

H. G. M. Jacobson

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Bulletin 404

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COMMERCIAL FERTILIZERS

REPORT FOR 1937



Connecticut
Agricultural Experiment Station
New Haven

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COMMERCIAL FERTILIZERS REPORT FOR 1937

STATUTE AND REGULATIONS REGARDING COMMERCIAL FERTILIZERS

THE term "commercial fertilizers" as used in the Connecticut fertilizer statute includes any and every substance imported, manufactured, prepared or sold for fertilizing or manuring or soil amendment purposes, except barnyard manure and stable manure that have not been artificially treated or manipulated, marl and lime.

The seller is responsible for the proper labelling of each package of fertilizer, for the registration of each brand sold or offered for sale, for the payment of the required analysis fee and for the payment of the tonnage tax. If, however, proper labelling, registration and payments of analysis fees and of tonnage tax have been provided for by the manufacturer or by another responsible person, all sellers of such brands are released from the above mentioned requirements. The retailer, therefore, should assure himself that the requirements of the law have been met by the manufacturer of the brands which he handles, or himself be prepared to meet all these requirements.

It frequently happens that a manufacturer or jobber sells fertilizer materials which are the products of, and which are registered by, another firm or individual. Distributors in such cases should sell such materials by the exact brand names under which they are registered in order that there may be no mistake as to the identity of the brands. Any change in the brand names, or failure to make the identity of the brand and its manufacturer clear, makes the distributor liable for the registration of the product as his own brand.

The law exempts from registration, and from other requirements referred to, only (1) fertilizers passing through the state in transit; (2) fertilizers and fertilizer materials shipped to regular fertilizer factories to be used for manufacturing purposes; and (3) fertilizers and fertilizer chemicals sold to the Connecticut Agricultural Experiment Station for experimental purposes.

NOTE: Analyses reported in this bulletin were made by Messrs. Nolan, Mathis and Walden; microscopic examinations by Miss Shepard; inspection and sampling by Mr. Churchill; and compilations by Mrs. Vosburgh.

VEGETABLE WASTE SOLD AS "TOP DRESSING"

In the last few years itinerant vendors have sold vegetable waste to city home owners as a top dressing for lawns and shrubbery. Inquiries regarding the substance and character of such materials have come to the Station and a number of samples have been examined. Sample 4280, page 26, is fairly typical of such of these as have come to our attention. This sample, as received, had the following composition:

Moisture.....	52.00%
Ash (mineral matter).....	10.92
Organic matter (and volatile).....	37.08
Nitrogen.....	1.25
Phosphoric acid.....	0.40
Potash.....	0.82
Lime, CaO.....	6.08

A ton of this product in the moist state as sold, contains 1040 lbs. of water, 218 lbs. of mineral matter, largely soil and lime, and 742 lbs. of vegetable (organic) material. The mineral matter and the organic together furnish about 50 lbs. of plant food (nitrogen, phosphoric acid and potash) to the ton, worth about \$2.00. The liming material present in this case is worth about a dollar more.

The 742 lbs. of organic matter has agricultural value as a mulch and as a conditioner for sandy soils to increase their water-holding capacity. Judging the value of this organic matter by the current market prices of similar material (*e.g.*, peat moss), it is worth \$10.00 to \$15.00.

The above material, in the moist condition represented by the analysis, weighed 32.5 lbs. to the bushel, so it takes a little over 3 bushels to make 100 lbs. in weight. At 25 cents per bushel, or about 75 cents per 100 lbs., the purchaser pays for organic matter at about the same rate as when he buys peat moss from local dealers in this State. However, peat moss and related materials as sold by regular dealers is air dry and contains a dependable maximum of organic matter. Waste products, such as the one here cited, will vary in water content and also in inert mineral matter; hence the organic matter will vary accordingly.

As a source of plant food, that is to say as a fertilizer, the value of such waste products as we have examined is negligible; but for the purpose herein cited they have some value.

DEFINITIONS OF FERTILIZER MATERIALS AND
INTERPRETATION OF TERMS USED IN
FERTILIZER CONTROL

For the purpose of bringing about a better understanding among control officials and the fertilizer industry as to the identity of fertilizer materials and the significance of terms used in interpreting results of analysis, a special committee of the Association of Official Agricultural Chemists was appointed in 1921 to consider this question, and from time to time pronouncements have been made.

The following definitions and interpretations are now official:¹

¹ Official and Tentative Methods of Analysis, A.O.A.C., 1930, page 490.

DEFINITIONS

ACIDULATED FISH TANKAGE, ACIDULATED FISH SCRAP

Acidulated fish tankage, acidulated fish scrap, is the rendered product derived from fish and treated with sulfuric acid (adopted 1930).

