthracnose (*Glomerella cingulata* (Stonem) S. & V. S.) and Limb blight (*Corticium salmonicolor* Karst) listed in reference to their importance on the host plant.

The Rust on fig leaves is of a very serious nature inasmuch as it attacks all leaves on the tree causing them to be shed prematurely even before the fruit is mature. This you can readily see cuts down the necessary functions of the plant resulting in very marked reduction in yields and at the same time causing the formation of small sized fruit. This disease is distributed in all portions of the state where the fig is grown and I might say almost without regard to weather conditions or variety and is found very destructive. The disease is not found on the trees at the time the fruit sets but when it once starts spreads rapidly over the whole tree.

Instead of giving the control methods here I will discuss the two following diseases and then give the control methods as all three diseases can be controlled with the same spraying. The last of the diseases listed, however, is not effectively controlled by spraying.

The Leaf blight is evident on the trees very shortly after the leaves have expanded and in fact it is even found before the leaves are fully grown. The fungus causing this disease is almost wholly superficial. It can be detected on the stems of the leaves up which it grows from the branch to the leaf blade in the form of numerous fine, silky threads growing parallel to the leaf petiole. When it reaches the blade of the leaf it spreads out over it discoloring it and eventually killing the whole blade. The leaf is eventually shed. This fungus is found on a large number of the growing tips of the branches and also on the young fruit which is not yet mature. Other than the silky threads it produces small brown tufts which appear on the outside of the bark and very much take the place of spores in spreading the fungus.

The third disease known as Anthracnose is of serious nature both on the leaves and fruit. It produces small brown spots on the leaves the centers of which often fall out and on the fruit causes a soft decay. It is probably more important on the fruit than on the leaves and causes considerable rotting of marketable products.

These three diseases can be controlled by the application of 4-4-50 bordeaux mixture in the form of liquid sprays applied with 150 or 200 pounds pressure. The first spray, which is applied before the buds break open, may be considered as a dormant spray. This spray will kill all spores of the organisms that may be adhering to the branches of the tree from the past season. The second spray should be applied as soon as the first leaves are

evident. A third application should be made a week after the second and sprays should be applied to the trees until the fruit is as large as the end of a lead pencil. In making applications after this time there is danger of discoloring the fruit and thus making it unsatisfactory for market. Do not spray after this time until the fruit has been picked, then another application or two of this spray will be very beneficial.

As for the limb blight I would say that this disease is uncommon on well cared for trees. This fungus on limbs that have been killed by it is a pale pink colored growth that completely covers the affected parts. Usually this fungus gets started on a dead twig or through a wound caused by pruning. Consequently the control measures to be practiced would be careful pruning at all times of all dead wood, painting the cut surfaces with carbolineum. Since the trees will be sprayed with bordeaux mixture to control the previously discussed diseases this same spray will be sufficient to check the spread of limb blight.

During the past two seasons these diseases have been controlled on several trees in the Experiment Station Plots with bordeaux sprays according to the schedule already given.

The fruit of the Celeste variety is resistant to Anthracnose.

Nematodes, the cause of root-knot, are present throughout the sandy soils of the State, and are generally conceded to be the most serious handicap to fig growing. Apparently all efforts to overcome this pest by means of various chemicals and mulches have met with little success, as

far as fig planting is concerned. At the Experiment Station, during the past two years, experiments have been made with various species of *Ficus* as a rootstock for figs, in the endeavor to find one on which the fig would grow satisfactorily as well as show a resistance to nematode attack. No originality is claimed for this idea, as experiments have heretofore been made along the same lines. Any rootstock for figs, to be of value, must prove itself adaptable to the soils on which it is planted; form a congenial union with its scion; be easily propagated; and show itself to be immune or resistant to root-knot.

In March of 1923, the Horticultural Department of the Experiment Station received several species of *Ficus* from the Office of Foreign Seed and Plant Introduction of the U. S. Department of Agriculture through the courtesy of Prof. E. L. Lord of the College of Agriculture, who had requested this material with the idea that it might prove of value for fig rootstocks. These, together with some already on hand and others later obtained, from other sources, make a total of 18 species of *Ficus* which have been considered in these tests. Practically all have been discarded because of susceptibility to root-knot, failure to form a union with a fig scion, or a seeming incompatibility between stock and scion which resulted in bud or graft forming a union but with an unsatisfactory growth of scion following.

Two species have shown encouraging results. One is an undetermined *Ficus* species, a native of North Queensland, Australia, introduced by the Office of

Seed and Plant Introduction in 1921 and distributed under S. P. I. No. 52406. It is described as being "A large clean tree with fruit of fine delicate sweet flavor and size of a black Smyrna fig, only more rounded and dark crimson when ripe." The other is *Ficus glomerata*, a native of Siam. It also is distributed by the Office of Foreign Seed and Plant Introduction, under S. P. I. No. 52496. The latter one has been in the United States for several years. Both are easily propagated from cuttings which root readily at all times of the year. The *glomerata*, in some instances, has not formed a union with a fig scion as readily as has the No. 52406, nor has it always grown off satisfactorily once a union has been formed. No grafts on the *glomerata* have been made for a length of time sufficient to give any definite or comparative results. Both are evergreen types. When set out in the open they are vigorous growers and have a very attractive foliage. They are susceptible to cold injury, both having had their foliage severely injured by a temperature of 29 degrees accompanied by a heavy frost. A temperature of 25 degrees killed them back to the bank. The same plants, sprouting from the ground, made a maximum growth of 9 feet during the next, their second, season. A plant of the No. 52406 has lived through two winters in the open at De Land with little or no cold injury.

