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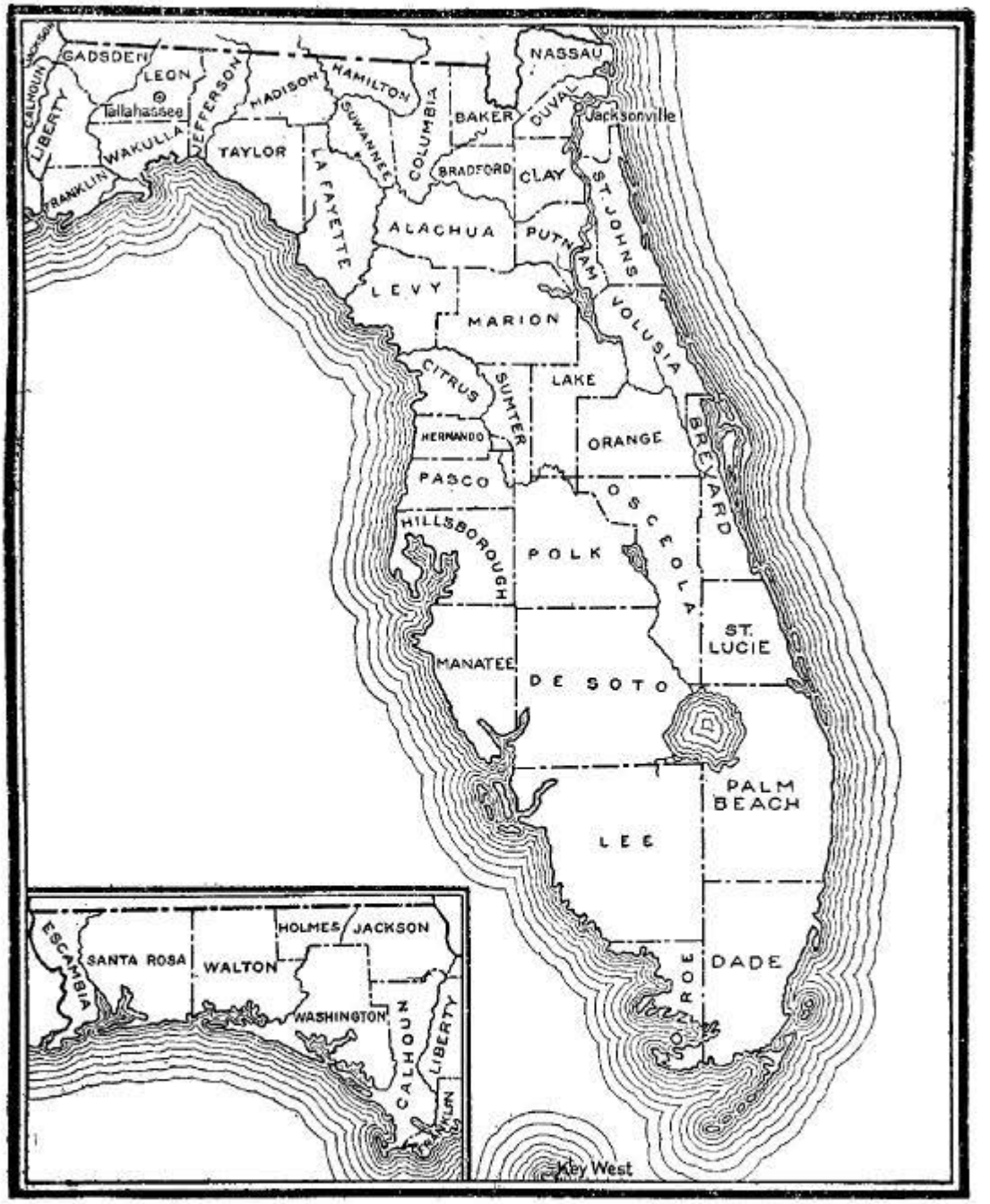

PART I.

SOME VEGETABLE AND FORAGE CROPS, NURSERY INSPECTION CIRCULAR.

TOMATO GROWING IN FLORIDA.

The Tomato (Lycopersicum esculentum) belongs to the order Solanaceae or Night-shade family which contains something over twelve hundred species, among which are three of our most valuable and important vegetables—the Irish potato, the tomato and the egg-plant. It also includes the red pepper, and the narcotics, such as bitter-sweet, belladonna, Jamestown or "Jimson weed," the tobacco and others.

The Tomato was first introduced into Europe from South America in 1596, but for many years it was planted only as an ornament to the flower garden. It came into use very gradually in the preparation of sauces and soups, and has only attained its popularity as a table vegetable in comparatively recent years. Its importance as an article of commerce really dates back little more than twenty years, and as compared with the present it was then indeed of small proportions, though at that time the increasing annual crop was watched in fear and much suspicion as to the probable effect on the markets. At present in Florida it exceeds in volume and value nearly four times that of the next most important vegetable crop (Irish potatoes). In 1910 the crates marketed were 2,336,948, the net value of which was $2,528,620. The Tomato, therefore is Florida's greatest vegetable crop, standing next in importance and value to the Orange.

SELECTION OF SOIL.

The Tomato will resist drought better than it will too much rain, in fact it stands drought better than most vegetables; the soil therefore best adapted to this crop is a good well drained sandy loam. The Tomato is not a gross

feeder; it seems to prefer a light soil to one that is too fertile, or that has been made rich with heavy animal manures; cow manure in moderate quantities is good, but chemical manures in proper quantities are best in most cases.

SEED BEDS.

We do not believe in the extreme views of some growers, who plant the seeds directly in the field, where the crop is to be produced. A seed bed is really indispensable; it makes success more certain and it should be well equipped to afford speedy and ample protection against cold, and of ample dimensions to furnish a relay of plants, if the first setting is destroyed by cold, and even a second relay is often necessary, for some times even these reserve forces have to be brought into action.

It is best to have three or even four good, large plants provided in the seed bed for every one the planter expects to raise to maturity. This is the true wisdom of the foresighted and provident grower, who, by his strong management will force success against obstacles before which weaker men will go down in defeat. The tomato is a feeble plant in its infancy and an easy prey to frost and mysterious fungus enemies—yet, if we faithfully defend and feed it, it will yield the dollars at last more generously than anything else except the prodigal orange.

The seed-beds may be of light, rich, sandy loam, raised a few inches above the level of the ground. It is considered best to have them six feet wide, and as long as desired, running east and west. Have on the north side a tight board wall, three feet high, on the south side half as high, with tightly boarded gables. This will give a shed-roof with light rafters nailed across, on which to roll down the roof of cloth, tacked to rollers anywhere from thirty to fifty feet long.

Let the rafters have no projection, so that the cloth may drop down snugly against the south wall. Such a

covering of cloth alone will protect the plants against a white frost; a sheet iron coke burner, such as the pine-apple men and orange growers use, placed every fifty or seventy-five feet, will protect them against a black frost.

Make drills crossways of the beds, three to four inches apart, sow the seed in thinly, say about two or three to the inch. Cover three-fourths of an inch. *Firm the soil* with a board or light roller, and water with a light spray, as may be needed to keep the soil moist, but be sure not to overdo it as too much moisture will cause the plants to damp off, and to grow small and slender, specially near the front and back walls of the frame. It is therefore advisable to sow the seed more thinly near the front and back than in the middle of the bed. Roll down the cover on chilly nights.

When the plants begin to have four leaves, cultivate lightly at least once a week. Pull out clumps of spindling plants where the seed chanced to fall in a bunch. Thin to three inches by cutting across the drills with a narrow hoe.

Where the plantation does not exceed a half-dozen acres, it pays to take up and reset the plants once or twice to render them more hardy and stocky. To toughen them against this removal it is recommended to reduce their supply of water for about ten days to render them somewhat dormant. This is to be continued up to the hour of removal. This may be done without fear as the tomato is very tolerant of a transfer.

TRANSPLANTING TO THE FIELD.

First, make ready the field two weeks beforehand. Supposing it to have been plowed in November and thoroughly cross-plowed in January, then with a two-horse plow run out furrows four feet apart and strew in the fertilizer at the rate of 600 pounds per acre. Work in a little of the furrow slice and mix it with the fertilizer with a bull-

tongue. Strew in as much more and mix again, thus giving 1,200 pounds per acre and leaving the surface level. Set the plants two to three feet apart, according to the strength of the land. Some growers prefer to manure the plants in the hill, which probably saves in the amount of fertilizer required per acre, but either plan is good, one about as good as another, and is largely a matter of choice only.

Reject rigorously all weakling plants. Leave them in the seed-bed to grow; when relieved of the crowding, they may come on and furnish a relay, if needed. Wet the ground soft and pull the plants up carefully, running the forefinger under, if necessary. Wet the rows down again to restore the level after the upheaval.

We have very little confidence in plantsetting machines with tomatoes. They are fine, and great time and labor savers in the planting of some crops, but not for tomatoes, they are too tender and easily bruised. The way is to set by hand with the best-paid class of men and not with children at all. Children are only fit to pick cut-worms. Take hold of a plant and pull; if the leaf comes off, the plant was properly set; if the plant comes up, the setting was poorly done. Caution the setters constantly against leaving airholes at the bottom; make them fill in at the bottom first, then at the top. *Firm the earth*; have an experienced man follow along; place one foot on each side of the plant; rock a little forward and throw his whole weight on his toes, opposite the plant.

Keep the plants screened from the sun, in a vessel with water enough to cover their roots. Let each setter have his own vessel of plants; take one out at a time and immediately place it in a hole punched in the ground, not exposing the roots to the air two seconds.

CULTIVATION.

This is as simple as with corn. It may be deep and

close for a few weeks, but keeping further away and more shallow as the plant advances, ceasing when the bloom-buds come.

There is little doubt that staking the plant and nipping out the terminal bud above the first cluster of bloom hastens the maturity and improves the size of the tomatoes; but it is questionable if it will pay with the present prices of labor. In a small field tended by the grower's family, it would probably be profitable. Do not prune the plants if you expect to ship your fruit to market; you will get fewer but larger fruit, but it will not pay you.

When picking the earliest fruits it should be remembered that the cold weather in the North will permit them to ripen very little on the road; hence they should not be gathered until they have begun to redden slightly. A greener one would remain hard and uneatable and rot before it would ripen. Later on, as the weather in the North grows warmer, they may be picked when they have fairly turned white, preparatory to reddening. An immature tomato removed from the plants always remains more or less tough. This objection may be remedied to a considerable extent by proper fertilizing. A tomato grown on a well-proportioned strongly mineral fertilizer will be comparatively crisp and melting in the mouth, while the produced on nitrogenous manures will be tough and wilted

The tomato, though it is so great a crop, is well worth being treated as a fancy product. In fact, all the early produce of Florida is deserving of this distinction. Coarse, brown wrapping paper cheapens the fruit. The buyer is only too ready to take it at the grower's own estimate. Valuable packages are not wrapped in hardware paper. The best printed tissue wraps should be used, and—let the fruit also be worthy of the wrappings.

VARIETIES.

There are such a large number of equally good varieties to choose from that one can hardly go amiss, and while at one time it was thought that only one or two kinds would bear shipment, continued improvements with new varieties have so changed these conditions that it is largely a matter of choice or personal preference as to which is best in the grower's opinion.

BLIGHT AND INSECT.

With the tomato, as with all other vegetables in this State, no precaution against insects should be neglected; prevention is much easier than medication. The one preeminent precaution is to use strong tobacco dust sprinkled around the plants as soon as they are set out. Blight is also far easier to overcome in advance. Burn all the old vines as soon as the harvest is over, thus destroying the germs of blight or other diseases. It is best to plant tomatoes in rotation with crops that are affected with diseases different from the tomato, such as corn, cabbages, peppers, etc.

FERTILIZER.

A good fertilizer for rather light soil would be composed of say—

No. 1.

	Per Cent.
1,000 lbs. of Blood and Bone (6½-8)	4 Ammonia
100 lbs. of Nitrate of Soda (17 per cent.)	8 Available
500 lbs. of Acid Phosphate (16 per cent.)	10 Potash
400 lbs. of Muriate of Potash (50 per cent.)	
2,000	

State value mixed and bagged.....$34.50
Plant Food, per ton .....440 pounds

For heavier soils, as the best class of sandy or clay loams:

No. 2.

		Per. Cent.
500 lbs. of Castor Pomace (6-2 per cent.)		
200 lbs. of Sulp. of Am. (25 per cent.)..	}	1.00 Ammonia
900 lbs. of Acid Phosphate (16 per cent.)		7.76 Available
400 lbs. of Sulp. of Potash (48 per cent.)..	}	8.00 Potash
2,000		

State value mixed and bagged.....$23.76
Plant Food, per ton.....426 pounds

IRISH POTATO GROWING IN FLORIDA.

The potato (Solanum Tuberosum) belongs to the family Solanacea the same as the tomato, egg-plant, belladonna, etc. Solanin the active principle is found in small proportions and is poison to a small extent. This poison is developed when the surface turns green from exposure to the direct rays of the sunlight and is therefore unwholesome as well as unpalatable when in that condition. For this reason sprouted or greenish colored potatoes are less valuable for food even though in the process of cooking a change is effected in the composition of the tuber.

The chief organic ingredient of the potato is starch which forms about one-tenth of its weight. According to history it was first introduced into Europe by the Spaniards from South America. It still grows wild in the mountain regions of Chili. It also has been found indigenous to Arizona and Mexico. It was introduced into England from Virginia by Sir Walter Raleigh. It is said that "The potato is one of the greatest blessings bestowed upon mankind for next to rice, it affords sustenance to more human beings than any other gift of God." It is one of the few food products that can be consumed exclusively as a food without limit as to time with no injury to the system; it is a ration in itself that will sustain life and strength for a great while. It is a wonderful provision of nature, that the family which embraces the deadly night shade, and other very poisonous plants, should also have among its members this most useful vegetable. Of all the crops of the truck-farmer, the potato is the one which is always saleable at more or less renumerative prices, its general use among all classes and

nativities of population, makes it perhaps the most universally planted vegetable known. The potato tuber is not a root, as it has neither root hairs itself, nor has the stem which connects it with the stock either fibrous roots or hairs and, therefore, does not provide the plant with nourishment; neither is it a seed any more than a stalk of sugar cane is a seed, both having eyes. The potato is simply an enlarged underground stem, the eyes of which are also the buds. As is well known the larger number of the eyes are on the end of the tuber opposite from where the stem connects with the plant. When the potato has dried out to a considerable extent and the atmospheric conditions are favorable, the eyes or buds will swell and begin to grow or sprout out. Until roots put forth these shoots are dependent on the moisture and starch in the tuber for their support, the same as seeds; these eyes, however, are independent of each other, which enables the cutting of the tuber into numerous parts for planting. If the tuber and eyes are both sound, the shoots will grow and make healthy plants, provided conditions are favorable, whether they be planted whole on in pieces with single eyes.

In cutting potatoes to single eyes, the cutter should commence at the stem end, where the eyes are fewer in number, and slice the pieces to single eyes each, in such a way as to distribute the greatest amount of the tuber-substance possible with each piece. A good rule is, cut all medium to large potatoes to single eyes whether sprouted or not. Small potatoes may not all mature enough to grow strong sprouts, but if a small potato is matured enough to put forth strong sprouts, cut it also to single eyes for very little substance will supply their support, but if the potato has not sprouted it may be planted whole without much danger of its putting forth more than one stalk.

A potato delights in a comparatively cool atmosphere and moist soil and therefore thrives best in cool months of the early spring and fall. Mulching with leaves to retain moisture often produces a good crop even if the season is very dry as the vegetable matter serves to conserve the moisture in the soil. The soil best adapted to this crop is a rich sandy loam or a moderately light clay loam underlaid by a sub-soil of a character to retain moisture. It should be plowed deeply and thoroughly pulverized. Plow and harrow until it is put in a thoroughly good condition and well rotted stable manure may be applied broad-cast, should there be a lack of humus in the soil, but in the event the stable manure is applied, it should be done for spring crops early in the season or very late in the fall months. If too much green manure is applied it is apt to produce scab. The land should be broken a month or six weeks before time for planting. It should be broken with a two-horse turn plow and subsoiled if possible. Into these furrows put a complete commercial fertilizer at the rate of 800 to 2,000 pounds per acre depending on the character of the soil. Mix this with the soil and the subsoil by running two furrows with a long narrow bull tongue plow so as to thoroughly mix the fertilizer with the soil, then let stand for ten to twelve days before planting. Cut the tubers as previously stated and plant when ready, covering about four inches deep.

VARIETIES.

The best varieties for planting in the South and especially in Florida, are the early and extra early varieties, such as the Bliss' Red Triumph, Bliss' white Triumph, Irish Cobbler, Improved Rose Number 4, Dixie and Extra Early Sun Light. These are the extra early and the best for growing in Florida for the first crop. Second earliest can in some sections be grown with profit, but not generally throughout the State for commercial purposes.

Beauty of Hebron, Early Rose and Carmen No. 3 are favorite second early varieties. Burbank and Peerless are late standard varieties for little later growing.

The time of planting potatoes in Florida depends upon the section of the State. In the far southern portions they can be planted as early as December growing later up to March as we go farther north, indicating the change necessary to conform to the seasons and location, the difference being about ten to twelve days for each 100 miles.

The cultivation of potatoes is very similiar to that of corn. Plow deep at first and shallower with each working until ready to lay by. In this way the roots that feed the plants will not be troubled and the process of making the tuber will not be interfered with. When the vines turn yellow the tubers are ready to dig which can best be done with an ordinary pronged potato hoe and the man. In some of the light sandy soils potato diggers are successfully used and can be successfully used in most Florida soils. The digger should not be permitted to pile them roughly into piles or throw them roughly into the baskets. The more carefully a vegetable is handled the better it will strike the public eye and consequently the more money it will bring the grower. Whatever may be its size, no cut or bruised potatoes should be put in the first quality, but may be in the culls. The barrels or baskets should be well shaken down and so full that the heads have to be pressed down. It is better that they should be double headed and well coopered. The potatoes should be classed as first and second quality and the culls, the small tubers, should be kept for feed purposes or seed as suggested elsewhere. Cloudy weather is best for digging the crop, as potatoes should not be exposed to the hot sun and if picked while warmed by the sun they are apt to rot before reaching the market. If dug during the sun shine, they should be gathered as they are dug

and carefully emptied into baskets or barrels and promptly hauled from the field or shaded from the rays of the sun. The potato is subject to various insects and diseases, but in this country a Florida potato grower has a great deal less to combat in this respect than those further north and west, but it is unsafe to place full reliance in this fact because there is no certainty as to when a disease or insects may attack the plant unsuspected. The potato scab is the greatest trouble to the potato grower in Florida. This is a fungus disease and can be prevented in a large measure by treating the pieces of potato before planting with solution of corrosive sublimate or formalin and a good plan to prevent this disease is to burn the vines wherever there is any appearance of the disease about them. The solution for treating this disease is corrosive sublimate, 4 ounces to 30 gallons of water. Soak the seed, after being cut, for one hour to one hour and a half, then drain. The formalin solution is one pint to 30 gallons of water. The potatoes are immersed in this latter solution for about two hours. A good plan to use in immersing potatoes in these solutions is to put them one-half bushel or so at a time in a gunny sack then lift them out and let the water drain back into the vessel. Any other clean sack will answer the purpose if desired. As soon as this is done spread them out and let them dry so that they will dry quickly and thoroughly. Be sure that the solutions are not too strong or the buds or eyes will be damaged.

There is also a disease known as the late blight which comes about the time the potatoes are beginning to mature. This disease can be controlled by spraying with Bordeaux mixture. In a former Bulletin, the July number, 1911, the formula for all sorts of sprays, the Bordeaux included, will be found.

FERTILIZERS.

The following formulas are adapted practically to all soils and sections in the State. The planter can choose which ever seems to suit his soil best.

No 1.

		Per Cent.
1,000 lbs. of Blood and Bone (6½-8)		
100 lbs. of Nitrate of Soda (17 per cent.)		4 Ammonia
500 lbs. of Acid Phosphate (16 per cent.)		8 Available
400 lbs. of Muriate of Potash (50 per cent.)		20 Potash
2,000		

State value mixed and bagged..... $34.50
Plant Food, per ton.....440 pounds

No. 2.

		Per Cent.
500 lbs. of Castor Pomace (6-2 per cent.)		
200 lbs. of Sulp. of Am. (25 per cent.)		4.90 Ammonia
900 lbs. of Acid Phosphate (16 per cent.)		7.70 Available
400 lbs. of Sulp. of Potash (48 per cent.)		9.70 Potash
2,000		

State value mixed and bagged..... $33.76
Plant Food, per ton.....420 pounds

THE HOME DAIRY IN FLORIDA.

By C. K. McQuarrie.

Assistant Superintendent Farmers' Institute.

The livestock industry in our State is in a backward condition. Why this should be so is a question that seems hard to answer. There is no section of Uncle Sam's wide domain where feeds for live-stock can be produced in greater variety and in larger quantities than right here in our State. Every farmer who has embarked in this industry in Florida, either for beef or dairy products, gives the same report of low cost of production along his special line. The livestock industry is the rock bottom foundation of agricultural prosperity the world over. Until the farmers of our Southland embark in it to the fullest extent, our agricultural prosperity as a section will not be of the highest grade. Corn alone, or any other single specialty in crop production, such as cotton or tobacco, never has made a country universally prosperous, and never will. We must have the live animal on all our farms, and in sufficient numbers to maintain and increase our soil fertility in a way that the contents of a "guano" sack never can. The importance of the live animals on the farm as a means of increasing agricultural prosperity is clearly indicated by the history of nations. A comparison of the types of livestock farmers found in the British Isles, Denmark, and Holland, with the peasant wheat growers of Russia, and the rice farmers of India, is ample to illustrate the close relation between livestock and agricultural prosperity.

ADVANTAGES OF LIVESTOCK FARMING.

Livestock farming necessitates rotation of crops and seeding down some of the land for pasture. It requires activity and skillful management the year round. It compels the farmer to keep an outlook on market conditions, at both the buying and selling ends of his business. It brings him into contact with his fellows as buyer and as seller. It enlarges his outlook on the world, and broadens his sympathies beyond the mere routine of sowing, cultivating and reaping. Mere grain raising or special crop farming, on the other hand, leads to continuous cropping, in most cases without proper crop rotation. It does even worse, it eliminates the meadows and pastures. It involves a strenuous life for a short season of the year, followed by a long period of inactivity. It tends to create an itinerant class of agricultural laborers, and encourages tenant farming, rather than permanent farm ownership. It fosters the soil-robbing spirit. Corn farmers, wheat farmers, cotton farmers, rice farmers, and all grain farmers as a class are strongly led to overdraw on their soil fertility account. The men engaged in that class of farming, as a rule, show but a small interest in the permanent prosperity of agriculture. The history of agriculture in all countries in the world shows that the livestock producers have taken a leading part in maintaining and increasing agricultural prosperity, and as a class they can always be relied upon to lead the van of progress wherever their lot may be cast.

ADVANTAGES OF FLORIDA FOR DAIRYING.

The money sent out of the State every year for dairy products is away up in the millions of dollars. This money could well be kept in the different communities, if we had enough livestock farmers. The protein feeds necessary to feed dairy stock can be grown here in pro-

fusion and in great variety. Our cowpea hay, analyzing 16 per cent protein, is equal pound for pound to the best bran on the market. Our velvet bean hay, with almost as high a protein content as the cowpea, and our never failing beggarweed, are also equal to any other protein feeds. Then we have the soy bean, the Kudzu, and a few others that go to make a varied palatable feed, such as a dairy cow wants. We also have carbohydrate feeds in abundance, such as Japanese cane, sweet potatoes, cassava, and others, that make our dairymen independent to a certain extent in the matter of feeds from outside sources.

Another advantage we have in the South over any other section of the country is our climate. We do not have to supply an extra 25 per cent. of feed for eight months of the year to keep up the natural heat of the animal as is the case during the cold weather that prevails in the northern States. Another advantage that we have is freedom from flies and insects of all kinds. While it may be difficult to believe, it is nevertheless a fact that in Florida the flies do not become the pest to cattle that they do in the northern States, and it is a rare occurrence to see cattle tearing around in a half crazed condition trying to get away from their tormentors. True we have the tick, which if allowed to get too numerous becomes a pest, but it is easily controlled if the proper methods are used, such as keeping cattle well salted and well groomed as all stock should be. We are also in a well watered section of the United States, which is an important consideration for livestock.

THE BEST BREED.

Every dairyman has his own favorite breed, but in Florida the Jersey seems to be the most popular. There are several reasons for this; but the principal one that concerns the man that makes butter is that the fat glob

ules in the Jersey cow's milk are larger than in the milk of the other breeds. The butter made from the Jersey cow's milk stands up better in warm weather, and will not turn oily as soon as that from other breeds, while its texture is good all the way through. From personal experience I prefer a highgrade Jersey, about seven-eighths Jersey and one-eighth native. This grade of cow will give you a hardy animal that is a good forager when turned to pasture or on the range. Its milking capacity will, in most cases, equal that of the pure stock, and as a general rule it will produce milk at less cost than the pure Jersey. Such animals do not require the same care and pampering as the thoroughbred, and cold and wet spells of weather do not affect their milk production so much. Anyone wishing to get good results and build up a herd of good animals can easily do so by keeping a full blood Jersey bull, and so grading up his herd. This bull should be changed every four or five years to prevent in-breeding. Every dairyman should raise his own cows by selecting the best of his heifer calves. By doing this he can build up a herd of a certain type, and can select the best milkers as they develop their milking qualities, while those not coming up to the mark can be sold off.

TRAINING THE CALVES.

To get the best results and develop good milkers, the calves should not be allowed to run with the cows. When the calf is dropped it should be taken away and put in a dry dark stall to dry off and get up its strength by resting. It should not be disturbed for at least 24 hours, and then some of its dam's milk may be offered it to drink. If slow to learn, the middle finger dipped in the milk can be given it to suck. If, however, it refuses to drink or suck, let it alone for about 12 hours, when it will readily take what you offer it. This seems at first rather a cruel practice, but in the end it is the best

method to pursue. A cow that is sucked by her calf will never develop into a good milker, because she will taper down her milk production as far as possible to the calf's needs, and as the calf never can suck her dry, her flow of milk will gradually decrease to the amount which the calf takes. On the other hand, if the cow is milked, she will naturally develop her full milking capacities in proportion to the feed she gets, and will naturally look upon her milker as the one she is providing for. It is right here that the good dairyman that knows his business seldom fails to develop the cow's full milking capacity by the proper treatment and judicious feeding necessary at this time in her life.

THE KIND OF BARN.

One great consideration in connection with dairying in this State is that we do not require the costly and elaborate barns that are needed in the northern States. A lean-to on the south side of the regular barn, entirely open on the south, is all that we want. The stalls should be made 4 feet wide and 4½ feet long, with a cement gutter running behind the cows to save all the manure made, both liquid and solid. The floor on which the cattle stand, however, should be made of board, and so should the platform outside the gutter.

An airtight locker or cupboard should be provided in which to keep the milk as each individual cow is being milked, and then when the milking is done the separating should be started right away, the cream put where it belongs and the skimmed milk fed to calves and pigs. If the dairy is located near a market where the milk can be hauled twice daily, the milk trade is the most profitable; but the dairy a few miles from town has to cater to the cream or butter market, and to get a high-grade article a cream separator must be used. Cream produced by the gravity system is not of as good quality, and the loss in

butter fat is greater, since much of the cream is not obtained from the milk. With the separator this is avoided. Separator cream, being of a smooth velvety texture, makes a high-grade butter, and the butter fat is completely removed from the milk, thus making the industry more profitable. It has never been successfully contradicted that a man with five cows or over can pay seventy-five dollars for a cream separator and be certain of getting his money back in a year from the increased yield of cream obtained by the separator method over the old gravity system of cream collecting.

BUTTER-MAKING.

It is generally supposed by those who have not studied the matter that we cannot make solid hard butter in Florida in the summer time without the liberal use of ice. This is a mistake, for the natural temperature of the well water, more particularly in our clay lands, is never over 66 degrees and often 62.

This in itself shows us conclusively that we are in a dairying section of the country. And having wells dug to cool the cream and cylindrical cans to hold it, we can churn the cream into butter under the most favorable conditions. The required temperature can be had by keeping the cream in a well; and by using as a starter a tablespoon full of buttermilk from the last churning we can get the necessary acidity to make high-grade butter.

It is a well known fact that when one uses ice for cooling purposes the supply has to be kept up or the butter will get oily. Cream cooled with water at the proper temperature gives a firmer grade of butter than when ice is used, and the butter stands up better, that is to say, it is not so apt to get oily and seldom does so.

The kind of churn used influences the quality of butter very much. A barrel churn is best. One does not want a

churn with any devices on the inside to break the grain of the butter, as a dasher in the churn will do. These barrel churns are fitted with small glass disks on the lid so that one can tell when the butter has come. Good butter is often spoiled by churning too long. One of the greatest mistakes in butter making is to keep churning so long as to gather all the butter in one lump. This should never be done, since it can never be washed thoroughly under those conditions, and in an effort to wash the buttermilk out of it the grain of the butter is spoiled making it salvy and oily. Churning should always be stopped when the grains of butter are about the size of a sorghum seed. The buttermilk is then run off, and a couple of gallons of clear water added. The churn is then turned a dozen revolutions or so and this water run off. It will then be found that the residual buttermilk runs off with it, not being mixed up with the butter as it would be if the butter was gathered up into a lump. The salting of the butter is of importance. The finest grade of dairy salt is necessary. This is easily obtained from dairy supply houses. The market calls for butter salted at the rate of an ounce of salt to a pound of butter. As a gallon of cream will produce about three and a half pounds of butter we will know what amount of salt to use without having to weigh the butter. The salting should be done immediately after the butter is washed, sprinkling the salt over the butter inside the churn and mixing it with a wooden paddle. Then leave it in the churn for a couple of hours, when it can be taken out and put on the butter worker to press out the remaining water and mix the salt. It is then ready to print. The print should be wrapped in parchment paper bearing the name of the dairy and owner.

With fifteen years of experience in butter-making in Florida we can say we never have found much trouble in producing the highest grade of butter all the year round,

and there is always an unlimited demand for it by the best families in the community. This trade always calls for print butter put up in pound prints or less, and when one uses his own special mold there will always be a sure market.

CONCLUSION.

There are, however, a few minor points along the line of successful dairying that some of our farmers are perhaps not prepared for. A dairyman's temperament must be such that he is universally kind to animals. Rough treatment and loud talking in the dairy barn do not pay. The milk cow is a lady in her own particular sphere, is the highest type of the brute creation, and she must be treated accordingly. Absolute cleanliness must be observed everywhere, the cows groomed every day, and before beginning milking their udders must be washed and wiped with a cloth. The man that is not prepared to attend to these important matters had better let dairying alone, and take up some branch of farming more suitable to his make-up. And every dairyman must not overlook the fact that strict attention to business is the keynote to success. Dairying means 365 days in the year of constant and careful work twice a day. But at the same time it means a better system of farming, maintaining and increasing the fertility of the soil, and above all it means more dollars per acre than any other line of farming that can be engaged in.

JAPANESE CANE.

By John M. Scott.

Animal Industrialist and Assistant Director Experiment Station.

INTRODUCTION.

For the successful production of live stock it is important to have an abundance of feed and forage at all times. If the natural grasses do not afford this, we must plan our crop rotation so as to supply the feed when needed. It may be that the natural grasses will supply sufficient feed for all live-stock, except for a short period during the winter months or during a severe drought. It is just at such times that the animals most need our help. If we fail to supply sufficient food to young growing animals, development is retarded or growth stops. We get as a result undersized and poorly developed beasts, and often what are commonly known as runts. Such stunted animals never develop into as good live-stock as do those individuals that are kept growing from birth to maturity.

During the past ten years the numbers of cattle in this State have doubled. On January 1, 1900, we had 412,820 head of cattle. On January 1, 1910, there were 807,000 head of cattle. If the number of cattle should increase as rapidly in the next ten years as in the last ten years, we shall own one million and a half head in 1920. Such a rapid increase would require that our farmers take steps to produce enough forage to properly feed the increment. There will probably be a like increase in hogs and sheep, and also a considerable increase in the number of horses

and mules. The needed extra supply of forage can easily be obtained by the growing of Japanese cane. There is no other crop that we can grow that will produce such a large yield of forage at so small a cost.

Florida is more of a live-stock State than many realize. On January 1, 1910, there were 807,000 head of cattle, 98,000 sheep, and 456,000 hogs. These are all forage-eating animals. To supply the needs of all these animals we must provide forage of some kind from November to March. Japanese cane is a crop that supplies a large amount of roughage at the very time of the year when the natural pasturage is limited. The want of an abundant supply of forage is one of the hindrances to the production of good live-stock in Florida. Stockmen have been negligent in supplying the necessary food to maintain their live-stock during the winter seasons and during the times of severe drought. To produce a good grade of live-stock an abundance of good feed must be supplied. The best forage to grow is one that will produce the best yield per acre, and that will supply the largest amount of nutrition in the feed. As well as being nutritious it must, of course, be palatable.

HISTORY.

Japanese cane as introduced into Florida from the Louisiana Sugar Experiment Station some sixteen or eighteen years ago. The Louisiana Station grew it for a number of years for comparison with other varieties of sugarcane as a source of sugar and syrup. It is rather probable that the Japanese cane was imported from Japan into Louisiana by General LeDuc, U. S. Commissioner of Agriculture, 1878. (There is, however, also a possibility that it came from Brazil.) However, the question as to where it came from is of secondary importance. The question of most importance is how we can so handle

Japanese cane as to obtain the best results in feeding it to our live-stock.

USES.