ACTIVATED SEWAGE PRODUCTS

Activated sewage products are those made from sewage freed from grit and coarse solids and aerated after being inoculated with micro-organisms. The resulting flocculated organic matter is withdrawn from the tanks, filtered with or without the aid of coagulants, dried, ground, and screened (adopted 1930).

AGRICULTURAL LIMING MATERIAL

Agricultural liming material is material whose calcium and magnesium content is capable of neutralizing soil acidity (adopted 1935).

AIR-SLAKED LIME

Air-slaked lime is the product obtained by exposing quicklime or hydrated lime to the atmosphere until partly carbonated (adopted 1931, withdrawn for amendment, 1935).

AMMONIATED SUPERPHOSPHATE

Ammoniated superphosphate is a product containing superphosphate and/or dissolved bone and nitrogenous compounds, but without the addition of potash (adopted 1930).

ANALYSIS

Analysis, as applied to fertilizers, designates the percentage composition of the product expressed in terms of nitrogen, phosphoric acid, and potash in their various forms (adopted 1926).

ASHES FROM LEACHED WOOD

Ashes from leached wood are unleached ashes resulting from the burning of wood that has been exposed to or digested in water or other liquid solvent, as in the extraction of dyes, so that a part of the plant food has been dissolved and removed (adopted 1926).

AVAILABLE PHOSPHORIC ACID

Available phosphoric acid is the sum of the water-soluble and the citrate-soluble phosphoric acid (adopted 1931).

"BASIC" LIME PHOSPHATE

"Basic" lime phosphate (lime-based superphosphate) is a superphosphate to which liming materials have been added in a quantity at least six per cent (6%) calcium carbonate equivalents in excess of the quantity required to convert all water-soluble phosphate to the citrate-soluble form (adopted 1934).

BASIC PHOSPHATE SLAG

Basic phosphate slag is a by-product in the manufacture of steel from phosphatic iron ores. The product shall be finely ground and shall contain no admixture of materials other than what results in the original process of manufacture. It shall contain not less than twelve per cent (12%) of total phosphoric acid (P_2O_5), not less than eighty per cent (80%) of which shall be soluble in two per cent (2%) citric acid solution according to the Wagner method of analysis. Any other phosphate slag not conforming to this definition shall be designated low grade (adopted 1925).

BRAND AND BRAND NAME

A brand is a term, design, or trademark used in connection with one or several grades of fertilizers (adopted 1926).

A brand name is a specific designation applied to an individual fertilizer (adopted 1926).

CITRATE-SOLUBLE ("REVERTED") PHOSPHORIC ACID

Citrate-soluble ("reverted") phosphoric acid is that part of the total phosphoric acid in a fertilizer that is insoluble in water but soluble in a solution of citrate of ammonia according to the method adopted by the A.O.A.C. (adopted 1932).

CRUDE, INERT, OR SLOW-ACTING NITROGENOUS MATERIALS

Crude, inert, or slow-acting nitrogenous materials are unprocessed organic substances relatively high in nitrogen, but having a very low value as plant food and showing a low activity by both the alkaline and neutral permanganate methods—below fifty per cent (50%) and eighty per cent (80%) respectively (adopted 1929).

CYANAMID

Cyanamid is a commercial product composed chiefly of calcium cyanamid (CaCN_2), and it shall contain not less than twenty-one per cent (21%) of nitrogen (adopted 1935).

DICALCIUM PHOSPHATE

Dicalcium phosphate is a manufactured product consisting chiefly of a dicalcic salt of phosphoric acid (adopted 1931).

DISSOLVED BONE

Dissolved bone is ground bone or bone meal that has been treated with sulfuric acid (adopted 1926).

DRIED BLOOD

Dried blood is the collected blood of slaughtered animals, dried and ground, and containing not less than twelve per cent (12%) of nitrogen in organic forms (adopted 1928).

DRIED, PULVERIZED, OR SHREDDED MANURES

Dried, pulverized, or shredded manures are what the name indicates, and not mixtures of manures and other materials (adopted 1925).

FERTILIZER GRADE

Fertilizer grade shall represent only the minimum guarantee of its plant food expressed in terms of nitrogen (not ammonia), available phosphoric acid, and water-soluble potash (adopted 1928).

FISH TANKAGE, FISH SCRAP, DRY GROUND FISH, FISH MEAL FERTILIZER GRADE

Fish tankage, fish scrap, dry ground fish, fish meal fertilizer grade is the dried ground product derived from rendered or unrendered fish (adopted 1929).

GARBAGE TANKAGE

Garbage tankage is the rendered, dried, and ground product derived from waste household food materials (adopted 1929).

GROUND LIMESTONE

Ground limestone is the product obtained by grinding calcareous or dolomitic limestone. Not less than seventy-five per cent (75%) shall pass a 100-mesh sieve. It shall contain calcium and magnesium carbonates equivalent to not less than ninety per cent (90%) of calcium carbonate (adopted 1931, withdrawn for amendment, 1935).