On March 28, 1923, a cutting was made from the plant designated as No. 52406. A shield bud from an Ischia fig was inserted in this rooted cutting on August 29th. The plant was kept in the greenhouse during the winter and on April 3,

1924, was planted in the open on a very light sandy soil which had been under cultivation at least 15 years. By June 1st of the same year the tree was setting considerable fruit, the first ripening September 9th—a few days over one year from the date the bud was inserted. Nearly one hundred fruits ripened during this first season. At the end of the growing season the tree had an extreme height of 4½ feet with an extreme spread of 5 feet and calipered 2½ inches just above the bud union. Despite it having been budded on an evergreen root-stock the scion went into a dormant state at the same time as adjacent fig trees on their own roots. Fertilizers were used but no mulching whatever was put about the tree. Cultivation consisted in flat hoeing only. No buildings are adjacent to the tree. Close examination of roots has shown a very slight root-knot infestation.

As a check, a vigorous, clean one-year fig on its own roots was planted on March 4, 1924, at a distance of some 17 feet from where the budded tree was later planted. The two trees were given identical treatment as to cultivation and fertilization. The check tree attained a maximum height of 2½ feet and ripened but one fruit during the season. Examination of roots has shown a heavy root-knot infestation.

To prevent injury by cold, the budded tree was banked with soil during the winter for some three months in the same

manner as citrus buds are protected. This banking has proven to be a most serious mistake as, when banks were removed late in February, the bark of the scion under the bank were found completely girdled which necessitated the removal of the whole top of the tree slightly above the bud union. New growth had started on the portion of the scion which was left. No damage could be noted to portions of the tree which were above the bank, showing that the banking and not cold injury caused the damage. This seemingly has demonstrated that this tree when so grafted cannot be banked with a large bank for long periods of time. Owing to the susceptibility of the stock to cold injury it is probable that it cannot be used in Northern Florida. Small grafted trees, however, lived through the past winter in the open in Alachua and Duval Counties without injury by cold.

In propagating this stock, both budding and grafting have been used. Grafting has given the better results. Raffia is used to wrap, after which the whole is covered with melted paraffin to exclude air and water from the union.

The foregoing remarks are in no wise to be construed as being a recommendation of these rootstocks by the Experiment Station. Sufficient time has not elapsed to thoroughly test them out nor have plantings of size been made in varied localities which would prove their adaptability.

Member: Did the time of year of making the cut or making the graft have any effect?

Mr. Mowry: I have done it all times

of the year, but had best success in grafting during January and February

Member: How about the cuttings?

Mr. Mowry: Any month in the year.

Member: Where can they be obtained?

Mr. Mowry: Through the Department of Agriculture, Office of Foreign Seed and Plant Introduction, Washington, D. C.

Member: How much work have you done with the Cluster Fig — *Ficus Glomerata*?

Mr. Mowry: It has been rather exotic. In some instances it has grown well; in others it has grown and then stopped. The work is in a highly experimental stage as yet. It is well worth giving more time to.

Member: I would like to ask if you have ever tried shipping figs in refrigerator boxes, similar to the strawberries. From your remarks, you couldn't ship them very well. Have any experiments been made along that line so as to get them to a market?

Mr. Mowry: I have no knowledge of any having been shipped in refrigerator boxes. There have been various methods devised for shipment, but none have proved successful for moving any large quantities.

Member: What effect would the moisture in refrigerator boxes have on the fruit?

Mr. Mowry: I can't say.

Mr. Whidden: It appears we can't raise figs on account of root-knot. Can you take an old tree and kill out that root-knot, so it will become perfect?

Mr. Mowry: No, sir. It is too late after you have let the root-knot start. I have never known it to be killed out on any

tree after the tree was once affected with it.

Mr. Whidden: About 35 years ago I got very much interested in figs. I sent to Washington. The Department sent me thirteen beautiful cuttings, and I rooted every one of them. I cared for them nicely in my back yard in Bartow, and I think I grew the most magnificent trees I ever saw. I pruned them just as I would a nice orange tree, on a single stock. I mulched them around and didn't work the ground at all. I gave some to my neighbors, two or three, and that left me eleven trees, and I had figs by the barrel, as fine as you ever saw in your life, and Mr. Mowry named the three varieties there tonight that I tried out then. I sold the place. Several years afterwards the trees were neglected, and went to the bad. Twelve years ago I got interested in figs again. I went to the country where I knew there were some nice trees, where they had been growing over twenty years, cut me some little limbs about 8 inches long, brought them home, packed them in Spanish Moss in January, and kept them until about the first of March. Then I selected a place where root-knot was not prevalent, and planted them. I transplanted them in an orchard in the back yard. I didn't work the ground; I mulched them, and produced more figs than the whole community could use. They were there when I sold that place. I haven't seen them in three years, but I had no trouble raising all the figs I and all the neighbors could use.