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DIVISION OF CHEMISTRY

COMMERCIAL FERTILIZERS IN 1929-1930 AND THEIR USES



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†As of September 1, 1930.

**In cooperation with U. S. Department of Agriculture.

SYNOPSIS

This is the annual Fertilizer Control Bulletin. It contains statistics regarding fertilizers sold in Texas, information regarding the fertilizer law, and analysis of samples of the fertilizer sold by different manufacturers. The extent to which the various manufacturers are coming up to their guarantees is shown.

The total sales of fertilizer in Texas for 1929-30 were 138,917 tons. In 1928-29 they were 187,215 tons; in 1927-28 they were 139,126 tons—all exclusive of cottonseed meal sold as a feed but used as a fertilizer. Practically all the sales of mixed fertilizers were confined to about 20 analyses.

The Bulletin contains a discussion of the use of fertilizers and suggestions for their use on various crops and in various sections of the State.

A number of high-analysis fertilizers were offered for sale in Texas this season.

Tables are given showing the extent to which the various fertilizer manufacturers met or exceeded their guarantees. The cost of fertilizer was less in 1929-30 than in 1928-29.

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COMMERCIAL FERTILIZERS IN 1929-30 AND THEIR USES

G. S. FRAPS AND S. E. ASBURY

The first Texas fertilizer law was passed in 1899. It was revised and amended in 1911. The results of the fertilizer inspection have been published in bulletins of the Texas Agricultural Experiment Station regularly since 1906. This is the twenty-eighth Fertilizer Control Bulletin and contains statistics and suggestions as to the use of fertilizer as well as a report on the analyses made in enforcing the provisions of the fertilizer law.

EXPLANATION OF TERMS

Nitrogen refers to the total nitrogen in the fertilizer. It is necessary in proper amounts for the development of all parts of the plant, but an excess of nitrogen delays maturity and is liable to promote the growth of stalk and leaves at the expense of fruit. Nitrogen is needed by many Texas soils, especially the sandy soils in the eastern and northern parts of the state.

Available phosphoric acid is the phosphoric acid which can be taken up immediately by plants. Phosphoric acid promotes the fruiting of plants, though it is necessary for the development of all parts of the plant.

Total phosphoric acid is the entire quantity of the phosphoric acid present, whether highly available or not. A guarantee of total phosphoric acid in place of available is made in bone, tankage, rock phosphate, and Thomas phosphate.

Potash is required to be soluble in water. Potash, like nitrogen, is needed by all parts of the plant, but especially by stalk and leaves. An excess of potash delays maturity and is liable to promote growth of the stalk and leaves at the expense of the fruit.

Valuation per ton represents the approximate cost of the plant food in the unmixed raw materials, at retail, in large markets. It is not the price at which the fertilizer is sold. The selling price includes also cost of mixing, sacks, transportation, manufacturers' and dealers' profits. The valuations are decided on about September 1, and the prices may change before the active fertilizer season, which is February to April. The valuation sums the value of the three plant foods shown in the analysis into

a single figure. A deficiency in one plant food may be compensated by an excess of another. The valuation found compared with the valuation guaranteed shows whether or not the fertilizer as a whole is better or poorer than the guaranteed analysis. The following valuations were used in 1929-30:

	Cents per pound
Nitrogen	22.5
Available phosphoric acid	6.0
Total phosphoric acid in Thomas phosphate, tankage, and bone meal	4.0
Potash	6.0

Information on the fertilizer bag and tag

A fertilizer tax tag is required on every bag of fertilizer before it is offered for sale or sold. The guaranteed analysis of the fertilizer is required by law to be printed on the bag or on a tag attached to the bag. Total phosphoric acid may be guaranteed on bone or tankage instead of available phosphoric acid. The information required on the package is as follows:

Net weight
 Name of fertilizer in full
 Name and address of manufacturer
 Guaranteed analysis:
 Nitrogen, per cent
 Available phosphoric acid, per cent
 Potash, per cent

Meaning of the figures naming a fertilizer

When a fertilizer is named by figures in this Bulletin, the first figure stands for the percentage of nitrogen, the second for the percentage of available phosphoric acid, the third for the percentage of water-soluble potash. The National Fertilizer Association, the second National Fertilizer Conference, and other organizations have adopted this order of terms. The order was changed in Texas, beginning September 1, 1929, to correspond with these recommendations and to aid in securing national and international uniformity in the naming of fertilizer. For example, a 4-8-4 fertilizer contains 4 per cent nitrogen, 8 per cent available phosphoric acid, and 4 per cent potash.

National and international uniformity

The movement for national and international uniformity in naming fertilizers, sponsored by the National Farm Papers and the National Fertilizer Conference and supported by the Association of Official Agricultural Chemists, the National Fertilizer Association, and other organizations, has made decided progress.

The use of the term nitrogen, and not ammonia, is desired, together with this order of terms: nitrogen first, phosphoric acid second, and potash third. The states along the Atlantic seaboard north of Georgia, together with Florida, have not yet changed to use the term nitrogen exclusively in place of ammonia, but all the rest of the country uses the term nitrogen. Alabama, Georgia, South Carolina, North Carolina, and perhaps Virginia are the only states which retain the order *phosphoric acid, nitrogen, and potash*. Authorities in all the states are contemplating making the necessary changes, and it is hoped that by 1932 the entire country will name fertilizers in the same way.

How to calculate the valuation

The valuation of fertilizer is calculated by multiplying the composition by the valuation of each unit of plant food and adding the products. A unit is one per cent of a ton, or 20 pounds; so if the valuation of available phosphoric acid is 6 cents a pound, the valuation of a unit is $6 \times 20 = \$1.20$. The valuation of a unit of nitrogen at 22.5 cents a pound would be $22.5 \times 20 = \$4.50$; the valuation of a unit of potash at 6 cents a pound would be $6 \times 20 = \$1.20$. The following is an example of the calculation at the prices given above:

Valuation of 4-8-4 fertilizer

Nitrogen	4x\$4.50 =	\$18.00
Available phosphoric acid	8x\$1.20 =	\$ 9.60
Potash	4x\$1.20 =	\$ 4.80
Total valuation per ton		\$32.40

QUANTITY SOLD

The quantities of commercial fertilizers sold in Texas for several seasons are given in Table 1. The sales in 1929-30 were less than for last season. The largest sales made in Texas were during the season 1928-29. Fertilizer statistics for a number of years to August 31, 1926, have been published in Bulletin 350.

Table 1.—Fertilizers sold in Texas

(Not including cottonseed meal sold as feed but used as fertilizer)

1905-06	13,500 tons
1910-11	52,985 tons
1913-14	77,400 tons
1914-15	17,500 tons
1917-18	58,000 tons
1918-19	46,000 tons
1919-20	56,700 tons
1920-21	14,850 tons
1921-22	33,000 tons

1922-23.....	73,300 tons
1923-24.....	126,179 tons
1924-25.....	97,719 tons
1925-26.....	121,747 tons
1926-27.....	79,863 tons
1927-28.....	139,126 tons
1928-29.....	187,215 tons
1929-30.....	138,917 tons

Quantity of sales by grades

Table 2 contains the sales of fertilizer by grades for three seasons. Nearly 45 per cent of the fertilizer sold consisted of two grades, 3-10-3 and 4-12-4, which have practically the same ratio of plant food, namely, 1-3-1. Next comes 4-8-4, nearly 18 per cent of the total. The 18 per cent superphosphate follows next, as it did last season, but the sales of 4-8-6 and 6-12-6 have increased so as to put them ahead of 5-15-5 and 4-10-2, which led them last season. Last season the sales of 4-12-4 exceeded those of 3-10-3, but this season sales of 3-10-3 were the largest of all.

Table 2—Fertilizer sold by grades in tons, in order of tonnage for 1929-30.*

	1929-30	1928-29	1927-28	1926-27
3-10-3.....	33,837	37,110	31,305	13,120
4-12-4.....	27,180	51,424	30,685	8,535
4- 8-4.....	24,601	22,738	10,615	3,735
18% superphosphate.....	12,938	12,201	11,353	12,517
4-8-6.....	6,046	4,102	4,219	2,779
20% superphosphate.....	5,355	5,022	4,811	4,053
6-12-6.....	4,100	4,855	1,749	.....
Nitrate of soda.....	3,732	4,257	2,846	1,095
5-15-5.....	3,769	6,562	3,765	1,249
4-10-2.....	3,117	5,873	4,467	1,906
6-10-7.....	2,652	2,999	2,120	1,483
6-9-3.....	1,650	2,502	1,084	73
6-18-6.....	1,451	919	207	75
0-15-6.....	1,346	890	648	1,173
Sulphate of ammonia.....	1,324	1,317	680	553
3-10-8.....	1,079	1,425	706	838
4-10-7.....	1,069	926	893	1,000
Bone meal.....	609	117	420	477
Cottonseed meal.....	563	797	1,530	2,034
4-10-0.....	548	.....	.....	.....
Muriate of potash.....	363	579	440	409
9-18-18.....	311	.....	.....	.....
Kainit (12% and 14%).....	221	516	558	1,348
Miscellaneous mixed fertilizer.....	192	360	466	330
9-27-9.....	124	.....	.....	.....
20% colloidal mineral phosphate.....	100	.....	.....	.....
Cyanamid.....	91	50	.....	.....
Miscellaneous unmixed fertilizer.....	82	.....	267	285
10-30-10.....	70	.....	.....	.....
Manure salts 20%.....	62	.....	.....	40
Sulphate of potash.....	53	26	23	4
10-20-10.....	50	.....	.....	.....
Sheep manure.....	50	.....	.....	.....
0-20-6.....	45	.....	.....	.....
10-0-10.....	43	.....	.....	.....
16-20-0.....	42	.....	.....	.....
15-30-15.....	42	9	.....	.....
12-24-12.....	10	.....	.....	.....
2-10-2.....	.....	12,236	13,640	8,817

Table 2—Fertilizer sold by grades in tons, in order of tonnage for 1929-30—Continued.

	1929-30	1928-29	1927-28	1926-27
16% acid phosphate.....		3,920	4,318	6,355
3-8-3.....		2,705	3,539	1,889
3-9-0.....		421	315	.....
0-12-4.....		246	250	441
8-8-4.....		111	.....	.....
2-12-2.....		.....	1,060	680
5-9-0.....		.....	78	.....
5-10-5.....		.....	69	.....
3-12-3.....		.....	.....	1,144
3-8-5.....		.....	.....	597
4-12-0.....		.....	.....	202
Total.....	138,917	187,215	139,126	79,236

Quantity of cottonseed meal used as a fertilizer

The tonnage of cottonseed meal reported in Table 2 includes only that sold as a fertilizer. Considerable quantities of cottonseed meal sold as feed are used as fertilizer. No estimate of these sales has been made for 1930, but the amount sold as fertilizer was less than last season.

The consumption of cottonseed meal as a fertilizer in Texas in 1929 was about 12,700 tons. The estimated use of cottonseed meal as a fertilizer in 1928 was about 22,800 tons and for 1927, 30,000 tons. This does not include cottonseed meal sold in mixed fertilizer.

Composition and selling price of different grades of fertilizer

Table 3 contains the average composition, the guaranteed valuation, the valuation found by analysis, and the average retail selling price per ton, of various grades of fertilizers. The average retail selling price is the average of the cash retail price as furnished to the inspector by the dealer. The prices vary in different places, on account of differences in freight rates or for other causes. The retail price includes handling costs, carrying charges, and the dealer's profits, as well as the items mentioned under valuation.

The guaranteed analysis is given in the first column of Table 3. Average analyses under guarantee are underscored. The valuation found exceeds the valuation guaranteed in almost every case. The exceptions are 4-10-7, 6-9-3, 9-18-18, and 9-27-9, and all the differences are slight.

COST OF PLANT FOOD

Table 4 contains the retail cost of a pound of nitrogen, of available phosphoric acid, and of potash, in cents per pound, as calculated from the cash selling prices per ton of Table 3 and the

Table 3.—Average composition, valuation and selling price of grades of fertilizer, 1929-30.

	Number averaged	Nitrogen, per cent	Available phosphoric acid	Potash, per cent	Guaranteed valuation	Valuation found	Selling price per ton
3-10-3.....	188	3.12	9.96	3.12	\$29.10	\$29.73	\$31.45
3-10-8.....	16	3.20	10.15	8.27	35.10	36.51	39.89
4-8-4.....	156	4.00	8.33	4.06	32.40	32.88	34.83
4-8-6.....	53	4.00	8.07	5.94	34.80	34.82	37.24
4-10-0.....	15	4.12	9.96	.....	30.00	30.51	34.06
4-10-2.....	24	4.08	9.91	2.60	32.40	33.42	34.57
4-10-7.....	8	3.82	10.29	6.76	38.40	37.65	39.71
4-12-4.....	199	4.08	11.90	4.11	37.20	37.52	39.03
5-15-5.....	38	5.10	14.83	5.26	46.50	46.98	46.64
6-9-3.....	19	5.81	9.11	3.14	41.40	40.83	42.11
6-10-7.....	25	5.95	10.17	7.04	47.40	47.44	48.85
6-12-6.....	53	5.98	12.09	6.04	48.60	48.66	47.33
6-18-6.....	9	5.98	17.63	5.80	55.80	55.03	52.99
9-18-18.....	1	8.91	17.77	18.44	83.70	83.55	85.00
9-27-9.....	5	8.98	26.76	9.04	83.70	83.38	75.29
10-0-10.....	1	11.20	.....	8.25	57.00	60.30	49.10
16-20-0.....	1	16.32	21.72	.....	96.00	99.50	85.00
0-15-6.....	6	.....	15.24	6.04	25.20	25.53	31.75
0-20-6.....	2	.....	20.26	5.86	31.20	31.33	.....
Superphosphate 18%.....	38	.....	18.83	.....	21.60	22.59	21.65
Superphosphate 20%.....	32	.....	20.46	.....	24.00	24.55	23.91
Kainit 12%.....	5	.....	.....	13.91	14.40	16.69	24.75
Sulphate of ammonia.....	9	20.84	.....	.....	92.04	93.80	61.42
Nitrate of soda 15 and 15.25%.....	12	16.00	.....	.....	68.07	72.02	60.19
Nitrate of soda 16.25%.....	4	16.34	.....	.....	73.13	73.53	55.00
Muriate of potash.....	4	.....	.....	50.76	60.00	60.91	48.27
Cottonseed meal.....	2	7.01	2.45	1.49	33.36	36.25	41.00
Bone meal.....	3	3.64	20.67*	.....	33.26	32.93	37.00
Manure salts 20%.....	1	.....	.....	19.06	24.00	22.87	25.20
Calcium nitrate.....	2	15.28	.....	.....	72.00	68.74	54.00

*Total phosphoric acid.

guaranteed composition of a number of grades of fertilizer. For the purpose of this calculation it was assumed that the prices were in the same ratio as the valuations. As the prices of the same fertilizer in different places vary, these figures are not correct for any one locality, but represent averages only, and are for purposes of comparison. The prices were collected by the inspectors from retail merchants handling fertilizer.

Table 4—Average approximate retail cost of plant food in cents per pound arranged in order of increasing cost.

	Nitrogen	Available phosphoric acid	Potash
Sulphate of ammonia.....	14.73		
Nitrate of soda, 16.25%.....	16.83		
Calcium nitrate.....	17.69		
Muriate of potash.....			4.75
10-0-10.....	18.31		4.88
Nitrate of soda.....	18.81		
16-20-0.....	19.21	5.12	
9-27-9.....	20.32	5.42	5.42
Superphosphate, 18%.....		5.75	
6-18-6.....	21.67	5.78	5.78
6-12-6.....	21.89	5.84	5.84
Superphosphate, 20%.....		5.84	
5-15-5.....	22.34	5.96	5.96
9-18-18.....	22.88	6.10	6.10
6-10-7.....	23.18	6.18	6.18
6-9-3.....	23.20	6.19	6.19
4-12-4.....	23.40	6.24	6.24
4-10-2.....	23.56	6.28	6.28
4-10-7.....	23.74	6.33	6.33
3-10-3.....	23.81	6.35	6.35
4-8-4.....	23.83	6.35	6.35
4-8-6.....	24.08	6.42	6.42
3-10-8.....	24.59	6.56	6.56
20% Manure salts.....			6.61
4-10-0.....	25.11	6.70	
Cottonseed meal.....	25.45	6.79	6.79
Bone meal.....	26.55	*4.72	
0-15-0.....		7.46	7.46
Kainit, 12%.....			8.90

*Total phosphoric acid.

Grades used extensively near the factories would average a lower price than those used at a distance, on account of the addition of larger transportation charges. The fertilizers with the lowest prices are given first.

Cost of phosphoric acid. The cheapest source of phosphoric acid was 16-20-0, and 9-27-9, followed by 18 per cent superphosphate. Available phosphoric acid cost about .09 cents more per pound in 20 per cent superphosphate than in 18 per cent. Phosphoric acid was most expensive in 0-15-6, less expensive in cottonseed meal, and then in 4-10-0, 3-10-8, and 4-8-6. Phosphoric acid was lower in price than last season, the difference averaging 0.25 cents a pound for 18 per cent superphosphate and 0.37 cents a pound for phosphoric acid in 3-10-3.

Cost of nitrogen. Sulphate of ammonia was the cheapest source of nitrogen; nitrate of soda was next. Bone meal was the most expensive source of nitrogen, cottonseed meal came next, then 4-10-0, and 3-10-8. Nitrogen in nitrate of soda cost about one-third more than in sulphate of ammonia. Nitrogen cost more in the mixed fertilizers than in sulphate of ammonia or nitrate of soda, as the cost of mixing enters into the cost. The lowest-priced nitrogen in the mixed fertilizer was in the 10-0-10, followed by the 16-20-0, 9-27-9, and then 6-18-6. Nitrogen was lower in price than last season, the difference averaging 1.70 cents a pound for sulphate of ammonia, 4.55 cents for nitrate of soda, 1.39 cents for 3-10-3, and 0.90 cents for 4-12-4.

Cost of potash. Muriate of potash was the cheapest form of potash, and 12 per cent kainit the most expensive, a pound of potash costing nearly twice as much in kainit as in muriate of potash. Potash can be purchased more cheaply in any mixed fertilizer than in kainit. It is certainly not economical to buy kainit. Evidently a person desiring to buy unmixed potash should buy muriate of potash, and not kainit. Potash was cheaper than during the previous season. The difference was 0.54 cents for muriate of potash, 0.76 cents for kainit, 0.27 cents for 3-10-3, and 0.24 cents for 4-12-4.

Relation to concentration of fertilizers

The ratios of plant food in the 3-10-3, 4-12-4, 5-15-5, and 6-18-6 fertilizers are nearly the same, as the proportions are about three parts phosphoric acid to one of nitrogen and one of potash. Table 5 shows the approximate cost of nearly equal quantities of plant food in these fertilizers at the average prices given in Table 3. The plant food in 4-12-4 costs \$2.59 more than

Table 5—Relative cost of approximately the same amount of plant food in different grades of fertilizer.