GROUND RAW BONE

Ground raw bone is dried ground animal bones that have not been previously steamed under pressure (adopted 1929).

GROUND SHELL LIME

Ground shell lime is the product obtained by grinding the shells of mollusks. Not less than seventy-five per cent (75%) shall pass a 100-mesh sieve. It shall contain calcium and magnesium carbonates equivalent to not less than eighty per cent (80%) of calcium carbonate (adopted 1931, withdrawn for amendment, 1935).

GROUND SHELL MARL

Ground shell marl is the product obtained by grinding natural deposits of shell marl. Not less than seventy-five per cent (75%) shall pass a 100-mesh sieve. It shall contain calcium and magnesium carbonates equivalent to not less than eighty per cent of calcium carbonate (adopted 1931, withdrawn for amendment, 1935).

GROUND STEAMED BONE

Ground steamed bone is ground animal bones that have been previously steamed under pressure (adopted 1929).

GYPSUM, LAND PLASTER, OR CRUDE CALCIUM SULFATE

Gypsum, land plaster, or crude calcium sulfate are products consisting chiefly of calcium sulfate. They may contain twenty per cent (20%) of combined water. (They do not neutralize acid soils) (adopted 1931).

HIGH CALCIC PRODUCTS

High calcic products are materials of which 90% or more of the total calcium and magnesium content consists of calcium oxide (adopted 1935).

HIGH MAGNESIC PRODUCTS

High magnesian products are materials in which more than 10 per cent of the total calcium and magnesium oxide consists of magnesium oxide (adopted 1935).

HOOF AND HORN MEAL

Hoof and horn meal is processed, dried, and ground hoofs and horns (adopted 1929).

HYDRATED OR SLAKED LIME

Hydrated or slaked lime is a dry product consisting chiefly of the hydroxide of calcium and oxide-hydroxide of magnesium (adopted 1935).

KAINIT

Kainit is a potash salt containing potassium and sodium chlorides and sometimes sulfate of magnesia with not less than twelve per cent (12%) of potash (K_2O) (adopted 1928).

LEACHED WOOD ASHES

Leached wood ashes are ashes from burned unleached wood with part of their plant food removed by artificial means or by exposure to rains, snows, or other solvent (adopted 1928).

LIME

The word "lime" when applied to liming materials means either calcium oxide or calcium and magnesium oxides (adopted 1934).

MANGANESE

Manganese. The Committee recommends that either the water-soluble or available manganese in fertilizers be expressed as manganese (Mn) (adopted 1935).

MANGANESE SULFATE

Manganese sulfate. The term manganese sulfate, when applied to an ingredient of a mixed fertilizer, shall designate anhydrous manganous sulfate ($MnSO_4$) (adopted 1935).

MANURE SALTS

Manure salts are potash salts containing high percentages of chloride and from twenty per cent (20%) to thirty per cent (30%) of potash (K_2O). The term double manure salts is discontinued (adopted 1925).

MONO-AMMONIUM PHOSPHATE (FERTILIZER GRADE)

Monoammonium phosphate (fertilizer grade) is a commercial salt made by combining phosphoric acid with ammonia. It shall contain not less than ten per cent (10%) of nitrogen and not less than forty-six per cent (46%) of available phosphoric acid (adopted 1934).

MURIATE OF POTASH (COMMERCIAL POTASSIUM CHLORIDE)

Muriate of potash is a potash salt containing not less than forty-eight per cent (48%) of potash (K_2O), chiefly as chloride (adopted 1929).

NITRATE OF POTASH (COMMERCIAL POTASSIUM NITRATE)

Nitrate of potash is a salt containing not less than twelve per cent (12%) of nitrogen and forty-four per cent (44%) of potash (K_2O) (adopted 1927).

NITRATE OF SODA (COMMERCIAL SODIUM NITRATE)

Nitrate of soda is commercial sodium nitrate containing not less than fifteen per cent (15%) of nitrogen, chiefly as sodium nitrate (adopted 1928).

PEAT

Peat is partly decayed vegetable matter of natural occurrence. It is composed chiefly of organic matter which contains some nitrogen of low activity (adopted 1931).

CHARRED PEAT

Charred peat is peat artificially dried at a temperature that causes partial decomposition (adopted 1931).

PHOSPHATE ROCK

Phosphate rock is a natural rock containing one or more calcium phosphate minerals of sufficient purity and quantity to permit its use, either directly or after concentration, in the manufacture of commercial products (adopted 1933).

PHOSPHORIC ACID

The term phosphoric acid designates phosphorus pentoxide (P_2O_5) (adopted 1934).

POTASH

The term potash designates potassium oxide (K_2O) (adopted 1934).

PRECIPITATED BONE PHOSPHATE

Precipitated bone phosphate is a by-product from the manufacture of glue from bones and is obtained by neutralizing the hydrochloric acid solution of processed bone with calcium hydroxide. The phosphoric acid is chiefly present as dicalcium phosphate (adopted 1933).

