VOLUME 24 NUMBER 1

FLORIDA QUARTERLY BULLETIN

JANUARY 1, 1914

DEPARTMENT OF AGRICULTURE.

W. A. McRAE
COMMISSIONER OF AGRICULTURE

REPORT OF THE CHEMICAL DIVISION.

R. E. ROSE
STATE CHEMIST

Analysis of Fertilizers, Feed Stuff, Food and Drugs.
Rules and Regulations.

Entered January 31, 1903, at Tallahassee, Florida, as second-class matter, under Act of Congresss of June, 1900.

These Bulletins Are Issued Free to Those Requesting Them

T. J. Appleyard, State Printer,
Tallahassee, Fla.

STATE CHEMIST'S REPORT, 1913.

Tallahassee, Fla., January 1, 1914.

To His Excellency,

Park Trammell, Governor,

Tallahassee, Florida.

Sir:—I have the honor to submit the following report of the Chemical Division of the Agricultural Department of the State of Florida for the year ending December 31, 1913:

The report of the State Treasurer, shows the sale of inspection stamps covering 213,728.04 tons of Commercial Fertilizers and Cotton Seed Meal—

Amounting to $53,432.01

And 137,156.44 tons of Commercial Feeding Stuffs—

Amounting to $34,289.11

A total revenue of $87,821.12

paid into the State Treasury to the credit of the General Revenue Fund. From which is to be deducted the total expenses of the Chemical Division, incident to the execution of the Fertilizer, Feed Stuff, and Pure Food and Drug Laws, including the expenses of the Immature Citrus Fruit Law ($2,134.96), a total expense of $19,072.01, showing a balance of $68,649.11 paid into the General Revenue Fund of the State. A summary of these expenditures will be found on the succeeding page. A detailed Financial Report will be found on the last pages of this report.

FINANCIAL REPORT.

RECEIPTS AND EXPENDITURES OF CHEMICAL DIVISION, 1913.

Salary of the State Chemist	$ 2,750.00
Salary of Asst. State Chemist, Fertilizers	1,800.00
Salary of Asst. State Chemist, Food and Drugs	1,800.00
Salary of Asst. State Chemist, Stock Feed	1,650.00
Salary three Food and Drug Inspectors	3,574.73
Salary Clerk Chemical Division	900.00
Traveling expenses three Food and Drug Inspectors	2,162.05
Samples and Incidentals, Pure Food Department	1,411.44
Chemicals, Apparatus and Incidentals, State Laboratory	953.83
Traveling Expenses State Chemist and Assistants	800.80
Postage State Chemist	134.20
Salaries of four Citrus Fruit Inspectors	1,083.32
Traveling Expenses Citrus Fruit Inspectors	1,008.38
Apparatus and Incidentals Citrus Fruit	43.26
Total Expenses Chemical Division	$19,072.01
Unexpended to Credit of Gen. Rev. Fund	1,777.99
Total Appropriations for 1913	$20,850.00
Total Revenue Chemical Division	$87,721.2
Total Expenses Chemical Division	19,072.01
Balance to credit of General Revenue	$68,649.11

APPROPRIATION AND EXPENDITURES.

Your attention is called to the considerable difference between the sums carried in the "Pure Food and Drugs Law" (Section 10 and 11, $25,500.00); and $19,700.00—the sum estimated as necessary in the budget prepared by this Division; accepted by the Appropriation Committee, and fixed by the Legislature, for the support of the Chemical Division, in the execution of the Pure Food, Fertilizer, Stock Feed and Cotton Seed Meal Laws, per annum, from July 1st, 1913, to June 30th, 1915—a difference of $5,800.00 per annum in excess of the budget.

This $19,700.00, together with $2,500.00, appropriated for the expenses for Citrus Fruit Inspection, fixes the total appropriation for the Chemical Division, per annum, July 1, 1913, to June 30, 1914, at.....$22,500.00

Sum carried in Pure Food Law, not approved by Appropriation Committee and Legislature, July 1, 1913, to June 30, 1915.....	25,500.00
Citrus Fruit Law.....	2,500.00
Apparent appropriation $28,000.00	
In excess of estimates.....	5,800.00
Actual appropriation, 1913.....$20,850.00	
Actual expenditures	19,072.01
1913 appropriation, not expended.....	1,777.99
	$20,850.00
Expenses Chemical Division, 1913.....$19,072.01	
To credit of General Revenue.....68,649.11	
Total Receipts, 1913 .....$87,721.12	

SUMMARY OF

ANALYTICAL REPORT, 1913.

The following analyses were made during the year:

Official samples fertilizers	58
Special samples fertilizers (sent in by citizens)	272
Official samples feed stuff	217
Special samples feed stuff (sent in by citizens)	26
Official food and drug samples	151
Special food and drug samples (sent in by citizens)	56
Official samples citrus fruit	5
Special samples citrus fruit (sent in by citizens)	188
Water samples	26
Miscellaneous samples (sent in by citizens)	100
Total number analyses	1099

It will be noted that the "Special Sample" of fertilizer, feeds, foods and drugs, sent in by citizens of the State, has materially increased, showing an increased demand on the part of the citizen for specific information on these subjects, of such vital importance—economical and otherwise.

The Florida Law is peculiar in this respect, permitting the submission of such samples by the citizen, only requiring that the sample shall be properly drawn, duly authenticated, and properly transmitted, in order to prevent the submission of spurious or fake samples, as provided by Section 12, of the Pure Food and Drugs Law.

FERTILIZERS.

Frank T. Wilson, B. S., Analyst.

Official samples fertilizer	58
Special samples fertilizers	272
Total analyses fertilizer department	330

The 48 samples of complete fertilizer drawn by the State Chemists and Inspectors had the following average composition and guarantee.

	Ammonia.	Available Phos. Acid.	Potash.
Official analysis	4.09%	6.38%	7.79%
Guarantee	3.85%	5.76%	7.49%
Excess above guarantee..	0.24%	0.52%	0.30%

Average State value found, per ton.....$29.23
Average State value guaranteed, per ton.. 27.47

EXCESS 0.20% ABOVE GUARANTEE.

We find complete fertilizers exceeding the guarantee 0.20% (twenty points), as follows

In Ammonia .....24 samples, or....50.0%
In Available Phosphoric Acid..34 samples, or....70.8%
In Potash .....29 samples, or....60.4%

DEFICIENCY 0.20% BELOW GUARANTEE.

We find complete fertilizers below guarantee 0.20% (twenty points, as follows:

In Ammonia ..... 5 samples, or....10.4%
In Available Phosphoric Acid.. 6 samples, or....12.5%
In Potash (K_2O) .....16 samples, or....33.3%

COMMERCIAL STOCK FEED.

E. Peck Greene, B. S., Analyst.

The following analyses have been made during the year:

Official samples feed stuff 218
Special samples feed stuff 26

Total analyses Feed Department 244

The average composition of the official samples was as follows:

	Protein.	Starch and Sugar.	Fats.
Official analysis	14.86	57.10	3.83
Guaranteed analysis	13.76	55.42	3.08
Average Excess	1.10	1.67	0.74

We find the official samples of feed stuffs exceeded the guarantee 0.20% (twenty points), as follows:

In Protein .....137 samples, or....53.91%
In Starch and Sugar.....115 samples, or....57.78%
In Fats ..... 90 samples, or....44.55%

There was a deficiency of 0.20% (twenty points), as follows:

In Protein ..... 13 samples, or.... 6.91%
In Starch and Sugar..... 70 samples, or....35.17%
In Fats ..... 47 samples, or....23.26%

FOODS AND DRUGS.

A. M. Henry, B. S., Analyst to June 10.
S. Heimburger, M. S., B. S.

Official food and drugs samples..... 151
Special food and drugs samples..... 60
Official citrus fruit samples..... 5
Special citrus fruit samples..... 188
Water samples 26

Total food and drugs samples.....430

Official Food Samples—Legal.....117 or 75%
Official Food Samples—Illegal..... 34 or 22%
Official Food Samples—Passed..... 5 or 3%

The 34 illegal samples were principally misbranded, failing to state net weight or measure.

Adulterated and misbranded..... 3

Misbranded 34
Immature citrus fruit samples reported..... 4

Those samples found adulterated or misbranded have been reported to the proper officer. In all cases the dealers and manufacturers have corrected the labels by placing the proper labels on the goods or by withdrawing the offending materials from the market.

Few prosecutions have been found necessary to enforce the provisions of the law.

Only such materials as are of public interest are analyzed by the State Laboratory, such as are directed by the Pure Food, the Fertilizer, and Stock Feed Law.

There are no fees or charges of any kind made by the State Laboratory.

The State Laboratory is not permitted to compete with commercial laboratories.

No commercial work of any kind is accepted.

The State Laboratory does not analyse samples for individual account wherein the public is not interested. Such samples should be sent to a commercial laboratory.

FERTILIZERS.

It will be noted that the average of the officially drawn samples of fertilizer show a slightly less guaranteed percentage in Ammonia as compared to the season of 1912, the average guarantee for 1912 being 4.05%, for 1913, 3.85%.

A decrease is also shown in Available Phosphoric Acid. The 1912 average guarantee was 6.18%, that for 1913 was 5.76%.

In Potash, the average guarantee increased. In 1912, it was 6.80%, while for 1913, it was 7.49%.

The excesses—.20% above guarantee—have materially increased, while deficiencies—.20% below guarantee—have proportionately decreased, showing a more careful manipulation of the raw materials, better grinding and

mixing, and particularly more efficient chemical and technical control of factories, most, if not all, have modern grinding and mixing apparatus and employ competent chemists to check raw materials and manufactured goods.

The average guaranteed "state value" of the "official sample" has decreased as compared to the season of 1912, $1..97 per ton.

The official analysis shows a decrase of $1.96 per ton as compared to 1912.

The average excess value of all the official samples above "guarantee" is $1.76 per ton.

Practically 6% in excess of guaranteed value.

Ammoniates.

It will be noted that the market prices of all organic Ammoniates have materially increased, while nitrates and ammoniated salts are quoted at practically the same figures as for 1912.

The synthetic nitrates and ammoniates—"Cyanamid," Nitrate of Lime, etc., are now being offered in competi- with natural nitrates, and ammoniates, and will doubtless in the future have considerable influence on the prices of fixed nitrogen for fertilizing and technical purposes.

Special Samples of Fertilizers.

There was an increase in "special samples" sent in by purchasers, under Section 9, of the Fertilizer Law, from 186 in 1912, to 274 in 1913; being practically 35 per cent increase in the "special sample," showing an increased demand by the consumer for an exact knowledge of the commercial and agricultural value of goods purchased afforded him by the Florida Law; a feature peculiar to the Florida Law, permitting the purchaser to send in a properly drawn and duly authenticated sample of goods purchased (feeds and fertilizers) and without cost, to obtain an analysis of the same.

It is needless to say that the "special sample," when properly and legally drawn, as the Law directs, affords the consumer immediate information as to the "state value" of fertilizers or feeds purchased, giving him the same protection demanded by the manufacturer, who "purchases his raw materials on guarantee, and pays for them on analysis."

THE NEW MINERAL FERTILIZER.

Early in July of this year, the attention of this division was called to this material. A grower of the State sent tags and literature lauding the value of this so-called "New Mineral Fertilizer," asking information as to its fertilizing value.

Being aware of the history of this material and the effort to impose it upon the credulity of the farmers of the country for years past, under various names or brands, by a campaign of pseudo-scientific misinformation, notably by the 'Professor of Polaric Nutrition of the Divine Science University," etc., that "Bread from Stones," "Stone Meal," "Mineral Fertilizer," has been fully tested and condemned as worthless as a fertilizer by competent agriculturalists, scientific and practical, Inspectors were at once directed to procure samples of the goods, specimens of tags, circulars and literature.

The only plant foods specified on the tags are Phosphoric Acid 0.23% and Potassium Oxide 2.09%, the remainder of the analysis simply showing small percentages of soda, lime, magnesia, Iron Oxide, with 72.37% of Silica (sand) and Alumina (clay), there being no free sulfur in the rock.

On July 12th, a sample was analyzed, by the official methods of the "Association of Official Agricultural Chemists"—the only recognized methods used by agricultural chemists, and agricultural experiment stations, which analysis showed:

Total Phosphoric Acid..... 0.06%
Available Phosphoric Acid.....None.
Water Soluble Potash (K_2O).....'...None.

This sample was obtained from Ft. Pierce; another sample from Cocoanut Grove, bearing the same tag and accompanied by the same literature, was analyzed August 31st. This analysis showed:

Total Phosphoric Acid..... 0.15%
Available Phosphoric Acid.....None.
Potash (K_2O) .....None.

That this matter should be fully investigated and no injustice done, parts of these samples were sent to the Florida Agricultural Experiment Station for analysis. The report of this analysis, by Prof. S. E. Collison, Chemist of the Florida Agricultural Experiment Station, shows:

Total Phosphoric Acid..... 0.04%
Available Phosphoric Acid.....None.
Water Soluble Potash (K_2O)..... 0.001%

The material being simply "micaceous shist," the Potassium, Phosphorous, Soda, Calcium and Magnesia being combined as Silicates in the rock, the sulfur as Sulphides, were insoluble in the strongest boiling acids.

The only two "plant foods" claimed by the tag, Phosphate and Potash, being absolutely unavailable silicates, on further investigation it has been shown that this material has been exploited on various occasions previously under various names—"Stone Meal," "The New England Mineral Fertilizer," "The New Mineral Fertilizer," and has been declared worthless as a fertilizer and insecticide by various agricultural experiment stations from Maine to Florida, and by the Chemical Bureau, of the U. S. Dept. of Agriculture, and exposed by various agricultural journals, notably the "Rural New Yorker," and the "Southern Ruralist"—both reputable and responsible journals.

Circular letters were sent out by this division to the

Press and citizens of the State warning them of the utter worthlessness of this so-called "New Mineral Fertilizer," the material being as insoluble as ordinary glass, which contains from 3 to 20 per cent of Potassium (or soda) as silicates, and is equally as soluble, or available, as this silicate (Igneous sandstone.

There are millions of acres of soil in Florida that contain (on a dry basis) two to three per cent of nitrogen, which can be readily made available. Other large areas of soil, with from one half to three per cent of phosphates, enormous deposits of low grade phosphate of lime and alumina, with one or more per cent available, and seven or more per cent insoluble phosphates (the waste of phosphate plants, in excellent mechanical condition, that can be had for hauling); while vast deposits of "soft phosphates," with 1.50 per cent or more available, and 15 to 25 per cent insoluble phosphate, that can be had for digging and hauling. With such materials; abundant nitrogen, immense quantities of phosphates—well distributed—having large actual plant foods readily made available, it is neddless to say that it is folly to purchase absolutely inert material of less fertilizing value than good average Florida soil, which can be purchased by the acre, from twenty-five to fifty dollars per acre, of which six inches off the surface will afford 1,000 tons of material superior to this "New Mineral Fertilizer" in fertilizing value.

At the above price per acre, the cost per ton would be 2.5 to 5 cents. The actual value of this "New Mineral Fertilizer," according to present market prices, of available phosphate, and water soluble potash being absolutely nothing, as it contains no available plant food whatever.

The principal stock in trade of this concern is the credulity of its victims, and abuse of all scientists, agricultural chemists, experiment stations, and manufacturers of commercial fertilizers.

Threats of suits for slander and libel have been made, none however, instituted.

After full investigation and on advice of the Attorney General, the following order was prepared by the State Chemist, and issued by the Agricultural Department:

Press Bulletin
State of Florida
Agricultural Department
Tallahassee, November 15, 1913.

NOTICE TO DEALERS, AGENTS AND CONSUMERS OF COMMERCIAL FERTILIZERS, INSECTICIDES, AND FUNGICIDES.

It having been shown by analysis by the Florida State Laboratory, the Laboratory of the Florida Agricultural Experiment Station, and the Bureau of Chemistry of the United States Department of Agriculture, together with those of a number of other State Agricultural Experiment Stations, that the "New Mineral Fertilizer," made by the New Mineral Fertilizer Company, of Boston, Massachusetts, can not be classed as either a fertilizer, insecticide or fungicide, and that the analysis quoted on the tags and in the literature issued by the said company is misleading and calculated to deceive, the material actually having no nitrogen (Ammonia), soluble Potash, nor available Phosphoric Acid or Sulfur in its composition; and on being advised by the Attorney General of the State of Florida that the sale of this material in the State as a fertilizer, insecticide or fungicide, under the laws of Florida, is illegal, notice is hereby given that the "New Mineral Fertilizer," made by the New Mineral Fertilizer Company, of Boston, Mass., can not be legally sold in the State of Florida.

Threfore, all dealers, or agents are duly notified that the sale, or offering for sale, of this "New Mineral Fer-

tilizer," as a fertilizer, insecticide, or fungicide, will subject them to the penalties of Chapter 4983, Laws of Florida.

W. A. McRAE,
Commissioner of Agriculture.
R. E. ROSE,
State Chemist.

COMMERCIAL FEEDING STUFF.

There has been a slight decrease in the average value of feed stuffs—0.52% in protein; 0.13% in fats; and an increase of 2.02% in starch and sugar (nitrogen free extract) attributed to the larger number of sugar and molasses feeds now used.

A larger percentage of excess—0.20% above guarantee is found, with a corresponding decrease in deficiencies—0.20% below guarantee.

The market price of mixed feed, as well as whole grain, has materially increased—corn, from $30 to $35 per ton.

There were imported into the State 34,209 tons of mixed feed (exclusive of corn, oats and hay, not subject to inspection), which at $37.50 per ton, shows our people expended the enormous sum of $1,282,837—for mixed feeds, in addition to the large quantities of corn, oats and hay imported.

In previous reports I have called attention to this abnormal condition, and to the fact that all such feeds—hay, corn and oats and mixed feed—could be produced economically in Florida, of superior quality to that imported.

Florida Forage crops are equal to, and in many instances superior to that imported, while in her cotton seed meal, beggar weed, cow peas and velvet beans, she has superior protein feds. Japanese cane, rice, natal, rhodes and native grasses, carbohydrates of superior

quality, can also be produced in large amount, at small cost, for culture and harvest.

No state has a greater variety of pasture and forage crops, of excellent quality, that can be, and are produced at minimum cost; this enormous annual sum paid paid for imported feed stuff, of less value per ton, can and should be produced at home, to say nothing of the cost of freight and profits to importers, saved by this home production.

IMMATURE CITRUS FRUIT.

There were but few attachments, or seizures, under this Law, during the season of 1913.

By far the larger number of our citrus growers and shippers are law abiding and heartily in favor of the Law.

A large number of such provided themselves with the necessary apparatus by which to determine the maturity of their fruit under the standard fixed by the Legislature, and thus informed themselves as to the maturity of their fruit before shipment.

The Citrus Fruit Inspectors, Messrs. J. B. Pylant, Bartow; W. J. Edwards, Ocala; J. W. Knight, of Floral City; and N. O. Penny, of Vero, all practical orange growers, competent, reliable and trustworthy men, of good common sense, familiar with citrus fruit, performed their rather delicate and onerous duties, to the satisfaction of the department, and the vast majority of the growers.

Only in such cases, wherein a very palpable effort to evade the Law was evident, were attachments made.

With but one exception the Inspectors' "field tests" were upheld by analysis by the State Laboratory. In this case, the Inspector's "field test" varied but 0.06% from the analytical results under laboratory conditions, showing the accuracy of the "field test," and skill of the Inspector in its application.

In those cases where attachments were ordered, the fruit unquestionably contained a much larger percentage of acid than allowed by law, and was undoubtedly "immature and unfit for consumption."

Replevin of Immature Fruit.

The replevin of illegal, adulterated, misbranded and deleterious food stuffs, attached by Inspectors and placed in the custody of the Sheriff of the County, has in the case of citrus fruit, made the attempt to enforce the law, farcical.

I would respectfully call your attention to this evident miscarriage of justice, and the necessity of having the proper officer resist the replevin of such goods found to be illegal, and under the law unfit for consumption.

In this connection, I am pleased to say, the position of this Division of the Agricultural Department, is sustained by the Attorney General, who, in an opinion dated November 18, says:

> "In view of this rule and the great public importance of the question, I would suggest that the proper course for your Department (the Agricultural Department) to pursue would be to assume the statute valid until declared invalid by the highest court of the State."

In view of the fact that goods attached by Inspectors, under Section 8, of Chapter 6541—the Pure Food and Drugs Law—and after analysis by the State Chemist, showing them to be illegal, immature and unwholesome, as defined in Chapter 6236, and Chapter 6515, Laws of Florida, have been replevined, without resistance, and sold or shipped for consumption, I respectfully call your attention to this very important matter, on which depends the proper enforcement of the Pure Food Law of the State and the protection of our citizens from adulterated,

misbranded, immature, unwholesome or deleterious foods and drugs.

Operation of the Citrus Fruit Law.

During the inspection period—September 1st to November 5th—few shipments of immature citrus fruit were made. Prices obtained were satisfactory, and the market good. However, at the close of the Inspection period, large shipments were made of unripe, immature fruit, resulting in a disastrous reduction of prices, which affected not only the inferior, immature fruit, but also mature and desirable fruit.

That a "color test" is unreliable and misleading, depending on personal opinion, prejudice, or interest, is apparent. That the dual standard—"color and acid test"—allows the shipment of immature fruit, has been established by the experience of the season.

That the standard of maturity recommended by the Commission, and approved by the various citrus growers organizations, should be applicable to all fruit, irrespective of color, and that the inspection period should extend from September 1st to December 1st of each year, has been fully demonstrated by this season's experience, as clearly demonstrated by the exhaustive study of the question by the State Experiment Station, various commercial laboratories and the State Laboratory.

Cost of Citrus Fruit Inspection.

The total cost of the inspection, from September 1st to November 5th (two and one sixth months), for Inspectors, including traveling expenses, apparatus and supplies, was $2,134.96, or an average for each Inspector of $200.81 (including apparatus and analytical work) per month, leaving a balance of $365.04 in the fund appropriated. Considering the large territory covered, the

active work demanded, and its importance to the state's principal industry, it has been very economical.

Recommendation..

I would recommend, therefore, that the standard of 1.30% of maximum acid for all oranges, and 1.75% for all grapefruit, irrespective of color; as recommended by the Commission, and approved by the organized orange growers of the State; be made the legal standard. That at least eight competent Inspectors be employed, the inspection districts being decreased in size proportionately, and that the inspection period be extended to December 31st of each year.

FLORIDA MUCK LANDS

In all parts of the State are found muck beds, in areas of from a few acres to tracts of hundreds or thousands of acres. These lands are the accumulated vegetable deposits of ages, composed of more or less decayed aquatic growth, particularly saw grass, rushes, ferns and similar plants. A large number of these muck beds are susceptable of perfect drainage.

When properly drained to a depth of not less than three feet from the surface—the deepr the better—allowing the air to replace the water, they rapidly decompose and become productive, as do similar soils in all states of the Union.

Many of these beds, however, can not be properly drained. The surface water may be removed (partial drainage), leaving the surface dry at times, though the sub-soil—one or two feet below the dry surface—is still saturated with sour, stagnant water. Such partial drainage has lead to much disappointment and generally total failure of ordinary crops.

Without perfect drainage to a depth of at least three feet, such soils will not produce paying crops. However,

these lands may be made valuable as a manure, by proper treatment, oxidation, or rotting, with the addition of phosphate and potash they can be composted, and thus become a manure equal to, and often superior to the same quantity of good stable manure, a most valuable addition to the surrounding sandy soil, adding not only the nitrogen in the muck (Ammonia), but also the added phosphate and potash, together with a large amount of "humus," so generally required by our ordinary sandy soils, thus adding to its water holding powers, and providing a medium for the growth of various useful bacteria, necessary in all fertile soils, without which plant foods can not be prepared nor assimulated.

Good average muck contains two to three per cent of nitrogen on a dry basis. However, green, raw muck holds from 60 to 90 per cent of water as dug. Hence it requires 12,000 to 18,000 pounds of raw muck to make a ton of dry material. As it rots (or oxidizes) it parts with a large portion of this water.

Decay can be hastened and the nitrogen made more available by the addition of 500 pounds of 16 per cent Acid Phosphate and 100 pounds of 50 per cent Sulfate of Potash, to each cord of muck. The addition of 500 or more pounds of stable manure will hasten decomposition and add to the mass an abundance of the necessary nitrogenous bacteria. The heap should be kept moist—not allowed to heat, dry and "fire fang," turning it wherever necessary, to prevent excessive heat. Such a properly built compost heap will yield a manure equal or superior to the best stable manure, adding in addition to the plant foods, nitrogen, phosphate and potash, also humus—a necessary medium for the growth of the "nitro-germs," absolutely essential in all fertile productive soils, the added potash and phosphates being necessary not only to assist in "breaking up" the muck, but also as a medium for the growth of the "nitro-germs" or bacteria.

Peat, or muck, used as bedding for live stock of all kinds, liberally spread in the barn yard, will largely add to the compost heap, on the size and quality of which largely depends the success of the farm, orchard, or grove, and particularly the truck patch and garden.

Farmer's and Trucker's Bulletins.

I would suggest to the truckers, orchardists and farmers of the State, particularly those who have recently come into the State and are not familiar with Florida soils and conditions, and the use of commercial fertilizers, so necessary and so profitably used in the State, that they write to the Florida Agricultural Experiment Station, at Gainesville, Florida, for the various valuable bulletins on subjects particularly fitted to Florida conditions. Also to write to the Secretary of Agriculture, Washington, D. C., for a list of Farmer's Bulletins, many of which are devoted to Florida conditions. These publications can be had free of cost on application and contain information of great value to the trucker, the orange grower, the stock man and the farmer.

Respectfully submitted.

R. E. ROSE,
State Chemist.

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 his 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 transmitting "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 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. These duplicate samples will be preserved for two months from 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 the 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 of 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 sample must not be less than one half pound, in a can or bottle, sealed and addressed to the Commissioner of Agriculture. The sender, name and address must also be on the package, this rule applying to special samples of fertilizers or commercial feeding stuff.*

A onepound 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 sacks 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.*

SOIL ANALYSIS.

We frequently have samples of soil sent in for analysis and a request to advise as to the best methods of fertilizing.

Excepting in extreme cases, such as Heavy Clays, Pure Sand and Muck Lands, there is but little information to be derived from a soil analysis that would be of benefit to farmers. So much depends on tilth, drainage, culture and other physical conditions that an analysis made under laboratory conditions is of little value.

A chemical analysis of a soil may indicate a very fer-

tile soil, rich in plant food, while the facts are the soils are not productive.

This is instanced by the rich Sawgrass muck lands and river bottoms of the State that are fertile chemically, but not productive until properly drained; also, by the arid lands of the west, rich in the elements of plant food, but not productive until irrigated.

Other soils, with less plant food, but on account of proper physical conditions, culture and tilth, are exceedingly productive.

The average of thousands of analysis of Florida soils made by the Agricultural Experiment Station and the State Laboratory is as follows:

Nitrogen (per cent.).....0.0413
Potash (per cent.).....0.0091
Phosphoric Acid (per cent.).....0.1635

This is a fair average of all of the Norfolk and Portsmouth soil series of the State, which comprise by far the greater portion of the State.

In this connection we quote from the report of the Indiana Agricultural Experiment Station, Purdue University, Lafayette, Ind., 1908, as follows:

"Soil Analysis of Little Value in Showing Fertilizer Requirements.—The Chemical Department is called upon to answer hundreds of letters of inquiry in relation to agricultural chemical problems from people all over the State. In this connection it might be well to say that there is a widespread idea that the chemist can analyze a sample of soil and, without further knowledge of the conditions, write out a prescription of a fertilizer which will fill the needs of that particular soil.

"The Experiment Station does not analyze samples of soil to determine the fertilizer requirements. There is no chemical method known that will show reliably the availability of the plant food elements present in the soil, as this is a variable factor, influenced by the kind of crop, the type of soil, the climate and biological conditions;

hence, we do not recommend this method of testing soil."

The method recommended by the Indiana Station is the field fertilizer test or plot system, in which long, narrow strips of the field to be tested are measured off side by side. The crop is planted uniformly over each. Different fertilizers are applied to the different plots, every third or fourth one being left unfertilized. The produce from these plots is harvested separately and weighed. In this manner the farmer can tell what fertilizer is best suited for his needs. As climatic conditions may influence the yield with different fertilizers, it is best to carry on such tests for more than one year before drawing definite conclusions. There is positively no easier or shorter method of testing the soil that we feel safe in recommending.

Soil can be greatly improved by an intelligent rotation of crops, the conservation of stable manure, and the use of some kind of commercial fertilizer. Farmers need have no fear that the proper application of commercial fertilizer will injure the land.

WATER ANALYSIS.

We frequently analyze water for public use—city, town and neighborhood supplies; springs and artesian wells in which the public is interested; when some economic question, boiler, laundry or other industrial use is to be decided.

WE DO NOT ANALYZE WATER FOR INDIVIDUAL ACCOUNT WHEREIN THE PUBLIC IS NOT INTERESTED. SUCH SAMPLES SHOULD BE SENT TO A COMMERCIAL LABORATORY. THE STATE LABORATORY DOES NOT COMPETE WITH COMMERCIAL LABORATORIES.

Also we do not make bacteriological examinations nor

examinations for disease germs. Such examinations and analyses are made by the State Board of Health at Jacksonville.

We do not make a sanitary analysis, nor a complete quantitative determination (separating each mineral and stating the quantity thereof).

Such an analysis would be costly in time and labor, and of no real value to the inquirer. We determine the total dissolved solids in the sample, and report them as parts per 1,000,000, naming the principal ingredients in the order of their predominance.

We find Calcium Carbonate (lime), Sodium Chloride (salt-, Magnesium Sulphate (epsom salts), Silica (sand), and Iron, is the general order of their predominance, though on the coast, where the total dissolved solids amounts to 5,000 or more parts per 1,000,000, Sodium Chloride (salt) is the predominant substance.

From a knowledge of the chemical analysis of a water, unaccompanied by any further information, no conclusion as to the potability and healthfulness of the water can be deduced.

Therefore, we require the following information to be given in regard to the source of the water.

(1). The source of the water: spring lake river, driven well, dug well, bored well, artesian well, or flowing well; and also the depth of the water surface below the top of the soil, and in cased wells the depth of the casing.

(2). The locality of the source of the water: town, city or village; or the section, township and range.

(3). The proposed use of the water; city supply, domestic use, laundry, boiler, irrigation or other industrial use.

(4). No sample of water will be analyzed unless the name and address of the sender is on the package for identification.

We require two gallons of each sample of water, in a

new jug, stopped with a new cork, and sent by prepaid express. We will not accept any sample of water for analysis not in a new jug. Vessels previously used for other purposes are never properly cleaned for sending samples of water for analysis. Corks, once used for other substances (molasses, vinegar, whiskey, kerosene, etc.), are never properly cleaned. In sampling a well water, the stagnant water in the pump must first be pumped off. The jug must first be rinsed with the water to be sampled, emptied, and then filed. A sample of spring, river or lake water is best taken (after rinsing the jug), by allowing the jug to fill after immersion some distance under the surface near the center of the body of water.

NOTE.—We find the waters of the State—springs, wells, driven wells and artesian wells—generally very pure and wholesome, with but little mineral impurity and that such as is not harmful. Except in cases of gross carelessness, in allowing surface water to contaminate the well or spring, the waters of the State are pure and wholesome. The deep wells of the State are noted for their purity and healthfulness.

ANALYSIS OF FOODS AND DRUGS.

Samples of Foods and Drugs are drawn under special regulations. Application should be made to the Commissioner of Agriculture or State Chemist for the necessary blanks, instructions, etc., for drawing and transmitting samples of foods and drugs, including drinks of all kinds.

COPIES OF LAWS, RULES AND REGULATIONS, AND STANDARDS.

Citizens of the State interested in fertilizers, foods and drugs, and stock feed, can obtain, free of charge, the respective Laws, including Rules and Regulations and

Standards, by applying to the Commissioner of Agriculture or State Chemist. Application for the Quarterly Bulletin of the State Department of Agriculture should also be made to the Commissioner of Agriculture or State Chemist. The Bulletins of the Florida Agricultural Experiment Station can be had by application to the Director at Gainesville.

INSTRUCTIONS TO MANUFACTURERS AND DEALERS.

Each package of Commercial Fertilizer, and each package of Commercial Feeding Stuff, must have, securely attached thereto, a tag with the guaranteed analysis required by law and the stamp showing the payment of the inspector's fee. This provision of the law, Section 3 of both laws—will be rigidly enforced.

Manufacturers and dealers will be required to properly tag and stamp each package of Commercial Fertilizer or Commercial Feeding Stuff under penalty as fixed in Section 6 of both laws. Tags shall be attached to the top end of each bag, or head of each barrel.

INSTRUCTION TO PURCHASERS.

Purchasers are cautioned to purchase no Commercial Fertilizers or Commercial Feeding Stuff that does not bear on *each package* an analysis tag with the guarantee required by law, and the stamp showing the payment of the inspector's fee. Goods not having the guarantee tag and stamp are irregular and fraudulent; the absence of the guarantee and stamp being evidence that the manufacturer or dealer has not complied with the law. Without the guarantee tag and stamp showing what the goods are guaranteed to contain, the purchaser has no recourse

against the manufacturer or dealer. Such goods are sold illegally and fraudulently, and are generally of little value. All reputable manufacturers and dealers now comply strictly with the law and regulations by placing the guarantee tag and stamp on each package.

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.

REGULATION 42—ANALYSISES MADE BY STATE LABORATORY.

Only such materials as are of public interest are analyzed by the State Laboratory, such as are directed by the Pure Food, the Fertilizer, and Stock Feed Law.

There are no fees or charges of any kind made by the State Laboratory.

The State Laboratory is not permitted to compete with commercial laboratories.

No commercial work of any kind is accepted.

The State Laboratory does not analyse samples for individual account wherein the public is not interested. Such samples should be sent to a commercial laboratory.

REGULATION 43—ANALYSES IN CRIMINAL CASES.

The State Laboratory does not make post mortem examinations, nor furnish evidence in criminal cases, (except as provided by the Pure Food, Fertilizer, and

Stock Feed Laws). Such analyses and examinations are made by specialists employed by the grand jury and prosecuting attorney, the cost being taxed as other criminal costs, by the court.

MARKET PRICES OF CHEMICALS AND FERTILIZING MATERIALS AT FLORIDA SEA PORTS, JANUARY 1, 1914.

Ammoniates.

Nitrate of Soda, 17% Ammonia	$ 60.00
Sulphate of Ammonia, 25% Ammonia	76.00
Dried Blood, 16% Ammonia	64.00
Cynanamid, 18% Ammonia	60.00
Dry Fish Scrap, 10% Ammonia	45.00

Potash.

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, 16% Ammonia, 46% Potash K_2O	120.00
Nitrate of Potash, American, 13% Ammonia, 42% Potash K_2O	100.00
Kainit, Potash, 12% K_2O	13.00
Canada Hardwood Ashes, in bags, 4% K_2O Potash	19.00

Ammonia and Phosphoric Acid

Water Soluable Tankage, 14% Ammonia	$ 47.00

High Grade Tankage, 10% Ammonia, 3½% Phosphoric Acid	45.00
Tankage, 8% Ammonia, 10% Phosphoric Acid	40.00
Low Grade Tankage, 6½% Ammonia, 12% Phosphoric Acid	35.00
Hotel Tankage, 6% Ammonia, 7% Phosphoric Acid	28.00
Sheep Manure, ground, 5% Ammonia	24.00
Imported Fish Guano, 11% Ammonia, 5½% Phosphoric Acid	52.00
Pure Fine Steamed Ground Bone, 3% Ammonia, 22% Phosphoric Acid	31.00
Raw Bone, 4% Ammonia, 22% Phosphoric Acid	37.00
Ground Castor Pomace, 5½% Ammonia, 2% Phosphoric Acid	26.00
Bright Cotton Seed Meal, 7½% Ammonia	30.00
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, 7% Potash	$ 24.00
High Grade Ground Kentucky Tobacco Stems, 2½% Ammonia, 10% Potash	28.00
Tobacco Dust No. 1, 2% Ammonia, 2% Potash	25.00
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 JAN. 1, 1914—FERTILIZER MATERIALS.

AMMONIATES.

Ammonia, sulphate, foreign, prompt....	2.95	@	3.00
futures	2.97½	@	3.05
Ammonia, sulph. domestic, spot.....	2.95	@	—
futures	2.97½	@	3.05
Fish scrap, dried, 11 p. c. ammonia and 14 p. c. bone phosphate, f. o. b. fish works, per unit.....	3.60	&	10
wet, acidulated, 6 p. c. ammonia, 6 p. c. phospheric acid, delivered.....	—	@	—
Ground fish guano, imported, 10 and 11 p. c. ammonia and 15-17 p. c. bone phosphate, c. i. f. N. Y., Balto. or Phila	3.60	&	10
Tankage, 11 p. c. and 15 p. c. f. o. b. Chicago	3.07½	@	—
Tankage, 10 and 20 p. c., f. o. b. Chicago ground	3.00	&	10
Tankage, 9 and 20 p. c., f. o. b. Chicago ground	3.00	&	10
Tankage, concentrated, f. o. b. Chicago, 14 to 15 per cent., f. o. b. Chicago.....	3.10	&	10
Garbage, tankage, f. o. b. Chicago.....	9.00	@	—
Sheep manure, concentrated, f. o. b. Chicago, per ton.....	13.00	@	—
Hoofmeal, f. o. b. Chicago, per unit.....	2.60	@	2.70
Dried blood, 12-13 p. c. ammonia f. o. b. New York	3.30	@	—
Chicago	3.15	@	—
Nitrate of soda, 90 p. c. spot, per 100 lbs	2.20	@	—

futures, 95 p. c..... 2.22½ @ 2.27½

Phosphates.

Acid phosphate, per unit.....	45	@	50
Bones, rough, hard, per ton.....	22.50	@	24.00
soft steamed unground.....	21.50	@	22.00
ground, steamed, 1¼ p. c. ammonia and 60 p. c. bone phosphate.....	20.00	@	21.00
ditto, 3 and 50 p. c.....	23.50	@	24.00
raw ground, 4 p. c. ammonia and 50 p. c. 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 per cent., f. o. b. Port Tampa, Fla....	3.00	@	3.25
Florida high grade phosphate hard rock 77 per cent., f. o. b. Florida ports ...	5.75	@	6.25
Tennessee phosphate rock, f. o. b. Mt. Pleasant, domestic, 78@80 p. c., per ton	5.00	@	5.50
75 p. c. guaranteed	4.75	@	5.00
68@72 p. c.....	4.25	@	4.50

Potashes.

Muriate of potash, 80-85 per cent., basis 80 per cent., in bags.....	38.65	@	—
Muriate of potash, min. 95 per cent., basis 80 per cent., in bags.....	40.15	@	—
Muriate of potash, min. 98 per cent., basis 80 per cent., in bags.....	41.00	@	—
Sulphate of potash, 90-95 per cent., basis 80 per cent., in bags.....	46.80	@	—
Double manure salt, 48-53 per cent., basis 48 per cent., in bags.....	24.95	@	—
Manure salts, min. 20 per cent., K_2O, in			

bulk	13.50	@	—
Hardsalt, min. 16 per cent., K_2O, in bulk	10.85	@	—
Kainit, min. 12.4 per cent., K_2O, in bulk	8.45	@	—

STATE VALUATIONS.

For Available and Insoluble Phosphoric Acid, Ammonia and Potash, for the Season of 1914.

Available Phosphoric Acid	5c a pound
Insoluble Phosphoric Acid	1c a pound
Ammonia (or its equivalent in nitrogen)	17½c 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)	3.50 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 3.50	— 11.97
Potash	7.23 per cent.	x 1.10	— 7.95
Mixing and Baging			— 1.50
Commercial value at sea ports			$27.94

Or a fertilizer analyzing as follows:

Available Phosphoric Acid	8 per cent.	x $1.00	— $ 8.00
Ammonia	2 per cent.	x 3.50	— 7.00
Potash	2 per cent.	x 1.10	— 2.20

Mixing and Bagging.....— 1.50

Commercial value at sea ports.....$18.70

The State 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 journals.

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 to 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 1914 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 Phos. Acid
Florida Pebble Phosphate	.....	.....	26 to 32
Florida Rock Phosphate	.....	.....	33 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	10 to 20
Dissolved Bone	2 to 4	13 to 15	2 to 3

POTASH MATERIALS AND FARM MANURES.