Grade	Available phosphoric acid	Nitrogen	Potash	Cost
Group 1				
	Pounds	Pounds	Pounds	
1 ton—6-18-6.....	360	120	120	\$52.99
1.2 tons—5-15-5.....	360	120	120	55.97
1.5 tons—4-12-4.....	360	120	120	58.55
2 tons—3-10-3.....	400	120	120	62.90
Group 2				
1 ton—6-12-6.....	240	120	120	47.33
1½ tons—4-8-4.....	240	120	120	52.25

an equal quantity of 6-18-6. The two tons of 3-10-3 cost \$4.35 more than the one and one-half tons of 4-12-4, but as it contains 40 pounds more phosphoric acid, with a valuation of \$2.40, the

plant food in 3-10-3 cost about \$2.00 more. That is, the most concentrated mixed fertilizer was the cheapest per pound of plant food, or to put it another way, the highest-priced fertilizer per ton may be the lowest-priced per pound of plant food. This difference is caused partly by freight charges, partly by the cost of bagging, etc.

FERTILIZER ANALYSES TO BE SOLD IN 1929-30

Some changes have been made in the analyses to be placed on the market next season. The 0-20-6 fertilizer was dropped on account of low sales. 0-15-6 is equally as good. A number of high-analysis fertilizers were added to the list. The sale of 12 per cent kainit is to be discontinued in favor of 14 per cent kainit.

The following analyses and materials were added to the list: 4-16-4, 8-24-8, 10-5-5, 10-20-15, 11-46-0, and 24 per cent dicalcium phosphate. The name of manure salts was changed to kainit.

The analyses of mixed fertilizer which will be sold in 1930-31, stated in the order of terms, nitrogen first, phosphoric acid second, potash third, is as follows:

0-15-6	6-10-7	12-24-12	Nitrate of soda
3-10-3	6-12-6	15-15-19	Dicalcium phosphate 20%
3-10-8	6-18-6	15-30-15	Muriate of potash 48%
4-8-4	8-24-8	16-16-21	Sulphate of potash 48%
4-8-6	9-18-18	16-20-0	Cottonseed meal
4-10-0	9-27-9	Superphosphate 18%	Calcium nitrate
4-10-2	10-0-10	Superphosphate 20%	Bone meal
4-10-7	10-5-5	Superphosphate 30%	Basic slag
4-12-4	10-20-10	Superphosphate 45%	Tankage
4-16-4	10-20-15	Kainit 14%	Sheep manure
5-15-5	10-30-10	Kainit 20%	Cyanamid
6-9-3	11-46-0	Sulphate of ammonia 20%	

It will be noticed that the ratio of both nitrogen and potash to phosphoric acid is 1 to 3, or nearly so, in 3-10-3, 4-12-4, 5-15-5, 6-18-6, 8-24-8, 9-27-9 and 10-30-10, that it is 1 to 2 in 4-8-4, 6-12-6, 10-20-10, 12-24-12, and 15-30-15, and that the ratio is 2-4-3 in 4-8-6 and 10-20-15.

FREE ANALYSIS

Fertilizer samples, if taken in accordance with the requirements of the law, will be analyzed free of charge. Those who desire the free analysis of a sample of fertilizer should write for a blank "Application for Free Fertilizer Analysis," to the State Chemist, College Station, Texas, before taking any sample. The proper sampling of a fertilizer requires care. If the sample is not properly taken, it does not represent the lot of fertilizer, and the analysis may be better or poorer than the goods actually are.

ANALYSIS OF FERTILIZERS, 1929-30

Table 8 contains a list of the samples of fertilizer subjected to analysis in the season beginning September 1, 1929. Analyses below guarantee are brought out in heavy type. Practically all the samples of fertilizer were collected by our inspectors. Analyses and inspection were made by S. E. Asbury, T. L. Ogier, Waldo Walker, R. L. Schwartz, J. K. Farmer, and Gideon W. Smith.

Table 6—Average valuation of all fertilizers, 1929-30, guaranteed and found, in dollars a ton.

	Number averaged	Number of samples more than 4 per cent below guarantee	Guaranteed valuation	Valuation found
American Cyanamid Company.....	1	0	\$96.00	\$99.50
Arkansas Fertilizer Company.....	12	2	30.08	30.19
Armour Fertilizer Works.....	144	2	38.80	39.90
Geo. L. Barber & Son.....	1	0	67.50	70.61
The Barrett Company.....	5	0	77.01	77.67
Bay Chemical Company.....	1	0	25.20	25.40
Bryan Cotton Oil and Fertilizer Company.....	8	1	34.13	35.54
Cherokee Farm Labor Union.....	3	1	40.20	37.28
Davison-Pick Fertilizers, Inc.....	27	2	34.80	36.58
East Texas Cotton Oil Company.....	7	0	33.13	34.10
Farmers Cotton Oil Company.....	10	1	34.14	35.04
Fidelity Chemical Corporation.....	28	1	38.68	38.82
Ford Motor Company.....	1	0	93.60	95.09
Gilmer Cotton Oil and Fertilizer Company.....	9	0	35.13	36.45
Halfhill Company.....	1	0	41.40	41.77
Home Fertilizer Company.....	16	13	32.81	30.05
Hope Fertilizer Company.....	13	0	33.68	34.38
International Agricultural Corporation.....	35	1	35.59	35.87
Kelley-Weber Company.....	7	0	21.60	22.14
La-Tex Fertilizer Company.....	7	2	35.36	34.09
Longview Cotton Oil Company.....	15	0	36.60	38.13
Marshall Cotton Oil Company.....	19	0	33.19	33.57
Meridian Fertilizer Factory.....	89	5	34.90	35.15
Mixson Bros.....	12	1	33.25	34.27
Nitrate Agencies Company.....	1	0	68.63	70.11
Oil Mill and Fertilizer Works, Henderson, Texas.....	21	3	40.33	40.30
Palestine Oil Mill and Fertilizer Company.....	35	2	34.21	34.39
Pate Brothers.....	16	0	33.94	36.32
Pittsburg Cotton Oil Company.....	22	2	33.95	34.40
Planter's Fertilizer and Chemical Company.....	15	0	34.63	35.51
F. S. Royster Guano Company.....	12	1	33.55	33.05
Shreveport Fertilizer Works.....	20	3	34.01	34.13
Smith County Cotton Oil and Fertilizer Co.....	34	5	35.57	35.21
Swift & Company Fertilizer Works.....	145	1	37.89	38.58
Tedford Brothers.....	1	0	45.15	46.01
Temple Cotton Oil Company.....	1	0	29.10	28.07
Texas Chemical Company.....	2	1	32.76	31.36
Texas Farm Bureau Service Corporation.....	22	0	37.05	37.83
Texas Fertilizer Company.....	34	0	35.68	34.23
Texas Refining Company.....	2	0	30.75	31.50
Thomas Self.....	7	1	34.80	34.28
Tri State Fertilizer and Lumber Company, Inc.....	7	2	35.14	36.41
Tyler Fertilizer Company.....	16	2	34.99	34.86
Virginia Carolina Chemical Corporation.....	57	1	31.89	32.16
Volpe Bros. for V. Ferrara.....	1	0	38.40	38.72

Relation of valuation guarantee to valuation delivered

Table 6 contains the average guaranteed valuation, and the average valuation found by our analyses, for all manufacturers doing business in Texas. In the preparation of this table, all analyses made were averaged, even though several were made of each brand, and fertilizer materials are included as well as mixed fertilizers.

Table 7 contains the average guaranteed analyses, and the average analyses found for mixed fertilizers sold by the various manufacturers. The averages in these tables do not include superphosphate, nitrate of soda, and other fertilizer materials, but only the mixed fertilizers.

Averages below guarantee

Whenever any lot of fertilizer is 4 per cent or more below guarantee, the law requires all persons who have sold this lot of fertilizer to make good the deficiency to all purchasers. The rebate is paid by the manufacturer to the dealer and by the dealer to the customer. The number of lots on which rebates paid by each manufacturer is shown in Table 6.

INVESTIGATIONS UNDER THE FERTILIZER LAW

The State Chemist is required by the fertilizer law to "investigate the composition, properties, and agricultural values of fertilizers, or of fertilizer materials, or ingredients of fertilizer sold, offered for sale within the State of Texas, and shall publish his results as he may find."

Relation to Experiment Station work

The work of the State Chemist is closely related to the chemical work of the Experiment Station. In his capacity as Chief of the Division of Chemistry of the Experiment Station, the State Chemist is carrying out extensive investigations into the fundamental properties of soils, especially with respect to their content of plant food. This work is related closely to the use of fertilizers, and is connected with investigations as to the agricultural values of fertilizers required by the Fertilizer Control, for fertilizers vary in effect upon the different soils.

Colloidal mineral phosphate

Colloidal mineral phosphate is a natural phosphate of lime containing 20 per cent total phosphoric acid or more. The phosphate of lime is in a finely divided condition, in fact so fine that some of it is termed colloidal. The availability to plants of the phosphoric acid of colloidal mineral phosphate is not definitely

Table 7.—Average composition of mixed fertilizer, guaranteed and found.

Manufacturer	Number averaged	Nitrogen per cent		Phosphoric acid per cent		Potash per cent		Valuation per ton	
		Guaranteed	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found
American Cyanamid Company.....	1	16.00	16.32	20.00	21.72			\$96.00	\$99.50
Arkansas Fertilizer Company.....	9	3.67	3.47	9.11	9.94	4.11	3.96	32.37	32.30
Armour Fertilizer Works.....	125	4.55	4.66	11.70	12.04	4.82	4.87	40.31	41.13
Bay Chemical Company, Inc.....	1			15.00	14.65	6.00	6.52	25.20	25.40
Bryan Cotton Oil and Fertilizer Company.....	6	4.33	4.70	11.33	11.52	4.33	4.42	38.30	40.28
Cherokee Farm Labor Union.....	3	4.67	4.24	10.67	11.21	5.33	3.96	40.20	37.28
Davison-Pick Fertilizers, Inc.....	19	3.53	3.53	11.26	11.56	4.21	4.39	34.44	35.10
Fast Texas Cotton Oil Company.....	6	3.83	3.80	11.00	11.33	3.83	4.27	35.05	35.81
Farmers Cotton Oil Company.....	10	3.80	3.83	10.00	10.60	4.20	4.24	34.14	35.04
Fidelity Chemical Corporation.....	25	4.56	4.65	11.88	11.52	4.80	4.92	40.54	40.61
Gilmer Cotton Oil and Fertilizer Company.....	9	4.22	4.13	9.22	10.18	4.22	4.72	35.13	36.45
The Halfhill Company.....	1	6.00	6.20	8.00	7.50	4.00	4.06	41.40	41.77
Home Fertilizer Company.....	15	3.87	3.80	9.13	7.02	4.33	4.18	33.56	30.56
Hope Fertilizer Company.....	12	3.42	3.51	9.17	9.42	3.42	3.44	30.48	31.22
International Agricultural Corporation.....	35	4.00	4.04	10.31	10.27	4.34	4.47	35.59	35.87
La-Tex Fertilizer Company.....	7	3.86	3.33	11.14	12.28	3.86	3.64	35.36	34.09
Longview Cotton Oil Company.....	15	4.13	4.16	10.87	11.49	4.13	4.69	36.60	38.15
Marshall Cotton Oil Company.....	19	3.89	3.93	9.89	9.92	3.16	3.32	33.19	33.57
Meridian Fertilizer Factory.....	76	3.88	3.98	10.18	9.72	3.84	4.01	34.33	34.37
Mixson Brothers.....	10	3.80	3.95	10.40	10.41	4.80	5.10	35.34	36.40
Oil Mill and Fertilizer Works.....	18	4.33	4.39	10.22	9.91	4.33	4.18	36.97	36.64
Palestine Oil Mill and Fertilizer Company.....	30	3.83	3.87	9.80	9.80	3.97	3.96	33.77	33.96
Pate Brothers.....	16	3.88	4.03	9.50	10.67	4.25	4.77	33.94	36.32
Pittsburg Cotton Oil Company.....	22	3.91	3.97	9.50	9.25	4.14	4.51	33.95	34.40
Planters Fertilizer and Chemical Company.....	15	3.87	3.99	10.47	10.75	3.87	3.86	34.60	35.51
F. S. Royster Guano Company.....	11	3.82	3.83	10.18	9.72	4.35	4.39	34.64	34.15
Shreveport Fertilizer Works.....	20	3.85	3.94	9.85	9.81	4.05	3.87	34.01	34.13
Smith County Cotton Oil and Fertilizer Company.....	31	4.16	4.05	10.06	9.97	3.26	3.30	34.71	34.16
Swift & Co. Fertilizer Works.....	129	4.19	4.25	10.74	10.78	4.48	4.64	37.11	37.61
Temple Cotton Oil Company.....	1	3.00	2.95	10.00	9.31	3.00	3.02	29.10	28.07
Texas Farm Bureau Service Corporation.....	16	4.00	4.05	11.44	11.68	4.44	4.40	37.05	37.51
Texas Fertilizer Company.....	29	3.97	4.00	10.90	11.03	3.90	3.91	35.60	35.95
Texas Refining Company.....	2	3.50	3.46	9.00	9.53	3.50	3.84	30.75	31.50
Thomas Self.....	7	4.00	3.77	10.43	10.72	3.57	3.72	34.80	34.28
Tri State Fertilizer and Lumber Co., Inc.....	6	4.67	5.27	8.67	7.83	4.67	4.64	37.00	38.68
Tyler Fertilizer Company.....	14	4.43	4.30	10.57	10.88	3.57	3.54	36.90	36.64
Virginia-Carolina Chemical Corporation.....	51	3.55	3.63	10.27	10.22	4.00	3.97	33.10	33.36

known, but it is no doubt much less available than the available phosphoric acid in 20 per cent superphosphate.

Sulphur and gypsum as a fertilizer

We are unable to recommend the use of sulphur or gypsum as a fertilizer in Texas. The experiments which have been carried out do not give satisfactory results under Texas conditions (see Bulletins 408 and 414).

Stock-pen manure

The composition of stock-pen manure varies according to the food eaten by the animal, the extent to which it has undergone fermentation or leaching by rain, and the percentage of moisture present. Stock-pen manure comes under the fertilizer law when sold for more than four dollars a ton. One registration of sheep manure during the past season guaranteed 1.5 per cent nitrogen and 1.0 per cent potash. At valuations given fertilizers, the nitrogen and potash would have a valuation of \$7.95 a ton, but the nitrogen in manure does not have the availability of that in commercial fertilizers and should not have as high a valuation.

Greensand marl

Extensive deposits of greensand marl are found in Texas. Most of these deposits are low in plant food. A deposit of greensand marl containing much more plant food than usual is found near San Antonio. One sample of this marl was found to contain 100 pounds of total phosphoric acid and 18 pounds of acid-soluble potash in a ton. It does not contain any available phosphoric acid or any water-soluble potash, and so can not be compared directly with a commercial fertilizer.

The greensand marl found near San Antonio varies in composition. It contains 4 to 6 per cent total phosphoric acid and 2 to 3½ per cent total potash. The phosphoric acid is not in the form termed available in fertilizer and the potash is not soluble in water as is required in fertilizer. It is not possible to say exactly what would be the value of this material compared with commercial fertilizer, but it would perhaps have about one-fourth the value of the same plant food in commercial fertilizer. If the greensand marl contains 10 per cent of phosphoric acid and potash together in the forms present in commercial fertilizer, it would have a fertilizer valuation of about \$12 a ton. As the plant food in this material is less easily taken up by plants, it would probably have a value of about one-fourth of this, or about \$3 a ton.

The study of past work indicates that 5 to 15 tons of green-

sand marl should be used to the acre. The material contains no nitrogen and for this reason is not a balanced fertilizer. It would be well to supply nitrogen in the form of well-rotted manure or use such fertilizer material as nitrate of soda or sulphate of ammonia in addition to the greensand marl.

Deposits of greensand marl in New Jersey were formerly used to a considerable extent, but are little used now that commercial fertilizers are available.

GENERAL CONSIDERATIONS ON THE USE OF FERTILIZERS

Fertilizers supply the three forms of plant food most necessary for growing crops, namely, nitrogen, phosphoric acid, and potash. For best results, other conditions should be favorable, such as soil in good physical condition, well-prepared seed bed, good seed, good cultivation, and suitable rotation. Nitrogen is the most expensive plant food, and for this reason the amount of fertilizer used generally does not supply all the nitrogen required by the crop. A cropping system which includes the regular growing of suitable legumes, such as clover, cowpeas, soy bean, velvet beans, or peanuts, should be followed for the purpose of securing nitrogen from the air, provided the legume crops can be used to advantage. Such a system also adds organic matter to the soil, utilizes time and labor to better advantage, aids in destroying insect pests and plant diseases, and has other favorable effects.

The proper fertilizers to use depends upon the kind of soil, the climate, the crop, how long the soil has been in cultivation, whether or not it has grown legumes to be turned under or grazed off, what the soil will produce without fertilizer, and other conditions.

Old soils, or sandy soils generally, are more deficient in nitrogen than new soils or clay soils. Soils having a rotation which includes legumes need less nitrogen than those cropped constantly to non-legumes.

Clay soils and soils with clay or loam subsoils in cultivation less than 15 years need little potash in Texas for ordinary farm crops, but light sandy soils with sandy subsoils may need potash. Larger amounts of fertilizer may be profitably used on crops with a high acre value, such as fruit or truck crops, than on ordinary farm crops. The fertilizer on cotton may profitably be twice as much as that used on corn.

Best results are secured by well-balanced plant food in the soil. An excess of nitrogen or an excess of potash is shown by the production of a heavy stalk or vine, with a deficiency of fruit or delayed maturity. If such land has not been fertilized, probably the best fertilizer to use is 200 to 400 pounds of superphosphate to the acre. This will frequently (but not always) promote

fruiting. If a fertilizer has been used, the remedy is to decrease the percentage of nitrogen and to increase the percentage of phosphoric acid in subsequent applications. The percentage of potash may also be decreased.

Excess of nitrogen in the soil with truck crops may also produce rapid growth with soft tissues, which do not stand up well under shipment. Strawberries, for example, produce large fruits which are not firm enough to ship well. Lettuce, cabbage, and similar crops may not be firm enough to stand shipment. Increased quantities of potash will not prevent softness caused by excess of nitrogen.

Excess of nitrogen renders some plants more liable to attack by some diseases. Excess of nitrogen also delays maturity. Excess of potash, like excess of nitrogen, delays maturity of the crop. A well-balanced fertilizer should be selected, due consideration being given to the soil, the crop, the character of growth, and other conditions.

How and when to apply fertilizer

Fertilizer is generally applied under the seed at the time of planting or previous to planting. It should not touch the seed, but should be one to three inches below it or at the side. A combined planter and fertilizer distributor may be used, but care should be taken to select a machine which applies the fertilizer properly, as some machines are not satisfactory.