PRECIPITATED PHOSPHATE

Precipitated phosphate is a product consisting mainly of dicalcium phosphate obtained by neutralizing with calcium hydroxide the acid solution of either phosphate rock or processed bone (adopted 1933).

PROCESS TANKAGES

Process tankages are products made under steam pressure from crude inert nitrogenous materials, with or without the use of acids, for the purpose of increasing the activity of the nitrogen. These products shall be called "Process Tankages" with or without further qualification. The water-insoluble nitrogen in these products shall test at least fifty per cent (50%) active by the alkaline, or eighty per cent (80%) by the neutral permanganate method (adopted 1931).

**PRODUCTS SECURED BY HEATING CALCIUM PHOSPHATE WITH ALKALI SALTS
CONTAINING POTASH**

Products secured by heating calcium phosphate with alkali salts containing potash are non-acid phosphates with potash. They are not potassium phosphate (adopted 1928).

QUICK LIME, BURNED LIME, CAUSTIC LIME, LUMP LIME, UNSLAKED LIME

Quick lime, burned lime, caustic lime, lump lime, unslaked lime. These designations shall apply to calcined materials, the major part of which is calcium oxide, in natural association with a lesser amount of magnesium oxide, and which is capable of slaking with water (adopted 1935).

SHEEP MANURE—WOOL WASTE

Sheep manure-wool waste is the by-product from wool-carding establishments consisting chiefly of sheep manure, seeds, and wool fiber (adopted 1931).

SOFT PHOSPHATE WITH COLLOIDAL CLAY

Soft phosphate with colloidal clay is very finely divided low-analysis by-product from mining Florida rock phosphate by a hydraulic process in which the colloidal materials settle at points in artificial ponds and basins farthest from the washer, and are later removed after the natural evaporation of the water (adopted 1933).

SULFATE OF AMMONIA (COMMERCIAL AMMONIUM SULFATE)

Sulfate of ammonia (commercial ammonium sulfate) is a commercial product composed chiefly of ammonium sulfate. It shall contain not less than twenty and five-tenths per cent (20.5%) of nitrogen (adopted 1931).

SULFATE OF POTASH (COMMERCIAL POTASSIUM SULFATE)

Sulfate of potash is a potash salt containing not less than forty-eight per cent (48%) of potash (K_2O), chiefly as sulfate, and not more than two and one-half per cent (2.5%) of chlorine (adopted 1929).

SULFATE OF POTASH-MAGNESIA

Sulfate of potash-magnesia is a potash salt containing not less than twenty-five per cent (25%) of potash (K_2O), nor less than twenty-five per cent (25%) of sulfate of magnesia, and not more than two and one-half (2.5%) of chlorine (adopted 1925).

SUPERPHOSPHATE

Superphosphate is a cured mixture of rock phosphate and sulfuric acid and/or phosphoric acid. The grade shall always be used as a prefix to the name. Example: 16% Superphosphate. The use of the term Acid Phosphate is discontinued (adopted 1935).

TANKAGE

Tankage (without qualification) is the rendered, dried, and ground by-product, largely meat and bone from animals (slaughtered or that have died otherwise) (adopted 1929).

UNIT OF PLANT FOOD

A unit of plant food is twenty (20) pounds, or one per cent (1%) of a ton (adopted 1926).

UNLEACHED WOOD ASHES

Unleached wood ashes are ashes from burned unleached wood that have had no part of their plant food removed and that contain four per cent (4%) or more of water-soluble potash (K_2O) (adopted 1928).

WASTE LIME, BY-PRODUCT LIME

Waste lime, by-product lime, is any industrial waste or by-product containing calcium or calcium and magnesium in forms that will neutralize acids. It may be designated by the prefixation of the name of the industry or process by which it is produced, i.e., gas-house lime, tanners' lime, acetylene lime-waste, lime-kiln ashes, calcium silicate, etc. (adopted 1931).

INTERPRETATIONS

ACTIVITY OF WATER-INSOLUBLE NITROGEN IN MIXED FERTILIZERS

The alkaline and neutral permanganate methods distinguish between the better and the poorer sources of water-insoluble nitrogen; they do not show the percentage availability of the material. The available nitrogen of any product is measured only by carefully conducted vegetation experiments.

(a) The methods shall be used on mixed fertilizers containing water-insoluble nitrogen amounting to three-tenths of one per cent (0.3%) or more of the weight of the material. If a total nitrogen exceeds the minimum guarantee and is accompanied by a low activity of the insoluble nitrogen, the over-run shall be taken into consideration in determining the classification of the water-insoluble nitrogen.

