E108-7000—L180

TEXAS AGRICULTURAL EXPERIMENT STATION

A. B. CONNER, DIRECTOR
COLLEGE STATION, BRAZOS COUNTY, TEXAS

BULLETIN NO. 498 NOVEMBER, 1934

DIVISION OF CHEMISTRY

COMMERCIAL FERTILIZERS IN 1933-34

AGRICULTURAL AND MECHANICAL COLLEGE OF TEXAS
T. O. WALTON, President

STATION STAFF†

Administration:
A. B. Conner, M. S., Director
R. E. Karper, M. S., Vice Director
Clarice Mixon, B. A., Secretary
M. P. Holleman, Chief Clerk
J. K. Francklow, Asst. Chief Clerk
Chester Higgs, Executive Assistant
Howard Berry, B. S., Technical Asst.

Chemistry:
G. S. Fraps, Ph. D., Chief; State Chemist
S. E. Asbury, M. S., Chemist
J. F. Fudge, Ph. D., Chemist
E. C. Carlyle, M. S., Asst. Chemist
T. L. Ogier, B. S., Asst. Chemist
A. J. Sterges, M. S., Asst. Chemist
Ray Treichler, M. S., Asst. Chemist
W. H. Walker, Asst. Chemist
Velma Graham, Asst. Chemist
Jeanne F. DeMottier, Asst. Chemist
W. E. Merrill, M. S., Asst. Chemist
W. H. Garman, M. S., Asst Chemist

Horticulture:
S. H. Yarnell, Sc. D., Chief

Range Animal Husbandry:
J. M. Jones, A. M. Chief
B. L. Warwick, Ph. D., Breeding Investiga.
S. P. Davis, Wool and Mohair
J. H. Jones, B. S., Animal Husbandman

Entomology:
F. L. Thomas, Ph. D., Chief; State Entomologist
H. J. Reinhard, B. S., Entomologist
R. K. Fletcher, Ph. D., Entomologist
W. L. Owen, Jr., M. S., Entomologist
J. N. Roney, M. S., Entomologist
J. C. Gaines, Jr., M. S., Entomologist
S. E. Jones, M. S., Entomologist
F. F. Bibby, B. S., Entomologist
**E. W. Dunnam, Ph. D., Entomologist
**R. W. Moreland, B. S., Asst. Entomologist
C. E. Heard, B. S., Chief Inspector
C. J. Burgin, B. S., Foulbrood Inspector

Agronomy:
E. B. Reynolds, Ph. D., Chief
R. E. Karper, M. S., Agronomist
P. C. Mangelsdorf, Sc. D., Agronomist
D. T. Killough, M. S., Agronomist
J. T. Vantine, Jr., M. S., Asst. Agronomist
J. O. Beasley, M. S., Asst. Agronomist

Publications:
A. D. Jackson, Chief

Veterinary Science:
*M. Francis, D. V. M., Chief
H. Schmidt, D. V. M., Veterinarian
**F. P. Mathews, D. V. M., M. S., Veterinarian
J. B. Mims, D. V. M., Asst. Veterinarian

Plant Pathology and Physiology:
J. J. Taubenhaus, Ph. D., Chief
W. M. Ezekiel, Ph. D., Plant Pathologist

Farm and Ranch Economics:
L. P. Gabbard, M. S., Chief
W. E. Paulson, Ph. D., Marketing
C. A. Bonnen, M. S., Farm Management
‡**W. R. Nisbet, B. S., Ranch Management
**A. C. Magee, M. S., Ranch Management

Rural Home Research:
Jessie Whitacre, Ph. D., Chief
Mary Anna Grimes, M. S., Textiles
Sylvia Cover, Ph. D., Foods

Soil Survey:
**W. T. Carter, B. S., Chief
E. H. Templin, B. S., Soil Surveyor
J. W. Huckabee, B. S., Soil Surveyor

Botany:
V. L. Cory, M. S., Acting Chief

Swine Husbandry:
Fred Hale, M. S., Chief

Dairy Husbandry:
O. C. Copeland, M. S., Dairy Husbandman

Poultry Husbandry:
R. M. Sherwood, M. S., Chief
J. R. Couch, M. S., Assoc. Poultry Husb.
Paul D. Sturkie, B. S., Asst. Poultry Husb.

Agricultural Engineering:
H. P. Smith, M. S., Chief

Main Station Farm:
G .T. McNess, Superintendent

Apiculture (San Antonio):
H. B. Parks, B. S., Chief
A. H. Alex, B. S., Queen Breeder

Feed Control Service:
F. D. Fuller, M. S., Chief
James Sullivan, Asst. Chief.
S. D. Pearce, Secretary
J. H. Rogers, Feed Inspector
K. L. Kirkland, B. S., Feed Inspector
S. D. Reynolds, Jr., Feed Inspector
P. A. Moore, Feed Inspector
E. J. Wilson, B. S., Feed Inspector
H. G. Wickes, D. V. M., Feed Inspector

SUBSTATIONS

No. 1, Beeville, Bee County:
R. A. Hall, B. S., Superintendent

No. 2, Tyler, Smith County:
P. R. Johnson, M. S., Superintendent
**B. H. Hendrickson, B. S., Sci. in Soil Erosion
**R. W. Baird, M. S., Assoc. Agr. Engineer

No. 3, Angleton, Brazoria County:
R. H. Stansel, M. S., Superintendent
H. M. Reed, B. S., Horticulturist

No. 4, Jefferson County:
R. H. Wyche, B. S., Superintendent
**H. M. Beachell, B. S., Junior Agronomist

No. 5, Temple, Bell County:
Henry Dunlavy, M. S., Superintendent
C. H. Rogers, Ph. D., Plant Pathologist
H. E. Rea, B. S., Agronomist
**E. B. Deeter, B. S., Soil Erosion
**P. L. Hopkins, B. S., Junior Civil Engineer

No. 6 Denton, Denton County:
P. B. Dunkle, M. S., Superintendent
**I. M. Atkins, B. S., Junior Agronomist

No. 7, Spur, Dickens County:
R. E. Dickson, B. S., Superintendent
B. C. Langley, M. S., Agronomist

No. 8, Lubbock, Lubbock County:
D. L. Jones, Superintendent
Frank Gaines, Irrig. and Forest Nurs.

No. 9, Balmorhea, Reeves County:
J. J. Bayles, B. S., Superintendent

No. 10, College Station, Brazos County:
R. M. Sherwood, M. S., In Charge
L. J. McCall, Farm Superintendent

No. 11, Nacogdoches, Nacogdoches County:
H. F. Morris, M. S. Superintendent

No. 12, Chillicothe, Hardeman County:
**J. R. Quinby, M. S. Superintendent
**J. C. Stephens, M. A., Asst. Agronomist

No. 14, Sonora, Sutton-Edwards Counties:
W. H. Dameron, B. S., Superintendent
I. B. Boughton, D. V. M., Veterinarian
W. T. Hardy, D. V. M., Veterinarian
O. L. Carpenter, Shepherd
**O. G. Babcock, B. S., Asst. Entomologist

No. 15, Weslaco, Hidalgo County:
W. H. Friend, B. S., Superintendent
S. W. Clark, B. S., Entomologist
W. J. Bach, M. S., Plant Pathologist
J. F. Wood, B. S., Horticulturist

No. 16, Iowa Park, Wichita County:
C. H. McDowell, B. S., Superintendent
L. E. Brooks, B. S., Horticulturist

No. 19, Winterhaven, Dimmit County:
E. Mortensen, B. S., Superintendent
**L. R. Hawthorn, M. S., Horticulturist

Members of Teaching Staff Carrying Cooperative Projects on the Station:

G. W. Adriance, Ph. D., Horticulture
S. W. Bilsing, Ph. D., Entomology
D. Scoates, A. E., Agricultural Engineering
A. K. Mackey, M. S., Animal Husbandry
R. G. Reeves, Ph. D., Biology
J. S. Mogford, M. S., Agronomy
F. R. Brison, M. S., Horticulture
W. R. Horlacher, Ph. D., Genetics
J. H. Knox, M. S., Animal Husbandry
A. L. Darnell, M. A., Dairy Husbandry

*Dean, School of Veterinary Medicine.
**In cooperation with U. S. Department of Agriculture.
‡In cooperation with Texas Extension Service.
†As of October 1, 19

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 1933-34 were 47,204 tons. In 1932-33 they were 30,843 tons. In 1931-32 they were 33,406 tons, all exclusive of cottonseed meal sold as a feed but used as a fertilizer. Sales of fertilizer increased about 70 per cent. Practically all the sales of mixed fertilizers were confined to about 20 analyses. A table is given which shows the approximate sales by counties for 1926 to 1933.

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

Tables are given showing the extent to which the various fertilizer manufacturers met or exceeded their guarantees. The cost of fertilizer was more in 1933-1934 than in 1932-33.

CONTENTS

BULLETIN NO. 498 NOVEMBER, 1934

COMMERCIAL FERTILIZERS IN 1933-34

G. S. FRAPS, AND S. E. ASBURY

Fertilizer laws require fertilizer to be correctly labelel so that the purchaser can know what he is getting. The object of the fertilizer law is to protect the farmer or other users of fertilizer against misrepresentation of the composition or fertilizing value of the fertilizer and manufacturers and dealers against unfair competition due to such misrepresentation.

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 thirty-second Fertilizer Control Bulletin. It contains statistics, suggestions as to the use of fertilizer, and 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 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. Since nitrogen is used in comparatively large quantities by plants and is, to some extent, washed from the soil, it is usually the first element to become depleted from a fertile soil.

Available phosphoric acid is the phosphoric acid in fertilizers which can be taken up quickly by plants. Phosphoric acid promotes the fruiting of plants, though it is also 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 basic slag.

Potash guaranteed in a fertilizer is required by the law 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 likely to promote growth of the stalk and leaves at the expense of the fruit. When potash is abundantly supplied, plants may take up more than they need. Potash is present in soils more abundantly than phosphoric acid.

Valuation per ton represents the approximate average cost of the plant food in the unmixed fertilizer, at retail. It is usually less than the price at which the mixed fertilizer is sold, but since it is an average, it may be

more than the price of some of the unmixed fertilizer ingredients. The selling price includes cost of mixing, bags, transportation, the profit of the manufacturers if any and that of the dealer. The valuations are decided on about September 1, and the prices often change before the chief active fertilizer season, which is February to April in Texas. The valuation sums the value of the three plant foods shown in the analysis into a single figure and is convenient for this purpose. The fertilizer law permits a deficiency of less than ten per cent in one plant food to 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 guarantee as a whole. The following valuations were used in 1933-34.

	Cents per pound
Nitrogen	12.0
Available phosphoric acid	5.5
Total phosphoric acid in Thomas phosphate, tankage, and bone meal	3.6
Total phosphoric acid in rock phosphate	1.3
Potash	5.5

Information on the Fertilizer Bag and Tag

A fertilizer tax tag is required to be placed 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 the tag attached to the bag. Total Phosphoric acid may be guaranteed for bone or tankage instead of available phosphoric acid. A guarantee of total phosphoric acid is required in Thomas phosphate or rock phosphate. 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

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, and the third for the percentage of water-soluble potash. For example, a 4-8-4 fertilizer contains 4 per cent of nitrogen, 8 per cent of available phosphoric acid, and 4 per cent of potash.

How to Calculate the Valuation

The valuation of a 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 nitrogen is 12 cents a pound, the valuation of a unit is $12 \times 20 = \$2.40$. The valuation of a unit of available phosphoric acid at 5.5 cents a pound would be $5.5 \times 20 = \$1.10$; the valuation of a unit of potash at 5.5 cents a pound

would be $1.10. The following is an example of a calculation at the prices given above:

Valuation of 4-8-4 fertilizer

Nitrogen	4 x $2.40	= $9.60
Available phosphoric acid	8 x $1.10	= $8.80
Potash	4 x $1.10	= $4.40
Total valuation per ton		$22.80

QUANTITY SOLD

The quantities of commercial fertilizers sold in Texas for several seasons, from September 1 to August 31, are given in Table 1. These are the actual

Table 1. Fertilizers sold in Texas, (not including cottonseed meal sold as feed but used as fertilizer).

	Tons
1905-06	13,500
1910-11	52,985
1913-14	77,400
1914-15	17,500
1917-18	58,000
1918-19	46,000
1919-20	56,700
1920-21	14,850
1921-22	33,000
1922-23	73,300
1923-24	126,179
1924-25	97,719
1925-26	121,747
1926-27	79,863
1927-28	139,126
1928-29	187,215
1929-30	138,917
1930-31	64,424
1931-32	33,406
1932-33	30,843
1933-34	47,204

sales as reported by the manufacturers, and not the tag sales. The tag sales are always a little larger than the actual sales. The sales in 1933-34 were about 70 per cent larger than of those for last season. The largest sales so far 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.

Quantity of Sales by Grades

Table 2 contains the sales of fertilizer by grades for four seasons, arranged in order according to sales in the season of 1933-34. Sales of 4-8-4 fertilizer are highest of all in 1933-34. The 4-12-4 comes second, the 4-8-6 comes third, and the 18 per cent superphosphate comes fourth.

Quantity of Cottonseed Meal Used as a Fertilizer

The tonnage of cottonseed meal reported in Table 2 includes only that tagged with fertilizer tax tags and sold as a fertilizer. Considerable quantities of cottonseed meal tagged with feed tags and sold as feed are used as fertilizer. No estimate of these sales has been made for 1934, but

the amount used as fertilizer was probably less than last season. It wa
perhaps equal to, or a little lower than, the tonnage of superphosphate

Table 2. Fertilizer sales by grades in order of tonnage for 1933-34.

	1933-34	1932-33	1931-32	1930-31
4-8-4	7,866	3,884	3,661	8,888
4-12-4	6,443	3,156	3,370	8,710
4-8-6	5,803	2,749	3,409	6,046
Superphosphate, 18%	4,858	4,373	6,505	10,149
6-10-7	3,951	2,060	2,234	3,456
3-10-3	3,579	1,761	1,578	7,056
6-12-6	3,380	2,494	2,122	3,301
Superphosphate, 20%	2,022	1,982	1,637	2,885
Nitrate of soda, 15% and 16%	1,116	624	726	1,299
Bone meal	1,052	498	696	428
5-15-5	868	606	1,091	2,066
Sulphate of ammonia, 20%	799	801	1,039	770
4-10-0	756	497	554	646
Tankage and activated sludge	695	1,680	362	.....
4-10-7	642	211	315	686
Cyanamid	550	169	121	176
11-48-0	265	104	155	.....
6-9-3	258	148	152	542
16-20-0	220	445	261	232
Muriate of potash, 48%	198	178	284	222
9-18-18	197	200	392	727
Cottonseed meal	191	668	574	1,266
4-8-10	186	110	52	.....
Kainit, 20%	180	180	87	78
6-18-6	180	39	53	324
10-20-10	161	151	247	375
Kainit, 14%	122	130	67	.....
Miscellaneous mixed fertilizer (lawn and garden)	105	94	292	369
Calcium nitrate	80	93	50	23
8-24-8	65	46	127	352
Sulphate of potash, 48%	64	15	7	4
Miscellaneous unmixed fertilizer	58	24	44	92
Superphosphate, 45%	56	34	12	62
10-10-0	53	.....	.....	.....
10-0-10	51	26	24	10
Soft phosphate with colloidal clay	40	42	.....	125
0-15-6	25	23	107	452
10-30-10	25	2	8	22
9-27-9	22	7	42	86
3-10-8	16	223	309	1,065
0-12-4	4	0	196	.....
10-20-0	2	6	.....	.....
4-10-2	.....	156	134	511
12-24-12	.....	121	40	3
20-20-0	.....	33	23	35
3-10-1	.....	.....	118	.....
10-20-20	.....	.....	100	20
Kainit, 12%	.....	.....	28	.....
15-30-15	.....	.....	1	8
5-10-10	.....	.....	.....	377
11-46-0	.....	.....	.....	230
Kainit, 14% and 12%	.....	.....	.....	140
Basic slag	.....	.....	.....	94
10-5-5	.....	.....	.....	16
Total	47,204	30,843	33,406	64,424

COMPOSITION AND SELLING PRICE OF DIFFERENT GRADES OF FERTILIZER

Table 3 contains the average composition, the guaranteed valuation, the valuation found by analyses, and the average retail selling price per ton, o

various grades of fertilizers. The average retail selling price is the average of the cash retail prices as furnished to the fertilizer inspector by the dealers. The prices of the same fertilizer may be different in different towns

Table 3. Average composition, valuation, and selling price of grades of fertilizer, 1933-34.

Grade	Number averaged	Nitrogen per cent	Available phosphoric acid per cent	Potash Per cent	Guaranteed valuation per ton	Valuation found per ton	Selling price per ton
0-12-4	1		11.55	4.08	17.60	17.20	24.80
0-15-6	1		14.49	5.71	23.10	22.22	30.00
3-10-3	78	3.11	10.17	3.15	21.50	22.12	27.85
4-8-4	139	4.00	8.36	4.16	22.80	23.37	28.90
4-8-6	87	4.07	8.31	5.93	25.00	25.44	30.64
4-8-10	6	3.93	8.94	9.13	29.40	29.31	33.78
4-10-0	9	4.15	10.15		20.60	21.14	26.68
4-10-7	13	4.11	10.13	7.40	28.30	29.15	32.85
4-12-4	125	4.08	12.21	4.19	27.20	27.84	33.18
5-15-5	14	5.19	14.47	5.23	34.00	34.13	38.03
6-4-1	1	5.71	4.19	1.59	19.90	20.06	42.00
6-9-3	11	5.75	9.40	3.25	27.60	27.72	32.30
6-10-7	76	5.94	10.46	6.93	33.10	33.37	36.35
6-12-6	62	6.00	12.23	6.07	34.20	34.54	37.54
6-18-6	2	6.00	17.80	6.28	40.80	40.88	43.85
8-24-8	2	8.12	22.55	8.74	54.40	53.90	55.95
9-18-18	3	9.13	18.14	17.62	61.20	61.25	61.63
9-27-9	1	8.74	27.14	9.59	61.20	61.38	60.75
10-0-10	2	10.47		9.39	35.00	35.46	40.00
10-6-4	2	9.56	6.98	3.94	35.00	34.93	67.50
10-10-0	3	10.03	10.37		35.00	35.49	37.60
10-20-10	5	9.95	17.43	10.54	57.00	56.62	59.60
16-20-0	5	16.51	20.76		60.40	62.46	58.06
Cyanamid	4	21.85			52.80	52.43	41.78
Bat guano	1	9.70	3.61		20.85	27.25	25.00
Calcium nitrate (nitrate of lime)	1	15.19			36.00	36.46	45.00
Ammonium sulphate	3	21.09			49.92	50.61	53.00
Hu-Actinite 5.5-2.0-0	1	5.30	2.79		15.40	15.79	20.00
Milorganite 5-2-0	1	6.44	2.70		14.20	18.43	45.00
Muriate of potash	8			48.90	52.80	53.80	50.36
Nitrate of soda, 15%	10	16.04			36.00	38.50	40.68
Nitrate of soda, 16%	17	16.13			38.40	38.71	39.45
Raw bone meal fertilizer	4	4.14	22.53*		24.72	26.16	24.73
Soft phosphate with colloidal clay	1		23.83*		5.20	6.20	25.00
Sulphate of ammonia	23	20.05			48.00	48.13	41.27
Sulphate of potash	1			45.90	52.80	50.49	
Superphosphate, 18%	71		18.65		19.80	20.52	23.34
Superphosphate, 20%	39		20.26		22.00	22.28	25.17
Cottonseed meal and fertilizer	2	6.79	2.40	1.79	19.26	20.91	26.50
Kainit, 20%	7			21.00	22.00	23.10	26.12

*Total phosphoric acid.

on account of differences in cost of transportation or for other causes. The retail price includes handling costs, carrying charges, and the dealer's profits, as well as the cost of the plant food used in the material from which the fertilizer is made.