Fertilizer may also be placed in the ground not more than three weeks before planting. If applied too early, there is danger of loss of plant food by fixation or leaching.

Applications of more more than 600 pounds of fertilizer to the acre are best made partly in the drill and partly broadcast.

In dry sections, where the soil above the seed is liable to dry out, the fertilizer may be applied on the firm soil at the side of the seed. Sometimes it may be advisable to put it in when the land is bedded, especially on heavy soils where there is little danger of loss by leaching.

How much to apply

Farmers not experienced in the use of fertilizer should begin with moderate amounts, 200 to 400 pounds to the acre for cotton or corn and 400 to 500 pounds for truck crops. Larger amounts may be tried on a small scale and then larger amounts used if these trials appear to justify it. The approximate amounts to use are indicated below.

Side dressings

More than one application of fertilizer is not usually recommended for cotton or corn. Under exceptional conditions, however, more than one application may be made for cotton or corn. These conditions would include: (1) when more than 500 pounds of fertilizer to the acre is to be used; (2) when the plants appear to be suffering from deficiency of available plant food, particularly nitrogen; (3) if the weather in the spring has been excessively wet, so as to cause considerable leaching; (4) if the soil is deep sandy, where the plant food is likely to leach out.

Side dressings of cotton with nitrate of soda, sulphate of ammonia, or other sources of nitrogen are not generally to be recommended, but may be used when the fertilizer applied at planting does not contain enough nitrogen, or on deep sandy soil, where there may be considerable loss from leaching. Under such conditions, 100 pounds per acre of nitrate of soda or sulphate of ammonia may be applied to cotton just after the first chopping.

Corn may frequently use to advantage a side dressing of nitrate of soda or sulphate of ammonia applied when the corn is knee-high.

Side dressings are frequently applied to truck crops. In such case a complete fertilizer is applied before or at the time of planting, and one or more side dressings of sulphate of ammonia or nitrate of soda afterwards. The reason for this procedure is that there is little danger of loss of phosphoric acid or potash by leaching, while soluble nitrogen is much more easily lost by leaching.

Fertilizers for East Texas

The soils of East Texas as a general rule respond well to fertilizers, and the recommendations made here apply chiefly to this section of the State. Many of the soils of East Texas are sandy and low in phosphoric acid and nitrogen; they are usually better supplied with potash but sometimes they are low in potash. The heavier soils and the bottom lands are much better supplied with plant food.

Fertilizers for the black lands

The heavy black limestone soils of Central Texas do not respond well to fertilizers. Sometimes fertilizers give good results, but frequently they do not, and in some cases they give satisfactory results one year and unsatisfactory the next. These soils appear to need vegetable matter first, such as is supplied by well-rotted manure, by legume crops turned under or grazed off, or by winter crops. A rotation is also of advantage (see Bulletin 365).

Sandy lands in this section will probably respond to fertilizer, though little has been used on them.

Fertilizers for West Texas

Some of the lighter soils of West Texas are low in phosphoric acid and potash, and fertilizers will probably be needed in this section of the State as time goes on. In fact, fertilizers have already been used with good results in some sections. Some of the soils of West Texas contain no more plant food than those of East Texas, but it is probable that the roots of the plants penetrate deeper and have more soil to feed upon, so that the plant is able to secure more plant food than from the corresponding soil in the eastern part of the State.

When fertilizers are used in Texas west of the black-land section, it is suggested that somewhat smaller amounts be used than is recommended for East Texas, unless the land is irrigated. Also, unless the land is irrigated, care should be taken that the fertilizer is in the firm soil in which the plants grow, not in the loose earth, which is likely to dry out.

Fertilizers for the Rio Grande Valley

The soils of this section are generally well supplied with plant food, especially with potash. When the soils are new, they may contain an excess of nitrogen, and tend to produce a heavy growth of stalk and leaves, with deficiency of fruit. Superphosphate is perhaps the best fertilizer to use in such soils, where there is reason to believe an abundance of nitrogen is present.

After having been under cultivation several years, these soils are likely to need nitrogen first, as the nitrogen is most readily exhausted. As it is desirable to avoid an excess of nitrogen, moderate quantities of nitrogen should be used at first. These soils are high in potash, and are less likely to need potash, than the East Texas soils, which are lower in potash. However, some potash may be used, especially as the cropping is heavy, but there is no need at present for the percentage of potash to exceed the percentage of nitrogen.

Our suggestion at present for these soils would be then to begin with superphosphate, if the vegetative growth is very heavy. Follow with 6-18-6 or 4-12-4, or begin with one of these if vegetative growth is not excessive. In the course of time one would reach such truck fertilizers as 4-8-4, 6-12-6, 6-9-3, or 6-10-7.

Fertilizers for the Gulf Coastal Plains

There is considerable variation in the soils of the Gulf Coastal Plains. Some of the soils in the southern section are very sandy,

and somewhat low in plant food. They should have about the same fertilizer as the sandy lands of East Texas. Most of the soils are heavier and better supplied with plant food than the very sandy soils. The fertilizers suggested are the same as for the corresponding soils of East Texas. The heavy black soils (the Lake Charles soils) at the Experiment Station at Angleton respond well to superphosphate on cotton and corn.

Some of the soils of the Gulf Coastal Plains are poorly drained. They should be well drained and placed in good condition before any fertilizer is used.

Suggestions for the use of fertilizer

The recommendations given below represent the best present information, and will be modified from time to time, as more experimental data are accumulated and further practical experience is secured. Where a fertilizer of a given ratio is suggested, a different grade with the same ratio may, of course, be used, in such a quantity as to supply an equivalent amount of plant food.

Grades with the same ratios

A different grade with the same ratio of plant food may be used, in any of the suggestions here made. Where 4-12-4 is suggested, equivalent amounts of 3-10-3, 5-15-5, 6-18-6, 8-24-8, 9-27-9, or 10-30-10 may be used, as these all have the same ratio of plant food, 1-3-1. Where 4-8-4 is suggested, equivalent amounts of 6-12-6, 10-20-10, 12-24-12, or 15-30-15 may be used, as they have the same ratio of plant food, 1-2-1. Likewise 10-20-15 has the ratio of 2-4-3, the same as 4-8-6 and equivalent amounts may be used in place of it.

Cotton

Loam soils with clay or sandy clay subsoils, such as Susquehanna, Lufkin, Orangeburg, or similar soils. If 200 to 400 pounds are used, use 4-10-0, 6-9-3, or 4-10-2; if over 400 pounds are to be used, use 4-10-2, 4-12-4, or 4-8-4.

Deep sandy soil, such as Norfolk sand. If 200 to 300 pounds or more are to be used, use 4-12-4; if 300 to 400 pounds or more are to be used, use 4-12-4, 4-8-4. However, these are not good cotton and corn soils and are better adapted to vegetables.

Land which produces an excessive stalk, and does not fruit well, chiefly bottom land: Use 200 to 400 pounds of 18 per cent or 20 per cent superphosphate. Nitrate of soda, sulphate of ammonia, or other nitrogenous fertilizer applied early at the rate of 100 to 200 pounds per acre sometimes gives good results on bottom lands which produce a moderately sized stalk.

Black waxy land, such as Houston black clay or heavy limestone soils of Central Texas. A systematic rotation is needed first. Fertilizers are uncertain. A trial may be made of 200 to 300 pounds of 4-10-0 or 6-9-3.

Alfalfa

Soil recently put in alfalfa: Use 200 to 400 pounds of superphosphate.

Soil in cultivation six years or longer (best to rotate): Use 200 to 400 pounds of superphosphate, or 200 to 600 pounds of 0-15-6.

Soils poor in lime should receive lime; see Bulletin 243.

Asparagus

Apply 10 to 12 tons of well-rotted manure and 500 to 800 pounds to the acre of a 4-12-4 or 6-12-6 fertilizer when setting out the plants. If the manure is not available, 600 to 900 pounds of the fertilizer could be used. Every spring apply 400 to 600 pounds of 4-8-4. Just before the cutting season is over, or soon after, apply 200 to 400 pounds of 4-8-4. Two top dressings of nitrate of soda, 100 pounds to the acre each, applied in the spring, would also be advisable in many cases.

Beans (garden) and peas (garden or English)

An application of 300 to 500 pounds of a 4-12-4 or 4-8-4 fertilizer is suggested.

Beets, broccoli, cabbage, carrots, cauliflower, mustard, spinach, and turnips

From 500 to 1000 pounds of 4-8-4, or 4-12-4 may be used and supplemented by three top dressings of 50 to 100 pounds of nitrate of soda or sulphate of ammonia, ten days to two weeks apart, beginning when the plants have begun to make a good growth. Excessive application of nitrogen and too rapid growth will impair the shipping quality.

The nitrate of soda or sulphate of ammonia should be sprinkled along the row, three or four inches from the plants, or applied broadcast after the dew has dried off or applied just before cultivation.

Citrus trees

We have not yet sufficient experiments on citrus trees in Texas on which to base recommendations for fertilizer. According to Bulletin 145 of the California Experiment Station, in California, nitrogen is chiefly needed and is best supplied in well-rotted manure; excess of nitrogen may cause "mottle leaf." Farmers Bulletin 1343 of the United States Department of Agri-

culture recommends three applications for young trees on the poor sandy soils of Florida. The first should be made early in the spring, the second in summer, the third in September.

For young or small trees in Texas, three applications of a 5-15-5 fertilizer are suggested. The total amount should be 1 to 2 pounds per tree, increasing a pound a year until trees are five to six years old. For bearing trees, three similar applications are suggested, the first two 6-12-6 or 6-10-7, the last one 5-15-5. Bearing trees ten years old may receive 15 to 30 pounds of fertilizer each year. More fertilizer is used as the trees become larger, large trees receiving 30 to 50 pounds each.

Over-fertilized trees become affected with "die-back," especially if an excess of nitrogen is applied. Die-back is also caused by hardpan, alkali, poor drainage, or deficiency of copper. "Mottle leaf" or "freshing" affects poorly nourished trees. It is believed an excess of nitrogen may reduce the shipping quality of the fruit or cause thick skins on grapefruit.

The soils on which citrus fruit are grown in Texas are generally higher in potash than either phosphoric acid or nitrogen, and there appears no good reason at present to recommend fertilizers high in potash. The percentage of potash need not exceed the percentage of nitrogen.

Corn

Loam or clay soils with clay or sandy clay subsoils, such as Susquehanna, Orangeburg, or similar soils with legume rotation: Use 200 to 300 pounds of 18 per cent or 20 per cent superphosphate, or 200 to 300 pounds of 4-10-0.

Loam or clay soils with clay or sandy clay subsoils, without legume rotation, in cultivation eleven years or more: Use 200 to 300 pounds of 4-10-0 or 4-10-2 or 6-9-3.

Deep sandy soil: Use 200 to 300 pounds of 4-12-4. This is not a good corn soil.

Land which produces a heavy stalk, but does not fruit well: Use 200 to 400 pounds of 18 per cent or 20 per cent superphosphate.

Black waxy land (Houston black clay), or heavy limestone land of Central Texas: A systematic rotation is needed first. Fertilizers are uncertain. A trial may be made of 200 to 400 pounds of 4-10-0 or 6-12-6.

Side dressing: Corn may frequently use to advantage a side dressing of nitrate of soda, sulphate of ammonia, or other soluble nitrate, applied when the corn is knee high.

Cantaloupes, cucumbers, squash, or watermelons

On sandy loam soils: If 200 to 300 pounds are applied, use 4-12-4 or 4-8-4. Larger applications are to be recommended, such as 300 to 500 pounds of 4-8-4 or 4-8-6. An excess of nitrogen will produce a heavy growth of vine, but a deficiency of fruit. The remedy is to use more phosphoric acid or less nitrogen. Well-rotted manure should always be used with melons, if possible.

Eggplant, mustard, okra, peppers, and radishes

An application of 300 to 700 pounds of 4-8-4 or 4-8-6 is suggested for trial.

Figs

Recommendations for fertilizers for figs depend upon the nature of the soil and the size of the trees. On the heavy black prairie soil at Angleton, phosphoric acid gave a slight increase in yield, while nitrogen and potash gave no appreciable increase in yield of figs. An application of 200 pounds per acre of superphosphate is suggested for such soils. Figs seem to do best on a soil containing lime.

For small trees on heavy black soil, 200 to 300 pounds to the acre of 4-10-0 or 4-10-2 is suggested. As the trees grow larger, the quantity of fertilizer may be increased to 600 to 1000 pounds to the acre. These soils contain a good amount of potash, but figs have such a high value to the acre that it is well to use some potash when the trees come into bearing. It would then be well to use 6-9-3 or 6-12-6 fertilizer.

The fertilizer should be applied in the spring after danger of frost is past, and harrowed in. Weeds should be kept down, especially around young trees. Otherwise, the fertilizer may help weeds to grow and thereby hold back the trees.

Onions

The use of 600 to 800 pounds of 6-12-6, 6-9-3, or 6-10-7 is suggested, supplemented with one to three dressings of 100 pounds of nitrate of soda or sulphate of ammonia at intervals of ten to fifteen days after the plants have begun to make rapid growth in the spring.

Peach or plum trees

Loam soils with clay or sandy clay subsoils, such as Orangeburg, Susquehanna, or similar types: Use 200 to 600 pounds per acre of 4-10-0 or 4-10-2. When the trees are bearing, use, in addition, 200 pounds or more of 6-9-3 or 6-12-6, increasing the quantity as the trees grow older.

Deep sandy soil, such as Norfolk sand: Use 200 to 600 pounds of 4-12-4 or 4-8-4.

On clay soils, and bottom lands, use 200 to 600 pounds of 4-10-0 or 6-9-3.

Potatoes, sweet

Loam or sandy loam soils with clay or sandy loam subsoils: 300 to 600 pounds of 4-12-4 or 4-8-4 may be used. Deep sandy soil: Use 200 to 500 pounds of 4-8-4 or 4-8-6. Excess of nitrogen will produce excessive growth of vine and deficiency of tubers.

Potatoes, Irish

On loam or sandy soils, 300 to 800 pounds of 4-8-4 or 4-12-4 or 4-8-6 is suggested. In East Texas 500 to 800 pounds of 4-8-4 or 6-9-3 may be used.

Rice

Experiments conducted at the Beaumont Substation from 1915 to 1928 show that 100 pounds to the acre of sulphate of ammonia made the largest increase in yield and has been the most profitable treatment used (see Bulletin 398, Fertilizers for Rice in Texas). The sulphate of ammonia should be applied at the time of planting, or not later than six weeks after planting the rice. Superphosphate, and phosphate and potash gave profitable returns also, though not so great as the sulphate of ammonia.

Strawberries

An application of 300 to 500 pounds of 4-8-4 or 4-12-4 may be made at the time of setting out the plants. In the spring, following the setting of the plants, an early application of the same fertilizer should be used in about the same quantity, put as near the row as convenient, and worked into the soil lightly. Some growers prefer to apply all the fertilizer early in the fall.

Tomatoes

Loam soils with clay or sandy clay subsoils, such as Susquehanna or Orangeburg: If 300 to 500 pounds are used, use 4-8-6 or 4-8-4; if 500 to 1000 pounds, use 4-8-6, 4-8-4, 4-10-2, or 6-9-3. Less than 500 pounds of fertilizer may be supplemented by 100 to 200 pounds of nitrate of soda or sulphate of ammonia if there is no tendency to excessive growth of vine.

Deep sandy soil, such as Norfolk sand: If 200 to 500 pounds are used, use 4-8-6 or 4-8-4; if 500 to 1000 pounds are used, use 4-8-6. Less than 500 pounds of fertilizer may be supplemented by 100 to 200 pounds of nitrate of soda or sulphate of ammonia if there is no tendency to excessive growth of vine.

Land which produces an excessive vine: Use 200 to 400 pounds of superphosphate, 18 per cent or 20 per cent. It is also important

to prune the vines, and on good land, good tomatoes can often be secured without fertilizer. Suckers should be removed every week, beginning a week after the plants are set out and continuing until a week after the top is pinched off. The top is pinched off as soon as the third cluster is formed. Another method of pruning is to allow the first sucker to come out to form a fork and prune off all others. The top of the main stalk is pinched off immediately after the third cluster of fruit is formed, and the sucker is pinched off immediately after the second cluster is formed on it. According to New Hampshire Bulletin 28, excess of potash delays maturity of tomatoes, and phosphoric acid hastens maturity.

Fertilizer for home gardens

The tendency with home gardens is to apply quantities of manure, without sufficient applications of phosphoric acid or potash. This results in an unbalanced condition of the plant food in the soil. The best fertilizer to apply under such conditions would be 200 to 400 pounds of superphosphate alone, or 0-15-6 fertilizer. Where applications of manure have been made only in moderate amounts, 300 to 600 pounds of 4-12-4 would probably be excellent. If lighter applications of manure are made, or none at all, 400 to 800 pounds of 4-8-4 or 4-8-6 would be suggested, and top dressings with nitrate of soda or sulphate of ammonia might also be tried.

Shade trees and ornamental shrubs

Shade trees and ornamental shrubs are probably benefited by fertilizer, but few fertilizer experiments have been made on such plants. The fertilizer should be added in such a way as to aid in developing the deep roots. Plants with surface roots extensively developed are likely to suffer from insufficient water in dry weather, or even to die. Where serious drouths occur, the development of deep-feeding roots by trees and shrubs is exceedingly important. The fertilizer may be put down in holes about a foot deep or deeper, punched with a pointed iron 1 to 3 inches in diameter. The fertilizer is distributed in 15 or 24 holes around the trees, in a circle a little larger than the spread of the branches. For large trees, more holes should be punched. Manure may be put down in the same way, but the holes need to be larger. Sulphate of ammonia, nitrate of soda, or some other nitrogenous fertilizer, as a complete mixed fertilizer such as 6-12-6 or 4-8-4, may be used at the rate of about one-half pound for each inch in diameter of the tree or shrub. Sulphate of ammonia would probably be best on limestone soils or basic soils, such as those of the black-land prairie region, and west or

south of it. East of the black lands, especially on the sandy soils, a complete mixed fertilizer would probably be best, though a nitrogenous fertilizer might be sufficient.

SUMMARY

This Bulletin contains a report of the Texas Fertilizer Control for 1929-30 and information regarding the use of fertilizer.

An explanation of terms is given.

Sales of fertilizer in Texas were 138,917 tons in 1929-30. In 1928-29 sales were 187,215 tons. In 1927-28, sales were 139,126 tons. This does not include cottonseed meal sold as a feed but used as a fertilizer.

The average selling prices and composition of the different kinds of fertilizer are given.