	POUNDS PER HUNDRED			
	Actual Potash	Ammonia	Phos. 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
Phosphoric acid into bone phosphate, multiply by	2.184
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	3.50	1.50
Hominy Feed	4.05	10.50	65.30	7.85	2.55
Corn and Oats, equal parts	5.80	11.15	64.65	5.20	2.25
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
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
Wheat (grain)	1.80	11.90	71.90	2.10	1.80
Dry Jap Sugar Cane...	26.22	2.28	62.55	1.55	2.77
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 Bean Hulls	27.02	7.46	44.56	1.57	4.32
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

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)	6.46 Available
300	pounds of Muriate or (Sulphate) (50 per cent)	7.50 Potash
2,000	State value mixed and bagged	$27.52
	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. Low Grade Sulp. Pot. (26 per cent)	7.80 Potash
2,000		
	State value mixed and bagged	$28.45
	Plant Food per ton	360 pounds

No. 3.

		Per Cent.
300 lbs. of Dried Blood (16 per cent).....	}	3.25 Ammonia
100 lbs of Nitrate of Soda (17 per cent).....	}	8.00 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.....$29.45
Plant Food per ton..... 381 pounds

(B) "FRUIT AND VINE."

No. 1.

Fruits, Melons, Strawberries, Irish Potatoes: Ammonia, 4 per cent., Available Phoshporic 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)...	}	4 Ammonia
500 lbs. of Acid Phosphate (16 per cent).....	}	8 Available
100 lbs. of Nitrate of Soda (17 per cent).....	}	10 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).....	}	4.00 Ammonia
200 lbs. of Sulp. of Am. (25 per cent).....	}	7.70 Available
900 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.....$33.76
Plant Food per ton..... 426 pounds

No. 3.

		Per Cent.
500 lbs. of Cotton Seed Meal (7½-2½-1½).....		
100 lbs. of Nitrate of Soda (17 per cent).....	}	3.97 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.....$33.56
Plant Food per ton ..... 425 pounds

COMMERCIAL STATE VALUES OF FEED STUFF FOR 1914.

For the season of 1914 the following "State values" are fixed as a guide to purchasers, quotation January 1.

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 1914.

Indian corn being the standard @$35.00 per ton.
($1.75 per sack of 100 lbs., 98c per bu. 56 lbs.)

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

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

Protein, 4.8c. per pound .....96c. per unit
Starch and Sugar, 1.55c. per pound .....31c. per unit
Fats, 3.5c. per pound .....70c. per unit

Example No. 1.

CORN AND OATS, EQUAL PARTS—

Protein	11.15 x 96c,	$10.71
Starch and Sugar	64.65 x 31c,	$20.04
Fat	5.20 x 70c,	3.64
State value per ton		$34.49

Example No. 2.

Protein	10.50 x 96c,	$10.08
Starch and Sugar	69.60 x 31c,	21.57
Fat	5.40 x 70c,	$ 3.78
State value per ton		$35.43

DEPARTMENT OF AGRICULTURE—DIVISION OF CHEMISTRY.

FERTILIZER SECTION.

R. E. ROSE, State Chemist. SPECIAL FERTILIZER ANALYSES, 1913. 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.			
Dried Sewer Sludge	2890	.....	00.47	0.17	00.64	0.83	.....	H. G. Tinker, Reddick.
Fertilizer	2891	5.70	3.84	9.60	13.44	6.10	10.82	Henry Hires, Dover.
Fertilizer	2892	7.07	6.36	3.60	9.96	4.98	10.55	H. K. Still, Crowsville.
Fertilizer	2893	8.59	7.70	0.88	8.58	4.03	7.91	A. M. Waldron, East Palatka.
Basic Slag	2894	.....	7.77	12.36	20.13	.....	.....	Ivan L. McMullen, Largo.
Fish Guano	2895	.....	3.89	5.89	9.78	11.40	.....	Ivan L. McMullen, Largo.
Fertilizer	2896	9.25	10.05	0.96	11.01	3.47	10.80	H. A. Perry, Pomona.
Fertilizer No. 1 (Armour's Original)	2897	5.45	6.13	1.44	7.57	5.07	5.20	Armour Fertilizer Works, Jacksonville.
Fertilizer No. 2 (Armour's Vegetable.)	2898	7.12	7.41	1.43	8.84	4.18	6.15	Armour Fertilizer Works, Jacksonville.
Fertilizer No. 3 (Tomato Special.)	2899	6.17	6.22	1.32	7.54	5.30	8.62	Armour Fertilizer Works, Jacksonville.
Fertilizer No. 4 (Armour's Irish Potato Special.)	2900	5.52	5.71	0.78	6.49	3.97	9.34	Armour Fertilizer Works, Jacksonville.

Fertilizer No. 5 (Armour's Bone and Potash.)	2901	8.40	7.94	1.36	9.30	5.21	1.41	Armour Fertilizer Works, Jacksonville.
Fertilizer No. 6 (Armour's Star Brand Fertilizer.)	2902	5.48	5.79	1.41	7.20	3.23	6.32	Armour Fertilizer Works, Jacksonville.
Fertilizer	2903	8.80	8.19	0.90	9.09	3.24	10.74	H. A. Perry, Pomona.
Fertilizer	2904	8.38	6.52	0.75	7.27	4.80	7.21	T. B. Glass, Hastings.
Fertilizer	2905	2.11	4.03	7.54	11.57	2.79	4.59	J. A McColl, Bradentown.
Kainit	2906	.....	.....	.....	.....	.....	12.20	American Agricultural Chemical Company, Jacksonville.
Fertilizer	2907	10.54	8.20	0.82	9.02	3.92	10.70	J. A. Anderson, Owens.
Fertilizer No. 1	2908	9.14	5.20	0.86	6.06	4.17	8 90	E. R. Parker, Mulberry.
Fertilizer No. 2	2909	9.02	6.71	1.05	7.76	5.15	11.44	E. R. Parker, Mulberry.
Fertilizer	2910	.....	6.86	2.30	9.16	3.73	14.85	J. H. Smith, Palmetto.
Fertilizer	2911	1.73	5.04	5.80	10.84	2.86	10.23	C. O McLaughlin, Sanford.
Fertilizer	2912	9.56	3.60	2.43	6.03	4.24	10.45	Col. John F. Horr, Jacksonville.
Fertilizer	2913	6.94	6.38	0.64	7.02	4.41	11.04	E. B. Brown, Sanford
Fertilizer	2914	4.59	9.17	1.16	10.33	4.62	10.50	E. B. Brown, Sanford
Fertilizer	2915	.....	6.89	0.68	7.57	4.46	8.32	W. Z. Chappell, Orange Hill.
Fertilizer	2916	6.79	4.36	5.18	9.54	3.96	8.77	John Bolly, Sanford
Fertilizer	2917	7.17	6.96	2.27	9.23	4.94	9.13	J. P. Cowburn, Crescent City.
Fertilizer	2918	9.59	9.21	1.10	10.31	4.35	5.93	O. S. Mills, Live Oak.
Fertilizer	2919	.....	6.00	2.27	8.27	5.27	5.82	J. C. Robinson, Seville.
Fertilizer	2920	7.87	7.70	1.32	9.02	4.29	8.51	C. J. Hunter, Crescent City.
Fertilizer	2921	6.80	7.26	0.13	7.39	4.21	6.65	E. B. Brown, Sanford.
Fertilizer	2923	4.84	5.93	6.73	12.66	2.11	11.16	J. O. Parrish, Parrish.
Fertilizer	2924	9.78	7.17	2.47	9.64	5.10	5.24	H. W. Smith, Bartow.
Fertilizer	2925	9.40	7.08	0.64	7.72	4.03	7.56	H. A. Perry, Pomona.
Cotton Seed Meal	2926	.....	.....	.....	.....	7.83	.....	E. A. Hargrove, Quincy.
Fertilizer No. 2	2927	10.04	7.39	1.25	8.64	2.48	2.46	Campbell Co., Laurel Hill.
Fertilizer No. 3	2928	.....	6.67	1.34	8.01	2.16	2.71	Campbell Co., Laurel Hill.
Tobacco Dust	2929	.....	.....	.....	.....	2.68	6.22	R. A. Clyatt, White City.

NAME, OR BRAND.	Laboratory Number.	Moisture.	Phosphoric Acid.			Ammonia.	Potash (K_2O).	BY WHOM SENT.
			Available.	Insoluble.	Total.			
Ashes No. 1	2930	.....	.....	.....	.....	.....	13.83	W. M. Tallant, Manatee.
Ashes No. 2	2931	.....	.....	.....	.....	.....	3.96	W. M. Tallant, Manatee.
Fertilizer No. 1	2932	.....	6.79	0.86	7.65	.....	5.06	George R. Spooner, Sneads.
Fertilizer No. 2	2933	.....	8.80	1.11	9.91	1.97	2.12	George R. Spooner, Sneads.
Fertilizer No. 3	2934	.....	7.74	1.08	8.82	2.58	2.70	George R. Spooner, Sneads.
Fertilizer No. 1	2935	.....	10.87	3.22	14.09	2.38	0.91	Shelfer & Ellinor, Havana.
Fertilizer No. 2	2936	.....	10.28	1.33	11.61	.....	3.78	Shelfer & Ellinor, Havana.
Fertilizer No. 3	2937	.....	9.40	6.47	15.87	7.94	2.50	Shelfer & Ellinor, Havana.
Fertilizer No. 4	2938	.....	18.94	0.99	19.93	.....	.....	Shelfer & Ellinor, Havana.
Fertilizer No. 5	2939	.....	8.61	4.37	12.98	2.46	2.17	Shelfer & Ellinor, Havana.
Fertilizer No. 1	2940	9.65	8.61	1.01	9.62	0.63	3.43	J. H. Parrish, Cottondale.
Fertilizer No. 2	2941	9.23	8.52	1.11	9.63	2.20	2.21	J. H. Parrish, Cottondale.
Fertilizer No. 3	2942	11.62	11.30	0.77	12.07	0.75	3.38	J. H. Parrish, Cottondale.
Fertilizer No. 4	2943	8.31	8.39	0.70	9.09	2.02	2.33	J. H. Parrish, Cottondale.
Fertilizer No. 1	2944	.....	10.20	5.07	15.27	2.43	1.39	E. B. Shelfer Co., Quincy.
Fertilizer No. 2	2945	.....	9.74	4.95	14.69	6.52	2.29	E. B. Shelfer Co., Quincy.
Fertilizer No. 3	2946	.....	11.12	0.79	11.91	0.70	3.66	E. B. Shelfer Co., Quincy.
Fertilizer	2947	9.05	4.67	10.78	15.45	4.11	6.30	T. D. Fitzgerald, Tampa.
Acid Phosphate	2948	.....	17.11	0.16	17.27	.....	.....	J. L. Robertson, Bristol
Fertilizer	2949	7.18	4.84	8.24	13.08	4.47	7.62	J. O. Parrish, Parrish.

Fertilizer	2950	.....	5.92	6.90	12.82	4.07	6.46	W. E. Bastill, Wauchula.
Fertilizer No. 1	2951	1.68	4.08	7.31	11.39	2.10	8.63	Edison Curry, Bradentown.
Fertilizer No. 2	2952	3.01	4.32	4.26	8.58	3.23	7.95	Edison Curry, Bradentown.
Fertilizer	2953	10.52	11.09	0.61	11.70	2.65	3.03	T. M. Moon, Greenville.
Fertilizer No. 1	2954	8.09	8.28	0.06	8.34	2.92	0.52	Givens & Clary, Laurel Hill.
Fertilizer No. 2	2955	10.81	9.47	0.17	9.64	1.78	2.06	Givens & Clary, Laurel Hill.
Fertilizer No. 3	2956	10.06	9.53	1.59	11.14	2.53	2.10	Givens & Clary, Laurel Hill.
Fertilizer "A"	2957	.....	9.05	00.20	9.25	2.70	7.37	H. E. Spencer, West Palm Beach.
Fertilizer	2958	5.60	7.46	1.28	8.74	4.20	11.15	D. F. DeCoster, Winter Haven.
Nitrate Soda	2959	.....	.....	.....	.....	18.77	.....	W. W. Cary, Crescent City.
Fertilizer	2960	.....	3.15	0.98	4.13	0.61	0.50	C. C. Pledger, Marianna.
Sulfate Ammonia	2961	.....	.....	.....	.....	25.35	.....	S. J. Meares, Anona.
Acid Phosphate	2962	.....	18.54	0.02	18.56	.....	.....	S. J. Meares, Anona.
Fertilizer No. 1	2963	12.39	8.84	0.57	9.41	2.64	2.44	D. R. Moore, Laurel Hill.
Fertilizer No. 2	2964	13.73	8.25	2.10	10.35	2.38	1.90	D. R. Moore, Laurel Hill.
Fertilizer No. 3	2965	12.25	9.57	0.49	10.06	1.87	2.21	D. R. Moore, Laurel Hill.
Fertilizer No. 4	2966	12.32	10.39	0.07	10.46	1.55	1.74	D. R. Moore, Laurel Hill.
Fertilizer	2967	11.05	9.11	0.79	9.90	2.10	3.04	Ed Wang, Laurel Hill.
Fertilizer	2968	10.07	7.73	0.73	8.48	2.19	2.81	Mrs. J. W. Houston, Laurel Hill.
Fertilizer	2969	11.03	8.75	1.20	9.95	2.14	3.18	F. G. Gray, Laurel Hill.
Fertilizer	2970	.....	8.41	0.83	9.24	2.42	3.44	Thos. O. Wolfe, Pollard, Ala.
Fertilizer	2971	7.16	.....	.....	5.05	5.61	10.32	Carroll Dunscombe, Stuart.
Acid Phosphate No. 1	2972	.....	16.55	0.23	16.78	.....	.....	Chas. Bracken, Rock Creek.
Fertilizer No. 2	2973	10.11	0.42	0.22	9.64	2.49	2.40	Chas. Bracken, Rock Creek.
Fertilizer No. 3	2974	10.00	10.62	0.06	10.68	1.62	2.02	Chas. Bracken, Rock Creek.
Ground Bone	2975	.....	.....	.....	22.70	4.40	.....	Miss P. E. Griffis, Tampa.
Fertilizer No. 1	2976	.....	6.22	0.28	6.50	3.04	9.21	E. F. Sperry, Orlando.
Steamed Bone No. 2	2977	.....	.....	.....	23.4%	3.10	.....	E. F. Sperry, Orlando.
Raw Bone No. 3	2978	.....	.....	.....	17.27	5.72	.....	E. F. Sperry, Orlando.
Fertilizer No. 7	2979	8.62	6.19	1.26	7.45	2.85	5.70	Givens & Clary, Laurel Hill.
Fertilizer	2980	.....	9.63	0.84	10.47	2.00	3.32	M. M. Grimes, Laurel Hill.

NAME, OR BRAND.	Laboratory Number.	Moisture.	Phosphoric Acid.			Ammonia.	Potash (K_2O.)	BY WHOM SENT.
			Available.	Insoluble.	Total.			
Fertilizer	2981	7.94	7.58	0.96	8.54	3.10	5.45	E. J. Waddell, Laurel Hill.
Fertilizer	2982	13.14	11.85	0.62	12.47	2.34	1.36	G. W. Melvin, Holt.
Fertilizer No. 4	2983	11.33	8.69	0.86	9.55	2.31	1.90	Givens & Clary, Laurel Hill.
Fertilizer No. 5	2984	10.96	9.77	0.95	10.72	1.87	1.42	Givens & Clary, Laurel Hill.
Fertilizer No. 6	2985	11.14	9.84	1.45	11.29	2.31	2.83	Givens & Clary, Laurel Hill.
Fertilizer	2986	12.21	8.07	2.51	10.58	2.30	1.86	R. L. McDonald, Sullivan.
Fertilizer	2987	12.16	9.97	0.42	10.39	2.58	1.96	H. P. Harris, Crestview.
Fertilizer	2988	8.40	8.09	1.97	10.06	4.59	8.05	E. H. Folk, Tampa.
Fertilizer	2989	8.72	6.94	0.41	7.35	4.15	7.60	H. A. Perry, Pomona.
Fertilizer	2990	.....	12.82	0.03	12.85	2.67	1.63	J. M. Johns, Sexton.
Acid Phosphate No. 1	2991	.....	16.32	0.39	16.71	.....	.....	P. B. Senterfitt, Laurel Hill.
Fertilizer No. 2	2992	.....	7.79	0.52	8.31	2.54	1.69	P. B. Senterfitt, Laurel Hill.
Fertilizer No. 3	2993	.....	9.41	1.15	10.56	2.28	2.19	P. B. Senterfitt, Laurel Hill.
Fertilizer	2994	6.99	4.63	0.58	5.21	4.38	6.08	Wm. Beck, Kenwood.
Fertilizer	2995	7.99	6.71	1.15	7.86	4.71	5.64	Frank Turner, Parrish.
Fertilizer	2996	.....	6.39	0.90	7.29	4.09	8.34	W. R. Sellers, Spuds.
Fertilizer No. 1	2997	11.71	8.46	0.32	8.78	2.29	3.35	L. M. Griffin, Blountstown.
Fertilizer No. 2	2998	14.42	10.23	0.29	10.52	3.21	4.40	L. M. Griffin, Blountstown.
Fertilizer No. 1	2999	10.04	10.27	1.44	11.71	2.44	2.35	L. Adams, Glendale.
Fertilizer No. 2	3000	12.50	10.25	1.52	11.77	3.11	2.06	L. Adams, Glendale.
Fertilizer No. 3	3001	9.91	10.30	1.54	11.84	2.42	2.09	L. Adams, Glendale.

Fertilizer	3002	8.62	9.18	0.25	9.43	4.62	7.77	Z. C. Chambliss, Ocala.
Fertilizer	3003	12.52	9.78	0.35	10.13	2.15	5.62	Willis Hall ,Sparr.
Fertilizer	3004	.....	15.57	0.32	15.89	1.06	0.38	Milton Cash House, Milton.
Fertilizer	3005	11.94	9.49	0.19	9.68	2.44	2.04	M. Stevenson, Noma.
Fertilizer	3006	.....	7.78	0.78	8.56	5.04	8.81	Chas. Ericsson, Hallandale.
Sea Bird Guano	3007	.....	14.43	4.11	18.54	4.57	1.11	M. A. Hill, Tarpon Srings.
Fertilizer	3008	.....	9.65	0.86	10.51	3.63	4.85	J. W. Henderson, Luanna.
Vegetable Meal	3009	.....	.....	.....	0.09	3.41	3.02	R. P. Johnson, Orlando.
Fertilizer No. 5	3010	10.17	8.01	0.55	8.56	2.26	3.88	D. R. Moore, Laurel Hill.
Fertilizer	3011	12.92	11.84	0.57	12.41	2.09	1.57	John Smith, Holt.
Fertilizer	3012	13.33	11.77	0.67	12.44	1.95	1.69	John Gibson, Holt.
Fertilizer	3013	13.64	10.60	0.55	11.15	2.28	2.00	G. E. Townson, Holt.
Acid Phosphate	3014	.....	16.49	0.85	17.34	.....	.....	J. S. Howell, Chumuckla.
Acid Phosphate	3015	.....	17.68	1.06	18.74	.....	.....	O. A. Gavin, Laurel Hill.
Fertilizer	3016	.....	10.43	0.49	10.92	1.85	3.61	O. A. Gavin, Laurel Hill.
Fertilizer	3017	6.43	6.90	0.76	7.66	2.17	10.02	A. G. Green, Starke.
Fertilizer	3018	5.19	6.16	8.90	15.06	4.14	7.3a	W. H. Quiston, Parrish.
Dried Blood	3019	.....	.....	.....	.....	3.96	.....	H. Dell, Pensacola.
Fertilizer No. 1	3020	12.22	9.64	0.94	10.58	3.88	7.27	J. C. Smith, Little River.
Fertilizer No. 2	3021	14.01	6.69	1.10	7.79	4.47	5.24	J. C. Smith, Little River.
Bird Guano	3022	.....	.....	.....	17.87	8.04	1.73	L. Ferguson, Tarpon Springs.
Fish Scrap	3023	.....	.....	.....	20.18	7.04	.....	E. E. Saunders & Co., Pensacola.
Fertilizer	3024	.....	7.52	0.37	7.89	2.54	4.01	G. W. Ray, Kendrick.
Fertilizer	3025	.....	10.03	1.12	11.15	2.53	2.42	J. M. Givens, Laurel Hill.
Fertilizer No. 1	3026	9.59	9.62	2.83	12.46	3.18	1.69	J. W. Mathews, Faceville, Ga.
Acid Phosphate No. 2	3027	.....	18.40	0.10	18.50	.....	.....	J. W. Mathews, Faceville, Ga.
Acid Phosphate No. 1	3028	.....	18.49	0.11	18.60	.....	.....	W. H. Mathews, Faceville, Ga.
Fertilizer No. 2	3029	8.86	7.30	3.04	10.34	3.28	3.18	W. H. Mathews, Faceville, Ga.
Fertilizer	3030	10.49	12.22	0.34	12.56	2.53	1.99	J. D. Kelly, Laurel Hill.
Fertilizer No. 1	3031	.....	9.53	0.60	10.13	2.50	2.44	W. D. Locke, Laurel Hill.
Fertilizer No. 2	3032	.....	7.91	0.83	8.74	2.97	3.55	W. D. Locke, Laurel Hill.

NAME, OR BRAND.	Laboratory Number.	Moisture.	Phosphoric Acid.			Ammonia.	Potash (K_2O.)	BY WHOM SENT.
			Available.	Insoluble.	Total.			
Fish Scrap "X"	3033	.....	.....	.....	4.05	14.56	.....	J. C. Barrow, Ft. Myers.
Fish Scrap "XI"	3034	.....	.....	.....	1.26	14.83	.....	J. C. Barrow, Ft. Myers.
Fertilizer	3035	9.76	5.40	0.57	5.97	5.72	4.59	C. H. Lundy, Parrish.
Fertilizer No. 1	3036	.....	7.03	0.81	7.84	4.02	8.78	H. G. Ballard, Byrd.
Fertilizer No. 2	3037	7.64	7.51	1.01	8.52	4.11	7.25	H. G. Ballard, Byrd.
Fertilizer No. 3	3038	5.93	7.47	1.48	8.95	4.97	8.16	H. G. Ballard, Byrd.
Fertilizer No. 4	3039	7.41	8.21	1.21	9.42	4.42	7.08	H. G. Ballard, Byrd.
Bird Guano No. 1	3040	.....	.....	.....	19.95	4.91	1.38	B. E. Chapman, Tampa.
Bird Guano No. 2	3041	.....	.....	.....	22.47	7.14	1.82	B. E. Chapman, Tampa.
Fertilizer	3042	15.86	5.98	0.94	6.92	2.89	9.07	B. B. Crum, Fulford.
Fertilizer No. 1	3043	.....	9.77	0.04	9.81	1.97	4.85	J. F. Faircloth, Dorcas.
Acid Phosphate No. 2	3044	.....	17.20	0.07	17.27	.....	.....	J. F. Faircloth, Dorcas.
Fertilizer	3045	9.61	6.58	0.80	7.38	2.92	5.08	A. W. Shurette, Laurel Hill.
Fertilizer	3046	15.93	11.56	0.41	11.97	2.04	1.69	W. J. Jones, Holt.
Fertilizer	3047	10.76	8.77	1.33	10.10	2.98	2.27	Martin Wang, Laurel Hill.
Fertilizer	3048	.....	11.21	0.92	12.13	2.20	2.04	Frank Riley, Holt.
Fertilizer	3049	.....	7.04	1.05	8.09	4.21	7.31	L. C. Canova, East Palatka.
Fertilizer No. 1	3050	.....	11.24	0.68	11.92	.....	4.36	J. M. Morgan, Cottondale.
Fertilizer No. 2	3051	6.96	8.82	1.49	10.31	1.11	7.46	J. M. Morgan, Cottondale.
Fertilizer No. 3	3052	6.96	10.05	2.25	12.30	1.59	5.89	J. M. Morgan, Cottondale.

Fertilizer	3053	.....	6.02	0.97	6.99	4.10	8.51	F. J. Fearnside, Palatka.
Acid Phosphate	3054	.....	15.30	0.96	16.26	.....	.....	W. L. Hagood, Faceville, Ga.
Nitrate Soda	3055	.....	.....	.....	.....	18.97	.....	J. P. Rasmusen, Bradentown.
Fertilizer	3056	5.98	7.37	1.78	9.15	4.33	6.44	R. F. Rigdon, Palatka.
Fertilizer	3057	10.15	10.37	0.22	11.09	4.37	4.40	H. T. Smith, Berrydale.
Acid Phosphate	3058	.....	17.86	0.36	18.22	.....	.....	C. B. Whiddon, Chattahoochee.
Fertilizer	3059	.....	10.79	1.33	12.12	2.45	2.00	H. A. Clark, Laurel Hill.
Fertilizer	3060	5.17	5.81	0.31	6.12	2.99	7.79	I. A. Pitt, Minneola.
Fertilizer	3061	5.25	7.64	1.71	9.35	4.56	8.98	E. B. Brown, Sanford.
Fertilizer No. 1	3062	12.67	10.55	0.33	10.88	2.00	2.70	R. A. Milligan, Laurel Hill.
Fertilizer No. 2	3063	13.18	12.18	0.49	12.67	1.91	3.55	R. A. Milligan, Laurel Hill.
Fertilizer No. 3	3064	11.90	10.15	0.51	10.66	2.10	4.01	R. A. Milligan, Laurel Hill.
Sea Bird Guano	3065	.....	.....	.....	17.78	12.33	1.63	W. F. Ferguson, Tarpon Springs.
Fertilizer	3066	10.93	11.18	0.76	11.94	1.94	2.15	S. R. Fowler, Laurel Hill.
Fertilizer No. 1	3067	6.68	7.75	1.24	8.99	4.24	6.68	J. A. Townsend, Glen St. Mary.
Fertilizer No. 1	3068	11.89	10.36	1.18	11.54	2.30	2.71	A. O. Botts, Botts.
Fertilizer No. 2	3069	10.98	11.47	1.32	12.79	2.15	1.90	A. O. Botts, Botts.
Fertilizer No. 1	3070	10.01	9.64	0.48	10.12	2.10	3.96	R. L. Bishop, Berrydale.
Fertilizer No. 2	3071	9.96	11.76	1.24	13.10	2.25	1.96	R. L. Bishop, Berrydale.
Fertilizer No. 1	3072	5.65	14.05	0.73	14.78	.....	.....	Isaac Bishop, Berrydale.
Fertilizer No. 2	3073	8.57	12.29	0.15	12.44	2.12	1.67	Isaac Bishop, Berrydale.
Fertilizer No. 2	3074	12.52	8.69	0.20	8.98	5.00	2.52	J. A. Townsend, Glen St. Mary.
"Blood Meal"	3075	.....	.....	.....	.....	16.70	.....	W. D. Eaton, Jupiter.
Fertilizer	3076	.....	8.30	0.20	8.50	2.67	4.93	J. F. Faircloth, Dorcas.
Fertilizer	3077	8.43	6.96	0.99	7.95	4.85	10.10	J. K. Christian, McIntosh.
Fertilizer No. 1	3078	15.27	11.82	.13	11.95	2.70	3.53	M. L. Hinson, Concord.
Fertilizer No. 2	3079	11.53	8.44	0.25	8.69	3.70	4.76	M. L. Hinson, Concord.
Fertilizer No. 3	3080	12.21	10.36	0.24	10.60	4.60	2.94	M. L. Hinson, Concord.
Fertilizer	3081	5.19	6.58	1.54	8.12	4.32	5.51	G. H. Heath, Byrd.

DEPARTMENT OF AGRICULTURE—DIVISION OF CHEMISTRY.

SPECIAL FERTILIZER ANALYSES, 1913.

R. E. ROSE, State Chemist. FERTILIZER SECTION. FRANK T. WILSON, 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.	Moisture.	Phosphoric Acid.			Ammonia.	Potash (K_2O).	BY WHOM SENT.
			Available.	Insoluble.	Total.			
Fertilizer	3082	4.54	5.04	0.96	6.00	4.20	8.91	Green & Robertson, Rideout.
Fertilizer	3083	9.00	9.78	1.02	10.80	3.22	6.35	Jno. A. Bailey, Channuckla.
Sea Fowl Guano	3084	.....	.....	.....	.....	4.80	.....	B. F. Chapman, Tampa.
Ground Castor Pomace	3085	.....	.....	.....	.....	5.35	.....	Osceola Fertilizer Co., Jacksonville.
Fertilizer No. 1	3086	7.45	7.83	4.02	11.85	5.13	5.24	Henry W. Smith, Wauchula.
Fertilizer No. 2	3087	7.68	6.25	2.40	8.65	4.53	10.52	Henry W. Smith, Wauchula.
Ashes	3088	.....	.....	.....	.....	.....	0.34	W. S. Tallant, Manatee.
Fertilizer	3089	9.23	7.14	0.78	7.92	5.01	8.15	F. E. Williams, Inverness.
Guano	3090	.....	10.50	1.90	12.40	2.39	1.80	R. H. Ellison, Baker.
Fertilizer	3091	5.39	5.85	0.70	6.55	3.20	7.17	D. H. Spencer, Sorrento.
Complete Fertilizer	3092	15.34	9.51	3.80	13.41	4.73	6.17	J. Ed Rauferson, Lily.
Fertilizer	3093	.....	3.65	1.85	5.50	6.15	4.53	C. T. Brown, Delray.
Fertilizer	3094	7.17	6.40	2.55	8.95	5.45	10.66	H. W. Smith, Wauchula.
Treated Muck or Peat (Potash Salts added.)	3095	.....	.....	.....	.....	2.17	6.65	Robert Ranson, Pablo Beach.

Fertilizer	3096	8.52	7.25	0.85	8.10	5.31	7.94	F. E. Williams, Inverness.
Fertilizer No. 3	3097	6.31	11.40	0.10	11.50	3.44	11.88	Henry W. Smith, Wauchula.
Fertilizer	3098	1.74	5.70	4.95	10.74	.....	.....	H. G. Gucio, Venice.
Castor Pomace	3099	.....	.....	.....	.....	5.62	.....	Osceola Fertilizer Co., Jacksonville.
Fertilizer	3100	7.67	8.00	2.80	10.80	4.43	8.00	J. T. Rousseau, Largo.
Hardwood and Hickory Ashes	3101	.....	.....	.....	.....	.....	1.45	J. R. Williams, Citra.
Fertilizer No. 1 (C. S. M.)	3102	.....	.....	.....	.....	8.00	.....	J. M. Nobles, Berrydale.
Fertilizer No. 2 (complete)	3103	8.03	12.02	0.43	12.45	2.63	2.36	J. M. Nobles, Berrydale.
Fertilizer No. 3 (Kainit)	3104	.....	.....	.....	.....	.....	11.32	J. M. Nobles, Berrydale.
Guano	3105	.....	9.25	0.35	9.60	2.35	1.88	J. C. Stewart, Bascom.
Fertilizer	3106	4.20	8.90	2.25	11.15	4.54	7.91	T. E. Mobley, Hastings.
Fertilizer	3107	4.24	8.72	2.48	11.20	4.49	7.46	J. A. Gladney, Hastings.
Fertilizer	3108	5.43	8.20	3.20	11.40	5.03	6.92	J. J. Brown, Hastings.
Fertilizer	3109	8.38	6.21	1.14	7.35	2.38	9.77	L. J. Hartley, Jr., Longwood.
Ashes	3110	.....	.....	.....	.....	.....	3.34	B. F. Blackburn, Osprey.
No. 1 Guano	3111	10.45	10.00	0.00	10.00	3.45	3.08	E. M. Pitts, Red Rock.
No. 2 Phosphate	3112	.....	16.25	1.15	17.40	.....	.....	E. M. Pitts, Red Rock.
No. 1 Fertilizer	3113	11.80	9.20	1.60	10.80	2.78	1.75	J. W. Kelly, Otahlite.
Guano	3114	.....	9.23	1.27	10.50	2.43	3.46	J. M. Deshazo, Mossy Head.
Fertilizer	3115	9.02	6.95	0.95	7.90	3.98	6.54	M. Merrett, West Apopka.
Fertilizer	3116	.....	12.62	0.38	13.00	.....	3.71	J. W. Peddle, Bristol.
Acid Phosphate	3117	.....	18.55	1.05	19.60	.....	.....	J. B. Huggins, Bluff Springs.
Fertilizer	3118	.....	10.65	0.45	11.10	3.95	3.88	B. D. Mayo, Pollard.
Ashes	3119	.....	.....	.....	.....	.....	3.14	B. F. Blackburn, Osprey.
Fertilizer No. 1	3120	8.44	7.87	1.55	8.02	3.23	9.07	C. F. Kistner, Crystal River.
Fertilizer No. 2	3121	6.71	9.30	0.20	9.50	3.68	7.21	C. F. Kistner, Crystal River.
Fertilizer No. 3	3122	12.04	10.15	0.65	10.80	3.80	5.06	C. F. Kistner, Crystal River.
Fertilizer	3123	11.65	6.60	0.80	7.40	3.65	8.28	R. P. Johnson, Orlando.
Fertilizer	3124	.....	9.28	1.70	10.98	1.96	1.20	C. B. Franklin, Gailiver.
Fertilizer	3125	5.88	6.86	0.74	7.60	3.10	10.16	Armour Fertz. Wks., Jacksonville.
Fertilizer	3126	3.53	5.50	0.50	6.00	3.35	8.29	Armour Fertz. Wks., Jacksonville.

NAME, OR BRAND.	Laboratory Number.	Moisture.	Phosphoric Acid.			Ammonia.	Potash (K_2O).	BY WHOM SENT.
			Available.	Insoluble.	Total.			
Fertilizer	3127	6.58	7.90	0.90	8.80	4.45	6.12	Armour Fertz. Wks., Jacksonville.
Fertilizer	3128	4.88	5.83	0.82	6.65	5.28	5.13	Armour Fertz. Wks., Jacksonville.
Fertilizer	3129	5.25	6.90	0.90	7.80	5.55	8.34	Armour Fertz. Wks., Jacksonville.
Fertilizer	3130	.....	7.88	2.20	10.08	3.68	11.68	Nocatee Fruit Co., Nocatee.
Ashes No. 1	3131	.....	.....	.....	.....	.....	0.37	Walter S. Tallant, Manatee.
Ashes No. 2	3132	.....	.....	.....	.....	.....	0.27	Walter S. Tallant, Manatee.
Hardwood Ashes	3133	.....	.....	.....	.....	.....	2.05	R. P. Johnson, Orlando.
Phosphatic Clay (Sea Mud)	3134	.....	.....	.....	1.20	.....	.....	J. Raford Carter, Merritt.
Fertilizer (Basic Slag & Nitrogen.)	3135	.....	4.73	6.87	11.60	3.21	.....	Jno. W. Jourdan, Jacksonville.
Fertilizer No. 1	3136	13.69	9.00	1.80	10.80	2.00	1.20	Chas. B. Franklin, Gulliver.
Fertilizer No. 2	3137	12.87	10.48	1.62	12.10	2.35	2.06	Chas. B. Franklin, Gulliver.
Thomas Phosphate	3138	.....	9.70	7.30	17.00	.....	.....	C. J. Stubbs, Fort Myers, Fla.
Fertilizer	3139	8.11	8.78	3.82	12.60	4.45	1.29	J. W. Jourdan, 321 Ocean St., Jax'ville.
Hardwood Ashes	3140	.....	.....	.....	.....	.....	1.06	L. B. Walden, Manatee, Fla.
Venezuela Goat Manure	3141	13.37	1.20	0.15	1.35	2.13	4.23	T. N. Estridge, Sanford, Fla.
V. C. Special Fertilizer	3142	7.12	5.37	1.95	7.32	5.40	6.48	T. N. Estridge, Sanford, Fla.
Fertilizer	3143	9.15	6.62	1.01	7.65	4.10	5.32	G. S. Hollingsworth, Arcadia, Fla.
Fertilizer	3144	13.29	5.10	6.80	11.90	3.15	7.70	A. W. Carlton, Knights, Fla.
Fertilizer	3145	.....	16.90	0.95	17.85	.....	.....	E. B. Glatzbach, Redland, Fla.
Fertilizer No. 1	3146	10.07	5.65	2.45	8.10	3.80	4.37	J. A. McCollum, Bowling Green, Fla.

Fertilizer No. 2	3147	10.14	5.73	2.62	8.35	3.43	4.42	J. A. McCollum, Bowling Green, Fla.
Canada Hardwood Ashes	3148	.....	.....	.....	.....	.....	2.67	E. B. Rood, Bradentown, Fla.
Fertilizer	3149	5.13	4.88	6.82	11.70	5.68	.....	Independent Fertz. Co., Jacksonville
Special Mixture	3150	5.18	3.75	2.25	6.00	4.23	12.48	E. M. Howard, Auburndale, Fla.
Fertilizer	3151	.....	.....	.....	.....	5.89	5.07	M. C. Britt, Winter Garden, Fla.
Fertilizer	3152	4.56	6.85	10.45	17.30	5.23	.....	T. E. Bughee, Hastings, Fla.
Fertilizer	3153	4.76	7.00	1.00	8.00	5.65	5.92	R. T. Hewitt, Hastings, Fla.
Fertilizer	3154	10.51	4.33	1.32	5.65	4.26	2.81	E. D. Davis, Hastings, Fla.
Fertilizer	3155	4.44	2.85	2.65	5.50	5.15	7.32	Carroll Duncombe, Stuart, Fla.
Fertilizer	3156	1.52	3.80	4.45	8.25	2.75	9.06	J. T. Rousseau, Largo, Fla.
Sheep Manure	3157	.....	.....	.....	0.30	4.80	0.16	A. D. Key, 207 Park Ave., Sanford.
Cotton Seed Meal	3158	.....	.....	.....	.....	7.45	.....	Ira C. Howell, Pensacola, Fla.
Fertilizer	3159	7.54	5.03	4.07	9.10	6.70	11.06	C. E. McLaughlin, Fort Myers, Fla.
Fertilizer	3160	6.19	1.08	0.42	1.50	7.27	14.73	T. B. Glass, Hastings, Fla.
Fertilizer	3161	7.46	6.73	1.02	7.75	5.03	5.75	F. H. Smith, Hastings, Fla.

DEPARTMENT OF AGRICULTURE—DIVISION OF CHEMISTRY.

FERTILIZER SECTION.

R. E. ROSE, State Chemist. OFFICIAL FERTILIZER ANALYSES, 1913. L. HEIMBURGER, Asst. Chemist.

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

Deficiencies Greater than 0.20% are Distinguished by Black Face Type.

NAME, OR BRAND.	Laboratory Number.	ANALYSES	Moisture.	Phosphoric Acid.			Ammonia.	Potash (K_2O).	BY WHOM AND WHERE MANUFACTURED.
				Available.	Insoluble.	Total.			
Mapes Potato Special.....	1891	Guarant'd Analysis	12.00	5.50	2.00	.....	3.50	7.00	Mapes F. & P. Guano Co.,
		Official Analysis...	6.96	6.10	3.71	9.84	3.79	8.63	New York, N. Y.
Mapes Fruit and Vine Manure	1892	Guarant'd Analysis	10.00	5.00	2.00	.....	2.00	10.00	Mapes F. & P. Guano Co.,
		Official Analysis...	8.51	5.49	3.71	9.20	2.48	11.28	New York, N. Y.
Mapes Orange Tree Manure	1893	Guarant'd Analysis	12.00	6.00	2.00	.....	4.00	3.00	Mapes F. & P. Guano Co.,
		Official Analysis...	10.57	6.21	4.46	10.67	4.33	3.66	New York, N. Y.
Germofert Celery Special..	1894	Guarant'd Analysis	5.00	5.00	7.00	12.00	6.00	6.00	Tampa Fertilizer Co.,
		Official Analysis...	4.67	3.36	12.15	15.51	5.75	5.72	Tampa, Fla.
Germofert Orange Tree Grower	1895	Guarant'd Analysis	5.00	3.00	9.00	12.00	4.00	5.00	Tampa Fertilizer Co.,
		Official Analysis...	5.39	4.43	11.33	15.76	3.86	5.95	Tampa, Fla.