The first column of Table 3 contains the guaranteed analyses. Average analyses which are below the guarantee are in heavy type. The valuation found exceeds the valuation guaranteed in almost every case. The exceptions are 0-12-4, 0-15-6, 4-8-10, 8-24-8, 10-6-4, 10-0-10, 10-20-10, cyanamid, and sulphate of potash. In all of these, however, the valuations found are only slightly below the valuations guaranteed.

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 given in Table 3 and the guaranteed composition.

Table 4. Approximate average cost of plant food in cents per pound, arranged in order of increasing cost, 1933-34.

	Nitrogen	Available phosphoric acid	Potash
Cyanamid	9.49		
Sulphate of ammonia	10.32		
16-20-0	11.53	5.29	
Muriate of potash			5.25
9-27-9	11.92	5.46	5.46
Raw bone meal fertilizer	12.00	3.60*	
9-18-18	12.09	5.54	5.54
Nitrate of soda, 16%	12.33		
8-24-8	12.33	5.57	5.57
Ammonium sulphate	12.75		
10-20-10	12.55	5.76	5.76
10-10-0	12.90	5.59	5.59
6-18-6	12.90	5.59	5.59
6-12-6	13.18	6.04	6.04
6-10-7	13.18	6.04	6.04
5-15-5	13.43	6.15	6.15
Nitrate of soda, 15%	13.56		
4-10-7	13.93	6.39	6.39
10-0-10	13.72		6.29
Superphosphate, 20%		6.29	
Superphosphate, 18%		6.49	
4-8-10	13.79	6.32	6.32
6-9-3	14.04	6.43	6.43
Bat guano	14.39	6.60	
Kainit, 20%			6.53
4-12-4	14.64	6.71	6.71
4-8-6	14.71	6.75	6.75
Calcium nitrate (nitrate of lime)	15.00		
4-8-4	15.02	6.98	6.98
3-10-3	15.54	7.13	7.13
4-10-0	15.54	7.13	
Hu-Actinite 5.5-2.0-0	15.58	7.14	
Cottonseed meal and fertilizer	16.51	7.57	7.57
0-15-6		7.15	7.15
0-12-4		7.75	7.75
10-6-4	23.15	10.61	10.61
Milorganite 5-2-0	38.03	17.43	
Soft phosphate with colloidal clay		6.24*	

*Total phosphoric acid.

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 particular locality, but represent averages only, and are for purposes of comparison. The prices were collected by the inspectors from retail merchants handling fertilizer. Grades used extensively near the factories would average a lower price than those used at a distance, on account of lower transportation costs. The fertilizers with the lowest prices of plant food are given first.

Cost of nitrogen. Cyanamid was the cheapest source of nitrogen; sulphate of ammonia was next; and 16-20-0 came third. The milorganite was

the most expensive source of nitrogen; 10-6-4 came next, followed by cottonseed meal. Nitrogen is nitrate of soda (15%) cost about 15.56 cents a pound compared with 10.32 cents a pound for that in sulphate of ammonia. Nitrogen costs more in the mixed fertilizers than in sulphate of ammonia or cyanamid, as the cost of mixing entered into the cost. Nitrogen in several of the mixed fertilizers cost less than in nitrate of soda. The lowest-priced nitrogen in the mixed fertilizer was in the 16-20-0, followed in order by the 9-27-9, 9-18-18, and 8-24-8. Nitrogen was higher in price than last season, the difference averaging 1.64 cents a pound for nitrogen in sulphate of ammonia, 0.59 cents for nitrate in 16% nitrate of soda, 1.56 cents for that in 3-10-3, and 1.62 cents for that in 4-12-4.

Cost of phosphoric acid. The cheapest source of phosphoric acid was in 16-20-0, then 9-27-9, followed by raw bone meal. The cost of available phosphoric acid was about 0.20 cents less per pound in 20 per cent superphosphate than in 18 per cent. Phosphoric acid was most expensive in milorganite, then in 10-6-4 and then in 0-12-4. Available phosphoric acid was 0.23 cents a pound higher in 4-12-4 than it was last season, and 0.72 cents a pound higher in 3-10-3 than last year.

Cost of Potash. Muriate of potash was the cheapest form of potash, and 10-6-4 the most expensive. Potash cost more than during the previous season. The difference was .01 cents a pound less for potash in muriate of potash, 1.30 cents a pound more in 3-10-3, and 1.27 cents a pound more in 4-12-4.

Relation of Cost to Concentration of Fertilizers

Certain fertilizers are sold which contain the plant food in the same proportions, so that so far as the nitrogen, phosphoric acid, and potash are concerned they are the same fertilizer except in concentration, or strength.

The ratio 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

Table 5. Relative cost of approximately the same amount of plant food in different grades of fertilizer (1933-34)

Grade	Available phosphoric acid	Nitrogen	Potash	Cost
Group 1	pounds	pounds	pounds	
1.2 tons—5-15-5	360	120	120	$45.64
1.5 tons—4-12-4	*360*	*120*	*120*	*$49.77*
2 tons—3-10-3	*400*	*120*	*120*	*$55.70*
Group 2				
1 ton—6-12-6	240	120	120	$37.54
1.5 tons—4-8-4	240	120	120	$43.35

cost of nearly equal quantities of plant food in these fertilizers at the average prices given in Table 3. The plant food in 1.5 tons of 4-12-4 costs $4.13 more than an equal quantity in 5-15-5. The two tons of 3-10-3 cost $5.93 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 $2.20, the plant food in

3-10-3 costs about $3.73 more. 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. The higher cost of manufacture of the more concentrated fertilizers is frequently more than offset by the cost of freight, bags, etc. Phosphoric acid averaged cheaper in 20 per cent superphosphate than in 18 per cent.

Comparing Costs of Fertilizer

The relative money value of two or more kinds of fertilizer may be roughly compared by dividing the price at which the fertilizer is sold per ton by the valuation per ton of the fertilizer. Guaranteed valuations for many grades for the season of 1933-34 are given in Table 3, and while the valuations for 1934-35 may be somewhat different, these valuations may be used for comparative purposes. For example, if a 4-8-4 fertilizer sells for $29.00 a ton and a 6-12-6 fertilizer for $34.00, which is cheaper? Using the valuations from Table 3, for 4-8-4, the selling price, $25.00, divided by the valuation, $22.80, gives 1.27; for 6-12-6, the selling price, $34.00, divided by the valuation $34.20 gives 0.99. Thus one dollar of valuation costs $1.27 in 4-8-4, and $0.99 in 6-12-6; therefore the 6-12-6 is cheaper. Similar calculations may be made for other grades and other prices.

Of course the suitability of the fertilizer to the soil and crop must be considered in addition to the relative cheapness of the plant food.

Fertilizer Analyses to be Sold in 1934-35

The grades of fertilizer sold in Texas are limited in number. This standardization aids the farmer to become familiar with the different kinds of fertilizer, enables him to decide more readily on the proper kind to be used, enables the agricultural worker to make definite recommendations and reduces the cost of manufacture and handling, thereby also reducing the cost to the consumer. At a conference with fertilizer manufacturers doing business in Texas, Louisiana, Mississippi, and Arkansas, grades of mixed fertilizer were adopted for these states. This was the tenth such conference for Texas manufacturers, and the second joint conference.

The analyses of mixed fertilizer adopted for sale in Texas in 1934-35 are given in Table 6.

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 and 9-27-9, that it is 1 to 2 in 4-8-4, 6-12-6, and 10-20-10.

FREE ANALYSIS

Purchasers of commercial fertilizers for their own use (but not for sale) can secure a free analysis of a sample. Those who desire the free analysis of a sample of commercial 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

and the law requires it to be taken in a certain way so that a fair sample is taken. If the sample is not properly taken, it does not represent the lot of fertilizer sampled, and the analysis may be better or poorer than the

Table 6. Grades of mixed fertilizer listed to be sold in Texas, Louisiana, Mississippi, and Arkansas during 1934-5 adopted at a joint meeting July 14, 1934.

Texas	Louisiana	Mississippi	Arkansas
0-12-4	0-12-4	--	0-12-4
--	--	--	2-10-2
--	--	--	2-12-2
--	0-14-10	--	--
--	--	--	2-12-6
0-15-6	0-15-6	--	--
--	--	3-8-5	--
--	3-8-10	--	--
3-10-3	3-10-3	3-10-3	3-10-3
--	3-10-5	--	--
4-8-4	4-8-4	4-8-4	4-8-4
4-8-6	4-8-6	4-8-6	4-8-6
--	--	4-8-8	--
4-8-10	4-8-10	--	4-8-10
4-10-0	--	--	--
4-10-7	4-10-7	4-10-7	--
4-12-4	4-12-4	4-12-4	4-12-4
--	4-12-8	--	--
--	5-8-8	--	--
5-15-5	5-15-5	5-15-5	5-15-5
--	--	6-6-6	--
--	--	6-8-4	--
--	--	--	6-8-12
6-9-3	6-9-3	--	--
6-10-7	6-10-7	6-10-7	6-10-7
6-12-6	6-12-6	6-12-6	6-12-6
6-18-6	--	--	--
--	8-8-0	--	--
--	8-8-8	--	--
8-24-8	--	--	--
9-18-18	--	--	--
9-27-9	--	--	--
10-0-10	10-0-10	10-0-10	10-0-10
10-10-0	--	--	--
10-20-10	10-20-10	10-20-10	10-20-10
11-48-0	11-48-0	11-48-0	11-48-0
15-0-0	15-0-0	15-0-0	15-0-0
16-20-0	16-20-0	16-20-0	16-20-0

goods actually are. This privilege of a free analysis applies only to fertilizers tagged and sold under the fertilizer law, and to samples properly taken so that they represent the goods sampled.

ANALYSIS OF FERTILIZERS, 1933-34

Table 9, near the end of this Bulletin, contains a list of the samples of fertilizer subjected to analysis in the season beginning September 1, 1933. Analyses below guarantee are brought out in heavy type. Practically all 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, C. M. Pounders, and Russell Smith.

Relation of Valuation Guaranteed to Valuation Delivered

Table 7 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 ar included as well as mixed fertilizers.

Table 7. Average valuation of all fertilizers, guaranteed and found in dollars a ton.

	Number averaged	No. of samples more than 4 per cent below guarantee	Valuation	
			Guaranteed	Found
American Cyanamid Company	9	0	$57.02	$58.00
Arkansas Fertilizer Company	4	0	23.58	24.38
Armour Fertilizer Works	108	2	28.20	28.80
The Barrett Company	7	0	38.40	38.92
Bryan Cotton Oil & Fertilizer Company	10	1	25.85	26.73
Campbell Fertilizer Company	4	0	23.43	25.46
Chilean Nitrate Sales Corporation	4	0	37.80	38.59
Davison-Pick Fertilizers, Inc.,	27	2	25.27	25.45
East Texas Cotton Oil Company	22	0	26.94	27.99
Farmers Cotton Oil Company	11	0	24.08	25.08
Federal Chemical Company, Inc.	43	3	25.22	25.91
Fidelity Chemical Corporation	38	0	29.51	30.37
Ford Motor Company	3	0	49.92	50.61
Gilmer Cotton Oil & Fertilizer Company	4	0	24.13	25.32
David Hardie Seed Company	2	0	31.10	32.04
City of Houston	1	0	15.40	15.79
International Agricultural Corporation	46	1	26.38	26.90
Jefferson Cotton Oil Company	1	0	19.80	20.89
Kelly-Weber & Company, Inc.	13	0	22.59	22.65
La-Tex Fertilizer Company	12	2	25.75	25.88
Longview Cotton Oil Company	15	0	26.20	27.29
Marshall Cotton Oil Company	25	1	26.10	26.04
Milwaukee Sewerage Commission	1	0	14.20	18.43
Mixson Brothers	10	0	27.99	29.15
Ney Brothers	1	0	20.85	27.25
Robert Nicholson Seed Company	2	0	31.10	31.68
Oil Mill & Fertilizer Works	20	1	26.22	26.14
Palestine Oil Mill & Fertilizer Company	74	8	27.49	27.83
Pate Brothers Fertilizer Works	20	2	26.85	28.04
Pittsburg Cotton Oil Company	28	2	24.15	24.43
Shreveport Fertilizer Works	42	4	25.49	25.28
Smith County Cotton Oil & Fertilizer Co.	7	0	23.63	24.90
Swift & Company Fertilizer Works	155	10	30.27	30.48
Synthetic Nitrogen Products Corporation	1	0	36.00	36.46
Temple Cotton Oil Company	3	0	25.00	24.53
Texas Chemical Company	3	0	24.72	26.12
Texas Co-Operatives Inc.	5	0	30.70	31.40
Texas Farm Products Company	65	4	28.72	28.98
Tyler Fertilizer Company	37	2	28.41	28.86
Traders Oil Mill Company	1	0	19.90	20.06
Tri-State Fertilizer & Lumber Company	7	0	30.17	31.90
United Chemical Company	3	0	29.77	29.78
Virginia-Carolina Chemical Corp.	47	2	24.31	24.67
Miller C. Weaver	1	0	5.20	6.20

Table 8 contains the average guaranteed analyses, and the avera analyses found for mixed fertilizers sold by the various manufacture The averages in these tables do not include superphosphate, nitrate of so and other fertilizer materials, but only the mixed fertilizers.

AVERAGES BELOW GUARANTEE

Whenever any lot of fertilizer is 4 per cent or more below guarant the law requires all persons who have sold this lot of fertilizer to ma good the deficiency to all purchasers. The rebate is paid by the man

Table 8. Average composition of mixed fertilizer, guaranteed and found.

	Number averaged	Nitrogen per cent		Phosphoric acid per cent		Potash per cent		Valuation per ton	
		Guarantee	Found	Guarantee	Found	Guarantee	Found	Guarantee	Found
Arkansas Fertilizer Company	4	3.75	3.84	8.50	8.67	4.75	5.11	23.58	24.38
Armour Fertilizer Works	91	4.47	4.58	10.88	11.08	4.97	4.96	28.16	28.63
Bryan Cotton Oil & Fertilizer Company	8	4.13	4.20	11.25	12.21	4.13	3.94	26.81	27.84
Campbell Fertilizer Company	3	4.00	4.36	8.67	8.31	5.00	6.71	24.63	26.99
Davison-Pick Fertilizers, Inc.	19	4.21	4.16	9.89	10.19	4.42	4.49	25.85	26.13
East Texas Cotton Oil Company	15	4.07	4.19	9.87	10.09	4.40	4.97	25.45	26.63
Farmers Cotton Oil Company	8	4.00	3.97	9.75	10.15	4.88	5.61	25.69	26.85
Federal Chemical Company, Inc.	39	4.21	4.25	9.31	9.78	4.46	4.52	25.24	25.93
Fidelity Chemical Corporation	26	5.27	5.50	11.42	11.85	5.81	5.60	31.60	32.38
Gilmer Cotton Oil & Fertilizer Company	4	3.75	3.93	9.50	10.12	4.25	4.33	24.13	25.32
David Hardie Seed Company	2	7.00	6.95	9.00	9.51	4.00	4.48	31.10	32.04
International Agricultural Corp.	31	4.03	4.02	9.81	9.99	4.35	4.47	25.25	25.54
Kelly, Weber & Company, Inc.	6	3.67	3.80	11.00	10.82	4.50	4.43	25.85	25.89
La-Tex Fertilizer Company	11	4.45	4.35	9.09	9.59	5.09	4.92	26.29	26.39
Longview Cotton Oil Company	9	4.44	4.47	9.89	10.54	4.33	4.30	26.31	27.04
Marshall Cotton Oil Company	21	4.52	4.40	9.95	10.14	4.81	4.78	27.10	26.97
Mixon Brothers	7	3.71	3.63	10.00	10.25	4.14	4.68	24.47	25.14
Robert Nicholson Seed Company	2	7.00	6.80	9.00	9.25	4.00	4.71	31.30	31.68
Oil Mill & Fertilizer Works	17	4.24	4.08	9.71	9.95	4.41	4.51	25.69	25.69
Palestine Oil Mill & Fertilizer Company	59	4.56	4.51	10.29	10.24	4.90	5.16	27.65	27.76
Pate Brothers Fertilizer Works	18	4.11	4.29	9.83	10.29	4.78	5.20	25.94	27.32
Pittsburg Cotton Oil Company	22	3.91	3.95	9.18	9.33	5.14	5.03	25.13	25.28
Shreveport Fertilizer Works	35	4.09	4.23	9.26	9.44	4.51	4.72	24.95	25.73
Smith County Cotton Oil & Fertilizer Company	6	4.00	4.15	9.00	9.63	4.33	4.55	24.27	25.57
Swift & Company Fertilizer Works	129	4.84	4.86	10.82	11.05	5.36	5.39	29.40	29.75
Temple Cotton Oil Company	3	4.00	3.95	9.33	8.96	4.67	4.73	25.00	24.53
Texas Co-Operatives, Inc.	3	5.33	5.34	9.00	9.27	4.67	4.66	27.83	28.16
Texas Farm Products Company	47	4.85	4.86	9.87	10.14	4.64	4.62	27.60	27.91
Traders Oil Mill Company	1	6.00	5.71	4.00	4.19	1.00	1.59	19.90	20.06
Tri-State Fertilizer & Lumber Company	5	4.80	4.91	9.60	9.29	6.00	7.97	28.68	30.76
Tyler Fertilizer Company	31	4.87	4.86	8.77	9.09	6.16	6.13	28.12	28.39
United Chemical Company	2	6.00	6.02	11.00	11.24	6.50	6.61	33.65	34.08
Virginia-Carolina Chemical Corp.	38	4.03	4.04	9.53	9.77	4.61	4.70	25.21	25.61

facturer to the dealer and by the dealer to the customer. The number of lots on which rebates were paid by each manufacturer is shown in Table 6.

SALES BY COUNTIES

Table 8A contains sales by counties as reported by manufacturers for 1926-1933. A similar table for previous years is given in Bulletin 350. This table is not strictly correct, for some sales were not reported, and there also may be some duplications, but it gives some information as to where fertilizer is sold in Texas.

Table 8A. Approximate sales of fertilizer in tons, by counties, 1926-1933.

County	1926-27	1927-28	1928-29	1929-30	1930-31	1931-32	1932-33
Anderson	479	1216	1864	1457	628	508	470
Angelina	1107	2046	3133	1945	806	617	557
Aransas	87	52	37	32	6	6	5
Archer	1	-----	-----	5	-----	-----	-----
Atascosa	456	753	977	632	348	313	213
Austin	385	500	486	311	256	84	59
Bailey	-----	-----	-----	-----	1	-----	-----
Bastrop	87	86	192	123	112	43	16
Bee	21	22	73	61	90	20	41
Burnet	55	-----	-----	-----	-----	-----	-----
Bell	-----	25	4	62	17	2	1
Baylor	-----	1	1	-----	-----	-----	-----
Bexar	144	269	400	300	146	241	143
Bosque	-----	1	-----	-----	-----	-----	-----
Bowie	3180	5967	6687	4598	1134	273	305
Bandera	-----	-----	-----	-----	-----	1	-----
Brazoria	186	361	384	265	213	56	56
Brazos	117	173	326	464	334	58	154
Brewster	-----	-----	-----	10	2	-----	-----
Briscoe	-----	-----	-----	-----	1	-----	-----
Brooks	48	83	197	245	249	263	151
Brown	5	18	29	7	4	1	1
Burleson	176	327	625	349	123	31	1
Callahan	18	4	20	1	37	1	2
Caldwell	73	82	33	46	8	33	3
Calhoun	19	-----	13	22	19	5	-----
Cameron	177	482	904	1529	833	573	548
Camp	648	800	1114	1103	1347	271	305
Cass	5452	9047	10738	8907	2788	645	347
Castro	-----	-----	-----	35	-----	-----	-----
Cottle	-----	2	-----	-----	-----	-----	-----
Chambers	252	121	194	191	232	453	464
Cherokee	3498	6194	8751	6817	3035	2412	1576
Childress	-----	3	3	6	1	-----	-----
Clay	-----	3	16	44	1	1	1
Colorado	-----	199	161	264	563	455	411
Coleman	-----	1	50	17	4	1	-----
Collin	-----	56	3	1	-----	-----	19
Collingsworth	-----	-----	-----	-----	1	-----	-----
Comal	-----	30	-----	49	-----	-----	2
Comanche	144	166	271	181	142	15	37
Cooke	17	160	21	52	66	36	13
Coryell	41	38	86	40	24	-----	4
Crockett	-----	1	1	-----	-----	-----	-----
Crosby	-----	-----	1	1	-----	-----	-----
Dallam	-----	-----	-----	-----	11	1	-----
Dallas	332	1857	529	457	387	537	260
Dawson	-----	-----	-----	2	1	-----	-----
Delta	-----	29	19	27	6	5	-----
Denton	23	24	40	40	17	20	1
De Witt	*132*	*240*	*387*	*475*	*598*	*479*	*259*
Dickens	1	-----	-----	-----	-----	-----	-----
Dimmit	*219*	*439*	*605*	*340*	*241*	*124*	*101*
Donley	-----	-----	-----	2	-----	1	-----
Duval	-----	-----	-----	-----	17	-----	-----

Table 8A. Approximate sales of fertilizer in tons, by counties 1926-1933—Continued.

