

CITRUS GROVE PRACTICES ON THE HAMMOCK LANDS OF THE INDIAN RIVER SECTION

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The subject allotted to me is one that might extend through hours of discussion, and permit a range of thought that would carry us into a multitude of subdivisions of each phase of it, and into an elaborate discussion involving experiences of growers for the past fifty years; and the theories of scientists and investigators and experts some of whose conclusions will stand until a new theory is evolved. All of this would be of no great value at this time. What I propose to bring to you is just a few minutes of a summary of my personal observations as a layman, who has lived and worked in the groves of this entire area for a period of twelve years. It has been my privilege during this time to observe, advise and direct the cultivation and fertilizing of hammock groves, from the North to the South end of this area known as the Indian River section. Also it has been my privilege to have direct charge of one or two groves that are known to be typical hammock groves.

The fame of Indian River Brands of fruit has become fairly well known to the average grower in Florida, and to the principal markets. The general accepted theory is that fruit from this section possesses superior quality. Much fruit is produced in this section that attests this fact. I have seen oranges and grapefruit picked from some of those groves that was of the finest quality; so smooth of surface, it would correspond to that of kid glove and skin that was so thin it is difficult to peel without cutting away some of the meat; and with this a firmness to the whole fruit; and so packed with juice that it seemed the peeling must be stretched to its limit to contain it. The flavor of this fruit leaves nothing to be desired. I have seen fruit of this sort and have grown some but only on the truly hammock lands. Not all of the fruit that comes from the Indian River section deserves the reputation that this section enjoys. I have seen just as fine fruit in other sections of the state, but only on soils

of a similar character to that of the hammock land of the Indian River section. For various reasons, various people take credit to themselves for the superior quality of fruit that has been grown under their supervision, or ownership, on groves of the Indian River hammocks, but it has been my observation that the success of the same people in producing fine quality of fruit, has varied directly with the character of the soils as their grove extended from the low hammocks to the high ridges. The ridges of the Indian River section are growing largely the same quality of fruit that is grown in any ridge grove area.

If this is true, then there must be something of vital importance that nature has placed in the hammock soils, that makes it possible for the production of superior fruit. In so far as I know, the greatest difference between this soil and others may be summed up in one word "humus." There is one factor that is of tremendous value, and that is the greater abundance of moisture in the hammock soils as compared to the ridge soils, and of course the tremendous amount of thoroughly decayed vegetable matter in the hammock soils enables them to retain the moisture better.

The reputation of the Indian River fruit has been made largely by the products of these groves that were started immediately after the big freeze of the winter of 1894-95. These early planters knew the value of hammock land. It meant that for years to come they could grow trees and produce fruit at a minimum of expense and these rich lands would give them a maximum of returns in fine quality fruit, for that which he could supply bountifully, which was hard work. These early grove owners knew nothing of the nine-hour day of labor, theirs was from daylight until dark.

Their equipment consisted of an ox, a hoe, a shovel, and with some a mule, and plow and harrow. The lands they selected were the heavy hammocks literally covered with a dense growth of holly,

hickory, live oak, dogwood, magnolia and cabbage palmetto. These soils were the product of centuries of accumulation of decaying vegetable matter. The usual procedure was to clear away a strip some ten feet wide on which the trees were to be set. This space was carefully cleared, and all roots removed to a depth of two feet. All forest trees in the remaining areas, were immediately girdled. As soon as the planting was finished, then began the work of clearing all of the remaining ground. The growth such as oak logs, palmetto logs, brush and what not was piled in long windrows between the trees, and there it lay until it had decayed. It took no scientific expert to guide those common sense old pioneers in the conservation of all the organic material that was produced on this land, even though it was already tremendously rich in this material. Naturally those plantings which entailed so much hard labor, and at a time when money for the employment of help was so scarce, were made in the most selected hammocks. Later years as the industry began to grow rapidly, large operators came in and made new plantings, and in their rush to get the land completely cleared, and with plenty of money for this initial expense; cleared large areas, cutting, piling and burning every bit of organic material that was found standing on the land. It was an economic loss. If I were clearing hammock land in this section today, I should follow the plan of those old timers; I would conserve every scrap of organic material. It is what made the hammocks different from other soils; and it is the reason why these soils have produced a quality of fruit that has made the Indian River section famous.