Its chief value to the farmers of Florida is as a forage crop for the feeding of live-stock. It may be used as silage, winter pasture, or dry forage. When first introduced to Florida, Japanese cane was grown for the production of syrup. In most sections of the State and under the usual conditions, the regular sugar-canes are much more satisfactory as crops for syrup production. This is because the Japanese cane is harder, and requires more power in grinding. It is also more difficult to strip, which increases the cost of stripping. However, as regards the quality of the syrup, there is but little difference between the regular sugar-cane and Japanese cane. The yield of syrup per acre from Japanese cane will vary from 150 to 500 gallons.

The locality best suited for the growing of Japanese cane will be all Florida, southern Georgia, Alabama, southern Mississippi, Louisiana and southern Texas. Any section in which the velvet bean will mature seed will be found a good place to grow the Japanese cane. This will be up to 200 to 250 miles north of the Gulf of Mexico.

PASTURE.

Japanese cane furnishes good pasturage from the middle of November to March. Cattle waste but little of it when pastured. They first eat off the green blades then the tender joints at the top, and continue to eat from the top until there is nothing left but the short stubble. It should not be pastured late in the spring. If pastured after growth starts in the spring the cattle or hogs will eat off the new growth and soon kill out the plants. It is not advisable to pasture later than March 1, or after new growth begins in the spring.

SILAGE.

Japanese cane makes a good silage. It keeps well, is relished by cattle, and the yield that can be secured makes it one of the cheapest and most economical crops that the Florida farmer can grow for silage. It has been used in feeding experiments with the dairy herd at the Experiment Station with quite satisfactory results. The cost of silage from this crop should not exceed $1.75 or $2.00 per ton. As compared with sorghum or corn silage the cost is about one-third less for Japanese cane silage.

DRY FORAGE.

Japanese cane will be found a valuable crop for dry winter forage. It is an easy crop to cure and the loss in storage is small. If it is stored in a barn or shed there will be hardly any loss. At the Experiment Station we have stored it in a barn in November and December and kept it until the following June and July. Six months after harvesting there as practically no loss; and when run through a feed cutter it was relished by cattle, horses and mules. If barn or shed room is not available, it can be stored in the barnyard and fed out as wanted. But with this method the loss will be considerable. It will be found profitable to put up a temporary shed under which to store the dry forage. This need not be an expensive shelter. It may be made of any material that will shed rain. It will perhaps be advisable when stacking the forage to set the butts of the canes on the ground. In this way the canes absorb some of the moisture from the soil, and will not dry out so much.

Japanese cane was used as roughage in one feeding experiment in beef production. In this test the following feeds per 1,000 pounds live weight were fed: corn, 12.50; velvet beans in the pod, 18.75; sweet potatoes, 20.8; and Japanese cane, 12.50 pounds. During a period of sixty

days the steers made a daily average gain per 1,000 pounds live weight of 6.5 pounds, at a cost of 4 cents per pound of gain.

SOIL.

Japanese cane is a crop well suited to a variety of soils. Good hammock land will no doubt produce the heaviest yields. But even the high pine lands will give good returns when properly fertilized. On swampy muck land Japanese cane will make a fairly good growth. On such land the growth will be greatly increased by an application of lime (ground limestone, or burnt lime). The amount of this which it is necessary to apply will depend upon the amount of acid in the soil, and will vary from 2,000 to 6,000 pounds of ground limestone, or one-half these amounts of air-slacked lime per acre. An application at the rate of 2,000 pounds of ground limestone per acre on high pine land on the Experiment Station farm increased the yield to the extent of 10.37 tons per acre during the season of 1909.

Every farmer in Florida should grow a few acres of Japanese cane, whether he has the class of soil best suited to it or not. If it is not the best soil, Japanese cane will produce as heavy a yield as will any other crop that can be grown on the same soil, or even a heavier yield. High pine land properly fertilized will give a yield of 15 to 20 tons per acre. Good hammock land will produce yields beyond these figures.

SAVING SEEDCANE.

Japanese cane is a perennial, and one planting will last many years if properly handled. This in itself causes quite a saving in the expense of growing the crop. In fact, it reduces the annual cost of production by about 50 per cent.

Japanese cane is propagated by cuttings of the canes

or by divisions of the stools. The cheapest and most economical way of propagating it is by cane cuttings. Therefore care and attention must be given to the saving of the seedcanes. Poor seed-canes, like poor seed, result in poor stands and unsatisfactory yields. The seed-canes should be selected and cut before there is danger of frost, so as to insure soundness. The buds will only stand a very slight frost without injury, and it is not safe to risk possible exposure to frost. The canes should be cut and banked before there is any likelihood of the first fall frost. The date for this will, of course, vary in different sections of the State.

Almost every farmer has his own method of banking his seedcane. Perhaps one method is about as good as another. The important facts to keep in mind are: The canes should be covered sufficiently deep to protect them against frost; the bank should be situated so as to get perfect drainage; if there should be standing water or abundant moisture, the canes are likely to rot; if the soil about the beds should become dry the canes may take the dry rot, and a large amount of the seed be lost. It is, therefore, important that we get the proper conditions as to moisture in the bank where we store our seed-canes. It will be found better to make two or three small beds than one large one. It would be well to bank more canes than you expect to use for planting. There is always some possibility of loss from various causes. Sometimes the loss may not exceed 10 per cent. while at other times it may be as high as 25 to 50 per cent.

CANE FOR PLANTING.

The number of canes required to plant an acre will depend upon the distance between the rows, the distance at which the canes are dropped in the row, and the length to which the canes are cut. Our experience has shown that, putting the rows 8 feet apart, 3,000 whole canes are suffi-

cient to plant an acre; and if good seed is used, are enough to give an excellent stand. Select only healthy canes, and reject all that are green and unripe. Plant in rows eight feet apart, cut the canes in pieces having three to four eyes to the piece, and drop them in a double line.

Some farmers drop the canes in a single line from 12 to 18 inches apart in the row. By this method of planting it will only require from 1,000 to 1,500 canes to plant an acre. The disadvantage is, however, that a thin stand will be obtained, which will result in a small yield of forage. This small yield of forage will not only be for the first year, but there will be a light yield for several years. It is nearly impossible to fill in the missing places properly. Where new canes are planted in the missing hills, it will be found that they either make no growth or a very unsatisfactory one. The old established canes have such an extensive root system and draw so heavily upon the plant food and soil moisture, that the new canes have little chance to make any growth.

It is very important that a good stand of canes should be obtained at the first planting. If only a half or two-thirds of a stand should be secured, it will follow that one-third to one-half of the crop will be weeds. For weeds will grow up between the canes unless the stand is thick enough to smother them out, and it costs less to cultivate an acre that will produce 20 tons of cane than one of half that yield. Hence we should obtain at the start the very best possible stand.

PREPARATION OF SEED-BED.

Before planting, the ground should be plowed broadcast to a depth of six inches. Plow under all vegetable growth on the land. As soon as the land is plowed it should be harrowed with the tooth harrow. Harrow it twice if necessary so as to put the surface in good tilth.

The rows can be laid off by the use of the marker, which is made of 2 by 6-inch lumber, the runners being set on edge at the distance apart that the rows are wanted and then braced sufficiently to keep them in place. A tongue is attached to the cross-brace in front, and a guide marker is attached at the side, at the proper distance to mark the next row.

For opening up the furrow in which to drop the seed-canes the disk cultivator will be found most satisfactory. The beginner, however, is likely to have trouble until he learns how to set the disks. In throwing out the rows, they should be set close together, so as to leave as narrow a ridge as possible in the bottom of the furrow. The cultivator should be set to run quite deep. If not, when the canes are covered the ground will be left in ridges, instead of being level. In covering the canes it will be found necessary to set the disks as far apart as posible, so as to give room for the canes between the disks. When the disks are set close they will catch the canes, which, instead of being covered, will be thrown out on the top of the bed. The use of the disk cultivator for this work will reduce the cost of planting by 25 to 40 per cent., which means much in the total cost of production.

PLANTING.

Just when to plant the seed-canes in Florida depends on the locality. Some prefer to plant in the fall, at the time of selecting the canes. This method reduces the expense by the omission of the cost of banking. Fall planting is perhaps not well suited to all parts of the State. In the northern and western portions of the State, where the winters are more severe than in the southern part, there is likely to be a greater loss of seed-canes during the winter season. Hence if fall planting should be practiced, the result may be an unsatisfactory stand. If the seed-canes are banked and kept till spring, then only

first-class cane will be planted. This will insure a good stand. Fall planting would be advisable for central and south Florida and spring planting for north and west Florida. For fall planting, November 10 to 20 will perhaps be the best time. For spring planting, the month of March will be the most satisfactory. All territory north of Gainesville should practice spring planting. All south of Gainesville may find fall planting satisfactory under ordinary conditions.

FERTILIZING.

The best formula to use in fertilizing Japanese cane is yet an unsettled question. We know, however, that Japanese cane has a very large root system and is a gross feeder, and so we may use quite a liberal amount of fertilizer. Any crop that produces such a tonnage of forage must necessarily draw heavily upon the fertility in the soil. The following formula has given good results on the Experiment Station farm, and perhaps may be taken as a guide until we get better information:

Ammonia	3 per cent.
Phos. acid	6 per cent.
Potash	7 per cent.

(Apply fertilizer at the rate of 400 to 600 pounds per acre.)

Ground limestone, 2,000 pounds per acre.

It makes little difference whether our source of ammonia is dried blood or sulphate of ammonia. Likewise the source of potash makes no material difference.

Since it requires a long growing season (from March 15 to November 15 at Gainesville) for this crop to mature, it will be found advisable to give the fertilizer in two applications. The first application may be made in the latter part of April, and the second during the early part

of August. By putting the fertilizer on in two applications, there is not likely to be so much of it lost by leaching during the rainy season.

TABLE X

Japanese Cane, Fertilizer Test, 1909-1910.

	Plot 1	*Plot* 2	*Plot* 3	*Plot* 4
Dried Blood	112	.....	112	.....
Sulphate of Ammonia	.....	.....	.....	72
Muriate of potash	84	84	.....	84
Sulphate of potash	.....	.....	.....	.....
Acid phosphate	.....	224	224	224
*Ground limestone	.....	.....	.....	.....
Total fert, per acre	196	308	336	380
†Yield, tons, 1909	24.2	17.7	16.1	19.1
†Yield, tons, 1910	14.6	12.4	10.0	14.4
Sucrose per cent., 1909	11.85	13.50	13.75	13.65
Sucrose, per cent., 1910	11.00	10.85	10.50	11.00
Brix, 1909	16.7	17.2	17.7	17.4
Brix, 1910	15.35	15.40	15.30	15.40

	Plot 5	*Plot* 6	*Plot* 7	*Plot* 8
Dried blood	112	.....	112	112
Sulphate of Ammonia	.....	72	.....	.....
Muriate of potash	84	.....	.....	.....
Sulphate of potash	.....	84	84	84
Acid Phosphate	224	224	224	224
*Ground limestone	.....	.....	.....	2000
Total fert, per acre	420	380	420	420
†Yield, tons, 1909	19.5	18.9	16.6	27.0
†Yield, tons, 1910	11.8	16.7	14.1	16.0
Sucrose per cent., 1909	13.60	13.50	13.58	13.78
Sucrose, per cent., 1910	11.20	11.10	10.95	10.90
Brix, 1909	17.4	17.5	17.6	17.8
Brix, 1910	15.60	15.60	15.50	15.50

*Ground limestone is not considered as a fertilizer, but as a soil corrective.

†Green material.

Since the Japanese cane makes a new root-system each year, it is not necessary to give the first application of

fertilizer so early in the season as many have been doing in the past. If we examine the roots of the canes when growth starts in the spring, we will find that the feeding roots do not start until the tops have made a considerable growth. In fact the tops may have grown as much as a foot before the roots make a start. This early growth comes from the stored-up plant food in the old stubs of the ratoons, and the plants do not draw on the soil fertility until the roots have begun to grow.

The amount of ground limestone or lime to apply, will depend on the acidity of the soil. The more acid in the soil, the heavier should be the application of ground limestone or lime. There should be an amount sufficient to neutralize about all of the acid in the soil.

CULTIVATION.

The cultivation of Japanese cane is nearly the same as that of corn or cotton. The important point to remember is the thorough preparation of the seed-bed before planting the canes. In the succeeding years the early spring cultivation should be somewhat as follows. About the time growth begins, give a thorough cultivation, stirring the ground to a depth of three or four inches. This may be done with the disk harrow going between the rows, or with the two-horse cultivator. There is no danger of injuring the roots at this time of the year, as the new roots have not yet made any growth. The first application of fertilizer should be applied just before the second cultivation. The second cultivation should be thorough, but not as deep as the first. As the crop continues to grow, the depth of cultivation should be less each time. Deep cultivation will be found to do much root pruning. If one will take time to examine the root system when the cane is nearly matured, a mass of fine feeding roots will be found very near the surface, many of them not more than

one-half inch deep. Deep cultivation destroys these roots, reducing the feeding capacity of the plants and so reducing the growth of the crop.

HARVESTING.

There is a tendency for the farmer to be in too much of a hurry to harvest Japanese cane. To produce the best quality of feed all forage crops must reach a certain stage of maturity. This is especially true of all saccharine forage crops. The chief value of this crop as a feed is its high sugar content. The higher the percentage of sugar, the higher its feeding value. The formation of the sugar does not take place while the crop is making a rapid growth. When growth ceases, and the crop begins to mature, which occurs in the fall when cool weather comes, is the time the formation of sugar takes place most rapidly. Harvesting, therefore, should be delayed until near danger of frost. If it is to be used for silage, the silage will keep better and will have a higher feeding value if the cane is allowed to mature before putting it into the silo. If used for dry forage it will also give better results if not harvested until well matured. However, there is the danger of allowing it to stand in the field until injured by frost. If it is used for feed a short time after being injured by frost the loss will be but slight. The feeding value after freezing deteriorates with time.

At the present time we cannot recommend any machine that will successfully harvest Japanese cane. The canes are too hard and heavy for a mowing machine. After a couple of years' growth the rows spread out too widely for a corn harvester to work successfully. A machete corn knife, or hoe will be found to do satisfactory work. No doubt as more farmers grow Japanese cane there will be a demand created for the necessary machinery for harvesting this crop.

JAPANESE CANE AND VELVET BEANS.

The feeding value of Japanese cane pasture may be increased by planting velvet beans between the rows. If the rows of Japanese cane are eight feet apart, a row of velvet beans may be planted between the rows and still leave room to cultivate both cane and beans. Plant the velvet beans as soon as the cane starts new growth in the spring. Drop the beans about two or three feet apart in the row. Give both cane and beans good cultivation until the beans throw out long runners. If the beans are not planted early in the season the Japanese cane will get the start and will almost completely smother the velvet beans.

ANALYSIS.

ANALYSIS OF AIR-DRIED SAMPLE.

Water	6.75 per cent.
Protein	1.37 per cent.
Fats	1.89 per cent.
Fiber	20.60 per cent.
Ash	2.04 per cent.
Nitrogen-free extract (sugars, etc.)	67.35 per cent.

(Analysis from unpublished data of the Chemical Department of the Florida Agricultural Experiment Station.)

Japanese cane is rich in carbohydrates, but poor in protein.

This should be remembered when feeding it. We should not expect it to take the place of all the concentrates in the ration. However, since it is rich in carbohydrates, it is only necessary to supply feed rich in protein in combination with Japanese cane to obtain the best results. If this point be kept in mind we will not be disappointed in the results we obtain by feeding this to our live-stock.

TABLE XI.

Good Rations.

	Percentage Composition.		
	Protein	*Carbohydrates*	*Fats*
Japanese cane, 10 pounds.....	.14	7.30	.19
Cowpea hay, 10 pounds.....	1.08	3.86	.11
Velvet beans in pod, 10 pounds.	1.71	6.19	.46
Total ..... (Nutritive ratio, about 1:6.5)	2.93	17.35	.76
Japanese cane, 12 pounds.....	.16	8.76	.23
Velvet beans in pod, 10 pounds.	1.71	6.20	.46
Cottonseed meal, 2 pounds....	.74	.34	.24
Total ..... (Nutritive ratio, about 1:6.6)	2.61	15.30	.93
Japanese cane, 10 pounds.....	.14	7.30	.19
Cowpea hay, 10 pounds.....	1.08	3.86	.11
Velvet beans in pod, 8 pounds..	1.37	4.95	.37
Total ..... (Nutritive ratio, about 1:6.7)	2.59	16.11	.67

Is Japanese cane hard on land?—This is a question asked quite frequently. No doubt Japanese cane is hard on land. Any crop that produces such an abundant growth of forage must necessarily draw very heavily upon the plant food in the soil. If then the plant food is not supplied by liberal application of fertilizer the soil will soon become exhausted and the yield obtained from the crop will be unsatisfactory. The plants produce a new root system each year. Hence there is some humus added and a small amount of plant food returned to the soil annually, but the amount left in the soil does not equal the amount taken out each season.

IMPORTANT FACTS.

1. The great need of Florida stockmen is an abundance of nutritious forage.

2. Japanese cane is the cheapest forage and silage crop that we can grow.

3. Japanese cane is a perennial, and one planting will last for many years if properly cared for.

4. Japanese cane will supply an abundance of good pasturage during the time of the year when this is most needed.

5. To obtain the best results in feeding, Japanese cane should be fed in combination with feeds rich in protein.

6. Japanese cane produces good yields of forage on a variety of soils.

7. Japanese cane has an immense root system and is a heavy feeder; hence it should be given a liberal application of fertilizer.

8. Japanese cane should not be pastured in the spring after new growth begins.

9. Japanese cane should be well matured before it is harvested.

SORGHUM FOR SILAGE AND FORAGE.

By John M. Scott.

Animal Industrialist and Assistant Director Experiment Station.

The sorghum crop has received too little attention from our farmers. This is doubtless due to insufficient appreciation of the qualities of the grain produced by this plant, and to the common cultivation of varieties of sorghum which are not the best kind for our climate. With the present rapid improvement in stock, and with the greater demand for better beef and for milk and butter, we are forced to search for more productive and more nutritious forage crops than sufficed in the past.

CLASSIFICATION.

It is supposed that all the varieties of sorghum now in cultivation originated from a single species, which was probably a native of Africa. The botanical differences which distinguished the various varieties are of almost no importance.

The sorghums may be divided into three classes: (1) Saccharine sorghums, (2) non-saccharine sorghums, and (3) broomcorns. The saccharine varieties are characterized by their tall, leafy stems, which are full of sweet juice. The non-saccharine varieties, as a rule, do not grow tall, and the stalks do not contain as much sugar. The broomcorns may be distinguished by their dry, pithy stalks, and by their long, loose seed-heads. The seed heads of the saccharine and non-saccharine varieties dif-

fer in size, shape, and color. The saccharine varieties are grown for syrup-making and for forage. The non-saccharine varieties are grown for either forage or grain.

SOIL ADAPTED TO SORGHUM.

The sorghums grow well on almost any good land. Ground that is well-suited for growing corn, cotton or vegetables, will give good yields of sorghum, either forage or grain. Neither heavy clays nor very light sandy soils are well-suited for the crop.

SILAGE IN GENERAL.

It is a well established fact that some form of succulent food is a desirable addition to the ordinary winter-rations for live stock, and the question arises as to the best and cheapest method of producing it. In England the farmer depends upon root crops, but in this country the raising of root crops will not in all probability be extensively practiced. Some have advocated the steaming of all feeds, but this method has failed to solve the problem. The silo has been extensively tried, and has been found to be the cheapest and also the best method of curing feed and keeping it in a good, palatable condition, so that it is relished by all classes of live stock.

SORGHUM SILAGE.

The question which confronts the farmer is: What crop can I raise most economically for the silo? This means: What crop will produce most tons of good nutritious food per acre? Cowpea hay is known to be an excellent forage, but the yield is small; moreover it does not make a good quality of silage. The same is true with oats, rye, or beggarweed hay. It comes then to the question of deciding between corn and sorghum. Analysis shows sorghum silage to be a little richer in total digestible nu-

trients than corn silage. Sorghum has also a heavier yield of green forage per acre than corn. If then, sorghum produces silage richer in total digestible nutrients, and also gives a larger yield of green forage per acre, it has two important points in its favor. It is not only the best crop for the silo, but also the cheapest.

The cost of cultivating an acre of ground is the same regardless of the yield; that is, the time and labor required to produce an acre of corn will be the same, whether two tons or ten tons of forage are produced per acre; but the cost of production per ton will be reduced as the yield per acre is increased. For example, if it costs $10 to fertilize and cultivate one acre that produces only four tons of forage, the cost per ton will be $2.50; but if for the same expenditure of money we can produce some other crop that will yield from twelve to fifteen tons per acre, then the cost per ton will be reduced by nearly 60 to 75 per cent.

SOWING SORGHUM.

Sorghum seed may be sown at any time from April 1 to July 20. When possible, it is advisable to sow early (from April 1 to April 15), as then the first cutting can be harvested in July, and with favorable conditions, another good crop may be harvested in October.

The quantity of seed required depends upon the method of sowing, whether in drills or broadcast. If sown in drills, 20 to 30 pounds of seed will be required per acre. If sown broadcast, more seed will be needed, varying from one to two bushels per acre. It is likely that if sown in rows, a distance of three or three and a half feet between the rows, and from two to three inches between the plants in the drill, will be found the most satisfactory. This distance will permit of cultivation being carried on, which will insure larger yields, and the cost of harvesting is also reduced.

The depth of planting will depend upon the conditions of the seed-bed at the time. If the seed-bed is well prepared, and there is plenty of moisture in the ground, then a half inch to one inch is as deep as the seed should be covered. But if the soil is very dry and loose the seed may be planted as deep as from one and a half to two and a half inches.

FERTILIZING.

Sorghum is a gross feeder, hence it requires a large quantity of fertilizer. The amount, however, will vary with the quality of the soil. From 400 to 800 pounds of fertilizer containing:

Ammonia	4 per cent.
Available phosphoric acid	6 per cent.
Potash	6 per cent.

should be used. The ground should be thoroughly prepared, and the fertilizer should be applied a week or ten days before sowing the seed.

After the crop is harvested, with a small plow throw a shallow furrow away from the sorghum stubs; apply the fertilizer in this furrow, and then cover it by throwing the furrow back again.

If sorghum is planted after a crop of vegetables has been taken off the ground, fertilizing will not be necessary, as there will be enough fertilizer left in the soil to produce a good crop of sorghum.

CULTIVATION.

Too much attention cannot be given to the preparation of the seed-bed, and to the cultivation of the growing crop. If the seed-bed is not thoroughly prepared, the result will be poor germination, which means poor stand, perhaps not more than half a stand. A poor stand means

a small yield of forage per acre. Where the seed-bed is thoroughly prepared, cultivation can begin much sooner, as the young plants will not be so easily covered or pulled out during the first cultivation, while they are quite small. This early cultivation will not only keep down weeds, but the stirring of the soil will also tend to hasten the growth of the crop. Sorghum is a slow-growing crop at first, hence the earlier its cultivation begins the more will the growth of the crop be hastened.

The two-horse cultivator should be used for cultivation. With this implement one man or boy, and two mules, will cultivate more than twice the area, and the soil will be left in much better condition, than when the old-fashioned one-horse plow or sweep is used. This means that the labor of cultivation will be reduced one-half. In other words, with the use of improved machinery the farmer will be able to double the area he is now cultivating; which will mean that he will raise double the amount of feed, and so can keep twice as much live stock as he is now keeping. Thus his gross income per year will be largely increased.

SORGHUM HAY.

Aside from being a good crop for silage, well cured sorghum makes an excellent hay crop. As hay, the saccharine varieties perhaps make a better quality of forage: but even the non-saccharine varieties are almost equal to crabgrass hay in feeding value, and give a much larger yield. In fact, from one acre of sorghum hay we get nearly double the amount of feed that we do from the same area of crabgrass. Sorghum hay, when fed with bran and cottonseed meal, will be found to give good results in the dairy. In fattening cattle for the market, sorghum hay supplied in addition to the grain feed will give good results.

PASTURING SORGHUM.

Sorghums make a good pasture for all classes of live stock. Perhaps the saccharine varieties will be found to give the best results. For pasturing, the seed should be sown a little thicker than usual, about one and a half bushels per acre. The ground should be well prepared before-hand. Pasturing may begin when the plants are only a few inches high; but, for the best results, the crop should not be pastured until the sorghum is about one and a half or two feet in height. It has been estimated that one acre of good sorghum will pasture ten head of cattle for ten days. If not pastured too closely before the cattle are removed, a second growth can be secured, which will furnish additional pasturage.

GRAIN.

Tests by various Experiment Stations have shown that the grain of the non-saccharine varieties of sorghum is of considerable importance as a feed. The seeds of the sorghums are very rich in carbohydrates (fat-producing material), but are low in protein. This, however, is not a serious drawback for Florida, as we have an abundance of feed rich in protein; such as cottonseed meal, or velvet beans, either of these fed in combination with sorghum seed will give good results for either milk or beef production.

Comparing the feeding value of Kafir corn (one of the non-saccharine varieties of sorghum) with that of corn, we find that 100 pounds of Kafir corn are equal to 80 pounds of corn in feeding value. In other words, when corn is worth $1.50 per hundred, Kafir corn is worth about $1.20 per hundred for feeding.

YIELDS IN THE SORGHUM VARIETY TEST, 1907.

These figures are the results of only one year's test, and

should therefore be taken only as indicating roughly what the yields may be.

NAME OF VARIETY.	Yield per acre of green forage in tons.	Yield per acre of grain in the head, in pounds.
Red Kafir Corn.....	3.968	1,187.50
Sirak	10.225	1,050.00
Honey	6.281	562.50
Sapling	5.900	550.00
Brown Durra.....	5.350	450.00
Minnesota Amber.....	8.612	975.00
Planter's Friend, No. 36...	13.068	787.00
Orange	13.813	1,336.50
Gooseneck, Erect.....	16.907	793.00
Planter's Friend, No. 37...	16.318	887.50
Amber	10.461	1,033.50
Sumac	12.449	429.50
Shallu	11.556	2,112.50
White Kafir.....	8.153	727.00
Gooseneck, Pendant.....	19.036	856.25
Collier	13.896	742.50
Red Amber.....	12.283	1,500.00
Cigne	12.450	900.00
Jerusalem Corn.....	8.204	458.00
Yellow Milo.....	9.487	900.00

DWARF ESSEX RAPE FOR WINTER FORAGE.

By John M. Scott,

Animal Industrialist and Assistant Director Experiment Station.

INTRODUCTION.

Dwarf Essex rape is a crop well suited to Florida conditions. It is excellent for feeding hogs, dairy cows, and sheep; as it will produce many tons of good nutritious feed per acre, at a time of the year when green feeds are scarce. Throughout a large portion of the State, farmers and stockmen could, with advantage, grow more of the succulent forage crops for feeding stock during the autumn and winter months, when the supply of grass and other green forage is often limited. Such crops may usually be grown on land that has already produced an early maturing crop. One of the best of these succulent crops is perhaps dwarf Essex rape—a plant closely related to the cabbage, turnip, and mustard.

A WINTER CROP.

Rape is a forage crop that does not flourish in hot, dry weather; but in most parts of the State, especially in the center and south, rape grows well throughout the winter, and suffers very little from the cold. Last winter the rape grown at the Experiment Station was injured only very slightly by the lowest temperatures. It is considered that rape will stand as much as six to eight degrees

of frost, with little or no injury. This, of course, depends upon the stage of growth; the young tender growth being more readily harmed than the more mature leaves and stalks. It is not at all likely that the weather will become cold enough to kill the roots, even if the tops should be frozen down. In the latter case, the plants will soon shoot up again and produce a good crop.

THE SOIL FOR RAPE.

Rape does well on nearly all kinds of soil; but, like many other crops, the better the soil the larger the yield. An old vegetable field would be a remarkably good location, and would require the addition of only a small amount of fertilizer. For the best results, rape should be planted on a rich, moist loamy soil. It will usually do well on any but light sandy soils or stiff clays, such soils being deficient in vegetable matter. Any soils that will produce good crops of vegetables, will also give good yields of rape. It is reported by several writers that rape is also well adapted to newly cleared woodland.

FERTILIZERS.

Practically nothing has been done at this Station to ascertain what fertilizers, or combinations of fertilizers, give best returns; but almost any good vegetable fertilizer, containing about six per cent, of ammonia, seven per cent. of phosphoric acid, and eight per cent. of potash, applied at the rate of from 200 to 700 pounds per acre, will be found to give good results. The larger amount would be applied on poorer lands, and the lesser amount on the richer soils.

PREPARATION OF SOIL.

Too much attention cannot be given to the preparation of the field for this crop. Thorough preparation of the

field is the secret of successful farming, whether in Florida or elsewhere. Such preparation of the field will not only reduce the after cultivation by half; but it will also conserve a large amount of soil water, which would otherwise be lost by running off or by evaporation. A good fourteen or sixteen-inch two-horse plow is the best implement to use in preparing the field for seeding. With the plow, all trash and litter can be buried; for the more vegetable matter we can get into the soil, the more fertility we add to it, and the more its water-holding capacity is increased. The plowing should be fairly deep—about four to six inches. If the land is rough after plowing, the disc harrow is needed. In using the disc harrow, it is best to lap half the width of the harrow each time, since the surface of the soil will then be kept level, which other wise would be ridged. It is well to harrow with a toothed harrow after using the disc, so as to get the surface in the best tilth.

HOW TO PLANT.

Rape may be planted in drills or sown broadcast. If the ground is badly infested with seeds of noxious weeds, it will be better to plant in drills and give some cultivation. Rape is rather a slow grower at first; but after reaching the height of three or four inches, it grows rapidly. If planted in drills, the drills should not be more than two feet or two and a half feet apart. It is the writer's opinion that more satisfactory results will be obtained if it is planted in drills, for the following reasons: First, there there is less waste when pastured, as stock naturally walk between the rows, and so do not trample as many plants or leaves under foot. Second, less seed is required. Third, drilling permits cultivation, insuring larger yields. The amount of seed required per acre will vary from three to five pounds, according as it is planted in drills or sown broadcast.

The seed may be sown at any time from the fifteenth of September to the fifteenth of December. The farmers of West Florida will find it best to plant during the latter part of September, while those of Central and South Florida can plant later in the season. The seed may be obtained from most seed houses.

HOW TO FEED RAPE.

Stock may be turned into the field and allowed to pasture on the rape, or it may be cut and fed to them. With the latter method much larger yields will be secured, if care is taken in cutting. If cut so as to leave the stubs five or six inches high, a second—and under favorable conditions, a third—crop may be secured. If pastured, some care must be exercised at first, until the stock become accustomed to it. When cattle are first allowed to pasture on rape, there is danger of bloating; but this can be easily avoided by feeding the animals a little hay or grain, just before turning them on the rape. In other words, do not turn the stock on the rape to pasture when they are hungry. When first turned on to pasture, let them graze for only a few minutes the first day—say ten or fifteen minutes; the second day allow them a few minutes more, and so on, until they become accustomed to rape. Another difficulty found in pasturing cows on rape is that it may cause a disagreeable taint in the milk. This may be overcome by using a little care and judgment in feeding. If the cows are allowed to pasture on the rape for about an hour just before and after milking, and at no other time, very little, if any, difficulty will be found.

YIELD PER ACRE.

The experience of this Station in growing rape has shown yields of from 27,260 to 33,296 pounds per acre. These results are based on the crops of two years. Many

of the Northern States report yields of thirty to fifty tons of green forage per acre. No doubt there is plenty of land in Florida capable of giving equally good returns.

RAPE TEST, 1907-8.

Three plots of dwarf Essex rape were sown in drills, the rows being thirty inches apart. Plots 1 and 2 were sown on September 25, 1907. The ground was thoroughly plowed, and a good seed-bed prepared, before sowing the seed. The soil on which the rape was grown was a very light sandy loam. On December 21, 1907, plot 3 was sown. The character of the soil was the same as for plots 1 and 2. The ground had been in sweet potatoes during the previous season. The potatoes were taken up in November, at which time the ground was well plowed, and then harowed. Nothing more was done to the ground until just before planting, when it was again harrowed. Each plot was given one cultivation for each cutting made.

On better soil the yield could be increased from 25 to 50 per cent, without additional cost. Even with the yield of 16.59 tons from plot 2, the cost per ton was less than $1.50; and if we increase the yield, we will at the same time reduce the cost per ton.

The tables which follow give the date of planting, the date of harvesting, and the yield of green forage per acre for each cutting, and also the kind and amount of fertilizer used.

TABLE 1.

Amounts of Fertilizer Used in Pounds Per Acre.

Plot No. 1.	Dried Blood.	Muriate of Potash.	Acid Phosphate.	Total for Season.	Date When Fertilizer Was Applied.
1	150	64	175	389	September 25, 1907
2	300	128	350	778	September 25, 1907
....	150	64	175	389	February 10, 1908
3	200	115	300	615	December 21, 1907

TABLE II.

Yields of Green Forage in Tons Per Acre.

Plot No. 1.	Date of Planting.	Date of Harvesting	First Cutting.	Second Cutting.	Total for Season.
1	September 25, 1907	December 6, 1907	3. 9	.....	3. 9
2	September 25, 1907	December 6, 1907	8. 9	.....	16.59
....	.....	March 27, 1908	.....	7.69	.....
3	December 21, 1907	March 28, 1908	3.24	.....	3.24

The following is the composition of rape:

Dry Matter.	Protein.	Carbohydrates.	Ether Extract.
14 per cent.	1.5 per cent.	8.1 per cent.	0.2 per cent.

It is practically the same composition as cabbage.

CIRCULAR 4. AUGUST, 1912.

UNIVERSITY OF FLORIDA

OFFICE OF

Inspector of Nursery Stock

GAINESVILLE

After due consideration of certain contingencies, pertaining particularly to the supply of seed potatoes available if the restrictions on such were not suspended or modified, and other presentations made by a representative body of potato growers, principally from the Hastings potato section, it was recommended, and the Board of Control adopted a resolution suspending Rules 34-38 (inclusive) until April 1st, 1913.