County	1926-27	1927-28	1928-29	1929-30	1930-31	1931-32	1932-33
Eastland	80	163	198	171	176	56	6
Ector	----	----	1	1	----	----	----
Ellis	1	----	32	3	3	1	1
El Paso	539	850	401	483	212	701	885
Erath	157	480	657	465	30	----	----
Falls	798	146	352	111	47	10	2
Fannin	429	156	62	66	20	----	----
Fayette	51	150	174	84	120	96	65
Fisher	1	----	----	----	2	----	----
Floyd	----	----	2	1	1	----	----
Fort Bend	33	190	330	286	679	427	349
Franklin	187	422	414	302	125	60	33
Freestone	587	1838	1869	1293	371	56	98
Frio	130	208	267	163	167	168	95
Gaines	----	1	1	1	----	----	----
Galveston	435	567	504	334	359	205	154
Gillespie	20	93	55	31	----	----	----
Goliad	----	2	24	73	83	16	14
Gonzales	86	155	289	217	107	26	20
Gray	----	----	22	35	18	6	1
Grayson	96	142	165	152	39	3	4
Gregg	3156	3761	6188	3665	971	224	212
Grimes	397	945	1775	725	482	73	94
Guadalupe	15	30	20	16	30	----	----
Hale	----	6	3	15	6	----	----
Hamilton	44	20	119	----	1	----	----
Hardeman	----	----	----	3	1	----	----
Hardin	454	656	687	602	677	394	367
Harris	778	1480	2164	1283	1310	1003	890
Harrison	3339	5169	7293	6014	1445	546	867
Haskell	----	2	2	1	2	----	----
Hays	----	----	18	2	4	----	1
Henderson	846	1813	3316	3221	1097	477	352
Hidalgo	516	431	609	1092	728	454	508
Hill	----	45	50	70	50	15	1
Hockley	----	----	16	2	----	----	----
Hood	50	46	46	----	----	1	1
Hopkins	670	1961	2574	1443	729	319	206
Houston	1107	3029	5412	2800	781	165	242
Howard	6	----	110	710	621	5	----
Hunt	8	40	170	158	44	26	14
Jack	1	1	----	----	----	----	----
Jackson	34	54	109	60	138	21	----
Jasper	1060	1388	1638	2107	1153	319	512
Jefferson	1080	1177	1440	1595	1423	1371	1118
Jim Hogg	----	----	----	15	16	21	----
Jim Wells	325	36	37	----	517	340	187
Johnson	970	62	92	35	47	29	12
Jones	53	67	55	51	1	----	2
Karnes	2	25	62	59	15	1	2
Kimble	----	----	----	----	----	1	----
Kaufman	154	383	615	513	147	30	22
Kerr	----	----	----	1	----	2	1
King	----	----	41	----	----	1	----
Kleberg	----	----	----	1	18	----	1
Knox	2	9	----	----	4	----	----
Lamar	155	706	764	1021	372	567	143
Lamb	----	----	----	2	----	----	----
Lampasas	----	----	----	----	1	----	----
La Salle	----	50	47	25	5	10	11
Lavaca	23	41	236	237	543	130	275
Lee	59	89	232	112	73	16	2
Leon	1059	1996	2954	1461	450	128	139
Liberty	1114	1874	2297	2206	2797	1296	1068
Limestone	372	1549	2807	1300	360	150	29
Live Oak	----	----	65	15	----	----	----
Llano	----	----	----	1	2	----	----
Lubbock	1	18	32	32	7	1	1
Lynn	----	26	1	1	----	----	----
McLennan	60	93	75	122	34	11	27
McCulloch	19	47	54	33	47	17	13
Madison	123	826	1755	608	495	109	118
Matagorda	230	115	97	74	55	10	15

Table 8A. Approximate sales of fertilizer in tons, by counties 1926-1933—Continued.

County	1926-27	1927-28	1928-29	1929-30	1930-31	1931-32	1932-33
Marion	1523	1667	1728	1752	284	65	40
Mason	-----	-----	-----	-----	-----	1	-----
Maverick	37	19	112	82	171	294	214
Medina	-----	36	-----	30	-----	-----	-----
Menard	-----	-----	2	-----	1	-----	-----
Midland	-----	-----	3	12	1	1	-----
Milam	166	333	711	344	200	22	59
Mills	23	71	190	67	58	55	1
Mitchell	123	95	65	18	2	2	-----
Moore	-----	-----	3	-----	-----	-----	-----
Montague	33	35	20	4	4	3	-----
Montgomery	199	310	707	209	194	90	107
Morris	1255	2869	2860	2590	795	133	95
Motley	-----	-----	1	1	-----	-----	-----
Nacogdoches	3777	8370	9004	6860	2779	848	875
Navarro	46	102	249	185	73	16	72
Newton	275	432	496	281	195	68	111
Nolan	4	13	3	6	3	1	-----
Nueces	433	304	334	517	300	48	79
Ochiltree	-----	-----	-----	-----	5	-----	-----
Orange	218	469	621	298	379	398	235
Palo Pinto	55	8	4	5	2	-----	-----
Panola	580	3785	5088	3088	870	240	262
Parker	22	154	99	193	199	85	74
Pecos	166	232	109	90	118	30	75
Polk	171	617	1226	668	535	281	549
Potter	1	6	5	1	4	15	9
Presidio	3	-----	-----	-----	1	-----	-----
Rains	22	116	258	178	91	70	29
Reagan	-----	-----	-----	-----	1	-----	-----
Red River	269	879	1568	1092	512	328	432
Reeves	-----	29	-----	-----	26	1	-----
Refugio	18	30	49	83	52	-----	1
Robertson	782	1282	2274	788	653	179	199
Rockwall	3	-----	3	-----	-----	-----	-----
Runnels	1	139	9	58	6	2	3
Rusk	2143	9683	13799	8399	2547	909	778
Sabine	819	1418	1708	954	425	287	316
San Augustine	800	1471	2417	1177	346	114	195
San Jacinto	16	53	124	81	69	19	26
San Patricio	323	306	359	248	415	154	135
San Saba	-----	-----	1	15	2	2	2
Scurry	-----	4	-----	-----	-----	-----	-----
Shelby	1688	3381	7137	2495	1086	346	632
Shackelford	-----	5	-----	-----	-----	-----	-----
Smith	2673	5743	10758	7693	2852	1489	1928
Somerville	23	-----	-----	1	-----	-----	-----
Stephens	1	23	90	12	5	-----	-----
Sutton	-----	-----	-----	1	1	-----	-----
Tarrant	108	176	434	246	327	336	314
Taylor	-----	6	52	33	9	2	1
Throckmorton	-----	-----	1	-----	-----	-----	-----
Titus	536	1702	2636	1813	278	62	43
Tom Green	30	48	150	276	227	2	4
Travis	13	46	36	71	10	43	11
Trinity	500	1321	2259	1141	699	232	351
Tyler	642	1070	1140	900	391	245	309
Upshur	1610	2910	3200	1777	882	337	146
Uvalde	60	214	53	138	20	21	88
Van Zandt	243	1636	3394	2122	329	78	144
Val Verde	-----	1	-----	3	3	1	-----
Victoria	56	73	85	112	133	89	30
Walker	114	316	941	233	56	19	41
Waller	508	753	809	727	623	441	475
Ward	-----	202	186	172	110	70	-----
Washington	31	15	102	49	19	-----	3
Webb	1369	1843	2087	1700	1123	914	1679
Willacy	-----	20	119	80	48	-----	3
Wharton	241	270	197	218	269	224	174
Wheeler	-----	-----	-----	-----	1	-----	-----
Wichita	129	89	91	33	27	3	23
Williamson	-----	39	67	35	15	15	7
Willbarger	15	19	56	-----	-----	-----	-----

Table 8A. Approximate sales of fertilizer in tons, by counties 1926-1933—Continued.

County	1926-27	1927-28	1928-29	1929-30	1930-31	1931-32	1932-33
Wilson	3	107	209	311	309	266	190
Wise	40	44	36	42	52	5	3
Wood	953	1477	2642	1669	658	242	242
Young	3	6	36	78	7	20	2
Zavalla	170	210	371	402	209	406	157
Total of above	65562	126609	176814	124253	58232	29318	27689
Total sales reported	79863	139126	187215	138917	64424	33406	30843

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 fertilizer materials, or ingredients of fertilizer sold or offered for sale within the State of Texas, and to 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 Cheif 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 of total phosphoric acid or more. The phosphate of lime is so finely divided that some of it is termed colloidal. The availability to plants of the phosphoric acid of colloidal mineral phosphate is much lower than that of the available phosphoric acid in 20 per cent superphosphate.

Sulphur, Gypsum, and Manganese

We are unable to recommend the use of sulphur or gypsum as a fertilizer in Texas or for application to Texas soils. The experiments which have been carried out do not give results which justify the use of such materials on soils (see Bulletins 408 and 414).

Investigations on the use of manganese sulphate for Texas soils are given in Bulletin 432. The results of the experimental work do not justify recommendation of the use of manganese sulphate on Texas soils.

Greensand

A report of investigations regarding the value of greensand as a fertilizer was published in Bulletin 428. The availability of the potash and

phosphoric acid in greensand was found to be low. Greensand has a little fertilizing value and can be used in quantities of 5 to 40 tons to an acre where it can be mixed and applied at a cost closely related to its value. It does not contain sufficient fertilizer value to justify attempting to market it.

Polyhalite and Sewage Sludge

Polyhalite, a mineral found in deep deposits in western Texas and in New Mexico, contains about 12 per cent potash, which is only partly soluble in water, but which is readily available to plants (see Bulletin 449).

Digested sewage sludge is low in plant food, and the nitrogen has a low availability. Dried activated sludge contains about 5 per cent nitrogen and 2 per cent available phosphoric acid and the nitrogen has a good availability to plants (see Bulletin 445).

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, sufficient rainfall or irrigation, 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, but the cost of nitrogen is decreasing. A cropping system which includes the regular growing of suitable legumes, such as clover, cowpeas, soy beans, velvet beans, peanuts, or alfalfa, should be followed for the purpose of securing nitrogen from the air, provided the legume crops can be grown to advantage. A suitable rotation also adds organic matter to the soil, utilizes time and labor to better advantage, aids in controlling 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 legumes have been turned under or grazed off, what the soil will produce without fertilizer, and other conditions.

Soils which have been in cultivation a long time, or very sandy soils are usually 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, such as corn or cotton. The fertilizer on cotton may profitably be twice as much as that used on corn.

Best results are secured by a well-balanced supply of plant food in the soil. An excess of nitrogen or an excess of potash is shown by the pro-

duction 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 300 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 nitrogen in the soil when truck crops are grown may 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. A well-balanced fertilizer will produce a crop that is firm and ships well.

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 in the earth at the side. A combined planter and fertilizer distributor may be used, but care should be taken to select a machine which applies the fertilizers 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 than 800 pounds of fertilizer to the acre are best made partly in the drill and partly broadcast. However, with some vegetables it is best to apply all the fertilizer in the drill.

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 same depth as the seed but by 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. When fertilizers of high analysis are used, especial care should be taken to mix with the soil, and not to apply them close to the seed or the roots of growing plants. These fertilizers are quite strong, and burning or other injury may result if they are concentrated close to roots of plants.

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 800 pounds for truck crops. Larger amounts may be tried on a small scale

and then these 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 a 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 a deep sandy soil, where the plant food is likely to leach out (see Bulletin No. 490).

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 chopping.

Corn which was not fertilized before planting 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 prodcedure 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, especially the Houston clay and the Houston black clay, do not give as much response to fertilizers as the sandy soils of eastern Texas. Sometimes they respond to applications of nitrogen and phosphoric acid, although in general the use of fertilizers on these soils has not been profitable. 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 Blackland section, it is suggested that somewhat smaller amounts be tried 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 the lower Rio Grande Valley 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 10-10-0, 16-20-0, or 11-48-0, or begin with one of these if vegetative growth is not excessive. In the course of time, when potash has been depleted by cropping, one would reach such truck fertilizers as 6-12-6, 10-20-10, 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. These should receive 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 sug-

gested are the same as for the corresponding soils of the Rio Grande Valley. The heavy black soils (the Lake Charles soils) at the Experiment Station at Angleton respond well to superphosphate and to applications of nitrogen and phosphoric acid 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, since applications of fertilizer will not remedy poor drainage.

FERTILIZERS SUGGESTED FOR THE VARIOUS CROPS

The recommendations given below represent the best present information for the use of fertilizers in Texas, and will be modified from time to time, as more experimental data are accumulated and further practical experience is secured.

Grades with the Same Ratios

Where a fertilizer of a given ratio is suggested, a different grade with the same ratio may be used, in such quantity as to supply an equivalent amount of plant food. Where 4-12-4 is suggested, equivalent amounts of 3-10-3, 5-15-5, 6-18-6, 8-24-8, or 9-27-9, 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 or 10-20-10, may be used, as they have the same ratio of plant food, 1-2-1.

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 20 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. Manure alone has given good results at both Balmorhea and Iowa Park. If the manure is available, 600 to 900 pounds of the fertilizer could be used. Every spring apply 400 to 600 pounds of 6-12-6. 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 6-10-7 or 6-12-6 fertilizer is suggested, except in the lower Rio Grande Valley, where the use of 200 to 300 pounds of 11-48-0 or 300 to 400 pounds of 10-20-0 is suggested.

Beets, Carrots, Turnips, and Radishes

From 300 to 700 pounds per acre of 6-12-6 or 5-15-5 is suggested for East Texas and 16-20-0 or 11-48-0 for the clay loams of the Rio Grande Valley and Gulf Coast.

Broccoli, Cabbage, Cauliflower, Mustard, and Spinach

From 300 to 700 pounds of 6-12-6 or 5-15-5 may be used, supplemented by three top dressings of 50 to 100 pounds of nitrate of soda or sulphate of ammonia or other fertilizer containing only nitrogen, ten days or 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.

Corn

Loam or clay soils with clay or sandy clay subsoils, such as Susquehanna, Kirvin, Orangeburg, or similar soils with legume rotation: Use 200 to 300 pounds of 4-8-4, 6-9-3, or 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 4-8-4, 6-9-3, or 4-10-0.

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 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 100 pounds of 16-20-0.

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, especially when unfertilized corn follows crops that were previously fertilized.

Land fertilized the previous season: Where corn follows cotton that has been well fertilized the previous season, for example with a 4-8-4 or 4-12-4 fertilizer at the rate of 300 to 400 pounds or more per acre, apply 15 to 20 pounds of nitrogen as nitrate of soda, sulphate of ammonia, or a synthetic nitrogen product before planting or as a side dressing when the corn is 12 to 24 inches high.

Cotton

Loam soils with clay or sandy clay subsoils, such as Ruston, Kirvin, Susquehanna, Lufkin, or similar soils: Experiments of the division of Agronomy (see Bulletin No. 469) indicate that these soils respond to applications of nitrogen, phosphoric acid, and to some extent to potash. If 200 to 400 pounds is used, use 4-8-4, 6-9-3, or 4-12-4; if over 400 pounds is to be used, use 4-12-4, 4-8-4, or 6-9-3, or other fertilizers with a similar ratio of plant food.

Deep sandy soil, such as Norfolk sand: If 200 to 300 pounds or more is to be used, use 4-12-4; if 300 to 400 pounds or more is to be used, use 4-8-4 or other fertilizer with similar ratio of plant food. However, these are not good cotton or 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 stalk of moderate size.

Dark prairie soils in the Gulf Coast Prairie, especially the Lake Charles soils, are deficient first in phosphoric acid, as shown by results of trials with fertilizers at the Experiment Station at Angleton: Use 100 pounds of 18 or 20 per cent superphosphate or 200 to 600 pounds per acre of a 4-10-0 fertilizer, or 100 to 200 pounds of 16-20-0.

Black waxy land, such as Houston black clay or heavy limestone soils of Central Texas: A systematic rotation is needed first. These soils sometimes respond to applications of nitrogen and phosphoric acid, although fertilizers are uncertain. A trial may be made of 200 to 300 pounds of 4-10-0 or 6-9-3, or 100 pounds of 16-20-0.

Cantaloupes, Cucumbers, Squash, or Watermelons

On sandy loam soils: If 200 to 300 pounds is applied, use 4-12-4 or 6-12-6. Larger applications are recommended, such as 300 to 500 pounds of 4-8-4 or 4-8-6. In southwest Texas, 300 to 400 pounds of 10-20-10 is suggested. 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, Okra, and Peppers

An application of 300 to 700 pounds of 6-12-6 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 soils 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 is suggested. As the trees grow larger, the quantity of fertilizer may be increased to 600 to 1000 pounds to the acre, or a 16-20-0 fertilizer may be used in smaller amounts.

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. Where a heavy crop of winter clover is turned under, the amount of nitrogen needed in commercial fertilizers is low.

Grapefruit or Orange Trees

According to Bulletin 145 of the California Agricultural Experiment Station, nitrogen is the cheif plant food needed in California, and is best supplied in well-rotted manure; excess of nitrogen may cause "Mottle leaf".

A 16-20-0, 10-10-0, or 11-48-0 fertilizer may be used on the Lower Valley soils, which are high in potash. On soils low in potash, a 10-20-10 may be desirable. Bearing trees ten years old may each receive 10 to 20 pounds of fertilizer each year.

Over-fertilized trees become affected with "die-back", especially if an excess of nitrogen is applied. Die-back is also caused by hardpan, alkali, or poor drainage. "Mottle leaf" or "Frenching" affects poorly nourished trees.

The soils on which citrus fruit are grown in Texas are generally higher in potash than in either phosphoric acid or nitrogen, and there appears no good reason at present to recommend fertilizers high in potash.

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 sulphate of ammonia at intervals of ten to fifteen days after the plants have begun to make rapid growth in the spring. Under irrigation, the 6-12-6 fertilizer may be used at rates varying from 600 to 900 pounds per acre except on new land, when 1200 pounds per acre may be used. On some soils, especially in the Winter Garden District, potash is not needed and a 10-10-0 or 16-20-0 fertilizer may be used.

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 4-12-4. It may also be applied to individual trees at the rate of 1 pound per inch of diameter of the tree at the beginning of the growing season. When the trees are bearing, use, in addition, 200 pounds or more of 10-10-0, increasing the quantity as the trees grow older. According to experiments made in other states and observations on commercial orchards in Texas, nitrogen is the only element needed for complete crops of peaches, which can be supplied by cyanamid or other nitrogenous fertilizers.

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

Clay soils and bottom lands: Use 200 to 600 pounds of 4-10-0.

Potatoes, Sweet

Loam or sandy loam soils with clay or sandy loam subsoils: 300 to 600 pounds of 4-12-4, or 6-12-6 may be used. Deep sandy soil: Use 200 to 500 pounds of 6-12-6 or 4-8-6. Excess of nitrogen will produce excessive growth of vine and deficiency of tubers. The use of manure is desirable in growing sweet potatoes, but heavy applications of barnyard manure produce conditions favorable for disease.

Potatoes, Irish

On loam or sandy soils, 300 to 700 pounds of 6-12-6 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. In the Rio Grande Valley, 16-20-0 or 11-48-0 gives good results.

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.