Available phosphoric acid cost less in 18 per cent superphosphate than in 20 per cent, though the difference was small. Kainit is a very expensive source of potash, muriate of potash being much cheaper. Nitrogen costs much less in sulphate of ammonia than nitrate of soda. Cottonseed meal is a very expensive fertilizer. Plant food costs less per pound in the more concentrated fertilizers than in less concentrated fertilizers, though the former costs more per ton. A pound of plant food cost most in the 4-10-0 fertilizer; the 3-10-8 came next. Phosphoric acid and nitrogen were about 0.25 cents a pound lower in price, and nitrogen 1.39 cents lower, in mixed fertilizer, in 1929-30, than they were last season.

The use of sulphur or gypsum as a fertilizer is not recommended for Texas.

Greensand marl does not contain enough plant food to be sold commercially as a fertilizer, though some of it could be used locally if it could be mined and applied at a low cost.

The grades of fertilizer to be sold next season are given.

Information is given regarding fertilizers, and suggestions are made for the fertilization of various crops in Texas.

A table is given showing the relation of the guaranteed valuation to the valuation delivered by the various manufacturers.

A table is given containing analyses of samples of fertilizers collected by inspectors.

Table 8.—Analysis of commercial fertilizer, season 1929-1930

Laboratory number	Manufacturer, place of business, and brand	Nitrogen—per cent	Phosphoric acid—available—per cent	Potash—per cent	Valuation—per ton
35108	American Cyanamid Company, New York, N. Y.— Ammo-Phos B—Guaranteee.....	16.00	20.00	.....	\$96.00
	Analysis.....	16.32	21.72	.....	99.50
35593	Arkansas Fertilizer Company, Little Rock, Arkansas— White Diamond Crop Getter—Guaranteee.....	4.00	12.00	4.00	37.20
	Analysis.....	3.73	12.74	3.75	36.58
35592	White Diamond Early Boll—Guaranteee.....	3.00	10.00	3.00	29.10
35833	Analysis.....	2.68	10.16	3.14	28.02
35994	Analysis.....	3.04	11.44	2.92	30.91
	Analysis.....	2.27	11.72	2.12	26.82
35311	White Diamond Jack Rabbit—Guaranteee.....	4.00	8.00	6.00	34.80
	Analysis.....	3.88	8.46	6.28	35.15
35999	Analysis.....	3.78	8.87	5.77	34.57
35312	White Diamond Old Reliable—Guaranteee.....	4.00	8.00	4.00	32.40
	Analysis.....	4.09	8.83	4.27	34.13
35840	Analysis.....	4.06	8.40	4.39	33.62
35993	Analysis.....	3.70	8.82	3.04	30.88
35324	White Diamond 18% Superphosphate—Guaranteee.....	.....	18.00	.....	21.60
	Analysis.....	.....	18.48	.....	22.18
35818	White Diamond 20% Superphosphate—Guaranteee.....	.....	20.00	.....	24.00
	Analysis.....	.....	20.54	.....	24.65
35834	Analysis.....	.....	20.60	.....	24.72
35113	Armour Fertilizer Works, Houston, Fort Worth, Texas, and New Orleans, Louisiana— Armour's Big Crop Fertilizer No. 0156—Guaranteee.....	.....	15.60	6.00	25.20
	Analysis.....	.....	15.11	5.67	24.93
35353	Armour's Big Crop Fertilizer No. 3103—Guaranteee.....	3.00	10.00	3.00	29.10
	Analysis.....	3.26	10.85	3.01	31.30
35355	Analysis.....	3.43	10.69	3.02	31.89
35406	Analysis.....	3.37	10.06	3.06	30.91
35456	Analysis.....	3.23	10.72	3.09	31.11
35522	Analysis.....	3.88	10.11	3.52	33.81
35608	Analysis.....	3.11	10.26	3.03	29.95
35754	Analysis.....	3.06	10.34	3.03	29.82
35777	Analysis.....	3.42	10.18	3.40	31.69
35799	Analysis.....	3.19	10.12	2.88	29.96
35802	Analysis.....	3.48	10.89	2.87	32.17
35826	Analysis.....	3.08	11.02	3.11	30.81
35845	Analysis.....	3.06	10.00	3.07	29.45
35851	Analysis.....	3.27	10.24	3.11	30.74
35852	Analysis.....	3.04	10.08	3.05	29.44
35889	Analysis.....	3.10	10.40	3.16	30.22
35904	Analysis.....	2.87	10.43	3.18	29.26
35971	Analysis.....	3.20	10.30	2.83	30.16
35972	Analysis.....	3.18	10.36	3.02	30.36
35112	Armour's Big Crop Fertilizer No. 3108—Guaranteee.....	3.00	10.00	8.00	35.10
	Analysis.....	3.08	10.66	8.20	36.49
35114	Analysis.....	3.23	10.54	8.91	37.88
35414	Analysis.....	3.48	10.81	8.04	38.28
35641	Analysis.....	3.17	10.84	8.83	37.88
35127	Armour's Big Crop Fertilizer No. 484—Guaranteee.....	4.00	8.00	4.00	32.40
	Analysis.....	4.01	9.40	4.26	34.44
35154	Analysis.....	4.05	10.25	4.20	35.57
35185	Analysis.....	3.96	8.89	4.12	33.43
35216	Analysis.....	3.86	8.17	3.51	31.38
35246	Analysis.....	4.00	8.63	3.49	32.55
35259	Analysis.....	4.08	8.19	3.56	32.46
35365	Analysis.....	3.97	9.05	4.23	33.81
35576	Analysis.....	4.19	8.49	3.76	33.56
35643	Analysis.....	4.10	8.72	3.62	33.25
35785	Analysis.....	4.17	8.01	3.82	32.96
35813	Analysis.....	4.03	8.80	4.01	33.51
35973	Analysis.....	4.15	9.35	4.21	34.95

Table 8.—Analysis of commercial fertilizer, season 1929-30—(continued)

Laboratory number	Manufacturer, place of business, and brand	Nitrogen—per cent	Phosphoric acid—available—per cent	Potash—per cent	Valuation—per ton
	Armour Fertilizer Works, Houston, Fort Worth, Texas, and New Orleans, Louisiana—Continued.				
	Armour's Big Crop Fertilizer No. 486—Guarantee	4.00	8.00	6.00	\$34.80
35184	Analysis.....	4.06	7.91	6.04	35.01
35277	Analysis.....	4.11	8.44	5.88	35.69
35323	Analysis.....	4.02	8.40	5.49	34.76
35366	Analysis.....	3.97	8.23	6.03	34.99
35377	Analysis.....	4.36	8.77	6.10	37.46
35413	Analysis.....	4.15	8.68	5.23	35.38
35575	Analysis.....	4.18	8.29	5.55	35.42
	Armour's Big Crop Fertilizer No. 4100—Guarantee	4.00	10.00	.....	30.00
35147	Analysis.....	4.30	9.95	.....	31.29
35153	Analysis.....	4.38	10.49	.....	32.30
35183	Analysis.....	4.38	9.96	.....	31.66
35278	Analysis.....	4.00	10.43	.....	30.52
35282	Analysis.....	4.36	9.46	.....	30.97
	Armour's Big Crop Fertilizer No. 4102—Guarantee	4.00	10.00	2.00	32.40
35135	Analysis.....	4.17	10.21	2.56	34.09
35195	Analysis.....	4.03	10.35	2.12	33.91
35496	Analysis.....	4.34	10.47	2.32	34.87
35507	Analysis.....	4.28	10.53	2.19	34.53
	Armour's Big Crop Fertilizer No. 4107—Guarantee	4.00	10.00	7.00	38.40
35207	Analysis.....	4.31	10.35	7.09	40.33
35360	Analysis.....	2.83	12.07	6.37	34.86
	Armour's Big Crop Fertilizer No. 4124—Guarantee	4.00	12.00	4.00	37.20
35196	Analysis.....	4.31	11.90	4.01	38.49
35221	Analysis.....	4.08	12.19	3.96	37.74
35245	Analysis.....	4.09	12.46	3.76	37.87
35261	Analysis.....	4.06	12.75	4.04	38.42
35356	Analysis.....	4.11	12.19	4.16	38.12
35458	Analysis.....	4.02	12.28	3.82	37.41
35459	Analysis.....	4.14	12.23	4.01	38.12
35464	Analysis.....	4.25	12.29	3.79	38.43
35506	Analysis.....	4.22	12.36	4.05	38.68
35521	Analysis.....	4.32	12.06	4.43	39.23
35531	Analysis.....	4.10	12.60	3.71	38.02
35557	Analysis.....	4.17	12.47	4.14	38.70
35567	Analysis.....	4.12	12.62	3.82	38.26
35607	Analysis.....	4.15	12.25	4.02	38.20
35672	Analysis.....	4.78	11.81	4.37	40.92
35680	Analysis.....	4.35	12.55	4.05	39.50
35722	Analysis.....	4.17	12.30	4.02	38.35
35761	Analysis.....	4.14	12.52	4.03	38.49
35814	Analysis.....	4.17	12.39	4.06	38.51
35837	Analysis.....	4.05	12.42	4.03	37.97
35880	Analysis.....	4.19	12.48	4.11	38.77
35903	Analysis.....	4.11	12.07	4.02	37.80
	Armour's Big Crop Fertilizer No. 5155—Guarantee	5.00	15.00	5.00	46.50
35087	Analysis.....	5.23	14.84	5.37	47.79
35096	Analysis.....	5.18	14.80	5.10	47.19
35119	Analysis.....	5.11	14.83	5.16	46.99
35133	Analysis.....	5.00	15.40	5.41	47.47
35137	Analysis.....	5.10	14.95	5.18	47.11
35214	Analysis.....	4.92	15.00	5.43	46.66
35244	Analysis.....	5.08	14.65	5.45	46.98
35302	Analysis.....	5.02	15.49	5.03	47.22
35322	Analysis.....	5.14	15.06	5.48	47.78
35367	Analysis.....	5.06	15.00	5.47	47.33
35409	Analysis.....	5.19	15.06	5.20	47.67
35427	Analysis.....	5.27	15.41	5.04	48.26
35523	Analysis.....	5.09	15.60	5.49	48.22
35660	Analysis.....	5.06	15.13	5.31	47.30
35675	Analysis.....	5.23	15.81	5.26	48.82
35823	Analysis.....	5.16	15.79	5.37	48.61

Table 8.—Analysis of commercial fertilizer, season 1929-30—(continued)

Laboratory Number	Manufacturer, place of business, and brand	Nitrogen—per cent	Phosphoric acid—available—per cent	Potash—per cent	Valuation—per ton
	Armour Fertilizer Works, Houston, Fort Worth, Texas, and New Orleans, Louisiana—Continued.				
	Armour's Big Crop Fertilizer No. 5155—Guarantee—Continued				
35846	Analysis.....	5.01	14.86	5.24	\$46.67
35942	Analysis.....	5.12	15.32	5.36	47.85
	Armour's Big Crop Fertilizer No. 693—Guarantee	6.00	9.00	3.00	41.40
35327	Analysis.....	6.04	9.34	3.04	42.04
35546	Analysis.....	5.54	8.05	3.25	38.49
	Armour's Big Crop Fertilizer No. 6107—Guarantee	6.00	10.00	7.00	47.40
35085	Analysis.....	5.89	10.60	7.01	47.64
35120	Analysis.....	5.93	10.24	6.91	47.27
35134	Analysis.....	6.12	10.20	7.08	48.28
35198	Analysis.....	6.14	9.90	7.16	48.10
35203	Analysis.....	6.06	10.06	7.12	47.88
35206	Analysis.....	6.10	9.82	6.93	47.55
35208	Analysis.....	6.13	10.05	6.14	47.02
35260	Analysis.....	6.05	10.19	7.04	47.91
35354	Analysis.....	6.06	10.10	7.13	47.95
35401	Analysis.....	5.86	10.74	6.55	47.12
35803	Analysis.....	6.18	10.54	6.91	48.75
35962	Analysis.....	6.01	10.73	6.66	47.92
	Armour's Big Crop Fertilizer No. 6126—Guarantee	6.00	12.00	6.00	48.60
35075	Analysis.....	5.77	12.32	6.08	48.05
35084	Analysis.....	6.19	12.08	6.21	49.81
35146	Analysis.....	6.13	12.06	6.12	49.40
35155	Analysis.....	5.63	13.06	5.14	47.18
35197	Analysis.....	6.27	11.99	6.22	50.07
35215	Analysis.....	5.70	12.61	5.90	47.86
35270	Analysis.....	6.12	11.84	6.72	49.81
35276	Analysis.....	5.97	12.16	5.92	48.56
35359	Analysis.....	6.03	12.27	6.17	49.26
35638	Analysis.....	6.04	12.43	6.21	49.55
	Armour's Big Crop Fertilizer No. 6186—Guarantee	6.00	18.00	6.00	55.80
35463	Analysis.....	6.19	17.87	6.36	56.93
35477	Analysis.....	5.96	17.75	6.31	55.69
	Armour's Big Crop 18% Superphosphate—Guarantee		18.00		21.60
35251	Analysis.....		18.79		22.55
35410	Analysis.....		17.44		20.93
35435	Analysis.....		19.02		22.82
35652	Analysis.....		20.00		24.00
35659	Analysis.....		18.82		22.58
35910	Analysis.....		19.29		23.15
35919	Analysis.....		19.33		23.20
35960	Analysis.....		19.44		23.33
	Armour's Big Crop 20% Superphosphate—Guarantee		20.00		24.00
35118	Analysis.....		20.79		24.95
35252	Analysis.....		20.55		24.66
35262	Analysis.....		20.86		25.03
35460	Analysis.....		20.98		25.18
35855	Analysis.....		19.39		23.27
35959	Analysis.....		20.41		24.49
	Armour's Kainit—Guarantee			12.00	14.40
35404	Analysis.....			14.83	17.80
35658	Analysis.....			14.98	17.98
	Armour's Nitrate of Soda—Guarantee	15.00			67.50
35086	Analysis.....	16.22			72.99
35111	Analysis.....	15.72			70.74
35121	Analysis.....	16.27			73.22
	NPK No. 1, 9-27-9—Guarantee	9.00	27.00	9.00	83.70
35136	Analysis.....	8.94	26.34	9.11	82.77
35220	Analysis.....	8.72	27.31	8.79	82.56
35642	Analysis.....	8.87	26.93	8.71	82.69
35954	Analysis.....	9.03	27.46	9.15	84.57
	NPK No. 2, 9-18-18—Guarantee	9.00	18.00	18.00	83.70
35202	Analysis.....	8.91	17.77	18.44	83.55

Table 8.—Analysis of commercial fertilizer, season 1929-30—(continued)

Laboratory number	Manufacturer, place of business, and brand	Nitrogen—per cent	Phosphoric acid—available—per cent	Potash—per cent	Valuation—per ton
35690	George L. Barber & Son, Jacksonville, Texas				
	Barber's Nitrate of Soda—Guarantee.....	15.00			\$67.50
	Analysis.....	15.69			70.61
	The Barrett Company, 40 Rector St., New York, N. Y.				
	Arcadian Nitrate of Soda—Guarantee.....	16.25			73.13
35079	Analysis.....	16.33			73.49
35083	Analysis.....	16.38			73.71
35090	Analysis.....	16.33			73.49
35992	Analysis.....	16.32			73.44
	Arcadian Sulphate of Ammonia—Guarantee.....	20.56			92.52
35758	Analysis.....	20.94			94.23
	Bay Chemical Company, Inc., New Orleans and Weeks, Louisiana—				
	Citratrus Rice Grower No. 0156—Guarantee.....		15.00	6.00	25.20
35645	Analysis.....		14.65	6.52	25.40
	Bryan Cotton Oil and Fertilizer Company, Bryan, Texas—				
	Star Brand Cotton and Corn Fertilizer—Guarantee....	3.00	10.00	3.00	29.10
35291	Analysis.....	3.28	10.54	2.94	30.94
35617	Analysis.....	3.64	10.66	3.13	32.93
	Star Brand Special Fertilizer—Guarantee.....	4.00	12.00	4.00	37.20
35292	Analysis.....	4.49	12.04	3.45	38.80
35614	Analysis.....	4.27	12.06	4.01	38.50
	Star Brand Superphosphate—Guarantee.....		18.00		21.60
35287	Analysis.....		19.02		22.82
35616	Analysis.....		16.57		19.88
	Star Brand Tomato Fertilizer—Guarantee.....	6.00	12.00	6.00	48.60
35289	Analysis.....	6.10	11.63	6.86	49.64
35615	Analysis.....	6.42	12.17	6.13	50.85
	Cherokee Farm Labor Union, Jacksonville, Texas—				
	Cherokee Farm Labor Union 486—Guarantee.....	4.00	8.00	6.00	34.80
35162	Analysis.....	3.42	9.38	5.64	33.42
	Cherokee Farm Labor Union 4124—Guarantee.....	4.00	12.00	4.00	37.20
35164	Analysis.....	3.98	12.24	3.18	36.42
	Cherokee Farm Labor Union 6126—Guarantee.....	6.00	12.00	6.00	48.60
35163	Analysis.....	5.31	12.02	3.07	42.00
	Davison-Pick Fertilizers, Inc., New Orleans, Louisiana, and Orange, Texas—				
	Bull Dog Special No. 0206—Guarantee.....		20.00	6.00	31.20
35644	Analysis.....		20.44	6.09	31.84
	Bull Dog Special No. 3103—Guarantee.....	3.00	10.00	3.00	29.10
35293	Analysis.....	3.06	10.08	3.74	30.36
35361	Analysis.....	3.30	11.36	3.19	32.31
35407	Analysis.....	2.96	10.03	3.83	29.96
35511	Analysis.....	3.02	10.95	2.76	30.94
35621	Analysis.....	3.26	11.08	3.61	32.30
35955	Analysis.....	3.25	10.07	3.34	30.72
	Bull Dog Special No. 3108—Guarantee.....	3.00	10.00	8.00	35.10
35400	Analysis.....	3.30	10.17	8.26	36.96
	Bull Dog Special No. 484—Guarantee.....	4.00	8.00	4.00	32.40
36005	Analysis.....	3.54	8.10	3.63	30.01
	Bull Dog Special 486—Guarantee.....	4.00	8.00	6.00	34.80
35411	Analysis.....	4.01	8.18	6.58	35.77
	Bull Dog Special No. 4124—Guarantee.....	4.00	12.00	4.00	37.20
35213	Analysis.....	4.36	11.05	4.14	37.85
35288	Analysis.....	3.91	11.33	4.07	36.08
35358	Analysis.....	4.30	11.42	4.57	38.53
35512	Analysis.....	4.00	13.18	3.49	38.01
35620	Analysis.....	3.93	12.77	4.10	37.93
35665	Analysis.....	3.93	12.61	4.03	37.66
35768	Analysis.....	4.01	12.06	4.11	37.45
35957	Analysis.....	3.58	12.20	4.56	36.22

Table 8.—Analysis of commercial fertilizer, season 1929-30—(continued)