Germofert Cabbage Special	1896	Guarant'd Analysis	5.00	5.00	7.00	12.00	6.00	4.00	Tampa Fertilizer Co.,
		Official Analysis...	5.65	3.32	13.32	16.64	4.94	3.26	Tampa, Fla.
Germofert Orange Fruiter Special	1897	Guarant'd Analysis	5.00	3.00	9.00	12.00	2.00	16.00	Tampa Fertilizer Co.,
		Official Analysis...	4.33	4.32	10.07	14.39	2.23	13.75	Tampa, Fla.
Gulf Citrus Special	1898	Guarant'd Analysis	10.00	6.00	1.00	7.00	4.00	8.00	Gulf Fertilizer Co., Tam-
		Official Analysis...	7.94	7.29	2.35	9.64	3.99	8.09	pa, Fla.
Fruit and Vine	1899	Guarant'd Analysis	10.00	6.00	1.00	7.00	3.00	10.00	Gulf Fertilizer Co., Tam-
		Official Analysis...	7.77	7.55	3.18	10.73	3.19	9.48	pa, Fla.
H. G. Va.-Car. Champion Citrus Compound	1900	Guarant'd Analysis	10.00	6.00	1.00	.....	3.00	14.00	Virginia-Carolina Chem.
		Official Analysis...	5.14	6.85	0.85	7.70	2.25	12.00	Co., Sanford, Fla
No. 2 Lettuce and Celery Grower	1901	Guarant'd Analysis	8.00	5.00	1.00	.....	5.00	8.00	Virginia-Carolina Chem.
		Official Analysis...	6.42	5.74	1.42	7.16	5.18	7.79	Co., Sanford, Fla.
Celery Special	1902	Guarant'd Analysis	8.00	6.00	1.00	.....	6.00	8.00	Virginia-Carolina Chem.
		Official Analysis...	7.39	8.38	1.05	9.43	5.25	8.88	Co., Sanford, Fla.
Gaskins' DeSoto Orange Tree Grower	1903	Guarant'd Analysis	8.00	6.00	1.00	.....	5.00	6.50	Virginia-Carolina Chem.
		Official Analysis...	7.89	6.96	0.71	7.66	4.97	5.78	Co., Sanford, Fla.
High Grade Blood & Bone	1904	Guarant'd Analysis	10.00	2.00	1.50	.....	10.00	.....	Independent Fertz. Co.,
		Official Analysis...	.....	4.52	4.02	8.54	9.92	.....	Jacksonville, Fla.
Favorite Non-Ammoniated Special	1905	Guarant'd Analysis	10.00	10.00	1.00	.....	.....	11.00	Independent Fertz. Co.,
		Official Analysis...	8.44	9.30	0.40	9.70	.....	11.36	Jacksonville Fla.
Favorite Lake Melon Special	1906	Guarant'd Analysis	10.00	7.00	1.00	.....	5.00	5.00	Independent Fertz. Co.,
		Official Analysis...	7.87	8.35	1.41	9.76	5.08	5.53	Jacksonville, Fla.

OFFICIAL FERTILIZER ANALYSIS, 1913—(Continued.)

NAME, OR BRAND.	Laboratory Number.	ANALYSES	Moisture.	Phosphoric Acid.			Ammonia.	Potash (K_2O.)	BY WHOM and WHERE MANUFACTURED.
				Available.	Insoluble.	Total.			
Favorite Fruiter Manure..	1907	Guarant'd Analysis	10.00	8.00	0.50	.....	4.00	12.00	Independent Fertz. Co.,
		Official Analysis...	5.90	8.79	0.46	9.25	4.05	11.61	Jacksonville, Fla.
Sulfate Ammonia	1908	Guarant'd Analysis	10.00	.....	.....	.....	25.00	.....	Independent Fertz. Co.,
		Official Analysis...	.....	.....	.....	.....	27.87	.....	Jacksonville, Fla.
Simon Pure No. 2.....	1909	Guarant'd Analysis	8.00	6.00	2.00	.....	4.00	6.00	E. O. Painter Fertz. Co.,
		Official Analysis...	6.72	7.64	2.10	9.74	4.60	7.25	Jacksonville, Fla.
Gem Die Back.....	1910	Guarant'd Analysis	8.00	7.00	.....	.....	.....	13.50	E. O. Painter Fertz. Co.,
		Official Analysis...	7.92	9.00	0.65	9.65	.....	13.05	Jacksonville, Fla.
Gem Potato Manure.....	1911	Guarant'd Analysis	8.00	4.00	1.00	.....	4.00	11.00	E. O. Painter Fertz. Co.,
		Official Analysis...	7.46	5.32	0.53	5.85	5.13	8.16	Jacksonville, Fla.
Gem Watermelon Special..	1912	Guarant'd Analysis	5.00	6.00	2.00	.....	3.00	10.00	E. O. Painter Fertz. Co.,
		Official Analysis...	7.02	6.74	0.51	6.25	3.97	11.54	Jacksonville, Fla.
Armour's Practical Trucker	1913	Guarant'd Analysis	10.00	6.00	1.00	.....	3.00	10.00	Armour Fertz. Works,
		Official Analysis...	6.09	6.30	0.41	6.71	3.16	9.66	Jacksonville, Fla.

DEPARTMENT OF AGRICULTURE—DIVISION OF CHEMISTRY.

FERTILIZER SECTION.

R. E. ROSE, State Chemist. OFFICIAL FERTILIZER ANALYSES, 1913. FRANK T. WILSON, Asst. Chemist.

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

Deficiencies Greater than 0.20% are Distinguished by Black Face Type.

NAME, OR BRAND.	Laboratory Number.	Analyses, Guaranteed and Found.	Moisture.	Phosphoric Acid.			Ammonia.	Potash (K_2O.)	BY WHOM and WHERE MANUFACTURED.
				Available.	Insoluble.	Total.			
Armour Fruit & Vine	1914	Guaranteed	10.00	6.00	1.00	.....	2.50	11.00	Armour Fertilizer Works, Jacksonville, Fla.
		Found.....	3.52	6.49	0.43	6.92	2.69	11.29	
Bean Fertilizer	1915	Guaranteed	10.00	5.00	1.00	.....	5.00	5.00	Armour Fertilizer Works, Jacksonville, Fla.
		Found.....	6.64	6.76	0.82	7.58	4.97	5.04	
Tomato Special	1916	Guaranteed	10.00	6.00	1.00	.....	5.00	8.00	Armour Fertilizer Works, Jacksonville, Fla.
		Found.....	7.60	6.48	0.90	7.38	4.76	8.00	
Goulding's Bone Compound.	1917	Guaranteed	10.00	8.00	1.00	.....	2.00	2.00	American Agricultural Chemical Co., Pensacola, Fla.
		Found.....	12.13	8.12	2.90	11.02	2.35	1.99	
New Mineral Fertilizer.	1918	Guaranteed	.....	....	.....	0.23	.....	2.00	New Mineral Fertilizer Co., Boston, Mass.
		Found.....	0.12	....	.....	0.04	.....	0.00	

NAME, OR BRAND	Laboratory Number.	Analyses, Guaranteed and Found.	Moisture.	Phosphoric Acid.			Ammonia.	Potash (K_2O.)	BY WHOM and WHERE MANUFACTURED.
				Available.	Insoluble.	Total.			
Mapes Orange Tree Manure.	1919	Guaranteed	12.00	6.00	2.00	.....	4.00	3.00	Mapes F. & P. Guano Co., New York, N. Y.
		Found.....	9.92	6.90	3.95	10.85	4.55	3.63	
Mapes Fruit & Vine Manure.	1920	Guaranteed	10.00	5.00	2.00	.....	2.00	10.00	Mapes F. & P. Guano Co., New York, N. Y.
		Found.....	9.03	6.13	1.97	8.10	2.75	10.86	
Mapes Vegetable Manure.	1921	Guaranteed	12.00	6.00	2.00	.....	5.00	2.00	Mapes F. & P. Guano Co., New York, N. Y.
		Found.....	5.46	6.80	3.20	10.00	5.04	5.12	
Ideal Corn Fertilizer	1922	Guaranteed	10.00	8.00	2.00	.....	2.00	6.00	Gulf Chemical Company, Marianna, Fla.
		Found.....	8.11	7.36	1.84	9.20	2.05	7.05	
Dekle's Trucker Guano.	1923	Guaranteed	10.00	7.00	2.00	.....	3.00	8.00	Gulf Chemical Company, Marianna, Fla.
		Found.....	6.27	4.75	2.45	7.20	3.45	9.03	
V. C. Special No. 5..	1924	Guaranteed	8.00	5.00	1.00	.....	5.00	5.00	Virginia-Carolina Chemical Company, Sanford, Fla.
		Found.....	8.18	5.93	1.07	7.00	5.00	4.27	
Number 3	1925	Guaranteed	8.00	6.00	2.00	.....	4.00	10.00	Southern Fertilizer Company, Orlando, Fla.
		Found.....	5.53	6.25	0.15	6.45	3.85	10.42	

Ideal Fruit & Vine	1926	Guaranteed	8.00	6.00	2.00	.....	3.00	10.00	Wilson & Toomer Fertilizer Company, Jacksonville, Fla.
		Found.....	8.98	6.85	1.00	7.85	3.55	8.85	
New Mineral Fertilizer	1927	Guaranteed	.....	....	.....	.23	.....	2.00	New Mineral Fertilizer Company, Boston, Mass.
		Found.....	.....	....	.....	0.15	.....	0.00	
Magnolia Brand.....	1928	Guaranteed	.....	.....	.....	2.50	7.50	1.50	Union Brokerage and Commission Co., Vicksburg, Miss.
		Found.....	.....	.....	.....	.....	7.24	.....	
Cotton Seed Meal...	1929	Guaranteed	.....	.....	.....	2.50	7.50	1.50	Florida Cotton Oil Co., Jacksonville, Fla.
		Found.....	.....	.....	.....	.....	5.70	.....	
Magnolia Brand High Grade C. S. Meal	1930	Guaranteed	.....	.....	.....	2.50	7.50	1.50	Union Brokerage and Commission Co., Vicksburg, Miss.
		Found.....	.....	.....	.....	.....	8.10	.....	
South'n Tree Grower	1931	Guaranteed	8.00	6.00	.....	4.00	.....	8.00	Southern Fertz Co., Orlando, Fla.
		Found.....	8.28	6.40	0.20	6.60	4.18	8.30	
Number One (for young trees)	1932	Guaranteed	8.00	6.00	2.00	.....	5.00	4.00	Southern Fertz. Co., Orlando, Fla.
		Found.....	8.04	6.08	0.62	6.70	5.00	4.91	
Special for Fruit....	1933	Guaranteed	8.00	6.00	1.00	.....	4.00	12.00	Southern Fertz. Co., Orlando, Fla.
		Found.....	6.84	6.93	0.53	7.08	3.87	11.07	
V. C. Fruit and Vine.	1934	Guaranteed	8.00	6.00	1.00	.....	2.50	10.00	Va.-Carolina Chemical Co., Sanford, Fla.
		Found.....	2.49	6.03	0.52	6.55	2.60	9.32	
Superior Orange Tree Fruit & Vine Fertz.	1935	Guaranteed	10.00	6.00	1.00	.....	4.00	12.00	Ocala Fertilizer Co., Ocala, Fla.
		Found.....	2.65	6.18	0.12	6.30	4.50	13.49	
"Superior" General Trucker	1936	Guaranteed	10.00	5.00	1.00	.....	3.00	5.00	Ocala Fertilizer Co., Ocala, Fla.
		Found.....	8.99	5.58	0.07	5.65	3.80	5.39	

NAME, OR BRAND	Laboratory Number.	Analyses, Guaranteed and Found.	Moisture.	Phosphoric Acid.			Ammonia.	Potash (K_2O.)	BY WHOM and WHERE MANUFACTURED.
				Available.	Insoluble.	Total.			
"Superior" Vegetable Fertilizer	1937	Guaranteed	10.00	6.00	1.00	.....	4.00	8.00	Ocala Fertilizer Co., Ocala, Fla.
		Found.....	9.29	7.05	0.15	7.20	4.43	9.77	
Germofert Hi'h Grade Vegetable	1938	Guaranteed	5.00	5.00	7.00	12.00	4.00	6.00	Tampa Fertilizer Co., Tampa, Fla.
		Found.....	5.60	5.15	9.10	14.25	4.28	6.48	
Georgia State Standard Am.Superphos.	1939	Guaranteed	10.00	8.00	1.00	.....	2.00	2.00	Va.-Carolina Chemical Co., Sanford, Fla.
		Found.....	7.74	8.23	1.65	9.88	2.20	2.54	
Dixie Trucker Fertz.	1940	Guaranteed	8.00	6.00	1.00	.....	4.00	8.00	va.-Carolina Chemical Co., Sanford, Fla.
		Found.....	2.92	7.38	0.87	8.25	4.54	7.44	
Potato Special.....	1941	Guaranteed	9.00	5.00	1.00	.....	4.00	10.00	The Gulf Fertilizer Co., Tampa, Fla.
		Found.....	5.95	7.28	1.97	9.25	4.85	12.08	
Sweet Potato Special	1942	Guaranteed	8.00	6.00	1.00	7.00	3.50	5.00	The Gulf Fertilizer Co., Tampa, Fla.
		Found.....	7.36	7.75	4.65	12.40	4.13	5.66	
Gulf Orange Tree Grower	1943	Guaranteed	.....	6.00	1.00	7.00	5.00	5.00	The Gulf Fertilizer Co., Tampa, Fla.
		Found.....	7.62	7.30	4.50	11.80	5.18	6.37	

Vegetable Special...	1944	Guaranteed	10.00	6.00	1.00	7.00	5.00	5.00	The Gulf Fertilizer Co., Tampa, Fla.
		Found.....	8.72	8.35	2.75	11.10	5.20	6.03	
Tankage	1945	Guaranteed	.....	.....	.....	9.38	10.20	.....	Ocala Fertilizer Co., Ocala, Fla.
		Found.....	.....	.....	.....	8.40	11.50	.....	
Standard Fish and Potash	1946	Guaranteed	11.00	4.00	1.00	5.00	5.00	6.00	Standard Fertz. Co., Gainesville, Fla.
		Found.....	13.69	1.85	3.65	5.50	4.39	6.30	
Sweet Potato Special	1947	Guaranteed	10.00	6.00	1.00	7.00	3.00	6.00	Standard Fertz. Co., Gainesville, Fla.
		Found.....	9.06	6.15	0.35	6.50	4.52	6.11	
Standard Vegetable No. 1.....	1948	Guaranteed	10.00	5.00	1.00	6.00	4.00	6.00	Standard Fertz. Co., Gainesville, Fla.
		Found.....	9.28	5.70	0.50	6.20	3.90	6.88	

DEPARTMENT OF AGRICULTURE—DIVISION OF CHEMISTRY.

FEEDING STUFF SECTION.

R. E. ROSE, State Chemist. SPECIAL FEEDING STUFF ANALYSES, 1913. E. PECK GREENE, Asst. Chemist.

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

NAME, OR BRAND.	Laboratory Number.	Fibre.	Protein.	Starch and Sugar. (Nitrogen Free Extr't.)	Fat.	Ash.	BY WHOM SENT.
Mixed Feed	244	4.12	11.23	61.78	5.30	2.37	H. A. Perry, Pomona, Fla.
Mixed Feed No. 128	245	9.07	10.97	61.20	4.32	2.27	Hughes Grocery Co., Florala, Ala.
Cracked Corn	246	1.95	10.39	69.91	4.10	2.05	Hughes Grocery Co., Florala, Ala.
Cotton Seed Meal	247	11.37	39.24	24.92	8.35	6.82	M. W. Carroll, Round Lake Fla.
Golden Cow Feed	248	9.60	19.31	50.87	4.57	5.40	City Milling and Trading Co., Tallahassee, Fla.
Stafolife Feed	249	10.20	10.35	56.70	2.48	5.19	Mrs. H. P. Householder, Arcadia, Fla.
Cotton Seed Meal	250	.....	39.14	.....	.....	.....	Milton Cash House, Milton, Fla.
Stock Feed	251	9.60	10.53	42.66	1.74	6.54	John Nelson, Chipley, Fla.
Cotton Seed Meal No. 1	152	.....	39.58	.....	.....	.....	Campbell Co., Laurel Hill, Fla.
Stafolife Horse Feed	253	12.50	19.50	43.82	2.99	8.00	Groves Lumber Co., Hosford, Fla.
Grain-Falfa Feed	254	12.00	11.41	57.27	3.42	4.23	Groves Lumber Co., Hosford, Fla.
Cotton Seed Meal	255	.....	38.70	.....	.....	.....	J. & O. Altschul Tobacco Co., Quincy Fla.
Cotton Seed Meal	256	.....	39.14	.....	.....	.....	Lake Jackson Mercantile Co., Lake Jackson, Fla.
Cotton Seed Meal	257	.....	38.62	.....	.....	.....	Lake Jackson Mercantile Co., Lake Jackson, Fla.
Cotton Seed Meal	258	.....	39.31	.....	.....	.....	Lake Jackson Mercantile Co., Lake Jackson, Fla.
Cotton Seed Meal	259	.....	39.58	.....	.....	.....	E. C. Behrens, Quincy, Fla.

Wheat Bran	260	9.00	14.48	54.09	2.53	7.25	J. P. Rasmussen, Bradentown, Fla.
Cotton Seed Meal	261	.....	39.84	.....	.....	.....	J. S. Howell, Chumuckla, Fla.
Corn and Oats Feed	262	8.80	9.92	63.34	4.07	3.20	Florida Land Co., Montbrook, Fla.
Mowrah Meal	263	.....	18.02	.....	.....	.....	E. F. Sperry, Orlando, Fla.
Cotton Seed	264	.....	17.90	.....	.....	.....	J. L. Kimbro, Galliver, Fla.
Indian Corn	265	1.92	9.04	73.42	4.25	1.12	J. H. Harp, Crescent City, Fla.
Cotton Seed Meal	266	.....	38.70	.....	.....	.....	B. B. Penton, Chumuckla, Fla.
Cotton Seed Meal	267	.....	36.86	.....	.....	.....	L. Mayer, Pensacola, Fla.
Wheat Bran	268	10.27	15.36	54.15	5.35	5.27	A. Lindholm, Sanford, Fla.
Cotton Seed Meal	269	.....	40.94	.....	.....	.....	Pat Walsh, Havana, Fla.

DEPARTMENT OF AGRICULTURE—DIVISION OF CHEMISTRY.

FEEDING STUFF SECTION.

R. E. ROSE, State Chemist. OFFICIAL FEEDING STUFF ANALYSES, 1913. E. PECK GREENE, Asst. Chemist.
Samples Taken by State Chemist and State Inspector Under Sections 1, 2 and 13, Act Approved May 24, 1905.
Deficiencies Greater than 0.20% are Distinguished by Black Face Type.

NAME, OR BRAND.	Laboratory Number.	ANALYSIS.	Fibre.	Protein.	Starch and Sugar (Nitrogen Free Extr't.)	Fat.	Ash.	NAME AND ADDRESS OF MANUFACTURER.
Victor Feed	1433	Guarant'd Analysis	12.00	8.00	62.00	3.00	.....	The Quaker Oats Co., Chicago, Ill.
		Official Analysis...	9.30	11.06	61.19	3.48	3.57	
Echo Stock Feed	1434	Guarant'd Analysis	12.00	11.25	51.00	3.50	.....	G. E. Patterson & Co., Memphis, Tenn.
		Official Analysis...	9.10	11.85	60.18	4.70	3.02	
Steinmesch Mixed Feed	1435	Guarant'd Analysis	6.00	10.00	65.00	2.50	.....	Steinmesch Feed Co., St. Louis, Mo.
		Official Analysis...	2.63	10.97	70.55	3.39	2.85	
Red Mill Horse and Mule Feed	1436	Guarant'd Analysis	8.00	12.00	60.00	4.00	.....	National Feed Mfg. Co., Macon, Ga.
		Official Analysis...	10.01	12.16	56.85	3.58	4.60	
Cracker Mule Feed	1437	Guarant'd Analysis	12.00	10.00	58.00	3.50	.....	The Quaker Oats Co., Chicago, Ill.
		Official Analysis...	12.52	11.35	57.47	3.65	2.92	
Pure Winter Wheat Fancy Shorts	1438	Guarant'd Analysis	3.90	16.36	62.66	4.50	.....	Akin-Erskine Milling Co., Evansville, Ind.
		Official Analysis...	5.04	19.31	55.33	4.75	4.12	

National Dairy Feed.....	1439	Guarant'd Analysis	15.00	15.00	48.00	3.25	.....	Stafolife & Milling Co., New Orleans, La.
		Official Analysis...	13.97	15.77	45.47	3.82	5.47	
Just Horse Feed.....	1440	Guarant'd Analysis	10.00	10.50	58.00	3.70	.....	Just Milling & Feed Co., Nashville, Tenn.
		Official Analysis...	5.44	10.38	62.04	3.22	6.26	
Nulife Horse Feed.....	1441	Guarant'd Analysis	12.00	11.00	53.00	3.50	.....	Stafolife Feed & Milling Co., New Orleans, La.
		Official Analysis...	11.31	12.51	56.39	4.57	4.96	
Emerald Horse Feed.....	1442	Guarant'd Analysis	14.00	11.00	53.00	3.25	.....	Stafolife Feed & Milling Co., New Orleans, La.
		Official Analysis...	15.37	10.85	61.86	2.40	5.33	
"Jim Dandy" Feed.....	1443	Guarant'd Analysis	12.00	10.50	55.00	2.50	.....	Cairo Milling Co., Cairo, Ill.
		Official Analysis...	8.73	11.32	54.61	3.32	8.36	
A. & G. Molasses Feed....	1444	Guarant'd Analysis	10.00	11.00	60.00	3.50	.....	National Milling Co., Macon, Ga.
		Official Analysis...	8.60	10.85	66.69	3.46	3.56	
Perfect Alfalfa Feed	1445	Guarant'd Analysis	7.30	10.38	64.24	3.50	.....	Drago Grain Co., Mobile, Ala.
		Official Analysis...	7.77	12.29	61.27	3.30	4.40	
Winter Wheat Middling...	1446	Guarant'd Analysis	4.00	15.50	71.00	4.50	.....	The Quaker City Flour Co., Philadelphia, Pa.
		Official Analysis...	5.05	16.06	58.78	5.42	4.46	
Omega Stock Feed.....	1447	Guarant'd Analysis	12.00	12.00	59.00	5.00	.....	Webb & Maury, Memphis, Tenn.
		Official Analysis...	13.47	14.92	48.92	5.50	8.87	
Ground Corn & Oats.....	1448	Guarant'd Analysis	5.50	10.75	65.00	5.15	.....	Baker & Holmes Co., Jacksonville, Fla.
		Official Analysis...	3.50	10.52	69.82	4.10	2.12	
Prime Cotton Seed Meal..	1449	Guarant'd Analysis	.....	38.62	.....	.....	.....	Alabama Cotton Oil Co., Demopolis, Ala.
		Official Analysis...	.....	39.22	.....	.....	.....	

NAME, OR BRAND.	Laboratory Number.	ANALYSIS.	Fibre.	Protein.	Starch and Sugar. (Nitrogen Free Extract.)	Fat.	Ash.	BY WHOM AND WHERE MANUFACTURED.
Shipstuff	1450	Guarant'd Analysis	8.00	14.50	57.00	3.50	.....	Atlanta Milling Co., Atlanta, Ga.
		Official Analysis...	5.85	15.53	59.58	3.74	4.87	
Pure Winter Wheat Fancy Shorts	1451	Guarant'd Analysis	3.90	16.36	62.66	4.50	.....	Akin-Erskine Milling Co., Evansville, Ind.
		Official Analysis...	4.18	18.42	57.62	4.30	4.17	
Star Middlings	1452	Guarant'd Analysis	8.00	15.00	54.00	4.00	.....	Star & Crescent Milling Co., Chicago, Ill.
		Official Analysis...	6.64	18.69	55.92	5.13	4.85	
Pawnee Feed	1453	Guarant'd Analysis	12.00	8.25	65.00	3.50	.....	National Oats Co., St. Louis, Mo.
		Official Analysis...	10.72	8.78	62.94	3.65	3.52	
Jersey Dairy Feed	1454	Guarant'd Analysis	15.00	16.50	45.00	3.50	.....	Stafolife Feed & Milling Co., New Orleans, La.
		Official Analysis...	12.07	17.89	47.34	4.00	11.65	
Pure Wheat Shorts	1455	Guarant'd Analysis	6.12	15.50	57.00	4.50	.....	Manly Milling Co., Omaha, Neb.
		Official Analysis...	12.12	18.69	47.74	5.75	5.27	
Sterling Horse Feed	1456	Guarant'd Analysis	8.00	9.25	64.50	3.25	.....	The Quaker Oats Co., Chicago, Ill.
		Official Analysis...	6.44	9.70	64.48	3.20	3.93	
Domino Horse & Mule Feed	1457	Guarant'd Analysis	10.00	10.50	55.00	3.50	.....	Standard Feed Co., Atlanta, Ga.
		Official Analysis...	7.90	10.84	60.01	2.85	5.94	

Stafolife Horse Feed.....	1458	Guarant'd Analysis	12.00	11.00	53.00	3.25	.....	Stafolife Feed & Milling Co., New Orleans, La.
		Official Analysis...	11.40	10.44	54.01	2.53	5.53	
Lasskorn Stock Feed.....	1459	Guarant'd Analysis	12.00	10.00	50.00	3.50	.....	G. E. Patterson & Co., Memphis, Tenn.
		Official Analysis...	9.75	11.25	58.65	2.41	5.70	
Real Horse & Mule Feed..	1460	Guarant'd Analysis	12.00	10.00	56.00	3.50	.....	Just Milling & Feed Co., Nashville, Tenn.
		Official Analysis...	11.05	12.20	56.68	2.72	5.10	
Larro-Feed	1461	Guarant'd Analysis	14.00	18.00	50.00	3.50	.....	The Larrowe Milling Co., Detroit, Mich.
		Official Analysis...	11.10	20.53	52.70	3.25	3.62	
Quality Feed	1462	Guarant'd Analysis	12.00	8.00	62.00	3.00	.....	The Quaker Oats Co., Chicago, Ill.
		Official Analysis...	10.70	9.13	65.00	2.83	3.39	
Bourbon 3-D Grains.....	1463	Guarant'd Analysis	14.00	24.00	40.00	8.00	.....	The Dewey Bros. Co., Blanchester, Ohio.
		Official Analysis...	11.30	25.45	45.92	7.20	2.55	
Choice Feed	1464	Guarant'd Analysis	7.97	13.00	54.00	2.95	.....	Empire Mills Co., Columbus, Ga.
		Official Analysis...	10.42	12.81	59.08	3.42	3.50	
Victor Feed	1465	Guarant'd Analysis	12.00	8.00	62.00	3.00	.....	The Quaker Oats Co., Chicago, Ill.
		Official Analysis...	11.40	10.35	55.96	8.82	4.17	
Ideal Horse & Mule Feed..	1466	Guarant'd Analysis	10.50	10.00	54.00	3.25	.....	Stringfellow & Doty Co., Jacksonville, Fla.
		Official Analysis...	7.22	9.82	62.63	3.20	4.60	
Purina Molasses Feed.....	1467	Guarant'd Analysis	12.00	10.00	59.00	2.50	.....	Ralston Purina Co., St. Louis, Mo.
		Official Analysis...	7.82	11.14	57.50	2.96	6.68	
A. & G. Molasses Mixed Feed	1468	Guarant'd Analysis	10.00	11.00	60.00	3.50	.....	National Milling Co., Macon, Ga.
		Official Analysis...	8.10	10.09	65.29	3.62	5.03	

NAME, OR BRAND.	Laboratory Number.	ANALYSIS.	Fibre.	Protein.	Starch and Sugar. (Nitrogen Free Extr't.)	Fat.	Ash.	BY WHOM AND WHERE MANUFACTURED.
Just Horse Feed	1469	Guarant'd Analysis	10.00	10.50	58.00	3.75	.....	Just Milling and Feed Co., Nashville, Tenn.
		Official Analysis...	9.47	9.57	57.78	2.86	4.48	
Green Meadow Dairy Feed.	1470	Guarant'd Analysis	25.00	11.00	48.00	1.00	.....	Omaha Alfalfa Milling Co., Omaha, Neb.
		Official Analysis...	13.94	11.31	47.95	1.25	7.60	
Dixie Gem Molasses Mixed Feed	1471	Guarant'd Analysis	12.00	10.00	.....	3.50	.....	National Milling Co., Macon, Ga.
		Official Analysis...	10.93	12.42	54.71	3.67	4.12	
Purina Molasses Feed.....	1472	Guarant'd Analysis	12.00	9.00	59.00	1.50	.....	Ralston Purina Co., St. Louis, Mo.
		Official Analysis...	10.09	11.42	53.67	2.34	6.28	
Red Mill Molasses Feed...	1473	Guarant'd Analysis	8.00	10.00	60.00	3.50	.....	National Milling Co., Macon, Ga.
		Official Analysis...	7.44	10.20	60.09	2.80	3.36	
Wheat Shorts	1474	Guarant'd Analysis	6.00	15.00	60.00	4.00	.....	Dahnke-Walker Milling Co., Union City, Tenn.
		Official Analysis...	5.77	15.36	58.45	3.50	4.55	
Fancy Feed	1475	Guarant'd Analysis	4.50	11.00	60.00	2.00	.....	City Mills Co., Columbus, Ga.
		Official Analysis...	4.63	13.43	64.04	2.25	3.20	
Pure Wheat Middlings....	1476	Guarant'd Analysis	3.90	16.00	60.00	4.50	.....	Iglehart Bros., Evansville, Ind.
		Official Analysis...	4.55	17.20	58.98	5.10	3.82	

Reliable Dry Horse Feed..	1477	Guarant'd Analysis	15.00	10.00	52.00	3.50	.....	Excello Feed Milling Co., St. Joseph, Mo.
		Official Analysis...	10.66	12.11	58.17	2.40	5.10	
Purina Feed	1478	Guarant'd Analysis	9.80	12.00	58.00	4.00	.....	Ralston Purina Co., St. Louis, Mo.
		Official Analysis...	8.65	14.65	57.34	4.42	4.42	
Shorts	1479	Guarant'd Analysis	6.50	17.00	55.52	5.00	.....	The Southwestern Milling Co., Kansas City, Mo.
		Official Analysis...	6.65	17.90	56.11	4.28	5.32	
Pure Wheat Middlings.....	1480	Guarant'd Analysis	6.00	15.00	60.00	4.00	.....	Iglehart Bros., Evansville, Ind.
		Official Analysis...	5.44	17.46	58.51	4.28	4.45	
U. S. Dairy Feed	1481	Guarant'd Analysis	14.10	18.00	43.47	5.00	.....	U. S. Feed and Grain Co., Memphis, Tenn.
		Official Analysis...	11.70	17.55	48.13	5.12	9.70	
Pure Middlings	1482	Guarant'd Analysis	6.00	15.50	58.00	5.30	.....	Columbia Mill and Elevator Co., Columbia, Tenn.
		Official Analysis...	6.22	17.02	57.70	3.82	4.72	
Standard Middlings	1483	Guarant'd Analysis	8.00	16.30	62.66	3.98	.....	Akin-Erskine Milling Co., Evansville, Ind.
		Official Analysis...	5.54	18.43	59.95	3.82	4.87	
Kyome Feed	1484	Guarant'd Analysis	6.91	16.38	59.98	4.15	.....	J. E. M. Milling Co., Frankfort, Ky.
		Official Analysis...	6.24	16.23	58.82	3.18	4.87	
Victor Feed	1485	Guarant'd Analysis	12.00	8.00	62.00	3.00	.....	The Quaker Oats Co., Chicago, Ill.
		Official Analysis...	11.42	8.07	64.10	2.82	2.70	
Shipstuff	1486	Guarant'd Analysis	7.00	15.00	58.00	4.00	.....	J. Allen Smith & Co., Knoxville, Tenn.
		Official Analysis...	6.37	15.80	57.74	3.35	4.52	
Steinmesch Mixed Feed....	1487	Guarant'd Analysis	6.00	10.00	65.00	2.50	.....	Steinmesch Feed Co., St. Louis, Mo.
		Official Analysis...	4.40	11.67	65.51	2.65	2.61	

OFFICIAL FEEDING STUFF ANALYSES, 1913.—(Continued.)

NAME, OR BRAND	Laboratory Number.	ANALYSIS.	Fibre.	Protein.	Starch and Sugar (Nitrogen Free Extr't.)	Fat.	Ash.	NAME AND ADDRESS OF MANUFACTURER.
Gano Feed	1488	Guarant'd Analysis	.....	7.50	59.00	3.50	.....	The Valley Milling Co., St.
		Official Analysis...	13.02	11.41	54.72	4.20	6.45	Louis, Mo.
Ceralfa Stock Feed	1489	Guarant'd Analysis	11.50	12.00	55.00	3.50	.....	Edgar-Morgan Co., Memphis,
		Official Analysis...	7.66	15.80	53.80	2.95	6.35	Tenn.
Brown Mule Feed	1490	Guarant'd Analysis	12.00	10.00	49.00	2.50	.....	Brown Milling Co., Greenville,
		Official Analysis...	16.38	10.71	52.71	2.60	6.40	Ala.
Kluk Poultry Feed	1491	Guarant'd Analysis	4.50	10.00	60.00	3.25	.....	Kornfalfa Feed Milling Co.,
		Official Analysis...	1.85	12.20	69.93	3.27	2.05	Kansas City, Mo.
Purity Feed	1492	Guarant'd Analysis	5.50	9.25	65.00	4.25	.....	John Wade & Sons, Memphis,
		Official Analysis...	6.85	9.92	64.57	4.00	2.26	Tenn.
Anchor Bran	1493	Guarant'd Analysis	10.00	14.50	53.50	4.00	.....	Kemper Mill & Elevator Co.,
		Official Analysis...	8.09	17.99	51.65	4.10	6.32	Kansas City, Mo.
Peck's Mule Feed	1494	Guarant'd Analysis	11.90	10.00	57.00	3.80	.....	Illinois Feed Mills, St. Louis,
		Official Analysis...	9.25	10.37	49.43	4.32	4.78	Mo.
Kingfalfa Mixed Horse Feed	1495	Guarant'd Analysis	12.00	10.50	55.00	3.25	.....	Kingfalfa Mills, Nebraska City,
		Official Analysis...	10.05	11.65	61.57	2.70	3.39	Neb.

Alfalfa Mixed Feed.....	1496	Guarant'd Analysis	12.00	10.50	52.50	3.50	.....	John Wade & Sons, Memphis, Tenn.
		Official Analysis...	11.15	12.46	52.17	4.05	9.17	
Thoroughbred Feed	1497	Guarant'd Analysis	6.91	16.38	59.98	4.15	.....	Lexington Roller Mills Co., Lexington, Ky.
		Official Analysis...	5.51	16.50	59.35	3.60	4.72	
Eureka Laying Mash Feed.	1498	Guarant'd Analysis	7.00	18.00	66.00	4.00	.....	Just Milling & Feed Co., Nashville, Tenn.
		Official Analysis...	5.22	18.06	50.65	3.67	12.90	
Model Mill Feed.....	1499	Guarant'd Analysis	7.15	17.48	55.00	4.00	.....	Model Mill Co., Jacksonville, Fla.
		Official Analysis...	6.75	17.38	49.89	4.50	11.02	
Corno Horse & Mule Feed	1500	Guarant'd Analysis	12.00	10.00	58.50	2.50	.....	The Corno Mills Co., St. Louis, Mo.
		Official Analysis...	12.70	10.48	56.91	3.87	5.79	
Choice Feed	1501	Guarant'd Analysis	7.97	13.00	54.00	2.95	.....	Empire Mills Co., Columbus, Ga.
		Official Analysis...	9.32	14.30	57.55	3.30	4.73	
Winter Midds	1502	Guarant'd Analysis	6.00	15.00	55.00	4.00	.....	Hunter-Robinson-Winz Milling Co., St. Louis, Mo.
		Official Analysis...	10.25	16.50	50.97	5.65	6.26	
Echo Stock Feed.....	1503	Guarant'd Analysis	12.00	11.25	51.00	3.50	.....	G. E. Patterson & Co., Memphis, Tenn.
		Official Analysis...	12.01	12.72	57.52	2.27	4.86	
Bourbon 3 D Grains.....	1504	Guarant'd Analysis	14.00	24.00	40.00	8.00	.....	The Dewey Bros. Co., Blanchester, Ohio.
		Official Analysis...	12.99	24.83	43.17	6.80	3.23	
Maizefalfa Feed	1505	Guarant'd Analysis	12.00	10.00	58.00	3.50	.....	The Quaker Oats Co., Chicago, Ill.
		Official Analysis...	11.07	12.20	58.29	3.55	4.62	
Dixie Gem Molasses Feed..	1506	Guarant'd Analysis	12.00	10.00	55.00	3.50	.....	National Milling Co., Macon, Ga.
		Official Analysis...	13.00	11.23	60.00	2.52	5.72	

NA..E, OR BRAND.	Laboratory Number.	ANALYSIS.	Fibre.	Protein.	Starch and Sugar. (Nitrogen Free Extr't.)	Fat.	Ash.	NAME AND ADDRESS OF MANUFACTURER.
Old Beck Sugar Feed.....	1507	Guarant'd Analysis	12.00	8.50	55.00	2.00	.....	Edgar-Morgan Co., Memphis, Tenn.
		Official Analysis...	10.22	9.16	56.39	2.61	4.25	
Nutriline Stock Feed.....	1508	Guarant'd Analysis	12.00	11.00	53.00	4.50	.....	Nutriline Milling Co., Crowley, La.
		Official Analysis...	8.79	11.12	53.05	8.00	7.17	
Prime Cotton Seed Meal..	1509	Guarant'd Analysis	.....	38.62	.....	.....	.....	Alabama Cotton Oil Co., Demopolis, Ala.
		Official Analysis...	.....	41.42	.....	.....	.....	
Magnolia Brand C. S. Meal.	1510	Guarant'd Analysis	.....	38.62	.....	.....	.....	Union Brokerage & Corn Co., New Orleans, La.
		Official Analysis...	.....	39.58	.....	.....	.....	
Cotton Seed Meal.....	1511	Guarant'd Analysis	.....	38.62	.....	.....	.....	Byromville Mfg. Co., Byromville, Ga.
		Official Analysis...	.....	39.49	.....	.....	.....	
Horse Feed	1512	Guarant'd Analysis	14.00	10.50	55.00	2.00	.....	John Wade & Sons, Memphis, Tenn.
		Official Analysis...	8.05	10.35	58.95	2.37	4.66	
Old Beck Sugar Feed.....	1513	Guarant'd Analysis	12.00	8.50	55.00	2.00	.....	Edgar-Morgan Co., Memphis, Tenn.
		Official Analysis...	10.81	9.56	58.11	2.10	4.38	
Sucrene Alfalfa Feed.....	1514	Guarant'd Analysis	12.00	11.00	50.00	2.50	.....	American Milling Co., Chicago, Ill.
		Official Analysis...	12.36	10.71	52.29	2.30	5.43	

Sucrene Dairy Feed.....	1515	Guarant'd Analysis	12.00	16.50	46.00	3.50	.....	American Milling Co., Chicago, Ill.
		Official Analysis...	12.30	18.17	45.25	3.52	8.44	
I. X. L. Horse and Mule Feed	1516	Guarant'd Analysis	12.00	10.00	53.00	3.25	.....	Allneeda Mills Co., East St. Louis, Ill.
		Official Analysis...	11.86	11.95	55.64	2.84	5.00	
Hammond Dairy Feed.....	1517	Guarant'd Analysis	11.00	16.50	48.00	3.50	.....	Western Grain Products Co., Hammond, Ind.
		Official Analysis...	9.47	17.78	48.02	4.53	7.54	
Corno Hen Feed.....	1518	Guarant'd Analysis	5.00	10.00	68.00	3.50	.....	Corno Mills Co., St. Louis, Mo.
		Official Analysis...	1.89	12.02	67.86	3.52	1.60	
Victor Feed	1519	Guarant'd Analysis	12.00	8.00	62.00	3.00	.....	The Quaker Oats Co., Chicago, Ill.
		Official Analysis...	10.26	9.21	63.79	3.45	2.95	
Larro Feed	1520	Guarant'd Analysis	14.00	19.00	50.00	3.00	.....	The Larrowe Milling Co., Detroit, Mich.
		Official Analysis...	9.22	21.06	52.14	3.50	5.02	
Purina Feed	1521	Guarant'd Analysis	9.80	12.00	58.00	4.00	.....	Ralston Purina Co., St. Louis, Mo.
		Official Analysis...	14.64	14.74	46.30	6.43	4.05	
Star Feed	1522	Guarant'd Analysis	10.00	11.70	57.00	3.80	.....	Illinois Feed Mills, St. Louis, Mo.
		Official Analysis...	10.17	15.95	55.50	4.85	5.05	
Cotton Seed Meal.....	1523	Guarant'd Analysis	.....	38.62	.....	.....	.....	The Buckeye Cotton Oil Co., Macon, Ga.
		Official Analysis...	.....	38.87	.....	.....	.....	
Cotton Seed Meal.....	1524	Guarant'd Analysis	.....	38.62	.....	.....	.....	Bainbridge Oil Mill, Bainbridge, Ga.
		Official Analysis...	.....	38.35	.....	.....	.....	
Dexter Horse and Mule Feed	1525	Guarant'd Analysis	12.00	10.00	55.00	3.00	.....	Allneeda Mills Co., East St. Louis, Ill.
		Official Analysis...	10.20	10.89	54.54	1.91	5.47	

OFFICIAL FEEDING STUFF ANALYSES, 1913—(Continued.)