Sorghum

An application of 200 to 300 pounds of 4-8-4, 6-9-3, or 4-10-0 is suggested.

Strawberries

An application of 300 to 400 pounds of 4-8-4, 6-12-6, or 4-12-4 may be made at the time of setting out the plants. In the spring, just before blossoming, 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. Another application in the fall is also desirable, to stimulate the growth of the plants in the cold season. Side dressings have not been found effective in the Winter Garden District of Southwestern Texas.

Tomatoes

Loam soils with clay or sandy clay subsoils of East Texas, such as the Ruston, Kirvin, or Nacogdoches: If 400 to 600 pounds is used, use 4-8-6 or 6-12-6; if 500 to 1000 pounds, use 4-8-6, 4-8-4, 4-12-4, 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 is used, use 4-8-6, or 4-8-4; if 500 to 1000 pounds is 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.

Winter Garden and Rio Grande Valley: Superphosphate alone at the rate of 200 to 300 pounds per acre has been found to give good results. A 10-20-0 or 16-20-0 or 11-48-0 at the rate of 200 to 400 pounds per acre may be used.

Land which produces an excessive vine: Use 200 to 400 pounds of superphosphate, 18 per cent or 20 per cent. Vines which grow large and do not fruit may sometimes be caused to fruit well without fertilizer if the vines are properly pruned. One method is to remove suckers 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 used where the growth of vine is excessive 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.

Home Gardens

Home gardens frequently receive large quantities of manure, with little or no applications of phosphoric acid or potash. This results in an unbalanced condition of the plant food in the soil, resulting in excessive growth of leaves and stems and insufficient fruit. The best fertilizer to apply when heavy applications of manure have been made would be 200 to 400 pounds of superphosphate or of 0-15-6 fertilizer.

Where applications of manure have been made only in moderate amounts, 300 to 600 pounds of 4-12-4 or 6-12-6 would probably be satisfactory. If lighter applications of manure are made, or none at all, 400 to 800 pounds of 4-8-4, 6-12-6, or 4-8-6 would be suggested, and top dressings with nitrate of soda or sulphate of ammonia might also be tried. The fertilizer should be mixed well with the soil in the rows and not allowed to be in direct contact with either seed or plants.

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. If a complete fertilizer is used, it is well to put it down in holes 12 to 18 inches deep or deeper, punched with a pointed iron about one inch in diameter. The fertilizer should be distributed in 15 or 24 holes around the trees, in a circle a little larger than the spread of the branches. The holes should be completely filled with the fertilizer. For large trees, more holes should be punched. Manure may be put down in the same way, but the holes must be larger. Sulphate of ammonia, nitrate of soda, or some other nitrogenous fertilizer, or 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 blackland 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.

Lawns

An application of either sulphate of ammonia, cottonseed meal, 4-12-4 or 4-8-4 fertilizer at the rate of one to 1½ pounds per hundred square feet, is suggested. The fertilizer should be applied in the spring evenly, when

the grass is dry, and then wet down thoroughly with the hose. If the grass is wet when the fertilizer is applied, the fertilizer will stick to it and probably burn it. The fertilizer can be applied broadcast by hand but it is better applied by a special distributor, which runs as easily as a lawn mower. If the soil is sandy or deficient in humus, an application of dried sheep or goat manure or well-rotted barnyard manure is suggested at the rate of 10 pounds to 100 square feet. This manure should be applied in the late fall or early spring.

SUMMARY

This Bulletin contains a report of the Texas Fertilizer Control for 1933-34 and information regarding the use of fertilizer.

An explanation of terms is given.

Sales of fertilizer in Texas were 47,204 tons in 1933-34. They were 30,843 tons in 1932-33, 33,401 tons in 1931-32. 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 costs less in 20 per cent superphosphate than in 18 per cent, though the difference was small. Kainit is an expensive source of potash, muriate of potash being much cheaper.

Nitrogen costs much less in sulphate of ammonia than in nitrate of soda. Plant food costs less per pound in the more concentrated fertilizers than in less concentrated fertilizer, though the former costs more per ton. Nitrogen was much higher in price than it was last season.

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

Approximate sales by counties from 1926 to 1933 is 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.

Table 9. Analysis of commercial fertilizer, season 1933-34.

Laboratory number	Manufacturer, place of business and brand	Nitrogen, per cent	Available phosphoric acid, per cent	Potash, per cent	Valuation found, per ton
	American Cyanamid Company, 535 Fifth Avenue, New York, New. York.				
	Aero Cyanamid—Guarantee	22.00	.....	.....	52.8(
48297	Analysis	21.97	.....	.....	52.73
48310	Analysis	21.76	.....	.....	52.22
48474	Analysis	21.86	.....	.....	52.46
48963	Analysis	21.80	.....	.....	52.32
	Ammo-Phos 16-20-0 Guarantee	16.00	20.00	.....	60.40
48294	Analysis	16.52	20.70	.....	62.42
48299	Analysis	16.45	20.73	.....	62.28
48302	Analysis	16.64	20.85	.....	62.88
48304	Analysis	16.54	20.68	.....	62.45
48308	Analysis	16.39	20.85	.....	62.28

Table 9. Analysis of commercial fertilizer, season 1933-34—(Continued).

Laboratory number	Manufacturer, place of business and brand	Nitrogen, per cent	Available phosphoric acid, per cent	Potash, per cent	Valuation found, per ton
	Arkansas Fertilizer Company, Box 945, Little Rock, Arkansas.				
	White Diamond Early Boll—Guarantee	3.00	10.00	3.00	21.50
48556	Analysis	3.14	10.23	3.44	22.57
	White Diamond Jack Rabbit—Guarantee	4.00	8.00	6.00	25.00
48555	Analysis	4.01	7.98	6.66	25.73
49125	Analysis	4.18	8.03	6.01	25.47
	White Diamond Old Reliable—Guarantee	4.00	8.00	4.00	22.80
48554	Analysis	4.04	8.45	4.32	23.75
	Armour Fertilizer Works, Houston, Fort Worth, Texas, and New Orleans, Louisiana.				
	Armour's Big Crop Fertilizer No. 0156—Guarantee	.....	15.00	6.00	23.10
48550	Analysis	.....	**13.89**	**5.10**	**20.89**
48646	Analysis	.....	**14.49**	**5.71**	**22.22**
	Armour's Big Crop Fertilizer No. 3103—Guarantee	3.00	10.00	3.00	21.50
48353	Analysis	3.24	10.29	3.14	22.55
48431	Analysis	3.06	10.31	3.01	21.99
48476	Analysis	3.20	10.15	3.15	22.32
48816	Analysis	3.10	10.69	3.33	22.86
48997	Analysis	3.01	**9.90**	3.06	**21.48**
49102	Analysis	3.14	10.24	3.16	22.28
49127	Analysis	3.07	10.06	3.08	21.83
49137	Analysis	3.35	10.46	2.85	22.69
49155	Analysis	3.20	10.10	3.20	22.31
	Armour's Big Crop Fertilizer No. 484—Guarantee	4.00	8.00	4.00	22.80
48339	Analysis	4.12	8.58	4.01	23.74
48357	Analysis	**3.91**	8.03	4.07	**22.69**
48502	Analysis	4.05	8.23	4.04	23.21
48637	Analysis	**3.96**	8.21	4.30	23.26
48701	Analysis	4.00	8.12	**3.81**	**22.72**
49063	Analysis	**3.79**	8.61	**3.77**	**22.72**
49085	Analysis	**3.92**	8.36	4.06	23.08
49101	Analysis	**3.96**	8.26	**3.67**	**22.63**
49178	Analysis	4.02	8.24	**3.89**	22.99
49191	Analysis	4.06	8.10	**3.78**	22.81
	Armour's Big Crop Fertilizer No. 486—Guarantee	4.00	8.00	6.00	25.00
48421	Analysis	4.01	8.12	**5.46**	**24.56**
48504	Analysis	4.15	8.28	6.05	25.73
48531	Analysis	4.08	8.11	**5.65**	**24.93**
48601	Analysis	4.08	8.78	**5.61**	25.62
48616	Analysis	4.23	8.42	6.06	26.08
48628	Analysis	4.24	8.52	**5.68**	25.80
48653	Analysis	4.26	8.34	**5.60**	25.55
48813	Analysis	**3.92**	8.02	**5.35**	**24.12**
48944	Analysis	4.14	8.98	6.13	25.79
49019	Analysis	4.05	8.58	6.02	25.78
49030	Analysis	4.01	8.17	6.02	25.23
49039	Analysis	4.07	8.29	6.09	25.59
49062	Analysis	4.08	8.13	**5.69**	**24.99**
49128	Analysis	**3.99**	8.57	6.14	25.76
	Armour's Big Crop Fertilizer No. 4100—Guarantee	4.00	10.00	.....	20.60
48398	Analysis	4.11	10.06	.....	20.93
48432	Analysis	4.01	10.11	.....	20.74
48452	Analysis	4.14	10.57	.....	21.57
48486	Analysis	4.04	**9.85**	.....	**20.54**
	Armour's Big Crop Fertilizer No. 4107—Guarantee	4.00	10.00	7.00	28.30
48330	Analysis	**3.91**	10.79	7.05	29.01
49008	Analysis	4.34	10.15	6.88	29.16
	Armour's Big Crop Fertilizer No. 4124—Guarantee	4.00	12.00	4.00	27.20
48328	Analysis	**3.77**	**11.53**	4.07	**26.21**
48340	Analysis	4.08	12.22	**3.91**	27.53
48399	Analysis	**3.89**	**11.83**	4.05	**26.81**
48420	Analysis	4.18	**11.82**	**3.87**	27.28
48448	Analysis	4.29	**12.33**	**3.89**	**28.14**

Table 9. Analysis of commercial fertilizer, season 1933-34—(Continued).

Laboratory number	Manufacturer, place of business and brand	Nitrogen, per cent	Available phosphoric acid, per cent	Potash, per cent	Valuation found, per ton
	Armour Fertilizer Works, Houston, Fort Worth, Texas, and New Orleans, Louisiana—Continued.				
	Armour's Big Crop Fertilizer No. 4124—Guarantee Continued	4.00	12.00	4.00	27.20
48477	Analysis	4.11	12.33	4.31	28.16
48503	Analysis	4.67	**11.61**	3.88	28.25
48617	Analysis	4.13	12.21	4.30	28.07
48627	Analysis	4.07	12.32	4.34	28.09
48645	Analysis	4.07	12.39	4.16	27.98
48652	Analysis	4.16	12.52	4.05	28.21
48791	Analysis	4.02	12.27	4.02	27.57
48817	Analysis	4.04	12.52	4.47	28 39
48901	Analysis	**3.92**	12.57	4.05	27.70
48943	Analysis	4.14	12.51	4.26	28.33
49007	Analysis	4.19	12.53	4.16	28.42
49136	Analysis	4.10	12.44	**3.78**	27.68
49153	Analysis	4.16	12.52	4.02	28.17
49179	Analysis	4.12	12.37	**3.71**	27.58
	Armour's Big Crop Fertilizer No. 5155—Guarantee	5.00	15.00	5.00	34.00
48331	Analysis	5.70	15.09	5.06	35 85
48352	Analysis	5.40	**14.80**	5.22	34.98
48600	Analysis	**4.62**	15.62	5.12	**33.90**
48615	Analysis	5.55	**14.21**	5.87	35.41
48754	Analysis	5.12	15.07	5.20	34.59
48976	Analysis	5.13	15.32	**4.49**	34.10
49018	Analysis	**4.92**	16.28	5.12	35.35
	Armour's Big Crop Fertilizer No. 693—Guarantee	6.00	9.00	3.00	27.60
48414	Analysis	6.00	9.84	3.05	28.58
	Armour's Big Crop Fertilizer No. 6107—Guarantee	6.00	10.00	7.00	33.10
48485	Analysis	6.17	10.14	7.32	34.01
48505	Analysis	6.26	10.28	7.28	34.34
48551	Analysis	6.07	10.48	**6.43**	33.17
48572	Analysis	6.18	10.47	**6.91**	33.95
48686	Analysis	6.02	10.38	7.03	33.60
48700	Analysis	6.21	10.11	7.08	33.81
48837	Analysis	6.09	10.15	7.01	33.50
48902	Analysis	6.15	10.53	**6.91**	33.94
49123	Analysis	6.20	10.73	7.16	34.56
	Armour's Big Crop Fertilizer No. 6126—Guarantee	6.00	12.00	6.00	34 20
48329	Analysis	6.15	**11.90**	6.24	34.71
48345	Analysis	6.02	12.36	6.02	34.67
48475	Analysis	6.04	12.52	**5.74**	34.58
48776	Analysis	6.18	12.21	6.01	34.87
48790	Analysis	6.15	12.15	**5.96**	34.69
48818	Analysis	6.19	12.48	6.11	35.31
48849	Analysis	6.25	12.53	6.02	35.40
48869	Analysis	6.03	12.02	6.09	34.39
48975	Analysis	6.23	**11.83**	6.16	34.74
49086	Analysis	**5.91**	12.02	6.23	34.25
49130	Analysis	6.45	12.34	**5.65**	35 27
49154	Analysis	6.08	12.90	**5.89**	35.26
	Armour's Big Crop Fertilizer No. 8248—Guarantee	8.00	24.00	8.00	54.40
48599	Analysis	**7.70**	**19.63**	8.24	49 13
	Armour's Big Crop 20% Kainit—Guarantee	.....	.....	20.00	22.00
48814	Analysis	.....	.....	21.62	23 78
	Armour's Big Crop Nitrate of Soda—Guarantee	15.00	.....	.....	36.00
48415	Analysis	15.83	.....	.....	37.99
48479	Analysis	15.89	.....	.....	39.14
48676	Analysis	15.90	.....	.....	38.16
49103	Analysis	16.02	.....	.....	38.45
49192	Analysis	16.20	.....	.....	38.88
	Armour's Big Crop Sulphate of Ammonia—Guarantee	20.00	.....	.....	48.00
48300	Analysis	20.69	.....	.....	49.66
49174	Analysis	20.90	.....	.....	50.16

Table 9. Analysis of commercial fertilizer, season 1933-34—(Continued).

Laboratory number	Manufacturer, place of business and brand	Nitrogen, per cent	Available phosphoric acid, per cent	Potash, per cent	Valuation found, per ton
	Armour Fertilizer Works, Houston, Fort Worth, Texas, and New Orleans, Louisiana—Continued.				
	Armour's Big Crop 18% Superphosphate—Guarantee	.....	18.00	.....	19.80
48324	Analysis	.....	18.23	.....	20.05
48356	Analysis	.....	18.31	.....	20.14
48480	Analysis	.....	18.30	.....	20.13
48812	Analysis	.....	18.59	.....	20.45
48968	Analysis	.....	18.72	.....	20.59
49022	Analysis	.....	19.33	.....	21.26
	Armour's Big Crop 20% Superphosphate—Guarantee	.....	20.00	.....	22.00
48478	Analysis	.....	**19.40**	.....	**21.34**
48811	Analysis	.....	20.66	.....	22.73
48819	Analysis	.....	21.02	.....	23.12
	Armour's NPK No. 2—Guarantee	9.00	18.00	18.00	61.20
48338	Analysis	9.12	**17.80**	**17.71**	**60.95**
	The Barrett Company, 40 Rector Street, New York, N. Y.				
	Arcadian Nitrate of Soda—Guarantee	16.00	.....	.....	38.40
48295	Analysis	16.23	.....	.....	38.95
48301	Analysis	**16.19**	.....	.....	38.86
48309	Analysis	16.26	.....	.....	39.02
48523	Analysis	16.14	.....	.....	38.74
48749	Analysis	16.23	.....	.....	38.95
48871	Analysis	16.22	.....	.....	38.93
48959	Analysis	16.26	.....	.....	39.02
	Bryan Cotton Oil & Fertilizer Company, Bryan, Texas.				
	Star Brand Cotton and Corn Fertilizer—Guarantee	3.00	10.00	3.00	21.50
48472	Analysis	**2.36**	11.14	**2.65**	**20.83**
48798	Analysis	3.89	10.81	3.87	25.49
49070	Analysis	3.89	12.18	**2.79**	25.81
	Star Brand Special Fertilizer—Guarantee	4.00	12.00	4.00	27.20
48471	Analysis	4.13	12.77	4.01	28.37
48799	Analysis	4.51	12.45	**3.29**	28.14
49071	Analysis	**3.69**	13.51	**3.52**	27.59
	Star Brand Superphosphate—Guarantee	.....	20.00	.....	22.00
48470	Analysis	.....	20.00	.....	22.00
48801	Analysis	.....	20.55	.....	22.61
	Star Brand Tomato Fertilizer—Guarantee	6.00	12.00	6.00	34.20
48473	Analysis	**5.79**	12.94	**5.30**	**33.96**
48800	Analysis	**5.34**	**11.85**	6.07	**32.54**
	Campbell Fertilizer Company, 1404 Rosedale Street, Houston, Texas.				
	4-8-4 All Weather Organic Base—Guarantee	4.00	8.00	4.00	22.80
48369	Analysis	4.63	8.26	5.60	26.36
48815	Analysis	4.67	**6.39**	4.76	23.48
	4-10-7 All Weather Organic Base—Guarantee	4.00	10.00	7.00	28.30
48370	Analysis	**3.78**	10.29	9.76	31.13
	All Weather 18% Superphosphate—Guarantee	.....	18.00	.....	19.80
48898	Analysis	.....	18.96	.....	20.86
	Chilean Nitrate Sales Corporation, 120 Broadway, New York, New York.				
	Champion Brand Chilean Nitrate of Soda—Guarantee	16.00	.....	.....	38.40
48403	Analysis	16.11	.....	.....	38.66
48537	Analysis	16.06	.....	.....	38.54
49167	Analysis	16.12	.....	.....	38.69
	Standard Chilean Nitrate of Soda—Guarantee	15.00	.....	.....	36.00
48361	Analysis	16.03	.....	.....	38.47

Table 9. Analysis of commercial fertilizer, season 1933-34—(Continued).