Laboratory number	Manufacturer, place of business, and brand	Nitrogen—per cent	Phosphoric acid—available—per cent	Potash—per cent	Valuation—per ton
	Davison-Pick Fertilizers, Inc., New Orleans, Louisiana, and Orange, Texas—Continued.				
35619	Bull Dog Special No. 6126—Guarantee	6.00	12.00	6.00	\$48.60
	Analysis	5.41	12.65	5.39	46.00
35364	Bull Dog Superphosphate No. 18—Guarantee		18.00		21.60
35956	Analysis		18.92		22.70
	Bull Dog Superphosphate No. 20—Guarantee		18.35		22.02
35290	Analysis		20.00		24.00
35362	Analysis		20.05		24.06
35618	Analysis		21.06		25.27
	Nitrate of Soda—Guarantee	15.00			24.18
35622	Analysis	16.00			67.50
	Raw Bone Meal—Guarantee	3.70	*22.00		72.00
35922	Analysis	3.95	*22.88		34.25
35106	Sulphate of Ammonia—Guarantee	20.00			36.08
	Analysis	20.96			90.00
	East Texas Cotton Oil Company, Wills Point, Texas—				
	ETCO 4-12-4 Fertilizer—Guarantee	4.00	12.00	4.00	37.20
35559	Analysis	4.10	12.30	4.29	38.36
35570	Analysis	4.09	11.92	4.09	37.62
35572	Analysis	3.89	12.15	4.42	37.39
35881	Analysis	4.03	11.28	4.42	36.98
	ETCO Meal Formula—Guarantee	3.00	10.00	3.00	29.10
35560	Analysis	3.01	11.00	3.53	30.99
	ETCO Potato Producer—Guarantee	4.00	8.00	4.00	32.40
35882	Analysis	3.68	9.31	4.84	33.54
	ETCO 18% Superphosphate—Guarantee		18.00		21.60
35571	Analysis		19.84		23.81
	Farmers Cotton Oil Company, Winnsboro, Texas—				
	Farmers No. 3103—Guarantee	3.00	10.00	3.00	29.10
35795	Analysis	2.80	11.49	2.43	29.31
36010	Analysis	4.21	10.98	2.08	34.63
	Farmers Fertilizer No. 484—Guarantee	4.00	8.00	4.00	32.40
35582	Analysis	3.86	8.81	4.51	33.35
35794	Analysis	3.87	8.77	4.30	33.10
	Farmers Fertilizer No. 486—Guarantee	4.00	8.00	6.00	34.80
35315	Analysis	4.24	9.67	5.87	37.96
35583	Analysis	3.51	9.71	6.01	34.66
	Farmers Fertilizer No. 4124—Guarantee	4.00	12.00	4.00	37.20
35314	Analysis	3.79	10.74	4.56	35.42
35585	Analysis	3.88	12.66	4.33	37.85
35796	Analysis	3.86	11.98	4.04	36.60
36012	Analysis	4.24	11.14	4.26	37.56
	Fidelity Chemical Corporation, Houston, Texas—				
	Fidelity 0-15-6 Fertilizer—Guarantee		15.00	6.00	25.20
35518	Analysis		14.71	6.17	25.05
	Fidelity 3-10-3 Fertilizer—Guarantee	3.00	10.00	3.00	29.10
35530	Analysis	3.04	9.61	3.06	28.88
	Fidelity 3-10-8 Fertilizer—Guarantee	3.00	10.00	8.00	35.10
35210	Analysis	3.06	8.44	9.33	35.10
	Fidelity 4-8-4 Fertilizer—Guarantee	4.00	8.00	4.00	32.40
35275	Analysis	3.92	8.04	3.89	31.96
35912	Analysis	4.14	8.25	4.01	33.34
35914	Analysis	4.52	8.60	3.66	35.05
	Fidelity 4-8-6 Fertilizer—Guarantee	4.00	8.00	6.00	34.80
35144	Analysis	4.32	8.17	6.04	36.49
	Fidelity 4-10-2 Fertilizer—Guarantee	4.00	10.00	2.00	32.40
35539	Analysis	4.71	9.43	2.64	35.69

*Total phosphoric acid.

Table 8.—Analysis of commercial fertilizer, season 1929-30—(continued)

Laboratory number	Manufacturer, place of business, and brand	Nitrogen—per cent	Phosphoric acid—available—per cent	Potash—per cent	Valuation—per ton
Fidelity Chemical Corporation, Houston, Texas—Cont'd.					
	Fidelity 4-12-4 Fertilizer—Guarantee	4.00	12.00	4.00	\$37.20
35110	Analysis	4.06	11.54	4.09	37.03
35274	Analysis	4.27	11.02	4.16	37.43
35471	Analysis	4.16	11.60	4.30	37.80
35654	Analysis	4.30	11.49	4.01	37.95
35536	Analysis	3.99	11.80	3.90	36.80
	Fidelity 5-15-5 Fertilizer—Guarantee	5.00	15.00	5.00	46.50
35105	Analysis	5.16	14.47	4.94	46.51
35109	Analysis	4.93	14.56	4.77	45.38
35472	Analysis	4.71	14.47	5.51	45.17
35541	Analysis	4.92	14.75	5.30	46.20
	Fidelity 6-9-3 Fertilizer—Guarantee	6.00	9.00	3.00	41.40
35126	Analysis	5.62	9.09	3.34	40.21
35514	Analysis	6.18	9.16	3.29	42.75
	Fidelity 6-10-7 Fertilizer—Guarantee	6.00	10.00	7.00	47.40
35211	Analysis	6.09	10.01	6.82	47.60
	Fidelity 6-12-6 Fertilizer—Guarantee	6.00	12.00	6.00	48.60
35145	Analysis	6.13	11.44	6.08	48.62
35517	Analysis	6.10	11.35	6.11	48.40
35653	Analysis	6.06	11.51	6.25	48.58
	Fidelity 6-18-6 Fertilizer—Guarantee	6.00	18.00	6.00	55.80
35533	Analysis	5.88	16.82	5.21	52.89
35655	Analysis	5.88	17.72	6.01	54.93
	Fidelity 18% Superphosphate—Guarantee		18.00		21.60
35520	Analysis		18.76		22.51
	Fidelity 20% Superphosphate—Guarantee		20.00		24.00
35107	Analysis		20.41		24.49
35538	Analysis		20.54		24.65
Ford Motor Company, Dearborn, Michigan—					
	Ford Ammonium Sulphate—Guarantee	20.80			93.60
35101	Analysis	21.13			95.09
Gilmer Cotton Oil and Fertilizer Company, Gilmer, Texas—					
	GCO&FCO'S 4-12-4—Guarantee	4.00	12.00	4.00	37.20
35284	Analysis	3.95	11.93	4.61	37.63
	GCO&FCO'S Cotton Grower—Guarantee	4.00	8.00	4.00	32.40
35286	Analysis	3.91	8.07	5.05	33.34
35604	Analysis	3.91	8.87	4.64	33.81
35606	Analysis	3.87	10.56	4.41	35.38
	GCO&FCO'S Early Fruiter—Guarantee	6.00	9.00	3.00	41.40
35285	Analysis	5.20	12.06	3.36	41.90
	GCO&FCO'S Superior Meal Compound—Guarantee	3.00	10.00	3.00	29.10
35283	Analysis	3.26	11.02	3.37	31.93
35605	Analysis	3.03	10.48	3.45	30.36
	GCO&FCO'S Texas Special—Guarantee	6.00	10.00	7.00	47.40
36008	Analysis	5.93	9.77	7.06	46.88
	GCO&FCO'S Tomato Special—Guarantee	4.00	8.00	6.00	34.80
36009	Analysis	4.09	8.85	6.51	36.84
The Halfhill Company, Los Angeles, California—					
	Kalox—Guarantee	6.00	8.00	4.00	41.40
35656	Analysis	6.20	7.50	4.06	41.77
Home Fertilizer Company of Arkansas, Inc., Searcy, Batesville, Fordyce, Texarkana, Star City and Little Rock, Arkansas—					
	Arco Brand 3-10-3—Guarantee	3.00	10.00	3.00	29.10
35809	Analysis	2.75	6.05	2.77	22.96
35827	Analysis	3.08	8.53	3.04	27.75
35841	Analysis	3.06	7.12	3.02	25.93
35923	Analysis	2.85	7.51	2.57	24.92

Table 8.—Analysis of commercial fertilizer, season 1929-30—(continued)

Laboratory number	Manufacturer, place of business, and brand	Nitrogen—per cent	Phosphoric acid—available—per cent	Potash—per cent	Valuation—per ton
	Home Fertilizer Company of Arkansas, Inc., Searcy, Batesville, Fordyce, Texarkana, Star City and Little Rock, Arkansas—Continued.				
35808	Arco Brand 4-8-4—Guarantee.....	4.00	8.00	4.00	\$32.40
	Analysis.....	4.01	5.60	3.31	28.74
35820	Analysis.....	4.36	6.09	3.40	31.01
35854	Analysis.....	4.01	5.79	5.59	31.71
	Arco Brand 4-8-6—Guarantee.....	4.00	8.00	6.00	34.80
35340	Analysis.....	3.32	6.86	4.53	28.61
35810	Analysis.....	4.02	5.87	5.72	31.99
35822	Analysis.....	3.88	5.79	5.91	31.50
35870	Analysis.....	3.97	5.95	6.11	32.34
35969	Analysis.....	4.00	5.77	6.01	32.13
	Arco Brand Fertilizer 4-12-4—Guarantee.....	4.00	12.00	4.00	37.20
35807	Analysis.....	4.11	10.64	3.57	35.55
35817	Analysis.....	3.94	10.99	4.03	35.76
	Arco Brand 6-9-3—Guarantee.....	6.00	9.00	3.00	41.40
35838	Analysis.....	5.70	6.68	3.16	37.46
	Arco Brand Superphosphate—Guarantee.....		18.00		21.60
35821	Analysis.....		18.65		22.38
	Hope Fertilizer Company, Hope, Arkansas—				
	Stork Brand Four Eight Four—Guarantee.....	4.00	8.00	4.00	32.40
35835	Analysis.....	3.70	7.97	4.13	31.17
35848	Analysis.....	3.76	8.08	4.37	31.86
35873	Analysis.....	3.70	8.32	4.41	31.92
35975	Analysis.....	4.72	8.53	4.06	36.35
35976	Analysis.....	4.47	8.89	3.11	34.52
	Stork Brand Three Ten Three—Guarantee.....	3.00	10.00	3.00	29.10
35755	Analysis.....	2.88	10.28	2.84	28.71
35847	Analysis.....	3.03	10.06	3.03	29.35
35849	Analysis.....	3.18	9.88	3.40	30.25
35868	Analysis.....	3.08	9.70	3.32	29.48
35875	Analysis.....	3.31	10.35	2.80	30.68
35974	Analysis.....	3.21	10.75	2.55	30.41
35977	Analysis.....	3.04	10.24	3.30	29.93
	Stork Brand 16% Nitrate of Soda—Guarantee.....	16.00			72.00
35756	Analysis.....	16.11			72.50
	International Agricultural Corporation, 61 Broadway, New York, N. Y., Texarkana, Texas, Arkansas—				
	International 3-10-3 Fertilizer—Guarantee.....	3.00	10.00	3.00	29.10
35182	Analysis.....	3.46	10.24	3.20	31.70
35709	Analysis.....	3.03	10.36	2.77	29.39
35790	Analysis.....	3.00	10.08	3.12	29.34
35850	Analysis.....	2.65	10.39	2.62	27.54
35867	Analysis.....	2.86	10.01	3.01	28.49
35869	Analysis.....	2.91	9.59	3.02	28.23
35984	Analysis.....	3.03	10.05	3.03	29.34
35987	Analysis.....	2.90	9.97	2.80	28.37
35997	Analysis.....	2.87	9.88	3.40	28.86
	International 4-8-4 Fertilizer—Guarantee.....	4.00	8.00	4.00	32.40
35181	Analysis.....	4.10	7.44	3.69	31.81
35303	Analysis.....	4.08	7.96	4.09	32.82
35317	Analysis.....	4.05	7.53	4.52	32.69
35325	Analysis.....	4.04	7.35	4.02	31.82
35601	Analysis.....	4.19	8.02	4.02	33.30
35996	Analysis.....	4.07	8.41	4.02	33.23
	International 4-8-6 Fertilizer—Guarantee.....	4.00	8.00	6.00	34.80
35306	Analysis.....	4.14	7.81	6.91	36.29
35342	Analysis.....	3.93	8.15	6.22	34.93
35351	Analysis.....	3.88	8.05	6.26	34.63
35990	Analysis.....	4.00	7.74	5.18	33.51
	International 4-10-7 Fertilizer—Guarantee.....	4.00	10.00	7.00	38.40
35304	Analysis.....	3.82	10.57	7.13	38.43

Table 8.—Analysis of commercial fertilizer, season 1929-30—(continued)

Laboratory number	Manufacturer, place of business, and brand	Nitrogen—per cent	Phosphoric acid—available—per cent	Potash—per cent	Valuation—per ton
	International Agricultural Corporation, 61 Broadway, New York, N. Y., Texarkana, Texas, Arkansas—Continued.				
	International 4-12-4 Fertilizer—Guarantee	4.00	12.00	4.00	\$37.20
35180	Analysis	3.94	11.83	4.09	36.84
35305	Analysis	4.08	11.59	4.04	37.12
35326	Analysis	4.31	11.56	4.33	38.47
35343	Analysis	4.24	11.86	4.49	38.70
35708	Analysis	4.10	12.22	4.03	37.95
35858	Analysis	4.06	12.28	4.28	38.15
	International 5-15-5 Fertilizer—Guarantee	5.00	15.00	5.00	46.50
35815	Analysis	5.08	14.53	5.36	46.73
	International 6-10-7 Fertilizer—Guarantee	6.00	10.00	7.00	47.40
35600	Analysis	5.60	10.76	7.71	47.36
	International 6-12-6 Fertilizer—Guarantee	6.00	12.00	6.00	48.60
35179	Analysis	5.86	12.52	6.16	48.78
35341	Analysis	6.14	11.55	6.71	49.54
35352	Analysis	6.69	11.71	6.01	51.37
	International Rainbow Cotton Fertilizer—Guarantee	4.00	12.00	4.00	37.20
35789	Analysis	4.08	12.07	4.11	37.77
35804	Analysis	4.19	11.98	4.18	38.26
35819	Analysis	4.04	11.74	4.10	37.19
36004	Analysis	3.97	11.65	3.81	36.42
	Kelly, Weber & Company, Inc., Lake Charles, Louisiana—Weber-King Brand 18% Superphosphate—Guarantee.		18.00		21.60
35647	Analysis		18.45		22.14
	La-Tex Fertilizer Company, Shreveport, Louisiana—				
	La-Tex 3-10-3—Guarantee	3.00	10.00	3.00	29.10
35723	Analysis	3.14	9.95	3.66	30.46
	La-Tex 4-8-4—Guarantee	4.00	8.00	4.00	32.40
35896	Analysis	2.90	9.06	4.31	29.09
	La-Tex 4-12-4—Guarantee	4.00	12.00	4.00	37.20
35697	Analysis	3.54	13.59	3.37	36.28
35805	Analysis	1.91	16.11	1.81	30.10
35829	Analysis	4.18	12.46	4.04	38.61
35895	Analysis	3.50	12.40	4.28	35.77
	Longview Cotton Oil Company, Longview, Texas—				
	Longview Cotton and Corn Special Fertilizer—Guarantee	4.00	12.00	4.00	37.20
35242	Analysis	4.06	11.27	5.04	37.84
35733	Analysis	3.77	12.31	5.10	37.86
35736	Analysis	4.26	14.26	4.30	41.44
35738	Analysis	3.94	12.71	4.47	38.34
	Longview Cotton Special Fertilizer—Guarantee	3.00	10.00	3.00	29.10
35243	Analysis	3.07	9.85	3.86	30.27
35750	Analysis	3.09	10.50	3.52	30.73
35982	Analysis	2.93	10.97	4.20	31.39
	Longview Extra Fertilizer—Guarantee	6.00	18.00	6.00	55.80
35385	Analysis	6.01	18.06	6.05	55.98
	Longview Fertilizer—Guarantee	5.00	15.00	5.00	46.50
35383	Analysis	5.38	15.02	5.40	48.71
	Longview Gregg County Special Fertilizer—Guarantee	4.00	8.00	4.00	32.40
35241	Analysis	4.01	8.44	4.67	33.78
35382	Analysis	4.13	8.18	4.76	34.12
35737	Analysis	3.82	8.64	4.10	32.48
35981	Analysis	3.19	10.23	3.83	31.24
	Longview Plant Food—Guarantee	4.00	8.00	4.00	32.40
35743	Analysis	4.42	8.80	5.14	36.62
	Longview Prize Fertilizer—Guarantee	6.00	12.00	6.00	48.60
35384	Analysis	6.31	13.15	5.84	51.19

Table 8.—Analysis of commercial fertilizer, season 1929-30—(continued)