(b) The water-insoluble nitrogen in mixed fertilizers showing an activity below fifty per cent (50%) by the alkaline method, and also below eighty per cent (80%) by the neutral method, shall be classed as inferior. This necessitates the use of both methods, also the provision as to over-run in (a), before classifying as inferior (adopted 1927).

AMOUNT OF CHLORINE PERMISSIBLE IN FERTILIZERS IN WHICH THE POTASH IS CLAIMED AS SULFATE

Chlorine in mixed fertilizers in which the potash is claimed as sulfate shall not exceed one-half of one per cent (0.5%) more than what is called for in the minimum potash content based on the definition for sulfate of potash formulated by the committee. Calculate as follows: 0.05 times the percentage of potash found plus 0.5 (adopted 1928).

BRAND NAME TO INCLUDE ANALYSIS OR GRADE OF FERTILIZER

The analysis or grade of a fertilizer should be included with its brand name, and so used by the manufacturer on sacks and in printed literature and by the control official in his reports and publications (adopted 1927).

CYANAMIDE AND UREA NITROGEN

Cyanamide and urea nitrogen is synthetic non-protein organic nitrogen (adopted 1931).

FERTILIZER FORMULA

A fertilizer formula shall express the quantity and grade of the crude stock materials used in making a fertilizer mixture. For example: 800 pounds of 16 per cent superphosphate, 800 pounds of tankage (7.40 nitrogen and 9.15 total phosphoric acid), and 400 pounds of sulphate of potash-magnesia (twenty-six per cent (26%) potash) (adopted 1926).

FINELY GROUND AS APPLIED TO BASIC PHOSPHATE SLAG

Finely ground in the definition of basic phosphate slag shall refer to actual size of particles as determined by the use of standard sieves, as follows: seventy per cent (70%) or more shall pass a 100-mesh, and ninety per cent (90%) or more shall pass a 50-mesh sieve (adopted 1927).

THE WORD "LIME" AS APPLIED TO FERTILIZERS

The term lime shall not be used in the registration, labelling, or guaranteeing of fertilizers or fertilizing materials, unless the lime is in a form to neutralize soil acidity, such as the oxide, hydroxide, or carbonate, or equivalent magnesia compounds (adopted 1935).

NET WEIGHTS

The weights appearing on packages of fertilizer, agricultural lime, and liming materials shall always mean net weights (adopted 1932).

ORDER OF TERMS

The order of terms in mixed fertilizers shall be nitrogen first, phosphoric acid second, and potash third (adopted 1930).

NAME OF A FERTILIZER MATERIAL USED AS THE BRAND NAME OR PART OF THE BRAND NAME OF A MIXED FERTILIZER

When the name of a fertilizer material is used as part of the brand name of a mixed fertilizer, as for example blood, bone or fish, the nitrogen or phosphoric acid shall be derived from or supplied entirely by the material named. When the name of a fertilizer material is used as a brand or as part of a brand and the nitrogen and phosphoric acid is not supplied by the material named, the word brand shall follow the name of the material. Example: Fish Brand Fertilizer (adopted 1930)

STATEMENT OF GUARANTIES

The statement of guarantee of mixed fertilizers shall be given in whole numbers (adopted 1930).

UNIFORMITY IN USE OF TERMS "PHOSPHORIC ACID" AND "POTASH"

As the terms phosphoric acid and potash are used universally in guaranteeing and in reporting the analyses of fertilizers, it is recommended that the same terms also be used in reporting and discussing the results of analyses of related materials (adopted 1934).

REGISTRATIONS

LATE REGISTRATIONS FOR 1936

To the brands registered for 1936 in our last report should be added:

Ted Alkire, Lubbock, Texas
Kireal (Cotton Hull Ashes)

International Vegetable Oil Mill
(Southern Cotton Oil Co.,) Sav-
annah, Ga.
High Grade Cotton Seed Meal 41%

L. B. Lovitt & Co., Memphis, Tenn.
"Lovit Brand" 36% Protein
Cottonseed Meal

REGISTRATIONS FOR 1937

For 1937, 59 firms and individuals registered 340 brands of fertilizers at this Station for sale in this State. As required by statute, the brands so registered are listed as follows:

Acme Guano Co., Baltimore, Md.

Acme 2-12-2
Acme 4-8-4
Acme 4-8-7
Acme 5-8-7
Acme 8-6-6
Acme 16% Superphosphate

Ted Alkire, Lubbock, Texas

"Kireal" Cotton Hull Ash

American Agricultural Chemical Co.,
North Weymouth, Mass.