Laboratory number	Manufacturer, place of business and brand	Nitrogen, per cent	Available phosphoric acid, per cent	Potash, per cent	Valuation found, per ton
	Davison Pick Fertilizers, Incorporated, New Orleans, Louisiana, and Orange, Texas.				
	Bull Dog Special No. 3103—Guarantee	3.00	10.00	3.00	21.50
48517	Analysis	3.08	**9.51**	3.10	**21.26**
48732	Analysis	3.04	**9.58**	3.29	**21.46**
48795	Analysis	3.00	10.70	**2.95**	22.22
48885	Analysis	3.11	**9.92**	3.13	21.81
	Bull Dog Special No. 484—Guarantee	4.00	8.00	4.00	22.80
48376	Analysis	**3.93**	8.30	4.04	23.00
48516	Analysis	4.04	8.70	4.33	24.03
48689	Analysis	**3.90**	8.29	4.04	22.92
48771	Analysis	4.23	8.43	4.04	23.86
48825	Analysis	4.16	8.65	4.28	24.21
48864	Analysis	**3.99**	8.05	4.02	22.86
	Bull Dog Special No. 486—Guarantee	4.00	8.00	6.00	25.00
48851	Analysis	**3.77**	8.27	6.17	**24.94**
	Bull Dog Special No. 4124—Guarantee	4.00	12.00	4.00	27.20
48377	Analysis	4.21	12.12	4.18	28.03
48603	Analysis	**3.92**	12.41	4.01	27.47
48688	Analysis	**3.82**	12.87	**3.82**	27.53
48772	Analysis	4.16	12.69	4.37	28.75
	Bull Dog Special No. 6107—Guarantee	6.00	10.00	7.00	33.10
48446	Analysis	**5.47**	10.95	**6.57**	**32.41**
48716	Analysis	**5.94**	10.14	**6.82**	**32.91**
	Bull Dog Special No. 6126—Guarantee	6.00	12.00	6.00	34.20
48363	Analysis	**5.77**	**11.98**	6.49	**34.17**
48852	Analysis	**5.48**	12.08	**5.70**	**32.71**
	Bull Dog Superphosphate No. 18—Guarantee	.....	18.00	.....	19.80
48515	Analysis	.....	18.04	.....	19.84
48602	Analysis	.....	18.52	.....	20.37
48715	Analysis	.....	18.77	.....	20.65
48853	Analysis	.....	19.09	.....	21.00
48863	Analysis	.....	19.20	.....	21.12
	Bull Dog Superphosphate No. 20—Guarantee	.....	20.00	.....	22.00
48360	Analysis	.....	**19.62**	.....	**21.58**
48733	Analysis	.....	20.17	.....	22.19
	Sulphate of Ammonia—Guarantee	20.00	.....	.....	48.00
48905	Analysis	**18.23**	.....	.....	**43.75**
	East Texas Cotton Oil Company, Wills Point, Texas.				
	ETCO 4-8-4 Fertilizer—Guarantee	4.00	8.00	4.00	22.80
48397	Anavlsis	4.08	8.63	4.29	24.00
48759	Analysis	**3.92**	**7.77**	4.77	23.21
48935	Analysis	**3.93**	**7.57**	4.66	22.89
	ETCO 4-8-6 Fertilizer—Guarantee	4.00	8.00	6.00	25.00
48760	Analysis	4.20	8.02	6.02	25.52
	ETCO 4-12-4 Fertilizer—Guarantee	4.00	12.00	4.00	27.20
48426	Analysis	4.18	12.14	4.47	28.30
48468	Analysis	4.08	12.20	4.99	28.70
48618	Analysis	4.02	12.08	4.76	28.18
48657	Analysis	**3.94**	12.34	4.71	28.21
48936	Analysis	4.01	**11.67**	4.70	27.63
49193	Analysis	4.15	**11.33**	4.29	**27.14**
	ETCO 6-10-7—Guarantee	6.00	10.00	7.00	33.10
48467	Analysis	6.15	10.22	7.20	33.92
	ETCO Meal Formula—Guarantee	3.00	10.00	3.00	21.50
48620	Analysis	3.46	10.91	3.67	24 34
	ETCO Muriate of Potash—Guarantee	.....	.....	48.00	52.80
48623	Analysis	.....	.....	51.70	56 87
	ETCO Potato Producer—Guarantee	4.00	8.00	4.00	22.80
48621	Analysis	4.31	8.47	4.49	24.60
49196	Analysis	4.36	10.02	4.48	26.41
	ETCO Sulphate Ammonia—Guarantee	20.00	.....	.....	48.00
49195	Analysis	20.76	.....	.....	49.82

Table 9. Analysis of commercial fertilizer, season 1933-34—(Continued).

Laboratory number	Manufacturer, place of business and brand	Nitrogen, per cent	Available phosphoric acid, per cent	Potash, per cent	Valuation found, per ton
	East Texas Cotton Oil Company, Willis Point, Texas—Cont.				
	ETCO 20% Superphosphate—Guarantee	.....	20.00	.....	22.00
48425	Analysis	.....	20.13	.....	22.14
48619	Analysis	.....	**19.39**	.....	**21.33**
48626	Analysis	.....	20.07	.....	22.08
48658	Analysis	.....	20.49	.....	22.54
49194	Analysis	.....	**19.64**	.....	**21.60**
	ETCO Tomato Special—Guarantee	4.00	8.00	6.00	25.00
48622	Analysis	4.10	8.01	7.06	26.42
	Farmers Cotton Oil Company, Winnsboro, Texas.				
	Farmers Fertilizer No. 484—Guarantee	4.00	8.00	4.00	22.80
49050	Analysis	**3.80**	9.15	4.62	24.27
49215	Analysis	**3.56**	9.04	5.51	24.54
	Farmers Fertilizer No. 486—Guarantee	4.00	8.00	6.00	25.00
48585	Analysis	**3.68**	8.86	6.05	25.24
49214	Analysis	4.35	8.66	6.48	27.10
	Farmers Fertilizer No. 4107—Guarantee	4.00	10.00	7.00	28.30
48582	Analysis	4.02	10.28	8.06	29.83
	Farmers Fertilizer No. 4124—Guarantee	4.00	12.00	4.00	27.20
48583	Analysis	4.37	***11.00***	4.91	27.99
49048	Analysis	**3.78**	12.33	4.21	27.26
49217	Analysis	4.16	**11.89**	5.01	28.57
	Farmers 18 Per Cent Superphosphate—Guarantee	.....	18.00	.....	19.80
48584	Analysis	.....	18.11	.....	19.92
49049	Analysis	.....	19.06	.....	20.97
49216	Analysis	.....	18.40	.....	20.24
	Federal Chemical Company, Incorporated, Shreveport, Louisiana.				
	Daybreak Dixie Special—Guarantee	4.00	8.00	4.00	22.80
49043	Analysis	4.10	8.04	4.23	23.33
	Daybreak Double Duty—Guarantee	4.00	12.00	4.00	27.20
49045	Analysis	4.46	12.23	**3.68**	28.20
	Daybreak Favorite Fertilizer—Guarantee	3.00	10.00	3.00	21.50
49044	Analysis	3.13	10.29	3.24	22.39
	Meridian Home Mixture—Guarantee	3.00	10.00	3.00	21.50
48983	Analysis	3.20	10.15	3.08	22.24
48996	Analysis	3.14	10.04	3.04	21.92
49037	Analysis	3.39	10.58	3.38	23.50
49087	Analysis	3.23	10.04	3.19	22.30
49099	Analysis	3.12	10.24	3.12	22.18
	Meridian Improved Superphosphate—Guarantee	.....	20.00	.....	22.00
48597	Analysis	.....	21.47	.....	23.62
	Meridian Magnolia State Formula—Guarantee	4.00	8.00	4.00	22.80
48463	Analysis	4.80	10.11	6.14	29.39
48606	Analysis	4.04	8.02	4.51	23.48
48659	Analysis	**3.87**	8.30	4.19	23.03
48678	Analysis	**3.94**	8.60	4.28	23.63
48748	Analysis	**3.72**	8.11	4.86	23.20
48786	Analysis	**3.81**	8.44	4.11	22.94
48804	Analysis	4.06	**7.89**	4.15	22.99
48984	Analysis	4.06	8.13	4.11	23.20
48995	Analysis	4.04	**7.77**	4.02	**22.67**
49036	Analysis	**3.82**	8.35	4.08	22.85
49069	Analysis	4.21	8.01	4.37	23.72
49100	Analysis	**3.78**	8.68	4.13	23.16
49111	Analysis	4.00	8.86	4.00	23.75
49172	Analysis	**3.91**	8.51	4.04	23.18
49202	Analysis	4.01	8.26	4.03	23.14
	Meridian Perfect Guano—Guarantee	6.00	12.00	6.00	34.20
48464	Analysis	**5.96**	15.71	6.03	38.21
	Meridian Perfection Compound—Guarantee	4.00	12.00	4.00	27.20
48466	Analysis	4.04	12.01	**3.71**	**26.99**
48607	Analysis	4.07	12.46	4.28	28.19

Table 9. Analysis of commercial fertilizer, season 1933-34—(Continued).

Laboratory number	Manufacturer, place of business and brand	Nitrogen, per cent	Available phosphoric acid, per cent	Potash, per cent	Valuation found, per ton
	Federal Chemical Company, Incorporated, Shreveport, Louisiana—Continued.				
	Meridian Perfection Compound—Guarantee—Continued	4.00	12.00	4.00	27.20
48660	Analysis	**3.93**	12.04	4.09	27.17
48698	Analysis	4.04	12.54	4.31	28.23
48823	Analysis	4.18	12.25	4.40	28.35
	Meredian Perfection Formula—Guarantee	6.00	9.00	3.00	27.60
49009	Analysis	**5.70**	9.81	3.08	27.86
	Meridian Special Mixture—Guarantee	6.00	10.00	7.00	33.10
48465	Analysis	**5.07**	10.81	8.11	**32.98**
48481	Analysis	6.11	10.70	**6.66**	33.76
48598	Analysis	6.47	10.26	7.14	34.67
48670	Analysis	6.37	10.37	7.28	34.71
49010	Analysis	6.43	10.06	7.42	34.66
	Meridian Truckers Special—Guarantee	4.00	8.00	6.00	25.00
48482	Analysis	4.16	8.63	**1.17**	**20.76**
48747	Analysis	**3.78**	8.69	**4.50**	**23.58**
48803	Analysis	**3.97**	8.30	6.50	25.81
49038	Analysis	**3.77**	8.97	**5.51**	**24.98**
	Meridian Union Special Superphosphate—Guarantee	.....	18.00	.....	19.80
48746	Analysis	.....	**16.81**	.....	**18.49**
49029	Analysis	.....	20.11	.....	22.12
	Nitrate of Soda—Guarantee	16.00	.....	.....	38.40
48787	Analysis	16.00	.....	.....	38.40
	Fidelity Chemical Corporation, P. O. Box No. 1793, Houston, Texas.				
	Fidelity 4-8-4 Fertilizer—Guarantee	4.00	8.00	4.00	22.80
48346	Analysis	4.32	8.73	**3.32**	23.62
48705	Analysis	4.17	8.56	**3.89**	23.71
48731	Analysis	4.53	8.79	**3.13**	23.98
48895	Analysis	4.27	**7.47**	4.30	23.20
	Fidelity 4-8-6 Fertilizer—Guarantee	4.00	8.00	6.00	25.60
48347	Analysis	4.02	8.71	**5.43**	25.20
48562	Analysis	4.19	8.58	**5.51**	25.56
48455	Analysis	4.21	8.67	**5.29**	25.46
48893	Analysis	4.57	8.51	6.01	26.94
	Fidelity 4-12-4 Fertilizer—Guarantee	4.00	12.00	4.00	27.20
48359	Analysis	4.27	12.26	4.15	28.31
48451	Analysis	4.30	12.43	**3.73**	28.09
48687	Analysis	4.71	13.15	**2.79**	28.84
48896	Analysis	4.55	12.21	**3.57**	28.28
	Fidelity 5-15-5 Fertilizer—Guarantee	5.00	15.00	5.00	34.00
48335	Analysis	5.20	15.22	**4.79**	34.49
48908	Analysis	5.26	15.11	5.04	34.78
	Fidelity 6-10-7 Fertilizer—Guarantee	6.00	10.00	7.00	33.10
48290	Analysis	6.15	11.03	**6.70**	34.26
48332	Analysis	6.27	10.28	**6.78**	33.82
48341	Analysis	6.45	10.16	**6.65**	33.98
48366	Analysis	6.09	10.50	**6.79**	33.64
48680	Analysis	**5.74**	10.45	7.25	33.26
48740	Analysis	6.19	10.05	7.68	34.37
	Fidelity 6-12-6 Fertilizer—Guarantee	6.00	12.00	6.00	34.20
48291	Analysis	6.20	13.55	6.07	36.47
48333	Analysis	6.16	12.08	**5.93**	34.59
48343	Analysis	6.21	12.09	**5.62**	34.38
48707	Analysis	6.18	**11.93**	**5.91**	34.45
	Fidelity 9-27-9 Fertilizer—Guarantee	9.00	27.00	9.00	61.20
48344	Analysis	**8.74**	27.14	9.59	61.38
	Fidelity 10-20-10 Fertilizer—Guarantee	10.00	20.00	10.00	57.00
48334	Analysis	**9.92**	20.39	**9.63**	**56.83**
	Fidelity 18% Superphosphate—Guarantee	.....	18.00	.....	19.80
48730	Analysis	.....	18.70	.....	20.57
48892	Analysis	.....	18.68	.....	20.55

Table 9. Analysis of commercial fertilizer, season 1933-34—(Continued).

Laboratory number	Manufacturer, place of business and brand	Nitrogen, per cent	Available phosphoric acid, per cent	Potash, per cent	Valuation found, per ton
	Fidelity Chemical Corporation, P. O. Box No. 1793, Houston, Texas—Continued.				
	Fidelity 20% Superphosphate—Guarantee	.....	20.00	.....	22.00
48289	Analysis	.....	21.38	.....	23.52
48342	Analysis	.....	21.01	.....	23.11
48445	Analysis	.....	21.02	.....	23.12
48456	Analysis	.....	20.08	.....	22.09
48681	Analysis	.....	20.70	.....	22.77
48704	Analysis	.....	20.79	.....	22.87
48739	Analysis	.....	20.61	.....	22.67
48897	Analysis	.....	20.39	.....	22.43
	Nitrate of Soda—Guarantee	15.00	.....	.....	36.00
48292	Analysis	16.10	.....	.....	38.6
	Sulphate of Ammonia—Guarantee	20.00	.....	.....	48.00
48293	Analysis	20.80	.....	.....	49.92
	Ford Motor Company, Dearborn, Michigan.				
	Ford Ammonium Sulphate—Guarantee	20.80	.....	.....	49.92
48311	Analysis	21.10	.....	.....	50.64
48639	Analysis	21.10	.....	.....	50.64
48894	Analysis	21.06	.....	.....	50.54
	Gilmer Cotton Oil & Fertilizer Company, Gilmer, Texas.				
	G C O & F CO'S 4-12-4—Guarantee	4.00	12.00	4.00	27.20
48610	Analysis	4.02	**11.32**	4.63	**27.19**
	G C O & F CO'S Cotton Grower—Guarantee	4.00	8.00	4.00	22.80
48608	Analysis	4.14	9.07	**3.23**	23.47
	G C O & F CO'S Superior Meal Compound—Guarantee	3.00	10.00	3.00	21.50
48611	Analysis	3.32	12.26	**2.43**	24.13
	G C O & F CO'S Tomato Special—Guarantee	4.00	8.00	6.00	25.00
48609	Analysis	4.23	**7.82**	7.02	26.47
	David Hardie Seed Company, Dallas, Texas.				
	Hardie's All-Purpose Fertilizer—Guarantee	4.00	12.00	4.00	27.20
48633	Analysis	4.18	**11.79**	5.34	28.87
	Hardie's Nu-Green Lawn Dressing—Guarantee	10.00	6.00	4.00	35.00
48638	Analysis	**9.71**	7.22	**3.61**	35.21
	City of Houston, Houston, Texas.				
	Hu-Actinite 5.5-2.0-0—Guarantee	5.50	2.00	.....	15.40
48887	Analysis	**5.39**	2.79	.....	15.79
	International Agricultural Corporation, Atlanta, Georgia, and Texarkana, Texas-Arkansas.				
	International 4-10-0 Ammoniated Compound—Guarantee	4.00	10.00	.....	20.60
48387	Analysis	4.08	**9.45**	.....	**20.19**
	International 3-10-3 Fertilizer—Guarantee	3.00	10.00	3.00	21.50
48781	Analysis	3.00	10.76	**2.94**	22.27
49017	Analysis	3.06	10.70	3.12	22.54
49080	Analysis	**2.92**	10.40	3.21	21.98
	International 4-8-4 Fertilizer—Guarantee	4.00	8.00	4.00	22.80
48495	Analysis	4.04	**7.82**	4.15	22.87
48542	Analysis	**3.92**	8.06	4.08	**22.77**
48558	Analysis	**3.76**	**7.73**	4.01	**21.93**
48697	Analysis	**3.80**	**7.71**	4.07	**22.08**
48931	Analysis	4.02	8.19	4.12	23.19
49014	Analysis	**3.84**	8.02	4.22	**22.68**
49075	Analysis	**3.82**	8.06	4.12	**22.57**
49079	Analysis	**3.74**	8.24	4.04	**22.48**
49209	Analysis	**3.97**	8.18	4.03	22.96
	International 4-12-4 Fertilizer—Guarantee	4.00	12.00	4.00	27.20
48525	Analysis	4.09	12.54	4.04	28.05
48543	Analysis	4.08	12.22	4.02	27.65
48661	Analysis	4.12	12.40	4.02	27.95
48751	Analysis	4.01	12.19	4.06	27.50

Table 9. Analysis of commercial fertilizer, season 1933-34—(Continued).

Laboratory number	Manufacturer, place of business and brand	Nitrogen, per cent	Available phosphoric acid, per cent	Potash, per cent	Valuation found, per ton
	International Agricultural Corporation, Atlanta, Georgia, and Texarkana, Texas-Arkansas.				
	International 4-12-4 Fertilizer—Guarantee—Continued	4.00	12.00	4.00	27.20
49016	Analysis	4.21	12.27	4.27	28.30
49074	Analysis	4.19	**11.98**	4.12	27.77
49083	Analysis	**3.94**	12.32	**3.91**	27.31
49120	Analysis	4.05	12.67	4.03	28.09
	International 6-10-7 Fertilizer—Guarantee	6.00	10.00	7.00	33.10
49047	Analysis	**5.87**	10.73	7.20	33.81
	International 6-12-6 Fertilizer—Guarantee	6.00	12.00	6.00	34.20
49173	Analysis	6.00	12.11	6.27	34.62
	International Rainbow Cotton Fertilizer—Guarantee	4.00	12.00	4.00	27.20
48696	Analysis	4.08	12.02	4.10	27.52
49033	Analysis	4.01	12.09	4.02	27.34
	International 18% Superphosphate—Guarantee	.....	18.00	.....	19.80
48493	Analysis	.....	18.25	.....	20.08
48535	Analysis	.....	**17.42**	.....	**19.16**
48559	Analysis	.....	18.32	.....	20.15
48756	Analysis	.....	18.76	.....	20.64
48782	Analysis	.....	18.49	.....	20.34
49015	Analysis	.....	18.89	.....	20.78
49072	Analysis	.....	18.48	.....	20.33
49126	Analysis	.....	18.36	.....	20.20
	International 20% Superphosphate—Guarantee	.....	20.00	.....	22.00
48373	Analysis	.....	20.59	.....	22.65
48534	Analysis	.....	21.23	.....	23.35
49073	Analysis	.....	20.24	.....	22.26
	International 4-10-7 Tomato Fertilizer—Guarantee	4.00	10.00	7.00	28.30
49210	Analysis	4.13	10.32	7.20	29.18
	International 4-8-6 Truck Fertilizer—Guarantee	4.00	8.00	6.00	25.00
48524	Analysis	4.02	7.38	6.88	25.34
48533	Analysis	4.00	7.89	**5.83**	**24.69**
48557	Analysis	**3.88**	8.42	6.04	25.21
49084	Analysis	4.00	8.63	6.14	25.84
49211	Analysis	**3.86**	8.10	6.18	**24.97**
	Muriate of Potash—Guarantee	.....	.....	48.00	52.80
48538	Analysis	.....	.....	53.52	58.87
48592	Analysis	.....	.....	49.81	54.79
49046	Analysis	.....	.....	51.37	56.51
	Sulphate of Ammonia—Guarantee	20.00	.....	.....	48.00
48593	Analysis	**19.07**	.....	.....	**45.77**
	Jefferson Oil Company, Jefferson, Texas.				
	Jefferson Superphosphate—Guarantee	.....	18.00	.....	19.80
49011	Analysis	.....	18.99	.....	20.89
	Kelly, Weber & Company, Incorporated, Lake Charles, Louisiana.				
	Weber-King Brand Fertilizer Special No. 0124—Guarantee	.....	12.00	4.00	17.60
48884	Analysis	.....	**11.55**	4.08	**17.20**
	Weber-King Brand Fertilizer Special No. 484—Guarantee	4.00	8.00	4.00	22.80
48882	Analysis	4.00	**7.89**	4.32	23.03
	Weber-King Brand Fertilizer Special No. 4124—Guarantee	4.00	12.00	4.00	27.20
48866	Analysis	4.10	**11.79**	4.05	27.27
48881	Analysis	4.35	**11.64**	**3.78**	27.40
48886	Analysis	4.30	**11.58**	**3.86**	27.31
	Weber-King Brand Fertilizer Special No. 6107—Guarantee	6.00	10.00	7.00	33.10
48868	Analysis	6.04	10.44	**6.48**	33.11
	Weber-King Brand 18% Superphosphate—Guarantee	.....	18.00	.....	19.80
48867	Analysis	.....	18.35	.....	20.19
48872	Analysis	.....	**17.87**	.....	**19.66**
48880	Analysis	.....	**17.82**	.....	**19.60**

Table 9. Analysis of commercial fertilizer, season 1933-34—(Continued).