The root stock on these groves is almost entirely sour orange. These early grove men often got their root stock from the wild sour orange trees that they found growing on the very land they were clearing. Many an orange tree, in these groves, that has been giving its owner wonderful fruit for years and years, is on a native wild orange root stock, that may have been 40 years old when it was budded or grafted. In all plantings of budded trees in later years, the sour stock has been used almost entirely on all hammock lands, both on the high hammock as well as on the low hammock. And in fact up to the

last ten years this type of root stock was used almost entirely throughout this section, on all types of soils. In recent years much lemon root has found its way into plantings of groves, but not on any of the hammock soils. In many of these early plantings the trees were not very accurately spaced, and, if they were, the distance apart seldom was over fifteen to twenty feet. As a result these groves are almost inaccessible with the modern tractor with its disc harrow, and other tools, that have perhaps done as much harm as they have done good. I do not mean to condemn these tools. They certainly have an established place in the Florida grove system, but they do such fine work, and do it so easily, that many of us who own this sort of equipment, over-do it.

These early growers were from necessity forced to do the greater part of their cultivation by hand labor, and with no more improved equipment than a one mule plow and harrow. From this we naturally find that they did as little cultivation as possible. Their biggest task, after the land was cleared, was to cut down the heavy vegetable growth from time to time, and hoe in their fertilizer, and often times they did not even hoe in their fertilizers. This practice of limited cultivation has been handed down and today even with more systematic planting and improved tools, the cultivation in all hammock groves is comparatively small. There is one thing that has always impressed me in this system of cultivation by hand as followed by these early growers, and which is practiced very extensively even today in those famous hammock groves north of Titusville, on Merritt Island, and along the ten mile section west of Ft. Pierce. It has automatically brought with it a system of making the individual tree the unit of attention. Not one tree escapes the attention of the owner as he leads or directs the hand work through these groves. It becomes his aim to make every tree do its best. Every tree comes before his inspection and if there is some special attention needed, the individual tree gets it. I believe if the growers of the state of Florida would adopt the individual tree as the unit of care, instead of the acre or the quarter section, it would quickly show a tremendous improvement in the quality of the fruit grown. When one considers the tremendous

amount of money spent for cultivation, fertilizing, and general care of groves in Florida, and the relatively small percentage of first class fruit that is actually produced, it is appalling. We are attempting to carry on in a tremendous wholesale way, an industry that finds its highest quality of production, only in perfection of the individual unit of production.

FERTILIZING

In the matter of fertilizing the hammock groves, the owner has in a general way, the same problems as those of the grove owner anywhere. It is largely a matter of judgment, and ability to correctly analyze the needs of the tree, and then make the application. In the very beginning the hammock grove gets some fertilizer. It may be a handfull, two or three times a year, according to the appearance of the tree. Usually the formula is very low in ammonia and high in potash. This is desirable for the best character of growth on the young tree. Care is taken to avoid forcing the tree too much. It is an easy matter to do this on those rich hammock lands. At the age of six years the trees are getting only about eight to ten pounds of fertilizer a year, while at the age of from twelve to twenty they get from twenty to thirty pounds per year. At this point the grove may begin to show distress from exhaustion of native richness of the soil; from this time on the hammock grove owner is facing problems of replenishing his organic material, similar to that confronting the grove owner of thinner land. The new grove will use, usually, a formula of fertilizer running lower in ammonia and higher in potash than is used on higher lands. I have known some hammock groves to receive not more than three per cent ammonia and not less than eight per cent potash at any time of the year, and often the summer application would be two per cent ammonia and ten to twelve per cent of potash. The phosphoric acid is kept rather constant at six to eight per cent. In the past, hammock grove owners have in some cases resorted to the use of all chemical fertilizers. It has been my observation that where this practice was followed over a period of years, in spite of the tremendous amount of humus that was in those