The resolution was adopted at the regular monthly meeting of the Board held at Jacksonville, Florida, on Saturday, August 3rd, 1912.

E. W. BERGER,
Inspector of Nursery Stock.

PART II.

CONDITION AND PROSPECTIVE YIELD OF CROPS.

DIVISION OF THE STATE BY COUNTIES.

Following are the divisions of the State, and the counties contained in each:

Northern Division.

Franklin,
Gadsden,
Hamilton,
Jefferson,
Lafayette,
Leon,
Liberty,
Madison,
Suwannee,
Taylor,
Wakulla—11.

Western Division.

Calhoun,
Escambia,
Holmes,
Jackson,
Santa Rosa,
Walton,
Washington—7.

Northeastern Division.

Alachua,
Baker,
Bradford,
Clay,
Columbia,
Duval,
Nassau,
Putnam,
St. Johns—9.

Central Division.

Citrus,
Hernando,
Lake,
Levy,
Marion,
Orange,
Pasco,
Sumter,
Volusia—9.

Southern Division.

Brevard,
Dade,
DeSoto,
Hillsborough,
Lee,
Manatee,
Monroe,
Osceola,
Palm Beach,
Pinellas,
Polk,
St. Lucie—12.

DEPARTMENT OF AGRICULTURE

W. A. McRAE, Commissioner. H. S. ELLIOT, Chief Clerk

CONDENSED NOTES OF CORRESPONDENTS.

By Divisions.

Northern Division.—Reports from our correspondents in every county of this division are very discouraging in their statements. The cotton crop is stated as being almost ruined by the unusual and excessive rain-fall throughout the entire growing period and the corn also has been cut short by the same causes from planting to maturity, and is reported from every county as sprouting in the ear. Under these conditions it is insisted by our correspondents that it is impossible for the cotton crop to make more than about half the usual crop and that the corn cannot possibly make more than from 60 to 70 per cent. of a crop, and then it is damaged at that and much of it will be unfit for consumption in any way. The only crop that seems to have done well the past season, is the oat crop which is larger by a great deal than ever before, at least for many years. The unfavorable climatic conditions have also affected the condition of live stock and especially that of hogs, as the outbreak of cholera is attributed directly to the unsanitary conditions produced by the excessive and continuous rains. Unless there should be a change in climatic conditions in the immediate future, the cotton crop will undoubtedly fall far below its present indications; being practically a month late already with only four or five weeks until frost, it is a serious condition indeed that presents itself and, in this connection, we make the suggestion to every

one growing standard crops, to plant rye, oats and such green crops as can largely assist in carrying his stock through until next spring, otherwise with the short corn crop and exceedingly short hay crop, great suffering will be entailed upon all live stock, and under these conditions farming for the next year will be done under great disadvantages, for poorly fed live stock cannot render the service necessary to produce good crops of any kind.

Western Division.—The conditions in this division are practically the same as in the one just described and the affect on the crops and live stock does not differ materially,, if any, from that mentioned above. Undoubtedly neither cotton nor corn nor hay can possibly reach a normal yield by 30 to 35 per cent, possibly 40. The same condition as to live stock obtains as in the first division and the same statements are made as to the causes which have produced the diseases among the hogs. Better climatic conditions are absolutely necessary to the saving of the hay as well as the corn and to enable the cotton to develop. There is no disguising the truthfulness of these statements. It is better to look the conditions squarely in the face and prepare to control them.

Northeastern Division.—The same conditions exist in this division as in the two former ones, except if any thing, the sea island cotton crop is in a worse condition and corn is reported as less than 70 per cent of a normal crop. The corn also in this division is reported as rotting in the ear and very small. The cotton is rotting in the bolls and sprouting also. We tender the same advice as to winter crops as we have given in connection with the preceding divisions. We see nothing else that will protect the farmers from actual want of stock feed, except the growth of crops for winter pasture. In this section other crops have been planted which have been successful to a considerable extent, but our reference is particularly to the standard crops which furnish the food necessary

for man and beast. Vegetable crops can be depended on to sustain people to a great extent, but not live stock, and on their condition depends successful farming.

Central Division.—Reports of crop conditions in this division are somewhat better than in the preceding ones, and this refers also to the condition of live stock as well. The rain-fall has been excessive in this district also, but it has not had quite as bad an affect on growing crops, as the crops mostly grown in this section are not so subject to excessive rain fall as the principal farm crops in the farming districts. Citrus fruit trees and others have apparently not been injured by the rains, nor has the fruit, as under some circumstances, been subject to splitting to any extent. This is accounted for by the fact that the rains have been continuous throughout the growing season from the blooming to the maturing of the fruit. Our reports also indicate that a full crop of citrus fruit may reasonably be expected. Live stock in this district is in good condition and hogs are in much better condition than in the northern and western sections of the State. While the rain-fall has been excessive in this district it has not equaled that in the more northern and western divisions.

Southern Division.—As far as climatic conditions are concerned there is little difference between this division and the foregoing ones. This being the great fruit and vegetable producing section of the State, it naturally requires greater amount of moisture than the other portions of the State where the standard crops are grown principally, so that the evenly distributed rains have had the effect of producing large crops of fruit and vegetables. The indications are that in this division there will be probably a larger yield of citrus fruits than ever known before. Our correspondents express the opinion that with the very favorable prospects and the yield of fruit now on the trees, that the yield of oranges

for the State will possibly be from six to six and a quarter million boxes and that the grape-fruit will yield some where close to one and a quarter million boxes, possibly a little more, but the reports that are being circulated of such an enormous crop of seven and eight million boxes of oranges and two million boxes of grape fruit, we look upon as entirely out of the question. The observations of our correspondents, who are experienced men all of them, in this respect, tell us that these reports cannot possibly be correct, therefore we consider that these reports should be discouraged in every respect, as they will tend to reduce the price of both the oranges and the grape-fruit.

Report of the Condition and Prospective Yield of Crops, Fruit Trees and Fruit for Quarter Ending September 30, 1912, as Compared with Same Period Last Year.

COUNTIES.	Upland Cotton.		Sea Island Cotton.	
	Condition.	Prospective Yield.	Condition.	Prospective Yield.
Northern Division—				
Gadsden	80	65	90	85
Hamilton	35	35	45	65
Jefferson	75	50	75	50
Leon	60	50	...	...
Liberty	60	50	...	...
Madison	50	45	45	45
Suwannee	...	...	80	70
Wakulla	60	50	...	...
Div. Average per cent..	59	49	67	63
Western Division—				
Calhoun	50	40	40	35
Escambia	80	75	...	...
Holmes	60	55	...	...
Jackson	75	65	...	...
Santa Rosa	90	90	...	...
Walton	80	85	...	...
Washington	100	65	...	...
Div. Average per cent..	76	71	40	35
Northeastern Division—				
Alachua	...	...	55	55
Baker	...	...	55	55
Bradford	...	...	75	50
Clay	...	...	75	75
Columbia	...	...	75	70
Duval	...	...	...	...
Putnam	...	...	80	50
St. Johns	...	...	...	...
Div. Average per cent..	...	...	69	59
Central Division—				
Citrus	...	...	...	...
Hernando	...	...	...	...
Lake	...	...	...	...
Levy	75	75	70	70
Marion	...	...	98	90
Orange	...	...	...	...
Pasco	...	...	50	50
Volusia	...	...	...	...
Div. Average per cent..	75	75	73	70
Southern Division—				
Brevard	...	...	...	...
Dade	...	...	...	...
DeSoto	...	...	...	...
Manatee	...	...	...	...
Osceola	...	...	...	...
Palm Beach	...	...	...	...
Pinellas	...	...	...	...
St. Lucie	...	...	...	...
Div. Average per cent..	...	...	...	...
State Average per cent..	70	65	62	57

Condition and Prospective Yield of Crops—Continued.

COUNTIES.	Corn.		Sugar Cane.	
	Condition.	Prospective Yield.	Condition.	Prospective Yield.
Northern Division—				
Gadsden	60	70	90	85
Hamilton	100	80	65	70
Jefferson	75	75	50	50
Leon	65	60	85	85
Liberty	50	50	80	75
Madison	40	45	80	80
Suwannee	90	85	75	75
Wakulla	80	75	90	75
Div. Average per cent..	70	67	77	74
Western Division—				
Calhoun	50	45	75	70
Escambia	75	75	70	70
Holmes	50	50	75	80
Jackson	50	45	90	85
Santa Rosa	95	85	100	100
Walton	60	66	100	100
Washington	70	70	90	90
Div. Average per cent..	64	62	87	84
Northeastern Division—				
Alachua	80	80	85	85
Baker	60	60	65	65
Bradford	80	60	50	50
Clay	75	75	100	100
Columbia	75	70	90	100
Duval	100	120	100	120
Putnam	60	45	110	125
St. Johns	50	35	65	85
Div. Average per cent..	73	67	83	93
Central Division—				
Citrus	75	65	100	95
Hernando	85	85	100	110
Lake	65	50	65	400
Levy	65	65	100	95
Marion	97	90	100	90
Orange	70	70	...	...
Pasco	100	95	100	100
Volusia	80	75	100	100
Div. Average per cent..	80	74	92	141
Southern Division—				
Brevard	...	...	80	90
Dade	100	100	...	...
DeSoto	75	75	90	90
Manatee	100	100	100	100
Osceola	90	100	100	100
Palm Beach	100	100	...	...
Pinellas	50	50	50	50
St. Lucie	...	...	100	100
Div. Average per cent..	86	82	87	88
State Average per cent..	75	70	85	96

Condition and Prospective Yield of Crops—Continued.

COUNTIES.	Field Peas.		Rice.	
	Condition.	Prospective Yield.	Condition.	Prospective Yield.
Northern Division—				
Gadsden	80	80	...	...
Hamilton	75	75	...	...
Jefferson	50	50	...	...
Leon	80	85	...	...
Liberty	75	80	...	...
Madison	75	75	50	50
Suwannee	100	95	...	...
Wakulla	50	50	...	...
Div. Average per cent..	73	74	50	50
Western Division—				
Calhoun	100	100	100	100
Escambia	70	70	100	100
Holmes	90	85	75	75
Jackson	100	100	...	...
Santa Rosa	80	80	100	100
Walton	75	85	100	120
Washington	90	90	...	...
Div. Average per cent...	80	87	95	99
Northeastern Division				
Alachua	80	80	...	...
Baker	65	60	...	...
Bradford	75	75	...	...
Clay	100	100	...	...
Columbia	90	90	...	...
Duval	...	...	...	...
Putnam	100	150	100	200
St. Johns	85	95	100	100
Div. Average per cent..	85	93	100	150
Central Division—				
Citrus	90	95	90	95
Hernando	90	85	100	102
Lake	90	90	...	...
Levy	100	100	100	100
Marion	105	95	110	100
Orange	50	50	...	...
Pasco	100	100	100	80
Volusia	90	100	...	...
Div. Average per cent..	102	102	100	95
Southern Division—				
Brevard	...	...	...	...
Dade	100	100	...	...
DeSoto	100	100	100	100
Manatee	100	100	100	100
Osceola	125	120	100	100
Palm Beach	75	75	...	...
Pineclas	70	75	75	80
St. Lucie	75	75	...	...
Div. Average per cent..	92	92	94	95
State Average per cent..	88	90	90	98

Condition and Prospective Yield of Crops—Continued.

COUNTIES.	Sweet Potatoes.		Cassava.	
	Condition.	Prospective Yield.	Condition.	Prospective Yield.
Northern Division—				
Gadsden	120	100	...	...
Hamilton	100	100	...	...
Jefferson	75	60	...	...
Leon	90	85	...	...
Liberty	80	60	...	...
Madison	105	100	...	...
Suwannee	80	85	10	15
Wakulla	100	65	...	...
Div. Average per cent..	94	82	10	15
Western Division—				
Calhoun	85	85	...	...
Escambia	100	90	...	...
Holmes	90	90	...	...
Jackson	90	85	...	...
Santa Rosa	95	95	...	...
Walton	100	100	...	...
Washington	100	100	...	...
Div. Average per cent..	94	92	...	...
Northeastern Division—				
Alachua	100	100	...	...
Baker	80	85	...	...
Bradford	75	75	...	...
Clay	100	110	...	...
Columbia	80	80	...	...
Duval	100	120	...	...
Putnam	90	150	100	150
St. Johns	100	100	100	100
Div. Average per cent..	91	103	100	125
Central Division—				
Citrus	90	85	...	...
Hernando	90	90	...	...
Lake	100	100	...	...
Levy	90	85	100	100
Marion	110	100	...	...
Orange	80	80	...	...
Pasco	100	90	100	100
Volusia	100	100	100	100
Div. Average per cent..	95	91	100	100
Southern Division—				
Brevard	100	100	...	...
Dade	100	100	...	...
DeSoto	100	125	...	...
Manatee	100	100	...	...
Osceola	80	75	...	...
Palm Beach	90	100	...	...
Pinellas	50	50	...	...
St. Lucie	90	90	...	...
Div. Average per cent..	89	92	...	...
State Average per cent..	93	92	70	80

Condition and Prospective Yield of Crops—Continued.

COUNTIES.	Peanuts.		Broom Corn.	
	Condition.	Prospective Yield.	Condition.	Prospective Yield.
Northern Division—				
Gadsden	120	95	...	...
Hamilton	80	100	...	...
Jefferson	50	50	...	...
Leon	90	95	...	...
Liberty	80	80	...	...
Madison	55	55	...	...
Suwannee	100	90	20	25
Wakulla	80	65	...	...
Div. Average per cent..	83	78	20	25
Western Division—				
Calhoun	100	90	...	...
Escambia	100	90	...	...
Holmes	80	80	...	...
Jackson	90	100	...	...
Santa Rosa	100	100	...	...
Walton	100	115	...	...
Washington	90	100	...	...
Div. Average per cent..	94	97	...	...
Northeastern Division—				
Alachua	90	90	...	...
Baker	75	70	...	...
Bradford	50	60	...	...
Clay	110	80	...	...
Columbia	80	80	...	...
Duval	100	100	...	...
Putnam	100	75	...	...
St. Johns	85	85	...	...
Div. Average per cent..	85	80	...	...
Central Division—				
Citrus	100	100	...	...
Hernando	75	75	...	...
Lake	90	90	...	...
Levy	90	80	...	...
Marion	115	100	...	...
Orange	...	...	...	...
Pasco	100	100	...	...
Volusia	100	100	...	...
Div. Average per cent..	96	92	...	...
Southern Division—				
Brevard	...	...	...	...
Dade	...	...	...	...
DeSoto	...	...	...	...
Manatee	...	...	...	...
Osceola	...	...	...	...
Palm Beach	...	...	100	100
Pinellas	...	...	...	...
St. Lucie	...	...	...	...
Div. Average per cent..	...	...	100	100
State Average per cent..	89	87	60	63

Condition and Prospective Yield of Crops—Continued.

COUNTIES.	Native Hay Grasses		Alfalfa.	
	Condition.	Prospective Yield.	Condition.	Prospective Yield.
Northern Division—				
Gadsden	120	95	...	...
Hamilton	...	...	...	...
Jefferson	100	100	...	...
Leon	100	100	...	...
Liberty	100	100	...	...
Madison	100	100	...	...
Suwannee	80	80	60	65
Wakulla	100	100	...	...
Div. Average per cent..	100	96	60	65
Western Division—				
Calhoun	100	100	...	...
Escambia	90	90	...	...
Holmes	100	100	...	...
Jackson	100	100	...	...
Santa Rosa	100	100	...	...
Walton	90	95	...	...
Washington	100	110	...	...
Div. Average per cent..	97	99	...	...
Northeastern Division—				
Alachua	100	100	...	...
Baker	55	50	...	...
Bradford	100	100	...	...
Clay	10	10	...	...
Columbia	60	60	...	...
Duval	100	125	...	...
Putnam	60	60	...	...
St. Johns	100	100	100	100
Div. Average per cent..	73	76	100	100
Central Division—				
Citrus	75	75	...	...
Hernando	100	100	...	...
Lake	150	75	...	...
Levy	100	80	...	...
Marion	120	110	...	...
Orange	60	60	...	...
Pasco	90	90	...	...
Volusia	100	100	...	...
Div. Average per cent..	98	85	...	...
Southern Division—				
Brevard	...	...	...	...
Dade	100	100	...	...
DeSoto	100	150	...	...
Manatee	...	...	...	...
Osceola	80	80	...	...
Palm Beach	100	100	...	...
Pinellas	75	75	...	...
St. Lucie	100	100	...	...
Div. Average per cent..	92	101	...	...
State Average per cent..	92	92	80	83

Condition and Prospective Yield of Crops—Continued.

COUNTIES.	Velvet Beans.		Pastures
	Condition.	Prospective Yield.	Condition.
Northern Division—			
Gadsden	120	112	100
Hamilton	60	60	80
Jefferson	...	...	90
Leon	75	80	100
Liberty	80	75	100
Madison	60	60	80
Suwannee	100	90	100
Wakulla	50	50	100
Div. Average per cent.	78	75	94
Western Division—			
Calhoun	100	100	100
Escambia	100	100	100
Holmes	80	80	100
Jackson	100	100	100
Santa Rosa	100	100	100
Walton	70	85	100
Washington	100	100	...
Div. Average per cent.	93	95	100
Northeastern Division—			
Alachua	65	65	100
Baker	45	45	60
Bradford	80	75	...
Clay	110	100	100
Columbia	100	100	100
Duval	...	...	150
Putnam	100	125	...
St. Johns	100	100	100
Div. Average per cent.	86	87	102
Ceuatral Division—			
Citrus	100	100	100
Hernando	100	100	105
Lake	100	80	200
Levy	100	100	100
Marion	97	85	120
Orange	80	80	50
Pasco	90	85	85
Volusia	100	100	100
Div. Average per cent.	90	91	107
Southern Division—			
Brevard	...	...	...
Dade	95	95	...
DeSoto	100	100	150
Manatee	100	100	100
Osceola	125	125	100
Palm Beach	100	100	100
Pinellas	...	...	75
St. Lucie	100	100	100
Div. Average per cent.	103	103	104
State Average per cent.	91	90	101

Condition and Prospective Yield of Crops—Continued.

COUNTIES.	Bananas.		Mangoes.	
	Condition.	Prospective Yield.	Condition.	Prospective Yield.
Northern Division—				
Gadsden	...	...	...	...
Hamilton	...	...	...	...
Jefferson	...	...	...	...
Leon	...	...	...	...
Liberty	...	...	...	...
Madison	...	...	...	...
Suwannee	...	...	...	...
Wakulla	...	...	...	...
Div. Average per cent..	...	...	...	...
Western Division—				
Calhoun	...	...	...	...
Escambia	...	...	...	...
Holmes	...	...	...	...
Jackson	...	...	...	...
Santa Rosa	...	...	...	...
Walton	...	...	...	...
Washington	...	...	...	...
Div. Average per cent..	...	...	...	...
Northeastern Division—				
Alachua	...	...	...	...
Baker	...	...	...	...
Bradford	...	...	...	...
Clay	...	...	...	...
Columbia	...	...	...	...
Duval	...	...	...	...
Putnam	...	...	...	...
Div. Average per cent..	...	...	...	...
Central Division—				
Citrus	...	...	...	...
Hernando	...	...	...	...
Lake	...	...	...	...
Levy	...	...	...	...
Marion	...	...	...	...
Orange	...	...	...	...
Pasco	...	...	...	...
Volusia	...	...	...	...
Div. Average per cent..	...	...	...	...
Southern Division—				
Brevard	85	95	...	...
Dade	100	100	100	100
DeSoto	100	100	...	...
Manatee	100	100	100	100
Osceola	120	120	...	...
Palm Beach	...	...	...	...
Pinellas	...	...	...	...
St. Lucie	100	100	75	70
Div. Average per cent..	101	102	91	84
State Average per cent..	101	102	91	84

Condition and Prospective Yield of Crops—Continued.

COUNTIES.	Guavas		Orange Trees.	
	Condition.	Prospective Yield.	Condition.	Prospective Yield.
Northern Division—				
Gadsden	...	...	...	...
Hamilton	...	...	...	...
Jefferson	...	...	...	...
Leon	...	...	100	80
Liberty	...	...	...	...
Madison	...	...	...	...
Suwannee	...	...	80	75
Wakulla	...	...	...	...
Div. Average per cent..	...	...	90	77
Western Division—				
Calhoun	...	...	100	90
Escambia	...	...	...	...
Holmes	...	...	...	...
Jackson	...	..	...	...
Santa Rosa	...	...	...	...
Walton	...	...	...	...
Washington	...	...	...	...
Div. Average per cent..	...	...	100	90
Northeastern Division—				
Alachua	...	...	80	100
Baker	...	...	95	90
Bradford	...	...	...	...
Clay	...	...	100	20
Columbia	...	...	...	...
Duval	...	...	115	100
Putnam	...	...	100	175
St. Johns	...	...	100	100
Div. Average per cent..	...	...	98	98
Central Division—				
Citrus	...	...	100	100
Hernando	...	...	101	100
Lake	200	200	300	300
Levy	...	...	100	95
Marion	...	...	115	100
Orange	80	80	80	75
Pasco	100	100	100	100
Volusia	100	100	100	60
Div. Average per cent..	120	120	124	104
Southern Division—				
Brevard	100	100	100	100
Dade	100	100	110	120
DeSoto	100	200	90	100
Manatee	150	200	100	125
Osceola	150	200	100	70
Palm Beach	100	100	100	75
Pinellas	100	200	110	125
St. Lucie	100	100	80	70
Div. Average per cent..	111	150	98	98
State Average per cent..	115	135	102	93

Condition and Prospective Yield of Crops—Continued.

COUNTIES.	Lemon Trees.		Lime Trees.	
	Condition.	Prospective Yield.	Condition.	Prospective Yield.
Northern Division—				
Gadsden	...	...	...	...
Hamilton	...	...	...	...
Jefferson	...	...	...	...
Leon	...	...	...	...
Liberty	...	...	...	...
Madison	...	...	...	...
Suwannee	10	...	...	...
Wakulla	...	...	...	...
Div. Average per cent..	10	...	...	...
Western Division—				
Calhoun	100	90	...	...
Escambia	...	...	...	...
Holmes	...	...	...	...
Jackson	...	...	...	...
Santa Rosa	...	...	...	...
Walton	...	...	...	...
Washington	...	...	...	...
Div. Average per cent..	100	90	...	...
Northeastern Division—				
Alachua	...	...	...	...
Baker	...	...	...	...
Bradford	...	...	...	...
Clay	...	...	...	...
Columbia	...	...	...	...
Duval	...	...	...	...
Putnam	...	...	...	...
St. Johns	...	...	...	...
Div. Average per cent..	...	...	...	...
Central Division—				
Citrus	90	90	90	90
Hernando	...	...	...	...
Lake	100	100	100	100
Levy	...	...	...	...
Marion	115	90	...	...
Orange	...	...	...	...
Pasco	90	...	90	...
Volusia	...	...	...	...
Div. Average per cent..	98	93	93	95
Southern Division—				
Brevard	...	...	...	...
Dade	90	90	95	95
DeSoto	100	100	100	100
Manatee	100	125	100	125
Osceola	100	60	100	40
Palm Beach	100	75	100	75
Pinellas	100	100	100	100
St. Lucie	70	50	70	50
Div. Average per cent..	94	86	95	84
State Average per cent..	76	90	91	89

Condition and Prospective Yield of Crops—Continued.

COUNTIES.	Grapefruit Trees.	
	Condition.	Prospective Yield.
Northern Division—		
Gadsden	...	...
Hamilton	...	...
Jefferson	...	...
Leon	100	95
Liberty	...	...
Madison	...	...
Suwannee	10	...
Wakulla	...	...
Div. Average per cent.	55	95
Western Division—		
Calhoun	100	85
Escambia	...	...
Holmes	...	...
Jackson	...	...
Santa Rosa	...	...
Walton	...	...
Washington	...	...
Div. Average per cent.	100	85
Northeastern Division—		
Alachua	80	100
Baker	65	65
Bradford	...	...
Clay	...	...
Columbia	...	...
Duval	...	...
Putnam	100	175
St. Johns	100	100
Div. Average per cent.	86	110
Central Division—		
Citrus	100	100
Hernando	101	100
Lake	300	300
Levy	100	95
Marion	115	110
Orange	80	50
Pasco	100	90
Volusia	100	60
Div. Average per cent.	124	113
Southern Division—		
Brevard	100	100
Dade	110	110
DeSoto	100	125
Manatee	100	150
Osceola	100	60
Palm Beach	100	100
Pinellas	100	125
St. Lucie	90	60
Div. Average per cent.	100	104
State Average per cent.	93	102

PART III.

REPORT OF CITRUS GROWERS' CONVENTION;

STANDARD FIXED BY COMMISSION AND ADOPTED.

REPORT

OF

CITRUS GROWERS' CONVENTION

HELD AT

GAINESVILLE, FLA.

AUGUST 15

1 9 1 2

Report of Convention of Citrus Growers.

Gainesville, Fla., August 15, 1912.

The Convention of Citrus Growers was called to order by State Commissioner of Agriculture W. A. McRae at 1:15 p. m. today, who spoke as follows:

To the Orange Growers and Shippers of Florida:

It is indeed a happy privilege to be present with you on this occasion to discuss, and we trust to forever settle the long mooted and knotty question of "When is an orange mature?"

In this meeting here today we trust that everyone will lay aside every bit of personal feeling or prejudice and that the question before us will be discussed logically and fairly by those of you who are more or less authorities on orange growing, and that all of the discussions may have for their object to give more information on the subject under consideration.

Immediately upon assuming the duties of the office of Commissioner of Agriculture, we saw facing us this knotty problem. Because of the heavy work of the Department, it was June, before we had time to give any consideration to the question.

We viewed the subject from every angle, and after personal discussion, and after much correspondence, we were satisfied in our own mind that the first step to be taken was to find some common ground on which we could stand, i. e., a standard for maturity.

On July 5th, we mailed out a circular letter, suggesting that a commission be appointed to recommend a standard, and being so sure that the course we had suggested

was the only course to pursue, on July 9th, we issued a circular letter making the call for this convention.

The Department recognized first that a standard of maturity was necessary, and second, that the commission to be appointed must be men of unquestioned ability and integrity, and men wholly disinterested and impartial. The personnel of the commission is as follows: H. Harold Hume, President State Horticultural Society; P. H. Rolfs, Director of Florida Agricultural Experiment Station; Prof. S. E. Collison, Chemist Florida Experiment Station; Professor E. R. Flint, Chemist State University, and Honorable R. E. Rose, State Chemist of Florida.

This commission needs no introduction to a Florida audience. The gentlemen composing the commission are scientists of the highest class, and each man is holding his present high position on merit only. And right here let me say, I doubt if there are any men in the United States who are better authorities on citrus culture than are Professors Hume and Rolfs.

People, as a whole, are more or less skeptical about making changes or departures from long-established customs or practices, and we have found no exception to the rule in this case. Nearly or quite all with whom we have talked, or with whom we have had correspondence, agree that a standard of maturity is necessary, but a few are afraid to suggest a standard of maturity, and the same few are afraid for some else to suggest one.

A standard of maturity is necessary. The time has come when the shipment of immature fruit should cease. The salvation of the industry demands it. The majority of the growers and shippers realize the importance of a standard and the trade also demands it. The only question is, who shall fix the standard, and what shall the standard of maturity be? These questions are easily answered. All standards must be determined by those directly interested, and on you, the orange growers and

shippers of Florida, devolves the task of fixing this standard of maturity for your fruit.

The Agricultural Department has at all times discussed this great question from the standpoint of merit only, and as a department we make no suggestions to you. We have faith in you, as good citizens. We have faith in your ability to meet the issue when you come face to face with it.

We have faith in your doing your full duty here in this great convention. We have faith in you and we fully believe that as broad-minded good citizens, you will stand for the good of the orange industry of Florida, and that you will not permit some petty jealousy or small personal interest now to keep you from doing your full duty in forever settling the great question before you today.

Men, today we are making history for Florida. This is the greatest meeting, in our judgment, ever held in this State, viewed from a financial standpoint. Literally millions are involved. The orange crop in Florida this year, will possibly reach the mammoth sum, if properly handled, of $12,000,000.00. The orange crop is conservatively estimated at 6,000,000 boxes, and we would not be surprised to see the 7,000,000 box mark. We cannot afford this season, with this mammoth crop, to paralyze the market by the shipment of immature fruit. When we take into consideration the short crop of California, you need only to handle with good business judgment and care, Florida's present crop, and the prices will take care of themselves. Under these conditions the law of supply and demand will logically assert its control.

Before closing this address, we desire to thank you for your presence at this convention. Your presence here means you are interested, and where there is interest we may always expect results. There were a few growers who wished the meeting called for September 15th. This was wholly impracticable, for the reason that the shipping season would soon be on, and there is a good deal more to

be done yet, and some considerable time to be consumed in preparatory work, even if a standard of maturity is now agreed upon. This is a big question and all the details necessary to put it in force cannot be arranged in a day.

To you, gentlemen of the commission, we wish to express our heartiest appreciation. We are aware that you have made personal sacrifice in giving up your vacation to serve on this commission, a position you accepted only as patriotic citizens. We trust this meeting will be one that will bear much fruit, and that you may all look back as time goes by, and have the pleasure of knowing that through your efforts one of the greatest questions of this State has been settled, and one of her greatest industries preserved for all future time.

We wish to express our appreciation to the Committee on Arrangements and the citizens of your beautiful and progressive city generally for their many courtesies extended and the cordial manner in which this convention has been received. Gainesville is truly a queen among convention cities. May her star of progress and prosperity continue to grow brighter with each passing year.

Gentlemen, the work of the commission is completed, and the commission is ready to make its report to you. We now turn the convention over to you, and at such time as you desire the commission will, in due form, present their report for your consideration.

The organization was perfected by the election of Commissioner W. A. McRae as permanent chairman and Josiah Varn as permanent secretary.

After a discussion as to whether the growers present were in favor of preventing the shipment of immature fruit, the question was put to a standing vote, and the convention unanimously voted in favor of preventing the

shipment of immature fruit. No one voted against preventing such shipment.

The report of the Commission was then presented by State Chemist R. E. Rose, the duly-appointed representative of the Commission, who spoke as follows:

ADDRESS OF R. E. ROSE, STATE CHEMIST OF FLORIDA.

Gentlemen of the Convention:

The Commission appointed by the Hon. W. A. McRae, Commissioner of Agriculture of Florida, to prepare a chemical standard for Immature Citrus Fruit, consisted of:—

Prof. H. Harold Hume, President of the Florida Horticultural Society, Chairman.

Prof. P. H. Rolfs, Director of the Florida Agricultural Experiment Station, Gainesville, Fla.

Dr. E. R. Flint, Professor of Chemistry of The State University.

Prof. S. E. Collison, Chemist of the Florida Agricultural Experiment Station, Gainesville.

And R. E. Rose, State Chemist, Tallahassee.

Owing to the unavoidable absence of Prof. Hume, the Chairman of the Commission, I have been delegated by the Commission to present their report to you for your consideration.

It is not necessary for me to call the attention of this body of Florida orange growers to the eminent fitness of at least four members of the Commission selected by the Commissioner of Agriculture for this important work; men who are known to all of you as authority on the subject presented to them; men trained as horticulturists, each a scientist of ability and repute, thoroughly familiar with the orange industry of the State.

The Chairman of the Commission, Prof. H. Harold Hume, is acknowledged to be an authority on citrus cul-

ture, and, as President of the Florida Horticultural Society, has the confidence of all the orange growers of the State.

Prof. P. H. Rolfs, the Director of the Florida Agricultural Experiment Station, is also known to the entire State as one of the most competent horticulturalists of the age, and particularly for his knowledge of citrus culture in all of its phases, from the seed bed to the marketing of the mature fruit.

Dr. E. R. Flint, Chemist of the State University, needs no introduction by me to this audience. His reputation as a chemist is second to none in America.

Prof. S. E. Collison, the Secretary of the Commission, and the Chemist of the State Agricultural Experiment Station, is also known to every orange grower by his work as an investigator in this particular line of study—the development of the citrus industry of Florida.

These four gentlemen are probably the best fitted by training and experience, to investigate the subject and deduct correct conclusions, that could have been selected in this or any other State.

Their official positions, in addition to their scientific attainments, and familiarity with the subject, to say nothing of their personal reputations for fairness and integrity, give their findings unusual weight and dignity.

This subject—A Chemical Standard for Immature (or mature) Citrus Fruit—has very properly been the subject of much discussion among the parties interested.

That it is an important subject is evidenced by the great interest shown by the discussion, pro and con, by the press and in all gatherings of citrus growers.

That there is a general demand to prevent the shipment of immature oranges is evident to anyone who has been familiar with this industry, particularly since the crops have assumed large proportions. No one, I believe, will deny the damage done to the industry as a whole, by the

shipment of sour, immature oranges from this State. This, I believe, will be conceded by all.

The problem then, is, can a standard be fixed by which an immature orange can be distinguished from a mature or ripe one? If so, what shall the standard be?

By whom shall the standard be fixed? All standards are fixed by the persons directly interested in the production and sale of commodities. I know of no exception. Standards when fixed by the persons engaged in the business of producing, manufacturing or selling a commodity, are the standards accepted by the Legislative and Executive officers, regulating the trade therein, and are used in all controversies for the settlement of differences—either by arbitration or by the courts. Therefore, the only persons who can make a standard for oranges are the growers and shippers of oranges.

This was evidently the position assumed by the Legislature, when enacting the Immature Citrus Fruit Law. The demand was for a law preventing the shipment of immature fruit. The inquiry was made—what constitutes immaturity? and full discussion was had. The bill passed by a large majority, leaving, however, the fixing of a standard or definition, where it belongs—to the producers and shippers of citrus fruits, the only persons interested and to be protected by the law.

Shall color be the standard? This is answered promptly by a negative, as it is well known that certain varieties are green in color when they are at their best and most desirable stage of maturity. Other late varieties are beautifully colored months previous to ripening, though still sour and unfit for consumption. Color is, therefore, no proper standard for ripeness.