NAME, OR BRAND.	Laboratory Number.	ANALYSIS.	Fibre.	Protein.	Starch and Sugar. (Nitrogen Free Extr't.)	Fat.	Ash.	NAME AND ADDRESS OF MANUFACTURER.
Syr-Ration Horse Feed....	1526	Guarant'd Analysis	14.00	10.50	55.00	2.00	.....	John Wade & Sons, Memphis, Tenn.
		Official Analysis...	13.06	10.64	56.46	1.93	4.40	
Manna Sugar Feed	1527	Guarant'd Analysis	12.00	10.00	50.00	3.00	.....	Edgar-Morgan Co., Memphis, Tenn.
		Official Analysis...	11.26	10.09	58.15	2.45	4.80	
Milko Syrup Cow Feed....	1528	Guarant'd Analysis	10.00	17.50	58.00	3.50	.....	Just Milling & Feed Co., Nashville, Tenn.
		Official Analysis...	9.85	17.08	51.11	4.27	6.45	
Kornfalfa Kandy Feed....	1529	Guarant'd Analysis	12.00	9.00	55.00	2.50	.....	Kornfalfa Feed Milling Co., Kansas City, Mo.
		Official Analysis...	10.84	10.04	57.49	2.54	6.03	
Besto Molasses Feed.....	1530	Guarant'd Analysis	12.00	10.00	57.00	3.50	.....	J. T. Gibbons, New Orleans, La.
		Official Analysis...	7.55	9.80	61.02	4.29	5.21	
Cotton Seed Meal.....	1531	Guarant'd Analysis	.....	36.05	.....	.....	.....	F. W. Brode & Co., Memphis, Tenn.
		Official Analysis...	.....	38.40	.....	.....	.....	
Cotton Seed Meal.....	1532	Guarant'd Analysis	.....	35.98	.....	.....	.....	F. W. Brode & Co., Memphis, Tenn.
		Official Analysis...	.....	35.89	.....	.....	.....	
Cyclone Feed Meal.....	1533	Guarant'd Analysis	.....	20.00	.....	.....	.....	American Cotton Hull & Fibre Co., Memphis, Tenn.
		Official Analysis...	.....	22.82	.....	.....	.....	

Pure Barley Malt Feed....	1534	Guarant'd Analysis	14.61	9.19	62.00	9.70	.....	The Cabell Co., Baltimore, Md.
		Official Analysis...	17.96	9.21	55.19	2.75	4.70	
Ideal Horse & Mule Feed..	1535	Guarant'd Analysis	12.00	10.50	56.00	3.50	.....	Stringfellow & Doty Co., Jacksonville, Fla.
		Official Analysis...	8.50	10.71	61.64	3.20	4.05	
Fostona Mix Feed.....	1536	Guarant'd Analysis	9.90	12.76	57.74	3.00	.....	Baker & Holmes Co., Jacksonville, Fla.
		Official Analysis...	4.82	12.55	65.30	4.00	2.31	
Comet Horse & Mule Feed.	1537	Guarant'd Analysis	11.60	10.13	60.00	3.42	.....	Allneeda Mills Co., East St. Louis, Ill.
		Official Analysis...	15.12	11.81	50.08	2.81	6.46	
Amco Old Process Linseed Meal	1538	Guarant'd Analysis	11.00	32.00	30.00	6.00	.....	American Milling Co., Chicago, Ill.
		Official Analysis...	8.92	32.12	37.74	7.07	5.40	
Crescent Feed	1539	Guarant'd Analysis	12.00	10.00	50.00	3.00	.....	Illinois Feed Mills, St. Louis, Mo.
		Official Analysis...	11.97	9.95	58.03	3.42	6.28	
Pure Wheat Bran & Screenings	1540	Guarant'd Analysis	9.50	14.50	50.00	4.00	.....	Liberty Mills, Nashville, Tenn.
		Official Analysis...	9.17	14.92	55.29	4.22	5.88	
Hominy Meal	1541	Guarant'd Analysis	6.50	9.11	60.00	8.25	.....	Louisville Central Mill Co., Louisville, Ky.
		Official Analysis...	5.32	11.32	62.68	8.21	2.90	
U. S. Stock Feed.....	1542	Guarant'd Analysis	12.50	14.50	42.50	5.00	.....	U. S. Feed and Grain Co., Memphis, Tenn.
		Official Analysis...	11.02	14.48	53.48	5.45	6.02	
Cow-Eat, a Mixed Feed....	1543	Guarant'd Analysis	10.00	20.00	45.00	4.00	.....	Lewis & Adcock, Knoxville, Tenn.
		Official Analysis...	12.76	22.82	41.98	5.90	7.64	

OFFICIAL FEEDING STUFF ANALYSES, 1913—(Continued.)

NAME, OR BRAND.	Laboratory Number.	ANALYSIS.	Fibre.	Protein.	Starch and Sugar, (Nitrogen Free Extr't.)	Fat.	Ash.	NAME AND ADDRESS OF MANUFACTURER.
Ga. Prime Brand Cotton Seed Meal	1544	Guarant'd Analysis	.....	00.20	00.30	0.50	.....	Empire Cotton Oil Co., Quitman, Ga.
		Official Analysis...	18.55	25.01	25.17	6.22	5.08	
Cotton Seed Meal	1545	Guarant'd Analysis	.....	38.62	.....	.....	.....	A. A. Smith, Atlanta, Ga.
		Official Analysis...	.....	39.05	.....	.....	.....	

NAME, OR BRAND.	Laboratory Number.	ANALYSIS.	Fibre.	Protein.	Starch and Sugar, (Nitrogen Free Extr't.)	Fat.	Ash.	NAME AND ADDRESS OF MANUFACTURER.
Prime Cotton Seed Meal.....	1546	Guarant'd Analysis	.....	38.62	.....	.....	.....	The Buckeye Cotton Oil Co., Cincinnati, Ohio.
		Official Analysis....	.....	38.70	.....	.....	.....	
Magnolia Brand Cot. Seed M...	1547	Guarant'd Analysis	.....	38.62	.....	.....	.....	Union Brokerage and Com. Co., New Orleans, La.
		Official Analysis....	.....	38.26	.....	.....	.....	
Standard Grade Cot. Seed Meal	1548	Guarant'd Analysis	.....	38.62	.....	.....	.....	Georgia Cotton Oil Co., Columbus, Ga.
		Official Analysis....	.....	40.63	.....	.....	.....	
Standard Grade Cot. Seed Meal	1549	Guarant'd Analysis	.....	38.62	.....	.....	.....	W. C. Bradley Co., Columbus, Ga.
		Official Analysis...	.....	38.32	.....	.....	.....	
Faultless Hen Feed.....	1550	Guarant'd Analysis	4.00	10.00	65.00	3.00	.....	Consolidated Grocery Co., Jacksonville, Fla.
		Official Analysis....	3.13	11.14	69.02	3.65	1.54	
Larro-Feed	1551	Guarant'd Analysis	14.00	19.00	50.00	3.00	.....	The Larrowe Milling Co., Detroit, Mich.
		Official Analysis....	11.50	20.71	51.12	3.62	4.20	
Feed (?)	1552	Guarant'd Analysis	.....	.....	.....	.....	.....	J. Bolgiano & Son, Baltimore, Md.
		Official Analysis....	4.17	12.90	65.79	3.32	2.87	
Corno Horse and Mule Feed..	1553	Guarant'd Analysis	12.00	10.00	58.50	3.50	.....	The Corno Mills Co., St. Louis, Mo.
		Official Analysis...	13.21	11.06	53.67	3.61	4.25	

NAME, OR BRAND.	Laboratory Number.	ANALYSIS.	Fibre.	Protein.	Starch and Sugar. (Nitrogen Free Extr't.)	Fat.	Ash.	NAME AND ADDRESS OF MANUFACTURER.
Schumacher Special Horse Feed	1554	Guarant'd Analysis	8.00	9.25	64.50	3.25	.....	The Quaker Oats Co., Chicago, Ill.
		Official Analysis.....	4.50	9.92	66.56	4.50	2.42	
Gano Feed	1555	Guarant'd Analysis	.....	7.50	59.00	3.50	.....	Valley Milling Co., St. Louis, Mo.
		Official Analysis.....	3.70	11.14	66.90	4.22	4.67	
Carolina Horse and Mule Feed	1556	Guarant'd Analysis	12.00	10.00	55.00	3.00	.....	Virginia-Carolina Feed Co., East St. Louis, Ill.
		Official Analysis.....	10.75	10.92	61.63	2.78	6.35	
Bell Horse and Mule Feed....	1557	Guarant'd Analysis	17.00	10.00	47.00	2.40	.....	Commonwealth Feed Mill Co., St. Louis, Mo.
		Official Analysis.....	15.95	9.74	51.66	3.81	5.09	
Rex Stock Feed	1558	Guarant'd Analysis	9.00	11.45	59.00	4.45	.....	Milan-Morgan Co., New Orleans, La.
		Official Analysis.....	10.16	12.21	58.90	4.27	4.22	
Kornfalfa Kandy Feed.....	1559	Guarant'd Analysis	12.00	9.00	55.00	2.50	.....	Kornfalfa Feed Milling Co., Kansas City, Mo.
		Official Analysis.....	8.67	8.42	61.10	2.55	4.30	
Hammond Dairy Feed.....	1560	Guarant'd Analysis	11.00	16.50	48.00	3.50	.....	Western Grain Products Co., Hammond, Ind.
		Official Analysis.....	10.78	16.51	46.85	6.02	9.76	
Permenter's Stud Feed.....	1561	Guarant'd Analysis	12.00	10.50	55.00	2.50	.....	Cairo Milling Co., Cairo Ill.
		Official Analysis.....	11.44	11.88	54.69	3.00	5.83	

Perfection Horse Feed	1562	Guarant'd Analysis	12.00	10.00	55.00	2.00	.....	Omaha Alfalfa Milling Co., Omaha, Neb.
		Official Analysis.....	9.68	11.27	59.79	2.04	4.87	
Straight Alfalfa Molasses Feed	1563	Guarant'd Analysis	25.00	9.00	45.00	1.00	.....	Kornfalfa Feed Milling Co., Kansas City, Mo.
		Official Analysis.....	12.90	11.14	53.58	1.98	8.20	
Reliable Horse Feed	1564	Guarant'd Analysis	15.00	10.00	52.00	3.50	.....	Excello Feed Milling Co., St. Joseph, Mo.
		Official Analysis.....	12.82	9.81	54.99	3.23	6.92	
Best Yet Molasses Feed	1565	Guarant'd Analysis	12.00	10.00	58.00	3.75	.....	National Milling Co., Macon, Ga.
		Official Analysis.....	12.22	8.67	58.68	2.95	5 41	
Crown Horse Feed	1566	Guarant'd Analysis	12.00	9.00	50.00	2.00	.....	G. E. Patteson & Co., Memphis, Tenn.
		Official Analysis.....	15.88	8.34	55.24	2.16	6.34	
Big Four Feed	1567	Guarant'd Analysis	12.00	10.50	55.00	2.50	.....	Cairo Milling Co., Cairo, Ill.
		Official Analysis.....	10.14	11.49	59.39	2.11	6.24	
Just Horse and Mule Feed	1568	Guarant'd Analysis	12.00	10.00	58.00	3.25	.....	Just Milling Co., Nashville, Tenn.
		Official Analysis.....	9.62	10.07	59.20	2.91	5.09	
Molac Horse Feed	1569	Guarant'd Analysis	10.50	10.00	62.00	3.00	.....	The Quaker Oats, Co., Chicago, Ill.
		Official Analysis.....	9.69	10.11	53.09	2.75	4.65	
Royal Horse and Mule Feed	1570	Guarant'd Analysis	12.00	10.00	55.00	2.50	.....	Standard Feed Co., Memphis, Tenn.
		Official Analysis.....	10.95	8.78	62.45	2.28	5.55	
Nutriline "Moonyik" Dairy Feed	1571	Guarant'd Analysis	12.00	15.00	48.00	4.50	.....	Nutriline Milling Co., Crowley, La.
		Official Analysis.....	12.64	14.99	45.24	7.22	8.08	
Steer Head Molasses Feed	1572	Guarant'd Analysis	12.50	9.00	50.51	3.00	.....	Drago Grain Co., Mobile, Ala.
		Official Analysis.....	5.36	9.62	68.33	3.14	4.04	

OFFICIAL FEEDING STUFF ANALYSES, 1913.—(Continued.)

NAME, OR BRAND.	Laboratory Number.	ANALYSIS.	Fibre.	Protein.	Starch and Sugar. (Nitrogen Free Extr't.)	Fat.	Ash.	NAME AND ADDRESS OF MANUFACTURER.
Mak-Fat Molasses Feed.....	1573	Guarant'd Analysis	12.00	10.00	55.00	3.50	.....	National Milling Co., Macon, Ga.
		Official Analysis.....	12.00	9.34	59.23	2.30	5.46	
Mixed Chicken Feed.....	1574	Guarant'd Analysis	.....	.....	.....	.....	.....	Excello Feed Milling Co., St. Joseph, Mo.
		Official Analysis.....	5.10	11.41	65.16	2.23	5.10	
Special Horse and Mule Feed..	1575	Guarant'd Analysis	12.00	10.00	58.00	3.25	.....	Stringfellow & Doty Co., Jacksonville, Fla.
		Official Analysis.....	9.21	11.23	54.54	3.92	3.60	
Purina Feed	1576	Guarant'd Analysis	9.80	12.00	58.00	4.00	.....	Ralston Purina Co., St. Louis, Mo.
		Official Analysis.....	9.00	16.23	55.78	4.75	2.70	
Acme Feed	1577	Guarant'd Analysis	10.00	10.00	70.00	3.00	.....	Valley Milling Co., St. Louis, Mo.
		Official Analysis.....	2.45	10.00	69.10	3.45	2.70	
Choice Feed	1578	Guarant'd Analysis	9.00	11.00	58.00	2.50	.....	City Mills Co., Columbus, Ga.
		Official Analysis.....	8.62	12.24	61.12	3.35	3.72	
O. K. Horse Feed.....	1579	Guarant'd Analysis	12.00	10.00	55.00	2.00	.....	Omaha Alfalfa Milling Co., Omaha, Neb.
		Official Analysis.....	11.09	12.20	58.29	3.51	3.76	
Midland Poultry Feed.....	1580	Guarant'd Analysis	2.50	17.50	50.50	2.50	.....	Midland Mixed Feed Co., Kansas City, Mo.
		Official Analysis.....	4.61	16.50	53.59	4.61	10.11	

Ballard's Brand	1581	Guarant'd Analysis	8.04	15.78	53.00	4.42	.....	Ballard & Ballard Co.,
		Official Analysis.....	9.00	14.93	55.27	4.60	6.50	Louisville, Ky.
Omega Stock Feed	1582	Guarant'd Analysis	12.00	12.00	50.00	5.00	.....	Webb & Maury, Memphis,
		Official Analysis.....	13.42	11.93	49.41	6.87	8.57	Tenn.
M. Middlings	1583	Guarant'd Analysis	5.70	17.87	54.44	6.40	4.55	Hecker-Jones-Jewell Milling
		Official Analysis.....	7.20	17.29	53.48	6.00	5.45	Co., New York, N. Y.
Pure Wheat Middlings	1584	Guarant'd Analysis	6.00	15.00	60.00	4.00	.....	Iglehart Bros., Evansville,
		Official Analysis.....	5.70	17.02	56.72	5.29	5.45	Ind.
Southern Dairy Feed	1585	Guarant'd Analysis	9.00	9.00	55.00	7.50	.....	Western Grain Co., Birming-
		Official Analysis.....	10.15	8.95	61.77	4.83	2.97	ham, Ala.
Steinmesch Mixed Feed	1586	Guarant'd Analysis	6.00	10.00	65.00	3.50	.....	Steinmesch Feed Co., St.
		Official Analysis.....	4.88	10.97	66.80	4.58	2.15	Louis, Mo.
Camp's Flaked Corn and Oats	1587	Guarant'd Analysis	8.00	10.00	65.00	4.00	.....	The Toledo Grain & Milling
		Official Analysis.....	4.17	10.09	67.85	4.27	3.60	Co., Toledo, Ohio.
Pure Dustless Alfalfa	1588	Guarant'd Analysis	30.00	14.00	.....	1.50	.....	The Otto Weiss Alfalfa Co.,
		Official Analysis.....	29.67	13.00	37.36	2.77	7.37	Wichita, Kan.
Pawnee Feed	1589	Guarant'd Analysis	12.00	8.25	65.00	3.50	.....	National Oats Co., St. Louis,
		Official Analysis.....	16.17	8.69	58.89	4.35	2.92	Mo.
Carolina Horse and Mule Feed	1590	Guarant'd Analysis	12.00	10.50	53.00	3.50	.....	Allneed Mills Co., East St.
		Official Analysis.....	11.77	11.93	56.01	3.77	6.47	Louis, Ill.
Kentucky Farm Feed	1591	Guarant'd Analysis	6.42	16.45	58.00	4.00	.....	Ballard & Ballard Co.,
		Official Analysis.....	4.20	19.13	58.26	4.20	4.64	Louisville, Ky.

NAME, OR BRAND.	Laboratory Number.	ANALYSIS.	Fibre.	Protein.	Starch and Sugar. (Nitrogen Free Extr't.)	Fat.	Ash.	NAME AND ADDRESS OF MANUFACTURER.
Snow's Horse and Mule Feed..	1592	Guarant'd Analysis	.....	10.50	55.00	2.75	.....	G. E. Patteson & Co., Memphis, Tenn.
		Official Analysis.....	11.50	10.73	55.00	3.08	5.45	
Circle C. Molasses Feed.....	1593	Guarant'd Analysis	12.00	10.50	55.00	2.50	.....	Cairo Milling Co., Cairo, Ill.
		Official Analysis.....	11.79	10.30	56.29	2.59	6.90	
Old Beck Sweet Feed.....	1594	Guarant'd Analysis	12.00	8.50	55.00	2.00	.....	Edgar-Morgan Co., Memphis, Tenn.
		Official Analysis.....	11.49	9.08	60.40	2.34	3.23	
Reliable Horse Feed.....	1595	Guarant'd Analysis	15.00	10.00	52.00	3.50	.....	Excello Feed Milling Co., St. Joseph, Mo.
		Official Analysis.....	14.36	11.71	50.26	3.60	0.74	
Feed Meal	1596	Guarant'd Analysis	8.00	12.50	60.00	5.50	.....	Mountain City Mills Co., Chattanooga, Tenn.
		Official Analysis.....	8.32	12.72	59.22	5.62	3.42	
Camp's Flaked Corn and Oats.	1597	Guarant'd Analysis	8.00	10.00	65.00	4.00	.....	The Toledo Grain and Milling Co., Toledo, Ohio.
		Official Analysis.....	7.31	9.96	65.43	4.27	2.13	
Atlas Feed	1598	Guarant'd Analysis	.....	11.85	57.18	3.35	.....	Barnard & Hester, Tampa, Fla.
		Official Analysis.....	11.65	12.35	57.10	3.05	4.14	
Homco Feed	1599	Guarant'd Analysis	7.00	9.50	67.89	7.00	.....	American Hominy Co., Indianapolis, Ind.
		Official Analysis.....	4.25	10.97	64.10	4.25	3.68	

Red Seal Mixed Feed.....	1600	Guarant'd Analysis	7.00	9.50	67.89	7.00	.....	Jocknsch, Davison & Co.,
		Official Analysis.....	4.25	10.97	64.10	9.03	3.68	Galveston, Texas.
Brown Mule Feed.....	1601	Guarant'd Analysis	12.00	10.00	50.00	3.00	.....	Good Luck Mills, St. Louis,
		Official Analysis.....	12.62	9.92	55.74	3.35	8.40	Mo.
Star Feed	1602	Guarant'd Analysis	10.00	11.70	57.00	3.80	.....	Illinois Feed Mills, St. Louis,
		Official Analysis.....	10.46	13.08	58.70	6.30	5.11	Mo.
Protena Feed	1603	Guarant'd Analysis	10.00	11.70	57.00	3.80	.....	Ralston Purina Co., St.
		Official Analysis.....	8.95	14.30	57.90	4.33	4.13	Louis, Mo.
Besto Molasses Feed.....	1604	Guarant'd Analysis	12.00	10.00	57.00	3.50	.....	J. T. Gibbons, New Orleans,
		Official Analysis.....	8.46	9.63	59.36	2.90	5.13	La.
Sucrene Alfalfa Horse & Mule Feed	1605	Guarant'd Analysis	12.00	11.00	50.00	2.50	.....	American Milling Co., Chi-
		Official Analysis.....	11.09	12.89	55.58	2.87	5.08	cago, Ill.
Sho-Me Horse Feed.....	1606	Guarant'd Analysis	15.00	10.00	52.00	3.50	.....	Excello Feed Milling Co.,
		Official Analysis.....	10.04	11.42	57.77	2.83	4.29	St. Joseph, Mo.
Kawmo Molasses Feed.....	1607	Guarant'd Analysis	12.00	9.00	55.00	2.50	.....	Kornfalfa Feed Milling Co.,
		Official Analysis.....	11.87	10.50	57.09	4.06	5.18	Kansas City, Mo.
Standard Feed	1608	Guarant'd Analysis	12.00	10.00	55.00	2.50	.....	Standard Feed Co., Mem-
		Official Analysis.....	11.04	10.28	58.60	2.42	4.42	phis, Tenn.
Infermary Feed	1609	Guarant'd Analysis	7.50	9.78	62.95	6.05	.....	Barnard & Hester, Tampa,
		Official Analysis.....	3.38	9.74	64.57	6.05	5.26	Fla.
Ideal Horse & Mule Feed.....	1610	Guarant'd Analysis	12.00	10.50	56.00	3.50	.....	Just Milling & Feed Co.,
		Official Analysis.....	9.45	10.97	61.45	3.40	2.80	Nashville, Tenn.

NAME, OR BRAND.	Laboratory Number.	Analysis.	Fibre.	Protein.	Starch and Sugar. (Nitrogen Free Extr't.)	Fat.	Ash.	NAME AND ADDRESS OF MANUFACTURER.
International Poultry Feed....	1611	Guarant'd Analysis	5.00	10.00	70.00	3.50	.....	International Sugar Feed Co., Memphis, Tenn.
		Official Analysis.....	2.41	10.53	71.37	3.42	1.82	
Larro Feed	1612	Guarant'd Analysis	14.00	19.00	50.00	3.00	3.50	The Larrowe Milling Co., Detroit, Mich.
		Official Analysis.....	12.12	19.13	51.60	3.86	4.38	
Cerolfa Stock Feed.....	1613	Guarant'd Analysis	11.50	13.00	55.00	3.50	.....	Edgar-Morgan Co., Memphis, Tenn.
		Official Analysis.....	4.87	14.22	61.86	4.13	4.80	
M. Middlings	1614	Guarant'd Analysis	6.27	17.59	53.65	5.78	.....	Hecker-Jones-Jewell Milling Co., New York, N. Y.
		Official Analysis.....	10.90	17.36	54.51	4.60	3.96	
Shipstuff	1615	Guarant'd Analysis	7.00	14.50	54.00	4.00	.....	The Dunlop Mills, Richmond, Va.
		Official Analysis.....	5.15	15.71	59.45	4.60	4.07	

Buckeye Cotton Seed Meal	1616	Guarant'd Analysis	12.00	38.50	.....	6.50	.....	The Buckeye Cotton Oil Co., Cincinnati, Ohio.
		Official Analysis....	10.10	38.44	28.55	6.10	6.92	
"Cyclone" Feed Meal	1617	Guarant'd Analysis	23.00	20.00	38.00	3.00	.....	American Cotton Hull and Fibre Co., Memphis, Tenn.
		Official Analysis....	21.27	20.09	44.55	3.75	4.30	
Prime Cotton Seed Meal	1618	Guarant'd Analysis	12.00	38.00	24.00	7.50	.....	Delta Oil Co., Greenville, Miss.
		Official Analysis....	11.60	38.17	28.86	6.70	6.20	
Pioneer Alfalfa Meal	1619	Guarant'd Analysis	35.00	12.00	45.00	1.50	.....	Kornfalka Feed Milling Co., Kansas City, Mo.
		Official Analysis....	25.51	14.92	40.02	2.15	9.25	
Shipstuff	1620	Guarant'd Analysis	.....	14.50	57.00	8.00	.....	Atlanta Milling Co., Atlanta, Ga.
		Official Analysis....	6.45	16.06	57.22	5.05	5.32	
Victor Feed	1621	Guarant'd Analysis	12.00	8.00	62.00	3.00	.....	The Quaker Oats Co., Chicago, Ill.
		Official Analysis....	10.70	8.60	65.77	3.13	3.35	
Losskorn Stock Feed	1622	Guarant'd Analysis	12.00	10.00	50.00	2.50	.....	G. E. Patteson & Co., Memphis, Tenn.
		Official Analysis....	11.18	9.79	59.61	1.86	4.58	
Daisy Dairy Feed	1623	Guarant'd Analysis	14.50	16.00	50.00	3.50	.....	The Quaker Oats Co., Chicago, Ill.
		Official Analysis....	15.20	15.85	46.50	4.25	7.20	
Hammond Dairy Feed	1624	Guarant'd Analysis	11.00	16.50	48.00	3.50	.....	Western Grain Products Co., Hammond, Ind.
		Official Analysis....	9.18	16.99	54.33	4.67	2.15	
Domino Dairy Feed	1625	Guarant'd Analysis	12.00	15.00	59.00	3.00	.....	Standard Feed Co., Memphis, Tenn.
		Official Analysis....	11.42	14.83	53.42	2.72	6.71	
Korn-Mo Stock Feed	1626	Guarant'd Analysis	12.00	10.00	50.00	2.50	.....	Baker & Holmes Co., Jacksonville, Fla.
		Official Analysis....	6.19	9.64	63.07	2.38	4.78	

NAME, OR BRAND	Laboratory Number.	Analysis.	Fibre.	Protein.	Starch and Sugar. (Nitrogen Free Extr't.)	Fat.	Ash.	NAME AND ADDRESS OF MANUFACTURER.
Besto Molasses Feed	1627	Guarant'd Analysis	12.00	10.00	57.00	3.50	.....	J. T. Gibbons, New Orleans, La.
		Official Analysis.....	9.46	9.60	62.40	3.80	1.80	
Sterling Horse Feed.	1628	Guarant'd Analysis	9.00	9.25	64.50	3.25	.....	The Quaker Oats Co., Chicago, Ill.
		Official Analysis.....	8.57	9.92	66.79	2.60	2.47	
Maizcfalfa Feed.....	1629	Guarant'd Analysis	12.00	10.00	58.00	3.50	.....	The Quaker Oats Co., Chicago, Ill.
		Official Analysis.....	14.30	11.23	57.41	2.90	4.72	
Thoroughbred Feed..	1630	Guarant'd Analysis	7.09	15.75	63.62	3.83	.....	Lexington Roller Mills Co., Lexington, Ky.
		Official Analysis.....	6.23	15.18	59.53	4.22	5.87	
Purina Feed.....	1631	Guarant'd Analysis	9.80	12.00	58.00	4.00	.....	Ralston Purina Co., St. Louis, Mo.
		Official Analysis.....	10.78	15.01	57.15	3.85	4.64	
Soten Stock Feed....	1632	Guarant'd Analysis	15.00	13.00	55.00	2.75	.....	South Texas Grain Co., Houston, Tex.
		Official Analysis.....	13.89	14.65	51.60	2.05	5.85	
Kyome Feed.....	1633	Guarant'd Analysis	6.91	16.28	59.98	4.15	.....	The J. E. M. Milling Co., Frankfort, Ky.
		Official Analysis.....	7.00	16.67	57.14	4.44	6.12	
Sterling Horse Feed.	1634	Guarant'd Analysis	8.00	9.25	64.50	3.25	.....	The Quaker Oats Co., Chicago, Ill.
		Official Analysis.....	6.92	14.48	61.43	3.05	2.77	

Brown's Horse and Mule Feed.....	1635	Guarant'd Analysis	12.00	9.00	50.00	2.50	.....	Brown Milling Co., Greenville, Ala.
		Official Analysis.....	13.22	11.14	58.72	2.77	4.30	
Banner Feed.....	1636	Guarant'd Analysis	10.50	9.75	62.00	3.75	.....	The Quaker Oats Co., Chicago, Ill.
		Official Analysis.....	13.17	10.00	55.39	5.67	4.05	
Pure Wheat Shorts..	1637	Guarant'd Analysis	6.00	15.50	58.00	5.30	.....	Columbia Mills and Elevator Co., Columbia, Tenn.
		Official Analysis.....	5.57	15.32	60.82	5.07	4.75	
Pioneer Alfalfa Meal.	1638	Guarant'd Analysis	35.00	12.00	45.00	1.50	.....	Kornfalfa Feed Milling Co., Kansas City, Mo.
		Official Analysis.....	32.12	13.16	32.82	1.75	7.40	
"G" Middlings.....	1639	Guarant'd Analysis	7.00	17.50	57.30	6.50	.....	C. A. Gambrill Mfg. Co., Baltimore, Md.
		Official Analysis.....	6.73	17.11	55.79	6.60	6.55	
Quality Feed.....	1640	Guarant'd Analysis	12.00	8.00	62.00	3.00	.....	The Quaker Oats Co., Chicago, Ill.
		Official Analysis.....	9.85	8.73	66.80	2.95	3.85	
Bosa Feed.....	1641	Guarant'd Analysis	12.00	8.00	62.00	3.00	.....	The Quaker Oats Co., Chicago, Ill.
		Official Analysis.....	10.01	8.34	67.06	2.72	3.45	
M Middlings.....	1642	Guarant'd Analysis	6.27	17.59	53.65	5.78	.....	Hecker-Jones-Jewell Milling Co., New York, N. Y.
		Official Analysis.....	5.91	17.99	57.28	5.29	4.70	
Schumacher Special Horse Feed.....	1643	Guarant'd Analysis	8.00	9.25	64.50	3.25	.....	The Quaker Oats Co., Chicago, Ill.
		Official Analysis.....	7.45	10.97	66.64	3.17	2.70	
Cracker Mule Feed..	1644	Guarant'd Analysis	12.00	10.00	58.00	3.50	.....	The Quaker Oats Co., Chicago, Ill.
		Official Analysis.....	14.83	11.23	56.84	2.50	4.94	
O. A. C. Special Feed	1645	Guarant'd Analysis	12.00	10.50	55.00	2.75	.....	Lakeland Feed and Supply Co., Lakeland, Fla.
		Official Analysis.....	9.56	10.33	57.31	3.15	6.10	

NAME, OR BRAND.	Laboratory Number.	Analysis.	Fibre.	Protein.	Starch and Sugars (Nitrogen Free Extr't.)	Fat.	Ash.	NAME AND ADDRESS OF MANUFACTURER.
XX Good Molasses Feed	1646	Guarant'd Analysis	12.00	9.00	59.00	1.50	.....	Ralston Purina Co., St. Louis, Mo.
		Official Analysis.....	12.14	8.93	59.76	1.92	5.40	
Molasses Horse and Mule Feed	1647	Guarant'd Analysis	12.00	10.00	56.00	3.50	.....	J. H. Wilkes & Co., Nashville, Tenn.
		Official Analysis.....	8.44	10.44	61.36	2.09	4.38	
Alfo Molasses Feed..	1648	Guarant'd Analysis	14.00	10.00	52.00	2.00	.....	John Wade & Sons, Memphis, Tenn.
		Official Analysis.....	11.20	10.12	57.71	1.73	5.31	
Cavalry Molasses Feed	1649	Guarant'd Analysis	12.00	10.00	55.00	3.00	.....	National Milling Co., Macon, Ga.
		Official Analysis.....	11.87	10.00	58.69	1.64	5.47	
Oceola Horse and Mule Feed	1650	Guarant'd Analysis	12.00	10.50	53.00	2.75	.....	G. E. Patteson & Co., Memphis, Tenn.
		Official Analysis.....	9.54	11.52	60.10	3.31	4.53	

DEPARTMENT OF AGRICULTURE—DIVISION OF CHEMISTRY.

FOOD AND DRUG SECTION.

R. E. Rose, State Chemist. SPECIAL FOOD ANALYSES, 1913. A. M. Henry, Asst. Chemist.

Samples Taken by Purchaser Under Section 12, Act Approved June 5, 1911.

ALCOHOLIC DRINKS.

Number.	LABEL.	MANUFACTURER.	Alcohol (per cent by volume).	FROM
1411	Uno	A. Reid Co., Pensacola	6.75	T. F. West, Tallahassee.
1412	Southern Beauty Apple Cider	Dawson Bros. Mfg. Co., Memphis, Tenn.	6.43	W. W. Hendrickson, Miami.
1413	Bourbon Apple Cider	Consolidated Cider & Vinegar Co., Memphis, Tenn.	6.43	W. W. Hendrickson, Miami.
1414	Hildrick's Honeydew Apple Cider		7.94	W. W. Hendrickson, Miami.
1415	Imitation Grape Juice		Absent	W. W. Hendrickson, Miami.
1416	Imitation Cider		15.85	J. H. Harvell, Milton.
1431	Imitation Cider		1.94	E. R. Isler, Tallahassee.
1432	Imitation Cider		14.49	E. R. Isler, Tallahassee.

ALCOHOLIC DRINKS.—(Continued.)

Number.	LABEL.	MANUFACTURER.	Alcohol (per cent by volume).	FROM
1433	Imitation Cider		3.46	E. H. Isler, Tallahassee.
1434	Imitation Cider		12.64	J. P. S. Houston, Tallahassee.
1435	Imitation Beer	P. Newman, Jacksonville	2.59	P. Newman, Jacksonville.
1436	Cider		6.19	E. D. Wester, DeFuniak Springs.
1438	Dr. Vereen's Blood Purifyer	Frank Vereen, Palatka	5.67	Frank Vereen, Palatka.
1439	Wine		11.25	Florida Brewing Co., Tampa.
1440	Cider		6.80	Joe Demetree, Tallahasse.
1441	Cider		6.82	Joe Demetree, Tallahasse.
1443	Cider		7.50	E. H. Hopkins, Tallahassee.
1447	Cider		10.68	A. Nofal, Ft. Lauderdale.
1448	Cider		11.03	Walters & Harris, Midway.

1449	Cider		10.15	M. Davis, Tallahassee.
1455	Cider and Whiskey Mixture		11.64	J. P. S. Houston, Tallahassee.
1456	Cider (Lenzo)		None	Maxwell & Reese, Midway.
1458	Teddy Beer	The Consumer's Brewing Co., New Orleans, La.	2.37	J. R. Warren, Millville.
1460	Scuppernong Wine	F. M. Lawler, St. Augustine	11.64	F. M. Lawler, St. Augustine.
1462	Florida Bud (beer)	Florida Brewing Co., Tampa	2.68	J. F. St. Johns, Eustis.

SPECIAL FOOD ANALYSES—(Continued.)

SUGAR CANE.

Number.	NAME.	Brix at 17.5° C.	Sucrose (per cent).	Invert Sugar. (per cent).	Coefficient of Purity.	FROM.
1390	Red Cuban Cane No. 1.....	12.40	8.16	3.24	65.81	Fellsmere Farms Co., Fellsmere.
1391	Blue Cane No. 2.....	14.42	13.00	0.40	90.15	Fellsmere Farms Co., Fellsmere.
1392	Ribbon Cane No. 3.....	15.44	12.01	2.32	77.78	Fellsmere Farms Co., Fellsmere.
1393	D 74 Cane No. 4.....	18.45	12.79	4.17	69.32	Fellsmere Farms Co., Fellsmere.
1428	Green Cane	16.71	14.40	1.49	86.23	A. W. Cain, Jacksonville.
1429	Striped Cane	14.91	14.06	0.15	94.30	A. W. Cain, Jacksonville.
1430	Green Cane	15.09	12.68	1.85	83.90	T. S. Kyle, Ocala.

DEPARTMENT OF AGRICULTURE—DIVISION OF CHEMISTRY.

FOOD AND DRUG SECTION.

H. E. ROSE, State Chemist. SPECIAL FOOD ANALYSES, 1913. A. M. Henry, Asst. Chemist.

Samples Taken by Purchaser Under Section 12, Act Approved June 5, 1911.

SPECIAL FOOD ANALYSES—(Continued.)

CITRUS FRUIT.

GRAPE FRUIT.

Number.	DATE.	FROM.	Total Acid as Citric (per cent).	Total Sugar as Invert (per cent).	Ratio of Acid to Sugar.	TASTE.
1417	Feb. 21, 1913.....	Jupiter	1.49	8.02	1 to 5.74	Sour.
1418	Feb. 21, 1913.....	Dade City	1.31	6.62	1 to 5.05	Sour.
1450	May 7, 1913.....	E. A. Douglass, Orange Co..	2.36	.....	.....	Sour.
1451	May 7, 1913.....	E. A. Douglass, Orange Co.				
No. 1	(Large)	E. A. Douglass, Orange Co..	1.57	.....	.....	Sour
No. 2	(Small)	E. A. Douglass, Orange Co..	2.00	.....	.....	Sour

GRAPE FRUIT—(Continued).

Number.	DATE.	FROM.	Total Acid as Citric (per cent).	Total Sugar as Invert (per cent).	Ratio of Acid to Sugar.	TASTE.
No. 3	(Large)	E. A. Douglass, Orange Co..	1.53	.....	.....	Sour
No. 4	(Medium)	E. A. Douglass, Orange Co..	1.81	.....	.....	Sour
No. 5	(Large)	E. A. Douglass, Orange Co..	1.44	.....	.....	Sour
No. 6	(Small)	E. A. Douglass, Orange Co..	2.23	.....	.....	Sour
Composite of six 6 samples	.....	E. A. Douglass, Orange Co..	1.67	.....	.....	Sour
1454	May 8, 1913.....	S. H. Gaitskill, McIntosh.....	0.77	12.52	1 to 16.26	Sweet.

ORANGES.

Number.	Date.	From	Total Acid as Citric (Per cent.)	Taste.
1452	May 7, 1913.....	W. E. Harris, Ona, Fla.....	0.74	Sweet.
1453	May 7, 1913.....	(Indian River).....	0.85	Sweet.

MISCELLANEOUS.

No.	LABEL.	RESULTS.	FROM.
1237	Wheat	Examined microscopically and macroscopically. The wheat is mouldy and has been heated. Not first class wheat.	Theo. J. DeSteuben, Jensen.
1444	Catsup No. 1.....	Sodium Benzoate.....absent. Mold in 10% of fields, yeast and spores, per 1/60 cc..... =20 Bacteria per cc.....13,000,000	Consolidated Grocery Co., Jacksonville.
1445	Catsup No. 2.....	Sodium Benzoate.....absent. Mold in 6% of fields, yeast and spores, per 1/60 cc..... =24 Bacteria per cc.....11,000,000	Consolidated Grocery Co., Jacksonville.
1446	Coffee	Chickory .....absent. Adulterated with coffee hulls.	Cheek-Neal Coffee Co., Jacksonville.
1461	Grapefruit Juice.....	Alcohol (% by vol.).....=none. Salicylic Acid (%).....=none. Benzoic Acid (%).....=none. Citric Acid (%).....=1.57	A. W. Giamptetro, Tampa.
1463	Delmonico Club Apple Vinegar	Acetic Acid (%) .....=3.24 Solids (%) .....=0.40 Ash (%) .....=0.05	A. L. Barineau, Tallahassee.