AA Complete Manure with 10% Potash
4-8-10
AA Double Strength Fertilizer 8-16-14
AA General Crop Fertilizer 2-10-2
AA Monarch Fertilizer 4-8-4
AA Peerless Fertilizer 4-8-7
AA Potato & Vegetable Fertilizer 5-8-7
AA Prolific 10% Potash Fertilizer 2-8-10
AA 16% Superphosphate
AA 20% Superphosphate
AA Tobacco Starter 5-5-15
AA Top Dresser 7-6-6
Agrico for Corn 3-10-6
Agrico for Corn 4-12-6
Agrico for Fruit 9-6-6
Agrico for Gardens 4-10-4
Agrico for Lawns, Trees, and Shrubs
7-7-5
Agrico for New England 4-8-10
Agrico for Pastures & Top Dressing
7-6-6
Agrico for Potatoes & Vegetables 5-8-7
Agrico for Seeding Down 4-16-20
Agrico for Tobacco 6-3-6
Agrico for Truck 5-10-5
Bradley's XL Fertilizer 3-10-4
Castor Pomace
Double A Tobacco Fertilizer 5-3-5
Fine Ground Bone
Fish Meal

High Grade Sulphate of Potash
Muriate of Potash
Pulverized Sheep & Goat Manure
Sanderson's Formula B 4-8-7
Sulphate of Ammonia

American Cyanamid Co., 30 Rocke-
feller Plaza, New York, N. Y.

21% 'Aero' Cyanamid Granular
'Ammono-Phos' 11-48-0

Apothecaries Hall Co., 8-24 Benedict
St., Waterbury, Conn.

Animal Tankage 10%
Bone Meal 2.47%
Bone Meal 3.70%
Bone & Meat Tankage
Calnitro
Castor Pomace
Cotton Hull Ashes
Cottonseed Meal—Castor Pomace
Mixture
Dry Ground Fish
Liberty Corn 2-10-2
Liberty Fertilizer 4-8-8
Liberty Fertilizer 5-10-5
Liberty Fertilizer 6-3-6
Liberty Fertilizer 6-8-6
Liberty Fertilizer 10-16-14
Liberty Fish, Bone & Potash 3-10-4
Liberty High Grade Corn 2-12-4
Liberty High Grade Market Gardeners
5-8-7
Liberty High Grade Tobacco Manure
6-3-7
Liberty Market Gardeners Special 4-8-4
Liberty Onion Special (Potash as
Sulphate) 4-8-7
Liberty Potato & General Crops 4-8-10
Liberty Potato & Market Gardeners
Special (Potash as Muriate) 4-8-7
Liberty Potato & Vegetable 2-8-10
Liberty Special Fertilizer for Fruit 7-8-6

Liberty Special Fertilizer for Lawns, Gardens, etc. 4-4-0

Liberty Tobacco Mixture 7-3-7

Liberty Tobacco Special 5-3-5

Liberty Tobacco Starter 4-10-0

Liberty Tobacco Starter with Potash 5-4-15

Liberty Top Dresser for Grass & Grain 8-3-8

Liberty Tree & Shrub Food 10-8-8

Nitrate Potash

Precipitated Bone

Sheep & Goat Manure

Sheep Manure, Domestic

Sulphate Ammonia

Super Phosphate 16%

Super Phosphate 20%

Armour Fertilizer Works, 120 Broadway, New York, N. Y.

Armour's Big Crop Fertilizer 3-10-4

Armour's Big Crop Fertilizer 3-12-6

Armour's Big Crop Fertilizer 4-8-4

Armour's Big Crop Fertilizer 4-8-7

Armour's Big Crop Fertilizer 4-8-10

Armour's Big Crop Fertilizer 4-16-4

Armour's Big Crop Fertilizer 5-8-7

Armour's Big Crop Fertilizer 7-6-6

Armour's Big Crop Fertilizer 8-16-20

Armour's Big Crop Superphosphate 16%

Armour's Big Crop Superphosphate 20%

Armour's Big Crop Tobacco Special 5-3-5

Armour's Big Crop Tobacco Special 6-3-6

Armour's Big Crop Tobacco Starter 5-5-15

Armour's Bone Meal Fertilizer 2.47-23

Armour's Fertilizer 4-8-8

Armour's Garden and Lawn Fertilizer 4-8-6

Muriate of Potash

Sheep and Goat Manure

Ashcraft-Wilkinson Co., Atlanta, Ga.

Cow-Eta Brand 41% Prime Quality Cottonseed Meal

Associated Seed Growers, Inc., 205 Church St., New Haven, Conn.

Clark's Premier 3-10-6

Clark's Special Mixture for General Use 4-8-4

Clark's Superphosphate 16%

Clark's Tip Top Brand 4-8-7

Clark's Tip Top Brand 5-8-7

Atkins & Durbrow Co., Inc., 165 John St., New York, N. Y.

Driconure

Henure

Barrett Co., 40 Rector St., New York, N. Y.

Arcadian The American Nitrate of Soda

Arcadian Sulphate of Ammonia

Sulphate of Ammonia

F. A. Bartlett Tree Expert Co., 60 Canal St., Stamford, Conn.

Bartlett Green Tree Food 6-7-4

The Baugh & Sons Co., 25 S. Calvert St., Baltimore, Md.