Shall different dates be fixed for the shipment of various varieties? It is needless to say to you that interminable confusion would follow when locality, soil, alti-

tude, season, culture and fertilizing are all factors in the date of maturity.

If color or date be eliminated, what remains by which to distinguish a ripe orange—one fit for consumption? Texture cannot be used in determining the maturity of an orange. Mellow, soft or tender oranges can not be shipped, nor would they be desirable for consumption.

We are therefore forced to examine the fruit chemically, to ascertain what the sugar and acid content is. When it is palatable and desirable as a fruit. When the consumer is pleased with its taste, and desires to repeat the pleasure of eating it.

Can a chemical standard be fixed? One that will do no injustice to the early orange. Will insure excellence in the seedling, and protect the late orange from condemnation by the consumer?

Your Commission is convinced that such a standard can be fixed and have unanimously recommended such a standard. A standard that will work no hardship on the grower. That will protect the consumer; eliminate the speculator and jobber, and secure for the industry fair prices for the entire crop during the entire shipping season, which, as you knew, extends from October to July.

It has been said that a standard could only be fixed by a horticulturalist and citrus grower. On your Commission you have two, at least, of the most eminent horticulturalists and orange growers.

It has also been said that a chemical standard would be "a gold mine to the chemist and of great cost to the grower."

The facts are, the "field test" can be made by any fairly intelligent man with apparatus not costing to exceed $2.00—in fact, less. It can be applied quickly and inexpensively. In case of doubt an appeal for a laboratory analysis by the State Laboratory is provided for. There

are no costs or fees of any kind paid to the State Laboratory.

The work of the State Laboratary will probably be increased very considerably, and there will probably have to be additional analytical force employed during the shipping season. However, the cost to the individual will not be increased, though the State may have an increased cost for inspection and analytical work.

As the revenues of the State Chemist's office increased from $13,000 in 1901, to $71,000 in 1911—with a net balance over all expenses in 1911 of $55,000—there can be no impropriety in asking your Legislature to make an additional allowance for the benefit of the citrus industry, particularly as the revenues derived from the fertilizer and feed inspection fees are largely paid by the citrus growers.

The cost of a chemical standard to the individual is therefore eliminated. This argument against a chemical standard therefore falls short when we consider that the shipment of Immature Citrus Fruit is acknowledged by all to be of immense damage to the industry, destroying the reputation for excellence of the Florida orange.

Mature Florida oranges are acknowledged to be the superior of any grown in the world. Until the shipment of immature oranges began to be considerable, no fruit was more eagerly purchased by the consumer.

On your decision, gentlemen, depends much of the future prosperity of the industry. May the discussions of the problem be fair and unprejudiced, your decision wise and for the general good of the entire industry.

We have carefully compiled all data available from official and individual sources. We have the data from which we drew our conclusions subject to your inspection, and will have the same published.

We find the ratio of acid to sugar remarkably constant, at the season of ripening, for all varieties. The ratio of one part citric acid to seven parts of sugar, as invert, we

find to be the least ratio at which an orange may be deemed fit for shipment; though it is not yet fully ripe, it is in a fair shipping condition.

The maximum acid fixed at 1.25% for field test will cut out few oranges, if any, that are fit for consumption. A very few sweet oranges contain 1.25% of acid.

Your Commission organized July 6th, divided the work among its members, met subsequently on July 18, and worked early and late in analyzing, studying and digesting the data compiled—that of the United States Agricultural Department, the California and Florida Agricultural Experiment Sations, and other published data from reliable sources was compiled by the gentlemen of the University and Agricultural Station.

The large number of analyses made by Wiley and Company, for the "Florida Citrus Exchange," and by Genth & Company, for the "Florida Fruit and Vegetable Shippers' Protective Association"—both reputable and competent commercial laboratories—were compiled by the State Chemist. There were in these recent analyses for the season of 1911-12, 218 made by Wiley & Co., and 62 made by Genth & Co., submitted to us.

These various analyses when reduced to uniform chemical terms, their dates chronologically arranged, varieties and known seasons of ripening considered, were found to be exceedingly concordant. In fact, your Commission was struck by the agreement between all analyses, when considered from the same viewpoint.

The ripening of the various varieties at the proper season was readily seen, while the decrease in acid and increase in sugar was uniform up to full maturity. The change in the fruit after picking was little, if any. The statement that oranges do not improve after plucking is found to be true, and the broad statement that oranges do not improve (ripen) after plucking, is well borne out by the investigation.

All these facts, however, have been carefully compiled

and detailed study made, and are ready for examination by yourselves or any committee appointed by your body. As stated, the analyses and compilations of data are published for your information.

Your Commission has labored long and faithfully, and now submits to you the results of its labor, for your careful and earnest consideration.

Report of Commission

P. H. Rolfs, Director.
John M. Scott, Animal Industrialist.
B. F. Floyd, Plant Physiologist.
J. R. Watson, Entomologist.
H. E. Stevens, Plant Pathologist.
S. E. Collison, Associate Chemist.

UNIVERSITY OF FLORIDA

Agricultural Experiment Station.

Gainesville, Fla., July 6, 1912.

MINUTES OF THE COMMITTEE APPOINTED BY THE COMMISSIONER OF AGRICULTURE TO PREPARE STANDARD FOR IMMATURE CITRUS FRUIT.

—1—

The Committee appointed by the Hon. W. A. McRae, Commissioner of Agriculture, to prepare a tentative standard for immature citrus fruit to be submitted to a convention of citrus growers to be held at Gainesville, August 15, 1912, for approval or rejection; to compile all analytical data now obtainable—that of the U. S. Dept. of Agriculture, the California and Florida Experiment Stations, the State Agricultural Department and all other reliable chemical data, met at the Agricultural Experiment Station, at Gainesville, Fla., July 6, 1912, at 9:30 A. M.

There were present P. H. Rolfs, Director Fla. Agricultural Experiment Station, E. R. Flint, Prof. of Chemistry, University of Florida, S. E. Collison, Chemist, Florida Agricultural Experiment Station, and R. E. Rose, State Chemist. Absent H. Harold Hume, Pres. Florida State

Horticultural Society. On motion, Prof. P. H. Rolfs was made chairman and S. E. Collison secretary, of the meeting. After discussion of analytical data available, a plan of research and study was outlined; Profs. Flint, Collison and Rolfs to compile analytical data from the reports of the U. S. Dept. of Agriculture, and of the California and Florida Experiment Stations; R. E. Rose to codify and arrange such data as furnished by the Florida Citrus Exchange—analyses made by Wiley and Co. of Baltimore —and such other reliable data from commercial laboratories as may be furnished by parties interested in citrus culture in Florida.

After general discussion of various analytical data and authorities the Commission adjourned to meet again at Gainesville, July 18, 1912.

(Signed.) P. H. Rolfs,
Chairman.

S. E. Collison,
Secretary.

Gainesville, Fla., July 18, 1912.

The Commission met on July 18, 1912, at 1:30 P. M. in the Agricultural Experiment Station, Gainesville, Fla. There were present H. Harold Hume, P. H. Rolfs, E. R. Flint, R. E. Rose, and S. E. Collison.

On motion of E. R. Flint and seconded by P. H. Rolfs, H. Harold Hume was elected chairman and S. E. Collison Secretary.

The various compilations of analytical data were presented by the two committees appointed at the previous meeting and were discussed fully by the Commission. After due consideration of all analytical work obtainable at present date it was moved by E. R. Flint and seconded by P. H. Rolfs:

Be it resolved that we recommend to the convention of citrus growers that the following standard be adopted:

"One. All round oranges showing a field test

of one and twenty-five hundredths (1.25) per cent or more of acid, calculated as citric acid, shall be considered as immature."

"Two. Provided, however, that if the grower (or shipper) consider the fruit mature he shall have the right to appeal from the field test, to the State Chemist for a chemical analysis, and if this chemical analysis shows that the percentage by weight of the total sugar, as invert sugar, be seven times or more than the weight of the total acid as citric acid, the fruit shall be deemed mature."

"Three. That the juices of not less than five average oranges shall be mixed from which a composite sample shall be drawn for the field test."

"Four. That the juices of not less than twelve average oranges shall be mixed, from which shall be drawn a composite sample for laboratory analysis."

The resolution was passed unanimously.

On motion of P. H. Rolfs and seconded by R. E. Rose, the following resolution was passed:

The Commission recognizes the fact that the analytical data regarding the analyses of immature citrus fruit is limited.

We recommend that analyses of immature grape fruit and round oranges be made during the months of September, October, November, and December.

We recommend that the State Chemist, the Chemist of the Experiment Station, and the Chemist of the University be earnestly requested to make such analyses during the ensuing shipping season.

The Commission further recommends that the convention of citrus growers make every posible effort to assist these various officers in securing the necessary fruit and

also aid them in securing the necessary funds to employ the assistance needed to carry out this work.

Owing to the fact that H. H. Hume, Chairman, and P. H. Rolfs will be absent from the State at the date of the convention, it was moved by E. R. Flint, seconded by P. H. Rolfs, and favorably acted upon by the Commission: that Capt. R. E. Rose be appointed a committee of one to present the recommendations of the Commission to the convention of citrus growers to be held August 15.

It was further moved by P. H. Rolfs, seconded by S. E. Collison and adopted by the Commission:

That this Commission recommend that the analytical data secured by the Commission be compiled by the State Chemist and be published as a part of the Quarterly Bulletin of the Commissioner of Agriculture, Hon. W. A. McRae. This information being deemed very important for the citrus grower.

(Signed.) H. Harold Hume,
Chairman.

S. E. Collison,
Secretary.

APPARATUS, MATERIAL NECESSARY, AND METHOD OF APPLYING FIELD TEST FOR MAXIMUM ACID IN IMMATURE ORANGES.

APPARATUS.

One one-quart granite ware cup.
One lemon squeezer.
Cheese cloth strainer, 18 inches square.
One white porcelain tea cup.
One 25 cc pipette.
One quart bottle of standard alkaline solution. (Equivalent to 1.25% solution of citric acid.)
One 2-ounce bottle, with dropper, or indicator (Phenolpthalein).
Cost approximately $1.50.

METHOD.

Peel five oranges, cut across plugs, squeeze and strain through the cheese cloth into the granite cup. (Throw cheese cloth and pulp away. Do not attempt to use cheese cloth twice). Rinse with alkali solution and fill pipette to mark 25 cc with alkali solution and place contents in tea cup. Carefully rinse pipette with orange juice, then fill pipette to mark (25 cc) with orange juice and add to alkaline solution in tea cup. Mix by revolving cup. Drop several drops of "indicator" into the mixture. If the acid be less than 1.25% a change of color will occur—orange to pink. If the acid be greater than 1.25% there will be no change in color.

CAUTION.

The alkaline solution must be of exact strength to neu-

tralize an equal volume of citric solution, containing 1.25% of citric acid.

NOTICE.

Preparation of Alkaline Solution.

An alkaline tablet, with an indicator, of exact alkaline value, is now upon the market.

Correspondence has been had with Florida dealers who will carry in stock 25 cubic centimeter pipettes, eight ounce prescription bottles, and Farrington's Alkaline Tablets.

To make the alkaline solution, dissolve 96 tablets in 8 ounces of pure rain or distilled water. Measure the water in the 8 ounce graduated prescription bottle, pour into a larger, clean clear bottle. Add 96 tablets. After dissolving the tablets—which will require two hours with frequent shaking—the solution is ready for use.

An equal volume of this alkaline solution will exactly neutralize an equal volume of orange juice containing 1.25% of citric acid. 25 cc's of alkaline solution added to 25 cc's of orange juice, will show a pink color, if the acid be less than 1.25%. It will not show a pink color if the acid be more than 1.25%.

These 25 cc pipettes, 8 ounce prescription bottles, and Farrington's Alkaline Tablets can be purchased from the Groover-Stewart Drug Co., of Jacksonville, Fla.

Not more than 8 ounces of the alkaline solution should be prepared at one time. The alkaline solution, properly stoppered, and kept out of direct sunlight, will not decompose for several days. The dry tablets will not decompose. Freshly made alkaline solution should be used.

After a prolonged discussion, in which many growers

participated, the following resolution, offered by Mr. L. B. Skinner, was unanimously adopted:

"Resolved, That it is the sense of this Convention that the report of the Commission shall be adopted, and shall obtain until the 5th day of November in each and every year; Provided, That after the 5th day of November in each and every year the standard shall be, 'that if each orange is two-thirds its total area colored yellow, it shall be considered as mature and fit for shipment.'"

The following amendment was also offered and unanimously adopted:

"That no variety of oranges or grapefruit shall be allowed to be shipped before October 1st of each year that has bloomed during that calendar year."

After several demonstrations of "field test" by State Chemist Rose and Assistant State Chemist Henry, the meeting adjourned sine die.

W. A. McRAE, Chairman.

Attest: JOSIAH VARN, Secretary.

COMPILATION AND STUDY OF

62 Analyses of Oranges

Made by the *F. A. Gouth Laboratory*, Philadelphia, Pa.,

For CHASE & COMPANY,

SEASON 1911-12,

ALSO

218 Analyses of Oranges

Made by the *Wiley & Co.'s Laboratory*, Baltimore, Md.,

For THE FLORIDA CITRUS EXCHANGE,

SEASON 1911-12,

COMPILED AND ARRANGED BY THE

Florida State Laboratory

From Data Furnished.

Proposed Standard { Maximum Acid 1.25 Field Test.
Maximum Ratio—1 Acid, 6 to 7 Sugar.

Arranged by Variety, Taste, Ratio of Acid to Sugar, and Months.

R. E. ROSE, State Chemist.

A. M. HENRY, B. S., Assistant State Chemist, Food and Drug Analyst

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TALLAHASSEE, FLORIDA,
August 15, 1912.

ANALYSES OF ORANGES,
Genth Laboratory.

Seedlings from the grove of Chase & Co., Isleworth, Orange County, Florida (24 analyses).

Tree No. 1.

Date.	Total Acid as Citric.	Total Sugar as Invert.	Ratio of Acid to Sugar.
10-19-11	1.77	+9.62	1 to 5.44
10-19-11	1.72	8.33	1 to 4.82
10-19-11	1.55	7.62	1 to 4.92
10-31-11	1.59	7.49	1 to 4.71
10-31-11	+1.82	7.80	1 to 4.29
11- 3-11	1.37	7.26	1 to 5.30
11-10-11	1.36	7.74	1 to 5.69
11-24-11	1.23	7.94	1 to 6.46
12-15-11	1.51	6.98	1 to 4.62
12-15-11	1.46	7.29	1 to 4.99
12-22-11	1.28	8.26	1 to 6.45
12-22-11	1.24	8.28	1 to 6.68
1-26-12	1.32	7.99	1 to 6.05
1-23-12	—1.00	7.91	1 to 7.91

Tree No. 3.

10-19-11	1.64	6.91	1 to 4.21
10-19-11	1.62	6.37	—1 to 3.93
10-19-11	1.20	6.43	1 to 5.36

Tree No. 5.

10-19-11	1.47	6.58	1 to 4.48
10-19-11	1.56	6.93	1 to 4.44
10-19-11	1.13	—6.27	1 to 5.55
10-31-11	1.72	7.61	1 to 4.42
10-31-11	1.50	7.84	1 to 5.23

Miscellaneous.

12-14-11	1.24	7.07	1 to 5.70
1-26-12	1.05	9.28	+1 to 8.84
Minimum	1.00	6.27	1 to 3.93
Maximum	1.82	9.62	1 to 8.84
Average	1.43	7.575	1 to 5.29

Boone's Early from the grove of Chase & Co., Isleworth, Orange County, Florida (6 analyses).

Date.	Total Acid as Citric.	Total Sugar as Invert.	Ratio of Acid to Sugar.
10-10-11	1.05	—6.57	1 to 6.26
10-10-11	+1.22	6.67	—1 to 5.47
10-10-11	1.07	—8.69	—1 to 8.12
10-10-11	1.26	7.46	1 to 5.92
10-10-11	—0.87	6.7[illegible]	1 to 7.7[illegible]
10-10-11	1.07	7.56	1 to 7.06
Minimum	0.87	6.57	1 to [illegible]
Maximum	1.22	8.69	1 to [illegible]
Average	1.08	7.325	1 to 6.7[illegible]

Homosassas from the grove of Chase & Co., Isleworth, Orange County, Florida. Tree No. 4 (11 analyses).

10-19-11	+1.41	—6.43	—1 to 4.56
10-19-11	1.27	7.5[illegible]	1 to 5.91
10-31-11	1.01	6.8[illegible]	1 to 6.73
10-31-11	0.98	6.79	1 to 6.93
11-13-11	1.09	7.79	1 to 7.15
12-15-11	0.76	8.17	1 to 10.75
12-15-11	0.74	8.17	1 to 11.04
12-21-11	0.85	8.38	1 to 9.86
12-21-11	0.84	8.48	1 to 10.10
1-26-12	0.70	8.27	1 to 11.81
2-23-12	—0.57	+8.95	—1 to 15.70
Minimum	0.57	6.43	1 to 4.56
Maximum	1.41	8.95	1 to 15.70
Average	0.93	7.79	1 to 8.38

Parson Browns from the grove of Chase & Co., Isleworth, Orange County, Florida. Tree No. 2 (8 analyses).

Date.	Total Acid as Citric.	Total Sugar as Invert.	Ratio of Acid to Sugar.
10-19-11	0.75	—4.75	1 to 6.33
10-19-11	0.66	4.77	1 to 7.23
10-31-11	0.69	5.29	1 to 7.67
10-31-11	1.25	6.47	—1 to 5.18
11-24-11	+1.29	+7.67	1 to 5.95
12- 8-11	0.48	6.82	1 to 14.21
12-14-11	0.47	6.53	1 to 13.89
1-26-12	—0.33	5.28	+1 to 16.00
Minimum	0.33	4.75	1 to 5.18
Maximum	1.29	7.67	1 to 16.00
Average	0.74	5.95	1 to 8.04

Valencias from the grove of Chase & Co., Isleworth, Orange County, Florida (2 analyses).

2-23-12	0.98	8.94	1 to 9.12
4-23-12	0.63	9.62	1 to 15.27
Average	0.805	9.28	1 to 11.53

Miscellaneous Oranges from the grove of Chase & Co, Isleworth, Orange County, Florida (11 analyses).

11- 3-11	1.25	7.70	1 to 6.16
11- 3-11	1.09	7.85	1 to 7.20
11-16-11	+1.46	7.87	1 to 5.39
11-24-11	1.23	7.67	1 to 6.24
12- 1-11	1.22	8.03	1 to 6.58
12- 8-11	1.44	7.64	—1 to 5.31
12-15-11	1.13	—7.58	1 to 6.71
12-22-11	1.06	8.37	1 to 7.90
1-26-12	1.01	8.13	1 to 8.05
2-23-12	—0.37	7.75	+1 to 20.95
2-23-12	0.98	+8.95	1 to 9.13
Minimum	**0.37**	**7.58**	**1 to 5.31**
Maximum	**1.46**	**8.95**	**1 to 20.95**
Average	**1.11**	**7.96**	**1 to 7.15**

Sixty-two Analyses arranged according to Ratio of Acid to Sugar.

VERY SOUR (NO ANALYSIS).

Acid:Sugar::1:0.00
to
Acid:Sugar::1:3.00

SOUR (25 ANALYSES).

Acid:Sugar::1:3.01
to
Acid:Sugar::1:6.00

Date.	Total Acid as Citric.	Total Sugar as Invert.	Ratio of Acid to Sugar.
10-10-11	1.22	6.67	1 to 5.47
10-19-11	1.77	+9.62	1 to 5.44
10-19-11	1.72	8.33	1 to 4.84
10-19-11	1.55	7.62	1 to 4.92
10-19-11	1.64	6.91	1 to 4.21
10-19-11	1.62	6.37	—1 to 3.93
10-19-11	1.20	6.43	1 to 5.36
10-19-11	1.47	6.58	1 to 4.48
10-19-11	1.56	6.93	1 to 4.44
10-19-11	—1.13	—6.27	1 to 5.55
10-19-11	4.41	6.43	1 to 4.56
10-19-11	1.27	7.50	1 to 5.91
10-31-11	1.59	7.49	1 to 4.71
10-31-11	+1.82	7.80	1 to 4.29
10-31-11	1.72	7.61	1 to 4.42
10-31-11	1.50	7.84	1 to 5.2o
10-31-11	1.25	6.47	1 to 5.18
11- 3-11	1.37	7.26	1 to 5.30
11-10-11	1.36	7.74	1 to 5.69
11-16-11	1.46	7.87	1 to 5.39
11-24-11	1.29	7.67	+1 to 5.95
12- 8-11	1.44	7.64	1 to 5.31
12-14-11	1.24	7.07	1 to 5.70
12-15-11	1.51	6.98	1 to 4.62
12-15-11	1.46	7.29	1 to 4.99
Minimum	1.13	6.27	1 to 3.93
Maximum	1.82	9.62	1 to 5.95
Average	1.46	7.30	1 to 4.99

TART (24 ANALYSES).

Acid:Sugar::1:6.01
to
Acid:Sugar::1:9.00

Date.	Total Acid as Citric.	Total Sugar as Invert.	Ratio of Acid to Sugar.
10-10-11	1.05	6.57	1 to 6.26
10-10-11	1.07	8.69	1 to 8.12
10-10-11	1.20	7.46	1 to 6.22
10-10-11	0.87	6.70	1 to 7.70
10-10-11	1.07	7.86	1 to 7.35
10-19-11	0.75	—4.75	1 to 6.33
10-19-11	—0.66	4.77	1 to 7.23
10-31-11	1.01	6.80	1 to 6.73
10-31-11	0.98	6.79	1 to 6.93
10-31-11	0.69	5.29	1 to 7.67
11- 3-11	1.25	7.70	1 to 6.16
11- 3-11	1.09	7.85	1 to 7.20
11-13-11	1.09	7.79	1 to 7.15
11-24-11	1.23	7.94	1 to 6.46
11-24-11	1.23	7.67	1 to 6.24
12- 1-11	1.22	8.03	1 to 6.58
12-15-11	1.13	7.58	1 to 6.71
12-22-11	1.28	8.26	1 to 6.45
12-22-11	1.24	8.28	1 to 6.68
12-22-11	1.06	8.37	1 to 7.90
1-26-12	+1.32	7.99	—1 to 6.05
1-26-12	1.01	8.13	1 to 8.05
1-26-12	1.05	+9.28	+1 to 8.84
2-23-12	1.00	7.91	1 to 7.91
Minimum	0.66	4.75	1 to 6.05
Maximum	1.32	9.28	1 to 8.84
Average	1.06	7.43	1 to 6.98

SWEET (9 ANALYSES).

Acid:Sugar::1: 9.01
to
Acid:Sugar::1:15.00

Date.	Total Acid as Citric.	Total Sugar as Invert.	Ratio of Acid to Sugar.
12- 8-11	0.45	6.82	—1 to 14.21
12-14-11	—0.97	—6.38	1 to 10.88
12-15-11	0.76	8.17	1 to 11.75
12-15-11	0.74	8.17	1 to 11.04
12-21-11	0.65	8.38	1 to 9.86
12-21-11	0.54	8.48	1 to 10.19
1-26-12	0.70	8.27	1 to 11.81
2-23-12	+0.98	8.94	—1 to 9.12
2-23-12	+0.66	+8.95	1 to 14.20
Minimum	0.47	6.82	1 to 9.12
Maximum	0.98	8.95	1 to 14.21
Average	0.76	8.08	1 to 10.46

VERY SWEET (4 ANALYSES).

Acid:Sugar::1:15.00
and higher.

11-26-12	—0.33	—5.28	1 to 16.00
2-23-12	0.57	8.95	1 to 15.70
2-23-12	0.37	7.75	+1 to 20.95
4-23-12	+0.63	+9.62	—1 to 15.27
Minimum	0.33	5.28	1 to 15.27
Maximum	0.63	9.62	1 to 20.95
Average	0.475	7.90	1 to 16.63

Sixty-two Analyses arranged by Months.

OCTOBER (27 ANALYSES).

Date.	Total Acid as Citric.	Total Sugar as Invert.	Ratio of Acid to Sugar.
10-10-11	1.03	6.57	1 to 6.26
10-10-11	1.22	6.67	1 to 5.47
10-10-11	1.07	8.69	+1 to 8.12
10-10-11	1.20	7.46	1 to 6.22
10-10-11	0.87	6.70	1 to 7.70
10-10-11	1.07	7.86	1 to 7.33
10-19-11	1.77	+9.62	1 to 5.44
10-19-11	1.72	8.33	1 to 4.84
10-19-11	1.55	7.62	1 to 4.92
10-19-11	1.64	6.91	1 to 4.21
10-19-11	1.62	6.37	—1 to 3.93
10-19-11	1.20	6.43	1 to 5.36
10-19-11	1.47	6.58	1 to 4.48
10-19-11	1.56	6.93	1 to 4.44
10-19-11	1.13	6.27	1 to 5.55
10-19-11	1.41	6.43	1 to 4.56
10-19-11	1.27	7.59	1 to 5.91
10-19-11	0.75	—4.75	1 to 6.33
10-19-11	+0.66	4.77	1 to 7.23
10-31-11	1.59	7.49	1 to 4.71
10-31-11	+1.82	7.80	1 to 4.29
10-31-11	1.72	7.61	1 to 4.42
10-31-11	1.50	7.84	1 to 5.23
10-31-11	1.01	6.80	1 to 6.73
10-31-11	0.98	6.79	1 to 6.93
10-31-11	0.69	5.29	1 to 7.67
10-31-11	1.25	6.47	1 to 5.18.
Minimum	0.66	4.75	1 to 3.93
Maximum	1.82	9.62	1 to 8.12
Average	1.29	6.98	1 to 5.42

NOVEMBER (9 ANALYSES).

Date.	Total Acid as Citric.	Total Sugar as Invert.	Ratio of Acid to Sugar.
11- 3-11	1.37	—7.26	—1 to 5.30
11- 3-11	1.25	7.70	1 to 6.16
11- 3-11	—1.09	7.85	+1 to 7.20
11-10-11	1.36	7.74	1 to 5.69
11-13-11	—1.09	7.79	1 to 7.15
11-16-11	+1.46	7.87	1 to 5.39
11-24-11	1.23	+7.94	1 to 6.46
11-24-11	1.29	7.67	1 to 5.95
11-24-11	1.23	7.67	1 to 6.24
Minimum	1.09	7.26	1 to 5.30
Maximum	1.46	7.94	1 to 7.20
Average	1.26	7.72	1 to 6.11

DECEMBER (15 ANALYSES).

12- 1-11	1.22	8.03	1 to 6.58
12- 8-11	0.48	6.82	+1 to 14.21
12- 8-11	1.44	7.64	1 to 5.31
12-14-11	1.24	7.07	1 to 5.70
12-14-11	—0.47	—6.53	1 to 13.89
12-15-11	+1.51	6.98	—1 to 4.62
12-15-11	1.46	7.29	1 to 4.99
12-15-11	0.76	8.17	1 to 10.75
12-15-11	0.74	8.17	1 to 11.04
12-15-11	1.13	7.58	1 to 6.71
12-21-11	0.85	8.38	1 to 9.86
12-21-11	0.84	+8.48	1 to 10.10
12-22-11	1.28	8.26	1 to 6.45
12-22-11	1.24	8.28	1 to 6.68
12-22-11	1.06	8.37	1 to 7.90
Minimum	0.47	6.53	1 to 4.62
Maximum	1.51	8.48	1 to 14.21
Average	1.05	7.74	1 to 7.38

JANUARY (5 ANALYSES).

Date.	Total Acid as Citric.	Total Sugar as Invert.	Ratio of Acid to Sugar.
1-26-12	+1.32	7.99	—1 to 6.05
1-26-12	1.05	+9.28	1 to 8.84
1-26-12	0.70	8.27	1 to 11.81
1-26-12	—0.33	—5.28	+1 to 16.00
1-26-12	1.01	8.13	1 to 8.05
Minimum	0.33	5.28	1 to 6.05
Maximum	1.32	9.28	1 to 16.00
Average	0.88	7.79	1 to 8.83

FEBRUARY (5 ANALYSES).

2-23-12	+1.00	7.91	1 to 7.91
2-23-12	0.57	+8.95	1 to 15.70
2-23-12	0.98	8.94	—1 to 9.12
2-23-12	—0.37	—7.75	+1 to 20.95
2-23-12	0.98	+8.95	1 to 9.13
Minimum	0.37	7.75	1 to 9.12
Maximum	1.00	8.95	1 to 20.95
Average	0.78	8.50	1 to 10.91

APRIL (1 ANALYSIS).

4-23-12	0.63	+9.62	1 to 15.27

SUMMARY BY VARIETIES.

Variety.	Total Acid as Citric.	Total Sugar as Invert.	Ratio of Acid to Sugar.	Number of Analyses.
Seedling	+1.43	7.575	—1 to 5.29	24
Boone's Early	1.08	7.325	1 to 6.78	6
Homosassa	0.93	7.79	1 to 8.38	11
Parson Brown	—0.74	—5.95	1 to 8.04	8
Valencia	0.805	+9.28	+1 to 11.53	2
Miscellaneous	1.11	7.96	1 to 7.15	11
Average	1.14	7.52	1 to 6.57	62

SUMMARY BY RATIO BY TASTE.

Ratio-Taste.	Total Acid as Citric.	Total Sugar as Invert.	Ratio of Acid to Sugar.	Number of Analyses.
Very Sour.....	....	....	.....	[illegible]
Sour	1.46	7.30	1 to 4.99	23
Tart	1.06	7.43	1 to 6.98	24
Sweet	0.76	8.08	1 to 10.46	99
Very Sweet	0.475	7.99	1 to 16.63	4
Average	1.14	7.52	1 to 6.57	62

SUMMARY BY MONTHS.

Month.	Total Acid as Citric.	Total Sugar as Invert.	Ratio of Acid to Sugar.	Number of Analyses.
October	1.29	6.98	1 to 5.42	27
November	1.26	7.72	1 to 6.11	9
December	1.05	7.74	1 to 7.38	15
January	0.88	7.79	1 to 8.83	3
February	0.78	8.59	1 to 10.10	5
April	0.63	9.62	1 to 15.27	1
Average	1.14	7.52	1 to 6.57	62

SUMMARY OF SIXTY-TWO ANALYSES.

	Total Acid as Citric.	Total Sugar as Invert.	Ratio of Acid to Sugar.
Minimum	0.33	4.75	1 to 3.93
Maximum	1.82	9.62	1 to 26.95
Average	1.14	7.52	1 to 6.57

SUMMARY OF ANALYSES WITH TOTAL ACID OVER 1.25 PER CENT AND RATIO OF ACID TO SUGAR UNDER ONE TO SEVEN.

By Ratio.

Sour	20 out of 25 analyses over 1.25 per cent. total acid.
	25 out of 25 analyses under 1 to 7 ratio of acid to sugar.
Tart	2 out of 24 analyses over 1.25 per cent. total acid.
	13 out of 24 analyses under 1 to 7 ratio of acid to sugar.
Sweet	0 out of 9 analyses over 1.25 per cent. total acid.
	0 out of 9 analyses under 1 to 7 ratio of acid to sugar.
Very Sweet	0 out of 4 analyses over 1.25 per cent. total acid.
	0 out of 4 analyses under 1 to 7 ratio of acid to sugar.

By Months.

October	13 out of 27 analyses over 1.25 per cent. total acid.
	22 out of 27 analyses under 1 to 7 ratio of acid to sugar.
November	4 out of 9 analyses over 1.25 per cent. total acid.
	7 out of 9 analyses under 1 to 7 ratio of acid to sugar.

December	4 out of 15 analyses over 1.25 per cent. total acid.
	8 out of 15 analyses under 1 to 7 ratio of acid to sugar.
January	1 out of 5 analyses over 1.25 per cent. total acid.
	1 out of 5 analyses under 1 to 7 ratio of acid to sugar.
February	3 out of 5 analyses over 1.25 per cent. total acid.
	0 out of 5 analyses under 1 to 7 ratio of acid to sugar.
April	0 out of 1 analysis over 1.25 per cent. total acid.
	0 out of 1 analysis under 1 to 7 ratio of acid to sugar.

TOTAL.

22 out of 62 analyses over 1.25 per cent. total acid.
38 out of 62 analyses under 1 to 7 ratio of acid to sugar.

ANALYSES OF ORANGES.

Wiley and Company's Laboratory.

Sales of Florida Oranges at Boston, Mass.
(36 analyses).

Date.	Total Acid as Citric.	Total Sugar as Invert.	Ratio of Acid to Sugar.	Taste.
12- 7-11.....	—0.67	+12.20	+1 to 18.21	Sweet
12- 8-11.....	1.19	9.25	1 to 7.77	Tart
12- 9-11.....	1.11	8.14	1 to 7.33	Tart
12-12-11.....	0.88	7.80	1 to 8.86	Tart
12-12-11.....	1.16	9.46	1 to 8.16	Tart
12-18-11.....	+1.77	—5.32	—1 to 3.01	Sour
12-18-11.....	1.00	9.28	1 to 9.28	Tart
12-18-11.....	1.23	8.61	1 to 7.00	Tart
12-18-11.....	1.40	7.85	1 to 5.61	Sour
12-19-11.....	0.94	8.16	1 to 8.68	Tart
12-20-11.....	1.18	7.92	1 to 6.71	Sour
12-21-11.....	0.97	7.29	1 to 7.51	Tart
12-22-11.....	1.29	7.75	1 to 6.01	Tart
12-26-11.....	1.26	8.21	1 to 6.52	Tart
12-27-11.....	1.00	9.19	1 to 9.19	Sweet
12-28-11.....	0.80	8.40	1 to 10.50	Sweet
12-29-11.....	0.97	8.99	1 to 9.27	Sweet
1- 1-12.....	0.76	8.82	1 to 11.61	Sweet
1- 2-12.....	0.75	8.30	1 to 11.07	Sweet
1- 3-12.....	0.97	8.67	1 to 8.94	Sweet
1- 4-12.....	1.19	10.93	1 to 9.18	Sweet
1- 5-12.....	1.17	9.16	1 to 7.83	Sweet
1- 8-12.....	1.15	9.26	1 to 8.05	Sweet
1- 9-12.....	0.94	8.87	1 to 9.44	Sweet
1-10-12.....	1.15	8.73	1 to 7.59	Tart
1-15-12.....	0.69	8.24	1 to 11.94	Sweet
1-16-12.....	1.00	10.88	1 to 10.88	Sweet
1-17-12.....	1.06	8.56	1 to 8.08	Sweet
1-11-12.....	1.10	9.96	1 to 9.05	Sweet
1-23-12.....	1.20	8.87	1 to 7.39	Sweet
1-24-12.....	1.09	9.22	1 to 8.46	Sweet
1-25-12.....	1.02	10.31	1 to 10.11	Sweet
1-26-12.....	1.04	10.19	1 to 9.80	Very Sweet
1-29-12.....	0.99	10.48	1 to 10.59	Very Sweet

Sales of Florida Oranges at Boston, Mass.
(36 analyses—(Continued.)