DEPARTMENT OF AGRICULTURE—DIVISION OF CHEMISTRY.

FOOD AND DRUG SECTION.

R. E. Rose, State Chemist. SPECIAL FOOD ANALYSES, 1913. L. HEIMBURGER, Asst. Chemist.

Samples Taken by Purchaser Under Section 12, Act Approved June 5, 1911.

ALCOHOLIC DRINKS.

Number.	DATE.	NAME.	Alcohol (per cent by Volume)	FROM.
1464	Wurtzburger Style Malt Tonic..	Wurtzburger Malt Extract Co., Atlanta, Ga.	3.88	Nat R. Walker, Crawfordville.
1465	Hop Ale	.....	0.20	T. C. Smyth, Tavares.
1466	Florida Bud., 12 oz. Guaranteed less than 2% Alcohol.	The Florida Brewing Co., Tampa, Fla.	3.27	T. C. Smyth, Tavares.
1467	Florida Bud., 12 oz. Guaranteed less than 2% Alcohol.	The Florida Brewing Co., Tampa, Fla.	2.95	T. C. Smyth, Tavares.
1469	Extract Jamaica Ginger.....	New Smyrna Pharmacy, New Smyrna, Fla.	91.04	W. H. Newell, New Smyrna.
1470	Schnapp's Brew	Tampa Bottling Works, Tampa, Fla..	0.47	Tampa Bottling Works, Tampa
1475	Cider	.....	7.29	E. D. Wester, DeFuniak Sp'gs.

1482	Schnapps Brew. Artificial color and flavor. Net contents 12 oz. Per cent Alcohol, by volume, 50 per cent solids, 1.98.	Tampa Bottling Works, Tampa, Florida, Distributors for South Fla.	0.00	R. B. Hawkins, Ft. Myers.

SOFT DRINKS.
(These Drinks Contain No Alcohol.)

No.	LABEL.	MANUFACTURER.	FROM.
1471	Poinsetta. Contains no alcohol, etc.	The Purity Extract & Tonic Co., Chattanooga, Tenn.	H. Blaine Peacock, Tarpon Springs.
1474	Golden Ribbon. Non-intoxicating, etc., 12 ozs.	Council Bluffs Soda Water Co., Council Bluffs, Iowa.	Paul Carter, Marianna.
1476	Mezzo No. 1. Elberta Flavor..	Anderson & Co., Atlanta, Ga.....	A. R. Denmark, Tallahassee.
1477	Golden Ribbon. Non-intoxicating, etc., 12 ozs.	Council Bluffs Soda Water Co., Council Bluffs, Iowa.	Tallahassee Fruit & Grocery Co., Tallahassee.
1478	Schooner Brew. Preserved with 1/10 of 1% Benzoate of Soda, National Beverage Co., Chatta- etc. Bottled under authority of National Beverage Co., Chattanooga, Tenn.	Crown Bottling Works, Brooksville, Fla.	Crown Bottling Works, Brooksville.
1483	Golden Ribbon. Imitation of German Brew. Non-intoxicating, 12 oz.	Council Bluffs Soda Water Co., Distributors, Council Bluffs, Iowa.	Josh Fowler, River Junction.

SPECIAL FOOD ANALYSES—(Continued.)
CITRUS FRUIT.

Number.	NAME.	DATE.	Total Acid as Citric (per cent).	FROM
1472	Pomelo (Sample No. 2).....	Aug. 27, 1913.....	2.23	J. R. Williams, Citra.
1473	Pomelo (Sample No. 1.....	Aug. 27, 1913.....	2.05	J. R. Williams, Citra.
1479	Oranges	Sept. 18, 1913.....	1.49	Barney Dillard, Astor.
1480	Grapefruit	Sept. 18, 1913	1.83	Barney Dillard, Astor.
1916	Grapefruit ..... (Royal Ponciana Brand)	Oct. 6, 1913	1.75	A. L. White, Ft. Myers.

No.	LABEL.	ANALYSIS.	FROM.
1468	Blue Grass Belle Catsup. Put up by The Castleman-Blakemore Co., Louisville, Ky.; 16 fluid ozs.	Sodium Benzoate.....None. Net measure.....16.6 fluid ozs. *Microscopic Examination.* Mold (in 2% of fields)....= 2 Yeasts & spores per 1/60 cc= 8 Bacteria (per cc).....= 5,000,000	Peninsular Grocery Co., Tampa.
1481	Milk	Butter Fat .....= 3. 5%	R. E. Rose, Tallahassee.
1484	Vinegar	Acetic Acid .....= 4.90% Total Solids .....= 2.23% Ash .....= 0.31%	Mrs. A. D. Davis, Jacksonville.
1485	Flour	Bleaching .....None. Dough Test .....Good. Corn Starch .....None. Gluten Test .....None. Corn Meal .....None.	H. W. Smith, Punta Gorda.

DEPARTMENT OF AGRICULTURE—DIVISION OF CHEMISTRY.

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

Samples Taken by Purchaser Under Section 12, Act Approved June 5, 1911.

OFFICIAL FOOD ANALYSIS, 1913.

SYRUPS.

Number.	LABEL.	Moisture (Per Cent.)	Ash (Per Cent.)	Glucose (Per Cent.) Polarizing at 17.5° U.	Sulphur Dioxide (Per Cent.)	Net Weight or Measure.	Remarks.
1182	†Colonial Brand Pure Maple Sap Syrup, Rigney & Co., Brooklyn, N. Y.; 25 ozs.	31.35	0.59	0.00	Absent	2 lbs. 1 oz.	†Passed
1183	*Towle's Log Cabin Cane-Sugar and Maple, 1 pint; The Towle's Maple Products Co., St. Paul, Minn.	31.92	0.15	0.00	Absent	1 pint.	*Legal.
1184	‡Park Brand Syrup, 42 ozs. or over; a blend of 75% rock candy drips and 25% maple syrup; Rigney & Co., Brooklyn, N. Y.	34.30	0.16	0.00	Absent	2 lbs. 8 ozs.	‡Illegal.
1185	†The Very Best Pure Cane Syrup, weight 2½ lbs.; J. A. Cooper, Robertsdale, Ala.	26.65	0.80	0.00	Absent	2 lbs. 6 ozs.	‡Illegal.
1186	*Roy's Pride Brand Absolutely Pure Sugar Cane Syrup, net weight 2½ lbs.; W. J. Singletary, Grand Ridge, Fla.	26.80	0.73	0.00	Absent	2 lbs. 8 ozs.	*Legal.

1187	‡King Komus Brand Pure Louisiana Cane Syrup, contains 1½ lbs. or over; Dunbars, Lopez & Dukate Co., New Orleans, La.	28.65	1.94	0.00	Absent	1 lb. 5 ozs.	‡Illegal.
1188	*Piney Woods Brand Georgia Cane Syrup, contents 1 lb. 9 ozs. or over; South Georgia Syrup Co., Valdosta, Ga.	29.35	0.77	0.00	Absent	1 lb. 10 ozs.	*Legal.
1189	‡Verona Brand Pure Cane Syrup, average net weight 3 lbs.; O. P. Wernicke, Avon Park, Fla.	24.70	0.88	0.00	Absent	2 lbs. 13 ozs.	‡Illegal.
1190	*Moro Molasses, contains Sulphur Dioxide; net weight not less than 2 lbs. 10 ozs.; Hudson Mfg. Co., 231 W. St., New York.	23.61	4.70	0.00	Present	2 lbs. 13 ozs.	*Legal.
1191	†Alligator Brand Pure Louisiana Molasses, contains Sulphur Dioxide, 24 ozs., average net weight; New Orleans Coffee Co., New Orleans, La.	24.05	4.25	0.00	Present	1 lb. 8 ozs.	†Passed
1192	†Peacock Brand Georgia Cane and Corn Syrup, net weight 21 ozs.; Southern Syrup Co., Montgomery, Birmingham, Ala.	26.37	0.52	38.03	Absent	1 lb. 6 ozs.	†Passed
1193	‡Airlo Brand Cane & Corn Syrup, contains 1½ lbs. or over; Dunbars, Lopez & Dukate Co., New Orleans, La.	24.16	1.41	20.55	Present	1 lb. 6 ozs.	‡Illegal.
1194	*Alaga, Alabama-Georgia Co.'s Cane & Corn Compound Syrup, net weight 1 lb. 13 ozs.; Alabama-Georgia Syrup Co., Montgomery, Ala.	27.92	0.79	42.33	Absent	1 lb. 13 ozs.	*Legal.

OFFICIAL FOOD ANALYSES, 1913—(Continued.)
SYRUPS—Continued.

Number.	LABEL.	Moisture (Per Cent.)	Ash (Per Cent.)	Glucose (Per Cent. Polarizing at 17.5° C.)	Sulphur Dioxide (Per Cent.)	Net Weight or Measure.	Remarks.
1195	*Car-Wi-Co Brand Corn and Sugar Cane Syrup, net weight 1 lb. 5 ozs.; Penick & Ford, Ltd., Columbus, Ga.	24.26	0.58	60.12	Absent	1 lb. 6 ozs.	*Legal.
1196	†Everybody's Brand Evaporated Sugar Cane Syrup and Corn Syrup, contains Sulphur Dioxide, 24 ozs. average net weight; New Orleans Coffee Co., New Orleans, La.	24.41	1.46	34.97	Present	1 lb. 11 ozs.	†Passed
1197	‡B. & O. Brand N. O. Molasses & Corn Syrup, contents 1 lb. 13 ozs.; Southern Molasses Co., West & King Sts., New York.	25.50	3.27	30.68	Present	1 lb. 14 ozs.	‡Illegal.
1198	†Sugar Glen Brand, Compound Sugar House Molasses and Corn Syrup, contains Sulphur Dioxide, weight 30 ozs.; C. E. Coe, Memphis, Tenn.	24.09	1.99	22.70	Present	2 lbs. 5 ozs.	†Passed
1199	‡LaBelle Brand Table Syrup, Gibbs Preserving Co., Baltimore, Md., 1/30 of 1% Sodium Benzoate.	26.34	2.08	60.24	Absent	1 lb. 11 ozs.	‡Illegal.
1200	*Karo (Crystal White), 2 lbs. net weight; corn Products Refining Co., New York.	22.73	0.20	83.44	Absent	2 lbs.	*Legal.

1201	*Karo (Corn Syrup), 2 lbs. net weight; Corn Products Refining Co., New York.	25.74	0.85	70.42	Absent	2 lbs.	*Legal.
1202	*A. & P. Choice Corn Syrup, contains 1 lb. 14 ozs.; The Great Atlantic & Pacific Tea. Co., Jersey City, N. J.	23.21	0.62	83.43	Absent	1 lb. 14 ozs.	*Legal.

Foot Notes to Syrups.

*Legal—Fully complies in every respect with the law.

†Passed—Net weight or measure not correctly stated on the label. Should be in lbs. and ozs.—not ozs. only. Though not strictly legal, complies sufficiently with the law to be passed.

‡Illegal—Samples are illegal for the following reasons:—

No. 1184—Short weight; incorrect statement of net weight; misbranded.
No. 1185—Short weight; incorrect statement of net weight; misbranded.
No. 1187—Short weight; incorrect statement of net weight; misbranded.
No. 1189—Short weight; incorrect statement of net weight; misbranded.
No. 1193—Short weight; incorrect statement of net weight; misbranded; adulterated. Contains Sulphur Dioxide and no statement of same on the label.
No. 1197—Adulterated and misbranded. Contains Sulphur Dioxide and no statement of same on label. Contains added water above amount allowed by standard.
No. 1199—Misbranded. No statement of net weight or measure on label.

MISCELLANEOUS.

No.	LABEL.	MANUFACTURER.	RESULTS.	REMARKS.
1175	Special Old Scotch Whiskey—Blended.	John Dewar & Sons, Ltd., Perth & London	Alcohol (by volume)=44.60%	Illegal. Misbranded. No statement of percentage of alcohol. No statement of net weight or measure.
1176	Pure Apple Cider....	Colsolidated Cider and Vinegar Co., Memphis, Tenn.	Alcohol (by volume)=4.69%	Illegal. Misbranded. No statement of percentage of alcohol. No statement of net weight or measure.
1177	Hildrick's Honey Dew Brand Pure Apple Cider.	Walter H. Hildrick Co., Greenwich St., New York.	Alcohol (by volume)=8.51%	Illegal. Misbranded. No statement of percentage of alcohol. No statement of net weight or measure.
1178	Smith's "True Fruit" Crushed Pineapple, 1 quart.	J. Hungerford Smith Co., Rochester, N. Y.	Formic Acid.....Absent	Legal.
1179	Crushed Fruit, Pineapple.	Crown Cordial and Extract Co., New York.	Formic Acid.....Absent	Illegal. No statement of net weight or measure.
1180	Artificially Colored Crushed Fruit.	Crown Cordial and Extract Co., New York.	Formic Acid.....Present	Illegal. Adulterated. Contains Formic Acid and no state-

	Strawberry.			ment of same on label. Misbranded. No statement of net weight or measure.
1181	Hirsch's Fancy Sweet Pickles.	Hirsch Bros. & Co., Louisville, Ky., and Pittsburg, Pa.	Acetic Acid.....=2.45% Alum .....Present Benzoic Acid.....=0.08%	Illegal. No statement of net weight or measure on label.

DEPARTMENT OF AGRICULTURE—DIVISION OF CHEMISTRY.

R. E. Rose, State Chemist. FOOD AND DRUG SECTION. L. HEIMBURGER, Asst. Chemist.

Samples Taken by State Inspector Under Section 12, Act Approved June 5, 1911.

OFFICIAL FOOD ANALYSIS, 1913

LARDS, LARD COMPOUNDS AND COOKING OILS.

Number.	LABEL.	Net Contents as Stated.	Net Contents as Found.	Iodine Number.	Butro Refractometer Reading at 40° C.	Cotton Seed Oil.	REMARKS.
1204	Armour's "Shield" Pure Lard, Armour & Co. (on 60-lb tub).	Sold in bulk.....		62.5	50.2°	Absent.	Legal.
1205	Wesson Snowdrift Oil. Choice Winter Pressed Cotton Seed Oil. Good for salads and cooking, etc. The Southern Cotton Oil Co., New York, Savannah, New Orleans, Chicago.	Not stated..	13¾ ozs.	69.9	59.8°	Present	Illegal. No statement of net weight or measure.
1206	Advance Compound. Ingredients: Prime Oleo Stearine and Refined Cotton Seed Oil. Sulzberger & Sons Co., of Oklahoma (on 60-lb. tub).	Sold in bulk.....		83.2	56.6°	Present	Legal.

1207	Scuco Shortening. Not less than 1 lb. 7 ozs. net. Contains only C. S. Oil, Stearine made from C. S. Oil and Oleo Stearine. Made at Savannah, Ga. The Southern Cotton Oil Co.	1 lb. 7 ozs.	1 lb. 7 ozs.	88.6	58.0°	Present	Legal.
1208	Pearl-Choice Refined Cotton Seed Oil, Prime Oleo Stearine-Beef Fat. Tennessee Packing and Stock Yards Co., Nashville, Tenn. (on tierce).	Sold in bulk	.....	63.8	55.3°	Present	Legal.
1209	Kneedit. Composed of C. Seed Oil, Cotton Seed Stearine and Oleo Stearine. Edible Products Co. Made at Savannah, Ga. (on 60-lb. tub).	Sold in bulk	.....	93.2	56.4°	Present	Legal.
1210	Fairbanks Brand Compound. Composed of C. S. Oil, Oleo Stearine and Stearine made from C. S. Oil. The N. K. Fairbanks Co., New Orleans. (on 50-lb. can).	Sold in bulk	.....	83.2	55.2°	Present	Legal.
1211	Indiana Brand Pure Lard. Kingar & Co., Indianapolis, Ind. (on 50-lb. can).	Sold in bulk	.....	65.9	50.3°	Absent.	Legal.

OFFICIAL FOOD ANALYSES, 1913—Continued.
LARDS, LARD COMPOUNDS AND COOKING OILS.

Number.	LABEL.	Net Contents as Stated.	Net Contents as Found.	Iodine Number.	Butro-Refractometer Reading at 40° C.	Cocton Seed Oil.	REMARKS.
1212	Morris' White Seal. Made from Cotton Seed Oil and Oleo Stearine. Morris & Co., E. St. Louis. [Sample from 45-lb. can).	Sold in bulk	.....	84.2	55.9°	Present	Legal.
1213	Invincible. For shortening, for frying. The Proctor & Gamble Co. Made at Ivorydale, O., and Macon, Ga. (on 60-lb. tub.)	Sold in bulk	.....	93.9	57.0°	Present	Legal.
1214	Sea Foam Compound. Cotton Seed Oil and Oleo Stearine. Made for Kingar & Co., Indianapolis, Ind. (on 60-lb. tub).	Sold in bulk	.....	86.7	55.2°	Present	Legal.

1215b	White Breast Brand Pure Lard, 401-54 gross. Morton Gregson Co., Nebraska City, Neb. (Label taken from bottom of tierce).	Sold in bulk	.....	65.7	50.4°	Absent.	Legal.
1216	Cream 'O'Cotton. Contains only sterilized C. S. Oil and Oleo Stearine. Texas Refining Co., Greenville, Texas. (on 45-lb. tin).	Sold in bulk	.....	87.2	56.5°	Present	Legal.
1217	Eagle Brand Pure Lard with Oleo Stearine. Jones & Lamb Co., Baltimore, Md. (on 45-lb tin).	Sold in bulk	.....	63.0	50.2°	Absent.	Legal.
1218	Sunny South C. S. Oil and Oleo Stearine. Net weight of contents 46 lbs. Street & Corkran Co., Baltimore, Md. (on 45-lb. tin can).	Sold in bulk	.....	83.4	56.2°	Present	Legal.
1219	Polar Compound. Sterilized Cotton Seed Oil and Oleo Stearine. Net weight 45 lbs. 9 ozs. Manufactured by the Merchants & Planters' Oil Co., Houston, Tex. (on 45-lb. can).	Sold in bulk	.....	83.6	55.2°	Present	Legal.
1220	Tennessee Country Style Pure Lard (on 45-lb. tin can).	Sold in bulk	.....	69.6	50.9°	Absent.	Legal.

LARDS, LARD COMPOUNDS AND COOKING OILS.

Number.	LABEL.	Net Contents as Stated.	Net Contents as Found.	Iodine Number.	Butyro-Refractometer Reading at 40° C.	Cotton Seed Oil.	REMARKS.
1414	Crisco. Purely vegetable. Net weight 1½ lbs. The Proctor & Gamble Co., Cincinnati, O.	1 and ½ lbs.	1 lb 8½ ozs.	76.3	53.2°	Absent.	Legal.
1415	Cottolene. Cotton Seed Oil—Oleo Stearine, 1 lb. 10 ozs. net weight. Contains no hog fat. The N. K. Fairbank Co.	1 lb. 10 ozs.	1 lb. 10 ozs.	87.1	55.2°	Present	Legal.
1416	Snowdrift. Contains only C. S. Oil and Oleo Stearine. Not less than 23 ozs. net. The Southern Cotton Oil Co., Gretna, La.	23 ozs.	25¾ ozs.	81.9	55.9°	Present	Illegal. Net weight not correctly stated in pounds and ounces.

1417	Cream White. Choice C. S. Oil, Prime Oleo Stearine—Beef Fat. Tennessee Packing and Stock Yards Co., Nashville, Tenn. (on barrel).	Sold in bulk	.....	88.9	56.3°	Present	Legal.
1418	Swift's Jewel Shortening. Made from refined Cotton Seed Oil and Oleo Stearine (on barrel).	Sold in bulk	.....	85.5	56.0°	Present	Legal.
1419	Cudahy's White Ribbon Compound. Prepared from Cotton Seed Oil, Oleo Stearine and Beef Fat (on barrel).	Sold in bulk	.....	84.8	55.3°	Present	Legal.
1420	Cudahy's Milwaukee Snow Ball, composed of C. S. Oil, Oleo Stearine and Beef Fat. Cudahy Bros. Co. plant, Cudahy, Wis.	Sold in bulk	.....	69.9	55.3°	Present	Legal.
1421	Pure Lard, Laurel Leaf Brand. Sulzberger & Sons Co. (on 40-lb. tin.	Sold in bulk	.....	59.5	50.2°	Absent.	Legal.
1422	Cudahy's Milwaukee White Champion Brand Pure Lard. Cudahy Bros. Co., Cudahy, Wis. (on 40-lb. tub).	Sold in bulk	.....	58.3	50.0°	Absent.	Legal.

LARDS, LARD COMPOUNDS AND COOKING OILS.

Number.	LABEL.	Net Contents as Stated.	Net Contents as Found.	Iodine Number.	Butro-Refracto-meter Reading at 40° C.	Cotton Seed Oil.	REMARKS.
1423	Swift's Silver Leaf Brand, Guaranteed Pure Lard. Swift & Co. (on 60-lb. tub).	Sold in bulk	.....	64.9	51.1°	Absent.	Legal.
1424	Flake White for shortening, etc. Proctor & Gamble Co., Ivorydale, O. (on 60-lb. tub).	Sold in bulk	.....	80.9	59.7°	Present	Legal.
1425	Snowhite. Composed of C. S. Oil. The N. K. Fairbank Co., New Orleans, La. (on tierce).	Sold in bulk	.....	84.5	55.4°	Present	Legal.
1426	Armour's White Cloud. Composed of Cotton Seed Oil and Oleo Stearine. Armour & Co. (on 60-lb. tub).	Sold in bulk	.....	80.8	55.3°	Present	Legal.

1427	Armour's Simon Pure Leaf Lard. Armour & Co.	Sold in bulk	.....	58.5	48.8°	Absent.	Legal.
1428	Cudahy's Rex Pure Lard (on side of tierce).	Sold in bulk	.....	69.9	50.1°	Absent.	Legal.

ALCOHOLIC DRINKS.

Number.	LABEL.	Alcohol (per cent. by Volume)	Net Weight as Stated.	Net Weight as Found.	Remarks.
1222	Rhein Brew (g). The William Gerst Brewing Co., Nashville, Tenn. Contents, 12 oz. Contains less than 2% alcohol.	2.00	12 oz.	12⅝ oz.	Legal.
1456	Schooner Brew. Preserved with 1/10 of 1% Benzoate of Soda. Bottled under authority of National Beverage Co., Chattanooga, Tenn. 7 oz.		7 oz.		Legal.
1439	Monticello Special Reserve Rye Whiskey. The Monticello Distilling Co., Baltimore, Md.	44.13	Not stated	15,⅝ oz.	Illegal. Misbranded. No statement of net weight or measure, or alcohol percentage on label.
1409	Mild Holland Gin. Hanne Bros., Importers and Bottlers, Jacksonville, Fla.	34.32	Not stated	15,¼ oz.	Illegal. Misbranded. No statement of net weight or measure, or alcohol percentage on label.

1461	Johns English Brew. Ginger Beer	2.37	Not stated	8,⅝ oz.	Illegal. Misbranded. No statement of net weight or measure, or alcohol percentage on label.
1462	Root Beer. Coca Cola Bottling Co., Jacksonville, Fla. Artificial.	0.60	7 oz.	7 oz.	Legal.
1464	Bludwine. 7 oz. Bludwine Bottling Co., Jacksonville, Fla.	0.60	7 oz.	8,⅝ oz.	Legal.
1497	White Top. Less than 2% alcohol. 12 oz. The Capital Brewing & Ice Co., Montgomery, Ala.	1.88	12 oz.	13,½ oz.	Legal.
1501	Florida Bud. Guaranteed less than two per cent. alcohol. 12 ounces. The Florida Brewing Co., Tampa, Fla.	1.68	12 oz.	13,⅞ oz.	Legal.
1502	Best Malt Meade. Contents, 12 ozs. Alcoholic strength less than 2 per cent. Chas. Blum Company, Jacksonville, Fla.	1.88	12 oz.	12,⅞ oz.	Legal.

DEPARTMENT OF AGRICULTURE—DIVISION OF CHEMISTRY.

R. E. ROSE, State Chemist. FOOD AND DRUG SECTION. L. HEIMBURGER, Asst. Chemist

Samples Taken by State Inspector Under Section 12, Act Aproved June 5, 1911.

OFFICIAL FOOD ANALYSIS, 1913.

CITRUS FRUIT.

Chapter 0515—1913.

Number.	Date.	VARIETY.	Total Acid as Crystallized Citric Acid. (per cent).	COLOR.	Taste.	REMARKS.
1402	Oct. 6	Grapefruit. Royal Ponciana	1.748	Pale green	Sour	Immature by color test. Mature by acid test.
1403	Oct. 6	Grapefruit. Royal Ponciana (duplicate sample of above).	1.73	Pale green	Sour	Immature by color test. Mature by acid test.
1404	Oct. 14	Oranges.	1.94	Green.	Sour	Immature by color and taste. Immature by analysis, showing excess of 0.64% acid above standard fixed by law.
1405	Oct. 15	Grapefruit.	1.79	Pale green.	Sour	Immature by color and taste. Larger per cent of acid than legal standard.
1406	Oct. 29	Oranges.	1.68	Forty per cent of sample green.	Sour	Immature by color and taste. Larger per cent of acid than legal standard.

No.	LABEL.	RESULTS.	REMARKS.
1449	Mixed Pork & Beef Sausage, with Cereal added. (Sold in bulk).	Moisture (%) .....39.28 Starch (%) ..... 3.50 Boric Acid (%) .....None. Salicylic Acid .....None. Sodium Sulfite 0.28	Illegal. Adulterated. Contains Sodium Sulfite.
1450	Airlo Brand Cane & Corn Syrup. Packed by Dunbars, Lopez & Dukate Co., New Orleans, La.	Sulfur Dioxide .....=None. Net Weight .....=12, 2/8 ozs.	Illegal. Misbranded. No statement of net weight or measure.
1451	Excelsior Brand Beets. Packed by C. E. Sears & Co., Circleville, Ohio.	Salicylic Acid .....=None. Benzoic Acid .....=None. Net weight .....=2 lbs. 1, 3/8 ozs.	Illegal. Misbranded. No statement of net weight or measure.
1452	Crown Brand Little Neck Clams. Packed by L. Pickert Fish Co., Boston, Mass.	Salicylic Acid.....=None. Benzoic Acid .....=None. Net weight .....=15, 7/8 ozs.	Illegal. Misbranded. No statement of net weight or measure.

SOFT DRINKS.

(These drinks contain no alcohol).

Number.	LABEL.	Saccharine (per cent).	Net Weight as Stated.	Net Weight as Found.	Remarks.
1221	Beaufont Ginger Ale. The Beaufont Co., Sole Mgrs., Richmond, Va.	None	Not stated	13 oz.	Illegal. Misbranded. No statement of net weight or measure.
1223	Lemon. Artificial color and flavor. Sanford Coca Cola Bottling Co., Sanford, Fla. 7 oz.	None	7 oz.	7,¼ oz.	Legal.
1224	Cream Soda. Artificial color and flavor. Sanford Coca Cola Bottling Co., Sanford, Fla. 7 oz.	None	7 oz.	7,¼ oz.	Legal.
1225	Ginger Ale. Artificial color and flavor. Sanford Coca Cola Bottling Co., Sanford, Fla. 7 oz.	None	7 oz.	6,⅝ oz.	Illegal. Misbranded. Incorrect statement of net weight.
1226	Strawberry. Artificial color and flavor. Sanford Coca Cola Bottling Co., Sanford, Fla. 7 oz.	None	7 oz.	7,¼ oz.	Legal.

1227	Sarsaparilla. Artificial color and flavor. Capacity, 7 oz.	None	7 oz.	8,⅛ oz.	Legal.
1228	Gay Ola. Ft. Pierce Bottling Works, Fort Pierce, Fla. 7 oz.	None	7 oz.	9 oz.	Legal.
1229	Grape Smash. Artificial color. Ft. Pierce Bottling Works, Ft. Pierce, Fla. 7,½ oz.	None	7,½ oz.	8,⅝ oz.	Legal.
1230	Cream Soda. Artificial flavor and color. Ft. Pierce Bottling Works, Ft. Pierce, Fla. Capacity, 7,½ oz.	None	7,½ oz.	8,⅞ oz.	Legal.
1231	Ginger Ale. Artificial flavor and and color. Ft. Pierce Bottling Works. Ft. Pierce, Fla. Capacity, 7 oz.	None	7 oz.	8,⅝ oz.	Legal.
1232	Strawberry. Artificial flavor and color. Fort Pierce Bottling Works, Fort Pierce, Fla. Capacity, 7 oz.	None	7 oz.	7,⅞ oz.	Legal.
1233	Lemon Soda. Artificial flavor and color. Fort Pierce Bottling Works, Fort Pierce, Fla. Capacity, 7,½ oz.	None	7,½ oz.	9 oz.	Legal.

Number.	LABEL.	Saccharine (per cent).	Net Weight as Stated.	Net Weight as Found.	Remarks.
1234	Hires. The Genuine Root Beer. Bottled and distributed under license of Charles E. Hires Co., Philadelphia. Lake Worth Bottling Works, West Palm Beach, Fla.	None	Not stated	13,⅝ oz.	Illegal. Misbranded. No statement of net weight or mensure.
1325	Peach. Artificial flavor and color. Frank Holler. West Palm Beach, Fla. This bottle contains 7 ozs.	None	7 oz.	9,¼ oz.	Legal.
1236	Red Rock Ginger Ale. The Red Rock Co., Atlanta, Ga.	None	Not stated	12,⅝ oz.	Illegal. Misbranded. No statement of net weight or mensure.
1237	Sparkling Lemon Sour. Artificially colored.	None	Not stated	13,½ oz.	Illegal. Misbranded. No statement of net weight or mensure.

1238	(Lemon Soda). Frank Holler. West Palm Beach, Fla. This bottle contains 7 ozs.	None	7 oz.	7,½ oz.	Legal.
1239	Ginger Ale. Artificial color and flavor.	None	Not stated	6,⅝ oz.	Illegal. Misbranded. No statement of net weight or measure.
1240	Cantrell & Cochranes Ginger Ale. Free from alcohol. 9.6 Fl. oz. Net. Dublin & Belfast. Manufactured in Ireland.	None	9.6 fl. oz.	11,⅜ oz.	Legal.
1241	Royal Palm Strawberry. Miami Coca Cola Bottling Co., Miami, Fla. Artificial flavor and color. Net weight 7 ozs.	None	7 oz.	6,⅝ oz.	Illegal. Net weight not correctly stated.
1242	Royal Palm Cascade Ginger Ale. Artificial flavor and color. Miami Coca Cola Bottling Co., Miami, Fla. Net weight 7 ozs.	None	7 oz.	7,⅛ oz.	Legal.
1243	Royal Palm Root Beer. Artificial flavor and color. Miami Coca Cola Bottling Co., Miami, Fla. Net weight, 7 ozs.	None	7 oz.	8,⅛ oz.	Legal.
1244	Strawberry. Artificial flavor and color.	None	Not stated	7,⅝ oz.	Illegal. Misbranded. No statement of net weight or measure.

Number.	LABEL.	Saccharine (per cent).	Net Weight as Stated.	Net Weight as Found.	Remarks.
1245	Lemon Soda. Artificial color and flavor.	None	Not stated	7.¼ oz.	Illegal. Misbranded. No statement of net weight or measure.
1246	Ginger Ale. Artificial flavor and color.	None	Not stated	7.⅝ oz.	Illegal. Misbranded. No statement of net weight or measure.
1247	Lemon Soda. Artificial flavor and and color. Magic City Bottling Works, Miami, Fla. This bottle contains 7 ozs.	None	7 oz.	6.¼ oz.	Illegal. Misbranded. Net weight not correctly stated.
1248	Brainol. This bottle contains 7 ozs. Magic City Bottling Works, Miami, Fla.	None	7 oz.	7.½ oz.	Legal.
1249	Ginger Ale. Artificial flavor and color. This bottle contains 7 ozs. Magic City Bottling Works, Miami, Fla.	None	7 oz.	7.¼ oz.	Legal.

1250	Root Beer. Artificial flavor and color. This bottle contains 7 ozs. Magic City Bottling Works, Miami, Fla.	None	7 oz.	7 ⅛ oz.	Legal.
1251	Strawberry. Artificial flavor and color. This bottle contains 7 ozs. Magic City Bottling Works, Miami, Fla.	None	7 oz.	7 oz.	Legal.
1252	Sarsaparilla. Artificial flavor and color. This bottle contains 7 ozs. Magic City Bottling Works, Miami, Fla.	None	7 oz.	7 ¾ oz.	Legal.
1253	Grape Smash. Artificial color. Miami Bottling Works, Miami, Fla. Gay Ola 7 oz.	None	7 oz.	8 oz.	Legal.
1254	Piezol. This bottle contains 7 ozs. Miami Bottling Works.	None	7 oz.	7 ¾ oz.	Legal.
1255	Lemon Soda. Artificial color and flavor. Miami Bottling Works, Miami, Fla. Gay Ola 7 oz.	None	7 oz.	8 ⅜ oz.	Legal.
1256	Strawberry. Consumer's Bottling Co., Key West, Fla. Artificial flavor and color. Capacity 7 oz.	None	7 oz.	8 oz.	Legal.

Number.	LABEL.	Saccharine (per cent.).	Net Weight as Stated.	Net Weight as Found.	Remarks.
1257	Sarsaparilla. Consumer's Bottling Co., Key West, Fla. Artificial flavor and color. Capacity 7 ozs.	None	7 oz.	7.¾ oz.	Legal.
1258	Hemp's Ginger Ale. Consumer's Bottling Co., Key West, Fla. Capacity 7 ozs.	None	7 oz.	8.¼ oz.	Legal.
1259	(Lemon Soda).	None	Not stated	8.¼ oz.	Illegal. Misbranded. No label on cap of bottle. No statement of net weight or measure.
1260	Cream Soda. Artificial flavor and color. Consumer's Bottling Co., Key West, Fla. Capacity 7 oz.	None	7 oz.	7.⅞ oz.	Legal.
1261	Orange Soda. Artificial flavor and color. Key West Bottling Co., Key West, Fla. Contents, 8 oz.	None	8 oz.	8 oz.	Legal.

1262	Lemon Soda. Key West Bottling Co., Key West, Fla., 8 oz.	None	8 oz.	8,⅝ oz.	Legal.
1263	Cream Soda. Artificial flavor and color. Key West Bottling Co., Key West, Fla.	None	Not stated	8,½ oz.	Illegal. Misbranded. No statement of net weight or measure.
1264	Ginger Ale. Artificial flavor and color. Key West Bottling Co., Key West, Fla., 8 oz.	None	8 oz.	8,⅝ oz.	Legal.
1265	Sarsaparilla. Artificial color and flavor. Key West Bottling Co., Key West, Fla., 8 oz.	None	8 oz.	8,¼ oz.	Legal.
1266	Strawberry. Artificial color and flavor. Key West Bottling Co., Key West, Fla., 7 oz.	None	7 oz.	8,½ oz.	Legal.
1267	Orange Phosphate. Artificial flavor and color. Consumer's Bottling Co., Key West, Fla. Capacity 7 oz.	None	7 oz.	8 oz.	Legal.
1453	Chero-Cola. 7 ozs. Bottled under authority of Chero-Cola Co., Columbus, Ga.	None	7 oz.	8,⅞ oz.	Legal.
1454	Strawberry. (Imitation). Chero-Cola Bottling Works, Live Oak, Fla. 7 oz.	None	7 oz.	8,⅝ oz.	Legal.

SOFT DRINKS—Continued

Number.	LABEL.	Saccharine (per cent).	Net Weight as Stated.	Net Weight as Found.	Remarks.
1455	Lemon Sour. Artificial flavor and color. Chero-Cola Bottling Works, Dawson, Ga.	None	Not stated	8 1/4 oz.	Illegal. Misbranded. No statement of net weight.
1457	Cherry Smash. Colored with Caramel and Amaranath 107. 7 oz. Bottled by authority of John E. Fowler, Richmond, Va.	None	7 oz.	7 5/8 oz.	Legal.
1458	Ginger Ale. Artificial flavor and color. 7 oz. Chero-Cola Co., Balubridge, Ga.	None	7 oz.	7 3/8 oz.	Legal.
1463	Grape. Artificial color and flavor. 7 oz.	None	7 oz.	8 oz.	Legal.
1465	Strawberry. Net contents 7 oz.	None	7 oz.	7 1/4 oz.	Legal.
1466	Strawberry. Shamrock quality. Artificial color and flavor. 7 oz.	None	7 oz.	7 3/8 oz.	Legal.

1467	Ginger Ale. Artificial color and flavor. Net contents 7 oz.	None	7 oz.	7.⅝ oz.	Legal.
1468	Ginger Ale. Artificial color and flavor. 7 oz. G. Muller Co., Jacksonville, Fla.	None	7 oz.	8 oz.	Legal.
1469	Strawberry. Artificial flavor and color. G. Muller & Co., 7 oz.	None	7 oz.	7.½ oz.	Legal.
1470	Cream. Artificial flavor and color. Net contents 7 oz.	None	7 oz.	7 oz.	Legal.
1471	Palmetto Phosphate. ½ pint. Bottled under authority of Palmetto Phosphate Sales Co., Jacksonville, Fla.	None	8 oz.	9.¼ oz.	Legal.
1472	Hanne's Citra Cola. Artificially flavored and colored. 8 oz.	None	8 oz.	8.⅞ oz.	Legal.
1473	Hanne's Lemon Soda. Half pint. Artificially flavored and colored.	None	8 oz.	9.¼ oz.	Legal.
1474	Sarsaparilla. Artificial color and flavor. Net contents 7 oz.	None	7 oz.	8.⅛ oz.	Legal.
1475	Strawberry. Artificial flavor and color. 7 oz.	None	7 oz.	7.⅝ oz.	Legal.

Number.	LABEL.	Saccharine (per cent).	Net Weight as Stated.	Net Weight as Found.	Remarks.
1470	Peach. Artificial flavor and color. 7 oz.	None	7 oz.	7,⅛ oz.	Legal.
1477	Root Beer. Artificial flavor and color. 7 oz.	None	7 oz.	7,⅛ oz.	Legal.
1496	Cherokee Ginger Ale. 7 oz.	None	7 oz.	7,⅛ oz.	Legal.
1498	Strawberry Soda Water. Imitation. Florida Bottling Works, Bartow, Fla. 6,½ oz.	None	6,½ oz.	7,⅛ oz.	Legal.
1499	Lemon Soda. Imitation. Florida Bottling Works, Bartow, Fla. 6,½ oz.	None	6,½ oz.	7,¼ oz.	Legal.
1500	Peach Mellow. 7 oz.	None	7 oz.	7,⅛ oz.	Legal.
1503	Gay Ola. 7 oz.	None	7 oz.	7,⅛ oz.	Legal.

1504	Lemon Sour. 7 oz.	None	7 oz.	7 oz.	Legal.
1505	Lemon Soda. 7 oz.	None	7 oz.	7,¾ oz.	Legal.
1506	Chocolate. 7 oz.	None	7 oz.	7,⅞ oz.	Legal.
1507	Peach Ola. 7 oz.	None	7 oz.	8 oz.	Legal.
1507	Chero-Cola. 7 ozs. Bottled under authority of Chero-Cola Co., Columbus, Ga.	None	7 oz.	8,⅛ oz.	Legal.
1598	Peach. Artificial flavor and color. 7 oz. Middle Florida Ice Co., Tallahassee, Fla.	None	7 oz.	7,½ oz.	Legal.
1599	Blue Seal Ginger Ale. Colored with Caramel. 7 oz. Middle Florida Ice Co., Tallahassee, Florida.	None	7 oz.	7,¼ oz.	Legal.

MISCELLANEOUS ANALYSES AND EXAMINATIONS, 1913.

WATER SAMPLES.

M. 1813—Zolfo Springs Water, from D. L. Skipper, Zolfo.
Total dissolved solids (parts per 1,000,000) .....= 558.
A highly mineralized water.

M. 1823—Well water, from Theo. T. Turnbull, Monticello.
Water contaminated by some organic filth, or decayed animal matter.
Mineral poisons—absent.

M. 1826—Water, from German-American Lumber Co., Millville.
Total dissolved solids (parts per 1,000,000) .....= 248.
A highly mineralized water.

M. 1837—Artesian well water, from A. R. Hemmingway, Ponce De Leon.
212-foot well.
Total dissolved solids (parts per 1,000,000 .....= 110.
A moderately mineralized water.