Laboratory number	Manufacturer, place of business, and brand	Nitrogen—per cent	Phosphoric acid—available—per cent	Potash—per cent	Valuation—per ton
	Marshall Cotton Oil Company, Marshall, Texas—				
	Mammoth Plant Food 4-8-4—Guarantee.....	4.00	8.00	4.00	\$32.40
35376	Analysis.....	4.36	8.47	4.27	34.90
	Marshall Eclipse Fertilizer 3-10-3—Guarantee.....	3.00	10.00	3.00	29.10
35336	Analysis.....	3.15	10.13	3.38	30.40
35373	Analysis.....	3.05	9.97	3.47	29.85
35760	Analysis.....	3.02	9.98	3.52	29.79
35773	Analysis.....	2.91	10.40	3.34	29.59
35986	Analysis.....	3.49	10.10	2.82	31.21
36015	Analysis.....	3.05	8.61	2.77	27.38
	Marshall Nut Producer 6-9-3—Guarantee.....	6.00	9.00	3.00	41.40
35375	Analysis.....	6.01	9.05	3.06	41.58
35989	Analysis.....	5.69	8.97	3.22	40.23
	Marshall Super & Meal Fertilizer 4-10-0—Guarantee.....	4.00	10.00	.....	30.00
35374	Analysis.....	4.06	10.39	.....	30.74
	Marshall Wonder Fertilizer 4-12-4—Guarantee.....	4.00	12.00	4.00	37.20
35334	Analysis.....	4.05	11.97	4.15	37.57
35372	Analysis.....	4.04	11.94	3.88	37.17
35753	Analysis.....	3.83	12.27	3.50	36.16
35767	Analysis.....	4.12	11.73	4.01	37.43
	Quick Producer Fertilizer 4-10-2—Guarantee.....	4.00	10.00	2.00	32.40
35759	Analysis.....	3.90	9.99	2.32	32.32
35985	Analysis.....	4.01	10.28	2.40	33.27
	Truckers Delight 4-8-4—Guarantee.....	4.00	8.00	4.00	32.40
35762	Analysis.....	4.09	8.18	4.34	33.44
35772	Analysis.....	4.10	7.84	4.42	33.16
35828	Analysis.....	3.74	8.19	4.17	31.66
	Meridian Fertilizer Factory, Shreveport, Louisiana—				
	Kainit—Guarantee.....	.....	.....	12.00	14.40
35657	Analysis.....	.....	.....	13.54	16.25
	Meridian Home Mixture—Guarantee.....	3.00	10.00	3.00	29.10
35151	Analysis.....	3.07	9.02	3.03	28.38
35173	Analysis.....	3.03	9.16	3.07	28.31
35292	Analysis.....	3.18	9.03	3.04	28.80
35429	Analysis.....	3.08	9.00	3.05	28.32
35436	Analysis.....	3.25	9.31	3.21	29.65
35449	Analysis.....	3.03	9.13	3.04	28.25
35478	Analysis.....	3.18	9.50	3.11	29.44
35525	Analysis.....	3.06	9.89	3.01	29.25
35532	Analysis.....	3.13	10.01	3.05	29.76
35566	Analysis.....	3.20	9.35	3.09	29.33
35609	Analysis.....	3.18	8.91	3.05	28.66
35698	Analysis.....	3.18	9.28	3.06	29.12
35740	Analysis.....	3.08	9.18	3.23	28.76
35744	Analysis.....	3.13	9.30	3.01	28.86
35749	Analysis.....	3.06	9.14	3.05	28.40
35764	Analysis.....	3.22	9.07	3.04	29.02
35774	Analysis.....	3.18	9.14	3.01	28.89
35806	Analysis.....	3.26	9.57	3.05	29.81
35811	Analysis.....	3.33	8.84	3.45	29.74
35831	Analysis.....	3.07	10.06	3.28	29.83
35871	Analysis.....	2.79	10.01	2.84	27.98
	Meridian Improved Superphosphate—Guarantee.....	.....	.....	20.00	24.00
35228	Analysis.....	.....	.....	20.01	24.01
35524	Analysis.....	.....	.....	20.12	24.14
35627	Analysis.....	.....	.....	20.06	24.07
35717	Analysis.....	.....	.....	20.16	24.19
	Meridian Magnolia State Formula—Guarantee.....	4.00	8.00	4.00	32.40
35172	Analysis.....	3.84	7.68	4.12	31.44
35300	Analysis.....	4.01	8.14	4.04	32.67
35379	Analysis.....	4.27	8.00	4.01	33.63
35418	Analysis.....	4.10	8.19	4.01	33.09
35552	Analysis.....	4.02	8.79	4.01	33.45

Table 8.—Analysis of commercial fertilizer, season 1929-30—(continued)

Laboratory number	Manufacturer, place of business, and brand	Nitrogen—per cent	Phosphoric acid—available—per cent	Potash—per cent	Valuation—per ton
Meridian Fertilizer Factory, Shreveport, La.—Continued.					
Meridian Magnolia State Formula—Guarantee—Cont'd					
35763	Analysis	4.19	8.36	4.05	\$33.75
35771	Analysis	3.73	6.89	3.52	29.28
35776	Analysis	4.22	9.15	4.08	34.87
35830	Analysis	3.94	8.57	3.88	32.67
35898	Analysis	4.00	7.63	4.31	32.33
35935	Analysis	4.18	9.03	4.02	34.47
35945	Analysis	4.04	9.46	4.07	34.41
Meridian Majestic Mixture—Guarantee					
35237	Analysis	5.00	15.00	5.00	46.50
35824	Analysis	5.35	13.37	5.17	46.32
35255	Analysis	4.83	12.51	5.02	42.78
35689	Analysis	6.00	12.00	6.00	48.60
Meridian Perfect Guano—Guarantee					
35255	Analysis	5.75	10.54	5.92	45.63
35689	Analysis	5.89	11.01	6.02	46.94
Meridian Perfection Compound—Guarantee					
35171	Analysis	4.00	12.00	4.00	37.20
35230	Analysis	4.28	11.49	3.90	37.73
35236	Analysis	3.81	11.80	3.71	35.76
35301	Analysis	4.58	11.40	4.66	39.88
35378	Analysis	4.25	11.34	4.00	37.54
35479	Analysis	4.12	11.29	4.12	37.03
35526	Analysis	4.13	10.82	4.12	36.51
35558	Analysis	4.27	11.05	4.05	37.34
35565	Analysis	4.11	10.87	4.14	36.51
35610	Analysis	4.26	10.38	4.14	36.60
35625	Analysis	4.16	11.13	4.20	37.12
35628	Analysis	4.21	11.23	4.36	37.66
35668	Analysis	4.21	11.18	4.40	37.65
35676	Analysis	4.22	11.41	4.08	37.58
35676	Analysis	4.33	11.68	3.88	38.17
35683	Analysis	4.32	11.34	4.05	37.91
35695	Analysis	4.23	11.56	4.30	38.07
35716	Analysis	4.19	11.19	4.20	37.33
35728	Analysis	4.21	11.33	4.05	37.41
35731	Analysis	4.25	11.35	4.07	37.63
35757	Analysis	4.16	11.33	4.11	37.31
35766	Analysis	4.22	11.82	4.04	38.02
35883	Analysis	4.09	10.84	4.07	36.30
Meridian Perfection Formula—Guarantee					
35529	Analysis	6.00	9.00	3.00	41.40
35948	Analysis	5.78	9.12	3.24	40.84
Meridian Perfection Superphosphate—Guarantee					
35513	Analysis	6.05	8.22	3.23	40.97
35540	Analysis	18.00	.....	.....	21.60
35872	Analysis	19.33	.....	.....	23.20
35963	Analysis	19.46	.....	.....	23.35
35963	Analysis	19.05	.....	.....	22.86
35963	Analysis	19.91	.....	.....	23.89
Meridian Southern Standard—Guarantee					
35152	Analysis	4.00	10.00	2.00	32.40
35239	Analysis	4.12	8.98	3.35	33.34
35879	Analysis	4.25	9.38	3.77	34.91
35890	Analysis	4.10	9.44	3.33	33.78
35983	Analysis	3.76	9.56	3.80	32.95
35983	Analysis	4.19	9.09	3.12	33.51
Meridian Special Mixture—Guarantee					
35825	Analysis	6.00	10.00	7.00	47.40
35238	Analysis	5.20	10.77	6.78	44.46
Meridian Truckers Special—Guarantee					
35238	Analysis	4.00	8.00	6.00	34.80
35328	Analysis	4.02	7.86	5.79	34.47
35553	Analysis	4.20	7.36	6.03	34.97
35596	Analysis	4.04	8.62	6.26	36.03
35684	Analysis	4.04	7.42	6.26	34.59
35812	Analysis	4.11	8.07	6.07	35.46
35943	Analysis	4.02	8.55	6.05	35.61
35944	Analysis	4.00	8.16	6.34	35.40
35944	Analysis	3.54	7.75	5.45	31.77
Muriate of Potash—Guarantee					
35780	Analysis	.....	.....	50.00	60.00
35864	Analysis	.....	.....	51.62	61.94
35864	Analysis	.....	.....	51.15	61.38

Table 8.—Analysis of commercial fertilizer, season 1929-30—(continued)

Laboratory number	Manufacturer, place of business, and brand	Nitrogen—per cent	Phosphoric acid—available—per cent	Potash—per cent	Valuation—per ton
Meridian Fertilizer Factory, Shreveport, La.—Continued.					
35256	Southern Mixture—Guarantee	4.00	10.00	.....	\$30.00
	Analysis	4.02	9.68	.....	29.71
	Sulphate of Ammonia—Guarantee	20.00	.....	.....	90.00
35781	Analysis	20.94	.....	.....	94.23
35857	Analysis	20.71	.....	.....	93.20
Mixson Brothers, Kirbyville, Texas—					
35225	Mixson's 3-10-3—Guarantee	3.00	10.00	3.00	29.10
35634	Analysis	2.91	10.18	2.72	28.58
	Analysis	3.41	9.20	2.88	29.85
35219	Mixson's 3-10-8—Guarantee	3.00	10.00	8.00	35.10
35631	Analysis	2.95	9.51	8.18	34.51
	Analysis	3.20	11.01	9.67	39.21
35226	Mixson's 4-8-4—Guarantee	4.00	8.00	4.00	32.40
35632	Analysis	5.16	7.73	3.91	37.19
	Analysis	3.57	7.66	4.57	30.74
35223	Mixson's 4-12-4—Guarantee	4.00	12.00	4.00	37.20
35633	Analysis	4.19	12.15	4.31	38.61
35952	Analysis	4.11	12.85	4.25	39.02
	Analysis	3.98	12.02	4.53	37.77
35222	Mixson's 6-12-6—Guarantee	6.00	12.00	6.00	48.60
	Analysis	6.04	11.74	6.01	48.48
35953	Mixson's 18% Superphosphate—Guarantee	.....	18.00	.....	21.60
	Analysis	.....	18.41	.....	22.09
35224	Mixson's 20% Superphosphate—Guarantee	.....	20.00	.....	24.00
	Analysis	.....	20.95	.....	25.14
Nitrate Agencies Company, New Orleans, Louisiana—					
35706	Chilean Nitrate of Soda—Guarantee	15.25	.....	.....	68.63
	Analysis	15.58	.....	.....	70.11
Oil Mill and Fertilizer Works, Henderson, Texas—					
35394	Henderson Hiland—Guarantee	6.00	12.00	6.00	48.60
35940	Analysis	6.05	11.82	5.68	48.23
	Analysis	6.00	13.62	6.14	50.71
35946	Henderson Nitrate of Soda—Guarantee	15.00	.....	.....	67.50
	Analysis	15.86	.....	.....	71.37
35391	Henderson Nursery Special—Guarantee	6.00	9.00	3.00	41.40
	Analysis	6.58	8.31	2.76	42.44
35998	Henderson Potato Grower—Guarantee	4.00	8.00	6.00	34.80
	Analysis	3.93	7.41	6.02	33.80
35395	Henderson Sandy Land—Guarantee	4.00	12.00	4.00	37.20
35440	Analysis	3.98	11.53	4.03	36.59
35721	Analysis	4.33	11.24	3.81	37.55
35938	Analysis	4.02	12.34	3.78	37.44
	Analysis	4.01	12.08	3.61	36.88
35390	Henderson Special—Guarantee	3.00	10.00	3.00	29.10
35441	Analysis	3.30	7.94	3.04	28.03
35937	Analysis	3.33	9.53	2.80	29.79
	Analysis	3.15	10.98	3.08	31.06
35947	Henderson Sulphate of Ammonia—Guarantee	20.00	.....	.....	90.00
	Analysis	20.30	.....	.....	91.35
35939	Henderson Superior—Guarantee	5.00	15.00	5.00	46.50
	Analysis	4.42	15.64	4.11	43.59
35941	Henderson 20% Superphosphate—Guarantee	.....	20.00	.....	24.00
	Analysis	.....	20.12	.....	24.14
35396	Henderson Tomato Grower—Guarantee	6.00	10.00	7.00	47.40
	Analysis	6.04	9.35	7.01	46.81
35176	Henderson Truck—Guarantee	4.00	8.00	4.00	32.40
35392	Analysis	3.95	5.92	3.77	29.40
35442	Analysis	3.97	6.73	3.88	30.61
35694	Analysis	4.02	7.43	4.01	31.82
35926	Analysis	4.02	8.10	3.63	32.17
	Analysis	4.00	8.48	4.05	33.04

Table 8.—Analysis of commercial fertilizer, season 1929-30—(continued)

Laboratory number	Manufacturer, place of business, and brand	Nitrogen—per cent	Phosphoric acid—available—per cent	Potash—per cent	Valuation—per ton
	Palestine Oil Mill and Fertilizer Company, Palestine, Texas—				
	Cottonseed Meal Fertilizer—Guarantee	6.88	1.00	1.00	\$33.36
35192	Analysis	7.13	2.46	1.62	36.98
35687	Analysis	6.88	2.44	1.36	35.52
	Palestine Blood and Bone 3103—Guarantee	3.00	10.00	3.00	29.10
35156	Analysis	3.00	10.29	3.09	29.56
35165	Analysis	2.74	10.35	3.14	28.52
	Palestine Blood and Bone 4100—Guarantee	4.00	10.00	4.00	30.00
35150	Analysis	3.91	9.34	3.81	28.81
	Palestine Blue Star 4-12-4—Guarantee	4.00	12.00	4.00	37.20
35149	Analysis	3.96	10.96	4.23	36.05
35264	Analysis	4.07	10.78	4.74	36.95
35462	Analysis	4.18	11.04	4.58	37.56
35485	Analysis	4.05	11.26	4.16	36.73
35663	Analysis	4.02	12.43	4.00	37.81
35909	Analysis	4.00	11.27	3.60	35.84
	Palestine Blue Star 6126—Guarantee	6.00	12.00	6.00	48.60
35474	Analysis	5.62	12.92	5.80	47.75
	Palestine Calcium Nitrate—Guarantee	16.00	16.00	16.00	72.00
35515	Analysis	14.44	14.44	14.44	64.98
	Palestine Corn & Cotton—Guarantee	4.00	10.00	2.00	32.40
35443	Analysis	4.01	10.08	2.52	33.17
35894	Analysis	4.19	10.04	2.21	33.56
	Palestine Cotton Producer—Guarantee	3.00	10.00	3.00	29.10
35432	Analysis	3.17	9.95	3.07	29.89
35444	Analysis	3.43	9.91	3.21	31.18
35669	Analysis	3.34	10.41	3.01	31.13
35691	Analysis	3.40	9.93	2.76	30.53
35725	Analysis	3.10	10.30	2.89	29.78
36001	Analysis	3.11	10.47	2.76	29.87
	Palestine Garden Special—Guarantee	3.00	10.00	8.00	35.10
35268	Analysis	3.46	10.98	7.31	37.47
	Palestine 18% Superphosphate—Guarantee	18.00	18.00	18.00	21.60
35484	Analysis	19.37	19.37	19.37	23.24
	Palestine 20% Superphosphate—Guarantee	20.00	20.00	20.00	24.00
35473	Analysis	20.17	20.17	20.17	24.20
	Palestine Tomato Special—Guarantee	4.00	8.00	6.00	34.80
35148	Analysis	4.28	8.28	5.05	35.26
35233	Analysis	4.01	7.70	5.82	34.27
35446	Analysis	4.06	8.11	5.79	34.95
	Palestine Upland Cotton—Guarantee	4.00	8.00	4.00	32.40
35157	Analysis	4.02	8.60	3.92	33.11
35166	Analysis	3.63	8.56	3.80	31.17
35232	Analysis	3.60	8.40	4.18	31.30
35265	Analysis	4.43	8.40	3.70	34.46
35445	Analysis	4.34	7.80	4.01	33.70
35475	Analysis	4.06	7.67	4.07	32.35
35915	Analysis	3.53	7.70	4.22	30.19
	Palestine Vegetable Leader—Guarantee	6.00	10.00	7.00	47.40
35267	Analysis	5.64	9.96	7.03	45.77
	Pate Brothers, Sulphur Springs, Texas—				
	Pate's 3-10-3—Guarantee	3.00	10.00	3.00	29.10
35321	Analysis	3.02	10.41	3.34	30.09
35580	Analysis	3.02	10.94	3.01	30.33
35801	Analysis	3.08	9.29	2.90	28.49
36014	Analysis	2.97	10.78	3.64	30.68
	Pate's 4-8-4—Guarantee	4.00	8.00	4.00	32.40
35318	Analysis	4.32	10.53	5.23	38.36
35333	Analysis	4.03	8.34	5.28	34.49
35579	Analysis	4.49	10.70	4.35	38.27
35693	Analysis	4.20	11.30	4.30	37.62
35800	Analysis	4.02	7.43	4.42	32.31

Table 8.—Analysis of commercial fertilizer, season 1929-30—(continued)

Laboratory number	Manufacturer, place of business, and brand	Nitrogen—per cent	Phosphoric acid—available—per cent	Potash—per cent	Valuation—per ton
Pate Brothers, Sulphur Springs, Texas—Continued.					
	Pate's 4-8-6—Guarantee.....	4.00	8.00	6.00	\$34.80
35319	Analysis.....	4.28	8.71	5.77	36.63
35578	Analysis.....	4.17	9.83	7.08	39.07
35797	Analysis.....	4.01	10.23	6.12	37.67
	Pate's 4-12-4—Guarantee.....	4.00	12.00	4.00	37.20
35320	Analysis.....	4.04	10.04	6.06	37.50
35978	Analysis.....	3.83	17.24	4.20	37.45
36013	Analysis.....	4.70	12.32	4.02	40.75
	Pate's 6-12-6—Guarantee.....	6.00	12.00	6.00	48.60
35581	Analysis.....	6.29	12.68	6.53	51.37
Pittsburg Cotton Oil Company, Pittsburg, Texas—					
	Double Circle Fertilizer 3-10-3—Guarantee.....	3.00	10.00	3.00	29.10
35299	Analysis.....	3.78	10.48	3.28	33.53
35345	Analysis.....	3.18	9.67	3.59	30.22
35597	Analysis.....	3.25	10.11	3.33	30.76
35793	Analysis.....	3.43	12.40	3.24	34.21
	Double Circle Fertilizer 4-8-4—Guarantee.....	4.00	8.00	4.00	32.40
35297	Analysis.....	4.01	7.91	4.42	32.84
35347	Analysis.....	3.91	8.01	4.43	32.53
35587	Analysis.....	3.90	8.26	4.49	32.85
35783	Analysis.....	3.78	8.81	4.34	32.79
35784	Analysis.....	4.10	8.09	4.32	33.34
35787	Analysis.....	4.23	8.65	4.38	34.68
36002	Analysis.....	3.56	6.01	4.03	28.07
	Double Circle Fertilizer 4-8-6—Guarantee.....	4.00	8.00	6.00	34.80
35296	Analysis.....	3.89	7.59	6.84	34.83
35316	Analysis.....	4.00	8.00	6.80	35.76
35344	Analysis.....	3.92	8.50	6.23	35.32
36003	Analysis.....	3.86	5.94	6.01	31.71
	Double Circle Fertilizer 4-12-4—Guarantee.....	4.00	12.00	4.00	37.20
35298	Analysis.....	4.01	11.04	4.17	36.30
35346	Analysis.....	3.98	10.91	4.54	36.45
35598	Analysis.....	4.16	11.10	4.26	37.15
35788	Analysis.....	4.26	10.97	4.44	37.66
35816	Analysis.....	4.03	10.93	4.45	36.60
35988	Analysis.....	4.35	11.23	4.34	38.27
	Double Circle Fertilizer 6-9-3—Guarantee.....	6.00	9.00	3.00	41.40
35599	Analysis.....	5.81	8.91	3.32	40.82
Planters Fertilizer and Chemical Company, Houston, Fort Worth, Texas, and New Orleans, La.—					
	Planters' Plow Brand Fertilizer No. 3103—Guarantee..	3.00	10.00	3.00	29.10
35247	Analysis.....	3.15	10.56	2.89	30.32
35832	Analysis.....	3.07	9.97	3.02	29.40
35836	Analysis.....	3.18	10.26	3.08	30.32
35844	Analysis.....	3.13	9.82	3.00	29.47
35853	Analysis.....	2.88	10.20	3.02	28.82
35863	Analysis.....	3.13	10.29	3.32	30.42
35970	Analysis.....	2.81	10.68	2.75	28.77
	Planters' Plow Brand Fertilizer No. 484—Guarantee..	4.00	8.00	4.00	32.40
35167	Analysis.....	4.77	8.16	4.03	36.10
35878	Analysis.....	4.47	8.70	4.01	35.37
35917	Analysis.....	4.09	8.79	4.14	33.93
	Planters' Plow Brand Fertilizer No. 4124—Guarantee..	4.00	12.00	4.00	37.20
35842	Analysis.....	4.11	12.07	4.02	37.80
35876	Analysis.....	4.03	12.68	3.63	37.72
	Planters' Plow Brand Fertilizer No. 5155—Guarantee..	5.00	15.00	5.00	46.50
35269	Analysis.....	5.19	15.02	5.39	47.85
	Planters' Plow Brand Fertilizer No. 6126—Guarantee..	6.00	12.00	6.00	48.60
35248	Analysis.....	5.81	12.11	5.59	47.39
35257	Analysis.....	6.08	11.93	6.08	48.98