soils, the trees began to harden. The leaves became smaller, and thinner; the growth is shorter and less vigorous, and the fruit begins to decrease in size. I recall one owner of a very fine hammock grove that had become so firmly convinced that any form of organic material in his fertilizer would give his trees 'die-back' that he used for years a chemical formula running 3-8-10 for the spring application and a chemical formula running 2-8-10 for the summer application. (Many grove owners practice the use of only two general applications per year). The last time I talked with this man he had decided to change his brand of fertilizer. "The fertilizer he had been using for years," he said, "used to get him good results, but lately it has been falling down" and all this time his fertilizer came from chemical materials, only supplying the three elements, ammonia, superphosphate and potash. It is true, as he argued, that his land had been producing good cover crops, but even these were getting lighter every year. If this man could only have set down in the woods, in an uncleared hammock, for half a day and pondered on how nature had made that hammock so rich, and then gone back to his grove and done what he could to imitate nature, he could have saved himself a lot of worry. What that hammock grove needed was more organic materials. What that grove needed was a few applications of fertilizer running from forty to sixty per cent of organic materials, to build up active bacteria in the soil. I have never yet seen or created any injury to groves on heavy hammock soils by the use of a reasonable amount of organic materials in the fertilizer, and particularly on these old hammock groves. The drain on these soils from years of crop production is tremendous. Those originally rich soils can not stand the strain indefinitely. It has been my observation that with all the humus that is returned to these soils annually from the naturally heavy vegetable growth, that the supply of organic material is steadily depleted by the removal of crops and development of trees over a period of years. It has been my observation that the bacterial activity is reduced even on these rich soils to such a state that the addition of some form of quickly available material in addition to the cover crops, that will stimulate bacterial activity, is necessary.

I know of no better way of doing this than by the use of a properly balanced fertilizer containing organic materials in accordance with the needs of the soil.

I look with a great deal of apprehension on a system of fertilizing which calls for the use of nothing but mineral fertilizers. I have searched diligently and have observed carefully, and I have yet to find substantial experimental data, or satisfactory results from the practice of such a system sufficient to warrant its recommendation for exclusive use.

The reverses that have come to growers during the past few years have been very disturbing, and the low returns of fruit this year have made growers everywhere particularly susceptible to new ideas, untried formulas, and half baked experiments, which are being offered. I do not want to convey the impression that I do not heartily approve of research in experimental work. On the contrary, research work that is carried on with proper degree of thoroughness and over a sufficient period of time, the results carefully and accurately checked and properly analyzed, and the conclusions placed in words that can be readily understood by the average grower, and put into practice—this sort of research work is of inestimable value. Never before in my fifteen years in this business in Florida has the state been so over-riden with so many "experts" who have evolved new plans of salvation for the citrus grower. All of these schemes and 'isms have one thing in common, they each and all of them are going to show the grower how to grow more fruit, better fruit, and at half the price, with this exception—the grower must pay the expert for his service or for his goods. There are times when I am dazed by the rapid turn of developments. I spent four years in college studying horticulture, and then for eighteen years I have tried to practice it, and studied constantly; and I have spent fifteen of those years in Florida, yet I meet every once in a while some expert who has been in the state anywhere from one to five years, who can tell me more about citrus culture than I ever hoped to learn. The amazing fact is that the one year man knows more than the five year man. To

me all of this is a warning. It is a danger signal, that I must at this time above all times sit steady. Whatever I do with my grove must be done only after careful deliberation, and in line with only well established and time proven practices. It is my thought that during these times when the whole world is trying to get something new started, when there is a bewildering barrage of propaganda being spread for the purpose of disturbing everything, from our usual method of combing our hair, to a radical change in the fundamentals of our Republican Government;—under these conditions I reason, that little wonder the citrus grower is going to be told that all he has ever done may be wrong and he must right about face if he expects to survive.

In closing the subject of fertilizing the hammock groves, I want to say that the reputation of the Indian River fruit was made by fruit grown by the use of properly balanced fertilizers, containing the three essential elements of plant food, and derived from such a variety of sources as best offer the tree its nourishment at a constant and steady rate throughout the year. There is no class of grove property that will tolerate unbalanced methods less than the hammock grove. It is particularly sensitive to neglect and radical practices, but like a thoroughbred responds beautifully to a common sense method of handling. Mother nature in building the hammock lands, never contrived, though I think she could have done so if she had thought best, to let loose a wad of ammonia at one time of the year, and a shot of phosphoric acid at another time, and then at her convenience feed her plants some potash. To Mother nature this method must have appeared unsound. Let us ignore a lot of bewildering theorizing, and confine our activities to following the example of Mother nature, when she built the wonderfully productive hammock soils. The more we conform to her example, the more conveniently she can turn our best efforts to our best interests. Mother nature tries to feed her trees a complete plant food, containing all the elements essential, and to give them steady and constant nourishment.