M. 1838—Flowing well water, from J. H. Tims, Miami.
30-foot well.
Total dissolved solids (parts per 1,000,000) .....= 350.
A highly mineralized water.

M. 1849—Well water, from Kentucky Military Institute, Eau Gallie.
C. W. Fowler, Supt., Lyndon, Ky.
Total dissolved solids (parts per 1,000,000) .....= 1415.
A very highly mineralized water.

M. 1850—Spring water, from R. E. Dashill, Floral Bluff.
Total dissolved solids (parts per 1,000,000) .....= 31.
A very slightly mineralized water.
A very pure water.

M. 1851—Well water, from C. H. W. Read, Cedar Key.
Total dissolved solids (parts per 1,000,000) .....= 476.
A highly mineralized water.

M. 1852—Flowing well water, from Jacobi's Lumber Co., Moleno.
Total dissolved solids (parts per 1,000,000) .....= 175.
A moderately mineralized water.

M. 1860—Spring water from Orange City well, from A. V. S. Smith, Jacksonville.
Total dissolved solids (parts per 1,000,000) .....= 202.

M. 1862—Water, from Jonathan Olds, Jensen.
Contains Arsenic.

M. 1866—Robert's Spring water, Tallahassee, from T. J. Campbell, West Palm Beach.
Total dissolved solids (parts per 1,000,000) .....= 38.
A very slightly mineralized water.

M. 1867—Flowing well water, from B. T. Dotney, San Mateo.
150-foot well.
Total dissolved solids (parts per 1,000,000) .....= 3720.
A very highly mineralized water.

M. 1871—Water (Choctawhatchee Bay-, from W. G. Stubbs, Freeport.
Total dissolved solids (parts per

1,000,000) .....= 8373.
A very highly mineralized water.

M. 1872—Water, from A. W. Fisher, St. Petersburg.
Total dissolved solids (parts per 1,000,000) .....= 69.
A very slightly mineralized water.

M. 1878—Artesian well water, from C. B. Sweet, Pineland.
Total dissolved solids (parts per 1,000,000) .....= 3828.
A very highly mineralized water.

M. 1879—Well water, from J. W. Ritter, Tallahassee.
Total dissolved solids (parts per 1,000,000) .....= 763.
The high content of Chlorine indicates contamination of this surface well.

M. 1888—Spring water, from Miss Clem Hampton, Hampton Springs.
Total dissolved solids (parts per 1,000,000) .....= 327.
A highly mineralized water.

M. 1889—Spring water, from Dr. C. C. Wilson, Lakeland.
Total dissolved solids (parts per 1,000,000) .....= 111.
A moderately mineralized water.

M. 1896—Spring water, from Dr. S. R. Radford, Tallahassee.
Total dissolved solids (parts per 1,000,000) .....= 27.
A very slightly mineralized water.

M. 1913—Artesian water, from Plant City Water Works, W. F. Merrin, Supt. of Water Works, Plant City.

(Parts per Million).

Chlorine (Cl) .....= 8.87
Carbonic Acid (CO_3) .....= None.
Bi-Carbonic Acid (HCO_3).....=206.48
Total dissolved solids (parts per 1,000,000) .....= 225.
A highly mineralized water.

M. 1915—Well water from Arcadia, from Guy Johnston, Nocatee.
246-foot well.
Total dissolved solids (parts per 1,000,000) .....= 400.
A highly mineralized water.

M. 1917—Spring water, from H. C. McRae, Trilby.
Total dissolved solids (parts per 1,000,000) .....= 201.
A moderately mineralized water.

M. 1925—Spring water, from Thomas Palmer, Tampa.
Total dissolved solids (parts per 1,000,000) .....= 2843.
A very highly mineralized water.

M. 1926—City Well water, from Jennings, from A. C. Stephens, Jennings.
(Parts per million).
Chlorine (Cl) 9.9
Carbonic Acid (CO_3)..... 9.6
Bi-Carbonic Acid (HCO_3) 213.9
Total dissolved solids (parts per 1,000,000) .....= 294.
A moderately mineralized water.

M. 1936—City well, from Gainesville, from J. E. Webster, Gainesville.
(Parts per million).
Chlorine (Cl) 10.6
Carbonic Acid (CO_3) .....None.

Bi-Carbonic Acid (HCO_3- 219.6
Total dissolved solids (parts per 1,000,000) ..... 307.
A highly mineralized water.

MISCELLANEOUS SAMPLES.

M. 1809—Impure Limestone, from M. W. Wileman, City Point.
M. 1810—Soft Limestone, from W. L. L. Mahon, Jacksonville.
M. 1811—Bog Ore (Impure Brown Hematite), from Robert J. W. Taylor, St. Petersburg.
M. 1812—Impure Red Ochre, from Perrin & Thompson, Winter Haven.
M. 1814—White (Ball) Clay, from S. H. Payne, Eustis.
M. 1815—(Rock No. 1), Limestone, from James D. Hay, St. Petersburg.
M. 1816—(Rock No. 2), Limestone, from James D. Hay, St. Petersburg.
M. 1817—Soil, from H .C. Bailey, Anthony.
M. 1818—Soil, from O. W. Mott, Sante Fee.
M. 1819—Soil, from J. B. Hawkins, Wellborn.
M. 1820—Clay, from F. E. Platt, Arcadia.
M. 1821—Dr. Blosser's Catarrh Remedy, from Revel Burgess, Interlachen.
M. 1822—Conglomerate Rock, from V. H. Flowers, Madison.
M. 1824—Marl, from R. M. Burt, Hastings.
M. 1825—Popcorn, from Dr. C. Raleigh Williams, St. Petersburg.
Strychnine had been added to the popcorn.
M. 1827—Crude Kaolin, from J. Gates, Manatee.
M. 1828—Indurated Kaolin, from Edward Rolfe, Jr., Oxford.
M. 1829—Impure Kaolin, from F. E. Dey, Milton.

M. 1830—Amber Mica, from First National Bank, Graceville.

M. 1831—Phosphate Matrix, from Robert O. Brown, Riverview.

(Air Dry Sample.)

Total Phosphoric Acid (%) 15.14
Equivalent to Bone Phosphate of Lime (%) 33.08

M. 1832—Soft Limestone, from J. J. Kiegar, Grand Ridge.

M. 1833—Limestone, from Frank Fee, Ft. Pierce.

M. 1834—Limestone, from A. D. Penny, Ft. Pierce.

M. 1835—Soft Limestone, from Barnes Bros., Crystal River.

M. 1836—Whiskey, from J. P. S. Houstoun, Tallahassee. Contains strychnine.

M. 1839—Marl, from Everglade Land Sales Co., Miami.

M. 1840—Ground phosphate (Floats-, from A. C. Ellis, Pensacola.

Total Phosphoric Acid (%) 28.65
Equivalent to Bone Phosphate of Lime (%) 62.60

M. 1841—Soft Limestone, from G. M. Martin, Crystal Springs.

M. 1842—Shell Marl, from Lester McHargue, Ruskin.

M. 1843—Rock Phosphate, from Smith, Malloy & Co., Mayo.

Total Phosphoric Acid (%) 30.06
Equivalent to Bone Phosphate of Lime (%) 65.68

M. 1844—Limestone, from J. H. Campbell, Benhaden. Phosphoric Acid—Trace.

M. 1845—Limestone, from H. R. Kenyon, Manatee. Phosphoric Acid—Trace.

M. 1846—Impure Limestone, Oak Knoll Grapefruit and Orange Co., Riley.

M. 1847—Phosphate Matrix, from K. O. Varn, Ft. Meade.
Total Phosphoric Acid (%) 7.28
Equivalent to Bone Phosphate of Lime (%) 15.91
Available Phosphoric Acid (%) 1.92

M. 1848—Flint, from W. M. Carraway, Tallahassee.

M. 1853—Limestone, from W. R. Kenyon, Manatee.

M. 1854—Limestone, from J. N. Willis, Williston.

M. 1855—Soft Limestone, from S. H. Payne, Eustis.

M. 1856—Animal Fat-tissue, from W. M. Laencey, New Smyrna.
Not Ambergris.

M. 1857—Marl, from W. Stanley Hanson, Ft. Myers.

M. 1858—Limestone, from Virgil H. Lanier, Tampa.

M. 1859—Limestone, from R. J. Anderson, Bay Head.

M. 1861—Soft Limestone, from H. T. Morrison, Crystal River.

M. 1863—Muck, from B. Shepard, Eustis.
Moisture (%) 67.68
Ammonia (on dry basis) (%)..... 2.04

M. 1864—Conglomerate, from I. Gold, Dade City.

M. 1865—Marl (a redeposit), from N. M. Sauls, Bowling Green.

M. 1868—Animal Fat, from B. B. Bachelder, Bunnell.

M. 1869—Alphano Humus, from J. A. Barnes, Quincy.
Ammonia (%) 2.50

M. 1870—Muck, from J. St. Clair White, Sanford.
Moisture (in original sample) (%)... 46.00
Ammonia (on dry basis) (%)..... 1.32

M. 1873—Limestone, from W. S. Tallant, Manatee.

M. 1874—Limestone, from Mrs. A. Ross, Brooksville.

M. 1875—Soft Limestone, from Mrs. A. Ross, Brooksville.

M. 1876—Limestone, from B. C. Prince, Jacksonville.
Carbonate of Lime (%)..... 94.18
Insoluble matter (%) 5.82

M. 1877—Hydrated Lime—Sulphur Mixture, from Garvey Bros., Ft. Myers.
Sulphur (%) 34.9
Hydrated Lime (%) 65.1

M. 1880—Linseed Oil, from A. B. Lees, Leesburg.
Iodine number 176.0
Not adulterated.

M. 1881—Clay—Marl, from A. J. Simms, Tampa.
Trace of Phosphoric Acid.

M. 1882—Muck, from R. H. Muirhead, Sanford.
Ammonia (on dry basis) (%)..... 2.65

M. 1883—Iron Pyrites, from Hughes, Adams & Co. Paxton.

M. 1884—Hulled Castor Beans, from W. W. Wright, Orlando.
Fat (oil- (%) 67.00
Pomace (%) 33.00

M. 1885—Pomace from Castor Beans (No. 1884), from W. W. Wright, Orlando.
Ammonia (%) 11.06

M. 1886—Marl, from H. Prom, Miami.

M. 1887—Castor Beans with Hulls, from W. W. Wright, Orlando.
Fat (%) 52.15
Pomace (%) 47.85
(From fat free pomace).
Ammonia (%) 5.62

M. 1890—Red Ochre, from C. E. Thomas, Silver Springs.

M. 1892—Impure Kaolin, from Welles-Kahn Co., Pensacola.

M. 1893—Shale, from Walton Land & Timber Co., DeFuniak Springs.

M. 1894—Alcoholic Liquid, from Chas. G. Powell, Tallahassee.

M. 1895—Impure Limestone, from Jack Peters, Tavares.

M. 1897—Soil, Sample "A" (muck), from H. E. Myers, Miami.
(Air Dry Sample-.
Ammonia (%) 3.96

M. 1898—Soil, Sample "B" (muck), from H. E. Myers, Miami.
Ammonia (in original sample) (%) 2.62

M. 1899—Soft Limestone, from G. C. Prather, St. Petersburg.

M. 1900—Soft Limestone, from Mark Isaacs, Jacksonville.

M. 1901—Soft Limestone, from Clifford Botts, Orlando.

M. 1902—Soil (muck), from The Sebring Real Estate Co., Sebring.
(Air Dry Sample).
Ammonia (%) 2.47

M. 1903—Rock (Sample No. 1), from Dowling Park Naval Stores Co., Perry.
Total Phosphoric Acid (%- 37.90
Equivalent to Bone Phosphate of Lime (%) 82.80

M. 1904—Rock (Sample No. 2), from Dowling Park Naval Stores Co., Perry.
Total Phosphoric Acid—Trace.

M. 1905—Rock (Sample No. 3), from Dowling Park Naval Stores Co., Perry.
Total Phosphoric Acid (%) 22.10
Equivalent to Bone Phosphate of Lime (%) 48.29

M. 1906—Rock (Sample No. 4), from Dowling Park Naval Stores Co., Perry.
Total Phosphoric Acid (%) 21.20
Equivalent to Bone Phosphate of Lime (%) 46.32

M. 1907—Impure Limestone, from J. L. Fitts, Ruskin.

M. 1908—Carbonaceous Clay, with specks of mica, from Walton Land and Timber Co., DeFuniak Springs.

M. 1909—Eckman's Alterative (Manufactured by Eckmans Manufacturing Co., Philadelphia), from W. V. Knott, Tallahassee.
No iodine present.
4% Ash.
1.40% of the ash—Potash (K_2O).
.06% K_2O (Potash) on liquid basis.
Lithium present.

M. 1910—Impure Limestone, from L. B. Walden, Manatee.
Phosphoric acid—Trace.

M. 1911—Chicken Grit, from Grenshaw Bros. Seed Co., Tampa.

Phosphoric Acid (%)	12.00
Equivalent to Bone Phosphate of Lime (%)	26.22

M. 1912—Marl, from E. E. Goodno, Labelle.

M. 1914—Iron Pyrites, from Jennings Naval Stores Co., Pensacola.

M. 1918—Calcareous Marl (No. 1), from Dr. C. B McKinnon, DeFuniak Springs.
Phosphoric Acid—Trace.

M. 1919—Calcareous Marl (No. 2), from Dr. C. B. McKinnon, DeFuniak Springs.
Phosphoric Acid—Trace.

M. 1920—Ground raw limestone, from W. G. Norsworthy, McIntosh.

Calcium Oxide (%)	49.50
Equivvalent to Calcium Carbonate ($CaCO_3$) (%-	88.40
Total Phosphoric Acid (%)	0.70

M. 1921—Marl, from G. C. Prather, St. Petersburg.

M. 1922—Sugar, with added Murcuric Chloride, from Dr. John C. Wills, Starke.

M. 1923—Phosphate Rock, from Albert Roberts, Perry.

Phosphoric Acid (%)	32.40
Equivalent to Bone Phosphate of Lime (%)	65.40

M. 1924—Crude Kaolin ,from Jack Peters, Tavares.

M. 1927—Limestone (screenings), from J. B. Cutler, Crystal River Rock Co., Crystal River.
Phosphoric Acid—Trace.

M. 1928—Terogenious Clay, from W. H. Tracy, Boulogne.

M. 1929—Marl, from G. C. Prather, St. Petersburg. (Air Dry Sample).

Insoluble matter (sand, clay, etc.), (%)	6.70
Carbonate of lime (by difference), (%)	93.30

M. 1930—Hydrated Lime, from Gadsden Lumber Co., Quincy.

Moisture (%)	0.10
Insoluble matter (Silica, etc.) (%).	2.63
Carbonate of Lime (%).....	97.27

M. 1931—Agricultural Lime, from American Sumatra Tobacco Co., Quincy.

Insoluble matter (%)	3.97
Hydrated Lime and Lime Oxide. Equal to Carbonate of Lime (%)..	96.03

M. 1932—Impure Iron Oxide (Bog Iron Ore), from Wm. A. Bell, Earlton.

Insoluble matter (%-	56.43
Phosphoric Acid (%)	Trace.
Lime (%)	None.
Magnesia (%)	None.
Manganese Oxide (%)	None.

M. 1933—Agricultural Lime (Ground Limestone), from Gadsden Lumber Co., Quincy.

Moisture (%)	0.38
Insoluble matter (%)	2.10
Carbonate of Lime ($CaCO_3$) (by difference)	97.52

M. 1934—Soil, from O. W. Knox, Bradentown.

Reaction	Acid
Chlorine	Trace.

M. 1935—Clay, from Serapin Sanchez, Tampa.

FLORIDA DEPARTMENT OF AGRICULTURE

DIVISION OF CHEMISTRY

R. E. ROSE, State Chemist

April 1, 1913

The Chemical Composition of Florida Oranges

FROM

October 1, 1912 to January 31, 1913.

BY

A. M. HENRY, Food and Drug Chemist.

LETTER OF TRANSMITTAL.

Hon. W. A. McRae,
Commissioner of Agriculture,
Tallahassee.

Sir:

The following study of the analysis of two hundred and fifty-nine samples of Florida oranges, involving samples from seventeen localities in the State, has been made for the purpose of determining the chemical composition of mature oranges, and to show the chemical changes during the process of ripening.

These samples were systematically taken by responsible growers, and forwarded at regular intervals each week to the State Laboratory at Tallahassee.

The analytical work and compilation of results has been done by A. M. Henry, B. S., Food and Drug Analyst of the State Laboartory. The conclusions drawn by Mr. Henry will be acknowledged by any one who will study the results, as fair, logical and fully justified by the data obtained.

That a "standard maximum acid content" for mature oranges can be fixed is apparent. Such a "maximum acid content" can be readily ascertained by a simple field test, which, while simple, is still accurate, inexpensive, and quickly applied, a test requiring no expensive apparatus nor costly reagents, one that can be applied by any intelligent person after a demonstration by any one familiar with rudimentary chemistry.

A standard involving a "ratio of acid to sugar," though doubtless of value in making this study, would in the opinion of the writer, involve considerable unnecessary argument and discussion, great loss of time, considerable expense, and accomplish nothing that would not be accomplished by a "standard maximum acid content."

The analyses, the dates, the gradual decrease in acid and increase in sugar, though not absolutely uniform and differing as to variety, all go to show that the conclusions drawn by the commission appointed by the Hon. W. A. McRae, Commissioner of Agriculture, to recommend a standard, and the action of the Citrus Growers' Convention, at Gainesville, in adopting the standard of "1.25% maximum citric acid" and a "ratio of one of citric acid to seven of total sugar as invert" was correct, as is confirmed by the studies of tse various laboratories that have continued the study during the season of 1912-13.

That a chemical standard is the only fair standard—variety, date of maturity, season, soil, and treaement considered, that can be devised will, I believe, be conceded.

The position assumed by the writer, as expressed at the Convention of Citrus Growers at Tampa, and again at Miami, has been sustained by this year's study.

No arbitrary date of maturity can be fixed for all varieties of oranges. Color is no index to maturity.

I would suggest, that in case of further legislation on the subject, or agreement among growers, that a "standard maximum acid content of 1.25%" be fixed, that any orange having more than 1.25% citric acid (as crystallized acid) be considered immature, that all oranges showing not more than 1.25% of citric acid be considered mature—without respect to date, color or variety, that the number of average oranges for the composite sample be fixed, that the method of preparing the sample be fixed and uniform, that the chemical terms, factors, and methods be also fixed and uniform.

I would recommend that not less than twelve average oranges, fairly representative of the fruit under consideration, be taken for a "field" or "house test," that they be peeled and the juice extracted by ordinary pressure, mixed and strained, that a representative sample of this juice be "titrated" against a standard uniform alkaline

solution, equivalent to exactly 1.25% of crystallized citric acid that the grower shall have the right to appeal, in case he is not satisfied with the Inspector's decision, to the State Chemist, (the fruit under investigation to be held pending the result of the appeal to the State Chemist) that the only determination to be made by the State Chemist shall be the percentage of "crystalized citric acid" in the sample submitted, which shall be *prima facie* evidence of the maturity or immaturity of the fruit under consideration, the sample sent to the State Chemist to be twelve average oranges, fairly representative of the fruit in question, drawn and sent by the grower and the Inspector, the samples to be verified by the signatures of the grower and the Inspector, and witnessed by two witnesses. A commission of five consisting of three growers, one attorney, and one chemist, should prepare any bill, or memorandum of agreement among the growers, in order that legal procedure, correct uniform methods of sampling, uniform methods of analysis, and terms and standards satisfactory to the grower, should be approved and adopted.

Very respectfully,

R. E. ROSE,
State Chemist.

Florida Department of Agriculture,
Division of Chemistry,
Tallahassee, March 19, 1913.

The Chemical Composition of Florida Oranges

FROM

October 1, 1912, to January 31, 1913

BY

A. M. HENRY, Food and Drug Chemist

INTRODUCTION

The object of this investigation was to obtain data upon which to base a standard for ripe, or mature oranges. Owing to a general demand of the orange growers of Florida the Legislature of 1911 passed An Act which is known as the Immature Citrus Fruit Law and is as follows:—

"CHAPTER 6236—(No. 117).

"AN ACT to Prohibit Certain Dispositions of Citrus Fruits Which Are Immature or Otherwise Unfit for Consumption, and the Misbranding of Citrus Fruits.

Be it Enacted by the Legislature of the State of Florida:

"Section 1. That it shall be unlawful for any one to sell, offer for sale, ship or deliver for shipment any citrus fruits which are immature or otherwise unfit for consumption, and for any one to receive any such fruits under a

contract of sale, or for the purpose of sale, or of offering for sale, or for shipment or delivery for shipment. This section shall not apply to sales or contracts for sale of citrus fruits on the trees under this section; nor shall it apply to common carriers or their agents who are not interested in such fruits and who are merely receiving the same for transportation.

"Sec. 2. It shall be unlawful for any one to misbrand any package or any wrapper containing citrus fruits; and all citrus fruits shall be deemed misbranded if the package or wrapper shall bear any statement, design or device regarding the fruit therein contained which is false or misleading either as to the name, size, quality or brand of such fruit or as to the locality which it was grown.

"Sec. 3. Whoever shall violate any of the provisions of this Act shall be punished by a fine not exceeding one thousand dollars or by imprisonment for not more than six months, or by both such fine and imprisonment, and the fruit, whether immature or otherwise unfit for consumption or misbranded shall be subject to seizure and disposition as in the case of adulterated or misbranded foods and drugs.

Approved June 5, 1911."

The following is the opinion of the Florida Supreme Court as to the constitutionality of the above law.

S. J. SLIGH, *Plaintig in Error*, v. JAMES A. KIRKWOOD, AS SHERIFF OF ORANGE COUNTY, *Defendant in Error*.

TAYLOR, J.—The Florida Legislature at its session in the year A. D. 1911, enacted the following statute:

Chapter 6236—entitled an Act to prohibit certain dispositions of citrus fruits which are immature or otherwise unfit for consumption, and the misbranding of citrus fruits.

For alleged violations of this statute the plaintiff in error was informed against in the criminal court of record of Orange County by three several informations each of them containing two counts, the first count in each of them charging him with the shipment to parties in another State of immature oranges the same being citrus fruit; the second count of each of them charging him with the delivery to an agent of a common carrier for shipment to the same parties in another State of the same alleged immature oranges, which oranges are therein alleged to be citrus fruit and to be immature and unfit for consumption.

The plaintiff in error was arrested upon three several warrants issued from these informations and detained in custody by the Sheriff, and applied to the Circuit Judge of Orange county for and obtained a writ of habeas corpus. In his petition for the writ he alleges that the statute above quoted upon which said prosecutions and arrests are based is in conflict with section 8 of article 1 of the Federal Constitution, and seeks within itself to govern and control commerce between the State of Florida and other States in the United States, which is beyond the power and jurisdiction of the State Legislature of Florida to do.

On hearing the habeas corpus proceedings the Circuit Judge remanded the plaintiff in error to the custody of the Sheriff and dismissed the petition for the writ. For review of this judgment the plaintiff in error brings his case here by writ of error.

In the exhaustively considered case of Southern Railway Company v. Railroad Commission of Indiana, rendered by the Supreme Court of Indiana on January 3, 1913, Ind. 100 N. E. Rep. 337, the following general propositions are said to be regarded as settled:

"First. That the power of regulating commerce among the States is in Congress, and the subject of exclusive Federal control.

"Second. That when Congress does act, and its action covers the subject matter, its action is exclusive as to interference.

"Third. Until, and unless Congress does act, and the action covers the subject matter, the States may act.

"Fourth. That so long as the action of the States is not repugnant to, or does not interfere with, or place burdens upon, or undertake to regulate, interstate commerce, or are mere police regulations, their action though in aid, or if in aid, of interstate commerce; is not invalid, unless it is a direct interference.

"Fifth. That it is not enough to render the State law invalid that is it similar to the Federal act upon the same subject. It must in operation interfere directly or substantially with interstate commerce, and not be an incidental or casual interference or remotely affect it hurtfully.

"Sixth. That where both the acts of Congress and of the State make a defined act an offense, the commission of the act may be an offense against each, and punishable by each." See the cited case for the numerous cases both Federal and State supporting the quoted propositions.

In the case of Savage v. Jones, State Chemist of Indiana, 225 U. S. 501, it is held: "That while the State cannot, under cover of exerting its police power, directly regulate or burden interstate commerce, a police regulation which has real relation to the proper protection of the people, and is reasonable in its terms, and does not conflict with any valid act of Congress, is not unconstitutional because it may incidentally affect interstate commerce. And that no State statute which even affects incidentally interstate commerce is valid if it is repugnant to the Federal Food and Drug Act of June 30, 1906, the object of which is to prevent adulteration and misbranding and keep adulterated and misbranded articles out of

interstate commerce.. And that where an act of Congress relating to a subject on which the State may act also, limits its prohibitions, it leaves the subject open to the State regulation as to the prohibitions that are unenumerated. And that the intent of Congress to supersede the exercise by the States of their police power will not be inferred unless the act of Congress, fairly interpreted, is in actual conflict with the law of the State."

We do not think that the Florida Statute is a direct interference with interstate commerce or a burden upon or prohibition against, the legitimate subjects of such commerce. It does incidentally affect such commerce by prohibiting *immature* citrus fruits produced within her borders from becoming subjects of shipment or sale and this in obedience to the police duty and power to protect the public health. Except thus incidentally we do not think that the act under discussion is an unwarranted interference with or burden upon interstate commerce.

Does the Florida statute in anywise conflict with the food and drugs act of Congress of June 30, 1906? By the sixth subdivision of section seven of the last named act, the prohibitions against vegetable substances, which as we interpret it would include citrus fruits, is that if it is in whole or in part filthy, decomposed or putrid, then it is debarred as a subject of commerce. *Green* or *immature* fruit may be as deleterious to health as the same fruit in an overripe or decomposed state. The act of Congress debars the latter, but says nothing as to the former, thus leaving the field of deleterious *immaturity* of fruit open to be dealt with by the States. We do not think that the act in question conflicts with the interstate commerce clause of the Federal Constitution or with any of the provisions of acts of Congress passed in pursuance thereof that have come to our attention, and the judgment of the Circuit Court is, therefore, hereby affirmed at the cost of the plaintiff in error.

The question of what is a ripe, or mature orange, having arisen under the Immature Citrus Fruit Law, and not being defined in it, Hon. W. A. McRae, Commissioner of Agriculture, in June, 1912, appointed a commission to recommend a tentative standard for mature oranges. The commission consisted of Dr. E R. Flint, Professor of Chemistry, University of Florida; Hon. R. E. Rose, State Chemist; P. H. Rolfs, Director, Florida Agricultural Experiment Station; H. Harold Hume, a prominent horticulturist and authority on the production of citrus fruit; and E. R. Collison, Chemist, Florida Agricultural Experiment Station. After several meetings and arduous work in the study of the analyses and other data concerning oranges, both mature and immature, the Commission reported to a convention of orange growers held in Gainesville on August 15, 1912. The tentative standard recommended by the Commission and adopted by the convention was as follows:—

"One. All round oranges showing a field test of one and twenty-five hundreds (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 following resolution in regard to the time of application of the standard was also adopted by the convention:—

"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.

"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."

The following, taken from the report of the Commission, by R. E. Rose, State Chemist, shows why a chemical standard in preference to any other standard, was recommended:—

"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 any one 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, altitude, 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 know, extends from October to July."

The following resolution was passed by the Commission and convention:—

'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."

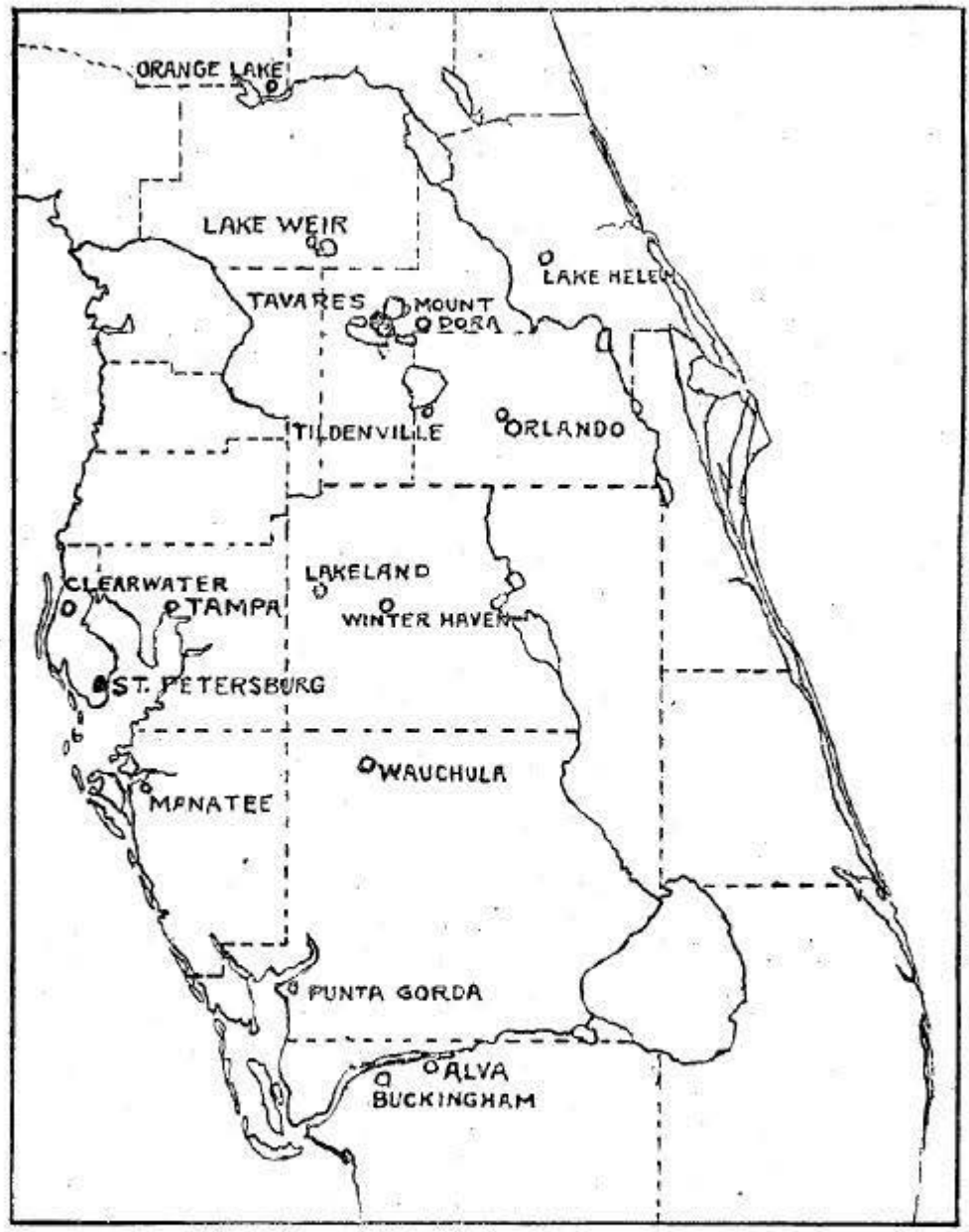
As a result of the Immature Citrus Fruit Law, the resolutions of the Citrus Fruit Standard Commission and the recommendations of the Citrus Growers Convention, this investigation was undertaken.

SCOPE OF INVESTIGATION.

With the fact in view that a standard for oranges, to be effective, must be one that could be applied in the grove, by both the grower and the Inspector, an examination of the literature of the work that had been done on oranges was undertaken. After a study of the literature, it was decided that the only determinations that would likely be of value and that would be practicable were the determination of total acid, as crystallized citric acid, total sugar as invert, and the ratio of total acid to total sugar.

These determinations were made on the juice as they would then be more applicable to field conditions instead of on the pulp. Incidently, determinations were made of the average weight of the orange, of the specific gravity of the orange, and of the percentage of the juice extracted. Owing to the large number of analyses made in the early part of the season no comprehensive and complete notes were made upon the physical properties and macroscopical appearance of the oranges, such as color, maturity of seeds, etc. The taste of the juice was recorded on all samples.

It was proposed to analyse weekly an average sample of twelve oranges from seventeen different localities. The weekly samples were to be analyzed from October 1st



MAP SHOWING LOCATION OF ORANGES ANALYZED

to January 31st. Only nine of the seventeen localities sent the samples in regularly for the entire time. The localities, growers, and varieties are as follows:—

Alva, Edward Parkinson—Seedling.
Clearwater, Marshal, Brandon & Bass—Seedling (Sweet Seville).
Tavares, Woodlea Company—Seedling.
Lake Helen, Mace & Son—Seedling.
Winter Haven, Boyd Brothers—Seedling.
Lake Weir, Carney Investment Company—Parson Brown.
Punta Gorda, J. M. Weeks—Seedling.
Wauchula, S. B. Hogan—Seedling.
Tildenville, L. W. Tilden—Valencia.
Tampa, Eugene Holtsinger—Seedling.
St. Petersburg, G. O. Osborn—Seedling.
Lakeland, G. P. Quaintanance—Seedling.
Manatee, H. T. Bennett—Seedling.
Orlando, C. W. Townsend—Seedling.
Buckingham, D. S. Borland—Seedling.
Mt. Dora, Charles Edgerton—Seedling.
Lake Orange, G. B. Crosby—Pineapple.

The first nine were received regularly for the entire time.

The accompanying map shows the localities from which they were received.

The varieties were chosen to represent the different time of maturing of oranges; the Parson Brown, early; the Pineapple, medium; the Valencia, the late; and the Seedlings matured at various times from early to late.

METHODS OF ANALYSIS.

The preparation of the sample, extraction of juice, and determination of acid, were practically the same as the

field test adopted. The methods used were those of the Association of Official Agricultural Chemists, with slight modifications to fit them to the work and are as follows:—

Preparation of Sample.

Twelve oranges are used for analysis. The twelve fruit are weighed. Peel the twelve fruit. Halve by cutting across segments, and squeeze with a lemon-squeezer into a porcelain or porcelain lined vessel thru a piece of cheese cloth placed over it. The cheese cloth is then squeezed out with gentle pressure and thrown away. The juice is now ready for analysis.

Juice.

The juice is weighed. The weight of juice divided by the weight of the fruit gives the percentage of juice in the fruit.

Total Acid as Crystallized Citric.

Weigh 10 grams of the juice and place in a 250 cc beaker, dilute with recently boiled distilled water to about 100 cc., add phenolphthalein and titrate with tenth normal sodium hydrate solution, free from sodium carbonate. Each cc. of the tenth normal sodium hydrate, when using ten grams of juice, is equivalent to 0.07 per cent of total acid as crystallized citric acid, and the number of cc of tenth normal sodium hydrate taken multiplied by 0.07 gives the percentage by weight or total acid as crystallized citric acid (Bureau of Chemistry Bulletin 107. Revised).

Total Sugar as Invert.

(a) Preparation of reagents.

(1) Copper Sulfate Solution. Dissolve 34,639 grams of $CuSO_4$, $5H_2O$ in water and dilute to 500 cc.

(2) Alkaline Tartrate Solution. Dissolve 173 grams of $NaKC_4H_4O_6.4H_2O$ and 50 grams of NaOH in water and dilute to 500 cc.

(3) Mixed Solution. Mix equal volumes of solutions (1) and (2) immediately before use.

(4) Standard Sodium Thiosulfate Solution. Prepare a solution of $Na_2S_2O_35H_9O$ containing 19 grams of pure crystals to 1,000 cc. Weigh accurately about 0.2 gram of pure copper foil and place in a flask of 250 cc capacity. Dissolve by warming with 5 cc of a mixture of equal volumes of strong HNO_3 and H_2O. Dillute to 50 cc. boil to expel the red fumes, add 5 cc of strong Br water, and boil until the Br is thoroly expelled. Remove from the heat and add a slight excess of strong NH_2OH. 7 cc. is about the right amount. Again boil until the excess of ammonia is expelled, as shown by a change in color of the liquid, and a partial precipitation. Now add a slight excess of acetic acid (3 or 4 cc of 80% acid) and boil for a minute. Cool to room temperature and add 10 cc of a solution of pure KI containing 300 grams of KI to 1,000 cc. Titrate at once with the thiosulfate solution until the brown tinge has become weak, then add sufficient starch liquor to produce a marked blue coloration. Continue the titration cautiously until the color due to free iodin has entirely vanished. The blue color changes toward the end to a faint lilac. If at this point the thiosulfate be added drop by drop and a little time be allowed for complete reaction after each addition there is no difficulty in determining the end point within a single drop. One cc of the thiosulfate solution will be found to correspond to about 0.005 gram of copper.

(5) Potassium Iodid Solution. Dissolve 30 grams of KI in water and di'ute to 100 cc. (It is best to have a fresh solution every day).

(6) Eighty per cent Acetic Acid. Dilute 810 cc of the 98.75 per cent acid to 1,000 cc.

(7) Lead Acetate Solution. Prepare a concentrated solution of $Pb(C_2H_3O_2)_2 3H_2O$ in freshly boiled distilled water, and dilute to a specific gravity of 1.25 with freshly boiled distilled water.

(b) Determination.

Weigh 25 grams of the orange juice and place in a 100 cc flask. Add 5 cc of the lead acetate solution, make up to 100 cc. with water and filter thru a dry double filter. Treat the titrate with anthydrous sodium sulfate in excess and filter thru a dry double filter. Invert 50 cc. of the filtrate in a 100 cc. flask by adding, little by little, while rotating the flask, 5 cc of HCL, containing 38.8% of the acid. Allow to stand over night at a temperature of 20 to 25° C, nearly neutralize with concentrated NaOH solution, using phenolphthalein as indicator, being careful not to get a local excess of NaOH. Dilute with water to 100 cc. Prepare a series of solutions in large test tubes by adding 1 and 2 cc of this solution to each tube successively. Add 5 cc of the mixed copper reagent to each, heat to boiling, boil 2 minutes, and filter. Note the volume of sugar solution which gives the filtrate lightest in tint, but still distinctly blue. Place twenty times this volume of sugar solution in a 100 cc flask, dilute to mark, and mix well. Place 50 cc of the mixed copper reagent and 50 cc of the sugar solution in a beaker of 250 cc capacity. Heat the mixture at such a rate that approximately four minutes are required to bring it to the boiling point, and boil for exactly two minutes. Add 100 cc of cold, recently boiled, distilled water. Filter immediately thru asbestos and wash the copper oxid well with water. Cover the gooch with a watch glass and dissolve the copper oxid with 5 cc of a mixture of equal volumes of strong nitric acid and water

poured under the watch glass with a pipette. Catch the filtrate in a flask of 250 cc capacity, wash watch glass and gooch free of copper; 50 cc of water will be sufficient. Boil to expel red fumes, add 5 cc of strong Br water, and boil until the Br is thoroly expelled. Remove from the heat and add a slight excess of strong NH_4OH. Seven cc. is about the right amount. Again boil until the excess of ammonia is expelled as shown by a change in color of the liquid, and a partial precipitation. Now add a slight excess of acetic acid (3 or 4 cc. of 80% acid) and boil for a minute. Cool to room temperature and add 10 cc of a solution of pure KI containing 300 grams of KI to 1,000 cc. Titrate at once with the thiosulfate solution until the brown tinge has become weak, then add sufficient starch liquor to produce a marked blue colora tion. Continue the titration cautiously until the color due to free iodin has entirely vanished. The blue color changes toward the end to a faint lilac. If at this point the thiosulfate be added drop by drop and a little time be allowed for complete reaction after each addition there is no difficulty in determining the end point within a single drop. The equivalent amount of copper is multiplied by the number of cc of the thiosulfate solution taken and the result divided by the weight of the original juice, corresponding to the portion taken for the copper reduction, which gives the copper in milligrams. The corresponding amount of invert sugar is obtained from the table given for this purpose on pages 45 and 46 of Bulletin 107, Revised, U. S. Bureau of Chemistry. The number of milligrams there found divided by 10 gives the percentage of Total Sugar as Invert. (Bureau of Chemistry, Bulletin 107, Revised).

Ratio of Acid to Sugar.

The percentage of total sugar as invert divided by the percentage of total acid as crystallized citric gives the ratio.

Sampling.