Laboratory number	Manufacturer, place of business and brand	Nitrogen, per cent	Available phosphoric acid, per cent	Potash, per cent	Valuation found, per ton
	Kelly, Weber & Company, Incorporated, Lake Charles, Louisiana—Continued.				
	Weber-King Brand 18% Superphosphate—Guarantee—Continued	.....	18.00	.....	19.80
48883	Analysis	.....	**17.73**	.....	**19.50**
48888	Analysis	.....	18.14	.....	19.95
49152	Analysis	.....	18.32	.....	20.15
49158	Analysis	.....	18.27	.....	20.10
	La-Tex Fertilizer Company, Shreveport, Louisiana.				
	La-Tex 3-10-3 Fertilizer—Guarantee	3.00	10.00	3.00	21.50
49091	Analysis	3.14	10.19	**2.93**	21.97
	La-Tex 4-8-4 Fertilizer—Guarantee	4.00	8.00	4.00	22.80
48530	Analysis	4.10	8.61	5.13	24.95
48765	Analysis	4.49	9.33	4.31	25.78
49090	Analysis	4.44	8.61	4.04	24.57
49134	Analysis	**3.82**	8.04	**3.63**	**22.00**
	La-Tex 4-8-6 Fertilizer—Guarantee	4.00	8.00	6.00	25.00
48766	Analysis	4.30	9.11	**5.13**	25.98
48942	Analysis	4.50	8.06	6.05	26.33
	La-Tex 4-12-4 Fertilizer—Guarantee	4.00	12.00	4.00	27.20
48833	Analysis	**3.86**	12.14	**3.64**	**26.61**
	La-Tex 6-10-7 Fertilizer—Guarantee	6.00	10.00	7.00	33.1
48444	Analysis	**4.69**	10.10	**5.59**	**28.52**
48677	Analysis	**4.76**	10.41	**6.23**	**29.72**
48941	Analysis	**5.73**	10.85	7.40	33.83
	La-Tex 18% Superphosphate—Guarantee	.....	18.00	.....	19.80
48443	Analysis	.....	18.44	.....	20.28
	Longview Cotton Oil Company, P. O. Drawer 810, Longview, Texas.				
	Longview Best Superphosphate—Guarantee	.....	20.00	.....	22.00
48829	Analysis	.....	**19.98**	.....	**21.9**
48847	Analysis	.....	22.13	.....	24.34
	Longview Cotton & Corn Special Fertilizer—Guarantee	4.00	12.00	4.00	27.20
48500	Analysis	4.52	12.12	4.01	28.59
49118	Analysis	4.26	12.52	4.01	28.40
	Longview Cotton Special Fertilizer—Guarantee	3.00	10.00	3.00	21.50
48497	Analysis	3.37	10.17	3.59	23.23
49000	Analysis	3.26	10.28	3.10	22.54
	Longview Crop Special Fertilizer—Guarantee	6.00	9.00	3.00	27.60
48821	Analysis	**5.25**	10.02	3.60	**27.58**
	Longview Gregg County Special Fertilizer—Guarantee	4.00	8.00	4.00	22.80
48501	Analysis	4.11	8.80	4.26	24.23
48999	Analysis	**3.85**	9.33	**3.59**	23.45
	Longview Muriate of Potash—Guarantee	.....	.....	48.00	52.80
48822	Analysis	.....	.....	50.73	55.80
	Longview Superphosphate—Guarantee	.....	18.00	.....	19.80
48498	Analysis	.....	**17.84**	.....	**19.62**
48998	Analysis	.....	20.04	.....	22.04
49117	Analysis	.....	20.19	.....	22.21
	Longview Vegetable Fertilizer—Guarantee	6.00	10.00	7.00	33.10
48499	Analysis	**5.94**	10.59	**6.33**	**32.87**
48820	Analysis	**5.64**	10.99	**6.19**	**32.44**
	Marshall Cotton Oil Company, Marshall, Texas				
	Marshall Eclipse Fertilizer 3-10-3—Guarantee	3.00	10.00	3.00	21.50
48507	Analysis	**2.94**	10.61	3.04	22.04
49002	Analysis	3.12	10.57	**2.69**	22.08
49012	Analysis	**2.94**	10.36	3.05	21.82
	Marshall Fertilizer 4-10-7—Guarantee	4.00	10.00	7.00	28.30
48511	Analysis	4.02	**9.87**	**6.38**	**27.53**
	Marshall Fertilizer 6-10-7—Guarantee	6.00	10.00	7.00	33.10
48512	Analysis	**5.26**	**9.24**	10.21	34.01
49098	Analysis	**5.88**	11.16	**5.21**	**32.12**
	Marshall Fertilizer 6-12-6—Guarantee	6.00	12.00	6.00	34.20
49006	Analysis	**6.06**	12.07	**6.32**	**34.77**

Table 9. Analysis of commercial fertilizer, season 1933-34—(Continued).

Laboratory number	Manufacturer, place of business and brand	Nitrogen, per cent	Available phosphoric acid, per cent	Potash, per cent	Valuation found, per ton
	Marshall Cotton Oil Company, Marshall, Texas—Continued.				
	Marshall Fertilizer 10-20-10—Guarantee	10.00	20.00	10.00	57.00
48509	Analysis	**9.04**	**18.59**	**8.63**	**51.64**
	Marshall Garden Fertilizer 4-8-6—Guarantee	4.00	8.00	6.00	25.00
48510	Analysis	4.00	8.34	**5.79**	25.14
48521	Analysis	**3.98**	8.14	6.11	25.22
	Marshall Nut Producer 6-9-3—Guarantee	6.00	9.00	3.00	27.60
49004	Analysis	**5.81**	10.32	**2.91**	28.49
	Marshall Superphosphate—Guarantee	.....	18.00	.....	19.80
49001	Analysis	.....	18.74	.....	20.61
48522	Analysis	.....	17.46	.....	19.21
	Marshall Wonder Fertilizer 4-12-4—Guarantee	4.00	12.00	4.00	27.20
48506	Analysis	**3.96**	12.17	4.34	27.66
48545	Analysis	4.06	12.06	4.46	27.92
49005	Analysis	4.02	12.16	**3.85**	27.27
	Supreme Superphosphate—Guarantee	.....	20.00	.....	22.00
48508	Analysis	.....	20.24	.....	22.26
49096	Analysis	.....	20.57	.....	22.63
	Truckers Delight 4-8-4—Guarantee	4.00	8.00	4.00	22.80
48513	Analysis	4.08	8.06	4.08	23.15
48514	Analysis	4.08	8.22	4.02	23.25
48544	Analysis	4.00	8.03	4.15	23.00
49003	Analysis	**3.88**	8.60	**3.56**	**22.69**
49013	Analysis	**3.87**	**7.82**	**3.68**	**21.94**
49097	Analysis	**3.70**	8.41	4.07	**22.61**
49119	Analysis	**3.74**	8.05	**3.73**	**21.94**
	Milwaukee Sewerage Commission, Milwaukee, Wisconsin.				
	Milwaukee Milorganite—Guarantee	5.00	2.00	.....	14.20
48651	Analysis	6.44	2.70	.....	18.43
	Mixon Brothers, Kirbyville, Texas.				
	Jasco Brand Special No. 3103—Guarantee	3.00	10.00	3.00	21.50
48861	Analysis	**2.99**	10.40	3.39	22.35
49145	Analysis	3.00	10.30	3.77	22.68
	Jasco Brand Special No. 484—Guarantee	4.00	8.00	4.00	22.80
48859	Analysis	**3.66**	8.61	4.81	23.54
49147	Analysis	4.26	8.69	4.64	24.88
	Jasco Brand Special No. 4107—Guarantee	4.00	10.00	7.00	28.30
48860	Analysis	**3.94**	10.24	7.57	29.05
	Jasco Brand Special No. 4124—Guarantee	4.00	12.00	4.00	27.20
48858	Analysis	**3.85**	**11.70**	4.50	**27.06**
49146	Analysis	**3.74**	**11.79**	4.08	**26.44**
	Jasco Brand Special 18% Superphosphate—Guarantee	.....	18.00	.....	19.80
48862	Analysis	.....	18.10	.....	19.91
	Muriate of Potash—Guarantee	.....	.....	48.00	52.80
49148	Analysis	.....	.....	52.02	57.22
	Nitrate of Soda—Guarantee	15.00	.....	.....	36.00
49149	Analysis	15.97	.....	.....	38.33
	Ney Brothers, D'Hanis, Texas.				
	Bat Guano—Guarantee	8.00	1.50	.....	20.85
48323	Analysis	9.70	3.61	.....	27.25
	Robert Nicholson Seed Company,				
	Nicholson's All-Round Fertilizer—Guarantee	4.00	12.00	4.00	27.20
48631	Analysis	4.20	**11.77**	5.15	28.70
	Nicholson's Evergreen Lawn Dressing—Guarantee	10.00	6.00	4.00	35.00
48629	Analysis	**9.40**	6.73	4.26	**34.65**
	Oil Mill & Fertilizer Works, Henderson, Texas.				
	Henderson 3-10-3—Guarantee	3.00	10.00	3.00	21.50
48489	Analysis	3.01	10.13	3.18	21.86
48982	Analysis	3.00	11.04	3.46	23.15
48985	Analysis	3.19	**9.06**	3.23	**21.18**
49180	Analysis	3.00	10.42	**2.82**	21.76

Table 9. Analysis of commercial fertilizer, season 1933-34—(Continued).

Laboratory number	Manufacturer, place of business and brand	Nitrogen, per cent	Available phosphoric acid, per cent	Potash, per cent	Valuation found, per ton
	Oil Mill & Fertilizer Works, Henderson, Texas—Continued.				
	Henderson Brand 4-8-4—Guarantee	4.00	8.00	4.00	22.80
48490	Analysis	**3.38**	8.28	4.42	**22.08**
48980	Analysis	**3.75**	8.75	**3.88**	22.90
48986	Analysis	4.12	8.92	**2.85**	22.84
48992	Analysis	**3.85**	**7.63**	**3.72**	**21.72**
	Henderson 4-8-6—Guarantee	4.00	8.00	6.00	25.00
48492	Analysis	**3 65**	8.22	6.77	25.25
49181	Analysis	**3 97**	8.70	**5.61**	25.27
	Henderson 4-12-4—Guarantee	4.00	12.00	4.00	27.20
48491	Analysis	**3.70**	**11.58**	4.82	**26.92**
48981	Analysis	4.31	**11.37**	4.63	27.94
48991	Analysis	**3.90**	12.00	4.27	27.26
	Henderson 6-9-3—Guarantee	6.00	9.00	3.00	27.60
48780	Analysis	**5.43**	9.20	4.00	**27.55**
	Henderson 6-10-7—Guarantee	6.00	10.00	7.00	33.10
48979	Analysis	**5.55**	11.37	**5.95**	**32.38**
48990	Analysis	6.06	**9.92**	7.34	33.52
	Henderson Brand 6-12-6—Guarantee	6.00	12.00	6.00	34.20
48778	Analysis	**5.45**	12.56	**5.66**	**33.13**
	Henderson Sulphate of Ammonia 20—Guarantee	20.00	.....	.....	48.00
48779	Analysis	**19.51**	.....	.....	**46 82**
	Henderson 18 Per Cent Superphosphate—Guarantee	.....	18.00	.....	19.80
48777	Analysis	.....	**17.66**	.....	**19.43**
48783	Analysis	.....	18.12	.....	19.93
	Palestine Oil Mill & Fertilizer Company, Palestine, Texas.				
	Cottonseed Meal Fertilizer—Guarantee	6.88	1.00	1.00	18.71
48487	Analysis	**6.77**	2.28	1.71	20.64
	Palestine Blue Star 4124—Guarantee	4.00	12.00	4.00	27.20
48384	Analysis	4.18	12.41	4.34	28.45
48437	Analysis	**3.90**	12.31	4.53	27.88
48462	Analysis	4.22	12.47	4.01	28.26
48488	Analysis	**3.91**	12.52	4.06	27.62
48587	Analysis	4.38	12.77	4.01	28.97
48685	Analysis	4.08	12.14	4.59	28.19
48703	Analysis	4.10	12.24	4.16	27.88
48752	Analysis	4.02	**11.76**	4.54	27.58
48797	Analysis	**2.56**	13.88	4.23	**26.06**
48915	Analysis	4.01	12.65	4.56	28.56
48919	Analysis	4.21	12.07	4.15	27.95
48965	Analysis	4.25	**11.88**	4.37	28.08
48969	Analysis	4.16	12.04	4.06	27.69
49141	Analysis	4.02	12.31	4.41	28.04
49168	Analysis	4.00	**11.19**	5.00	27.41
	Palestine Blue Star 5155—Guarantee	5.00	15.00	5.00	34.00
48674	Analysis	5.14	15.73	**4.85**	34.98
48918	Analysis	5.02	**12.44**	5.41	**31.68**
	Palestine Blue Star 6107—Guarantee	6.00	10.00	7.00	33.10
48385	Analysis	6.10	10.76	7.38	34.60
48706	Analysis	6.08	**9.94**	7.13	33.36
48753	Analysis	6.11	10.19	7.05	33.63
48796	Analysis	5.88	10.68	**6.59**	33.11
48907	Analysis	6.01	10.02	**6.93**	**33.06**
48916	Analysis	6.00	10.65	7.13	33.96
48922	Analysis	6.19	10.02	7.47	34.10
	Palestine Blue Star 6126—Guarantee	6.00	12.00	6.00	34.20
48672	Analysis	6.12	**11.65**	6.79	34.98
48695	Analysis	**5.66**	12.15	6.00	**33.55**
48723	Analysis	**5.86**	12.03	6.02	**33.91**
48906	Analysis	6.03	**10.85**	6.06	**33.08**
48920	Analysis	**5.80**	**11.60**	6.46	**33.79**
48948	Analysis	6.09	**11.58**	6.56	34.58

Table 9. Analysis of commercial fertilizer, season 1933-34—(Continued).

Laboratory number	Manufacturer, place of business and brand	Nitrogen, per cent	Available phosphoric acid, per cent	Potash, per cent	Valuation found, per ton
	Palestine Oil Mill & Fertilizer Company, Palestine, Texas Continued.				
	Palestine Blue Star 20% Kainit—Guarantee	.....	.....	20.00	22.00
49115	Analysis	.....	.....	20.92	23.01
	Palestine Blue Star Sulphate of Ammonia—Guarantee	20.00	.....	.....	48.00
48758	Analysis	**19.85**	.....	.....	**47.64**
	Palestine Cotton Producer—Guarantee	3.00	10.00	3.00	21.50
48450	Analysis	**2.75**	**8.68**	3.01	**19.46**
48684	Analysis	3.33	**7.48**	3.56	**20.14**
49166	Analysis	3.02	10.44	3.20	22.25
	Palestine Eighteen Per Cent Superphosphate—Guarantee	.....	18.00	.....	19.80
48427	Analysis	.....	19.70	.....	21.67
48722	Analysis	.....	18.51	.....	20.36
48949	Analysis	.....	19.22	.....	21.14
49116	Analysis	.....	18.21	.....	20.03
	Palestine Jumbo—Guarantee	6.00	18.00	6.00	40.80
48438	Analysis	6.10	**17.77**	6.36	41.19
	Palestine Manure Salts—Guarantee	.....	.....	20.00	22.00
48461	Analysis	.....	.....	21.35	23.49
48721	Analysis	.....	.....	21.64	23.80
49170	Analysis	.....	.....	21.51	23.66
	Palestine Muriate of Potash—Guarantee	.....	.....	48.00	52.80
48406	Analysis	.....	.....	49.57	54.53
	Palestine Nitrate of Soda—Guarantee	15.00	.....	.....	36.00
48757	Analysis	16.20	.....	.....	38.88
48950	Analysis	16.29	.....	.....	39.10
	Palestine Perfection—Guarantee	6.00	9.00	3.00	27.60
48416	Analysis	**5.25**	**8.24**	3.06	**25.03**
48439	Analysis	**5.92**	**8.63**	3.42	**27.46**
48563	Analysis	5.20	7.41	4.11	**25.15**
	Palestine Rust Proof—Guarantee	4.00	10.00	7.00	28.30
48673	Analysis	4.02	**9.09**	7.12	**27.48**
48917	Analysis	4.04	10.52	7.38	29.39
	Palestine Tomato Special—Guarantee	4.00	8.00	6.00	25.00
48389	Analysis	**3.97**	8.10	6.12	25.17
48417	Analysis	**3.86**	**7.83**	6.08	**24.56**
48662	Analysis	4.04	**7.43**	6.26	**24.76**
48671	Analysis	**3.92**	8.36	**5.88**	25.08
48923	Analysis	**3.89**	**7.90**	6.18	**24.83**
48925	Analysis	4.00	**7.87**	6.29	25.18
48964	Analysis	**3.80**	7.80	6.47	**24.82**
48987	Analysis	**3.86**	8.00	**5.32**	**23.91**
	Palestine Twenty Per Cent Superphosphate—Guarantee	.....	20.00	.....	22.00
48386	Analysis	.....	**19.74**	.....	**21.71**
48702	Analysis	.....	20.10	.....	22.11
	Palestine Upland Cotton—Guarantee	4.00	8.00	4.00	22.80
48388	Analysis	4.08	9.38	4.26	24.80
48436	Analysis	**3.64**	**7.34**	4.56	**21.83**
48449	Analysis	4.00	8.06	4.10	22.98
48460	Analysis	**3.71**	8.08	4.27	**22.49**
48586	Analysis	4.00	8.13	4.22	23.18
48663	Analysis	**3.89**	**7.69**	4.71	22.98
48679	Analysis	4.02	8.33	4.39	23.64
48921	Analysis	4.06	8.19	4.12	23.28
48930	Analysis	**3.89**	8.02	4.63	23.25
48988	Analysis	**3.87**	8.03	4.30	22.85
49140	Analysis	**3.78**	**7.89**	4.62	22.83
49169	Analysis	**3.95**	8.59	**3.68**	22.98
	Pate Brothers Fertilizer Works, Sulphur Springs, Texas.				
	Pate's 3-10-3—Guarantee	3.00	10.00	3.00	21.50
48567	Analysis	3.32	10.26	3.58	23.20
49058	Analysis	3.09	10.06	3.38	22.21
49220	Analysis	3.29	10.50	3.21	22.98

Table 9. Analysis of commercial fertilizer, season 1933-34—(Continued).