Date	Total Acid as Citric.	Total Sugar as Invert.	Ratio of Acid to Sugar.	Taste.
1-30-12.....	0.86	9.55	1 to 11.10	Very Sweet
1-31-12.....	0.79	11.37	1 to 14.39	Very Sweet
Minimum....	0.67	5.32	1 to 3.01	Sour
Maximum.....	1.77	12.20	1 to 18.21	Very Sweet
Average.....	1.05	9.01	1 to 8.59	

Sales of the Florida Citrus Exchange at Cincinnati, Ohio
(25 analyses).

Date.	Total Acid as Citric.	Total Sugar as Invert.	Ratio of Acid to Sugar.	Taste.
11-24-11.....	+1.62	8.83	—1 to 5.45	Tart
12- 2-11.....	0.85	7.34	1 to 8.64	Sweet
12- 5-11.....	1.02	7.90	1 to 7.75	Tart
12- 6-11.....	1.09	+10.08	1 to 9.25	Tart
12- 8-11.....	1.13	8.15	1 to 7.21	Sweet
12-12-11.....	1.25	8.04	1 to 6.43	Tart
12-13-11.....	1.09	—7.00	1 to 6.42	Tart
12-15-11.....	0.87	8.67	1 to 9.97	Tart
12-18-11.....	1.18	9.15	1 to 7.75	Tart
12-20-11.....	0.86	8.63	1 to 10.03	Sweet
12-22-11.....	0.96	9.40	1 to 9.79	Sweet
12-28-11.....	1.01	7.79	1 to 7.71	Tart
12-30-11.....	0.97	9.03	1 to 9.31	Sweet
1- 3-12.....	0.86	8.82	1 to 10.26	Sweet
1- 5-12.....	1.34	9.09	1 to 6.78	Tart
1- 9-12.....	0.77	8.80	+1 to 11.43	Sweet
1-12-12.....	0.93	7.79	1 to 8.38	Tart
1-15-12.....	—0.75	7.48	1 to 9.97	Sweet
1-17-12.....	1.04	8.14	1 to 7.83	Tart
1-19-12.....	0.86	7.23	1 to 8.41	Sweet
1-22-12.....	1.06	7.98	1 to 7.53	Tart
1-24-12.....	1.08	8.16	1 to 7.56	Sweet
1-26-12.....	0.86	7.60	1 to 8.84	Tart

Sales of Florida Oranges at Boston, Mass.
(25 analyses—(Continued).

Date	Total Acid as Citric.	Total Sugar as Invert.	Ratio of Acid to Sugar.	Taste.
1-29-12.....	1.10	7.32	1 to 6.65	Tart
1-31-12.....	1.05	8.28	1 to 7.89	Sweet
Minimum....	0.75	7.09	1 to 5.45	Tart
Maximum....	1.62	10.08	1 to 11.43	Sweet
Average.....	1.02	8.27	1 to 8.07	

Sales of the Florida Citrus Exchange at New York, [illegible]
(33 analyses).

Date.	Total Acid as Citric.	Total Sugar as Invert.	Ratio of Acid to Sugar.	Taste.
11- 4-11.....	0.77	—7.32	1 to 9.51	Sweet
12- 7-11.....	1.19	+11.33	1 to 9.52	Tart
12- 8-11.....	1.43	8.76	1 to 6.13	Tart
12- 9-11.....	0.74	8.37	1 to 11.38	Sweet
12-11-11.....	1.19	9.37	1 to 7.9[illegible]	Tart
12-12-11.....	0.66	8.72	1 to 13.21	Sweet
12-13-11.....	+1.54	8.87	—1 to 5.76	Tart
12-14-11.....	0.60	8.75	1 to 14.63	Very Sweet
12-19-11.....	0.74	8.72	1 to 11.78	Sweet
12-19-11.....	0.75	8.73	1 to 11.64	Sweet
12-20-11.....	0.90	7.98	1 to 8.87	Tart
12-21-11.....	1.20	8.20	1 to 6.83	Tart
12-26-11.....	1.16	9.13	1 to 7.87	Tart
12-27-11.....	0.89	9.21	1 to 10.35	Sweet
12-28-11.....	1.34	8.27	1 to 6.17	Tart
12-29-11.....	1.04	8.83	1 to 8.49	Tart
1- 2-12.....	1.30	8.09	1 to 6.22	Tart
1- 3-12.....	1.04	9.50	1 to 9.13	Sweet
1- 4-12.....	0.84	9.00	1 to 10.71	Sweet
1- 8-12.....	1.16	9.59	1 to 8.27	Sweet
1- 9-12.....	0.78	11.07	1 to 14.19	Very Sweet
1-11-12.....	0.86	9.08	1 to 10.56	Sweet
1-13-12.....	0.96	9.19	1 to 9.57	Tart
1-15-12.....	0.99	8.95	1 to 9.04	Sweet
1-18-12.....	0.79	8.52	1 to 10.78	Sweet

Sales of Florida Oranges at Boston, Mass.
(53 analyses—(Continued).

Date	Total Acid as Citric.	Total Sugar as Invert.	Ratio of Acid to Sugar.	Taste.
1-19-12.....	0.76	8.63	1 to 11.36	Sweet
1-22-12.....	0.80	8.93	1 to 11.16	Sweet
1-23-12.....	0.91	9.28	1 to 10.20	Sweet
1-24-12.....	1.56	9.40	1 to 6.27	Tart
1-25-12.....	1.24	9.46	1 to 7.63	Tart
1-26-12.....	0.83	8.61	1 to 10.37	Sweet
1-29-12.....	0.63	8.75	1 to 13.89	Sweet
1-30-12.....	0.81	8.50	1 to 9.34	Sweet
1-31-12.....	0.75	8.85	1 to 11 80	Sweet
2- 1-12.....	1.00	9.05	1 to 9.05	Sweet
2- 2-12.....	0.91	10.88	1 to 11.96	Very Sweet
2- 5-12.....	0.63	8.38	1 to 13.30	Sweet
2- 6-12.....	0.77	8.81	1 to 11.44	Sweet
2- 7-12.....	1.22	10.24	1 to 8.39	Tart
2- 8-12.....	0.97	9.97	1 to 10.28	Sweet
2- 9-12.....	0.95	10.13	1 to 10.68	Sweet
2-13-12.....	0.74	9.85	1 to 13.31	Very Sweet
2-14-12.....	0.78	8.92	1 to 11.44	Sweet
2-15-12.....	0.96	10.95	1 to 11.41	Very Sweet
2-16-12.....	0.80	10.22	1 to 12.78	Very Sweet
2-20-12.....	0.81	9.84	1 to 12.15	Very Sweet
2-20-12.....	0.83	9.74	1 to 11.73	Sweet
2-21-12.....	1.19	10.18	1 to 9.25	Sweet
2-23-12.....	0.89	9.55	1 to 10.73	Sweet
2-26-12.....	0.86	9.53	1 to 11.08	Sweet
2-27-12.....	0.77	9.60	1 to 12.47	Sweet
2-28-12.....	0.49	10.00	1 to 20.41	Very Sweet
2-29-12.....	—0.44	10.17	+1 to 23.11	Very Sweet
Minimum....	0.44	7.32	1 to 5.76	Tart
Maximum....	1.54	11.33	1 to 23.11	Very Sweet
Average.....	0.93	9.25	1 to 9.99	

Sales of Florida Oranges at Boston, Mass.
(37 analyses).

Date.	Total Acid as Citric.	Total Sugar as Invert.	Ratio of Acid to Sugar.	Taste.
12- 4-11.....	0.94	8.15	1 to 8.67	Tart
12- 5-11.....	1.13	—7.80	1 to 6.90	Tart
12- 6-11.....	1.23	8.20	1 to 6.67	Tart
12- 7-11.....	1.20	10.80	1 to 9.00	Tart
12- 8-11.....	1.21	8.38	1 to 6.93	Tart
12-11-11.....	0.94	9.10	1 to 9.68	Sweet
12-12-11.....	1.22	8.71	1 to 7.14	Tart
12-13-11.....	1.48	8.54	—1 to 5.77	Sour
12-14-11.....	1.25	8.70	1 to 6.96	Tart
12-15-11.....	1.29	8.85	1 to 6.86	Tart
12-18-11.....	0.94	8.58	1 to 9.13	Sweet
12-19-11.....	1.35	8.42	1 to 6.24	Tart
12-20-11.....	1.00	8.66	1 to 8.66	Tart
12-21-11.....	1.20	8.99	1 to 7.49	Tart
12-22-11.....	1.12	8.09	1 to 7.22	Tart
12-26-11.....	1.07	9.02	1 to 8.43	Sweet
12-27-11.....	1.36	9.41	1 to 6.92	Tart
12-28-11.....	1.19	8.87	1 to 7.45	Tart
12-29-11.....	1.15	9.10	1 to 7.91	Tart
1- 2-12.....	0.92	9.28	1 to 10.09	Sweet
1- 3-12.....	0.67	8.94	1 to 13.34	Sweet
1- 4-12.....	0.88	8.28	1 to 9.41	Sweet
1- 5-12.....	+1.60	11.65	1 to 7.28	Sweet
1- 8-12.....	0.79	9.05	1 to 11.46	Sweet
1- 9-12.....	1.07	9.64	1 to 9.01	Sweet
1-10-12.....	1.06	—7.80	1 to 7.36	Tart
1-11-12.....	1.08	10.22	1 to 9.46	Sweet
1-12-12.....	1.12	+11.72	1 to 10.46	Sweet
1-15-12.....	0.93	9.38	1 to 10.09	Sweet
1-17-12.....	—0.62	9.35	+1 to 15.08	Very Sweet
1-18-12.....	1.02	9.41	1 to 9.23	Sweet
1-19-12.....	1.03	8.90	1 to 8.64	Sweet
1-22-12.....	1.13	8.87	1 to 7.85	Sweet
1-24-12.....	0.94	9.46	1 to 10.06	Sweet
1-26-12.....	1.17	9.47	1 to 8.09	Sweet
1-29-12.....	1.24	9.16	1 to 7.39	Tart

Sales of Florida Oranges at Boston, Mass.
(37 analyses—(Continued).

Date	Total Acid as Citric.	Total Sugar as Invert.	Ratio of Acid to Sugar.	Taste.
1-31-12.....	0.96	9.08	1 to 9.46	Sweet
Minimum....	0.62	7.80	1 to 5.77	Sour
Maximum....	1.60	11.72	1 to 15.08	Very Sweet
Average.....	1.09	9.08	1 to 8.30	

Boone's Early from Citrus Association, Gotha, Orange County, Florida (1 analysis).

11-24-11.....	0.73	8.63	1 to 11.82	Sweet

Bull Dog Brand from Winter Park Fruit Co., Winter Park Orange County, Florida (14 analyses).

11-25-11.....	0.98	8.74	1 to 8.92	Tart
12- 5-11.....	1.18	—8.64	1 to 7.32	Sour
12- 9-11.....	+1.38	8.87	—1 to 6.43	Sour
12-21-11.....	1.03	9.15	1 to 8.88	Tart
1-20-12.....	1.04	9.56	1 to 9.19	Sweet
1-27-12.....	1.29	9.51	1 to 7.37	Tart
2- 3-12.....	1.27	9.68	1 to 7.62	Tart
2-10-12.....	0.96	9.33	1 to 9.72	Sweet
2-17-12.....	0.94	10.37	1 to 11.03	Very Sweet
2-24-12.....	0.95	9.92	1 to 10.44	Sweet
3- 5-12.....	0.92	10.62	1 to 11.54	Sweet
3-12-12.....	1.07	10.46	1 to 9.78	Tart
3-19-12.....	0.81	11.20	1 to 13.83	Very Sweet
3-26-12.....	—0.64	+11.77	+1 to 18.39	Very Sweet
Minimum....	0.64	8.64	1 to 6.43	Sour
Maximum....	1.38	11.77	1 to 18.39	Very Sweet
Average.....	1.03	9.84	1 to 9.53	

Camel Brand from Winter Park Fruit Co., Winter Park, Orange County, Florida (14 analyses).

Date.	Total Acid as Citric.	Total Sugar as Invert.	Ratio of Acid to Sugar.	Taste.
11-23-11.....	0.92	8.31	1 to 9.03	Sour
12- 5-11.....	1.31	—8.30	1 to 6.34	Sour
12- 9-11.....	+1.73	8.47	—1 to 4.90	Sour
12-21-11.....	1.10	9.31	1 to 8.46	Tart
1-20-12.....	1.30	9.80	1 to 7.54	Sweet
1-27-12.....	0.96	9.98	1 to 10.40	Sweet
2- 3-12.....	1.35	9.76	1 to 7.23	Tart
2-10-12.....	1.10	10.34	1 to 9.40	Tart
2-17-12.....	0.92	10.17	1 to 11.05	Very Sweet
2-24-12.....	0.85	9.62	1 to 11.32	Sweet
3- 5-12.....	0.68	9.49	1 to 13.82	Sweet
3-12-12.....	0.96	11.01	1 to 11.47	Sweet
3-19-12.....	—0.66	11.03	1 to 16.71	Very Sweet
3-26-12.....	—0.66	+11.15	+1 to 16.89	Very Sweet
Minimum....	0.66	8.30	1 to 1.50	Sour
Maximum....	1.73	11.15	1 to 16.89	Very Sweet
Average.....	1.04	9.76	1 to 9.42	

Homosassa from George E. Koplin, Winter Haven, Orange County, Florida (5 analyses).

Date.	Total Acid as Citric.	Total Sugar as Invert.	Ratio of Acid to Sugar.	Taste.
12- 7-11.....	+0.74	—8.28	—1 to 11.19	Sweet
1- 4-12.....	0.57	8.57	1 to 15.04	Tart
2- 5-12.....	0.58	8.35	1 to 14.40	Sweet
3- 4-12.....	0.55	9.01	1 to 16.38	Sweet
4- 6-12.....	—0.40	+9.80	+1 to 24.50	Very Sweet
Minimum....	0.40	8.28	1 to 11.19	Tart
Maximum....	0.74	9.80	1 to 24.50	Very Sweet
Average.....	0.57	8.80	1 to 15.50	

Indian River from P. W. Roberts, Mims, Brevard County, Florida (5 analyses).

Date	Total Acid as Citric.	Total Sugar as Invert.	Ratio of Acid to Sugar.	Taste.
12- 9-11.....	0.80	8.98	1 to 11.23	Sweet
12-26-11.....	+0.90	9.04	—1 to 10.04	Sweet
2- 2-12.....	0.83	—8.57	1 to 10.33	Sweet
3- 5-12.....	0.80	+9.88	1 to 12.35	Sweet
3-25-12.....	—0.25	9.56	+1 to 38.24	Very Sweet
Minimum....	0.25	8.57	1 to 10.04	Sweet
Maximum....	0.90	9.88	1 to 38.24	Very Sweet
Average.....	0.72	9.21	1 to 12.86	

Parson Browns from Carney Investment Co., Summerfield, Marion County, Florida (7 analyses).

11-22-11.....	—0.36	9.13	1 to 25.36	Very Sweet
11-28-11.....	+0.68	9.63	1 to 14.16	Sweet
12- 8-11.....	0.61	—7.66	—1 to 12.56	Sweet
1- 8-12.....	0.53	8.35	1 to 15.75	Sweet
2- 5-12.....	0.47	9.74	1 to 20.72	Sweet
3- 8-12.....	0.54	10.74	1 to 19.89	Sweet
4- 8-12.....	0.40	+10.91	+1 to 27.28	Very Sweet
Minimum....	0.36	7.66	1 to 12.56	Sweet
Maximum....	0.68	10.91	1 to 27.28	Very Sweet
Average.....	0.51	9.45	1 to 18.43	

SEEDLINGS (15 ANALYSES).

From J. W. Weeks, Punta Gorda, DeSoto County, Florida.

Date.	Total Acid as Citric.	Total Sugar as Invert.	Ratio of Acid to Sugar.	Taste.
12-15-11.....	1.08	7.62	1 to 7.06	Tart
1-12-12.....	1.01	9.00	1 to 8.91	Sweet
2-13-12.....	0.98	9.74	1 to 9.94	Sweet
3-12-12.....	0.77	10.14	1 to 13.17	Very Sweet
4-13-12.....	0.70	+11.23	1 to 16.04	Very Sweet

From A. A. Moseley, Winter Park, Orange County, Florida

Date	Total Acid as Citric.	Total Sugar as Invert.	Ratio of Acid to Sugar.	Taste.
11-24-11.....	1.04	—7.53	1 to 7.24	Tart
12-18-11.....	+1.27	7.62	—1 to 6.00	Tart
1-17-12.....	1.02	7.91	1 to 7.75	Tart
2-15-12.....	0.91	8.97	1 to 9.86	Sweet
3-18-12.....	0.72	10.65	1 to 14.79	Sweet
4-17-12.....	—0.59	9.73	+1 to 16.49	Sweet

From J. W. Westlake, Lake Helen, Volusia County, Florida.

12-11-11.....	1.04	8.86	1 to 8.52	Sweet
1-11-12.....	0.86	9.61	1 to 11.17	Sweet
2-12-12.....	0.77	10.41	1 to 13.52	Sweet
3-11-12.....	0.75	10.96	1 to 14.61	Sweet
Minimum....	0.59	7.53	1 to 6.00	Tart
Maximum....	1.27	11.23	1 to 16.49	Very Sweet
Average.....	0.90	9.33	1 to 10.36	

Valencias from Z. W. Tilden, Tildenville, Orange County, Florida (6 analyses).

Date.	Total Acid as Citric.	Total Sugar as Invert.	Ratio of Acid to Sugar.	Taste.
11-24-11.....	+1.51	—7.80	—1 to 5.17	Sour
12-27-11.....	1.03	8.70	1 to 8.45	Tart
1-29-12.....	1.01	9.65	1 to 9.55	Sweet
2-26-12.....	0.79	10.15	1 to 12.85	Sweet
3-29-12.....	0.80	10.07	1 to 12.59	Sweet
4-30-12.....	—0.59	—10.19	+1 to 17.27	Sweet
Minimum....	0.59	7.80	1 to 5.17	Sour
Maximum....	1.51	10.19	1 to 17.27	Sweet
Average.....	0.955	9.43	1 to 9.87	

Two Hundred Eighteen Analyses Arranged by Taste.

VERY SOUR (NO ANALYSES).

SOUR (10 ANALYSES).

Date.	Total Acid as Citric.	Total Sugar as Invert.	Ratio of Acid to Sugar.
11-24-11	1.51	7.80	1 to 5.17
11-25-11	—0.92	8.31	+1 to 9.03
12- 5-11	1.18	8.64	1 to 7.32
12- 5-11	1.31	8.30	1 to 6.34
12- 9-11	1.38	+8.87	1 to 6.43
12- 9-11	1.73	8.47	1 to 4.90
12-13-11	1.48	8.54	1 to 5.77
12-18-11	+1.77	—5.32	—1 to 3.01
12-18-11	1.40	7.85	1 to 5.61
12-20-11	1.18	7.92	1 to 6.71
Minimum	0.92	5.32	1 to 3.01
Maximum	1.77	8.87	1 to 9.03
Average	1.39	8.02	1 to 5.77

TART (70 ANALYSES).

11-24-11	+1.62	8.83	—1 to 5.45
11-24-11	1.04	7.53	1 to 7.24
11-25-11	0.98	8.74	1 to 8.92
12- 4-11	0.94	8.15	1 to 8.67
12- 5-11	1.02	7.90	1 to 7.75
12- 5-11	1.13	7.80	1 to 6.90
12- 6-11	1.09	10.08	1 to 9.25
12- 6-11	1.23	8.20	1 to 6.67
12- 7-11	1.19	+11.33	1 to 9.52
12- 7-11	1.20	10.80	1 to 9.00
12- 8-11	1.19	9.25	1 to 7.77
12- 8-11	1.43	8.76	1 to 6.13
12- 8-11	1.21	8.38	1 to 6.93
12- 9-11	1.11	8.14	1 to 7.33
12-11-11	1.19	9.57	1 to 8.04
12-12-11	0.88	7.80	1 to 8.86
12-12-11	1.16	9.46	1 to 8.16

TART—(Continued.)

Date.	Total Acid as Citric.	Total Sugars as Invert.	Ratio of Acid to Sugar.
12-12-11	1.23	8.04	1 to 6.46
12-12-11	1.22	8.71	1 to 7.14
12-13-11	1.09	—7.20	1 to 6.42
12-13-11	1.54	8.87	1 to 5.78
12-14-11	1.25	8.70	1 to 6.96
12-15-11	0.87	8.97	1 to 10.31
12-15-11	1.29	8.13	1 to 6.30
12-15-11	1.08	7.02	1 to 6.50
12-18-11	1.00	9.23	1 to 9.23
12-18-11	1.23	8.61	1 to 7.00
12-18-11	1.18	9.13	1 to 7.73
12-18-11	1.27	7.62	1 to 6.00
12-19-11	0.94	8.26	1 to 8.68
12-19-11	1.35	8.42	1 to 6.24
12-20-11	0.90	7.96	1 to 8.87
12-20-11	1.00	8.86	1 to 8.86
12-21-11	0.97	7.26	1 to 7.51
12-21-11	1.20	8.29	1 to 6.91
12-21-11	1.20	8.99	1 to 7.49
12-21-11	1.03	9.15	1 to 8.88
12-21-11	1.10	9.31	1 to 8.46
12-22-11	1.29	7.75	1 to 6.01
12-22-11	1.12	8.09	1 to 7.22
12-26-11	1.26	8.21	1 to 6.52
12-26-11	1.16	9.13	1 to 7.87
12-27-11	1.36	9.41	1 to 6.92
12-27-11	1.03	8.70	1 to 8.45
12-28-11	1.01	7.79	1 to 7.71
12-28-11	1.34	8.27	1 to 6.17
12-28-11	1.19	8.87	1 to 7.45
12-29-11	1.04	8.83	1 to 8.49
12-29-11	1.15	9.10	1 to 7.91
1- 2-12	1.30	8.09	1 to 6.22
1- 4-12	—0.57	8.57	—1 to 15.04
1- 5-12	1.34	9.09	1 to 6.78
1-10-12	1.15	8.73	1 to 7.59
1-10-12	1.06	7.89	1 to 7.36
1-12-12	0.93	7.79	1 to 8.38
1-13-12	0.96	9.19	1 to 9.57
1-17-12	1.04	8.14	1 to 7.83

TART—(Continued.)

Date.	Total Acid as Citric.	Total Sugar as Invert.	Ratio of Acid to Sugar.
1-17-12	1.02	7.91	1 to 7.75
1-22-12	1.06	7.98	1 to 7.53
1-24-12	1.50	9.40	1 to 6.27
1-25-12	1.24	9.46	1 to 7.63
1-26-12	0.86	7.60	1 to 8.84
1-27-12	1.29	9.51	1 to 7.37
1-29-12	1.10	7.32	1 to 6.65
1-20-12	1.24	9.16	1 to 7.39
2- 3-12	1.27	9.68	1 to 7.62
2- 3-12	1.35	9.76	1 to 7.23
2- 7-12	1.22	10.24	1 to 8.39
2-10-12	1.10	10.34	1 to 9.40
3-12-12	1.07	10.46	1 to 9.78
Minimum	0.57	7.00	1 to 5.45
Maximum	1.62	11.33	1 to 15.04
Average	1.15	8.69	1 to 7.59

SWEET (112 ANALYSES).

11-24-11	0.77	7.32	1 to 9.51
11-24-11	0.73	8.63	1 to 11.82
11-28-11	0.68	9.63	1 to 14.16
12- 2-11	0.85	7.34	1 to 8.64
12- 7-11	0.67	+12.20	1 to 18.21
12- 7-11	0.74	8.28	1 to 11.19
12- 8-11	1.13	8.15	—1 to 7.21
12- 8-11	0.61	7.66	1 to 12.56
12- 9-11	0.74	8.57	1 to 11.58
12- 9-11	0.80	8.98	1 to 11.23
12-11-11	0.94	9.10	1 to 9.68
12-11-11	1.04	8.86	1 to 8.52
12-12-11	0.66	8.72	1 to 13.21
12-18-11	0.94	8.58	1 to 9.13
12-19-11	0.74	8.72	1 to 11.78
12-19-11	0.75	8.73	1 to 11.64
12-20-11	0.86	8.63	1 to 10.0...
12-22-11	0.96	9.40	1 to 9.79
12-26-11	1.07	9.02	1 to 8.43
12-26-11	0.90	9.04	1 to 10.04
12-27-11	1.00	9.19	1 to 9.19

SWEET—(Continued.)

Date.	Total Acid as Citric.	Total Sugar as Invert.	Ratio of Acid to Sugar.
12-27-11	0.89	9.21	1 to 10.35
12-28-11	0.89	8.40	1 to 11.53
12-29-11	0.97	8.99	1 to 9.27
12-30-11	0.97	9.03	1 to 9.31
1- 1-12	0.76	8.82	1 to 11.61
1- 2-12	0.75	8.30	1 to 11.07
1- 2-12	0.92	9.28	1 to 10.09
1- 3-12	0.97	8.67	1 to 8.94
1- 3-12	0.86	8.82	1 to 10.26
1- 3-12	1.04	9.50	1 to 9.13
1- 3-12	0.67	8.94	1 to 13.34
1- 4-12	1.19	10.93	1 to 9.18
1- 4-12	0.84	9.00	1 to 10.71
1- 4-12	0.88	8.28	1 to 9.41
1- 5-12	1.17	9.16	1 to 7.83
1- 5-12	1.60	11.65	1 to 7.28
1- 8-12	1.15	9.26	1 to 8.05
1- 8-12	1.16	9.59	1 to 8.27
1- 8-12	0.79	9.05	1 to 11.46
1- 8-12	0.53	8.35	1 to 15.75
1- 9-12	0.94	8.87	1 to 9.44
1- 9-12	0.77	8.80	1 to 11.43
1- 9-12	1.07	9.64	1 to 9.01
1-11-12	0.86	9.08	1 to 10.56
1-11-12	1.08	10.22	1 to 9.46
1-11-12	0.86	9.61	1 to 11.17
1-12-12	1.12	11.72	1 to 10.46
1-12-12	1.01	9.00	1 to 8.91
1-15-12	0.69	8.24	1 to 11.94
1-15-12	0.75	7.48	1 to 9.97
1-15-12	0.99	8.95	1 to 9.04
1-15-12	0.93	9.38	1to 10.09
1-16-12	1.00	10.88	1 to 10.88
1-17-12	1.06	8.56	1 to 8.08
1-18-12	0.79	8.52	1 to 10.78
1-18-12	1.02	9.41	1 to 9.23
1-19-12	0.86	—7.23	1 to 8.41
1-19-12	0.76	8.63	1 to 11.36
1-19-12	1.03	8.90	1 to 8.64
1-20-12	1.04	9.56	1 to 9.19

SWEET—(Continued.)

Date.	Total Acid as Citric.	Total Sugar as Invert.	Ratio of Acid to Sugar.
1-20-12	1.30	9.80	1 to 7.54
1-22-12	1.10	9.96	1 to 9.05
1-22-12	0.80	8.93	1 to 11.16
1-22-12	1.13	8.87	1 to 7.85
1-23-12	1.20	8.87	1 to 7.39
1-23-12	0.91	9.28	1 to 10.20
1-24-12	1.09	9.22	1 to 8.46
1-24-12	1.08	8.16	1 to 7.56
1-24-12	0.94	9.46	1 to 10.06
1-25-12	1.02	10.31	1 to 10.11
1-26-12	0.83	8.61	1 to 10.37
1-26-12	1.17	9.47	1 to 8.09
1-27-12	0.96	9.98	1 to 10.40
1-29-12	0.63	8.75	1 to 13.89
1-29-12	1.01	9.65	1 to 9.55
1-30-12	0.91	8.50	1 to 9.34
1-31-12	1.05	8.28	1 to 7.89
1-31-12	0.75	8.85	1 to 11.80
1-31-12	0.96	9.08	1 to 9.46
2 -1-12	1.00	9.05	1 to 9.05
2- 2-12	0.83	8.57	1 to 10.33
2- 5-12	0.63	8.38	1 to 13.39
2- 5-12	0.58	8.35	1 to 14.49
2- 5-12	—0.47	9.74	+1 to 20.72
2- 6-12	0.77	8.81	1 to 11.44
2- 8-12	0.97	9.97	1 to 10.28
2- 9-12	0.95	10.13	1 to 10.68
2-10-12	0.96	9.33	1 to 9.72
2-12-12	0.77	10.41	1 to 13.52
2-13-12	0.98	9.74	1 to 9.94
2-14-12	0.78	8.92	1 to 11.44
2-15-12	0.91	8.97	1 to 9.86
2-20-12	0.83	9.74	1 to 11.73
2-21-12	1.10	10.18	1 to 9.25
2-23-12	0.89	9.55	1 to 10.73
2-24-12	0.95	9.92	1 to 10.44
2-24-12	0.85	9.62	1 to 11.32
2-26-12	0.86	9.53	1 to 11.08
2-26-12	0.79	10.15	1 to 12.85
2-27-12	0.77	9.60	1 to 12.47

SWEET—(Continued).

Date.	Total Acid as Citric.	Total Sugar as Invert.	Ratio of Acid to Sugar.
3- 4-12	0.55	9.01	1 to 16.38
3- 5-12	0.92	10.62	1 to 11.54
3- 5-12	0.68	9.40	1 to 13.82
3- 5-12	0.80	9.88	1 to 12.35
3- 5-12	0.54	10.74	1 to 19.89
3-11-12	0.75	10.96	1 to 14.61
3-12-12	0.96	11.01	1 to 11.47
3-18-12	0.72	10.65	1 to 14.79
3-29-12	0.80	10.07	1 to 12.59
4-17-12	0.59	9.73	1 to 16.49
4-30-12	0.59	10.19	1 to 17.27
Minimum	0.47	7.23	1 to 7.21
Maximum	1.60	12.20	1 to 20.72
Average	0.88	9.25	1 to 10.31

VERY SWEET (26 ANALYSES).

11-22-11	0.36	9.13	1 to 25.36
12-14-11	0.60	—8.78	1 to 14.63
1- 9-12	0.78	11.07	1 to 14.19
1-17-12	0.62	9.35	1 to 15.08
1-26-12	+1.04	10.19	1 to—9.80
1-29-12	0.99	10.48	1 to 10.59
1-30-12	0.86	9.55	1 to 11.10
1-31-12	0.79	11.37	1 to 14.39
2- 2-12	0.91	10.88	1 to 11.96
2-13-12	0.74	9.95	1 to 13.31
2-15-12	0.96	10.95	1 to 11.41
2-16-12	0.80	10.22	1 to 12.78
2-17-12	0.94	10.37	1 to 11.03
2-17-12	0.92	10.17	1 to 11.05
2-20-12	0.81	9.84	1 to 12.15
2-28-12	0.49	10.00	1 to 20.41
2-29-12	0.44	10.17	1 to 23.11
3-12-12	0.77	10.14	1 to 13.17
3-19-12	0.81	11.20	1 to 13.82
3-19-12	0.66	11.03	1 to 16.71
3-25-12	—0.25	9.56	+1 to 38.24

VERY SWEET—(Continued).

Date.	Total Acid as Citric.	Total Sugar as Invert.	Ratio of Acid to Sugar.
3-26-12	0.64	+11.77	1 to 18.39
3-26-12	0.66	11.15	1 to 16.89
4- 6-12	0.40	9.80	1 to 24.50
4- 8-12	0.40	10.91	1 to 27.28
4-13-12	0.70	11.23	1 to 16.04
Minimum	0.25	8.78	1 to 9.80
Maximum	1.04	11.77	1 to 38.24
Average	0.71	10.35	1 to 14.68

Two Hundred Eighteen Analyses Arranged According to Ratio by Taste.

VERY SOUR (NO ANALYSES).

Acid:Sugar::1:0.00
to
Acid:Sugar::1:3.00

SOUR (8 ANALYSES).

Acid:Sugar::1:3.01
to
Acid:Sugar::1:6.00

Date.	Total Acid as Citric.	Total Sugar as Invert.	Ratio of Acid to Sugar.	Taste.
11-24-11.....	1.62	8.83	1 to 5.45	Tart
11-24-11.....	1.51	7.80	1 to 5.17	Sour
12- 9-11.....	1.73	8.47	1 to 4.90	Sour
12-13-11.....	1.54	+8.87	1 to 5.76	Tart
12-13-11.....	1.48	8.54	1 to 5.77	Sour
12-18-11.....	+1.77	—5.32	—1 to 3.01	Sour
12-18-11.....	1.40	7.85	1 to 5.61	Sour
12-18-11.....	—1.27	7.62	+1 to 6.00	Tart
Minimum....	1.27	5.32	1 to 3.01	Sour
Maximum....	1.77	8.87	1 to 6.00	Tart
Average.....	1.54	7.91	1 to 5.14	

TART (83 ANALYSES).