Careful and accurate sampling are very important. The instructions to the samplers to select a tree from which all the samples should be taken, and to take twelve average oranges for each sample each week, were implicit. That careful and accurate sampling were important is shown in the following table, which shows the analyses of twelve average oranges taken respectively from the North, East, South and West sides of one tree, all at the same time:—

Number.	Side of Tree	Total Sugar.	Total Acid.	Ratio.
1295	North	7.17	1.69	1 to 4.24
1296	East	7.70	1.32	1 to 5.83
1297	South	7.96	1.32	1 to 6.03
1298	West	7.31	1.47	1 to 6.97
	Average	7.54	1.45	1 to 5.20

Extraction of Juice.

The same as in the extraction of juice from cane or other things; the less the pressure and the quantity of juice extracted, the greater the soluble solids, such as acid and sugar, in the juice; and consequently the greater the pressure and extraction the lower the acid and sugar in the juice. This is concretely shown by the analysis of a sample of oranges in which three separate extractions of juice were made, each succeeding one with greater pressure.

Number.	Pressure.	Total Sugar.	Total Acid.	Ratio.
1085	First	8.39	1.03	1 to 8.15
1086	Second	8.13	0.94	1 to 8.65
1087	Third	8.33	0.88	1 to 9.47
1088	Composite of above	8.13	0.94	1 to 8.65
	Average of above	8.28	0.95	1 to 8.72

The method of using an ordinary wooden lemon squeezer for extraction of the juice, makes these analyses comparable to samples that will be tested in the field and for which use conclusions can be drawn from this work.

SUMMARY BY LOCALITIES.

Alva, Lee County—Seedling. Samples were received from Sept. 28, to Jan. 24, making seventeen samples. This orange was ripe the latter part of October both in chemical composition and taste, the acid content falling below 1.25% on October the 26th. The acid began with 1.85%, the maximum, on Sept. 28th, fell rapidly during October, more slowly during November and December, and remained practically constant throughout January. The minimum acid was 0.74% on Jan. 11th. The sugar began with 6.25% and increased gradually to 9.56% on January 24th. The increase in sugar was rapid in October, slower in November and December, and again rapid during January. The average sugar content of this orange throughout the season was higher than any other of the studies. The ratio of acid to sugar increased from 1 to 3.38, or sour on Sept. 28, to 1 to 12.10 or very sweet, on Jan. 24. The percentage of juice did not vary materially from the average during the season.

Clearwater, Pinellas County—Seedling. Samples were received from Sept. 30, to Jan. 28, making eighteen samples in all. This orange ripened early in November, the acid content falling below 1.25% on November 12. The acid began with 1.97%, fell rapidly during October and November, considerably slower in December and January, and ended with 0.68%. The sugar began with 5.02% during the season. The ratio of acid to sugar began at 1 to 2.55, or very sour, and increased to 1 to 12.65, or very sweet. In this orange there was a gradual decrease in the percentage of juice as the season advanced.

Tavares, Lake County—Seedling. Samples were received from Oct. 4, to Jan. 24, making sevénteen samples in all. This orange did not ripen until in January. The acid content falling below 1.25% on Jan. 17. The acid began with 2.29% on the first sample and fell very rapidly during October, more slowly during the rest of the season and ended with 1.19%. The sugar began with 6.16% on the first sample and increased very rapidly during October and November, much slower during December and January, and ended with 8.56%. The ratio of acid to sugar began at 1 to 2.69, or very sour, and increased gradually to 1 to 7.19, or tart. The percentage of juice did not vary noticeably from the average during the season.

Lake Helen, Volusia County Seedling. Samples were received from Oct. 1st, to Jan. 28, making eighteen samples in all. This orange ripened in November, the acid content falling below 1.25% on the 19th. The acid began with 1.98% in the first sample, fell rapidly during November and remained nearly constant throughout the rest of the season, ending with 1.25%. The sugar content began with 5.69% and ended with 9.34%, increasing gradually throughout the season. The ratio of acid to sugar began with 1 to 2.87, very sour in taste, and ended with 1 to 7.47, tart in taste. However, on Jan. 8 and

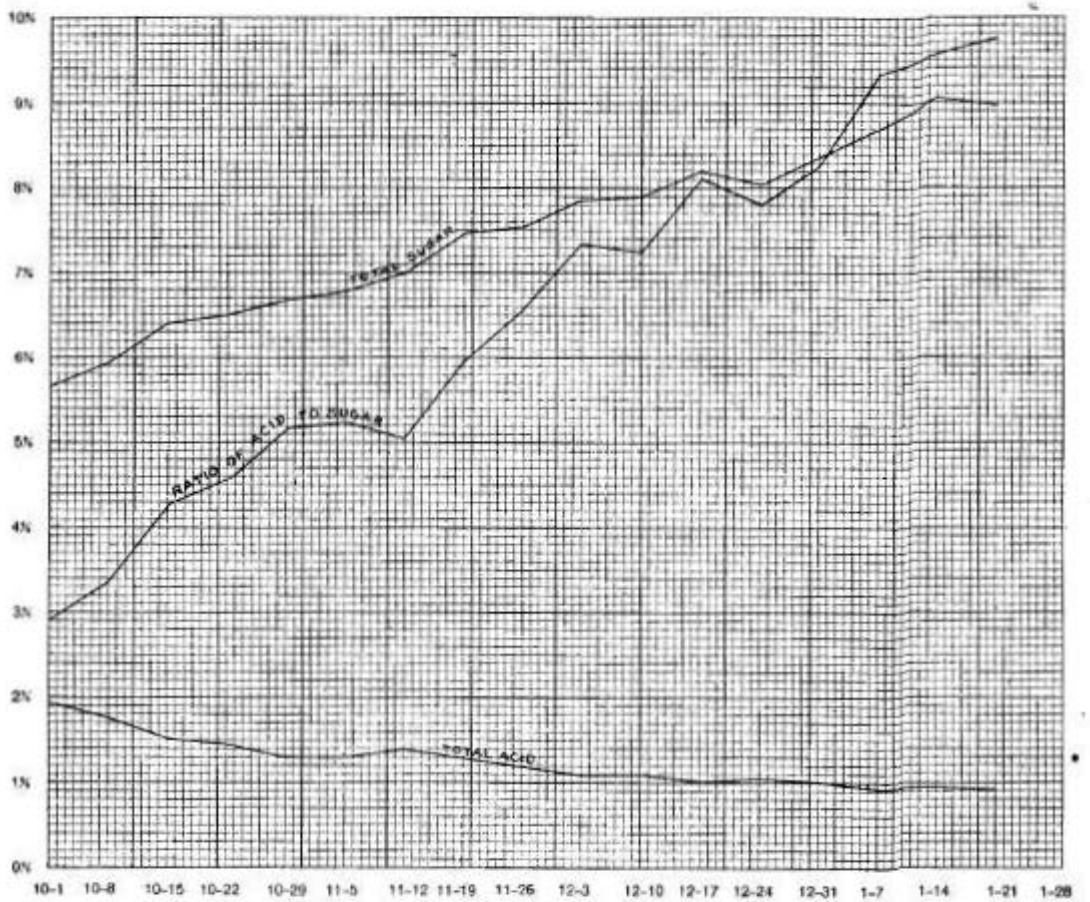


CHART SHOWING AVERAGE CHEMICAL CHANGES IN ORANGES FROM NINE LOCALITIES, FROM OCTOBER 1 TO JANUARY 31.

14, the ratio was above 9.00% and the taste sweet. The percentage of juice did not vary considerably from the average during the season.

Winter Haven, Polk County—Seedling. Samples were received from Oct. 3 to Jan. 28, making eighteen in all. This orange ripened the latter part of November, the acid falling below 1.25% on November 26th. The acid began with 1.67% and ended with 1.12%, falling very gradually throughout the season. The variation in maximum and minimum acid in this orange was only 0.65%, a very small decrease in acid for four months—less than the decrease in any other sample except the Parson Browns, which were ripe before the study was begun. The sugar began at 5.75% and increased to 8.45% gradually. The ratio of acid to sugar began with 1 to 3.44, or sour taste, and increased to 1 to 7.54, or tart taste. There was a small decrease in percentage of juice during the season.

Lake Weir, Marion County—Parson Brown. Samples were received from Sept. 28, to Jan. 27, making eighteen in all. This orange was ripe when the analyses were begun, the acid content at no time being higher than 1.65%. The acid content began with 0.98% and ended with 0.41%, with a very small gradual decrease during the season. The sugar began with 6.54% and ended with 8.65%, increasing during October and November and running nearly constant throughout December and January. The ratio of acid to sugar began with 1 to 6.67, tart and ended with 1 to 21.10, very sweet, with most rapid increase in January. The percentage of juice decreased considerably during the season. This was a very dry orange, the percentage of juice being less than that of any other orange.

Punta Gorda, DeSoto County—Seedling. The samples were received from Oct. 3, to Jan. 30, making eighteen in all. This orange ripened during the latter part of Octo-

ber, the acid falling below 1.25% on Oct. 24. The acid began at 1.74% and ended with 0.73% decreasing most rapidly during October and very slowly the rest of the season. The sugar content began with 4.96% and ended with 9.01%, the increase being gradual during the season. The average sugar content for the season was very low in these oranges. The ratio of acid to sugar began at 1 to 2.85, taste very sour, increased gradually thru the season and ended at 1 to 12.34, taste very sweet. The percentage of juice did not vary but very slightly during the season. The first two samples received were from a different tree from the samples during the remainder of the season. This orange had a very thick and heavy rind and altho the percentage of juice in the whole orange was low, the pulp was very juicy.

Wauchula, DeSoto County—Seedling. Samples were received from Oct. 4 to Jan. 30, making eighteen in all. This orange ripened during the latter part of November, the acid content falling below 1.25% on November 27. The acid began with 2.13% and ended with 0.97% decreasing very rapidly during October and much more slowly for the rest of the season. The sugar began with 5.19% and ended with 10.00%, increasing during the first three months and remaining nearly constant during January. On January 18th, the sugar was 10.07%, the highest found during the study. The ratio of acid to sugar began with 1 to 2.44, taste very sour, and ended with 1 to 10.31, taste sweet, increase being very gradual throughout the season. The percentage of juice increased slightly during October and November, with slightly greater decrease during December and January.

Tildenville, Orange County Valencia. Samples were received from October 7 to January 27, making seventeen in all. This is a very late orange, not being ripe at the end of the study and the acid content having fallen only to 1.27%. The acid began with 2.86% and

ended with 1.27%, the decrease being much slower during January than the rest of the season. On Oct. 14 the acid was 3.09%, the maximum acid found during the study. The sugar began with 4.81% and ended with 9.29%, increasing gradually throughout the season. The ratio of acid to sugar began with 1 to 1.68, very sour taste, and ended with 1 to 7.31, tart taste. The percentage of sugar on Oct. 7 was 4.57%, the lowest found during the study. The percentage of juice increased considerably during the season, this being the juciest orange of the study. The samples up to Dec. 23 were all received from one tree, after which a change was made to another tree.

Tampa, Hillsboro County—Seedlings. Samples were received from Oct. 4 to Jan. 17, making fifteen in all. This orange ripened during the latter part of December, the acid falling below 1.25% on Dec. 21. The acid began with 2.13% and ended with 1.16%, there being a very constant decrease during the first three months and practically constant during January. The sugar began with 5.20% and ended with 9.74%, increasing gradually. The ratio began at 1 to 2.45, very sour taste, and ended with 1 to 8.40, tart taste. The percentage of juice varied very little from the average during the season.

St. Petersburg, Pinellas County—Seedling. This orange ripened during December, the acid falling below 1.25% on Dec. 17. The acid began with 2.15% and ended with 1.13%, decreasing very rapidly during October and much slower during November and December. The sugar began with 5.11% and ended with 7.67%, with a gradual increase. The ratio of acid to sugar began at 1 to 2.38, a very sour taste, and ended at 1 to 6.79, a tart taste. The percentage of juice decreased considerably during the season.

Lakeland, Polk County—Seedling. Samples were received from Oct. 3 to Jan. 2, making thirteen in all. This orange was not ripe at the time samples quit coming,

the acid at the end being 1.31%, altho on Dec. 20, the acid was 1.12%, and Nov. 28, 1.18%, which may have been due to careless sampling or other cause. The acid began at 2.01% and ended with 1.31%. The decrease was very small and irregular during the time samples were received. The sugar began at 5.13% and ended with 8.62%, increasing constantly throughout the season. The ratio of acid to sugar began at 1 to 2.55, very sour taste, and ended at 1 to 6.57, tart taste, the increase being very irregular. The percentage of juice did not vary but little during the season.

Manatee, Manatee County—Seedling. Samples were received from Oct. 3 to Dec. 28, making twelve samples in all. This orange ripened during October, the acid falling below 1.25% on Oct. 18. The acid began at 1.45% and ended at 0.73%, decreasing very rapidly during October and remaining nearly constant during November and December. The sugar began at 6.81% and ended at 9.24%, increasing gradually during the season. The ratio of acid to sugar began at 1 to 4.70, a sour taste, and ended at 1 to 12.66, a very sweet taste. The increase was nearly constant during the season. The percentage of juice did not vary perceptably from the average.

Orlando, Orange County—Seedling. Samples were received from Oct. 1, to Dec. 4, making ten samples in all. This orange had not ripened on Dec. 4, the acid then being 1.40%. The acid began at 1.76% and ended at 1.40%, decreasing irregularly during the two months. Sugar began at 5.20% and ended at 7.93%, increasing gradually. The ratio of acid to sugar began at 1 to 2.95, very sour taste, and ended at 1 to 5.66, sour taste, increasing irregularly. The percentage of juice did not vary perceptibly from the average.

Buckingham, Lee County—Seedling. A particularly acid tree was selected for the samples. Samples were received irregularly from Oct. 7 to Jan. 24, making ten

samples in all. The oranges ripened during the early part of November, the acid falling below 1.25% on Nov. 8. The acid began at 2.05% and ended at 0.97%, falling rapidly during October and slower for the rest of the season. The sugar began at 6.21% and ended at 9.84%, increasing rapidly during October and much slower during the balance of the season. The ratio of acid to sugar began at 1 to 3.03, a sour taste, and ended at 1 to 11.31, a sweet taste. The percentage of juice in the orange decreased considerably during the season.

Mt. Dora, Lake County—Seedling. Samples were received from Oct. 5 to Nov. 30, making nine in all. This orange was still green on Nov. 30, the acid being 1.49%. The acid began at 2.03% and ended at 1.49%. Sugar began at 5.11% and ended at 7.26%. The ratio of acid to sugar began with 1 to 2.52, very sour taste, and ended with 1 to 4.87, sour taste. The percentage of juice remained practically constant.

Orange Lake, Alachua County—Pineapple. Samples were received from Oct. 3 to Dec. 5, making nine in all. This orange ripened in December, the acid falling below 1.25% on Dec. 5. The acid began at 1.37% and ended at 0.97%. The sugar began at 6.50% and ended at 8.80%. The ratio began at 1 to 4.75, a sour taste, and ended with 1 to 9.07, a sweet taste. The percentage of juice remained practically constant.

GENERAL SUMMARY AND AVERAGES.

Averages each week of the samples that were received during the entire season are shown in the table that follows. The nine localities were:—

Alva, Lee County—Seedling.
Clearwater, Pinellas County—Seedling (Sweet Seville.)
Tavares, Lake County—Seedling.
Lake Helen, Volusia County—Seedling.

Winter Haven, Polk County—Seedling.
Lake Weir, Marion County—Parson Brown.
Punta Gorda, DeSoto County—Seedling.
Wauchula, DeSoto County—Seedling.
Tildenville, Orange County—Valencia.

The accompanying chart shows these averages graphically.

The averages are:

Week Beginning	Total Sugar as Invert (per cent.)	Total Acid as Crystallized Citric Acid (per cent.)	Ratio of Acid to Sugar.
1912			
Oct. 1	5.63	1.92	1 to 2.93
Oct. 8	5.92	1.76	1 to 3.36
Oct. 15	6.42	1.51	1 to 4.25
Oct. 22	6.50	1.43	1 to 4.55
Oct. 29	6.67	1.30	1 to 5.13
Nov. 5	6.78	1.30	1 to 5.22
Nov. 12	6.97	1.38	1 to 5.05
Nov. 19	7.45	1.25	1 to 5.96
Nov. 26	7.54	1.15	1 to 6.56
Dec. 3	7.84	1.07	1 to 7.33
Dec. 10	7.89	1.09	1 to 7.24
Dec. 17	8.18	1.01	1 to 8.10
Dec. 24	8.05	1.03	1 to 7.82
Dec. 31	8.36	1.01	1 to 8.28
1913			
Jan. 7	8.69	0.93	1 to 9.34
Jan. 14	9.08	0.95	1 to 9.56
Jan. 21	8.97	0.92	1 to 9.75

Sugar.

The average sugar content of these nine samples during the season is:

Locality.	Variety.	Sugar (per cent.)
Alva	Seedling	8.08
Lake Weir	Parson Brown	8.04
Lake Helen	Seedling	7.87
Wauchula	Seedling	7.66
Tavares	Seedling	7.60
Winter Haven	Seedling	7.17
Clearwater	Seedling	7.08
Punta Gorda	Seedling	7.02
Tildenville	Valencia	6.92

Acid.

The average acid content of these nine samples during the seasons is:

Locality.	Variety	Acid (per cent.)
Tildenville	Valencia	1.90
Tavares	Seedling	1.52
Winter Haven	Seedling	1.30
Lake Helen	Seedling	1.25
Wauchula	Seedling	1.25
Clearwater	Seedling	1.13
Punta Gorda	Seedling	1.05
Alva	Seedling	1.03
Lake Weir	Parson Brown	0.72

Ratio of Acid to Sugar.

The average ratio of these nine samples during the season is:

Locality.	Variety.	Ratio of Acid to Sugar.
Lake Weir	Parson Brown	1 to 11.32
Alva	Seedling	1 to 7.84
Punta Gorda	Seedling	1 to 6.69
Lake Helen	Seedling	1 to 6.30
Clearwater	Seedling	1 to 6.27
Wauchula	Seedling	1 to 6.13
Winter Haven	Seedling	1 to 5.52
Tavares	Seedling	1 to 5.00
Tildenville	Valencia	1 to 3.64

Maturity by Tentative Standard.

The earliest date at which the ratio of acid to sugar reached 1 to 7 for each of these nine localities was.

Locality.	Variety.	Time.
Lake Weir	Parson Brown	Oct. 14, 1912
Alva	Seedling	Nov. 8, 1912
Lake Helen	Seedling	Nov. 26, 1912
Punta Gorda	Seedling	Nov. 28, 1912
Clearwater	Seedling	Dec. 2, 1912
Wauchula	Seedling	Dec. 3, 1912
Winter Haven	Seedling	Jan. 7, 1913
Tavares	Seedling	Jan. 17, 1913
Tildenville	Valencia	Jan. 27, 1913

For other localities:

Manatee	Seedling	Nov. 4, 1912
Buckingham	Seedling	Nov. 22, 1912
Orange Lake	Pineapple	Dec. 5, 1912
Tampa	Seedling	Dec. 21, 1912
St. Petersburg	Seedling	After Dec. 31, 1912
Lakeland	Seedling	After Jan. 2, 1913

Maturity by Field Test.

The earliest date at which the acid content fell to 1.25 per cent or below for each of these nine localities was:

Locality.	Variety.	Time.
Lake Weir	Parson Brown	Before Oct. 1, 1912
Punta Gorda	Seedling	Oct. 24, 1912
Alva	Seedling	Oct. 26, 1912
Wauchula	Seedling	Oct. 30, 1912
Clearwater	Seedling	Nov. 1, 1912
Lake Helen	Seedling	Nov. 19, 1912
Winter Haven	Seedling	Nov. 26, 1912
Tavares	Seedling	Jan. 17, 1913
Tildenville	Valencia	After Jan. 31,1913

For other localities:

Manatee	Seedling	Oct. 18, 1912
Buckingham	Seedling	Oct. 25, 1912
Lakeland	Seedling	Nov. 28, 1912
Orange Lake	Pineapple	Dec. 5, 1912
St. Petersburg	Seedling	Dec. 17, 1912
Tampa	Seedling	Dec. 21, 1912

MAXIMA AND MINIMA.

There were 259 analyses of oranges made for this study. During the same time and incident to this work, 88 mis-

cellaneous analyses of oranges from various localities, were made, and also 10 analyses under the Pure Food and Drug Law, making a total of 357 analyses of Florida oranges.

These 98 other analyses were published in the report of the State Chemist of Florida for 1912. Below the maxima and minima of these 357 analyses, are given, altho it is of little practical value as the analyses were begun while some of the oranges were very immature and were not continued until they had reached over ripeness.

Juice (per cent.)	Maximum.. 55.12	Alva, Seedling, on Oct. 18, 1912.
	Minimum... 26.52	Manatee, Seedling, on Dec. 13, 1912.
Total Acid as Crystallized Citric Acid. (per cent.)	Maximum.. 3.09	Tildenville, Valencia, on Oct. 14, 1912.
	Minimum... 0.41	Lake Weir, Parson Brown, on Jan. 27, 1913.
Total Sugar as Invert sugar. (per cent.)	Maximum.. 14.43	Sanford, Seedling, on Jan. 18, 1912.
	Minimum... 4.55	Sarasota, Seedling, on Oct. 12, 1912.
Ratio of Total Acid to Total Sugar.	Maximum.. 1 to 22.31	Sanford, Parson Brown, on Jan. 18, 1912.
	Minimum... 1 to 1.48	Tildenville, Valencia, on Oct. 14, 1912.

WEATHER CONDITIONS.

A careful study of the climatological data for temperature and rainfall for the orange section, was made, but no conclusions could be drawn from one season only.

The study began in October after a very heavy rainfall for the orange section for September, over 11 inches, with decreasing amounts for each succeeding month. The fall

and winter have been unusually warm, with the warmest January since 1892.

It would take analyses from numerous localities for several seasons to draw conclusions of any value in regard to the influence of seasonal variations on the composition of the orange.

An attempt was made to correlate the irregular increase of the acid content of the orange with the rainfall but without success.

The observations on the location, in the extreme Northern part or the extreme Southern part of the orange section, did not show that the difference in climate had any effect as to the date of maturing. The peculiarity of individual varieties of the orange is the only influence that was noted to have an effect on the date of maturity.

STARCH.

Numerous qualitative tests were made for starch throughout the season, particularly on immature oranges early in the season. At no time was any starch found in any orange.

CONCLUSIONS.

The conclusion that can be drawn from this study, while brief, is important.

After a careful examination of the data obtained and that relating to the composition of the orange, the conclusion is that a chemical standard is the only fair one for an orange. Of course, even in applying an automatic chemical standard, common sense will have to be used. Any of the physical standards that may be suggested, such as color of rind, color of pulp, appearance of seed, taste, etc., or even a combination of all, could never be practically applied with any justice, by different inspectors in

different locations, on account of the differences between man and man and the impossibility of preparing concrete standards to which the different oranges could be compared.

A careful examination of the facts in this study will show the injustice of setting a definite date on which to begin shipping, or even a different date for each variety.

While there are a few well defined varieties, the large majority of oranges in Florida vary from each other by such minute physical differences that it would be impossible to differentiate between varieties, particularly after the oranges were removed from the trees.

It is evident that for scientific accuracy and ease of practical application, the chemical standard should be as simple as possible. While the ratio of acid to sugar can be so fixed that oranges that are evidently immature will fall on one side and those evidently mature will fall on the other side; it is as accurate, if not more so, and much easier to fix a percentage of acid that will divide those evidently mature and immature into two classes. Of course, whatever standard, chemical or otherwise, is used, there will always be cases where the question of maturity will have to be left to the standard, rather than to the senses. It is our conclusion that a standard of 1.25 per cent of total acid is scientifically accurate, fair and just to the producer and consumer alike, and of the greatest ease of practical application to the orange industry.

While oranges that contain not more than 1.25 per cent of total acid will vary from sweet to rather tart in taste and probably will have a greater variation in flavor and taste than those with a greater ratio of acid to sugar than 1 to 7, they will always be edible and desirable fruit. Of course, there is occasionally freak fruit that would pass any standard adopted and still be edible and undesirable; but such cases call for the application of common sense with the standard.

RECOMMENDATIONS.

While it is not in the province of this study to recommend a law fixing the maturity of oranges, it is, however, the object to recommend a standard for oranges to be embodied in whatever law Florida has, or will have, on the maturity of citrus fruit. It is also recommended that the method of obtaining a fair and accurate sample, the procedure of the field test, and laboratory method for the determination of acid should be made a part of the law in order that uniform methods, terms, and definitions be used in all cases for the enforcement of the law by officers charged with the execution of the law.

Standard.

The standard recommended is:

Orange, sweet orange, is the ripe, mature fruit of *Citrus aurantium* L., the juice of which contains not more than one and twenty-five hundredths (1.25) per cent by weight of total acid, determined as crystallized citric acid.

Selection of Sample.

Two samples of twelve average oranges each, fairly representative of the fruit to be tested, should be selected by the inspector in the presence of the person in charge. One sample should be sealed and set aside, and the field test applied to the other. In case the person in charge should appeal from the result of the field test, as applied by the inspector, the duplicate, sealed sample should be packed, sealed, and signed by the inspector, in the presence of the person in charge and two witnesses. The person in charge and the two witnesses shall witness the package by signing their names after that of the inspector. The package of oranges shall then be sent by parcel post or by prepaid express to the Division of Chemistry, of the Florida Department of Agriculture at Tallahassee.

Field Test.

Apparatus and Chemicals:

One two-quart granite-ware cup.
One wooden lemon-squeezer.
Cheese cloth strainers, 18 inches square.
One white porcelain tea-cup.
One pocket knife.
One pipette, 25 cc.
One eight-ounce graduated bottle.
One box Farrington alkaline tablets.

Preparation of Alkaline Solution. Place 96 of the Farrington alkaline tablets in an eight-ounce graduated bottle, fill up to eight ounce mark with pure distilled or rain water, stopper well, and shake frequently for at least three hours before using solution. The solution will have a pink color with a white sediment.

Method. Peel twelve oranges, selected as directed, cut in half across segments, squeeze the halves with a lemon-squeezer into the granite-ware cup through a piece of cheese cloth placed over it. Squeeze out the cheese cloth gently and throw away. Then stir the juice in the cup well but gently. Rinse the pipette with the alkaline solution, empty it, then fill to mark with the alkaline solution and empty into tea-cup. Then rinse the pipette with the orange juice, and empty, fill to mark with orange juice, and while revolving the tea-cup let the orange juice run slowly from the pipette into the tea-cup. Mix the orange juice and alkaline solution thoroly.

If the orange is immature and contains more than 1.25 *per cent of acid the mixture in the tea-cup will be more or less deeply orange colored.*

If the orange is mature and contains not more than 1.25 *per cent of acid the mixture in the cup will be more or less pink in color.*

Laboratory Method.

Peel twelve orangse, selected as directed, cut in half across segments, squeeze the halves with a lemon-squeezer into the granite-ware cup through a piece of cheese cloth placed over it. Squeeze out the cheese cloth gently and then throw away. Stir the juice in the cup well but gently. Weigh 10 grams of the juice and place in a 250 cc beaker, dilute with recently boiled distilled water to about 100 cc., add phenolphthalein and titrate with tenth normal sodium hydrate solution, free from sodium carbonate. Each cc of tenth normal sodium hydrate, when using ten grams of juice, is equivalent to 0.07 per cent of total acid as crystallized citric acid, and the number of cc of tenth normal sodium hydrate taken, multiplied by 0.07, gives the percentage by weight of total acid as crystallized citric acid.

Seedling Oranges from Alva, Lee County.

Grown by Edward Parkinson.

Trees 25 Years Old.

Number.	Date Gathered.	Date Analyzed.	Juice (per cent).	Total Sugar as Invert. (per cent).	Total Acid as Crystallized Citric (per cent).	Ratio of Total Acid to Total Sugar.	Taste.
	—1912—	—1912—					
1103	Sept. 28	Oct. 2	.....	6.25	1.85	1 to 3.38	Sour
1173	Oct. 16	Oct. 18	42.81	7.08	1.44	1 to 4.92	Sour
1187	Oct. 18	Oct. 22	55.12	7.12	1.30	1 to 5.48	Sour
1228	Oct. 26	Oct. 31	45.02	7.67	1.21	1 to 6.34	Tart
1266	Nov. 2	Nov. 7	46.57	7.45	1.15	1 to 6.48	Tart
1286	Nov. 8	Nov. 14	44.33	8.02	1.13	1 to 7.10	Tart
1069	Nov. 16	Nov. 20	39.12	7.70	1.13	1 to 6.81	Tart
1090	Nov. 22	Nov. 27	46.80	8.14	1.07	1 to 7.61	Tart
1308	Nov. 29	Dec. 3	45.81	7.82	0.99	1 to 7.90	Tart
1323	Dec. 6	Dec. 10	44.79	8.23	0.89	1 to 9.24	Sweet
1340	Dec. 13	Dec. 21	39.13	8.36	0.82	1 to 10.20	Sweet
1353	Dec. 20	Dec. 28	43.60	8.44	0.86	1 to 9.81	Sweet
1363	Dec. 28	Dec. 31	45.22	8.26	0.84	1 to 9.83	Sweet
		—1913—					
1367	Dec. 28	Jan. 1	43.67	8.67	0.84	1 to 10.32	Sweet
	—1913—						
1380	Jan. 4	Jan. 9	40.46	8.70	0.75	1 to 11.60	Sweet
1388	Jan. 11	Jan. 14	41.65	8.54	0.74	1 to 11.54	Sweet
1402	Jan. 18	Jan. 21	41.62	9.43	0.78	1 to 12.09	*V. S.
1421	Jan. 24	Jan. 30	38.58	9.56	0.79	1 to 12.10	*V. S.
Average Dec. 1, 1912			41.35	8.08	1.03	1 to 7.84	Tart

*Very Sweet.

Seedling Oranges (Sweet Seville), from Clearwater, Pinellas Count.

Grown by Marshall, Brandon and Bass.

A Very Slow Maturing Tree. Trees 28 Years Old.

Number.	Date Gathered.	Date Analyzed.	Juice (per cent).	Total Sugar as Invert. (per cent).	Total Acid as Crystallized Citric (per cent).	Ratio of Total Acid to Total Sugar.	Taste.
	—1912—	—1912—					
1107	Sept. 30	Oct. 2	43.72	5.02	1.97	1 to 2.55	†V. S.
1133	Oct. 7	Oct. 9	49.12	5.21	1.73	1 to 3.01	Sour.
1165	Oct. 15	Oct. 17	45.79	5.64	1.61	1 to 3.50	Sour.
1189	Oct. 21	Oct. 23	43.56	6.05	1.47	1 to 4.12	Sour.
1220	Oct. 28	Oct. 30	40.76	5.88	1.47	1 to 4.00	Sour.
1265	Nov. 5	Nov. 7	39.54	6.10	1.27	1 to 4.80	Sour.
1284	Nov. 12	Nov. 14	45.57	6.94	1.15	1 to 6.03	Tart
1070	Nov. 18	Nov. 20	41.45	7.11	1.19	1 to 5.97	Sour.
1099	Nov. 26	Nov. 29	43.16	7.07	1.06	1 to 6.67	Tart
1310	Dec. 2	Dec. 5	44.05	7.50	1.01	1 to 7.43	Tart
1326	Dec. 9	Dec. 11	42.46	7.72	1.84	1 to 9.19	Sweet
1337	Dec. 17	Dec. 20	41.58	7.76	0.74	1 to 10.49	Sweet
1350	Dec. 24	Dec. 27	43.75	7.71	0.87	1 to 8.86	Tart
		—1913—					
1369	Dec. 31	Jan. 2	41.16	8.31	0.96	1 to 8.66	Tart
	—1913—						
1379	Jan. 7	Jan. 9	39.14	8.02	0.80	1 to 10.02	Sweet
1398	Jan. 14	Jan. 17	33.98	8.24	0.75	1 to 10.99	Sweet
1405	Jan. 21	Jan. 24	35.37	8.53	0.80	1 to 10.66	Sweet
1425	Jan. 28	Jan. 31	33.42	8.60	0.68	1 to 12.65	*V. S.
Average Nov. 29, 1912...			41.53	7.08	1.13	1 to 6.27	Tart

†Very Sour.

*Very Sweet.

Seedling Oranges from East Shore of Lake Harris, Near Tavares, Lake County.

Grown by The Woodlea Company.

Trees 5 Years Old.

Number.	Date Gathered.	Date Analyzed.	Juice (per cent).	Total Sugar as Invert. (per cent).	Total Acid as Crystallized Citric (per cent).	Ratio of Total Acid to Total Sugar.	Taste.
	—1912—	—1912—					
1124	Oct. 4	Oct. 7	45.28	6.16	2.28	1 to 2.69	†V. S.
1151	Oct. 11	Oct. 14	44.91	6.40	1.89	1 to 3.39	Sour
1183	Oct. 18	Oct. 21	43.20	7.03	1.71	1 to 4.11	Sour
1217	Oct. 25	Oct. 28	40.03	6.92	1.56	1 to 4.44	Sour
1255	Nov. 1	Nov. 4	45.28	7.04	1.58	1 to 4.46	Sour
1279	Nov. 8	Nov. 11	48.59	7.31	1.60	1 to 4.57	Sour
1300	Nov. 15	Nov. 19	42.43	7.55	1.67	1 to 4.52	Sour
1084	Nov. 22	Nov. 25	45.04	7.56	1.43	1 to 5.29	Sour
1305	Nov. 29	Dec. 2	46.27	7.90	1.48	1 to 5.34	Sour
1321	Dec. 6	Dec. 9	46.19	8.33	1.45	1 to 5.74	Sour
1334	Dec. 13	Dec. 17	44.44	8.05	1.45	1 to 5.55	Sour
1344	Dec. 20	Dec. 23	44.63	8.08	1.36	1 to 5.94	Sour
1359	Dec. 27	Dec. 30	46.04	7.79	1.27	1 to 6.13	Tart
	—1913—	—1913—					
1376	Jan. 3	Jan. 6	47.25	8.09	1.34	1 to 6.04	Tart
1386	Jan. 10	Jan. 13	43.62	8.14	1.34	1 to 6.07	Tart
1401	Jan. 17	Jan. 21	42.24	8.34	1.18	1 to 7.07	Tart
1419	Jan. 24	Jan. 30	41.28	8.56	1.19	1 to 7.19	Tart
Average Nov. 29, 1912...			44.51	7.60	1.52	1 to 5.00	Sour

†Very Sour.

Seedling Oranges from Lake Helen, Volusia County.

Grown by Mace & Son.

Trees 20 Years Old.

Number.	Date Gathered.	Date Analyzed.	Juice (per cent).	Total Sugar as Invert. (per cent).	Total Acid as Crystallized Citric (per cent).	Ratio of Total Acid to Total Sugar.	Taste.
	—1912—	—1912—					
1114	Oct. 1	Oct. 4	44.68	5.69	1.98	1 to 2.87	†V. S.
1140	Oct. 8	Oct. 11	45.40	6.22	1.50	1 to 4.15	Sour
1172	Oct. 15	Oct. 18	44.47	6.34	1.36	1 to 4.66	Sour
1200	Oct. 22	Oct. 26	42.98	6.56	1.44	1 to 4.56	Sour
1230	Oct. 29	Nov. 1	48.22	7.04	1.28	1 to 5.50	Sour
1272	Nov. 5	Nov. 8	49.46	6.94	1.35	1 to 5.14	Sour
1288	Nov. 12	Nov. 15	45.85	6.89	1.41	1 to 4.89	Sour
1078	Nov. 19	Nov. 23	42.33	7.95	1.15	1 to 6.91	Tart
1097	Nov. 26	Nov. 29	48.42	8.11	1.01	1 to 8.03	Tart
1315	Dec. 3	Dec. 6	45.19	7.77	1.10	1 to 7.06	Tart
1332	Dec. 11	Dec. 17	43.12	8.80	1.26	1 to 6.98	Tart
1341	Dec. 17	Dec. 21	44.25	8.67	0.99	1 to 8.76	Tart
1354	Dec. 24	Dec. 28	44.27	8.19	1.09	1 to 7.51	Tart
	—1913—	—1913—					
1373	Jan. 1	Jan. 4	43.95	8.65	1.22	1 to 7.09	Tart
1383	Jan. 8	Jan. 11	43.07	9.62	0.84	1 to 11.45	Sweet
1395	Jan. 14	Jan. 17	39.72	9.21	1.01	1 to 9.12	Sweet
1406	Jan. 21	Jan. 24	36.94	9.69	1.20	1 to 8.08	Tart
1424	Jan. 28	Jan. 31	44.89	9.54	1.25	1 to 7.47	Tart
Average Nov. 30, 1912...			44.29	7.87	1.25	1 to 6.30	Tart

†Very Sour.

Seedling Oranges from Lake Howard, Winter Haven, Polk County.

Grown by Boyd Brothrs.

Trees 28 Years Old.

Number.	Date Gathered.	Date Analyzed.	Juice (per cent).	Total Sugar as Invert. (per cent).	Total Acid as Crystallized Citric (per cent).	Ratio of Total Acid to Total Sugar.	Taste.
	—1912—	—1912—					
1121	Oct. 3	Oct. 7	46.16	5.75	1.67	1 to 3.44	Sour
1139	Oct. 8	Oct. 11	49.60	5.64	1.68	1 to 3.36	Sour
1175	Oct. 15	Oct. 18	45.43	6.44	1.47	1 to 4.38	Sour
1195	Oct. 23	Oct. 25	43.63	6.41	1.39	1 to 4.61	Sour
1239	Oct. 30	Nov. 2	45.33	6.37	1.39	1 to 4.58	Sour
1271	Nov. 5	Nov. 8	48.92	6.05	1.29	1 to 4.69	Sour
1287	Nov. 12	Nov. 15	47.20	6.25	1.47	1 to 4.25	Sour
1076	Nov. 19	Nov. 22	39.41	7.17	1.46	1 to 4.91	Sour
1098	Nov. 26	Nov. 29	45.21	7.00	1.21	1 to 5.75	Sour
1318	Dec. 3	Dec. 6	45.07	7.67	1.20	1 to 6.39	Tart
1331	Dec. 10	Dec. 14	42.08	7.43	1.27	1 to 5.89	Sour
1342	Dec. 17	Dec. 21	43.48	8.05	1.19	1 to 6.76	Tart
1358	Dec. 26	Dec. 30	45.19	7.34	1.18	1 to 6.22	Tart
		—1913—					
1370	Dec. 31	Jan. 3	41.34	7.94	1.17	1 to 6.79	Tart
	—1913—						
1381	Jan. 7	Jan. 10	42.20	7.88	1.11	1 to 7.10	Tart
1396	Jan. 14	Jan. 17	39.04	9.12	1.10	1 to 8.29	Tart
1409	Jan. 21	Jan. 24	39.76	8.05	1.03	1 to 7.82	Tart
1426	Jan. 28	Jan. 31	42.71	8.45	1.12	1 to 7.54	Tart
Average Nov. 30, 1912...			43.99	7.17	1.30	1 to 5.52	Sour

Parson Brown Oranges from Lake Weir, Marion County.

Grown by Carney Investment Company.

Trees 12 Years Old.

Number.	Date Gathered.	Date Analyzed.	Juice (per cent).	Total Sugar as Invert. rle (per cent).	Total Acid as Crystallized Citric (per cent).	Ratio of Total Acid to Total Sugar.	Taste.
	—1912—	—1912—					
1101	Sept. 28	Sept. 30	43.07	6.54	0.98	1 to 6.67	Tart
1130	Oct. 7	Oct. 8	41.74	6.62	1.05	1 to 6.35	Tart
1153	Oct. 14	Oct. 15	44.92	6.85	0.87	1 to 7.87	Tart
1188	Oct. 21	Oct. 23	35.69	7.25	0.79	1 to 9.18	Sweet
1219	Oct. 28	Oct. 30	39.48	7.51	0.63	1 to 11.92	Sweet
1259	Nov. 4	Nov. 5	44.06	7.61	0.76	1 to 10.01	Sweet
1280	Nov. 11	Nov. 12	45.50	7.28	0.79	1 to 9.22	Sweet
1068	Nov. 18	Nov. 20	39.37	7.93	0.86	1 to 9.22	Sweet
1089	Nov. 25	Nov. 27	41.59	8.39	0.73	1 to 11.49	Sweet
1309	Dec. 2	Dec. 5	39.39	8.28	0.64	1 to 12.94	*V. S.
1324	Dec. 9	Dec. 10	44.68	8.24	0.63	1 to 13.08	*V. S.
1335	Dec. 16	Dec. 17	39.39	8.24	0.66	1 to 12.48	*V. S.
1349	Dec. 23	Dec. 27	41.50	8.77	0.67	1 to 13.09	*V. S.
1364	Dec. 30	Dec. 31	42.98	8.74	0.64	1 to 13.66	*V. S.
	—1913—	—1913—					
1378	Jan. 6	Jan. 9	38.74	9.83	0.56	1 to 17.55	*V. S.
1389	Jan. 13	Jan. 14	36.69	8.26	0.48	1 to 17.21	*V. S.
1405	Jan. 20	Jan. 21	37.52	9.74	0.55	1 to 17.71	*V. S.
1423	Jan. 27	Jan. 30	37.24	8.65	0.41	1 to 21.10	*V. S.
Average Nov. 28, 1912...			40.75	8.04	0.72	1 to 11.32	Sweet

*Very Sweet.