Laboratory number	Manufacturer, place of business and brand	Nitrogen, per cent	Available phosphoric acid, per cent	Potash, per cent	Valuation found, per ton
	Pate Brothers Fertilizer Works, Sulphur Springs, Texas.				
	Pate's 4-8-4—Guarantee	4.00	8.00	4.00	22.80
48565	Analysis	4.07	10.18	4.23	25.62
49057	Analysis	4.28	8.77	4.47	24.84
49219	Analysis	4.33	8.98	4.07	24.75
	Pate's 4-8-6—Guarantee	4.00	8.00	6.00	25.00
48564	Analysis	4.20	9.93	6.23	27.85
48571	Analysis	4.13	9.85	6.21	27.58
49051	Analysis	4.12	8.75	6.50	26.67
49056	Analysis	4.16	8.11	6.30	25.83
49218	Analysis	4.16	8.71	6.10	26.27
49221	Analysis	4.26	8.97	**5.82**	26.49
	Pate's 4-12-4—Guarantee	4.00	12.00	4.00	27.20
48566	Analysis	4.15	**11.85**	4.61	28.07
48630	Analysis	4.14	**11.91**	5.01	28.55
49055	Analysis	4.23	12.20	4.33	28.33
	Pate's 5-15-5—Guarantee	5.00	15.00	5.00	34.00
48647	Analysis	5.10	**12.26**	5.58	**31.87**
	Pate's 6-12-6 —Guarantee	6.00	12.00	6.00	34.20
48634	Analysis	6.05	**11.73**	7.16	35.30
48648	Analysis	6.05	12.17	6.83	35.42
	Pate's Sulphate of Ammonia—Guarantee	20.00	.....	.....	48.00
48632	Analysis	**19.64**	.....	.....	**47.14**
	Pate's 20% Superphosphate—Guarantee	.....	20.00	.....	22.00
48568	Analysis	.....	**19.85**	.....	**21.84**
	Pittsburg Cotton Oil Company, Pittsburg, Texas.				
	Double Circle Fertilizer 3103—Guarantee	3.00	10.00	3.00	21.50
48591	Analysis	3.03	10.08	3.02	21.68
48724	Analysis	3.02	10.16	3.08	21.82
49025	Analysis	3.00	10.35	3.10	22.00
49197	Analysis	3.20	**9.59**	3.14	21.68
	Double Circle Fertilizer 484—Guarantee	4.00	8.00	4.00	22.80
48573	Analysis	4.05	**7.66**	4.30	22.88
48588	Analysis	4.08	8.01	4.33	23.36
48725	Analysis	**3.80**	8.41	4.19	22.98
49024	Analysis	4.04	8.57	4.29	23.85
49041	Analysis	4.10	8.73	4.13	23.98
49059	Analysis	4.01	8.49	4.03	23.39
	Double Circle Fertilizer 486—Guarantee	4.00	8.00	6.00	25.00
48590	Analysis	4.14	8.16	**5.43**	**24.89**
49028	Analysis	4.12	8.76	**5.44**	25.51
49060	Analysis	4.04	8.29	**5.81**	25.21
49200	Analysis	4.27	8.83	**5.50**	26.01
	Double Circle Fertilizer 4810—Guarantee	4.00	8.00	10.00	29.40
48560	Analysis	4.08	8.05	10.28	29.96
48574	Analysis	**3.85**	8.01	**9.15**	**28.12**
49201	Analysis	4.00	8.12	**8.02**	**27.35**
	Double Circle Fertilizer 4124—Guarantee	4.00	12.00	4.00	27.20
48562	Analysis	4.05	**10.86**	4.11	**26.19**
49027	Analysis	4.00	**11.57**	4.15	**26.90**
49040	Analysis	**3.98**	**11.63**	4.07	**26.82**
49198	Analysis	4.02	12.36	**3.91**	27.55
	Double Circle Fertilizer 6107—Guarantee	6.00	10.00	7.00	33.10
48694	Analysis	6.03	10.65	7.17	34.08
	18% Superphosphate—Guarantee	.....	18.00	.....	19.80
48561	Analysis	.....	18.23	.....	20.05
48589	Analysis	.....	18.60	.....	20.46
49020	Analysis	.....	19.57	.....	21.53
49199	Analysis	.....	18.88	.....	20.77
	20% Superphosphate—Guarantee	.....	20.00	.....	22.00
48575	Analysis	.....	20.14	.....	22.15
49026	Analysis	.....	20.78	.....	22.86

Table 9. Analysis of commercial fertilizer, season 1933-34—(Continued).

Laboratory number	Manufacturer, place of business and brand	Nitrogen, per cent	Available phosphoric acid, per cent	Potash, per cent	Valuation found, per ton
	Shreveport Fertilizer Works, 312-314 Ward Building, Shreveport, Louisiana.				
	American Nitrate of Soda—Guarantee	16.00	.....	.....	38.40
48826	Analysis	16.06	.....	.....	38.54
	Lion 3-10-3 Blood & Bone—Guarantee	3.00	10.00	3.00	21.50
48827	Analysis	**2.88**	10.66	3.03	21.97
	Lion 4-8-4 Cotton Producer—Guarantee	4.00	8.00	4.00	22.8
48394	Analysis	4.00	8.14	4.54	23.54
48459	Analysis	4.11	8.42	4.55	24.13
48624	Analysis	4.02	8.63	4.93	24.56
48690	Analysis	**3.78**	8.23	4.28	22.88
48742	Analysis	**3.72**	8.46	4.20	22.86
48972	Analysis	**3.92**	8.52	4.68	23.93
49042	Analysis	4.10	8.45	5.04	24.68
49068	Analysis	**3.91**	10.39	4.30	25.54
49077	Analysis	4.63	**7.25**	4.13	23.63
49092	Analysis	4.37	8.14	4.02	23.86
49109	Analysis	4.74	9.57	5.63	28.10
49150	Analysis	4.42	8.43	4.47	24.80
49177	Analysis	4.25	**7.52**	4.13	23.01
	Lion 6-10-7 La-Tex Special—Guarantee	6.00	10.00	7.00	33.10
48395	Analysis	**5.93**	11.13	7.42	34.63
48854	Analysis	6.24	10.05	**6.08**	**32.73**
	Lion 3-10-3 Mcal Formula—Guarantee	3.00	10.00	3.00	21.50
48529	Analysis	3.23	10.17	3.69	23.00
48636	Analysis	**2.63**	**9.33**	3.37	**20.28**
49114	Analysis	3.55	**8.40**	3.05	**21.12**
	Lion 6-9-3 Prolific Fruiter—Guarantee	6.00	9.00	3.00	27.60
48828	Analysis	5.78	9.54	3.03	27.69
	Lion 5-15-5 Special Cotton—Guarantee	5.00	15.00	5.00	34.00
48469	Analysis	**4.86**	**10.71**	6.35	**30.43**
	Lion 4-8-6 Special Truck—Guarantee	4.00	8.00	6.00	25.00
48402	Analysis	4.23	8.32	6.30	26.23
48442	Analysis	**3.87**	8.44	6.28	25.48
48458	Analysis	4.18	9.14	6.69	27.44
48741	Analysis	4.07	8.45	**5.80**	25.43
48773	Analysis	4.67	8.22	**5.72**	26.54
48973	Analysis	5.02	8.56	**4.81**	26.76
49067	Analysis	**3.94**	9.08	**5.49**	25.49
49076	Analysis	4.68	**7.75**	6.01	26.37
	Lion 4-12-4 Superior Cotton Grower—Guarantee	4.00	12.00	4.00	27.20
48576	Analysis	4.10	12.21	4.04	27.71
48625	Analysis	**3.88**	**11.85**	**3.47**	**26.17**
48832	Analysis	**3.42**	12.02	**3.66**	**25.46**
48855	Analysis	**3.93**	12.18	4.01	27.24
49110	Analysis	4.55	12.78	**3.84**	29.20
49151	Analysis	4.46	**11.37**	4.11	27.78
	Lion 18% Superphosphate—Guarantee	.....	18.00	.....	19.80
48457	Analysis	.....	19.19	.....	21.11
48577	Analysis	.....	**16.36**	.....	**18.00**
48691	Analysis	.....	18.05	.....	19.86
48831	Analysis	.....	20.02	.....	22.02
48865	Analysis	.....	19.14	.....	21.05
49108	Analysis	.....	18.88	.....	20.77
	Smith County Cotton Oil & Fertilizer Company, Tyler, Texas.				
	Smico 4-8-4 Fertilizer—Guarantee	4.00	8.00	4.00	22.80
48413	Analysis	4.30	8.50	4.36	24.47
	Smico 4-8-6 Fertilizer—Guarantee	4.00	8.00	6.00	25.00
48412	Analysis	**3.69**	8.51	6.04	**24.86**
48957	Analysis	4.36	8.56	6.24	26.74
48961	Analysis	4.41	8.71	6.24	27.02
	Smico 4-10-0 Fertilizer—Guarantee	4.00	10.00	.....	20.60
48411	Analysis	4.29	10.78	.....	22.16

Table 9. Analysis of commercial fertilizer, season 1933-34—(Continued).

Laboratory number	Manufacturer, place of business and brand	Nitrogen, per cent	Available phosphoric acid, per cent	Potash, per cent	Valuation found, per ton
	Smith County Cotton Oil & Fertilizer Company, Tyler, Texas—Continued.				
	Smico 4-12-4 Fertilizer—Guarantee	4.00	12.00	4.00	27.20
48956	Analysis	**3.87**	12.74	4.41	28.15
	Smico 18 Per Cent Superphosphate—Guarantee	.....	18.00	.....	19.80
48667	Analysis	.....	18.98	.....	20.88
	Swift & Company Fertilizer Works, New Orleans and Shreveport, Louisiana, and Houston and Fort Worth, Texas.				
	20% Kainit—Guarantee	.....	.....	20.00	22.00
48719	Analysis	.....	.....	**19.24**	**21.16**
	Muriate of Potash—Guarantee	.....	.....	48.00	52.80
48612	Analysis	.....	.....	**42.79**	**47.07**
	16% Nitrate of Soda—Guarantee	16.00	.....	.....	38.40
48280	Analysis	**15.81**	.....	.....	**37.94**
48285	Analysis	16.07	.....	.....	38.57
48940	Analysis	16.04	.....	.....	38.50
49129	Analysis	16.31	.....	.....	39.14
	Pioneer 4-12-4—Guarantee	4.00	12.00	4.00	27.20
48429	Analysis	4.22	12.05	4.44	28.27
	Raw Bone Meal Fertilizer—Guarantee	3.70	*22.00	.....	24.72
48635	Analysis	4.30	*22.18	.....	26.29
	Sulphate Ammonia—Guarantee	20.00	.....	.....	48.00
48279	Analysis	**19.34**	.....	.....	**46.42**
48286	Analysis	20.84	.....	.....	50.02
48321	Analysis	20.41	.....	.....	48.98
48351	Analysis	20.62	.....	.....	49.49
48640	Analysis	**19.11**	.....	.....	**45.86**
48693	Analysis	**18.87**	.....	.....	**45.29**
48789	Analysis	20.13	.....	.....	48.31
49185	Analysis	**18.13**	.....	.....	**43.51**
	Sulphate of Potash—Guarantee	.....	.....	48.00	52.80
48287	Analysis	.....	.....	**45.90**	**50.49**
	Swift's Red Steer 3-10-3—Guarantee	3.00	10.00	3.00	21.50
48400	Analysis	3.10	**9.94**	3.19	21.88
48441	Analysis	3.01	**9.95**	3.44	21.95
48518	Analysis	3.12	10.62	3.01	22.48
48536	Analysis	**2.97**	10.13	3.02	21.59
48755	Analysis	3.02	10.00	**2.94**	**21.48**
48785	Analysis	3.87	**8.41**	3.79	22.71
48974	Analysis	**2.99**	**9.79**	3.06	**21.32**
48989	Analysis	3.08	10.03	**2.82**	21.52
49052	Analysis	**2.99**	10.55	3.08	22.18
49082	Analysis	**2.92**	**9.80**	3.10	**21.20**
49094	Analysis	**3.04**	**9.82**	3.32	21.75
49104	Analysis	3.02	10.13	3.04	21.73
49106	Analysis	3.00	10.10	4.20	22.93
49122	Analysis	**2.92**	10.17	**2.85**	**21.34**
49203	Analysis	3.15	10.52	**2.87**	22.29
	Swift's Red Steer 4-8-4—Guarantee	4.00	8.00	4.00	22.80
48371	Analysis	4.02	10.13	**3.82**	24.99
48419	Analysis	4.00	8.20	**3.82**	22.82
48440	Analysis	4.03	8.20	4.06	23.16
48520	Analysis	**3.89**	8.08	**3.88**	**22.50**
48541	Analysis	4.01	8.10	**3.86**	**22.78**
48553	Analysis	4.02	8.51	**3.87**	23.27
48569	Analysis	**3.88**	8.58	4.03	23.18
48614	Analysis	4.01	8.47	4.07	23.42
48664	Analysis	4.01	8.21	**3.67**	**22.69**
48720	Analysis	**3.87**	**7.75**	4.00	**22.22**
48784	Analysis	**2.71**	10.09	**3.39**	**21.33**
48788	Analysis	**3.92**	8.04	4.04	**22.69**

*Total phosphoric acid.

Table 9. Analysis of commercial fertilizer, season 1933-34—(Continued).

Laboratory number	Manufacturer, place of business and brand	Nitrogen, per cent	Available phosphoric acid, per cent	Potash, per cent	Valuation found, per ton
	Swift & Company Fertilizer Works, New Orleans and Shreveport, Louisiana, and Houston and Fort Worth, Texas—Continued.				
	Swift's Red Steer 4-8-4—Guarantee—Continued	4.00	8.00	4.00	22.80
48843	Analysis	4.04	8.76	4.00	23.74
48848	Analysis	**3.80**	**7.51**	4.19	**21.99**
48876	Analysis	**3.85**	8.27	4.20	22.96
48927	Analysis	**3.76**	8.18	4.00	**22.42**
48958	Analysis	**3.71**	8.41	4.01	**22.56**
49023	Analysis	**3.86**	8.45	**3.74**	**22.67**
49054	Analysis	**3.90**	8.15	**3.75**	22.46
49061	Analysis	**3.81**	8.18	4.01	**22.55**
49066	Analysis	**3.82**	**7.80**	**3.83**	**21.96**
49093	Analysis	**3.92**	8.27	4.02	22.93
49144	Analysis	**3.93**	8.29	**3.91**	22.85
49157	Analysis	**3.94**	8.41	4.06	23.18
49205	Analysis	4.16	8.85	4.02	24.14
	Swift's Red Steer 4-8-6—Guarantee	4.00	8.00	6.00	25.00
48355	Analysis	**3.98**	8.25	6.02	25.25
48532	Analysis	4.32	**7.72**	**5.34**	**24.73**
48605	Analysis	4.03	8.00	**5.62**	**24.65**
48692	Analysis	**3.97**	8.66	**5.43**	25.03
48805	Analysis	4.26	8.36	**5.66**	25.65
48899	Analysis	4.06	8.16	**5.82**	25.12
48924	Analysis	4.01	8.07	6.19	25.31
48951	Analysis	**3.97**	**7.70**	6.28	**24.91**
49081	Analysis	**3.74**	8.15	**5.88**	**24.42**
49121	Analysis	**3.88**	8.25	**5.58**	**24.53**
49184	Analysis	**3.97**	8.18	6.16	25.31
49204	Analysis	**3.92**	8.28	6.09	25.22
	Swift's Red Steer 4-8-10—Guarantee	4.00	8.00	10.00	29.40
48422	Analysis	4.02	10.41	9.39	31.43
48428	Analysis	4.01	8.40	**9.49**	**29.30**
	Swift's Red Steer 4-10-0—Guarantee	4.00	10.00	.....	20.60
49171	Analysis	4.14	10.14	.....	21.09
	Swift's Red Steer 4-10-7—Guarantee	4.00	10.00	7.00	28.30
48594	Analysis	4.35	10.31	7.18	29.68
48856	Analysis	4.05	10.32	**6.60**	28.33
49142	Analysis	4.10	10.09	**6.77**	28.39
	Swift's Red Steer 4-12-4—Guarantee	4.00	12.00	4.00	27.20
48312	Analysis	4.06	12.01	4.44	27.83
48317	Analysis	4.10	12.18	4.02	27.66
48318	Analysis	4.02	12.18	4.40	27.89
48322	Analysis	4.02	12.00	4.64	27.95
48453	Analysis	4.13	12.44	**3.99**	27.98
48519	Analysis	4.08	12.57	4.01	28.03
48540	Analysis	4.08	12.59	4.16	28.22
48570	Analysis	4.11	12.36	4.62	28.54
48604	Analysis	4.40	12.30	4.04	28.53
48613	Analysis	4.15	12.36	4.54	28.55
48844	Analysis	4.17	12.35	4.36	28.40
48874	Analysis	**3.95**	12.84	4.02	28.02
48878	Analysis	4.00	12.33	4.03	27.59
48926	Analysis	4.08	12.26	4.02	27.70
49053	Analysis	4.10	12.72	4.11	28.35
49095	Analysis	4.08	12.05	4.33	27.81
49143	Analysis	4.01	12.20	4.14	27.59
	Swift's Red Steer 5-15-5—Guarantee	5.00	15.00	5.00	34.00
48306	Analysis	5.19	15.29	5.12	34.91
48349	Analysis	5.02	15.09	5.18	34.35
	Swift's Red Steer 6-9-3—Guarantee	6.00	9.00	3.00	27.60
48404	Analysis	6.02	9.12	3.21	28.01
48952	Analysis	6.10	9.46	3.23	28.60
	Swift's Red Steer 6-10-7—Guarantee	6.00	10.00	7.00	33.10
48296	Analysis	6.06	10.17	7.80	34.31
48313	Analysis	6.18	10.48	**6.61**	33.63

Table 9. Analysis of commercial fertilizer, season 1933-34—(Continued).

Laboratory number	Manufacturer, place of business and brand	Nitrogen, per cent	Available phosphoric acid, per cent	Potash, per cent	Valuation found, per ton
	Swift & Company Fertilizer Works, New Orleans and Shreveport, Louisiana, and Houston and Fort Worth, Texas—Continued.				
	Swift's Red Steer 6-10-7—Guarantee—Continued	6.00	10.00	7.00	33.10
48327	Analysis	6.14	10.25	7.21	33.95
48337	Analysis	**5.90**	10.18	7.44	33.54
48365	Analysis	6.01	10.08	7.10	33.32
48372	Analysis	**5.97**	10.30	7.03	33.39
48418	Analysis	6.00	10.10	7.15	33.38
48447	Analysis	**5.33**	11.16	**5.90**	**31.56**
48454	Analysis	6.08	10.41	**6.67**	33.38
48675	Analysis	**5.98**	10.68	7.02	33.82
48699	Analysis	6.10	10.40	**6.36**	**33.08**
48762	Analysis	6.00	10.21	**6.93**	33.25
49035	Analysis	**5.96**	10.27	7.57	33.93
49182	Analysis	6.08	10.47	7.28	34.12
	Swift's Red Steer 6-12-6—Guarantee	6.00	12.00	6.00	34.20
48278	Analysis	**5.92**	12.69	6.07	34.85
48281	Analysis	6.19	12.59	6.27	35.61
48282	Analysis	6.07	12.64	**5.85**	34.91
48283	Analysis	6.03	12.68	6.01	35.03
48284	Analysis	6.11	12.64	6.03	35.19
48305	Analysis	**5.79**	**11.60**	**5.88**	**33.13**
48315	Analysis	6.06	12.40	6.20	35.00
48320	Analysis	6.00	**11.84**	6.17	34.21
48325	Analysis	6.06	**11.96**	6.20	34.52
48350	Analysis	6.00	12.35	6.16	34.77
48391	Analysis	6.19	12.52	6.08	35.32
48433	Analysis	6.04	12.21	6.17	34.72
48665	Analysis	**5.85**	**11.78**	6.58	34.24
48857	Analysis	**5.93**	12.66	**5.76**	34.50
48870	Analysis	**5.63**	12.32	**4.92**	**32.47**
48875	Analysis	**5.81**	12.28	**5.78**	**33.81**
48879	Analysis	**5.92**	12.34	6.46	34.89
48970	Analysis	6.15	12.04	**5.83**	34.41
49107	Analysis	6.29	12.88	**5.58**	35.41
49131	Analysis	6.26	12.29	**5.76**	34.88
49183	Analysis	6.05	12.15	**5.74**	34.20
	Swift's Red Steer 6-18-6—Guarantee	6.00	18.00	6.00	40.80
48364	Analysis	**5.89**	**17.83**	6.19	**40.56**
	Swift's Red Steer 8-8-8—Guarantee	8.00	8.00	8.00	36.80
48595	Analysis	**7.68**	8.22	**4.45**	**32.37**
	Swift's Red Steer 8-24-8—Guarantee	8.00	24.00	8.00	54.40
48316	Analysis	8.21	**21.39**	8.69	**52.79**
48891	Analysis	8.02	**23.71**	8.79	55.00
	Swift's Red Steer 9-18-18—Guarantee	9.00	18.00	18.00	61.20
48354	Analysis	9.22	18.45	**17.53**	61.71
49034	Analysis	9.06	18.17	**17.61**	**61.10**
	Swift's Red Steer 10-20-10—Guarantee	10.00	20.00	10.00	57.00
48303	Analysis	10.77	**16.76**	10.42	**55.75**
48326	Analysis	10.50	20.32	**9.56**	58.07
48336	Analysis	**8.41**	**17.56**	13.00	**53.80**
48890	Analysis	10.14	21.12	10.09	58.67
	Swift's Red Steer 18% Superphosphate—Guarantee	.....	18.00	.....	19.80
48390	Analysis	.....	18.47	.....	20.32
48405	Analysis	.....	18.83	.....	20.71
48552	Analysis	.....	18.12	.....	19.93
48654	Analysis	.....	18.82	.....	20.70
48877	Analysis	.....	19.34	.....	21.27
49021	Analysis	.....	19.51	.....	21.46
49156	Analysis	.....	18.13	.....	19.94
	Swift's Red Steer 20% Superphosphate—Guarantee	.....	20.00	.....	22.00
48314	Analysis	.....	**19.72**	.....	**21.69**
48368	Analysis	.....	20.02	.....	22.02
48718	Analysis	.....	**19.59**	.....	**21.55**

Table 9. Analysis of commercial fertilizer, season 1933-34—(Continued).