Acid:Sugar::1:6.01
to
Acid:Sugar::1:9.00

Date.	Total Acid as Citric.	Total Sugar as Invert.	Ratio of Acid to Sugar.	Taste.
11-24-11.....	1.04	7.53	1 to 7.24	Tart
11-25-11.....	0.98	8.74	1 to 8.92	Tart
12- 2-11.....	—0.85	7.34	1 to 8.64	Sweet
12- 4-11.....	0.94	8.15	1 to 8.67	Tart
12- 5-11.....	1.02	7.90	1 to 7.73	Tart
12- 5-11.....	1.13	7.80	1 to 6.90	Tart
12- 5-11.....	1.18	8.64	1 to 7.32	Sour
12- 5-11.....	1.31	8.30	1 to 6.34	Sour
12- 6-11.....	1.23	8.20	1 to 6.67	Tart
12- 7-11.....	1.20	10.80	1 to 9.00	Tart
12- 8-11.....	1.19	9.25	1 to 7.77	Tart
12- 8-11.....	1.13	8.15	1 to 7.21	Sweet
12- 8-11.....	1.43	8.76	1 to 6.13	Tart
12- 8-11.....	1.21	8.38	1 to 6.93	Tart
12- 9-11.....	1.11	8.14	1 to 7.33	Tart
12- 9-11.....	1.38	8.87	1 to 6.43	Sour
12-11-11.....	1.19	9.57	1 to 8.04	Tart
12-11-11.....	1.04	8.86	1 to 8.52	Sweet
12-12-11.....	0.88	7.80	1 to 8.86	Tart
12-12-11.....	1.16	9.46	1 to 8.16	Tart
12-12-11.....	1.25	8.04	1 to 6.43	Tart
12-12-11.....	1.22	8.71	1 to 7.14	Tart
12-13-11.....	1.09	—7.00	1 to 6.42	Tart
12-14-11.....	1.25	8.70	1 to 6.96	Tart
12-15-11.....	1.29	8.85	1 to 6.86	Tart
12-15-11.....	1.08	7.62	1 to 7.06	Tart
12-18-11.....	1.23	8.61	1 to 7.00	Tart
12-18-11.....	1.18	9.15	1 to 7.75	Tart
12-19-11.....	0.94	8.16	1 to 8.68	Tart
12-19-11.....	1.35	8.42	1 to 6.24	Tart
12-20-11.....	1.18	7.92	1 to 6.71	Sour
12-20-11.....	0.90	7.98	1 to 8.87	Tart
12-20-11.....	1.00	8.66	1 to 8.66	Tart
12-21-11.....	0.97	7.29	1 to 7.51	Tart
12-21-11.....	1.20	8.20	1 to 6.83	Tart
12-21-11.....	1.20	8.99	1 to 7.49	Tart

TART—(Continued.)

Date.	Total Acid as Citric.	Total Sugar as Invert.	Ratio of Acid to Sugar.	Taste.
12-21-11.....	1.03	9.15	1 to 8.88	Tart
12-21-11.....	1.10	9.31	1 to 8.46	Tart
12-22-11.....	1.29	7.75	1 to 6.01	Tart
12-22-11.....	1.12	8.09	1 to 7.22	Tart
12-26-11.....	1.26	8.21	1 to 6.52	Tart
12-26-11.....	1.16	9.13	1 to 7.87	Tart
12-26-11.....	1.07	9.02	1 to 8.43	Sweet
12-27-11.....	1.36	9.41	1 to 6.92	Tart
12-27-11.....	1.03	8.70	1 to 8.45	Tart
12-28-11.....	1.01	7.79	1 to 7.71	Tart
12-28-11.....	1.34	8.27	1 to 6.17	Tart
12-28-11.....	1.19	8.87	1 to 7.45	Tart
12-29-11.....	1.04	8.83	1 to 8.49	Tart
12-29-11.....	1.15	9.10	1 to 7.91	Tart
1- 2-12.....	1.30	8.09	1 to 6.22	Tart
1- 3-12.....	0.97	8.67	+1 to 8.94	Sweet
1- 5-12.....	1.17	9.16	1 to 7.83	Sweet
1- 5-12.....	1.34	9.09	1 to 6.78	Tart
1- 5-12.....	+1.60	+11.65	1 to 7.28	Sweet
1- 8-12.....	1.15	9.26	1 to 8.05	Sweet
1- 8-12.....	1.16	9.59	1 to 8.27	Sweet
1-10-12.....	1.15	8.73	1 to 7.59	Tart
1-10-12.....	1.06	7.80	1 to 7.36	Tart
1-12-12.....	0.93	7.79	1 to 8.38	Tart
1-12-12.....	1.01	9.00	1 to 8.91	Sweet
1-17-12.....	1.06	8.56	1 to 8.08	Sweet
1-17-12.....	1.04	8.14	1 to 7.83	Tart
1-17-12.....	1.02	7.91	1 to 7.75	Tart
1-19-12.....	0.86	7.23	1 to 8.41	Sweet
1-19-12.....	1.03	8.90	1 to 8.64	Sweet
1-20-12.....	1.30	9.80	1 to 7.54	Sweet
1-22-12.....	1.06	7.98	1 to 7.53	Tart
1-22-12.....	1.13	8.87	1 to 7.85	Sweet
1-23-12.....	1.20	8.87	1 to 7.39	Sweet
1-24-12.....	1.09	9.22	1 to 8.46	Sweet
1-24-12.....	1.08	8.16	1 to 7.56	Sweet
1-24-12.....	1.50	9.40	1 to 6.27	Tart
1-25-12.....	1.24	9.46	1 to 7.63	Tart
1-26-12.....	0.86	7.60	1 to 8.84	Tart
1-26-12.....	1.17	9.47	1 to 8.09	Sweet

TART—(Continued.)

Date.	Total Acid as Citric.	Total Sugar as Invert.	Ratio of Acid to Sugar.	Taste.
1-27-12.....	1.29	9.51	1 to 7.37	Tart
1-29-12.....	1.10	7.32	1 to 6.65	Tart
1-29-12.....	1.24	9.16	1 to 7.39	Tart
1-31-12.....	1.05	8.28	1 to 7.89	Sweet
2- 3-12.....	1.27	9.68	1 to 7.62	Tart
2- 3-12.....	1.35	9.76	1 to 7.23	Tart
2- 7-12.....	1.22	10.24	1 to 8.39	Tart
Minimum.....	0.85	7.00	1 to 6.01	Sour
Maximum.....	1.60	11.65	1 to 8.94	Sweet
Average.....	1.15	8.64	1 to 7.54	

SWEET (108 ANALYSES.)

Acid:Sugar::1:9.01
to
Acid:Sugar::1:15.00

11-24-11.....	0.77	—7.32	1 to 9.51	Sweet
11-24-11.....	0.73	8.63	1 to 11.82	Sweet
11-25-11.....	0.92	8.31	1 to 9.03	Sour
11-28-11.....	0.68	9.63	1 to 14.16	Sweet
12- 6-11.....	1.09	10.08	1 to 9.25	Tart
12- 7-11.....	1.19	11.33	1 to 9.52	Tart
12- 7-11.....	0.74	8.28	1 to 11.19	Sweet
12- 8-11.....	0.61	7.66	1 to 12.56	Sweet
12- 9-11.....	0.74	8.57	1 to 11.58	Sweet
12- 9-11.....	0.80	8.98	1 to 11.23	Sweet
12-11-11.....	0.94	9.10	1 to 9.68	Sweet
12-12-11.....	0.66	8.72	1 to 13.21	Sweet
12-14-11.....	—0.60	8.78	1 to 14.63	Very Sweet
12-15-11.....	0.87	8.67	1 to 9.97	Tart
12-18-11.....	1.00	9.28	1 to 9.28	Tart
12-18-11.....	0.94	8.58	1 to 9.13	Sweet
12-19-11.....	0.74	8.72	1 to 11.78	Sweet
12-19-11.....	0.75	8.73	1 to 11.64	Sweet
12-20-11.....	0.86	8.63	1 to 10.03	Sweet
12-22-11.....	0.96	9.40	1 to 9.79	Sweet
12-26-11.....	0.90	9.04	1 to 10.04	Sweet
12-27-11.....	1.00	9.19	1 to 9.19	Sweet

SWEET—(Continued.)

Date.	Total Acid as Citric.	Total Sugar as Invert.	Ratio of Acid to Sugar.	Taste.
12-27-11.....	0.89	9.21	1 to 10.35	Sweet
12-28-11.....	0.80	8.40	1 to 10.50	Sweet
12-29-11.....	0.97	8.99	1 to 9.27	Sweet
12-30-11.....	0.97	9.03	1 to 9.31	Sweet
1- 1-12.....	0.76	8.82	1 to 11.61	Sweet
1- 2-12.....	0.75	8.30	1 to 11.07	Sweet
1- 2-12.....	0.92	9.28	1 to 10.09	Sweet
1- 3-12.....	0.86	8.82	1 to 10.26	Sweet
1- 3-12.....	1.04	9.50	1 to 9.13	Sweet
1- 3-12.....	0.67	8.94	1 to 13.34	Sweet
1- 4-12.....	+1.19	10.93	1 to 9.18	Sweet
1- 4-12.....	0.84	9.00	1 to 10.71	Sweet
1- 4-12.....	0.88	8.28	1 to 9.41	Sweet
1- 8-12.....	0.79	9.05	1 to 11.46	Sweet
1- 9-12.....	0.94	8.87	1 to 9.44	Sweet
1- 9-12.....	0.77	8.80	1 to 11.43	Sweet
1- 9-12.....	0.78	11.07	1 to 14.19	Very Sweet
1- 9-12.....	1.07	9.64	—1 to 9.01	Sweet
1-11-12.....	0.86	9.08	1 to 10.56	Sweet
1-11-12.....	1.08	10.22	1 to 9.46	Sweet
1-11-12.....	0.86	9.61	1 to 11.17	Sweet
1-12-12.....	1.12	+11.72	1 to 10.46	Sweet
1-13-12.....	0.96	9.19	1 to 9.57	Tart
1-15-12.....	0.69	8.24	1 to 11.94	Sweet
1-15-12.....	0.75	7.48	1 to 9.97	Sweet
1-15-12.....	0.99	8.95	1 to 9.04	Sweet
1-15-12.....	0.93	9.38	1 to 10.09	Sweet
1-16-12.....	1.00	10.88	1 to 10.88	Sweet
1-18-12.....	0.79	8.52	1 to 10.78	Sweet
1-18-12.....	1.02	9.41	1 to 9.23	Sweet
1-19-12.....	0.76	8.63	1 to 11.36	Sweet
1-20-12.....	1.04	9.56	1 to 9.19	Sweet
1-22-12.....	1.10	9.96	1 to 9.05	Sweet
1-22-12.....	0.80	8.93	1 to 11.16	Sweet
1-23-12.....	0.91	9.28	1 to 10.20	Sweet
1-24-12.....	0.94	9.46	1 to 10.06	Sweet
1-25-12.....	1.02	10.31	1 to 10.11	Sweet
1-26-12.....	1.04	10.19	1 to 9.80	Very Sweet
1-26-12.....	0.83	8.61	1 to 10.37	Sweet
1-27-12.....	0.96	9.98	1 to 10.40	Sweet

SWEET—(Continued).

Date.	Total Acid as Citric.	Total Sugar as Invert.	Ratio of Acid to Sugar.	Taste.
1-29-12.....	0.99	10.48	1 to 10.59	Very Sweet
1-29-12.....	0.63	8.75	1 to 13.89	Sweet
1-29-12.....	1.01	9.65	1 to 9.55	Sweet
1-30-12.....	0.86	9.55	1 to 11.10	Very Sweet
1-30-12.....	0.91	8.50	1 to 9.34	Sweet
1-31-12.....	0.79	11.37	1 to 14.39	Very Sweet
1-31-12.....	0.75	8.85	1 to 11.80	Sweet
1-31-12.....	0.96	9.08	1 to 9.46	Sweet
2- 1-12.....	1.00	9.05	1 to 9.05	Sweet
2- 2-12.....	0.91	10.88	1 to 11.96	Very Sweet
2- 2-12.....	0.83	8.57	1 to 10.33	Sweet
2- 5-12.....	0.63	8.38	1 to 13.30	Sweet
2- 5-12.....	0.58	8.35	1 to 14.40	Sweet
2- 6-12.....	0.77	8.81	1 to 11.44	Sweet
2- 8-12.....	0.97	9.97	1 to 10.28	Sweet
2- 9-12.....	0.95	10.15	1 to 10.68	Sweet
2-10-12.....	0.96	9.33	1 to 9.72	Sweet
2-10-12.....	1.10	10.34	1 to 9.40	Tart
2-12-12.....	0.77	10.41	1 to 13.52	Sweet
2-13-12.....	0.74	9.85	1 to 13.31	Very Sweet
2-13-12.....	0.98	9.74	1 to 9.94	Sweet
2-14-12.....	0.78	8.92	1 to 11.44	Sweet
2-15-12.....	0.96	10.95	1 to 11.41	Very Sweet
2-15-12.....	0.91	8.97	1 to 9.86	Sweet
2-16-12.....	0.80	10.22	1 to 12.78	Very Sweet
2-17-12.....	0.94	10.37	1 to 11.03	Very Sweet
2-17-12.....	0.92	10.17	1 to 11.05	Very Sweet
2-20-12.....	0.81	9.84	1 to 12.15	Very Sweet
2-20-12.....	0.83	9.74	1 to 11.73	Sweet
2-21-12.....	1.10	10.18	1 to 9.25	Sweet
2-23-12.....	0.89	9.55	1 to 10.73	Sweet
2-24-12.....	0.95	9.92	1 to 10.44	Sweet
2-24-12.....	0.85	9.62	1 to 11.32	Sweet
2-26-12.....	0.86	9.53	1 to 11.08	Sweet
2-26-12.....	0.79	10.15	1 to 12.85	Sweet
2-27-12.....	0.77	9.60	1 to 12.47	Sweet
3- 5-12.....	0.92	10.62	1 to 11.54	Sweet
3- 5-12.....	0.68	9.40	1 to 13.82	Sweet
3- 5-12.....	0.80	9.88	1 to 12.35	Sweet
3-11-12.....	0.75	10.96	1 to 14.61	Sweet

SWEET—(Continued).

Date.	Total Acid as Citric.	Total Sugar as Invert.	Ratio of Acid to Sugar.	Taste.
3-12-12.....	1.07	10.46	1 to 9.78	Tart
3-12-12.....	0.96	11.01	1 to 11.47	Sweet
3-12-12.....	0.77	10.14	1 to 13.17	Very Sweet
3-18-12.....	0.72	10.65	+1 to 14.79	Sweet
3-19-12.....	0.81	11.20	1 to 13.82	Very Sweet
3-29-12.....	0.80	10.07	1 to 12.59	Sweet
Minimum....	0.60	7.32	1 to 9.01	Sour
Maximum....	1.19	11.72	1 to 14.79	Very Sweet
Average.....	0.87	9.45	1 to 10.82	

VERY SWEET (19 ANALYSES.)

Acid:Sugar::1:15.01 and higher.

11-22-11.....	0.36	9.13	1 to 25.36	Very Sweet
12- 7-11.....	0.67	+12.20	1 to 18.21	Sweet
1- 4-12.....	0.57	8.57	1 to 15.04	Tart
1- 8-12.....	0.53	—8.35	1 to 15.76	Sweet
1-17-12.....	0.62	9.35	1 to 15.08	Very Sweet
2- 5-12.....	0.47	9.74	1 to 20.72	Sweet
2-28-12.....	0.49	10.00	1 to 20.41	Very Sweet
2-29-12.....	0.44	10.17	1 to 23.11	Very Sweet
3- 4-12.....	0.55	9.01	1 to 16.38	Sweet
3- 8-12.....	0.54	10.74	1 to 19.89	Sweet
3-19-12.....	0.66	11.03	1 to 16.71	Very Sweet
3-25-12.....	—0.25	9.56	+1 to 38.24	Very Sweet
3-26-12.....	0.64	11.77	1 to 18.39	Very Sweet
3-26-12.....	0.66	11.15	1 to 16.89	Very Sweet
4- 6-12.....	0.40	9.80	1 to 24.50	Very Sweet
4- 8-12.....	0.40	10.91	1 to 27.28	Very Sweet
4-13-12.....	+0.70	11.23	1 to 16.04	Very Sweet
4-17-12.....	0.59	9.73	1 to 16.49	Sweet
4-30-12.....	0.59	10.19	1 to 17.27	Sweet
Minimum....	0.25	8.35	1 to 15.04	Tart
Maximum.....	0.70	12.20	1 to 38.24	Very Sweet
Average.....	0.53	10.14	1 to 19.02	

Two Hundred Eighteen Analyses Arranged by Months.

NOVEMBER (9 ANALYSES.)

Date.	Total Acid as Citric.	Total Sugar as Invert.	Ratio of Acid to Sugar.	Taste.
11-22-11.....	—0.36	9.13	+1 to 25.36	Very Sweet
11-24-11.....	+1.62	8.83	1 to 5.45	Tart
11-24-11.....	0.77	—7.32	1 to 9.51	Sweet
11-24-11.....	0.73	8.63	1 to 11.82	Sweet
11-24-11.....	1.04	7.53	1 to 7.24	Tart
11-24-11.....	1.51	7.80	—1 to 5.17	Sour
11-25-11.....	0.98	8.74	1 to 8.92	Tart
11-25-11.....	0.92	8.31	1 to 9.03	Sour
11-28-11.....	0.68	+9.63	1 to 14.16	Sweet
Minimum.....	0.36	7.32	1 to 5.17	Sour
Maximum.....	1.62	9.63	1 to 25.36	Very Sweet
Average.....	0.96	8.44	1 to 8.82	

DECEMBER (77 ANALYSES.)

12- 2-11.....	0.85	7.34	1 to 8.64	Sweet
12- 4-11.....	0.94	8.15	1 to 8.67	Tart
12- 5-11.....	1.02	7.90	1 to 7.75	Tart
12- 5-11.....	1.13	7.80	1 to 6.90	Tart
12- 5-11.....	1.18	8.64	1 to 7.32	Sour
12- 5-11.....	1.31	8.30	1 to 6.34	Sour
12- 6-11.....	1.09	10.08	1 to 9.25	Tart
12- 6-11.....	1.23	8.20	1 to 6.67	Tart
12- 7-11.....	0.67	+12.20	+1 to 18.21	Sweet
12- 7-11.....	1.19	11.33	1 to 9.52	Tart
12- 7-11.....	1.20	10.80	1 to 9.00	Tart
12- 7-11.....	0.74	8.28	1 to 11.19	Sweet
12- 8-11.....	1.19	9.25	1 to 7.77	Tart
12- 8-11.....	1.13	8.15	1 to 7.21	Sweet
12- 8-11.....	1.43	8.76	1 to 6.13	Tart
12- 8-11.....	1.21	8.38	1 to 6.93	Tart
12- 8-11.....	0.61	7.66	1 to 12.56	Sweet
12- 9-11.....	1.11	8.14	1 to 7.33	Tart
12- 9-11.....	0.74	8.57	1 to 11.58	Sweet
12- 9-11.....	1.38	8.87	1 to 6.43	Sour
12- 9-11.....	1.73	8.47	1 to 4.90	Sour
12- 9-11.....	0.80	8.98	1 to 11.23	Sweet

DECEMBER—(Continued).

Date.	Total Acid as Citric.	Total Sugar as Invert.	Ratio of Acid to Sugar.	Taste.
12-11-11.....	1.19	9.57	1 to 8.04	Tart
12-11-11.....	0.94	9.10	1 to 9.68	Sweet
12-11-11.....	1.04	8.86	1 to 8.52	Sweet
12-12-11.....	0.88	7.80	1 to 8.86	Tart
12-12-11.....	1.16	9.46	1 to 8.16	Tart
12-12-11.....	1.25	8.04	1 to 6.43	Tart.
12-12-11.....	0.66	8.72	1 to 13.21	Sweet
12-12-11.....	1.22	8.71	1 to 7.14.	Tart
12-13-11.....	1.09	7.00	1 to 6.42	Tart
12-13-11.....	1.54	8.87	1 to 5.76	Tart
12-13-11.....	1.48	8.54	1 to 5.70	Sour
12-14-11.....	—0.60	8.78	1 to 14.63	Very Sweet
12-14-11.....	1.25	8.70	1 to 6.96	Tart
12-15-11.....	0.87	8.67	1 to 9.97	Tart
12-15-11.....	1.29	8.85	1 to 6.86	Tart
12-15-11.....	1.08	7.62	1 to 7.06	Tart
12-18-11.....	+1.77	—5.32	—1 to 3.01	Sour
12-18-11.....	1.00	9.28	1 to 9.28	Tart
12-18-11.....	1.23	8.61	1 to 7.00	Tart
12-18-11.....	1.40	7.85	1 to 5.61	Sour
12-18-11.....	1.18	9.15	1 to 7.75	Tart
12-18-11.....	0.94	8.58	1 to 9.13	Sweet
12-18-11.....	1.27	7.62	1 to 6.00	Tart
12-19-11.....	0.94	8.16	1 to 8.68	Tart
12-19-11.....	0.74	8.72	1 to 11.78	Sweet
12-19-11.....	0.75	8.73	1 to 11.64	Sweet
12-19-11.....	1.35	8.42	1 to 6.24	Tart
12-20-11.....	1.18	7.92	1 to 6.71	Sour
12-20-11.....	0.86	8.63	1 to 10.03	Sweet
12-20-11.....	0.90	7.98	1 to 8.87	Tart
12-20-11.....	1.00	8.66	1 to 8.66	Tart
12-21-11.....	0.97	7.29	1 to 7.51	Tart
12-21-11.....	1.20	8.20	1 to 6.83	Tart
12-21-11.....	1.20	8.99	1 to 7.49	Tart
12-21-11.....	1.03	9.15	1 to 8.88	Tart
12-21-11.....	1.10	9.31	1 to 8.46	Tart
12-22-11.....	1.29	7.75	1 to 6.01	Tart
12-22-11.....	0.96	9.40	1 to 9.79	Sweet
12-22-11.....	1.12	8.09	1 to 7.22	Tart
12-26-11.....	1.26	8.21	1 to 6.52	Tart

DECEMBER—(Continued).

Date.	Total Acid as Citric.	Total Sugar as Invert.	Ratio of Acid to Sugar.	Taste.
12-26-11.....	1.16	9.13	1 to 7.87	Tart
12-26-11.....	1.07	9.02	1 to 8.43	Sweet
12-26-11.....	0.90	9.04	1 to 10.04	Sweet
12-27-11.....	1.00	9.19	1 to 9.19	Sweet
12-27-11.....	0.89	9.21	1 to 10.35	Sweet
12-27-11.....	1.36	9.41	1 to 6.96	Tart
12-27-11.....	1.03	8.70	1 to 8.45	Tart
12-28-11.....	0.80	8.40	1 to 10.50	Sweet
12-28-11.....	1.01	7.79	1 to 7.71	Tart
12-28-11.....	1.34	8.27	1 to 6.17	Tart
12-28-11.....	1.19	8.87	1 to 7.45	Tart
12-29-11.....	0.97	8.99	1 to 9.27	Sweet
12-29-11.....	1.04	8.83	1 to 8.49	Tart
12-29-11.....	1.15	9.10	1 to 7.91	Tart
12-30-11.....	0.97	9.03	1 to 9.31	Sweet
Minimum....	0.60	5.32	1 to 3.01	Sour
Maximum....	1.77	12.20	1 to 18.21	Very Sweet
Average.....	1.09	8.63	1 to 7.92	

JANUARY (77 ANALYSES).

1- 1-12.....	0.76	8.82	1 to 11.61	Sweet
1- 2-12.....	0.75	8.30	1 to 11.07	Sweet
1- 2-12.....	1.30	8.09	—1 to 6.22	Tart
1- 2-12.....	0.92	9.28	1 to 10.09	Sweet
1- 3-12.....	0.97	8.67	1 to 8.94	Sweet
1- 3-12.....	0.86	8.82	1 to 10.26	Sweet
1- 3-12.....	1.04	9.50	1 to 9.13	Sweet
1- 3-12.....	0.67	8.94	1 to 13.34	Sweet
1- 4-12.....	1.19	10.93	1 to 9.18	Sweet
1- 4-12.....	0.84	9.00	1 to 10.71	Sweet
1- 4-12.....	0.88	8.28	1 to 9.41	Sweet
1- 4-12.....	0.57	8.57	1 to 15.04	Tart
1- 5-12.....	1.17	9.16	1 to 7.83	Sweet
1- 5-12.....	1.34	9.09	1 to 6.78	Tart
1- 5-12.....	+1.60	11.65	1 to 7.28	Sweet
1- 8-12.....	1.15	9.26	1 to 8.05	Sweet
1- 8-12.....	1.16	9.59	1 to 8.27	Sweet
1- 8-12.....	0.79	9.05	1 to 11.76	Sweet

JANUARY—(Continued.)

Date.	Total Acid as Citric.	Total Sugar as Invert.	Ratio of Acid to Sugar.	Taste.
1- 8-12.....	—0.53	8.35	+1 to 15.75	Sweet
1- 9-12.....	0.94	8.87	1 to 9.44	Sweet
1- 9-12.....	0.77	8.80	1 to 11.43	Sweet
1- 9-12.....	0.78	11.07	1 to 14.19	Very Sweet
1- 9-12.....	1.07	9.64	1 to 9.01	Sweet
1-10-12.....	1.15	8.73	1 to 7.59	Tart
1-10-12.....	1.06	7.80	1 to 7.36	Tart
1-11-12.....	0.86	9.08	1 to 10.56	Sweet
1-11-12.....	1.08	10.22	1 to 9.46	Sweet
1-11-12.....	0.86	9.61	1 to 11.17	Sweet
1-12-12.....	0.93	7.79	1 to 8.38	Tart
1-12-12.....	1.12	+11.72	1 to 10.46	Sweet
1-12-12.....	1.01	9.00	1 to 8.91	Sweet
1-13-12.....	0.96	9.19	1 to 9.57	Tart
1-15-12.....	0.69	8.24	1 to 11.94	Sweet
1-15-12.....	0.75	7.48	1 to 9.97	Sweet
1-15-12.....	0.99	8.95	1 to 9.04	Sweet
1-15-12.....	0.93	9.38	1 to 10.09	Sweet
1-16-12.....	1.00	10.88	1 to 10.88	Sweet
1-17-12.....	1.06	8.56	1 to 8.08	Sweet
1-17-12.....	1.04	8.14	1 to 7.83	Tart
1-17-12.....	0.62	9.35	1 to 15.08	Very Sweet
1-17-12.....	1.02	7.91	1 to 7.75	Tart
1-18-12.....	0.79	8.52	1 to 10.78	Sweet
1-18-12.....	1.02	9.41	1 to 9.23	Sweet
1-19-12.....	0.86	—7.23	1 to 8.41	Sweet
1-19-12.....	0.76	8.63	1 to 11.36	Sweet
1-19-12.....	1.03	8.90	1 to 8.64	Sweet
1-20-12.....	1.04	9.56	1 to 9.19	Sweet
1-20-12.....	1.30	9.80	1 to 7.54	Tart
1-22-12.....	1.10	9.96	1 to 9.05	Sweet
1-22-12.....	1.06	7.98	1 to 7.53	Tart
1-22-12.....	0.80	8.93	1 to 11.16	Sweet
1-22-12.....	1.13	8.87	1 to 7.85	Sweet
1-23-12.....	1.20	8.87	1 to 7.39	Sweet
1-23-12.....	0.91	9.28	1 to 10.20	Sweet
1-24-12.....	1.09	9.22	1 to 8.46	Sweet
1-24-12.....	1.08	8.16	1 to 7.56	Sweet
1-24-12.....	1.50	9.40	1 to 6.27	Tart
1-24-12.....	0.94	9.46	1 to 10.06	Sweet

JANUARY—(Continued).

Date.	Total Acid as Citric.	Total Sugar as Invert.	Ratio of Acid to Sugar.	Taste.
1-25-12.....	1.02	10.31	1 to 10.11	Sweet
1-25-12.....	1.24	9.46	1 to 7.63	Tart
1-26-12.....	1.04	10.19	1 to 9.80	Very Sweet
1-26-12.....	0.86	7.60	1 to 8.84	Tart
1-26-12.....	0.83	8.61	1 to 10.37	Sweet
1-26-12.....	1.17	9.47	1 to 8.09	Sweet
1-27-12.....	1.29	9.51	1 to 7.37	Tart
1-27-12.....	0.96	9.98	1 to 10.40	Sweet
1-29-12.....	0.99	10.48	1 to 10.59	Very Sweet
1-29-12.....	1.10	7.32	1 to 6.65	Tart
1-29-12.....	0.63	8.75	1 to 13.89	Sweet
1-29-12.....	1.24	9.16	1 to 7.39	Tart
1-29-12.....	1.01	9.65	1 to 9.55	Sweet
1-30-12.....	0.86	9.55	1 to 11.10	Very Sweet
1-30-12.....	0.91	8.50	1 to 9.34	Sweet
1-31-12.....	0.79	11.37	1 to 14.39	Very Sweet
1-31-12.....	1.05	8.28	1 to 7.89	Sweet
1-31-12.....	0.75	8.85	1 to 11.80	Sweet
1-31-12.....	0.96	9.08	1 to 9.46	Sweet
Minimum....	0.53	7.23	1 to 6.22	Tart
Maximum....	1.60	11.72	1 to 15.75	Very Sweet
Average.....	0.98	9.12	1 to 9.30	

FEBRUARY (34 ANALYSES).

2- 1-12.....	1.00	9.05	1 to 9.05	Sweet
2- 2-12.....	0.91	10.88	1 to 11.96	Very Sweet
2- 2-12.....	0.83	8.57	1 to 10.33	Sweet
2- 3-12.....	1.27	9.68	1 to 7.62	Tart
2- 3-12.....	+1.35	9.76	—1 to 7.23	Tart
2- 5-12.....	0.63	8.38	1 to 13.30	Sweet
2- 5-12.....	0.58	—8.35	1 to 14.40	Sweet
2- 5-12.....	0.47	9.74	1 to 20.72	Sweet
2- 6-12.....	0.77	8.81	1 to 11.44	Sweet
2- 7-12.....	1.22	10.24	1 to 8.39	Tart
2- 8-12.....	0.97	9.97	1 to 10.28	Sweet
2- 9-12.....	0.95	10.15	1 to 10.68	Sweet
2-10-12.....	0.96	9.33	1 to 9.72	Sweet
2-10-12.....	1.10	10.34	1 to 9.40	Tart

FEBRUARY—(Continued).

Date	Total Acid as Citric.	Total Sugar as Invert.	Ratio of Acid to Sugar.	Taste.
2-12-12.....	0.77	10.41	1 to 13.52	Sweet
2-13-12.....	0.74	9.85	1 to 13.31	Very Sweet
2-13-12.....	0.98	9.74	1 to 9.94	Sweet
2-14-12.....	0.78	8.92	1 to 11.44	Sweet
2-15-12.....	0.96	+10.95	1 to 11.41	Very Sweet
2-15-12.....	0.91	8.97	1 to 9.86	Sweet
2-16-12.....	0.80	10.22	1 to 12.78	Very Sweet
2-17-12.....	0.94	10.37	1 to 11.03	Very Sweet
2-17-12.....	0.92	10.17	1 to 11.05	Very Sweet
2-20-12.....	0.81	9.84	1 to 12.15	Very Sweet
2-20-12.....	0.83	9.74	1 to 11.73	Sweet
2-21-12.....	1.10	10.18	1 to 9.25	Sweet
2-23-12.....	0.89	9.55	1 to 10.75	Sweet
2-24-12.....	0.95	9.92	1 to 10.44	Sweet
2-24-12.....	0.85	9.62	1 to 11.32	Sweet
2-26-12.....	0.86	9.53	1 to 11.08	Sweet
2-26-12.....	0.79	10.15	1 to 12.85	Sweet
2-27-12.....	0.77	9.60	1 to 12.47	Sweet
2-28-12.....	0.49	10.00	1 to 20.41	Very Sweet
2-29-12.....	—0.44	10.17	+1 to 23.11	Very Sweet
Minimum....	0.44	8.35	1 to 7.23	Tart
Maximum....	1.35	10.95	1 to 23.11	Very Sweet
Average.....	0.87	9.74	1 to 10.52	

MARCH (16 ANALYSES).

3- 4-12.....	0.55	—9.01	1 to 16.38	Sweet
3- 5-12.....	0.80	9.88	1 to 12.35	Sweet
3- 5-12.....	0.92	10.62	1 to 11.54	Sweet
3- 5-12.....	0.68	9.40	1 to 13.82	Sweet
3- 8-12.....	0.54	10.74	1 to 19.89	Sweet
3-11-12.....	0.75	10.96	1 to 14.61	Sweet
3-12-12.....	0.77	10.14	1 to 13.17	Very Sweet
3-12-12.....	+1.07	10.46	—1 to 9.78	Tart
3-12-12.....	0.96	11.01	1 to 11.47	Sweet
3-18-12.....	0.72	10.65	1 to 14.79	Sweet
3-19-12.....	0.81	11.20	1 to 13.83	Very Sweet
3-19-12.....	0.66	11.03	1 to 16.71	Very Sweet
3-25-12.....	—0.25	9.56	+1 to 38.24	Very Sweet

MARCH—(Continued).