Table 8.—Analysis of commercial fertilizer, season 1929-30—(continued)

Laboratory number	Manufacturer, place of business, and brand	Nitrogen—per cent	Phosphoric acid—available—per cent	Potash—per cent	Valuation—per ton
	F. S. Royster Guano Company, Norfolk, Virginia—				
	Royster Jupiter Guano—Guarantee.....	4.00	8.00	4.00	\$32.40
35387	Analysis.....	4.02	7.41	3.66	31.37
35419	Analysis.....	4.01	7.45	4.06	31.86
35739	Analysis.....	3.89	8.37	4.02	32.37
	Royster Legion Guano—Guarantee.....	4.00	10.00	7.00	38.40
35594	Analysis.....	3.63	9.84	6.37	35.79
35791	Analysis.....	3.81	9.77	6.54	36.72
	Royster Piedmont Guano—Guarantee.....	3.00	10.00	3.00	29.10
35595	Analysis.....	3.14	9.09	3.18	28.86
35932	Analysis.....	3.28	10.04	3.21	30.66
	Royster 18% Superphosphate—Guarantee.....	.....	18.00	.....	21.60
35775	Analysis.....	.....	17.37	.....	20.84
	Royster Trojan Guano—Guarantee.....	4.00	12.00	4.00	37.20
35388	Analysis.....	4.10	11.13	4.20	36.85
35430	Analysis.....	4.05	11.38	4.31	37.07
35734	Analysis.....	4.26	11.52	4.34	38.20
35931	Analysis.....	3.92	10.90	4.36	35.95
	Shreveport Fertilizer Works, Shreveport, Louisiana—				
	Lion Cotton Producer—Guarantee.....	4.00	8.00	4.00	32.40
35295	Analysis.....	4.16	8.50	3.37	32.96
35380	Analysis.....	3.78	8.11	3.34	30.75
35569	Analysis.....	4.02	7.95	4.08	32.53
35612	Analysis.....	4.27	8.15	4.12	33.94
35735	Analysis.....	3.93	8.99	3.43	32.60
35927	Analysis.....	4.19	7.44	3.37	31.83
	Lion 4-10-2 Extrafine Mixture—Guarantee.....	4.00	10.00	2.00	32.40
35549	Analysis.....	4.74	9.73	3.18	36.83
	Lion Meal Formula—Guarantee.....	3.00	10.00	3.00	29.10
35381	Analysis.....	2.82	9.72	3.03	27.99
35568	Analysis.....	3.01	8.64	3.06	27.59
35611	Analysis.....	3.05	9.51	3.25	29.04
35719	Analysis.....	3.40	10.55	3.25	31.86
	Lion 5-15-5 Special Cotton—Guarantee.....	5.00	15.00	5.00	46.50
35234	Analysis.....	5.94	12.17	4.70	46.97
	Lion 4-12-4 Superior Cotton Grower—Guarantee.....	4.00	12.00	4.00	37.20
35235	Analysis.....	4.03	12.14	3.63	37.07
35368	Analysis.....	2.73	13.35	2.73	31.59
35510	Analysis.....	4.09	12.69	3.63	38.00
35547	Analysis.....	4.14	11.98	3.86	37.64
35561	Analysis.....	4.07	12.53	3.76	37.87
	Lion 4-8-6 Tomato Special—Guarantee.....	4.00	8.00	6.00	34.80
35294	Analysis.....	4.02	7.63	5.06	33.32
35548	Analysis.....	4.34	7.91	6.41	36.71
35562	Analysis.....	4.01	8.49	6.04	35.49
	Smith County Cotton Oil and Fertilizer Company, Tyler, Texas—				
	Smico 3-10-3 Fertilizer—Guarantee.....	3.00	10.00	3.00	29.10
35168	Analysis.....	3.16	9.51	3.59	29.94
35200	Analysis.....	3.00	9.16	4.00	29.29
35979	Analysis.....	3.04	8.85	3.02	27.92
	Smico 4-8-4—Guarantee.....	4.00	8.00	4.00	32.40
35175	Analysis.....	4.00	8.89	3.89	33.34
35190	Analysis.....	3.70	8.21	3.88	31.16
35193	Analysis.....	3.65	9.27	3.54	31.80
35258	Analysis.....	3.72	8.29	4.04	31.54
35509	Analysis.....	4.08	7.79	3.78	32.25
35555	Analysis.....	3.83	8.89	4.43	33.23
35686	Analysis.....	3.93	8.50	4.01	32.70
35891	Analysis.....	3.88	8.05	3.63	31.48
35967	Analysis.....	3.79	7.11	3.75	30.09

Table 8.—Analysis of commercial fertilizer, season 1929-30—(continued)

Laboratory number	Manufacturer, place of business, and brand	Nitrogen—per cent	Phosphoric acid—available—per cent	Potash—per cent	Valuation—per ton
Smith County Cotton Oil and Fertilizer Company, Tyler, Texas—Continued.					
	Smico 4-8-6 Fertilizer—Guaranteee.....	4.00	8.00	6.00	\$34.80
35273	Analysis.....	3.89	7.55	5.51	33.18
	Smico 4-10-0 Fertilizer—Guaranteee.....	4.00	10.00	.....	30.00
35169	Analysis.....	4.00	11.31	.....	31.57
35174	Analysis.....	4.25	9.49	.....	30.52
35191	Analysis.....	4.00	9.85	.....	29.82
35194	Analysis.....	4.16	9.06	.....	29.59
35199	Analysis.....	4.07	8.96	.....	29.07
	Smico 4-10-2 Fertilizer—Guaranteee.....	4.00	10.00	2.00	32.40
35887	Analysis.....	3.81	10.12	1.91	31.58
35968	Analysis.....	3.71	10.06	2.12	31.31
	Smico 4-12-4 Fertilizer—Guaranteee.....	4.00	12.00	4.00	37.20
35201	Analysis.....	3.99	11.82	3.11	31.82
35266	Analysis.....	4.20	11.01	4.28	37.25
35271	Analysis.....	3.86	11.66	4.21	36.41
35438	Analysis.....	3.93	12.61	4.18	37.84
35508	Analysis.....	4.13	11.32	4.14	37.14
35629	Analysis.....	3.80	11.43	4.15	35.80
35682	Analysis.....	3.94	11.46	4.13	36.44
	Smico 6-9-3 Fertilizer—Guaranteee.....	6.00	9.00	3.00	41.40
35439	Analysis.....	5.74	9.47	3.43	41.31
35886	Analysis.....	5.60	9.76	3.59	41.22
	Smico 6-12-6 Fertilizer—Guaranteee.....	6.00	12.00	6.00	48.60
35170	Analysis.....	5.79	11.21	5.73	46.33
	Smico 6-18-6 Fertilizer—Guaranteee.....	6.00	18.00	6.00	55.80
35681	Analysis.....	5.82	18.46	6.28	55.88
	Smico Sulphate of Ammonia—Guaranteee.....	20.00	.....	.....	90.00
35554	Analysis.....	20.86	.....	.....	93.87
	Smico 18% Superphosphate—Guaranteee.....	.....	18.00	.....	21.60
35437	Analysis.....	.....	17.69	.....	21.23
35630	Analysis.....	.....	19.45	.....	23.34
Swift & Company Fertilizer Works, Harvey and Shreveport, Louisiana, Houston, Texas—					
	Kainit—Guaranteee.....	.....	.....	12.00	14.40
35405	Analysis.....	.....	.....	12.09	14.51
	20% Manure Salts—Guaranteee.....	.....	.....	20.00	24.00
35661	Analysis.....	.....	.....	19.06	22.87
	Muriate of Potash—Guaranteee.....	.....	.....	50.00	60.00
35470	Analysis.....	.....	.....	50.55	60.66
	Nitrate of Soda—Guaranteee.....	15.00	.....	.....	67.50
35077	Analysis.....	16.30	.....	.....	73.35
35094	Analysis.....	16.29	.....	.....	73.31
35104	Analysis.....	16.13	.....	.....	72.59
35747	Analysis.....	15.71	.....	.....	70.70
	Pioneer 5-15-5—Guaranteee.....	5.00	15.00	5.00	46.50
35140	Analysis.....	5.07	14.96	5.11	46.90
	Pioneer 6-10-7—Guaranteee.....	6.00	10.00	7.00	47.40
35142	Analysis.....	6.02	10.03	7.28	47.87
	Pioneer 6-12-6—Guaranteee.....	6.00	12.00	6.00	48.60
35141	Analysis.....	5.73	12.06	6.42	47.96
	Sulphate of Ammonia—Guaranteee.....	20.00	.....	.....	90.00
35081	Analysis.....	21.08	.....	.....	94.86
35209	Analysis.....	20.68	.....	.....	93.06
	Swift's Blood, Bone and Potash—Guaranteee.....	4.00	10.00	7.00	38.40
35132	Analysis.....	3.94	10.02	7.16	38.34
35786	Analysis.....	4.16	10.01	6.79	38.88
36006	Analysis.....	4.08	9.72	6.59	37.93
	Swift's Red Steer 0-15-6—Guaranteee.....	.....	15.00	6.00	25.20
35100	Analysis.....	.....	15.65	6.53	26.62
35651	Analysis.....	.....	16.19	6.04	26.68

Table 8.—Analysis of commercial fertilizer, season 1929-30—(continued)

Laboratory number	Manufacturer, place of business, and brand	Nitrogen—per cent	Phosphoric acid—available—per cent	Potash—per cent	Valuation—per ton
	Swift & Company Fertilizer Works, Harvey and Shreveport, Louisiana, Houston, Texas—Continued.				
	Swift's Red Steer 3-10-3—Guarantee	3.00	10.00	3.00	\$29.10
35280	Analysis.....	3.14	10.36	3.37	30.60
35357	Analysis.....	3.13	9.20	3.60	29.45
35564	Analysis.....	3.34	10.22	3.09	31.00
35602	Analysis.....	3.17	10.15	3.03	30.09
35635	Analysis.....	3.09	10.15	3.34	30.10
35701	Analysis.....	3.04	10.42	3.25	30.08
35711	Analysis.....	3.02	10.31	3.14	29.73
35732	Analysis.....	3.17	9.83	3.22	29.93
35742	Analysis.....	3.16	9.75	3.12	29.66
35745	Analysis.....	3.16	9.99	3.16	30.00
35778	Analysis.....	3.15	9.60	3.11	29.43
35782	Analysis.....	3.29	10.35	3.21	31.08
35798	Analysis.....	3.12	9.89	3.07	29.59
35839	Analysis.....	3.04	9.81	3.06	29.12
35843	Analysis.....	3.10	9.67	3.26	29.46
35874	Analysis.....	3.08	10.26	3.14	29.94
35877	Analysis.....	3.52	10.35	3.50	32.46
35893	Analysis.....	3.04	10.01	3.10	29.52
35905	Analysis.....	2.83	9.95	2.79	28.03
35906	Analysis.....	2.83	9.69	3.17	28.17
35908	Analysis.....	3.08	9.94	3.36	29.82
35911	Analysis.....	2.96	9.94	3.02	28.87
35924	Analysis.....	3.12	9.60	3.61	29.89
35950	Analysis.....	3.18	10.11	3.39	30.51
35995	Analysis.....	3.11	10.11	3.27	30.05
	Swift's Red Steer 3-10-8—Guarantee	3.00	10.00	8.00	35.10
35099	Analysis.....	3.03	10.03	7.37	34.52
35102	Analysis.....	3.01	10.04	8.51	35.81
35416	Analysis.....	3.08	10.32	6.93	34.56
35637	Analysis.....	3.33	9.46	8.36	36.37
	Swift's Red Steer 4-8-4—Guarantee	4.00	8.00	4.00	32.40
35125	Analysis.....	4.01	8.55	4.11	33.24
35129	Analysis.....	3.99	8.33	4.09	32.87
35143	Analysis.....	4.06	8.32	4.04	33.10
35159	Analysis.....	3.95	8.98	3.82	33.14
35160	Analysis.....	4.08	8.16	4.20	33.19
35205	Analysis.....	4.00	8.33	4.09	32.91
35313	Analysis.....	4.17	8.26	3.93	33.40
35331	Analysis.....	4.08	7.59	4.16	32.46
35386	Analysis.....	4.17	7.59	4.00	32.64
35423	Analysis.....	4.11	7.36	4.34	32.54
35480	Analysis.....	3.75	8.08	4.47	31.94
35528	Analysis.....	4.26	8.33	4.01	33.98
35551	Analysis.....	4.04	8.36	4.21	33.26
35556	Analysis.....	4.08	8.22	4.13	33.20
35584	Analysis.....	4.10	8.35	4.13	33.43
35613	Analysis.....	4.09	8.14	4.34	33.39
35678	Analysis.....	4.15	8.81	4.02	34.07
35688	Analysis.....	4.04	7.89	4.29	32.80
35792	Analysis.....	4.07	8.16	4.11	33.04
35892	Analysis.....	4.05	8.62	3.85	33.23
35907	Analysis.....	3.95	8.28	3.63	32.08
35913	Analysis.....	3.96	7.87	4.04	32.11
35925	Analysis.....	3.82	8.68	4.02	32.43
35949	Analysis.....	4.00	8.08	4.31	32.87
36011	Analysis.....	3.93	7.82	3.85	31.69
	Swift's Red Steer 4-8-6—Guarantee	4.00	8.00	6.00	34.80
35417	Analysis.....	4.13	8.37	5.80	35.59
35424	Analysis.....	3.94	8.18	6.03	34.79
35588	Analysis.....	4.03	8.64	5.49	35.10
	Swift's Red Steer 4-10-0—Guarantee	4.00	10.00		30.00
35158	Analysis.....	3.87	10.09		29.53

Table 8.—Analysis of commercial fertilizer, season 1929-30—(continued)

Laboratory number	Manufacturer, place of business, and brand	Nitrogen—per cent	Phosphoric acid—available—per cent	Potash—per cent	Valuation—per ton
Swift & Company Fertilizer Works, Harvey and Shreveport, Louisiana, Houston, Texas—Continued.					
	Swift's Red Steer 4-10-2—Guarantee	4.00	10.00	2.00	\$32.40
35369	Analysis	3.73	10.04	2.56	31.91
35537	Analysis	4.08	10.15	2.81	33.91
35888	Analysis	4.26	9.68	2.21	33.44
35964	Analysis	4.02	10.19	2.10	32.84
	Swift's Red Steer 4-12-4—Guarantee	4.00	12.00	4.00	37.20
35103	Analysis	4.14	12.21	3.92	38.77
35130	Analysis	4.01	12.08	4.31	37.72
35240	Analysis	4.13	12.02	4.08	37.91
35263	Analysis	3.80	11.63	4.06	35.93
35279	Analysis	4.09	12.19	4.30	38.20
35308	Analysis	4.08	12.43	4.07	38.16
35363	Analysis	3.79	12.01	4.10	36.39
35370	Analysis	4.05	12.05	4.09	37.60
35451	Analysis	4.23	11.81	4.34	38.42
35461	Analysis	4.01	11.78	4.44	37.52
35468	Analysis	3.99	12.06	4.13	37.39
35481	Analysis	4.01	11.94	4.22	37.44
35534	Analysis	3.98	11.70	4.29	37.10
35535	Analysis	4.00	12.58	3.49	37.29
35563	Analysis	4.11	12.47	4.10	38.38
35577	Analysis	4.17	11.86	4.23	38.08
35589	Analysis	4.13	12.15	4.13	38.13
35623	Analysis	4.14	12.19	4.39	38.55
35636	Analysis	4.11	12.15	4.23	38.16
35673	Analysis	4.13	11.66	4.29	37.73
35692	Analysis	4.11	12.23	4.40	38.40
35746	Analysis	4.12	12.22	4.11	38.13
35865	Analysis	4.06	11.85	4.19	37.52
35900	Analysis	4.01	12.21	3.76	37.21
35951	Analysis	4.11	12.02	4.18	37.94
	Swift's Red Steer 5-15-5—Guarantee	5.00	15.00	5.00	46.50
35095	Analysis	5.11	14.36	5.42	46.73
35450	Analysis	5.26	14.31	5.08	46.94
35527	Analysis	5.39	14.25	5.02	47.38
	Swift's Red Steer 6-9-3—Guarantee	6.00	9.00	3.00	41.40
35455	Analysis	6.05	9.62	2.74	42.06
	Swift's Red Steer 6-10-7—Guarantee	6.00	10.00	7.00	47.40
35076	Analysis	6.14	9.91	7.01	47.93
35123	Analysis	6.09	10.21	7.50	48.60
35131	Analysis	5.64	10.17	7.45	46.52
35204	Analysis	6.11	10.01	7.62	48.65
35208	Analysis	6.13	10.05	6.14	47.02
	Swift's Red Steer 6-12-6—Guarantee	6.00	12.00	6.00	48.60
35080	Analysis	6.12	11.40	6.01	48.43
35088	Analysis	6.12	11.95	6.40	49.56
35089	Analysis	6.07	11.79	6.14	48.84
35093	Analysis	6.04	11.92	6.16	48.87
35124	Analysis	5.57	11.53	6.97	47.27
35161	Analysis	5.88	11.97	7.00	49.22
35177	Analysis	6.10	11.53	6.46	49.04
35231	Analysis	6.00	12.04	6.33	49.05
35307	Analysis	5.95	12.03	5.81	48.19
35371	Analysis	6.08	12.02	5.88	48.84
35389	Analysis	6.14	11.56	6.01	48.71
35466	Analysis	6.25	12.48	7.19	51.74
35469	Analysis	6.03	11.71	6.30	48.75
35685	Analysis	6.12	12.06	6.20	49.45
35916	Analysis	5.64	12.83	5.48	47.36
35958	Analysis	6.10	11.95	6.09	49.10
35980	Analysis	5.81	11.27	6.05	46.93