Laboratory number	Manufacturer, place of business and brand	Nitrogen, per cent	Available phosphoric acid, per cent	Potash, per cent	Valuation found, per ton
	Swift & Company Fertilizer Works, New Orleans and Shreveport, Louisiana, and Houston and Fort Worth, Texas—Continued.				
	Vigoro—Guarantee	4.00	12.00	4.00	27.20
48288	Analysis	4.39	12.69	4.14	29.05
48319	Analysis	4.25	12.21	4.56	28.65
48348	Analysis	4.06	12.79	4.08	28.30
48900	Analysis	4.49	12.36	4.03	28.81
	Synthetic Nitrogen Products Corporation, 285 Madison Avenue, New York, New York.				
	Calcium Nitrate (Nitrate of Lime)—Guarantee	15.00	.....	.....	36.00
48298	Analysis	15.19	.....	.....	36.46
	Temple Cotton Oil Company, North Little Rock, Arkansas.				
	Quapaw 4-8-4—Guarantee	4.00	8.00	4.00	22.80
48539	Analysis	**3.86**	8.48	4.02	23.01
	Quapaw 4-8-6—Guarantee	4.00	8.00	6.00	25.00
49065	Analysis	**3.94**	**7.19**	6.14	**24.12**
	Quapaw 4-12-4—Guarantee	4.00	12.00	4.00	27.20
49064	Analysis	4.04	**11.20**	4.03	**26.45**
	Texas Chemical Company, 811 Petroleum Building, Houston, Texas.				
	"T. C. C." Brand Raw Bone Meal—Guarantee	3.70	*22.00	.....	24.72
48873	Analysis	3.96	*22.28	.....	25.54
48889	Analysis	4.04	*22.80	.....	26.12
49159	Analysis	4.27	*22.84	.....	26.69
	Texas Co-Operatives, Incorporated, 1108 South Ervay Street, Dallas, Texas.				
	Texas Co-Ops Fertilizer 484—Guarantee	4.00	8.00	4.00	22.80
48643	Analysis	4.07	8.53	4.06	23.62
	Texas Co-Ops Fertilizer 693—Guarantee	6.00	9.00	3.00	27.60
48713	Analysis	6.02	9.25	3.15	28.10
	Texas Co-Ops Fertilizer 6107—Guarantee	6.00	10.00	7.00	33.10
48712	Analysis	**5.94**	10.03	**6.78**	**32.75**
	Texas Co-Ops Sulphate of Ammonia—Guarantee	20.00	.....	.....	48.00
48666	Analysis	20.82	.....	.....	49.97
	Texas Co-Ops Superphosphate 20 pct.—Guarantee	.....	20.00	.....	22.00
48650	Analysis	.....	20.49	.....	22.54
	Texas Farm Products Company, Nacogdoches, Texas.				
	Lone Star Brand Cottonseed Meal—Guarantee	6.88	1.50	1.50	19.81
48737	Analysis	**6.81**	2.53	1.87	21.18
	Lone Star Brand 3-10-3 Fertilizer—Guarantee	3.00	10.00	3.00	21.50
48434	Analysis	3.00	**9.91**	3.17	21.50
48838	Analysis	3.05	10.06	3.31	22.03
48846	Analysis	3.04	10.24	3.04	21.90
48938	Analysis	3.02	**9.77**	3.01	**21.31**
49132	Analysis	3.23	10.37	3.26	22.75
49163	Analysis	3.10	10.18	3.02	21.96
	Lone Star Brand 4-8-4 Fertilizer—Guarantee	4.00	8.00	4.00	22.80
48374	Analysis	**3.93**	8.06	**3.72**	**22.39**
48401	Analysis	**3.91**	**7.99**	4.08	**22.66**
48774	Analysis	4.15	8.49	4.04	23.74
48794	Analysis	**3.85**	8.35	4.18	23.03
48845	Analysis	**3.83**	8.49	4.07	23.01
48850	Analysis	**3.77**	8.55	4.16	23.04
48945	Analysis	**3.94**	8.27	4.13	23.10
48977	Analysis	**3.94**	8.15	4.01	22.84
49113	Analysis	4.07	8.72	**3.73**	23.46
49139	Analysis	4.01	8.02	4.04	22.88

*Total phosphoric acid.

Table 9. Analysis of commercial fertilizer, season 1933-34—(Continued).

Laboratory number	Manufacturer, place of business and brand	Nitrogen, per cent	Available phosphoric acid, per cent	Potash, per cent	Valuation found, per ton
	Texas Farm Products Company, Nacogdoches, Texas—Cont.				
	Lone Star Brand 4-8-6 Fertilizer—Guarantee	4.00	8.00	6.00	25.00
48396	Analysis	4.04	8.42	6.00	25.56
48913	Analysis	4.00	8.24	**5.87**	25.12
48947	Analysis	4.06	8.16	6.07	25.40
49161	Analysis	**3.88**	**7.99**	**5.80**	**24.48**
	Lone Star Brand 4-10-0 Fertilizer—Guarantee	4.00	10.00	.....	20.60
48380	Analysis	4.10	10.01	.....	20.85
	Lone Star Brand 4-10-7 Fertilizer—Guarantee	4.00	10.00	7.00	28.30
48435	Analysis	4.79	**9.03**	7.57	29.76
48484	Analysis	4.22	10.39	**6.30**	28.49
	Lone Star Brand 4-12-4 Fertilizer—Guarantee	4.00	12.00	4.00	27.20
48358	Analysis	4.03	12.25	4.34	27.92
48717	Analysis	4.09	12.15	4.02	27.61
48836	Analysis	4.00	12.46	4.20	27.93
48841	Analysis	4.14	12.41	4.06	28.06
48842	Analysis	4.13	12.52	4.07	28.16
48960	Analysis	4.03	12.56	4.39	28.32
49112	Analysis	4.04	12.66	**3.66**	27.66
	Lone Star Brand 6-10-7 Fertilizer—Guarantee	6.00	10.00	7.00	33.10
48367	Analysis	6.13	10.09	**6.69**	33.17
48375	Analysis	**5.84**	10.08	**6.83**	**32.62**
48379	Analysis	**5.89**	10.26	7.06	33.20
48727	Analysis	**5.97**	10.35	**6.62**	**33.00**
48728	Analysis	**5.84**	10.51	**6.86**	33.13
48738	Analysis	**5.88**	10.43	**6.94**	33.21
48840	Analysis	6.08	10.53	7.25	34.15
48909	Analysis	6.00	10.51	**6.79**	33.43
49133	Analysis	**5.98**	11.04	**6.76**	33.93
49138	Analysis	**5.95**	10.29	**6.45**	**32.70**
	Lone Star Brand 6-12-6 Fertilizer—Guarantee	6.00	12.00	6.00	34.20
48381	Analysis	6.02	12.07	**5.87**	**34.19**
48745	Analysis	**5.95**	12.06	6.07	34.23
48775	Analysis	5.83	12.57	6.24	34.68
48939	Analysis	**5.71**	**11.87**	**5.16**	**32.44**
	Lone Star Brand 10-10-0—Guarantee	10.00	10.00	.....	35.00
48910	Analysis	10.18	10.28	.....	35.74
48967	Analysis	**9.89**	10.49	.....	35.28
49162	Analysis	10.02	10.35	.....	35.44
	Lone Star Brand 48% Muriate of Potash—Guarantee	.....	.....	48.00	52.80
48483	Analysis	.....	.....	**44.48**	**48.93**
48912	Analysis	.....	.....	48.57	53.43
	Lone Star Brand Nitrate of Soda—Guarantee	16.00	.....	.....	38.40
48904	Analysis	**15.86**	.....	.....	**38.06**
48911	Analysis	16.04	.....	.....	38.50
49176	Analysis	16.36	.....	.....	39.26
	Lone Star Brand Sulphate of Ammonia—Guarantee	20.00	.....	.....	48.00
48903	Analysis	20.75	.....	.....	49.80
48946	Analysis	20.35	.....	.....	48.84
49175	Analysis	**19.05**	.....	.....	**45.72**
	Lone Star Brand 18% Superphosphate—Guarantee	.....	18.00	.....	19.80
48729	Analysis	.....	18.56	.....	20.42
48744	Analysis	.....	18.51	.....	20.36
48824	Analysis	.....	19.14	.....	21.05
48937	Analysis	.....	18.62	.....	20.48
48966	Analysis	.....	**17.01**	.....	**18.71**
48978	Analysis	.....	18.77	.....	20.65
	Lone Star Brand 20% Superphosphate—Guarantee	.....	20.00	.....	22.00
48378	Analysis	.....	**19.49**	.....	**21.44**
48839	Analysis	.....	20.79	.....	22.87
49160	Analysis	.....	20.55	.....	22.61

Table 9. Analysis of commercial fertilizer, season 1933-34—(Continued).

Laboratory number	Manufacturer, place of business and brand	Nitrogen, per cent	Available phosphoric acid, per cent	Potash, per cent	Valuation found, per ton
	Traders Oil Mill Company, Fort Worth, Texas.				
	Traders Lawn Fertilizer—Guarantee	6.00	4.00	1.00	19.90
48649	Analysis	**5.71**	4.19	1.59	20.06
	Tri-State Fertilizer & Lumber Company, Shreveport, Louisiana.				
	Red Diamond 4-8-4 Fertilizer—Guarantee	4.00	8.00	4.00	22.80
48934	Analysis	4.56	**7.25**	4.66	24.05
	Red Diamond 4-8-6 Fertilizer—Guarantee	4.00	8.00	6.00	25.00
48767	Analysis	4.14	**7.81**	9.87	29.39
	Red Diamond 4-10-7 Fertilizer—Guarantee	4.00	10.00	7.00	28.30
48770	Analysis	4.00	10.34	9.13	31.01
	Red Diamond 6-10-7 Fertilizer—Guarantee	6.00	10.00	7.00	33.10
48768	Analysis	6.04	**9.46**	8.08	33.80
	Red Diamond 6-12-6 Fertilizer—Guarantee	6.00	12.00	6.00	34.20
48769	Analysis	**5.79**	**11.59**	8.10	35.56
	Red Diamond 20% Sulphate of Ammonia—Guarantee	20.00	.....	.....	48.00
48933	Analysis	20.97	.....	.....	50.33
	Red Diamond 18% Superphosphate—Guarantee	.....	18.00	.....	19.80
48932	Analysis	.....	**17.43**	.....	**19.17**
	Tyler Fertilizer Company, Tyler, Texas.				
	Eighteen Per Cent Superphosphate—Guarantee	.....	18.00	.....	19.80
48669	Analysis	.....	19.76	.....	21.74
48734	Analysis	.....	18.92	.....	20.81
	Heart Brand Fertilizer No. 3-10-3—Guarantee	3.00	10.00	3.00	21.50
48711	Analysis	3.22	10.85	3.32	23.32
	Heart Brand Fertilizer No. 4-8-4—Guarantee	4.00	8.00	4.00	22.80
48407	Analysis	**3.82**	8.47	**3.90**	**22.78**
48580	Analysis	4.12	**7.65**	5.09	23.91
48655	Analysis	4.05	8.80	**3.67**	23.44
49190	Analysis	4.33	8.94	4.36	25.02
	Heart Brand Fertilizer No. 4-8-6—Guarantee	4.00	8.00	6.00	25.00
48424	Analysis	**3.63**	8.40	6.04	**24.59**
48430	Analysis	**3.91**	8.23	**4.99**	**23.92**
48710	Analysis	4.06	**7.95**	6.33	25.45
48736	Analysis	4.16	8.25	**5.72**	25.35
48764	Analysis	**3.98**	8.39	6.02	25.40
48929	Analysis	**3.94**	8.26	6.26	25.44
49188	Analysis	**3.92**	8.01	6.08	**24.91**
	Heart Brand Fertilizer No. 4-8-10—Guarantee	4.00	8.00	10.00	29.40
48410	Analysis	**3.90**	8.78	**9.74**	29.73
48423	Analysis	**3.89**	8.81	**9.51**	29.49
48579	Analysis	4.10	8.08	**9.65**	**29.35**
48954	Analysis	**3.78**	9.11	**8.62**	**28.57**
	Heart Brand Fertilizer No. 4-10-0—Guarantee	4.00	10.00	.....	20.60
48392	Analysis	4.48	10.37	.....	22.16
	Heart Brand Fertilizer No. 4-12-4—Guarantee	4.00	12.00	4.00	27.20
48578	Analysis	**3.96**	**11.77**	4.34	27.22
48763	Analysis	**3.85**	12.04	4.81	27.77
48928	Analysis	**3.77**	**11.84**	4.75	27.30
48962	Analysis	4.22	12.48	**3.67**	27.90
	Heart Brand Fertilizer No. 6-10-7—Guarantee	6.00	10.00	7.00	33.10
48393	Analysis	**5.51**	10.94	**6.15**	**32.02**
48408	Analysis	6.13	10.44	**6.73**	33.59
48581	Analysis	**5.68**	**8.51**	8.23	**32.94**
48656	Analysis	**5.66**	10.68	8.16	34.31
48668	Analysis	**5.77**	10.41	7.02	**33.02**
49186	Analysis	**5.05**	12.41	**6.02**	**32.39**
	Heart Brand Fertilizer No. 6-12-6—Guarantee	6.00	12.00	6.00	34.20
48409	Analysis	6.79	**11.52**	6.09	35.67
48955	Analysis	**5.94**	**11.41**	**5.86**	**33.26**
	Heart Brand Fertilizer No. 10-0-10—Guarantee	10.00	.....	10.00	35.00
48971	Analysis	10.79	.....	**9.54**	36.39
49189	Analysis	10.15	.....	**9.24**	**34.52**

Table 9. Analysis of commercial fertilizer, season 1933-34—(Continued).

Laboratory number	Manufacturer, place of business and brand	Nitrogen, per cent	Available phosphoric acid, per cent	Potash, per cent	Valuation found, per ton
	Tyler Fertilizer Company, Tyler, Texas—Continued.				
	Sulphate of Ammonia—Guarantee	20.00	.....	.....	48.00
48709	Analysis	20.86	.....	.....	50.06
48735	Analysis	**20.61**	.....	.....	49.46
	Twenty Per Cent Superphosphate—Guarantee	.....	20.00	.....	22.00
48596	Analysis	.....	20.20	.....	22.22
49187	Analysis	.....	21.10	.....	23.21
	United Chemical Company, Santa Fe Building, Dallas, Texas.				
	"United Plantfood" 6-10-7—Guarantee	6.00	10.00	7.00	33.10
48642	Analysis	6.00	10.38	7.09	33.62
	"United Plantfood" 6-12-6—Guarantee	6.00	12.00	6.00	34.20
48641	Analysis	6.04	12.09	6.12	34.53
	"United Plantfood" 20% Superphosphate—Guarantee	.....	20.00	.....	22.00
48644	Analysis	.....	**19.25**	.....	**21.18**
	Virginia-Carolina Chemical Corporation, Shreveport, Louisiana.				
	20% Kainit—Guarantee	.....	.....	20.00	22.00
48810	Analysis	.....	.....	20.24	22.26
	V-C Big Giant Crop Grower—Guarantee	6.00	12.00	6.00	34.20
49207	Analysis	**5.83**	12.17	6.17	**34.17**
	V-C Blood, Bone and Potash—Guarantee	3.00	10.00	3.00	21.50
48809	Analysis	**2.96**	10.35	3.10	21.90
	V-C Champion Crop Grower—Guarantee	4.00	10.00	7.00	28.30
49208	Analysis	4.12	10.17	**6.85**	28.62
	V-C Early Trucker—Guarantee	4.00	8.00	4.00	22.80
48743	Analysis	**3.93**	8.21	4.29	23.18
49078	Analysis	**3.96**	8.00	4.16	22.88
	V-C Fruit & Truck Special—Guarantee	6.00	10.00	7.00	33.10
48496	Analysis	**5.91**	10.23	7.16	33.31
48750	Analysis	**5.84**	**9.78**	7.46	**32.99**
48761	Analysis	6.00	10.09	7.37	33.61
48793	Analysis	**5.76**	11.63	**6.57**	33.84
48953	Analysis	6.10	10.57	7.01	33.98
	V-C Good Luck Fertilizer—Guarantee	4.00	8.00	4.00	22.80
48527	Analysis	**3.99**	8.41	4.14	23.38
48549	Analysis	4.02	8.83	4.03	23.79
48993	Analysis	4.01	**7.77**	4.06	**22.64**
49088	Analysis	**3.98**	8.29	4.01	23.08
49165	Analysis	**3.90**	8.02	4.19	**22.79**
49212	Analysis	4.12	8.97	4.04	24.20
	V-C Indian Brand Fertilizer—Guarantee	4.00	12.00	4.00	27.20
48383	Analysis	4.17	12.12	4.13	27.88
48547	Analysis	4.13	12.18	4.16	27.89
48683	Analysis	4.11	12.27	4.55	28.37
48714	Analysis	4.12	**11.78**	4.33	27.61
48834	Analysis	4.23	12.18	4.23	28.20
	V-C Prolific Cotton Grower—Guarantee	3.00	10.00	3.00	21.50
48382	Analysis	3.00	10.16	3.00	21.68
48546	Analysis	**2.92**	10.18	3.03	21.54
48682	Analysis	**2.95**	10.61	3.13	22.19
48808	Analysis	**2.96**	**9.99**	3.02	**21.41**
48835	Analysis	3.08	10.09	**2.81**	21.58
49031	Analysis	3.10	10.06	3.13	21.95
49089	Analysis	3.08	10.10	3.04	21.84
49105	Analysis	**2.93**	**9.78**	3.18	**21.29**
49124	Analysis	**2.92**	10.26	3.19	21.81
49164	Analysis	3.12	10.08	3.17	22.07
	V-C 18% Superphosphate—Guarantee	.....	18.00	.....	19.80
48494	Analysis	.....	19.83	.....	21.81
48526	Analysis	.....	18.95	.....	20.85
48806	Analysis	.....	18.40	.....	20.24
48994	Analysis	.....	**17.68**	.....	**19.45**
49032	Analysis	.....	18.11	.....	19.92
49135	Analysis	.....	18.75	.....	20.63

Table 9. Analysis of commercial fertilizer, season 1933-34—(Continued).

Laboratory number	Manufacturer, place of business and brand	Nitrogen, per cent	Available phosphoric acid, per cent	Potash, per cent	Valuation found,
	Virginia-Carolina Chemical Corporation, Shreveport, Louisiana—Continued.				
	V-C 20% Superphosphate—Guarantee	.....	20.00	.....	22.0
48726	Analysis	.....	**18.77**	.....	**20.6**
48807	Analysis	.....	**19.01**	.....	**20.9**
	V-C Tomato Special—Guarantee	4.00	8.00	6.00	25.0
48914	Analysis	4.04	8.44	6.04	25.6
	V-C Truckers Special—Guarantee	4.00	8.00	6.00	25.0
48528	Analysis	4.10	**7.98**	**5.77**	**24.9**
48548	Analysis	**3.96**	8.42	**5.80**	25.1
48792	Analysis	**3.88**	8.63	6.06	25.4
48802	Analysis	4.00	8.19	6.06	25.2
49206	Analysis	4.12	8.04	**5.88**	25.2
49213	Analysis	4.04	8.36	6.13	25.6
	Miller C. Weaver, Corpus Christi, Texas.				
	Soft Phosphate with Colloidal Clay—Guarantee	.....	*20.00	.....	5.2
48307	Analysis	.....	*23.83	.....	6.2

*Total phosphoric acid.