Baugh's Complete Animal Base Fertilizer 3-8-4

Baugh's Fish Bone & Potash Mixture 4-8-4

Baugh's Half Century Perfection Br and 4-8-7

Baugh's Peruvian Guano Substitute 5-8-7

Baugh's Pure Steamed Bone Meal

Baugh's Raw Bone Meal

Baugh's Special Top Dresser 7-6-6

Baugh's $\frac{3}{4}$ Century Perfection Brand 3-10-6

Baugh's Truckers Favorite 5-10-5

Baughphos, The Ideal 16% Superphosphate

Baughphos, The Ideal 20% Superphosphate

Muriate of Potash

Berkshire Chemical Co. Bridgeport, Conn.

Berkshire Berry & Tomato Special 3-10-6

Berkshire Castor Pomace

Berkshire Complete Fertilizer 2-12-2

Berkshire Complete Tobacco Fertilizer 5-3-5

Berkshire Dry Ground Menhaden Fish

Berkshire Fine Ground Bone

Berkshire Golf Green Fertilizer 8-5-2

Berkshire Grass Special Fertilizer 6-6-5

Berkshire Ground Tankage

Berkshire High Grade Tobacco Fertilizer 6-3-6

Berkshire Long Island Special 4-8-7

Berkshire Market Garden Fertilizer 4-8-4

Berkshire Potato & Garden Special 5-8-7

Berkshire Sheep & Goat Manure

Berkshire Superphosphate 16%

Berkshire Tobacco Special Fertilizer 7-3-7

Bisbee Linseed Co., Inc., Amsterdam, N. Y.

"K & M" Brand Old Process Linseed Meal

Buell Fertilizer Co., Exeter, N. H.

Buell Peat-Poultry Manure (Two-In-One)

Chilean Nitrate Sales Corp., 120 Broadway, New York, N. Y.

Champion Brand Chilean Nitrate of Soda

Chilean Nitrate of Soda Containing Potash

Old Style Chilean Nitrate of Soda

Coloidal Products of America, Inc.,
Orlando, Fla.
Mineral Colloids

Consolidated Chemical Industries, Inc., 111 Rutter St., San Francisco, Cal.

1/70 Steamed Bone Meal (for fertilizer purposes)

Consolidated Rendering Co., 178 Atlantic Ave., Boston, Mass.

Corenco 2-10-2 Bone Brand
Corenco 3-10-4 Animal Brand
Corenco 4-8-4 Corn and Vegetable
Corenco 4-8-7 Market Garden
Corenco 4-8-10 Potato Grower
Corenco 5-3-5 Tobacco Grower
Corenco 5-5-5 Lawn and Shrub Fertilizer
Corenco 5-8-7 General Crop Manure
Corenco 5-8-10 Peerless Potato
Corenco 5-10-5 Super Truck
Corenco 6-3-6 Special Tobacco Grower
Corenco 7-3-7 Super Tobacco Grower
Corenco 7-6-6 Complete Fruit & Top Dressing

Corenco 8-16-14 Two in One
Corenco Ground Bone
Corenco Pure Raw Bone
Corenco Sheep Manure
Ground Tankage 7.41%
Ground Tankage 8.50%
Muriate of Potash
Sulphate of Ammonia
Sulphate of Potash
Superphosphate 16%
Superphosphate 20%

H. Ernest Conwell, Inc., Milton, Del.
Organo Brand Poultry Manure

Davey Tree Expert Co., Kent, Ohio

Davey Shredded Cattle Manure
Davey Tree Food 10-3-3

Davison Chemical Corp. Baltimore, Md.

Davco Homogeneous Granulated Fertilizer 5-8-7
Davco Granulated Superphosphate 20%

Eastern States Farmers' Exchange, Springfield, Mass.

Eastern States 0-20-20
Eastern States 4-8-8
Eastern States 4-12-4
Eastern States 4-16-20
Eastern States 5-5-15 Tobacco
Eastern States 6-8-6
Eastern States 8-4-8 Tobacco
Eastern States 8-12-20
Eastern States 8-16-16
Eastern States 8-16-16 Low Chlorine Special

Eastern States 8-20-12
Eastern States 8-24-8
Eastern States 10-5-10 Tobacco
Eastern States 12-4-4
Eastern States 12-16-12
Eastern States Agricultural Urea 4 $\frac{1}{2}$ %
Eastern States Calnitro
Eastern States Castor Pomace
Eastern States Cottonhull Ash
Eastern States Cottonseed Meal—
Castor Pomace Mixture
Eastern States Dry Ground Fish
Eastern States 40% Double Superphosphate
Eastern States Ground Steamed Bone
Eastern States Muriate of Potash
Eastern States Nitrate of Potash
Eastern States Precipitated Bone
Eastern States Soy Bean Meal
Eastern States Sulphate of Ammonia, Specially Dried
Eastern States Sulphate of Potash
Eastern States Sulphate of Potash-Magnesia
Eastern States 20% Superphosphate
Eastern States Urea 46%

Faesy & Besthoff, Inc., 22 E. 40th St., New York, N. Y.