Table 8.—Analysis of commercial fertilizer, season 1929-30—(continued)

Laboratory number	Manufacturer, place of business, and brand	Nitrogen—per cent	Phosphoric acid—available—per cent	Potash—per cent	Valuation—per ton
Swift & Company Fertilizer Works, Harvey and Shreveport, Louisiana, Houston, Texas—Continued.					
35467	Swift's Red Steer 6-18-6—Guarantee	6.00	18.00	6.00	\$55.80
	Analysis	5.90	16.61	6.27	54.00
36016	Swift's Red Steer 9-27-9—Guarantee	9.00	27.00	9.00	83.70
	Analysis	9.35	25.75	9.43	84.30
35519	Swift's Red Steer 18% Superphosphate—Guarantee	18.00	18.70	21.60	22.44
35650	Analysis	18.93	18.76	22.72	22.51
35674	Analysis	18.76	18.56	22.27	22.08
35961	Analysis	18.56	20.00	24.00	24.08
35212	Swift's Red Steer 20% Superphosphate—Guarantee	20.00	20.07	24.08	24.64
35516	Analysis	20.53	21.08	25.30	25.30
35662	Analysis	21.08	4.00	12.00	37.20
35078	Vigoro—Guarantee	4.00	12.00	4.00	37.20
35082	Analysis	4.15	11.63	4.42	37.94
35091	Analysis	4.22	11.81	4.53	38.60
35122	Analysis	4.18	12.91	4.31	39.47
35178	Analysis	4.31	12.00	4.11	38.73
	Analysis	4.31	13.32	4.07	40.26
Tedford Brothers, Aransas Pass, Texas—					
35128	Bat Guano—Guarantee	9.50	1.00	1.00	45.15
	Analysis	8.90	3.97	1.00	46.01
Temple Cotton Oil Company, North Little Rock, Arkansas.					
35866	Quapaw 3-10-3—Guarantee	3.00	10.00	3.00	29.10
	Analysis	2.95	9.31	3.02	28.07
Texas Chemical Company, Houston, Texas—					
35648	T. C. C. Powdered Raw Bone—Guarantee	3.75	*18.00	3.75	31.27
	Analysis	3.08	*15.96	3.75	26.63
35649	T. C. C. Raw Bone Meal—Guarantee	3.70	*22.00	3.70	34.25
	Analysis	3.90	*23.18	3.70	36.09
Texas Farm Bureau Service Corporation, Dallas, Texas—					
35116	Farm Bureau Fertilizer 0156—Guarantee	15.00	6.00	25.20	25.20
	Analysis	15.11	5.30	24.49	24.49
35498	Farm Bureau Fertilizer 3103—Guarantee	3.00	10.00	3.00	29.10
35500	Analysis	3.34	9.78	3.14	30.54
35741	Analysis	3.34	9.65	3.30	30.57
35862	Analysis	2.93	9.52	3.96	29.36
	Analysis	3.10	9.97	3.01	29.52
35426	Farm Bureau Fertilizer 484—Guarantee	4.00	8.00	4.00	32.40
35726	Analysis	4.06	9.14	4.03	34.08
	Analysis	3.94	8.30	4.16	32.68
35425	Farm Bureau Fertilizer 486—Guarantee	4.00	8.00	6.00	34.80
	Analysis	3.88	8.42	6.12	34.90
35497	Farm Bureau Fertilizer 4102—Guarantee	4.00	10.00	2.00	32.40
	Analysis	4.02	10.18	2.25	33.01
35495	Farm Bureau Fertilizer 4124—Guarantee	4.00	12.00	4.00	37.20
35718	Analysis	4.13	11.83	4.08	37.69
	Analysis	4.01	11.66	4.16	37.03
35139	Farm Bureau Fertilizer 6155—Guarantee	4.00	15.00	5.00	46.50
35729	Analysis	5.06	16.87	4.62	48.55
	Analysis	5.06	15.49	5.18	47.58
35138	Farm Bureau Fertilizer 6107—Guarantee	6.00	10.00	7.00	47.40
	Analysis	5.80	9.67	7.66	46.89
35482	Farm Bureau Fertilizer 6126—Guarantee	6.00	12.00	6.00	48.60
	Analysis	5.91	12.60	4.39	46.99
35115	Farm Bureau Fertilizer 6186—Guarantee	6.00	18.00	6.00	55.80
	Analysis	6.23	18.54	4.94	56.22

*Total phosphoric acid.

Table 8.—Analysis of commercial fertilizer, season 1929-30—(continued)

Laboratory number	Manufacturer, place of business, and brand	Nitrogen—per cent	Phosphoric acid—available—per cent	Potash—per cent	Valuation—per ton
Texas Farm Bureau Service Corporation, Dallas, Texas—Continued.					
35483	Farm Bureau Muriate of Potash—Guarantee.....			50.00	\$60.00
	Analysis.....			49.71	59.65
35117	Farm Bureau Nitrate of Soda 15.25%—Guarantee.....	15.25			68.63
	Analysis.....	16.27			73.22
35779	Farm Bureau Superphosphate 18%—Guarantee.....		18.00		21.60
	Analysis.....		18.36		22.03
35499	Farm Bureau Superphosphate 20%—Guarantee.....		20.00		24.00
35707	Analysis.....		21.42		25.70
35899	Analysis.....		21.57		25.88
	Analysis.....		21.37		25.64
Texas Fertilizer Company, Nacogdoches, Texas—					
	Lone Star Brand 3-10-3 Fertilizer—Guarantee.....	3.00	10.00	3.00	29.10
35254	Analysis.....	3.13	9.91	3.16	29.77
35486	Analysis.....	3.31	10.20	2.85	30.56
35492	Analysis.....	3.10	10.04	2.86	29.43
35504	Analysis.....	3.05	9.69	3.34	29.37
35667	Analysis.....	3.26	10.29	3.01	30.63
35677	Analysis.....	3.04	10.39	3.01	29.76
35700	Analysis.....	3.13	11.08	3.32	31.37
35710	Analysis.....	3.04	10.19	3.18	29.73
35712	Analysis.....	2.95	10.11	3.23	29.29
35920	Analysis.....	2.94	10.49	2.89	29.29
	Lone Star Brand 4-8-4 Fertilizer—Guarantee.....	4.00	8.00	4.00	32.40
35696	Analysis.....	4.10	9.05	3.71	33.76
35714	Analysis.....	4.02	8.40	4.03	33.01
35928	Analysis.....	3.76	8.45	3.89	31.73
35929	Analysis.....	4.00	8.33	3.61	32.33
	Lone Star Brand 4-12-4 Fertilizer—Guarantee.....	4.00	12.00	4.00	37.20
35253	Analysis.....	3.87	11.12	4.24	35.85
35491	Analysis.....	4.01	11.69	4.10	37.00
35664	Analysis.....	4.00	12.03	4.01	37.25
35699	Analysis.....	4.04	12.43	4.01	37.91
35705	Analysis.....	4.04	12.15	4.21	37.81
35715	Analysis.....	4.16	12.22	4.01	38.19
35933	Analysis.....	3.99	12.18	4.04	37.43
35921	Analysis.....	4.06	12.34	3.75	37.58
35487	Analysis.....	3.96	11.19	4.36	36.48
	Lone Star Brand 5-15-5 Fertilizer—Guarantee.....	5.00	15.00	5.00	46.50
35505	Analysis.....	5.05	14.60	5.22	46.51
35720	Analysis.....	5.05	14.63	5.10	46.41
35918	Analysis.....	5.00	14.69	5.00	46.13
	Lone Star Brand 6-9-3 Fertilizer—Guarantee.....	6.00	9.00	3.00	41.40
35494	Analysis.....	5.92	9.41	2.80	41.29
	Lone Star Brand 6-10-7 Fertilizer—Guarantee.....	6.00	10.00	7.00	47.40
35704	Analysis.....	6.01	10.54	6.45	47.44
	Lone Star Brand 6-12-6 Fertilizer—Guarantee.....	6.00	12.00	6.00	48.60
35493	Analysis.....	6.10	12.01	6.10	49.18
	Lone Star Brand 18% Superphosphate—Guarantee.....		18.00		21.60
35490	Analysis.....		19.50		23.18
35666	Analysis.....		19.08		22.90
35703	Analysis.....		19.31		23.17
	Lone Star Brand 20% Superphosphate—Guarantee.....		20.00		24.00
35488	Analysis.....		21.48		25.78
35702	Analysis.....		21.97		26.36
Texas Refining Company, Greenville, Texas—					
	Plant Food 3-10-3—Guarantee.....	3.00	10.00	3.00	29.10
35573	Analysis.....	2.95	10.46	3.34	29.84
	Plant Food 4-8-4—Guarantee.....	4.00	8.00	4.00	32.40
35574	Analysis.....	3.97	8.59	4.34	33.16

Table 8.—Analysis of commercial fertilizer, season 1929-30—(continued)

Laboratory number	Manufacturer, place of business, and brand	Nitrogen—per cent	Phosphoric acid—available—per cent	Potash—per cent	Valuation—per ton
	Thomas Self, Crockett, Texas—				
	Crockett 3-10-3—Guarantee.....	3.00	10.00	3.00	\$29.10
35453	Analysis.....	3.24	10.20	2.51	29.83
35902	Analysis.....	2.72	10.06	3.24	28.20
	Crockett 4-8-4—Guarantee.....	4.00	8.00	4.00	32.40
35454	Analysis.....	4.02	8.83	3.78	33.23
	Crockett 4-12-4—Guarantee.....	4.00	12.00	4.00	37.20
35272	Analysis.....	3.68	12.04	5.05	37.07
35452	Analysis.....	3.47	11.78	3.88	34.42
35901	Analysis.....	3.76	12.61	4.46	37.40
	Crockett 6-9-3—Guarantee.....	6.00	9.00	3.00	41.40
35457	Analysis.....	5.48	9.49	3.12	39.79
	Tri-State Fertilizer and Lumber Company, Inc., Shreveport, Louisiana—				
	Red Diamond 3-10-3 Fertilizer—Guarantee.....	3.00	10.00	3.00	29.10
35502	Analysis.....	3.35	6.34	3.30	26.65
35751	Analysis.....	3.40	8.76	3.25	29.71
	Red Diamond 4-8-4 Fertilizer—Guarantee.....	4.00	8.00	4.00	32.40
35765	Analysis.....	4.71	8.13	4.14	35.93
	Red Diamond 4-12-4 Fertilizer—Guarantee.....	4.00	12.00	4.00	37.20
35501	Analysis.....	4.44	11.90	4.31	39.43
35752	Analysis.....	4.52	11.82	4.61	40.05
	Red Diamond 10-0-10—Guarantee.....	10.00	.....	10.00	57.00
36007	Analysis.....	11.20	.....	8.25	60.30
	Red Diamond 20% Superphosphate—Guarantee.....	.....	20.00	.....	24.00
35503	Analysis.....	.....	19.01	.....	22.81
	Tyler Fertilizer Company, Tyler, Texas—				
	Eighteen Percent Superphosphate—Guarantee.....	.....	18.00	.....	21.60
35428	Analysis.....	.....	19.09	.....	22.91
35885	Analysis.....	.....	18.26	.....	21.91
	Heart Brand Fertilizer No. 3-10-3—Guarantee.....	3.00	10.00	3.00	29.10
35431	Analysis.....	3.10	10.63	3.13	30.47
35434	Analysis.....	2.89	10.76	3.26	29.83
	Heart Brand Fertilizer No. 4-8-4—Guarantee.....	4.00	8.00	4.00	32.40
35544	Analysis.....	4.08	8.54	4.35	33.83
35884	Analysis.....	3.67	8.83	4.09	32.03
35965	Analysis.....	3.54	8.98	4.02	31.53
	Heart Brand Fertilizer No. 4-10-0—Guarantee.....	4.00	10.00	.....	30.00
35186	Analysis.....	4.09	10.98	.....	31.59
	Heart Brand Fertilizer No. 4-10-2—Guarantee.....	4.00	10.00	2.00	32.40
35189	Analysis.....	3.85	9.60	2.26	31.56
	Heart Brand Fertilizer No. 4-12-4—Guarantee.....	4.00	12.00	4.00	37.20
35422	Analysis.....	3.86	11.31	4.30	36.10
35543	Analysis.....	4.06	11.82	4.08	37.35
35966	Analysis.....	3.72	12.85	3.70	36.60
	Heart Brand Fertilizer No. 6-9-3—Guarantee.....	6.00	9.00	3.00	41.40
35187	Analysis.....	5.40	8.67	3.03	38.34
35545	Analysis.....	6.01	9.73	2.77	42.05
	Heart Brand Fertilizer No. 6-12-6—Guarantee.....	6.00	12.00	6.00	48.60
35433	Analysis.....	5.93	12.75	5.72	48.85
	Heart Brand Fertilizer No. 6-18-6—Guarantee.....	6.00	18.00	6.00	55.80
35188	Analysis.....	5.95	16.85	4.80	52.76
	Virginia-Carolina Chemical Corporation, Shreveport, Louisiana—				
	Kainit—Guarantee.....	.....	.....	12.00	14.40
35412	Analysis.....	.....	.....	14.09	16.91
	V-C Big Giant Crop Grower—Guarantee.....	6.00	12.00	6.00	48.60
35859	Analysis.....	5.44	15.31	6.01	50.06
	V-C Blood, Bone & Potash—Guarantee.....	3.00	10.00	3.00	29.10
35402	Analysis.....	3.15	9.47	3.21	29.39
35626	Analysis.....	3.01	9.87	3.07	29.07

Table 8.—Analysis of commercial fertilizer, season 1929-30—(continued)

Laboratory number	Manufacturer, place of business, and brand	Nitrogen—per cent	Phosphoric acid—available—per cent	Potash—per cent	Valuation—per ton
Virginia-Carolina Chemical Corporation, Shreveport, Louisiana—Continued.					
	V-C 20th Century Guano—Guarantee	3.00	10.00	3.00	\$29.10
35339	Analysis	3.10	9.67	3.26	29.46
	V-C Early Trucker—Guarantee	4.00	8.00	4.00	32.40
35330	Analysis	4.03	8.25	4.09	32.95
35550	Analysis	3.82	8.43	3.75	31.81
	V-C Georgia State Grange—Guarantee	3.00	10.00	3.00	29.10
35448	Analysis	3.25	9.46	3.08	29.68
	V-C Good Luck Fertilizer—Guarantee	4.00	8.00	4.00	32.40
35393	Analysis	4.12	7.63	4.02	32.52
35447	Analysis	4.24	7.09	3.86	32.22
35476	Analysis	4.02	8.11	4.24	32.91
35586	Analysis	4.02	8.06	3.76	32.27
35727	Analysis	3.82	8.84	3.61	32.13
35748	Analysis	3.78	9.10	3.62	32.27
35934	Analysis	3.93	8.13	4.29	32.60
35936	Analysis	3.44	9.71	3.54	31.38
36000	Analysis	3.36	9.29	4.04	31.12
	V-C Indian Brand Fertilizer—Guarantee	4.00	12.00	4.00	37.20
35227	Analysis	4.40	11.04	4.14	38.02
35250	Analysis	4.37	10.97	4.23	37.91
35309	Analysis	4.28	11.16	4.23	37.73
35329	Analysis	4.50	11.16	4.16	38.63
35348	Analysis	4.51	11.04	4.22	38.61
35398	Analysis	4.09	11.42	3.77	36.63
35415	Analysis	4.62	11.14	4.22	39.22
35420	Analysis	4.52	10.51	3.81	37.52
35465	Analysis	4.49	11.55	4.16	39.06
35542	Analysis	4.30	11.61	4.01	38.09
35603	Analysis	4.27	11.70	4.35	38.48
35624	Analysis	3.65	12.22	4.19	36.12
35679	Analysis	4.03	11.96	4.06	37.36
35770	Analysis	3.65	12.86	3.32	35.84
	V-C Premium Fertilizer for Cotton—Guarantee	4.00	10.00	2.00	32.40
35670	Analysis	3.69	10.27	2.35	31.75
	V-C Prolific Cotton Grower—Guarantee	3.00	10.00	3.00	29.10
35218	Analysis	3.13	9.70	3.00	29.33
35249	Analysis	3.26	9.07	3.15	29.33
35349	Analysis	2.88	10.57	2.45	28.58
35397	Analysis	3.30	8.99	3.02	29.26
35421	Analysis	3.25	10.05	3.06	30.36
35639	Analysis	3.31	9.59	3.03	30.05
35713	Analysis	3.03	10.19	2.74	29.16
35724	Analysis	3.20	9.47	3.21	29.61
35730	Analysis	2.78	10.88	2.59	28.68
35769	Analysis	2.81	10.77	2.86	29.00
35856	Analysis	2.96	9.71	3.06	28.64
35860	Analysis	3.02	9.80	3.07	29.03
35930	Analysis	3.02	9.77	2.81	28.68
35991	Analysis	3.11	10.01	3.04	29.66
	V-C Stonewall High Grade Guano—Guarantee	3.00	10.00	8.00	35.10
35217	Analysis	3.05	9.43	9.10	35.97
35408	Analysis	3.29	9.88	8.27	36.59
35640	Analysis	3.52	10.31	6.99	36.60
	V-C 18% Superphosphate—Guarantee	18.00	18.00	18.00	21.60
35399	Analysis	18.53	18.53	18.53	22.24
35671	Analysis	19.15	19.15	19.15	22.98
	V-C 20% Superphosphate—Guarantee	20.00	20.00	20.00	24.00
35281	Analysis	20.33	20.33	20.33	24.39
35350	Analysis	19.60	19.60	19.60	23.52
35489	Analysis	18.37	18.37	18.37	22.04

Table 8.—Analysis of commercial fertilizer, season 1929-30—(continued)

Laboratory number	Manufacturer, place of business, and brand	Nitrogen—per cent	Phosphoric acid—available—per cent	Potash—per cent	Valuation—per ton
	Virginia-Carolina Chemical Corporation, Shreveport, Louisiana—Continued.				
35310	V-C Trucker's Special—Guarantee.....	4.00	8.00	6.00	\$34.80
	Analysis.....	4.17	8.01	5.31	34.75
35403	Analysis.....	4.07	8.10	3.23	34.32
35646	V-C Victor Rice Grower—Guarantee.....		20.00	6.00	31.20
	Analysis.....		20.07	5.62	30.82
	Volpe Brothers, Laredo, Texas, (for Vincente Farrara, Monterrey, N. L., Mexico)—				
35092	Bat Guano No. 2—Guarantee.....	6.40	8.00	.....	38.40
	Analysis.....	6.86	6.54	.....	38.72
	Miller C. Weaver, Corpus Christi, Texas—				
32402	Colloidal Mineral Phosphate—Guarantee.....	.....	*20.00	.....	.....
	Analysis.....	.....	*20.09	.....	.....

*Total phosphoric acid.