Date.	Total Acid as Citric.	Total Sugar as Invert.	Ratio of Acid to Sugar.	Taste.
3-26-12.....	0.64	+11.77	1 to 18.39	Very Sweet
3-26-12.....	0.66	11.15	1 to 16.89	Very Sweet
3-29-12.....	0.80	10.07	1 to 12.59	Sweet
Minimum....	0.25	9.01	1 to 9.78	Tart
Maximum....	1.07	11.77	1 to 35.24	Sweet
Average.....	0.72	10.48	1 to 13.61	

APRIL (5 ANALYSES).

4- 6-12.....	—0.40	9.80	1 to 24.50	Very Sweet
4- 8-12.....	—0.46	10.91	+1 to 27.28	Very Sweet
4-13-12.....	+0.70	+11.23	—1 to 16.04	Very Sweet
4-17-12.....	0.59	—9.73	1 to 16.49	Sweet
4-30-12.....	0.59	10.19	1 to 17.27	Sweet
Minimum....	0.49	9.73	1 to 16.04	Sweet
Maximum....	0.70	11.23	1 to 27.28	Very Sweet
Average.....	0.54	10.37	1 to 19.35	

SUMMARY BY VARIETIES.

Variety.	Total Acid as Citric.	Total Sugar as Invert.	Ratio of Acid to Sugar.	Number of Analyses.
Boston sales.....	1.05	9.01	1 to 8.59	39
Cincinnati sales..	1.02	8.27	1 to 8.07	23
New York sales..	0.93	9.25	1 to 9.99	53
Philadelphia Sales	1.09	9.08	1 to 8.30	37
Boone's Early...	0.73	8.63	1 to 11.82	1
Bull Dog Brand..	1.03	9.84	1 to 9.53	14
Camel Brand....	1.04	9.76	1 to 9.42	14
Homosassa	0.57	8.80	1 to 15.50	3
Indian River.....	0.72	9.21	1 to 12.86	7
Parson Brown...	0.51	9.45	1 to 18.43	7
Seedlings	0.90	9.32	1 to 10.36	13
Valencia	0.955	9.43	1 to 9.87	6
Total	0.97	9.14	1 to 9.41	218

SUMMARY BY TASTE.

Taste.	Total Acid as Citric.	Total Sugar as Invert.	Ratio of Acid to Sugar.	Number of Analyses.
Very Sour.....	....	....	.....	0
Sour	1.39	8.02	1 to 5.77	10
Tart	1.15	8.69	1 to 7.59	70
Sweet	0.88	9.25	1 to 10.31	112
Very Sweet.....	0.71	10.35	1 to 14.68	26
Total	0.97	9.14	1 to 9.41	218

SUMMARY BY RATIO BY TASTE.

Taste.	Total Acid as Citric.	Total Sugar as Invert.	Ratio of Acid to Sugar.	Number of Analyses.
Very Sour.....	....	....	.....	0
Sour	1.54	7.91	1 to 5.14	8
Tart	1.15	8.64	1 to 7.54	83
Sweet	0.87	9.45	1 to 10.82	108
Very Sweet.....	0.53	10.14	1 to 19.02	19
Total	0.97	9.14	1 to 9.41	218

SUMMARY BY MONTHS.

Month.	Total Acid as Citric.	Total Sugar as Invert.	Ratio of Acid to Sugar.	Number of Analyses.
November	0.96	8.44	1 to 8.82	9
December	1.09	8.63	1 to 7.92	77
January	0.98	9.12	1 to 9.30	77
February	0.87	9.74	1 to 10.52	34
March	0.72	10.48	1 to 13.61	16
April	0.54	10.37	1 to 19.35	5
Total	0.97	9.14	1 to 9.41	218

SUMMARY OF TWO HUNDRED EIGHTEEN ANALYSES.

	Total Acid as Citric.	Total Sugar as Invert.	Ratio of Acid to Sugar.
Minimum	0.25	5.32	1 to 3.01
Maximum	1.77	12.20	1 to 38.24
Average	0.97	9.14	1 to 9.41

SUMMARY OF ANALYSES WITH TOTAL ACID OVER 1.25 PER CENT AND RATIO OF ACID TO SUGAR UNDER ONE TO SEVEN.

By Taste.

Sour	7 out of 10 analyses over 1.25 per cent. total acid. 8 out of 10 analyses under 1 to 7 ratio of acid to sugar.
Tart	16 out of 70 analyses over 1.25 per cent. total acid. 21 out of 70 analyses under 1 to 7 ratio of acid to sugar. 3 of the 16 over 1.25 per cent. total acid are also over 1 to 7 ratio of acid to sugar.
Sweet	2 out of 112 analyses over 1.25 per cent. total acid. 0 out of 112 analyses under 1 to 7 ratio of acid to sugar. The 2 analyses over 1.25 per cent. total ratio are also over 1 to 7 ratio of acid to sugar.
Very Sweet	0 out of 26 analyses over 1.25 per cent total acid. 0 out of 26 analyses under 1 to 7 ratio of acid to sugar.

By Ratio by Taste.

Sour	8 out of 8 analyses over 1.25 per cent. total acid. 8 out of 8 analyses under 1 to 7 ratio of acid to sugar.

Tart	17 out of 83 analyses over 1.25 per cent. total acid. 21 out of 83 analyses under 1 to 7 ratio of acid to sugar. 5 of the 17 over 1.25 per cent. total acid are also over 1 to 7 ratio of acid to sugar.
Sweet	0 out of 108 analyses over 1.25 per cent. total acid. 0 out of 108 analyses under 1 to 7 ratio of acid to sugar.
Very Sweet	0 out of 19 analyses over 1.25 per cent. total acid. 0 out of 19 analyses under 1 to 7 ratio of acid to sugar.

By Months.

November	2 out of 9 analyses over 1.25 per cent. total acid. 2 out of 9 analyses under 1 to 7 ratio of acid to sugar.
December	15 out of 77 analyses over 1.25 per cent. total acid. 23 out of 77 analyses under 1 to 7 ratio of acid to sugar.
January	6 out of 77 analyses over 1.25 per cent. total acid. 4 out of 77 analyses under 1 to 7 ratio of acid to sugar. 3 out of the 6 over 1.25 per cent. total acid are also over 1 to 7 ratio of acid to sugar.

SUMMARY OF ANALYSES WITH TOTAL ACID OVER 1.25 PER CENT. AND RATIO OF ACID TO SUGAR UNDER ONE TO SEVEN.

By Months—(Continued.)

February	2 out of 34 analyses over 1.25 per cent. total acid. 0 out of 34 analyses under 1 to 7 ratio of acid to sugar. The 2 analyses over 1.25 per cent. total acid are also over 1 to 7 ratio of acid to sugar.
March	0 out of 16 analyses over 1.25 per cent. total acid. 0 out of 16 analyses under 1 to 7 ratio of acid to sugar.
April	0 out of 5 analyses over 1.25 per cent. total acid. 0 out of 5 analyses under 1 to 7 ratio of acid to sugar.

TOTAL.

25 out of 218 analyses over 1.25 per cent. total acid.
29 out of 218 analyses under 1 to 7 ratio of acid to sugar.
5 of the 25 over 1.25 per cent. total acid are also over 1 to 7 ratio of acid to sugar.

State of Florida
Agricultural Department

DIVISION OF CHEMISTRY

R. E. ROSE, STATE CHEMIST

Assistant State Chemists
L. HEIMBURGER, B. S., M. S., fertilizers
A. M. HENRY, B. S., foods and drugs
E. PECK GREENE, B. S., stock feed

Inspectors
A. P. JORDAN
MARCUS ENDEL

TALLAHASSEE, FLA., September 1, 1912.

TO THE CITRUS GROWERS OF FLORIDA.

The Citrus Grower's Convention held at Gainesville, Fla., August 15, 1912, having adopted the report of the Scientific Commission appointed by the Commissioner of Agriculture, to fix a standard for immature Citrus Fruit, this Commission having resolved as follows:

"On motion of P. H. Rolfs seconded by R. E. Rose, the following resolution was passed:

"The Commission recognizes the fact that the analytical data regarding the analyses of immature citrus fruit is limited.

"We recommend that analyses of immature grape fruit and round oranges be made during the months of September, October, November and December.

"We recommend that the State Chemist, the Chemist of the Experiment Station, and the Chemist of the University be earnestly requested to make such analyses during the ensuing shipping season.

"The Commission further recommends that the convention of citrus growers make every possible effort to assist

these various officers in securing the necessary fruit and also aid them in securing the necessary funds to employ the assistance needed to carry out this work."

In accordance with this resolution, the *State Chemist* will analyse samples of average *oranges* during September, October, November and December, at *Tallahassee*, Florida.

The chemists of the *Florida University* and the *Agricultural Experiment Station* will analyse samples of *grapefruit* during the same months, at *Gainesville*, Florida.

No funds having been provided, and the funds of the Agricultural Department, University and Agricultural Experiment Station being limited, the number of analyses will necessarily be limited to such as can be made, without seriously interfering with the routine work of the Departments (fertilizers, feeds, foods and drugs). Hence only such samples as are sent in by the official Inspectors of the Department, and such duly authorized Agents appointed in various localities to secure samples of average oranges of various specified varieties, will be accepted for analysis.

Varieties must be true to name and of undoubted identity. It is desired to obtain fruit from various parts of the State. The following localities are suggested—competent agents to collect and forward samples from each locality are desirer:

1. Winter Haven.
2. Marion County.
3. Arcadia.
4. Brooksville.
5. Leesburg.
6. Cocoa, Rockledge, or Mims.
7. Miami.

8. DeLand or Lake Helen.
9. Sanford.
10. Orlando or Winter Park.
11. Ft. Myers or Punta Gorda.

The samples of fruit must be furnished by the growers of the locality and sent by express to the analyst without cost, there being no funds provided for procuring samples, nor transportation of same.

The following varieties of oranges are desired for September, and October analysis:

Varieties of Oranges:

1. Boone's Early.
2. Parson Brown.
3. Homosassa.
4. Pineapple.
5. Ruby.

Later in the Season—

6. Florida Seedlings.
7. Hart's Late.
8. Valencia Late.

ORANGES to be sent to the State Chemist, Tallahassee, Florida.

The following varieties of *Grape Fruit* are desired:

1. Seedlings.
2. Marsh Seedless.
3. Walters.
4. Duncan.
5. Silver Cluster.

GRAPE FRUIT to be sent to the chemists of the Florida University and the Agricultural Experiment Station, at Gainesville, Florida.

One sample of twelve average oranges or grape fruit of each variety, from each locality, each week.

Freak Oranges, or grape fruit,—June or Fall bloom will not be considered. Only average, normal fruit, of the various varieties will be accepted.

Samples from individuals, not officially connected with the work (Inspectors and Agents) cannot be accepted. Agents and Inspectors must use blanks furnished by the Agricultural Department in transmitting samples, filling out all blanks properly for the information of the analysis that proper information may be had and data obtained from which proper conclusions may be drawn.

The localities suggested, and varieties named, are subject to change or modification, as the work progresses.

The orange growers of the various localities mentioned are requested to select responsible and competent agents who will be willing to serve and forward their names to the Commissioner of Agriculture, at Tallahassee, Florida, for appointment as agents to obtain and forward the necessary fruit.

Respectfully,

W. A. McRAE,
Commissioner of Agriculture.

R. E. ROSE,
State Chemist

AGRICULTURAL DEPARTMENT,
DIVISION OF CHEMISTRY
TALLAHASSEE, FLORIDA

Agent's Report on Collection of Orange Samples for Analysis by State Chemist.
TALLAHASSEE, FLORIDA

AGENT .....
ADDRESS .....
GROWER .....
VARIETY .....
DATE COLLECTED .....
DATE SHIPPED .....
LOCALITY .....
AGE OF TREES .....
CLASS OF SOIL .....
FERTILIZATION .....
CULTIVATION .....
EXPRESS CHARGES must be paid by sender, the Department having no funds for expressage.
REMARKS .....

.....

.....

NOTE—Samples shall consist of twelve average oranges.
No "freak oranges" must be sent in
No June or Fall bloom.
Only average, normal, seasonable fruit will be considered.
Samples will be accepted only from Official Inspectors and duly appointed agents of this Department.

ORANGES will be analyzed by the State Chemist, at TALLAHASSEE, FLORIDA.

GRAPE-FRUIT will be analyzed by the chemists of the Florida University and Agricultural Experiment Station, at GAINESVILLE, FLORIDA.

STATE UNIVERSITY AND AGRICULTURAL EXPERIMENT STATION

GAINESVILLE, FLORIDA

Agent's Report on Collection of Grape Fruit Samples for Analysis by Chemists of State University and Agricultural Experiment Station

GAINESVILLE, FLORIDA

AGENT .....
ADDRESS .....
GROWER .....
VARIETY .....
DATE COLLECTED .....
DATE SHIPPED .....
LOCALITY .....
AGE OF TREES .....
CLASS OF SOIL .....
FERTILIZATION .....
CULTIVATION .....
EXPRESS CHARGES must be prepaid by sender, the Department having no funds for expressage.
REMARKS .....

NOTE—Samples shall consist of twelve average grape fruit.

No freak fruit must be sent in.

No June or Fall bloom.

Only average, normal, seasonable fruit will be considered.

Samples will be accepted only from Official Inspectors and duly appointed agents of this Department.

ORANGES will be analyzed by the state Chemist, at TALLAHASSEE, FLORIDA.

GRAPE-FRUIT will be analyzed by the chemists of the Florida University and Agricultural Experiment Station, at GAINESVILLE, FLORIDA.

PART IV.

Fertilizers,
Feed Stuffs, and
Foods and Drugs.

SPECIAL SAMPLES.

Florida is the only State in the Union that provides for the "special sample," drawn by the consumer or purchaser, under proper rules and regulations fixed by law—to be sent to the State Laboratory for analysis free of cost. Any citizen in the State who has purchased fertilizers or feeds for their own use may draw a sample of the same, according to law, and have the same analysed by the State Chemist free of cost. And in case of adulteration or deficiency he can, on establishing the fact, receive double the cost of price demanded for the goods.

The law requires the "special samples" to be drawn in a manner to prevent the submission of spurious samples; rules and regulations are published in every Bulletin for drawing and transmiting "special samples."

This special sample has been a most potent factor in enforcing the law and discouraging the sale of adulterated or misbranded goods.

Special samples of foods and drugs may also be sent to the State Laboratory for analysis free of cost, when the sample is properly drawn according to law. The necessary instructions and blanks required to properly draw and transmit samples of "food and drugs" will be sent to any citizen requesting the same.

"THE SPECIAL SAMPLE FURNISHES THE CONSUMER WITH THE SAME PROTECTION DEMANDED BY THE MANUFACTURER, WHO BUYS HIS MATERIALS ONLY UPON GUARANTEE AND PAYS FOR THEM ACCORDING TO ANALYSIS, AND IS PAID FOR BY THE CONSUMER OUT OF THE FUNDS DERIVED FROM THE INSPECTION FEE OF TWENTY-FIVE CENTS PER TON PAID ON FERTILIZERS AND FEEDS SOLD IN THE STATE."

REGULATIONS GOVERNING THE TAKING AND FORWARDING OF FERTILIZER OR COMMERCIAL FEEDING STUFF SAMPLES TO THE COMMISSIONER OF AGRICULTURE.

SECTION 15 OF THE LAWS.

Special samples of Fertilizers or Commercial Feeding Stuffs sent in by purchasers, under Section 9 of the laws, shall be drawn in the presence of two disinterested witnesses, from one or more packages, thoroughly mixed, and A FAIR SAMPLE OF THE SAME OF NOT LESS THAN EIGHT OUNCES (ONE-HALF POUND) SHALL BE PLACED IN A TIN CAN OR BOTTLE, SEALED AND SENT BY A DISINTERESTED PARTY TO THE COMMISSIONER OF AGRICULTURE AT TALLAHASSEE. NOT LESS THAN EIGHT OUNCES, IN A TIN CAN OR BOTTLE, WILL BE ACCEPTED FOR ANALYSIS. This rule is adopted to secure fair samples of sufficient size to make the necessary determinations and to allow the preservation of a duplicate sample in case of protest or appeal. This duplicate sample will be preserved for two months from the date of certificate of analysis.

The State Chemist is not the proper officer to receive special samples from the purchaser. The propriety of the method of drawing and sending the samples as fixed by law is obvious.

The drawing and sending of special samples in rare cases is in compliance with law. Samples are frequently sent in paper packages or paper boxes, badly packed, and frequently in very small quantity (less than ounce); frequently there are no marks, numbers or other means of identification; the postmark in some instances being absent.

I would call the attention to those who desire to avail themselves of this privilege to Sections 9 and 10 of the law, which are clear and explicit.

Hereafter, strict compliance with above regulations will be required. *The samples must not be less than one-half pound, in a tin can or bottle, sealed and addressed to the Commissioner of Agriculture. The sender's name and address must also be on the package, this rule applying to special samples of fertilizers or commercial feeding stuff.*

A one-pound baking powder tin can, properly cleaned, filled with a fairly drawn, well mixed sample taken from several sacks, is a proper sample. *It should be sealed and addressed to the Commissioner of Agriculture at Tallahassee. The sender's name and address should also be placed on the package. If more than one sample is sent, the samples should be numbered so as to identify them. All this should be done in the presence of the witnesses and the package mailed or expressed by one of the witnesses.*

The tags off the sack should be retained by the sender to compare with the certificate of analysis when received, and not sent to this office. *The date of the drawing and sending the sample, and names of the witnesses, should also be retained by the sender; not sent to this office.*

INSTRUCTIONS TO SHERIFFS.

The attention of Sheriffs of the various counties is called to Section 3 of both laws, defining their duties. This Department expects each Sheriff to assist in maintaining the law and protecting the citizens of the State from the imposition of fraudulent, inferior or deficient Commercial Fertilizers or Commercial Feeding Stuffs.

MARKET PRICES OF CHEMICALS AND FERTILIZING MATERIALS AT FLORIDA SEA PORTS, JULY, 1, 1912.

Ammoniates.

	Less than ten tons.
Nitrate of Soda, 17% Ammonia	$ 56.00
Sulphate of Ammonia, 20% Ammonia	76.00
Dried Blood, 16% Ammonia	60.00
Cynanamid, 18% Ammonia	60.00
Dry Fish Scrap, 10% Ammonia	45.00

Potashes.

High Grade Sulphate of Potash, 90% Sulphate, 48% K_2O	$ 50.00
Low Grade Sulphate of Potash, 48% Sulphate, 26% K_2O	30.00
Muriate of Potash, 80%; 48% K_2O	48.00
Nitrate of Potash, imported, 15% Ammonia, 44% Potash K_2O	120.00
Nitrate of Potash, American, 13% Ammonia, 42% potash K_2O	94.00
Kainit, Potash, 12% K_2O	13.00
Canada Hardwood Ashes, in bags, 4% K_2O Potash	19.00

Ammonia and Phosphoric Acid.

High Grade Tankage, 10% Ammonia, 5½% Phosphoric Acid	$ 40.00
Tankage, 8% Ammonia, 10% Phosphoric Acid	37.00
Low Grade Tankage, 6½% Ammonia, 14% Phosphoric Acid	33.00
Hotel Tankage, 6% Ammonia, 7% Phosphoric Acid	28.00

Sheep Manure, ground, 3% Ammonia (Figures subject to revision.)	24.00
Imported Fish Guano, 10% Ammonia, 10% Phosphoric Acid	52.00
Pure Fine Steamed Ground Bone, 3% Ammonia, 22% Phosphoric Acid	31.00
Raw Bone, 4% Ammonia, 22% Phosphoric Acid	35.00
Ground Castor Pomace, 5½% Ammonia, 2% Phosphoric Acid	26.00
Bright Cotton Seed Meal, 7½% Ammonia	28.00
Dark Cotton Seed Meal, 4½% Ammonia	26.00

PHOSPHORIC ACID.

High Grade Acid Phosphate, 16% Available Phosphoric Acid	$ 15.00
Acid Phosphate, 14% Available Phosphoric Acid	14.00
Bone Black, 17% Available Phosphoric Acid	25.00

MISCELLANEOUS.

High Grade Ground Tobacco Stems, 2% Ammonia, 8% Potash	$ 28.00
High Grade Ground Kentucky Tobacco Stems, 2½% Ammonia, 10% Potash	28.00
Tobacco Dust No. 1, 2% Ammonia, 2% Potash	24.00
Cut Tobacco Stems, in sacks, 2% Ammonia, 4% Potash	20.00
Dark Tobacco Stems, baled, 2% Ammonia, 4% Potash	19.00
Land Plaster, in sacks	12.00

The charges by reputable manufacturers for mixing and bagging any special or regular formula are $1.50 per ton in excess of above prices.

NEW YORK WHOLESALE PRICES, CURRENT JULY 1, 1912—FERTILIZER MATERIALS.

Ammoniates.

Ammonia, sulphate, foreign, prompt	$ 3.40	@	—
futures	3.35	@	—
Ammonia, suplhate, domestic, spot	3.35	@	—
futures	3.26	@	3.28
Cyanimide, f.o.b. Baltimore	2.30	@	—
f.o.b. Niagara Falls	2.35	@	—
Fish scrap, dried, 11% ammonia and 14% bone phosphate, f.o.b. fish works, per unit	2.40	&	10
wet, acidulated, 6% ammonia, 3% phosphoric acid, delivered	2.50	&	35
Ground fish guano, imported, 10 and 11% ammonia and 15-17% bone phosphate, c. i. f. N. Y., Balto. or Phila.	3.10	&	10
Tankage, 11% and 15% f.o.b. Chicago	2.70	&	10
Tankage, 10% and 20% f.o.b. Chicago, ground	2.30	&	10
Tankage, 9% and 20% f.o.b. Chicago, ground	2.30	&	10
Tankage, concentrated, f.o.b. Chicago 14 to 15%, f.o.b. Chicago	2.30	&	10
Garbage, tankage, f.o.b. Chicago	9.00	@	—
Sheep manure, concentrated, f.o.b. Chicago, per ton	10.00	&	—
Hoofmeal, f.o.b. Chicago, per unit	2.60	@	2.70
Dried Blood, 12-13% ammonia, f.o.b. New York	2.50	@	—
Chicago	2.50	@	—
Nitrate of Soda, 95% spot per 100 lbs.	2.45	@	2.47½
futures, 95%	2.45	@	2.47½

Phosphates.

Acid Phosphate, per unit	50	@ 55
Bones, rough, hard, per ton	22.50	@24.00
soft steamed unground	21.50	@22.00
ground, steamed, 1¼% ammonia and 60% bone phosphate	20.00	@21.00
ditto, 3 and 50%	23.50	@24.00
raw ground, 4% ammonia and 50% bone phosphate	28.50	@30.00
South Carolina phosphate rock, kiln dried, f.o.b. Ashley River	3.50	@ 3.75
Florida land pebble phosphate rock, 68%, f.o.b. Port Tampa, Fla	3.70	@ 3.80
Florida high grade phosphate hard rock, 77%, f.o.b. Florida ports	5.75	@ 6.25
Tennessee phosphate rock, f.o.b. Mt. Pleasant, domestic, 78 to 80%, per ton	5.00	@ 5.50
75% guaranteed	4.75	@ 4.50
68 to 72%	4.25	@ 4.50

Potashes.

Muriate of potash, 80-85%, basis 80%, in bags	38.55	@ —
Muriate of potash, min. 95%, basis 80%, in bags	40.15	@ —
Muriate of potash, min. 98%, basis 80%, in bags	41.99	@ —
Sulphate of potash, 90-95%, basis 90%, in bags	46.80	@ —
Double manure salt, 48-53%, basis 48%, in bags	24.95	@ —
Manure salt, min. 20%, K_2O, in bulk	13.50	@ —
Hardsalt, min. 16%, K_2O, in bulk	10.85	@ —
Kainit, min. 12.4%, K_2O, in bulk	8.45	@ —

STATE VALUATIONS.

For Available and Insoluble Phosphoric Acid, Ammonia and Potash, for the Season of 1912.

Available Phosphoric Acid	5c. a pound
Insoluble Phosphoric Acid	1c. a pound
Ammonia (or its equivalent in nitrogen)	18½c a pound
Potash (as actual potash, K_2O)	5½c. a pound

If calculated by units—

Available Phosphoric Acid	$1.00 per unit
Insoluble Phosphoric Acid	20c per unit
Ammonia (or its equivalent in nitrogen)	3.65 per unit
Potash	1.10 per unit

With a uniform allowance of $1.50 per ton for mixing and bagging.

A unit is twenty pounds, or 1 per cent., in a ton. We find this to be the easiest and quickest method for calculating the value of fertilizer. To illustrate this, take for example a fertilizer which analyzes as follows:

Available Phosphoric Acid	6.22 per cent. x $1.00	— $ 6.22
Insoluble Phosphoric Acid	1.50 per cent. x .20	— .30
Ammonia	3.42 per cent. x 3.65	— 12.48
Potash	7.23 per cent. x 1.10	— 7.95
Mixing and Bagging		— 1.50
Commercial value at sea ports		$28.45

Or a fertilizer analyzing as follows:

Available Phosphoric Acid	8 per cent. x $1.00	— $ 8.00
Ammonia	2 per cent. x 3.65	— 7.30
Potash	2 per cent. x 1.10	— 2.20
Mixing and Bagging		— 1.50
Commercial value at sea ports		$19.00

The above valuations are for cash for materials delivered at Florida seaports, and they can be bought in one-ton lots at these prices at the date of issuing this Bulletin. Where fertilizers are bought at interior points, the additional freight to that point must be added.

The valuations and market prices in preceding illustrations are based on market prices for one-ton lots.

STATE VALUES.

It is not intended by the "State valuation" to fix the price or commercial value of a given brand. The "State values" are the market prices for the various approved chemicals and materials used in mixing or manufacturing commercial fertilizers or commercial stock feed at the date of issuing a Bulletin, or the opening of the "*season.*" They may, but seldom do, vary from the market prices, and are made liberal to meet any slight advance or decline.

They are compiled from price lists and commercial reports by reputable dealers and pournals.

The question is frequently asked: "What is 'Smith's Fruit and Vine' worth per ton?" Such a question cannot be answered categorically. By analysis, the ammonia, available phosphoric acid and potash may be determined, and the inquirer informed what the cost of the necessary material to compound a ton of goods similar to "Smith's Fruit and Vine" would be, using none but accepted and well known materials of the best quality.

State values do not consider "trade secrets," loss on bad bills, cost of advertisements and expenses of collections. The "State value" is simply that price at which the various ingredients necessary to use in compounding a fertilizer or feed, can be *purchased for cash in ton lots at Florida seaports.*

These price lists are published in this report, with the "State values" for 1912 deducted therefrom.

COMPOSITION OF FERTILIZER MATERIALS.

NITROGENOUS MATERIALS.

	POUNDS PER HUNDRED		
	Ammonia	Phosphoric Acid	Potash
Nitrate of Soda	17 to 19	.....	.....
Sulphate of Ammonia	21 to 24	.....	.....
Dried Blood	12 to 17	.....	.....
Concentrated Tankage	12 to 15	1 to 2	.....
Bone Tankage	6 to 9	10 to 15	.....
Dried Fish Scrap	8 to 11	6 to 8	.....
Cotton Seed Meal	7 to 10	2 to 3	1½ to 2
Hoof Meal	13 to 17	1½ to 2	.....

PHOSPHATE MATERIALS.

	POUNDS PER HUNDRED		
	Ammonia	Available Phos. Acid	Insoluble Phosphoric Acid
Florida Pebble Phosphate	.....	.....	26 to 32
Florida Rock Phosphate	.....	.....	32 to 35
Florida Super Phosphate	.....	14 to 45	1 to 35
Ground Bone	3 to 6	5 to 8	15 to 17
Steamed Bone	3 to 4	6 to 9	16 to 20
Dissolved Bone	2 to 4	13 to 15	2 to 3

POTASH MATERIALS AND FARM MANURES.

	POUNDS PER HUNDRED			
	Actual Potash	Ammonia	Phosphoric Acid	Lime
Muriate of Potash	50	.....	.....	.....
Sulphate of Potash	48 to 52	.....	.....	.....
Carbonate of Potash	55 to 60	.....	.....	.....
Nitrate of Potash	40 to 44	12 to 16	.....	.....
Double Sul.of Pot.&Mag	26 to 30	.....	.....	.....
Kainit	12 to 12½	.....	.....	.....
Sylvinit	16 to 20	.....	.....	.....
Cotton Seed Hull Ashes	15 to 30	.....	7 to 9	10
Wood Ashes, unleached	2 to 8	.....	1 to 2	.....
Wood Ashes, leached	1 to 2	.....	1 to 1½	35 to 40
Tobacco Stems	5 to 8	2 to 4	.....	3½
Cow Manure (fresh)	0.40	0 to 0.41	0.16	0.31
Horse Manure (fresh)	0.53	0 to 0.60	0.28	0.31
Sheep Manure (fresh)	0.67	1.00	0.19	0.33
Hog Manure (fresh)	0.60	0.55	0.19	0.08
Hen Dung (fresh)	0.85	2.07	1.54	0.24
Mixed Stable Manure	0.63	0.76	0.26	0.70

FACTORS FOR CONVERSION.

To convert—

Ammonia into nitrogen, multiply by	0.824
Ammonia into protein, multiply by	5.15
Nitrogen into ammonia, multiply by	1.214
Nitrate of soda into nitrogen, multiply by	0.1647
Nitrogen into protein, multiply by	6.25
Bone phosphate into phosphoric acid, multiply by	0.458
Muriate of potash into actual potash, multiply by	0.632
Actual potash into muriate of potash, multiply by	1,583
Sulphate of potash into actual potash, multiply by	0.41
Actual potash into sulphate of potash, multiply by	1.85
Nitrate of potash into nitrogen, multiply by	0.139
Carbonate of potash into actual potash, multiply by	0.681
Actual potash into carbonate of potash, multiply by	1.466
Chlorine, in "kainit," multiply potash (K_2O) by	2.33

For instance, you buy 95 per cent. of nitrate of soda and want to know how much nitrogen is in it, multiply 95 per cent. by 0.1647, you will get 15.65 per cent. nitrogen; you want to know how much ammonia this nitrogen is equivalent to, then multiply 15.65 per cent. by 1.214 and you get 18.99 per cent., the equivalent in ammonia.

Or, to convert 90 per cent. carbonate of potash into actual potash (K_2O), multiply 90 by 0.681, equals 61.29 per cent. actual potash (K_2O).

COPIES OF THE FERTILIZER, STOCK FEED AND PURE FOOD AND DRUG LAWS.

Copies of the Laws, Regulations and Standards will be furnished by the Commissioner of Agriculture on application.

AVERAGE COMPOSITION OF COMMERCIAL FEED STUFFS.

NAME OF FEED.	Crude Fiber.	Protein.	Starch and Sugar.	Fat.	Ash.
Bright Cot'n Seed Meal	9.35	39.70	28.60	7.80	5.80
Dark Cotton Seed Meal	20.00	22.90	37.10	5.50	5.00
Linseed Meal, old process	7.50	35.70	36.00	7.20	5.30
Linseed Meal, new process	8.40	36.10	36.70	3.60	5.20
Wheat Bran	9.00	15.40	53.90	4.00	5.80
Wheat Middlings	5.40	15.40	59.40	4.10	3.20
Mixed Feed (Wheat)	7.80	16.90	54.40	4.80	5.30
Ship Stuff (Wheat)	5.60	14.60	59.80	5.00	3.70
Corn (grain)	2.10	10.50	69.60	5.40	1.50
Corn Meal	1.90	9.70	68.70	3.80	1.40
Corn Cobs	30.10	2.40	54.90	0.50	1.40
Corn and Cob Meal	6.60	8.50	64.80	3.30	1.30
Hominy Feed	4.05	10.50	65.30	7.85	2.55
Corn and Oats, equal parts	5.70	10.50	64.20	4.40	2.29
Corn and Oats Feeds	12.10	8.70	61.70	3.70	3.20
Barley (grain)	2.70	12.40	69.80	1.80	2.40
Barley and Oats, equal parts	6.10	12.10	64.75	3.40	2.70

AVERAGE COMPOSITION OF COMMERCIAL FEED STUFFS—(*Continued.*)

NAME OF FEED.	Crude Fiber.	Protein.	Starch and Sugar.	Fat.	Ash.
Oats (grain)	9.50	11.80	59.70	5.00	3.00
Oat Feed	6.10	16.00	54.90	7.10	3.70
Rice (grain)	0.20	7.40	79.20	0.40	0.40
Rice Bran	9.50	12.10	49.90	8.80	10.00
Rice Hulls	35.70	3.60	38.60	0.70	13.20
Rye (grain)	1.70	10.60	72.50	1.70	1.90
Rye Bran	3.50	14.70	63.80	2.80	3.60
Wheat (grain)	1.80	11.90	71.90	2.10	1.80
Cow Pea	4.10	20.80	55.70	1.40	3.20
Cow Pea Hay	20.10	16.60	42.20	2.20	7.50
Velvet Beans and Hulls	9.20	19.70	51.30	4.50	3.30
Velvet Bean Hay	29.70	14.70	41.00	1.70	5.70
Beggarweed Hay	24.70	21.70	30.20	2.30	10.90
Japanese Kudzu Hay	32.14	17.43	30.20	1.67	6.87
Cotton Seed (whole)	23.20	18.40	24.70	19.90	3.50
Cotton Seed Hulls	44.40	4.00	36.60	2.00	2.60
Gluten Feed	5.30	24.00	51.20	10.60	1.10
Beef Scrap	.....	44.70	3.28	14.75	29.20

COMMERCIAL STATE VALUES OF FEED STUFFS FOR 1912.

For the season of 1912 the following "State values" are fixed as a guide to purchasers.

These values are based on the current prices of corn, which has been chosen as a standard in fixing the commercial values; the price of corn, to a large extent, governing the price of other feeds, pork, beef, etc.:

COMMERCIAL VALUES OF FEED STUFFS FOR 1912.

Protein, 3.53c per pound	70.6c per unit
Starch and Sugar, 1.56c. per pound	31.3c per unit
Fats, 3.52c. per pound	70.5c per unit

A unit being 20 pounds (1%) of a ton.