Seedling Oranges from Punta Gorda, DeSoto County.

Grown by J. M. Weeks.

Trees 25 Years Old.

Number.	Date Gathered.	Date Analyzed.	Juice (per cent).	Total Sugar as Invert. (per cent).	Total Acid as Crystallized Citric (per cent).	Ratio of Total Acid to Total Sugar.	Taste.
	—1912—	—1912—					
1117	Oct. 3	Oct. 5	39.32	4.69	1.74	1 to 2.85	†V. S.
1146	Oct. 10	Oct. 12	40.68	5.15	1.95	1 to 2.64	†V. S.
Changed to another tree.							
1180	Oct. 17	Oct. 19	41.74	5.87	1.46	1 to 4.02	Sour
1201	Oct. 24	Oct. 26	42.44	5.89	1.24	1 to 4.75	Sour
1245	Oct. 30	Nov. 2	44.92	6.22	1.04	1 to 5.98	Sour
1273	Nov. 7	Nov. 9	43.14	6.26	1.06	1 to 5.91	Sour
1291	Nov. 13	Nov. 18	38.68	6.37	1.09	1 to 5.84	Sour
1080	Nov. 21	Nov. 23	41.02	6.83	1.05	1 to 6.50	Tart
1301	Nov. 28	Nov. 30	45.69	7.28	0.98	1 to 7.43	Tart
1320	Dec. 5	Dec. 7	48.25	7.14	0.86	1 to 8.30	Tart
1330	Dec. 12	Dec. 14	42.31	7.37	0.90	1 to 8.19	Tart
1343	Dec. 19	Dec. 21	43.34	7.31	0.76	1 to 9.62	Sweet
1356	Dec. 26	Dec. 28	45.37	7.47	0.84	1 to 8.89	Tart
	—1913—	—1913—					
1372	Jan. 2	Jan. 4	43.43	7.70	0.80	1 to 9.62	Sweet
1384	Jan. 9	Jan. 11	35.13	8.38	0.85	1 to 9.86	Sweet
1399	Jan. 16	Jan. 18	42.06	8.56	0.77	1 to 11.12	Sweet
1410	Jan. 23	Jan. 24	33.88	8.57	0.78	1 to 10.99	Sweet
1427	Jan. 30	Jan. 31	35.62	9.01	0.73	1 to 12.34	*V. S.
Average Dec. 1, 1912			41.50	7.02	1.05	1 to 6.69	Tart

†Very sour.

*Very sweet.

Seedling Oranges from Wauchula, DeSoto County.

Grown by S. B. Hogan.

Trees 30 Years Old.

Number.	Date Gathered.	Date Analyzed.	Juice (per cent).	Total Sugar as Invert. (per cent).	Total Acid as Crystallized Citric (per cent).	Ratio of Total Acid to Total Sugar.	Taste.
	—1912—	—1912—					
1113	Oct. 2	Oct. 4	42.04	5.19	2.13	1 to 2.44	†V. S.
1142	Oct. 9	Oct. 11	43.76	5.71	1.83	1 to 3.12	Sour
1174	Oct. 16	Oct. 18	44.91	6.36	1.62	1 to 3.93	Sour
1202	Oct. 23	Oct. 26	46.11	6.56	1.42	1 to 4.62	Sour
1232	Oct. 30	Nov. 1	45.48	6.30	1.23	1 to 5.12	Sour
1260	Nov. 6	Nov. 8	45.75	6.75	1.29	1 to 5.23	Sour
1289	Nov. 13	Nov. 15	44.65	6.80	1.40	1 to 4.86	Sour
1075	Nov. 20	Nov. 22	44.67	7.45	1.33	1 to 5.60	Sour
1096	Nov. 27	Nov. 29	47.01	7.05	1.22	1 to 5.78	Sour
1316	Dec. 3	Dec. 6	49.21	7.80	1.05	1 to 7.43	Tart
1329	Dec. 11	Dec. 13	44.28	7.67	1.17	1 to 6.56	Tart
1339	Dec. 18	Dec. 20	42.57	8.16	1.04	1 to 7.85	Tart
1348	Dec. 23	Dec. 27	35.51	8.12	0.96	1 to 8.46	Tart
1371	Jan. 1	Jan. 3	43.66	8.12	0.93	1 to 8.73	Tart
1382	Jan. 8	Jan. 10	40 07	10.07	0.98	1 to 10.28	Sweet
1397	Jan. 15	Jan. 17	37.68	10.00	0.96	1 to 10.42	Sweet
1408	Jan. 22	Jan. 24	37.08	9.74	0.96	1 to 10.15	Sweet
1422	Jan. 28	Jan. 30	37.48	10.00	0.97	1 to 10.31	Sweet
Average Nov. 30, 1912...			42.88	7.66	1.25	1 to 6.13	Tart

†Very Sour.

Valencia Oranges from Tildenville, Orange County.

Grown by L. W. Tilden.

Trees 16 Years Old.

Number.	Date Gathered.	Date Analyzed.	Juice (per cent).	Total Sugar as Invert. (per cent).	Total Acid as Crystallized Citric (per cent).	Ratio of Total Acid to Total Sugar.	Taste.
	—1912—	—1912—					
1132	Oct. 7	Oct. 9	40.48	4.81	2.86	1 to 1.68	†V. S.
1161	Oct. 14	Oct. 16	42.63	4.57	3.09	1 to 1.48	†V. S.
1190	Oct. 21	Oct. 23	43.95	5.33	2.38	1 to 2.24	†V. S.
1218	Oct. 28	Oct. 30	42.64	5.13	2.51	1 to 2.04	†V. S.
1264	Nov. 4	Nov. 6	46.05	5.94	2.01	1 to 2.96	†V. S.
1281	Nov. 11	Nov. 13	44.95	5.51	2.05	1 to 2.69	†V. S.
1071	Nov. 18	Nov. 20	42.06	6.13	2.18	1 to 2.81	†V. S.
1093	Nov. 25	Nov. 28	45.03	6.52	1.99	1 to 3.28	Sour
1311	Dec. 2	Dec. 5	40.20	6.95	1.78	1 to 3.90	Sour
1327	Dec. 9	Dec. 11	47.87	7.63	1.62	1 to 4.71	Sour
1336	Dec. 16	Dec. 20	45.01	7.31	1.55	1 to 4.72	Sour
1351	Dec. 23	Dec. 27	41.14	8.46	1.39	1 to 6.09	Tart
		—1913—	Changed to another tree.				
1366	Dec. 30	Jan. 1	47.22	8.01	1.48	1 to 5.41	Sour
	—1913—						
1377	Jan. 6	Jan. 9	49.99	8.20	1.50	1 to 5.47	Sour
1394	Jan. 13	Jan. 17	48.46	9.06	1.30	1 to 6.97	Tart
1404	Jan. 20	Jan. 21	45.51	8.78	1.38	1 to 6.36	Tart
1420	Jan. 27	Jan. 30	48.70	9.29	1.27	1 to 7.31	Tart
Average Dec. 2, 1912			44.82	6.92	1.90	1 to 3.64	Sour

†Very Sour.

Seedling Oranges from Tampa, Hillsboro County.

Grown by Eugene Holtsinger.

Number.	Date Gathered.	Date Analyzed.	Juice (per cent).	Total Sugar as Invert. (per cent).	Total Acid as Crystallized Citric (per cent).	Ratio of Total Acid to Total Sugar.	Taste.
	—1912—	—1912—					
1122	Oct. 4	Oct. 7	42.67	5.20	2.13	1 to 2.45	†V. S.
1148	Oct. 11	Oct. 14	43.26	5.40	1.93	1 to 2.79	†V. S.
1182	Oct. 18	Oct. 21	47.36	5.92	1.88	1 to 3.15	Sour
1212	Oct. 25	Oct. 28	41.84	6.15	1.64	1 to 3.75	Sour
1249	Nov. 1	Nov. 4	42.92	6.78	1.66	1 to 4.08	Sour
1277	Nov. 8	Nov. 11	47.99	5.96	1.49	1 to 4.00	Sour
1293	Nov. 15	Nov. 18	39.31	7.53	1.55	1 to 4.86	Sour
1083	Nov. 22	Nov. 25	42.83	7.88	1.63	1 to 4.83	Sour
1304	Nov. 29	Dec. 2	44.10	7.12	1.51	1 to 4.72	Sour
1322	Dec. 6	Dec. 9	45.60	7.89	1.35	1 to 5.84	Sour
1347	Dec. 21	Dec. 27	40.13	8.89	1.21	1 to 7.35	Tart
1357	Dec. 27	Dec. 30	42.22	8.53	1.30	1 to 6.56	Tart
	—1913—	—1913—					
1375	Jan. 3	Jan. 6	40.10	8.97	1.13	1 to 7.94	Tart
1385	Jan. 10	Jan. 13	41.81	10.00	1.31	1 to 7.63	Tart
1400	Jan. 17	Jan. 21	35.93	7.74	1.16	1 to 8.40	Tart
Average Nov. 24, 1912...			42.54	7.46	1.53	1 to 4.88	Sour

†Very Sour.

Seedling Oranges from St. Petersburg, Pinellas County.

Grown by George O. Osborn.

Trees 30 Years Old.

Number.	Date Gathered.	Date Analyzed.	Juice (per cent).	Total Sugar as Invert. (per cent).	Total Acid as Crystallized Citric (per cent).	Ratio of Total Acid to Total Sugar.	Taste.
	—1912—	—1912—					
1136	Oct. 8	Oct. 10	48.31	5.11	2.15	1 to 2.38	†V. S.
1164	Oct. 15	Oct. 17	46.57	5.03	1.94	1 to 2.59	†V. S.
1197	Oct. 22	Oct. 25	46.92	5.63	1.66	1 to 3.39	Sour
1240	Oct. 29	Nov. 2	47.67	5.67	1.60	1 to 3.54	Sour
1269	Nov. 5	Nov. 7	48.17	5.63	1.55	1 to 3.63	Sour
1283	Nov. 12	Nov. 14	45.66	6.14	1.46	1 to 4.21	Sour
1072	Nov. 19	Nov. 21	40.05	6.47	1.56	1 to 4.15	Sour
1094	Nov. 26	Nov. 28	44.18	6.77	1.41	1 to 4.80	Sour
1313	Dec. 3	Dec. 6	45.95	6.70	1.34	1 to 5.00	Sour
1328	Dec. 10	Dec. 13	45.09	6.88	1.28	1 to 5.38	Sour
1338	Dec. 17	Dec. 20	40.37	7.03	1.22	1 to 5.76	Sour
1352	Dec. 24	Dec. 28	41.52	7.31	1.28	1 to 5.71	Sour
		—1913—					
1368	Dec. 31	Jan. 2	32.39	7.67	1.13	1 to 6.79	Tart
Average Nov. 19, 1912...			44.14	6.31	1.51	1 to 4.18	Sour

†Very Sour.

Seedling from Lakeland, Polk County.

Grown by G. P. Quaintenance.

Trees 17 Years Old.

Number.	Date Gathered.	Date Analyzed.	Juice (per cent).	Total Sugar as Invert. (per cent).	Total Acid as Crystallized Citric (per cent).	Ratio of Total Acid to Total Sugar.	Taste.
	—1912—	—1912—					
1118	Oct. 3	Oct. 4	42.81	5.13	2.01	1 to 2.55	†V. S.
1145	Oct. 10	Oct. 12	47.48	4.87	2.06	1 to 2.32	†V. S.
1181	Oct. 17	Oct. 19	46.04	5.09	1.71	1 to 2.98	†V. S.
1199	Oct. 24	Oct. 26	45.17	5.52	1.74	1 to 3.17	Sour
1244	Oct. 31	Nov. 2	45.87	5.53	1.94	1 to 2.85	†V. S.
1274	Nov. 7	Nov. 9	46.43	5.95	1.68	1 to 3.54	Sour
1290	Nov. 14	Nov. 18	47.22	6.75	1.64	1 to 4.12	Sour
1079	Nov. 21	Nov. 23	41.80	6.76	1.67	1 to 4.05	Sour
1307	Nov. 28	Dec. 3	44.41	7.65	1.18	1 to 6.48	Tart
1319	Dec. 5	Dec. 7	44.39	6.98	1.43	1 to 4.88	Sour
1346	Dec. 20	Dec. 27	41.95	7.81	1.12	1 to 6.97	Tart
1355	Dec. 27	Dec. 28	45.33	8.08	1.30	1 to 6.22	Tart
	—1913—	—1913—					
1374	Jan. 2	Jan. 4	46.16	8.62	1.31	1 to 6.58	Tart
Average Nov. 16, 1912...			45.00	6.52	1.69	1 to 3.86	Sour

†Very Sour.

Seedling Oranges from Manatee, Manatee County

Grown by H. T. Bennett.

Trees 60 Years Old.

Number.	Date Gathered.	Date Analyzed.	Juice (per cent).	Total Sugar as Invert. (per cent).	Total Acid as Crystallized Citric (per cent).	Ratio of Total Acid to Total Sugar.	Taste.
	—1912—	—1912—					
1123	Oct. 3	Oct. 7	44.63	6.81	1.45	1 to 4.70	Sour
1149	Oct. 10	Oct. 14	45.11	6.83	1.48	1 to 4.61	Sour
1177	Oct. 18	Oct. 21	45.24	7.24	1.22	1 to 5.93	Sour
1214	Oct. 25	Oct. 28	44.81	7.33	1.13	1 to 6.49	Tart
1248	Nov. 1	Nov. 4	46.29	7.75	1.08	1 to 7.18	Tart
1276	Nov. 8	Nov. 11	41.43	7.70	0.92	1 to 8.37	Tart
1292	Nov. 15	Nov. 18	34.41	8.19	0.85	1 to 9.64	Sweet
1081	Nov. 22	Nov. 25	45.46	8.43	0.97	1 to 8.19	Tart
1306	Nov. 29	Dec. 3	45.81	8.50	0.80	1 to 10.62	Sweet
1333	Dec. 13	Dec. 17	26.52	8.92	0.73	1 to 12.22	*V. S.
1345	Dec. 20	Dec. 23	43.26	9.01	0.76	1 to 11.86	Sweet
1362	Dec. 28	Dec. 31	44.32	9.24	0.73	1 to 12.66	*V. S.
Average Nov. 13, 1912...			42.27	7.80	1.01	1 to 7.72	Tart

*Very Sweet.

Seedling Oranges from Orlando, Orange County.

Grown by C. W. Townsend.

Trees 20 Years Old.

Number.	Date Gathered.	Date Analyzed.	Juice (per cent).	Total Sugar as Invert. (per cent).	Total Acid as Crystallized Citric (per cent).	Ratio of Total Acid to Total Sugar.	Taste.
	—1912—	—1912—					
1111	Oct. 1	Oct. 3	43.78	5.20	1.76	1 to 2.95	†V. S.
1135	Oct. 8	Oct. 10	48.80	5.26	1.85	1 to 2.84	†V. S.
1162	Oct. 15	Oct. 17	43.87	5.64	1.98	1 to 2.85	†V. S.
1193	Oct. 22	Oct. 24	41.73	5.87	1.69	1 to 3.47	Sour
1231	Oct. 30	Nov. 1	45.42	6.20	1.45	1 to 4.28	Sour
1261	Nov. 5	Nov. 6	42.28	6.58	1.55	1 to 4.25	Sour
1286	Nov. 13	Nov. 14	44.69	6.03	1.65	1 to 3.65	Sour
1074	Nov. 18	Nov. 22	38.12	7.25	1.24	1 to 5.85	Sour
1302	Nov. 29	Dec. 2	42.20	7.56	1.27	1 to 5.95	Sour
1314	Dec. 4	Dec. 6	45.92	7.93	1.40	1 to 5.66	Sour
Average Nov. 2, 1912....			43.63	6.35	1.58	1 to 4.02	Sour

†Very sour.

Seedling Oranges from Buckingham, Lee County.

Grown by D. S. Borland.

A particularly Acid Tree Was Selected.

Number.	Date Gathered.	Date Analyzed.	Juice (per cent).	Total Sugar as Invert. (per cent).	Total Acid as Crystallized Citric (per cent).	Ratio of Total Acid to Total Sugar.	Taste.
	—1912—	—1912—					
1125	Oct. 4	Oct. 7	50.03	6.21	2.05	1 to 3.03	Sour
1154	Oct. 11	Oct. 15	43.94	6.36	1.74	1 to 3.66	Sour
1204	Oct. 18	Oct. 26	44.02	7.32	1.42	1 to 5.15	Sour
1227	Oct. 25	Oct. 31	44.46	7.60	1.25	1 to 6.08	Tart
1254	Nov. 1	Nov. 4	45.18	7.26	1.34	1 to 5.42	Sour
1282	Nov. 8	Nov. 13	45.85	8.02	1.20	1 to 6.68	Tart
1073	Nov. 15	Nov. 21	44.18	8.30	1.21	1 to 6.86	Tart
1095	Nov. 22	Nov. 28	44.18	8.10	1.15	1 to 7.04	Tart
	—1913—	—1913—					
1380	Jan. 10	Jan. 13	38.23	9.15	0.80	1 to 11.44	Sweet
1407	Jan. 20	Jan. 24	37.90	9.84	0.87	1 to 11.31	Sweet
Average Nov. 13, 1912...			43.80	7.82	1.30	1 to 6.02	Tart

Seedling Oranges from Mt. Dora, Lake County.

Grown by Charles Edgerton.

Trees 25 Years Old.

Number.	Date Gathered.	Date Analyzed.	Juice (per cent).	Total Sugar as Invert. (per cent).	Total Acid as Crystallized Citric (per cent).	Ratio of Total Acid to Total Sugar.	Taste.
	—1912—	—1912—					
1128	Oct. 5	Oct. 7	46.42	5.11	2.03	1 to 2.52	†V. S.
1152	Oct. 12	Oct. 14	52.09	5.59	1.74	1 to 3.21	Sour
1184	Oct. 19	Oct. 21	46.30	6.39	1.55	1 to 4.12	Sour
1216	Oct. 26	Oct. 28	40.34	5.36	1.34	1 to 4.00	Sour
1256	Nov. 2	Nov. 5	48.24	6.19	1.53	1 to 4.05	Sour
1278	Nov. 9	Nov. 11	49.55	5.99	1.40	1 to 4.28	Sour
1299	Nov. 16	Nov. 19	41.40	6.80	1.29	1 to 5.27	Sour
1082	Nov. 23	Nov. 25	48.55	7.34	1.37	1 to 5.36	Sour
1303	Nov. 30	Dec. 2	43.83	7.26	1.49	1 to 4.87	Sour
Average Nov. 2, 1912....			45.19	6.23	1.65	1 to 3.78	Sour

†Very Sour.

Pineapple Oranges from East Shore of Orange Lake, Alachua County.

Grown by G. B. Crosby, Island Grove.

Number.	Date Gathered.	Date Analyzed.	Juice (per cent).	Total Sugar as Invert. (per cent).	Total Acid as Crystallized Citric (per cent).	Ratio of Total Acid to Total Sugar.	Taste.
	—1912—	—1912—					
1115	Oct. 3	Oct. 4	35.20	6.50	1.37	1 to 4.74	Sour
1143	Oct. 10	Oct. 11	44.07	6.86	1.50	1 to 4.57	Sour
1179	Oct. 17	Oct. 18	41.08	7.84	1.20	1 to 6.53	Tart
1196	Oct. 24	Oct. 25	40.89	7.77	1.27	1 to 6.12	Tart
1241	Oct. 31	Nov. 2	42.50	8.02	1.68	1 to 4.77	Sour
1275	Nov. 7	Nov. 9	41.60	7.83	1.40	1 to 5.59	Sour
1294	Nov. 14	Nov. 18	40.10	8.36	1.54	1 to 5.43	Sour
1077	Nov. 21	Nov. 23	40.77	7.88	1.34	1 to 5.88	Sour
1317	Dec. 5	Dec. 6	43.84	8.80	0.97	1 to 9.07	Sweet
Average Nov. 1, 1912....			41.12	7.79	1.36	1 to 5.73	Sour

EXPENDITURES CHEMICAL DIVISION, 1913.

(Exclusive of Salaries Fixed by Law.)

TRAVELING EXPENSES PURE FOOD AND DRUG INSPECTORS.

January 1 to July 1, 1913.

Feb.	1—Bill A. P. Jordan	$ 84.10
Feb.	28—Bill Marcus Endel	99.85
Mar.	3—Bill A. P. Jordan	95.20
Mar.	25—Bill Marcus Endel	51.30
Apr.	11—Bill Marcus Endel	97.60
Apr.	14—Bill A. P. Jordan	79.55
May	23—Bill A. P. Jordan	71.30
June	4—Bill Marcus Endel	79.05
June	14—Bill A. P. Jordan	87.10
June	26—Bill Marcus Endel	85.55
To June 30, 1913		$830.60

July 1 to December 31, 1913.

July	14—Bill A. P. Jordan	$ 69.05
Aug.	1—Bill Marcus Endel	116.30
Aug.	18—Bill A. P. Jordan	105.25
Sept.	1—Bill Marcus Endel	58.10
Sept.	1—Bill J. H. Lancaster	106.80
Sept.	2—Bill A. P. Jordan	47.85
Sept.	28—Bill A. P. Jordan	78.30
Oct.	1—Bill Marcus Endel	52.85
Oct.	3—Bill J. H. Lancaster	83.25
Oct.	24—Bill Marcus Endel	31.50
Oct.	29—Bill Marcus Endel	95.90
Oct.	29—Bill A. P. Jordan	104.20
Oct.	26—Bill A. P. Jordan	66.35
Nov.	24—Bill J. H. Lancaster	40.15
Dec.	1—Bill Marcus Endel	109.35
Dec.	20—Bill J. H. Lancaster	59.00
Dec.	24—Bill Marcus Endel	78.75
Dec.	24—Bill A. P. Jordan	28.50
July 1 to December 31		$1,331.45
January 1 to June 30		830.60
Total Expenses 1913		$2,162.05

INCIDENTALS PURE FOOD DEPARTMENT.

January 1 to July 1, 1903.

Jan.	1—Dan Allen (freight and dray)	$ 3.67
Jan.	1—City Lights (gas)	8.70
Jan.	1—City Water	13.10
Jan.	1—Telephone	2.00
Jan.	1—D. R. Cox	2.15
Jan.	1—F. C. Gilmore	8.00
Jan.	4—Yaeger-Bethel Hardware Co	19.40
Jan.	4—Bernard Luning	22.50
Jan.	4—Williams & Kwilecki	3.55
Jan.	4—Eimer & Amend	4.80
Jan.	4—Eimer & Amend	13.83
Jan.	4—Eimer & Amend	21.34
Jan.	4—Eimer & Amend	1.00
Jan.	4—A. M. Henry (petty cash)	26.80
Jan.	4—Southern Express Company	9.61
Jan.	10—J. W. Corbett	4.50
Jan.	10—H. R. Sauls	14.75
Jan.	10—R. E. Rose	7.54
Jan.	10—Telegrams	0.85
Jan.	10—Eimer & Amend	37.65
Jan.	15—Chas. H. Barr (repairs to press)	2.50
Feb.	8—Southern Express Company	9.19
Feb.	12—Eimer & Amend	53.56
Feb.	13—Philadelphia Book Company	15.00
Feb.	15—Orange Judd Company	2.25
Feb.	15—Trade Periodical Company	5.00
Feb.	17—F. C. Gilmore (painting and repairs to laboratory)	58.75
Feb.	26—Eimer & Amend	104.35
Feb.	26—Under Typewriter Company	3.00
Feb.	26—D. Appleton & Co	1.80
Feb.	3—Postage	60.04
Feb.	5—Southern Express Company	12.82

Mar. 20	Subscription to Scientific American	7.00
Mar. 20	Eimer & Amend	6.96
Mar. 20	Marcus Endel (samples)	1.00
Mar. 31	Alex Walton (janitor)	20.00
Mar. 31	H. R. Kaufman (carbon paper)	1.50
Apr. 1	T. J. Appleyard (stationery	2.60
Apr. 1	J. F. Hill (pencils)	2.00
Apr. 1	A. M. Henry (petty cash)	7.95
Apr. 1	Telephone	2.00
Apr. 3	City water	12.50
Apr. 3	City gas	7.20
Apr. 3	Southern Express Company	6.14
Apr. 3	Eimer & Amend	7.65
Apr. 3	Philadelphia Book Company	5.00
Apr. 11	F. C. Gilmore	10.15
Apr. 14	A. P. Jordan (samples)	2.35
Apr. 21	Yaeger-Bethel Hardware Co	5.15
Apr. 26	Philadelphia Book Company	35.30
Apr. 26	Dan Allen (freight and dray)	1.84
May 3	R. J. Phillips (plumbing)	1.25
May 3	City gas	9.90
May 3	J. F. Hill (stationery)	3.85
May 3	H. R. Kaufman (type supplies)	2.45
May 3	Southern Express Company	12.57
May 3	Hardee-Smith Drug Co. (ether)	1.00
May 3	Telephone	2.00
May 3	Yaeger-Bethel Hardware Co	1.05
May 3	Tallahassee Drug Co	.75
May 3	Eimer & Amend	4.66
May 3	Andrus & Church (files	9.00
July 1	R. E. Rose (petty cash)	$ 18.00
July 1	L. Heimburger	4.88
July 1	J. F. Hill	1.00
July 3	Telephone	2.00
July 3	Yaeger-Bethel Hardware Co	7.40
July 3	City water	12.52

July	8—Dan Allen (freight and dray)	2.64
Aug.	1—Marcus Endel (samples)	2.15
Aug.	1—Southern Express Company	9.36
Aug.	15—Subscription to Paint and Oil Reporter	4.00
Aug.	15—R. E. Rose (petty cash)	11.20
Sept.	1—Marcus Endel (samples)	2.00
Sept.	2—H. R. Kaufman (typewriter supplies)	5.10
Sept.	2—D. R. Cox (file cabinet)	19.00
Sept.	2—Eimer & Amend	2.56
Sept.	2—R. E. Rose (petty cash)	10.75
Sept.	6—Western Union Telegraph Co.	5.41
Sept.	6—Yaeger-Bethel Co.	1.05
Sept.	9—Dan Allen (freight and dray)	1.87
Sept.	15—Dan Allen (freight and dray)	3.15
Sept.	15—R. E. Rose (petty cash)	10.80
Sept.	24—Eimer & Amend	58.68
Sept.	24—Subscription to Nat'l Food Magazine	1.00
Sept.	24—Eimer & Amend	6.98
Sept.	24—Eimer & Amend	2.52
Sept.	24—Eimer & Amend	44.00
Sept.	24—Eimer & Amend	8 92
Sept.	24—Groover-Stewart Drug Co.	9.70
Oct.	1—Southern Express Company	17.45
Oct.	1—City water	18.26
Oct.	1—City gas	8.25
Oct.	1—Telephone	2.00
Oct.	4—Western Union Telegraph Company	2.45
Oct.	22—A. P. Jordan (samples)	9.28
Oct.	24—Marcus Endel (samples)	5.10
Nov.	15—R. E. Rose (petty cash)	6.60
Nov.	17—Groover-Stewart Drug Co.	3.10
Nov.	17—Alva Bushnell Co. (files)	4.37
Nov.	19—F. C. Gilmore (repairs)	4.50
Dec.	1—City gas	8.85
Dec.	1—Southern Express Company	8.87
Dec.	1—R. E. Rose (petty cash)	13.70

Dec. 10	Eimer & Amend	19.96
Dec. 10	Eimer & Amend	1.85
Dec. 10	Eimer & Amend	23.14
Dec. 10	H. R. Sauls (repairs)	2.00
Dec. 16	Marcus Endel (samples	4.50
Dec. 20	J. H. Lancaster	1.20
Dec. 24	Dues Ass'n. Am. Food & Drug Officials.	10.00
Dec. 24	Philadelphia Book Company	5.00
Dec. 30	Eimer & Amend	1.20
Dec. 24	Andrus & Church (files)	9.00
May 3	Eimer & Amend	$ 25.00
May 3	R. E. Rose (petty cash)	23.85
May 7	Marcus Endel (samples)	7.60
May 13	Eimer & Amend	44.00
May 16	Dues to Ass'n Food & Drug Officials	10.00
May 21	R. E. Rose (petty cash)	18.93
June 1	F. C. Gilmore (repairs)	4.20
June 1	City gas	9.30
June 1	Telephone	2.00
June 1	Southern Express Company	11.82
June 5	Yaeger-Bethel Hardware Co	3.00
June 5	Western Union Telegraph Company	2.95
June 6	A. M. Henry (petty cash)	19.70
June 7	H. R. Sauls (repairs to plumbing)	1.25
June 10	F. C. Gilmore (repairs)	11.75
June 11	R. E. Rose (petty cash)	9.15
	Total expenses 1913	$1,411.44

CHEMICALS AND APPARATUS PURE FOOD DEPARTMENT.

January 1 to July 1, 1913.

Jan.	1—Eimer & Amend	$ 15.65
Jan.	1—Eimer & Amend	33.08
Jan.	1—Eimer & Amend	1.00
Jan.	1—Eimer & Amend	16.20
Jan.	1—Eimer & Amend	7.88
Jan.	1—F. C. Gilmore (repairs)	34.35
Jan.	1—Dan Allen (freight and dray)	5.60
Jan.	1—Dan Allen (freight and dray)	2.05
Jan.	1—H. R. Kaufman (typewriter supplies)	3.20
Jan.	1—Southern Express Company	6.31
Jan.	1—Groover-Stewart Drug Co	4.00
Jan.	1—J. F. Hill (stationery)	2.25
Jan.	1—City gas plant	7.60
Jan.	1—City Board of Managers (light fixtures)	3.50
Jan.	1—Telegrams	3.90
Jan.	1—Telephone	2.00
Jan.	1—Bernard Luning (Laboratory Asst.)	13.50
Jan.	1—R. E. Rose (petty cash)	8.00
Jan.	1—Williams & Kwelecki (stoves, etc.)	3.65
Jan.	1—Tallahassee Drug Co	2.00
Jan.	1—Bernard Luning	19.50
Jan.	1—Mill repairs	5.00
Jan.	1—D. R. Cox	.90
Jan.	1—Telephone	2.00
Jan.	1—Eimer & Amend	7.20
Jan.	1—J. F. Hill	2.35
Jan.	1—Yaeger-Bethel Co	7.23
Jan.	1—Walker & Black	1.20
Jan.	1—Board Public Works	6.90
Jan.	1—Southern Express Co	5.54
Jan.	1—R. E. Rose (petty cash)	1.35

Jan.	1—Southern Express Co.....	6.31
Jan.	1—Muralo Co. (paint for laboratory).....	24.00
Jan.	1—Heimburger (sundries)	6.20
Jan.	1—Scrubbing and cleaning.....	6.00
Jan.	1—Bill E. H. Barr (repairs to tank).....	2.00
Jan.	1—Subscription to La Planter.....	3.00
Jan.	1—Bill R. E. Rose (petty cash).....	6.20
Feb.	1—Bill R. E. Rose (petty cash).....	15.00
Feb.	3—Telephone	2.00
Feb.	1—D. R. Cox (shades).....	3.30
Feb.	1—City Water & Light Plant (fixtures)...	7.50
Feb.	3—City Lights (gas).....	7.95
Feb.	1—Underwood Typewriter Co.....	42.08
Feb.	11—Yaeger-Bethel Hardware Co.....	2.30
Feb.	11—Subscription to American Fertilizer...	2.00
Feb.	12—Eimer & Amend (Dec. 14).....	15.75
Feb.	13—R. E. Rose (petty cash).....	11.40
Mar.	1—City gas	6.30
Mar.	1—Telephone	2.00
Mar	3—E. A. Tully.....	1.50
Mar.	4—R. E. Rose (petty cash).....	17.25
Mar.	24—T. J. Appleyard (envelopes, etc.).....	26.50
May	7—T. J. Appleyard (printing).....	7.90
May	7—Yaeger-Bethel Co.	1.90
May	13—Eimer & Amend.....	26.42
June	1—Alex McDougal, postmaster (postage)..	6.00
July	1—Yaeger-Bethel Hardware Co.....	31.60
July	1—City gas	7.95
July	1—Southern Express Co.....	6.14
July	1—Eimer & Amend.....	6.37
July	1—Eimer & Amend.....	4.42
July	1—Eimer & Amend.....	11.63
July	1—Eimer & Amend.....	63.17
July	1—Eimer & Amend.....	10.91
July	15—N. F. Banks (livery).....	2.00
July	15—H. R. Sauls (plumbing).....	1.60

July	15—R. E. Rose (petty cash)	10.50
July	16—Eimer & Amend	10.05
July	20—Dan Allen (freight and dray)	1.84
July	31—R. E. Rose (petty cash)	12.00
Aug.	1—City gas	11.55
Aug.	1—City gas fixtures	1.40
Aug.	2—Telephone	2.00
Aug.	14—Eimer & Amend	50.53
Aug.	14—H. R. Sauls (plumbing)	3.80
Sept.	2—City gas	9.15
Sept.	2—Telephone	2.00
Sept.	2—J. F. Hill (stationery)	2.00
Sept.	2—Ice Company	1.25
Sept.	2—Southern Express Company	6.31
Sept.	7—Middle Fla. Ice Co	1.50
Sept.	7—Subscription to La Planter	3.00
Sept.	9—E. O. Painter (apparatus)	5.23
Sept.	16—R. E. Rose (petty cash)	11.00
Sept.	20—American Can Co. (sample cans)	6.75
Sept.	24—American Ribbon & Carbon Co	2.50
Sept.	26—Keystone Supply Co	1.00
Oct.	29—J. H. Lancaster (samples)	2.45
Nov.	3—R. E. Rose (petty cash)	15.40
Oct.	3—R. E. Rose (petty cash)	13.45
Nov.	3—True Democrat	5.00
Nov.	3—Southern Express Company	21.78
Nov.	3—Western Union Telegraph Co	.81
Nov.	3—Telephone	2.00
Nov.	3—Groover-Stewart Company	1.80
Nov.	3—Middle Fla. Ice Company	1.55
Nov.	3—Board Public Works (gas)	7.80
Nov.	3—Eimer & Amend	1.36
Nov.	4—T. J. Appleyard (stationery)	2.60
Nov.	4—F. C. Gilmore (repairs)	2.75
Nov.	6—Yaeger-Bethel Hardware Co	2.35
Nov.	7—Levy Bros. (sample cases)	2.50

Nov.	3—Eimer & Amend	8.33
Nov.	10—J. F. Hill (stationery)	2.75
Dec.	6—Telephone	2.00
Dec.	6—Yaeger-Bethel Hardware Co	8.40
Dec.	6—Middle Fla. Ice Co	1.50
Dec.	6—Blymer Iron Works (repairs to mill)	3.50
Dec.	11—Subscription to Pure Food Journal	2.00
Dec.	15—R. E. Rose (petty cash)	11.38
Dec.	29—Eimer & Amend	21.43
Dec.	30—R. E. Rose (petty cash)	14.95
	Total Expenses 1913	$953.83

TRAVELING EXPENSES STATE CHEMIST AND ASSISTANTS.

January 1 to July 1, 1913.

Jan.	1—R. E. Rose, to Arcadia and Tampa....	$ 61.55
Jan.	1—R. E. Rose, to Hardaway.....	5.35
Jan.	27—R. E. Rose, to Ft. Pierce, etc.....	69.45
Feb.	17—To 1,000 mile ticket.....	25.00
Mar.	11—To R. E. Rose, to Jacksonville.....	36.90
Mar.	21—To R. E. Rose, to Ft. Pierce, etc.....	35.00
Apr.	19—A. M. Henry, to Tampa.....	32.00
Apr.	14—R. E. Rose, to Jacksonville.....	25.00
May	3—R. E. Rose, to DeLand.....	39.80
May	3—A. M. Henry, to DeLand.....	32.80
June	4—L. Heimburger, 1,000 mile ticket (10465)	20.00
June	5—A. P. Greene, 1,000 mile ticket (10468)	20.00
June	10—R. E. Rose, R. R. ticket (No. 10486)..	20.00
June	10—R. E. Rose, R. R. ticket (No. 32040)..	25.00
June	29—R. E. Rose, to Mobile and Pensacola, to Convention Food & Drug Officials.....	61.35

July 1 to December 31, 1913.

July	31—To R. E. Rose, to Marianna & Mulford.	$ 7.55
Aug.	12—To R. E. Rose, to Miami, etc.....	75.15
Aug.	23—To R. E. Rose, to Lake City, Jacksonville, Kissimmee	17.00
Sept.	2—To R. E. Rose, to Jacksonville.....	13.00
Sept.	23—To R. E. Rose, to Jacksonville, Tampa, St. Petersburg, etc.....	42.35
Oct.	13—To R. E. Rose, R. R. ticket, 1,000 miles.	20.00
Oct.	24—To R. E. Rose, R. R. ticket, 1,000 miles.	25.00
Nov.	3—To R. E. Rose, to Jacksonville.....	15.30
Dec.	8—To R. E. Rose, to Tampa.....	50.35
Dec.	8—F. W. Wilson, 1,000 mile ticket (55420)	20.00
Dec.	27—R. E. Rose, to DeFuniak Springs, etc..	5.90

Total Expenses 1913.....$800.80

CITRUS FRUIT FUND, 1913.

Sept. 24	Eimer & Amend (apparatus)	$ 15.83
Sept. 29	Groover-Stewart Drug Co	4.70
Oct. 1	N. O. Penny (Inspector)	160.70
Oct. 1	Southern Express Co. (apparatus)	3.18
Oct. 2	J. B. Pylant (Inspector)	107.55
Oct. 2	W. J. Edwards (Inspector)	76.58
Oct. 2	J. W. Knight (Inspector)	139.92
Oct. 3	Yaeger-Bethel Hardware Co	3.70
Oct. 9	F. C. Gilmore	1.50
Oct. 9	Levy Bros. (Instrument cases and supplies)	5.40
Oct. 11	Groover-Stewart Drug Co. (Alkaline tablets)	14.32
Nov. 3	W. J. Edwards, to Nov. 1st	135.03
Nov. 7	N. O. Penny, to Nov. 5th	139.55
Nov. 7	J. W. Knight, to Nov. 5th	128.55
Nov. 8	J. B. Pylant, to Nov. 5th	110.50
Nov. 8	H. & W. B. Drew Co. (stamp)	.63
Nov. 28	Salaries four Inspectors, $270.83 each, for two months and five days	1,083.32
	Total expenses Cit. Fruit inspection	$2,134.96
	Balance to 1914 unexpended	365.04
	Appropriation	$2,500.00
	Balance to season of 1914	365.04

POSTAGE STATE CHEMIST.

January 1st to July 1st, 1913.

Feb. 1, 1913—Bill of Postmaster	$ 10.02
Mar. 31, 1913—Bill of Postmaster	37.24

July 1st to December 31st, 1913.

Sept. 12, 1913—Bill to Postmaster	$ 49.24
Nov. 3, 1913—Bill to Postmaster	2.96
Dec. 1, 1913—Bill to Postmaster	2.26
Dec. 31, 1913—Bill to Postmaster	32.48
Total Expenses 1913	$134.20

SUMMARY OF EXPENSES EXCLUSIVE OF SALARIES FIXED BY LAW.

Traveling Expenses Inspectors	$2,162.05
Incidentals Pure Food Department	1,411.44
Chemicals and Apparatus	953.83
Traveling Expenses State Chemists	800.80
Postage State Chemist	134.20
Citrus Fruit Law	2,134.96
	$7,597.28