Indian corn being the standard @ $33.00 per ton.

To find the commercial state value, multiply the percentages by the price per unit.

EXAMPLE NO. 1.

HOMINY FEED—		
Protein	10.50 x 70.6c.	$ 7.41
Starch and Sugar	65.30 x 31.3c.	20.43
Fat	7.85 x 70.5c.	5.53
State value per ton		$33.37

EXAMPLE NO. 2.

Protein	10.50 x 70.6c.	$ 7.41
Starch and Sugar	69.60 x 31.3c.	21.78
Fat	5.40 x 70.5c.	3.81
State value per ton		$33.00

FORMULAS.

There are frequent inquiries for formulas for various crops, and there are hundreds of such formulas published; and, while there are hundreds of "brands," the variations in these grades are surprisingly little. Dozens of "brands" put up by the same manufacturer are identical goods, the only difference being in the name printed on the tag or sack. A good general formula for field or garden might be called a "vegetable formula," and would have the following: Ammonia, 3½%; available phosphoric acid, 6½%; and potash, 7½%. The following formulas will furnish the necessary plant food in about the above proportion. I have purposely avoided the use of any fraction of 100 pounds in these formulas to simplify them. Values are taken from price lists furnished by the trade, January 1, 1912.

For cotton, corn, sweet potatoes and vegetables: Ammonia, 3½%; available phosphoric acid, 6½%; potash, 7½%.

(A) "VEGETABLE."

No. 1.

		Per Cent.
900 pounds of	Cotton Seed Meal (7½-2½-1½)	3.25 Ammonia
800 pounds of	Acid Phosphate (16 per cent)	6.40 Available
300 pounds of	Muriate or (Sulphate) (50 per cent)	7.50 Potash
2,000		

State value mixed and bagged.....$28.11
Plant Food per ton..... 343 pounds

No. 2.

		Per Cent.
1,000 lbs of	Blood and Bone (6½-8)	3.25 Ammonia
400 lbs of	Acid Phosphate (16 per cent)	7.00 Available
600 lbs of	Low Grade Sulp. Pot. (26 per cent)	7.80 Potash
2,000		

State value mixed and bagged.....$29.04
Plant Food per ton..... 360 pounds

No. 3.

		Per Cent.
300 lbs of Dried Blood (13 per cent).....		3.25 Ammonia
100 lbs of Nitrate of Soda (17 per cent).....		8.09 Available
1,000 lbs of Acid Phosphate (16 per cent).....		7.80 Potash
600 lbs of Low Grade Sulp. Pot. (26 per cent)		
2,000		

State value mixed and bagged.....$30.04
Plant Food per ton..... 581 pounds

(B) "FRUIT AND VINE."

No. 1.

Fruits, Melons, Strawberries, Irish Potatoes: Ammonia, 4 per cent., Available Phosphoric Acid 7 per cent., Potash 10 per cent.

		Per Cent.
1,000 lbs of Blood and Bone (6½-8).....		
400 lbs of Muriate of Potash (50 per cent)		8 Available
500 lbs of Acid Phosphate (16 per cent)..		4 Ammonia
100 lbs of Nitrate of Soda (17 per cent)..		10 Potash
2,000		

State value mixed and bagged.....$35.22
Plant Food per ton..... 440 pounds

No. 2.

		Per Cent.
500 lbs of Castor Pomace (6-2 per cent).....		4.0 Ammonia
200 lbs of Sulp. of Am. (25 per cent).....		7.70 Available
800 lbs of Acid Phosphate (16 per cent).....		9.60 Potash
400 lbs of Sulp. of Pot. (48 per cent).....		
2,000		

State value mixed and bagged.....$34.45
Plant Food per ton..... 420 pounds

No. 3.

		Per Cent.
500 lbs of Cotton Seed Meal (7½-2½-1½).....		
100 lbs of Nitrate of Soda (17 per cent).....		3.37 Ammonia
100 lbs of Sulp. of Am. (25 per cent).....		8.30 Available
900 lbs of Acid Phosphate (16 per cent)....		8.97 Potash
400 lbs of Sulp. of Potash (48 per cent).....		
2,000		

State value mixed and bagged.....$34.27
Plant Food per ton..... 425 pounds

DEPARTMENT OF AGRICULTURE—DIVISION OF CHEMISTRY.

FERTILIZER SECTION.

R. E. ROSE, State Chemist. SPECIAL FERTILIZER ANALYSES, 1912. L. HEIMBURGER, Asst. Chemist.

Samples taken by Purchaser Under Section 9, Act Approved May 22, 1901.

NAME, OR BRAND.	Laboratory Number.	Moisture.	Phosphoric Acid.			Ammonia.	Potash (K_2O.)	BY WHOM SENT.
			Available.	Insoluble.	Total.			
Fertilizer	2840	.....	7.56	0.95	8.21	2.83	3.49	A. M. Anderson, Crews.
Fish Scrap	2841	.....	.....	.....	4.01	12.30	.....	R. B. Brown, Sanford.
Fertilizer No. 1	2842	8.45	5.72	2.76	8.48	2.36	3.51	Armour Fertilizer Works, Jacksonville
Fertilizer No. 2	2843	8.38	5.91	1.39	7.30	2.68	10.39	Armour Fertilizer Works, Jacksonville
Fertilizer No. 3	2844	7.83	5.73	1.65	7.38	4.77	6.56	Armour Fertilizer Works, Jacksonville
Fertilizer No. 4	2845	6.17	8.34	0.84	8.98	3.81	10.70	Armour Fertilizer Works, Jacksonville
Fertilizer	2846	14.22	9.44	1.78	11.22	2.21	3.86	L. H. Matthews, Candler.
Fertilizer	2847	.....	4.35	1.35	5.70	2.40	7.52	H. A. Martin, Dallas.
Acid Phosphate	2848	.....	13.92	0.52	13.44	.....	.....	J. P. Waddell, Otahite.
Fertilizer No 1	2849	17.87	11.43	0.60	12.03	1.72	2.48	J. M. Nobles, Berrydale.
Fertilizer No. 2	2850	13.66	9.96	0.41	10.37	2.56	2.58	J. M. Nobles, Berrydale.
Fertilizer No. 3	2851	9.85	10.72	1.99	12.71	1.96	1.98	H. A. Jones, Milton.
Cotton Seed Meal No. 1	2852	.....	.....	.....	2.74	8.29	1.81	H. A. Jones, Milton.
Acid Phosphate No. 1	2853	.....	14.03	4.26	18.29	.....	.....	H. B. Cooley, Berrydale.
Fertilizer	2854	.....	11.89	0.34	12.14	1.65	2.60	C. W. Moore, Sr., Hester.
Bird Guano	2855	.....	13.03	9.73	22.76	3.64	1.74	L. R. Woods, Tampa.

NAME, OR BRAND.	Laboratory Number.	Moisture.	Phosphoric Acid.			Ammonia.	Potash (K_2O.)	BY WHOM SENT.
			Available.	Insoluble.	Total.			
Mixture Guano & Acid Phosphate.	2856	.....	12.88	8.72	21.60	2.84	1.59	L. R. Woods, Tampa.
Fertilizer	2857	5.39	.....	.....	12.65	8.67	24.18	Gen. Ashby, Ft. Pierce.
Special Mixture	2858	7.09	3.50	1.71	8.24	6.88	5.61	Independent Fertz. Co., Jacksonville.
Fertilizer No. 1	2859	11.19	8.65	0.57	9.22	3.38	5.27	H. A. Perry, Pomona.
Fertilizer No. 2	2860	18.39	5.13	1.65	6.78	4.51	7.65	H. A. Perry, Pomona.
Fertilizer No. 1	2861	11.40	5.49	0.29	5.78	2.43	2.50	Givens & Clary, Laurel Hill.
Fertilizer No. 2	2862	11.17	8.37	0.11	8.81	1.71	1.82	Givens & Clary, Laurel Hill.
Fertilizer No. 1	2863	15.91	7.66	0.48	8.14	2.57	2.11	J. M. Hemphill, Darlington.
Acid Phosphate No. 2	2864	.....	17.35	0.16	17.51	.....	.....	J. M. Hemphill, Darlington.
Fertilizer	2865	5.38	7.91	1.16	9.07	6.68	9.13	R. L. Mills, Miami.
Fertilizer	2866	.....	6.22	1.31	7.56	3.66	3.49	A. M. Anderson, Gretna.
Fertilizer	2867	.....	4.74	1.76	6.50	2.99	7.66	W. L. Smith, Summerfield.
Fertilizer	2868	5.78	.....	.....	7.74	6.65	5.80	Independent Fertz. Co., Jacksonville.
Fertilizer	2869	14.26	6.60	0.80	7.40	1.48	6.67	Lewis Hartsfield, Tallahassee.
Fertilizer	2870	14.59	7.36	0.26	7.62	1.29	3.02	C. L. Barks, Garden City.
Fertilizer	2871	.....	5.38	6.12	14.50	2.91	1.91	Gulf Fertilizer Co., Tampa.
Fertilizer	2872	.....	5.19	1.97	7.16	1.38	5.68	J. W. Watson, Miami.

DEPARTMENT OF AGRICULTURE—DIVISION OF CHEMISTRY.

FERTILIZER SECTION.

R. E. ROSE, State Chemist. OFFICIAL FERTILIZER ANALYSES, 1912. L. HEIMBURGER, Asst. Chemist.

Samples Taken by State Chemist Under Sections 1 and 2, Act Approved May 22, 1905.

NAME, OR BRAND.	Laboratory Number.		Moisture.	Phosphoric Acid.			Ammonia.	Potash (K_2O.)	BY WHOM and WHERE MANUFACTURED.
				Available.	Insoluble.	Total.			
"Superior" Vegetable Fertilizer	1816	Guarant'd Analysis	10.00	6.00	1.00	.....	4.00	8.00	Ocala Fertz. Co., Ocala, Fla.
		Official Analysis...	6.52	6.09	0.20	6.29	4.21	7.21	
Goulding's High Grade English Guano	1817	Guarant'd Analysis	16.00	10.00	0.50	.....	2.00	2.00	Am. Agricul. Chem. Co., Goulding's Fertz. Wks., Pensacola, Fla.
		Official Analysis...	15.00	10.34	1.48	11.82	2.11	2.00	
Wilson & Toomer's Special F. & V. Manure	1818	Guarant'd Analysis	10.00	6.00	1.00	.....	4.00	12.00	Wilson & Toomer Fertz. Co., Jacksonville, Fla.
		Official Analysis...	7.09	6.87	2.05	8.92	4.09	12.76	
Goulding's 16% Acid Phosphate	1819	Guarant'd Analysis	16.00	16.00	0.50	.....	.....	.....	Am. Agricul. Chem. Co., Goulding's Fertz. Wks., Pensacola, Fla.
		Official Analysis...	.....	16.20	2.21	18.41	.....	.....	
Favorite Home Block & Potash Compound	1820	Guarant'd Analysis	10.00	8.00	0.50	.....	.....	12.00	Independent Fertz. Co., Jacksonville, Fla.
		Official Analysis...	7.66	7.69	0.58	8.67	.....	11.13	
Favorite Fruiter Manure	1821	Guarant'd Analysis	10.00	8.00	0.50	.....	4.00	12.00	Independent Fertz. Co., Jacksonville, Fla.
		Official Analysis...	4.28	8.76	0.78	9.54	3.90	13.44	

NAME, OR BRAND.	Laboratory Number.		Moisture.	Phosphoric Acid.			Ammonia.	Potash (K_2O.)	BY WHOM and WHERE MANUFACTURED.
				Available.	Insoluble.	Total.			
Favorite Orange Grower...	1822	Guarant'd Analysis	10.00	8.00	1.00	.....	5.00	11.00	Independent Fertz. Co., Jacksonville, Fla.
		Official Analysis...	5.92	8.17	0.16	8.63	5.27	13.71	
Pinellas Special No. 3.....	1823	Guarant'd Analysis	10.00	7.00	.....	.....	4.00	10.00	Independent Fertz. Co., Jacksonville, Fla.
		Official Analysis...	7.75	6.87	0.82	7.70	3.99	11.56	
Choctaw Cotton Guano....	1824	Guarant'd Analysis	10.00	10.00	2.00	.....	2.00	1.00	F. S. Royster Guano Co., Macon, Ga.
		Official Analysis...	11.85	10.10	0.73	11.13	1.67	1.05	
Wilson & Tomser's Special Mixture No. 1.....	1825	Guarant'd Analysis	8.00	6.00	1.00	.....	5.00	5.00	Wilson & Tomser Fertz. Co., Jacksonville, Fla.
		Official Analysis...	8.94	6.75	1.65	8.50	4.55	8.53	
Humber's Compound	1826	Guarant'd Analysis	.....	10.00	.....	.....	2.00	2.00	Blanchard, Humber & Co., Columbus, Ga.
		Official Analysis...	10.72	9.81	2.56	11.79	1.92	2.22	
Fertilizer	1827	Guarant'd Analysis	.....	12.00	.....	.....	.....	1.00	Gulf Guano Co., Bainbridge, Ga.
		Official Analysis...	10.58	7.17	1.12	8.29	.....	6.28	
Rock	1828	Guarant'd Analysis	8.00	8.00	1.00	.....	2.00	2.00	Gulf Guano Co., Bainbridge, Ga.
		Official Analysis...	12.06	8.11	0.52	9.13	2.70	2.10	

Early Bird Young Pineapple Manure	1829	Guarant'd Analysis	10.00	.....	.....	5.00	5.00	5.00	Osceola Fertz. Co., Jacksonville, Fla.
		Official Analysis...	8.71	.....	.....	5.83	5.22	6.19	
Gulf State Special.....	1830	Guarant'd Analysis	10.00	8.00	2.00	.....	3.00	3.00	Gulf Chemical Co., Marianna, Fla.
		Official Analysis...	11.39	7.22	1.32	8.54	3.60	2.93	
Marianna Special Guano..	1831	Guarant'd Analysis	10.00	10.00	2.00	.....	2.00	2.00	Gulf Chemical Co., Marianna, Fla.
		Official Analysis...	10.66	9.34	1.96	11.30	1.73	2.52	
Radium	1832	Guarant'd Analysis	12.00	8.00	1.50	.....	2.00	4.00	W. C. Bradley Co., Columbus, Ga.
		Official Analysis...	10.61	7.91	0.86	8.77	2.19	3.84	
Tuscarora Tomato Special.	1833	Guarant'd Analysis	10.00	6.00	1.00	.....	5.00	8.00	Tuscarora Fertz. Co., Jacksonville, Fla.
		Official Analysis...	10.02	5.67	0.73	6.40	4.84	7.17	
Florida Fruit & Tree Grower	1834	Guarant'd Analysis	10.00	8.00	1.00	.....	5.00	7.00	Tuscarora Fertz. Co., Jacksonville, Fla.
		Official Analysis...	9.49	7.80	2.26	10.12	4.77	6.73	
Celery Grower	1835	Guarant'd Analysis	10.00	3.00	1.00	.....	7.00	4.00	Tuscarora Fertz. Co., Jacksonville, Fla.
		Official Analysis...	9.11	3.29	0.96	4.25	6.04	4.48	
Muckland Tomato Special No. 2.	1836	Guarant'd Analysis	10.00	9.00	.....	.....	2.50	5.00	E. O. Painter Fertz. Co., Jacksonville, Fla.
		Official Analysis...	4.51	11.47	1.15	12.62	4.01	6.50	
Gem Corn Fertilizer.....	1837	Guarant'd Analysis	10.00	5.00	2.00	.....	3.00	4.00	E. O. Painter Fertz. Co., Jacksonville, Fla.
		Official Analysis...	10.93	6.63	0.57	7.20	2.65	4.91	
Simon Pure Garden	1838	Guarant'd Analysis	8.00	4.00	3.00	.....	5.00	6.50	E. O. Painter Fertz. Co., Jacksonville, Fla.
		Official Analysis...	10.38	5.08	1.17	6.25	6.55	6.94	
Simon Pure No. 2.....	1839	Guarant'd Analysis	8.00	6.00	1.00	.....	5.00	6.00	E. O. Painter Fertz. Co., Jacksonville, Fla.
		Official Analysis...	7.21	7.66	0.34	8.00	5.43	6.36	

NAME, OR BRAND.	Laboratory Number.		Moisture.	Phosphoric Acid.			Ammonia.	Potash (K_2O.)	BY WHOM and WHERE MANUFACTURED.
				Available.	Insoluble.	Total.			
H. G. Orange Fruiter.....	1840	Guarant'd Analysis	10.00	10.00	1.00	.....	3.00	13.00	Am. Agricul. Chem. Co.,
		Official Analysis...	6.96	10.71	0.05	10.76	3.53	12.49	Jacksonville, Fla.
Bradley Florida Vegetable.	1841	Guarant'd Analysis	10.00	6.00	1.00	.....	4.00	5.00	Am. Agricul. Chem. Co.,
		Official Analysis...	10.18	6.93	1.16	8.09	4.18	4.56	Jacksonville, Fla.
Bradley Fruit & Vine.....	1842	Guarant'd Analysis	10.00	5.50	1.00	.....	2.25	10.00	Am. Agricul. Chem. Co.,
		Official Analysis...	8.15	7.04	2.32	9.36	2.54	8.61	Jacksonville, Fla.
Bradley Special Fruit & Vine	1843	Guarant'd Analysis	10.00	5.50	1.00	.....	4.25	10.00	Am. Agricul. Chem. Co.,
		Official Analysis...	7.96	6.27	1.19	7.56	4.79	8.72	Jacksonville, Fla.
Bradley Nursery Stock....	1844	Guarant'd Analysis	10.00	8.00	1.00	.....	4.50	3.00	Am. Agricul. Chem. Co.,
		Official Analysis...	11.45	8.24	1.38	9.62	4.85	3.17	Jacksonville, Fla.
Armour's Sweet Potato Special	1845	Guarant'd Analysis	10.00	6.50	1.00	.....	2.50	3.50	Armour Fertz. Works,
		Official Analysis...	8.78	5.95	1.16	7.11	2.97	3.63	Jacksonville, Fla.
Armour's Blood, Bone & Potash	1846	Guarant'd Analysis	10.00	8.00	1.00	.....	5.00	7.00	Armour Fertz. Works,
		Official Analysis...	10.71	8.48	0.95	9.43	4.32	6.69	Jacksonville, Fla.

Armour's Corn Special....	1847	Guarant'd Analysis	10.00	6.00	1.00	.....	3.00	6.00	Armour Fertz. Works,
		Official Analysis...	9.31	5.74	1.87	7.61	2.63	6.09	Jacksonville, Fla.
Armour's Orange Fruiter..	1848	Guarant'd Analysis	10.00	8.00	1.00	.....	4.00	12.00	Armour Fertz. Works,
		Official Analysis...	7.96	8.42	0.30	8.73	4.12	11.90	Jacksonville, Fla.
Armour's Original No. 1 Mixture	1849	Guarant'd Analysis	10.00	5.00	1.00	.....	5.00	5.00	Armour Fertz. Works,
		Official Analysis...	9.14	4.89	2.12	7.02	4.95	4.32	Jacksonville, Fla.
Ideal Vegetable Manure...	1850	Guarant'd Analysis	8.00	6.00	1.00	.....	4.00	8.00	Wilson & Toomer Fertz.
		Official Analysis..	9.72	7.19	1.82	9.02	3.99	8.47	Co., Jacksonville, Fla.
Ideal Fruit & Vine Manure.	1851	Guarant'd Analysis	8.00	6.00	.....	.....	3.00	10.00	Wilson & Toomer Fertz.
		Official Analysis...	10.53	6.79	1.09	7.88	3.42	9.71	Co., Jacksonville, Fla.

DEPARTMENT OF AGRICULTURE—DIVISION OF CHEMISTRY.

FEEDING STUFF SECTION.

R. E. ROSE, State Chemist. SPECIAL FEEDING STUFF ANALYSES, 1912. E. PECK GREENE, Asst. Chemist.

Samples Taken by Purchaser Under Section 9, Act Approved May 24, 1905.

NAME, OR BRAND.	Laboratory Number.	Fibre.	Protein.	Nitrogen-Free Ext. (Starch and Sugar.)	Fat.	Ash.	BY WHOM SENT.
Scratch Feed	227	2.37	11.14	63.82	3.00	8.54	Chas. L. West, Oviedo, Fla.
Cotton Seed Meal	228	.....	40.62	.....	.....	.....	D. C. Lasseter, Pace, Fla.
Kudzu Hay	229	30.24	12.72	39.70	1.50	5.87	C. E. Pleas, Chipley, Fla.
Feed	230	11.12	15.26	48.42	3.62	7.64	R. J. Masters, St. Augustine, Fla.

DEPARTMENT OF AGRICULTURE—DIVISION OF CHEMISTRY.

FEEDING STUFF SECTION.

R. E. ROSE, State Chemist. OFFICIAL FEEDING STUFF ANALYSES, 1912. E. PECK GREENE, Asst. Chemist.
Samples Taken by State Chemist and State Inspector Under Sections 1, 2 and 13, Act Approved May 24, 1905.

NAME, OR BRAND.	Laboratory Number.		Fibre.	Protein.	Nitrogen Free Ext. (Starch and Sugar.)	Fat.	Ash.	NAME AND ADDRESS OF MANUFACTURER.
Standard Grade Cotton Seed Meal	1343	Guarant'd Analysis	.....	38.62	.....	.....	.....	Bainbridge Oil Co., Bainbridge, Ga.
		Official Analysis	.....	38.66	.....	.....	.....	
Omega Stock Feed	1344	Guarant'd Analysis	12.00	12.00	50.00	5.00	.....	Webb & Maury, Memphis, Tenn.
		Official Analysis	13.93	15.57	48.23	4.95	6.10	
Pawnee Feed	1345	Guarant'd Analysis	12.00	8.25	65.00	3.50	.....	National Oats Co., St. Louis, Mo.
		Official Analysis	13.88	9.87	57.50	6.20	4.95	
Aunt Patsy's Poultry Feed	1346	Guarant'd Analysis	7.28	15.00	54.22	4.50	5.34	The Aunt Patsy Poultry Feed Co., Memphis, Tenn.
		Official Analysis	9.10	17.11	48.22	3.62	8.80	
Schumaker Special Horse Feed	1347	Guarant'd Analysis	8.60	9.25	61.50	3.25	.....	The Quaker Oats Co., Chicago, Ill.
		Official Analysis	7.41	11.32	62.98	4.02	3.72	
Memphi Stock Feed	1348	Guarant'd Analysis	12.00	14.00	46.00	3.50	.....	Webb & Maury, Memphis, Tenn.
		Official Analysis	12.50	14.01	52.57	3.59	6.00	

NAME, OR BRAND.	Laboratory Number.		Fibre.	Protein.	Nitrogen-Free Ext. (Starch and Sugar.)	Fat.	Ash.	NAME AND ADDRESS OF MANUFACTURER.
Luxury Hen Feed.....	1349	Guarant'd Analysis	3.50	10.00	68.00	2.70	.....	Union City Grain and Feed Co.,
		Official Analysis...	1.92	12.95	66.38	2.77	2.37	Union City, Tenn.
Cow Feed	1350	Guarant'd Analysis	12.00	16.50	52.50	3.50	.....	International Sugar Feed Co.,
		Official Analysis...	12.77	22.11	46.29	4.65	7.18	Memphis, Tenn.
Cow Feed	1351	Guarant'd Analysis	12.00	16.50	52.00	3.50	.....	International Sugar Feed Co.,
		Official Analysis...	12.09	20.00	41.81	5.14	7.18	Memphis, Tenn.
Perfection Horse Feed....	1352	Guarant'd Analysis	12.00	10.50	55.00	3.00	.....	Omaha Alfalfa Milling Co, Oma-
		Official Analysis...	12.17	11.75	45.60	4.95	6.95	ha, Neb.
Wash-Co Horse & Mule Feed	1353	Guarant'd Analysis	.....	12.00	50.00	2.00	.....	Wash-Co Alfalfa Milling Co., Ft.
		Official Analysis...	6.62	12.15	58.31	4.84	5.15	Calhoun, Neb.
Standard Feed	1354	Guarant'd Analysis	10.00	11.50	51.00	3.50	.....	Standard Feed Co., Atlanta, Ga.
		Official Analysis....	7.74	12.13	50.22	3.10	10.47	
Atlas Feed	1355	Guarant'd Analysis	.....	11.85	57.18	3.35	.....	Barnard & Bender, Tampa, Fla.
		Official Analysis...	10.45	11.85	56.68	3.20	1.17	
Imperial Feed	1356	Guarant'd Analysis	6.00	10.00	60.00	3.50	.....	F. H. Chamberlain Co., St. Louis,
		Official Analysis...	5.86	10.78	64.53	2.88	6.20	Mo.

Ground Corn and Oats	1357	Guarant'd Analysis	.....	9.37	67.59	4.48	.....	Barnard & Hester, Tampa, Fla.
		Official Analysis...	5.37	11.41	62.58	4.00	4.46	
Aunt Patsy's Poultry Feed	1358	Guarant'd Analysis	7.28	15.00	54.22	4.50	5.34	The Aunt Patsy Poultry Feed Co., Memphis, Tenn.
		Official Analysis...	7.29	16.50	52.39	4.65	7.92	
Purina Feed	1359	Guarant'd Analysis	9.80	12.50	58.00	4.00	.....	Ralston Purina Co., St. Louis, Mo.
		Official Analysis...	6.52	13.95	58.58	2.55	5.20	
Standard Cotton Seed Meal	1360	Guarant'd Analysis	11.00	38.62	29.00	7.00	.....	Flash-Hunter Commission Co., Atlanta, Ga.
		Official Analysis...	10.37	40.10	26.93	6.60	6.20	
Sucrene Dairy Feed	1361	Guarant'd Analysis	12.00	16.50	46.00	3.50	.....	American Milling Co., Chicago, Ill.
		Official Analysis...	11.78	17.20	48.49	3.45	6.46	
Sugaration Stock Feed	1362	Guarant'd Analysis	.....	11.65	64.00	3.50	.....	G. E. Patteson & Co., Memphis, Tenn.
		Official Analysis...	11.96	12.00	54.37	3.40	6.25	
Imperial Horse Feed	1363	Guarant'd Analysis	12.00	11.00	52.00	4.50	.....	K. & E. Newmond, New Orleans, La.
		Official Analysis...	11.76	11.64	55.50	4.38	5.16	
Star Molasses Feed	1364	Guarant'd Analysis	12.50	10.00	57.00	2.30	.....	Illinois Feed Mills, St. Louis, Mo.
		Official Analysis...	12.56	10.53	52.19	2.25	5.12	
"Wildfire" Feed	1365	Guarant'd Analysis	12.00	10.50	55.00	2.00	.....	Permeator Co., Jacksonville, Fla.
		Official Analysis...	12.15	10.44	57.98	3.10	4.07	
Quaker Dairy Molasses Feed	1366	Guarant'd Analysis	14.00	16.00	50.00	3.50	.....	The Quaker Oats Co., Chicago, Ill.
		Official Analysis...	13.88	16.76	48.88	3.60	5.13	
Manna Rice Special Chicken Feed	1367	Guarant'd Analysis	4.00	11.00	65.00	3.00	.....	Edgar Morgan Co., Memphis, Tenn.
		Official Analysis...	3.98	14.30	63.78	3.10	1.82	

OFFICIAL FEEDING STUFF ANALYSES, 1912—Continued.

NAME, OR BRAND.	Laboratory Number.		Fibre.	Protein.	Nitrogen Free Ext. (Starch and Sugar.)	Fat.	Ash.	NAME AND ADDRESS OF MANUFACTURER.
"Sico" Cold Pressed Feed Meal	1368	Guarant'd Analysis	20.00	26.00	40.00	6.00	.....	Sea Island Cotton Oil Co., Charleston, S. C.
		Official Analysis	18.24	25.90	36.46	6.95	4.70	
Ship Stuff	1369	Guarant'd Analysis	7.00	14.50	54.00	4.00	.....	The Dunlop Mills, Richmond, Va.
		Official Analysis	7.30	17.11	51.87	3.59	4.70	
Luxury Horse Feed	1370	Guarant'd Analysis	12.00	10.00	55.00	3.50	.....	Union City Grain & Feed Co., Union City, Tenn.
		Official Analysis	12.60	11.67	57.43	4.20	4.23	
U-N-I. Dairy Feed	1371	Guarant'd Analysis	11.85	21.59	47.31	3.98	.....	United Grocery Co., Jacksonville, Fla.
		Official Analysis	8.97	21.76	44.74	3.91	5.62	
Corno Horse and Mule Feed	1372	Guarant'd Analysis	12.00	10.00	58.50	2.50	.....	The Corno Mills Co., St. Louis, Mo.
		Official Analysis	10.05	12.72	58.88	2.82	5.61	
Cotton Seed Meal	1373	Guarant'd Analysis	10.00	38.50	25.00	3.00	.....	Farmers' Oil Mills, Anderson, S. C.
		Official Analysis	10.65	38.93	25.80	8.07	6.60	

DEPARTMENT OF AGRICULTURE—DIVISION OF CHEMISTRY.

FOOD AND DRUG SECTION.

R. E. ROSE, State Chemist. SPECIAL FOOD ANALYSES, 1912. A. M. HENRY, Asst. Chemist.

Samples Taken by Purchaser Under Section 10, Act Approved June 5, 1911.

ALCOHOLIC DRINKS.

No.	LABEL.	MANUFACTURER.	Alcohol (per cent by volume.)	FROM.
1045	Hop Brew Lager Beer.....	South Atlantic Bottling Co., Jacksonville, Fla.	2.60	South Atlantic Bottling Co., Jacksonville.
1046	Cider	.....	7.30	C. A. Jones, Campbellton.
1047	Cider	.....	5.13	W. B. Crawford, Kissimmee.
1048	Best Meade. Alcohol less than 2%, contents 12 ozs.....	Chas. Blum Co., Jacksonville, Fla.	1.86	J. N. Milton, Mayor, Macclenny.
1049	Hop Brew, Alcohol less than ½%, contents 12 ozs.	South Atlantic Bottling Co., Jacksonville, Fla.	0.43	South Atlantic Bottling Co., Jacksonville.
1051	Cider	.....	5.82	W. B. Crawford, Kissimmee.
1052	Cider	.....	5.13	W. B. Crawford, Kissimmee.
1054	Best Malt Meade, Alcohol less than 2%, contents 12 ozs.	Chas. Blum Co., Jacksonville, Fla.	1.78	E. R. Sessions, Live Oak.

DEPARTMENT OF AGRICULTURE—DIVISION OF CHEMISTRY.

R. E. ROSE, State Chemist. FOOD AND DRUG SECTION. A. M. HENRY, Asst. Chemist.

Samples Taken by State Inspectors Under Section 9, Act Approved June 5, 1911.

OFFICIAL FOOD ANALYSES, 1912.

SUCCOTASH.

In the twelve samples examined no evidence of preservatives, artificial sweeteners, or bleachings agents were detected. Ten out of these twelve samples were misbranded in that they failed to bear any statement of the net weight or measure on the label, and the statement of the net weight in the other two was in ounces instead of pounds and ounces, as required. Two samples were adulterated in that soaked beans were used and the label contained no statement of the fact. One sample was adulterated in that the beans were wormy, although the fact that they were soaked beans was stated on the label. The samples varied in price from 10 to 15 cents per pound. Out of the twelve samples none were classed as legal, complying with the law in all particulars; two were passed and ten declared illegal.

Number.	LABEL.	Total Solids (Per Cent.).	Weight.	REMARKS.
1146	Progress Brand Succotash, Wm. Grecht Co., Baltimore, Md.	19.41	1 lb. 5 ozs.	Illegal. Misbranded. No statement of net weight or measure.
1147	Spring Garden Brand Succotash (Dried Beans), Wm. Grecht Co., Baltimore, Md.	17.32	1 lb. 5 ozs.	Illegal. Misbranded. No statement of net weight or measure. Adulterated; contains wormy beans.
1148	Royal Scarlet Fine Table Succotash, R. C. Williams & Co., New York, N. Y.	27.22	1 lb. 6 ozs.	Illegal. Misbranded. No statement of net weight or measure.

1149	Victory Brand Succotash, John Boyle Co., Baltimore, Md.	27.59	1 lb. 5 ozs.	Illegal. Misbranded. No statement of net weight or measure. Adulterated; soaked beans used.
1150	Blue Label Succotash, Curtice Brothers Co., Rochester, N. Y.	24.13	1 lb. 5 ozs.	Illegal. Misbranded. No statement of net weight or measure. Adulterated; soaked beans used.
1151	Iona Brand Succotash (Dried Beans), The Great Atlantic & Pacific Tea Co., Jersey City, N. J.	25.16	1 lb. 5 ozs.	Illegal. Misbranded. No statement of net weight or measure.
1152	Grandmother's Brand Succotash, The Great Atlantic & Pacific Tea Co., Jersey City, N.J.	26.20	1 lb. 5 ozs.	Illegal. Misbranded. No statement of net weight or measure.
1153	Flag Brand Succotash (Dried Beans), 20 ozs. contents, Fort Stanwix Canning Co., Rome, N. Y.	23.64	1 lb. 5 ozs.	Passed.
1154	White Rose Brand Succotash, Seeman Bros., N. Y.	22.87	1 lb. 5 ozs.	Illegal. Misbranded. No statement of net weight or measure.
1155	President Madison Brand Ripe Lima Succotash, The Medina Canning Co., Medina, N.Y.	26.29	1 lb. 5 ozs.	Illegal. Misbranded. No statement of net weight or measure.
1156	Bridal Fancy Succotash (Green Lima Beans), Thomas Roberts & Co., Philadelphia, Pa.	22.18	1 lb. 4 ozs.	Illegal. Misbranded. No statement of net weight or measure.
1157	Golf Succotash (net weight 21 ozs.), Golf Canning Co., Rome, N. Y.	24.08	1 lb. 5 ozs.	Passed.