Bone Meal

Ford Motor Co., 3674 Schaefer Road, Dearborn, Mich.

Ford Ammonium Sulphate

Goulard & Olena, Inc., 140 Liberty St., New York, N. Y.

G & O Ground Bone
G & O Lawn-Garden & Flower Fertilizer 5-8-5
G & O Sheep Manure
J. B. Greens Formula 10-4-3

Humphreys-Godwin Co., Memphis, Tenn.

Bull Brand Cottonseed Meal
Dixie Brand Cottonseed Meal

International Agricultural Corp., 38 Chauncy St., Boston, Mass.

International Basic Slag
International Bone Meal
International Caribee 5-10-10
International 3-10-4
International 4-8-4
International 5-8-7
International 8-16-14

Spencer Kellogg & Sons, Inc., Buffalo, N. Y.

Castor Pomace

Killen & Hall, Inc., Darien, Conn.

Tree Food 8-5-2

Leary The Florist, Waterbury, Conn.
All-Gro 4-8-5

L. B. Lovitt & Co., Memphis, Tenn.
"Lovit Brand" 41% Protein Cotton
Seed Meal

Natural Guano Co., Aurora, Ill.
Sheep's Head Sheep Manure

**North American Car Corp., Premier
Poultry Manure Div. 327 So.
LaSalle St., Chicago, Ill.**
Premier Brand Pulverized Poultry
Manure

**N. V. Potash Export My., Inc., 19 West
44th St., New York, N. Y.**

N. V. Muriate of Potash 50%
N. V. Muriate of Potash 60%
N. V. Sulphate of Potash
N. V. Sulphate of Potash-Magnesia

**Old Deerfield Fertilizer Co., Inc., So.
Deerfield, Mass.**

Nitrate of Potash
Old Deerfield Complete Tobacco 5-3-5
Old Deerfield Complete Tobacco 6-3-7
Old Deerfield Concentrated 3-16-14
Old Deerfield Cottonhull Ashes
Old Deerfield Dry Ground Fish
Old Deerfield Dry Ground Fish (Jap-
anese)
Old Deerfield Grass Top Dressing 7-6-6
Old Deerfield Ground Steamed Bone
Old Deerfield Starter Bone & Potash
5-8-12
Old Deerfield Superphosphate 16%
Valley Brand 4-8-4
Valley Brand 5-8-7

Olds & Whipple, Inc., Hartford, Conn.

95% Cottonseed Meal-5% Castor Pom-
ace Mixture
Japanese Fish
32% Linseed Meal-Archer-Daniels-Mid-
land Company
Luxura 5-8-7
O&W 3-10-4 Corn Special Fertilizer
O&W 4-8-4 Market Garden Fertilizer
O&W 4-8-7 Potato & General Purpose
Fertilizer
O&W 5-3-5 Complete Tobacco Fertilizer
O&W 5-4-15 H. G. Tobacco Starter and
Potash Compound
O&W 5-8-7 Potato & General Purpose
Fertilizer
O&W 6-3-5 Blue Label Tobacco Fertil-
izer, Potash derived from Cotton Hull
Ashes
O&W 6-3-6 Blue Label Tobacco Fertil-
izer
O&W 6-3-6 Blue Label Tobacco Fertil-
izer, Potash derived from Cotton Hull
Ashes

O&W 8-6-6 Top Dressing & Grass Fer-
tilizer
O&W Bone Meal
O&W Castor Pomace
O&W Cotton Hull Ashes
O&W Dry Ground Fish
O&W Nitrate of Potash
O&W Precipitated Bone
O&W Superphosphate 16%

**Organic Fertilizer Corp., 120 Broad-
way, New York, N. Y.**
Fish Organo

**Outpost Nurseries, Inc., Ridgefield,
Conn.**
Outpost Plant Food 8-5-2

**Plantspur Products Co., Inc., Ridge-
field, N. J.**
Plantspur Fertilizer 3-3-2

Frank S. Platt Co., New Haven, Conn.
Platco Special 5-8-7
Platt's Special Lawn Fertilizer 10-5-5

**Pulverized Manure Co., 503 Exchange
Bldg., Union Stock Yard, Chicago,
Ill.**
Wizard Brand Cow Manure
Wizard Brand Pulverized Sheep Manure

**The Rogers & Hubbard Co., Portland,
Conn.**

Fine Ground Bone
Golf Course Fertilizer 8-6-2
Gro-Fast Plant Food 5-6-6
Hubbard's All Soils All Crops Fertilizer
4-8-4
Hubbard's "Bone Base" Oats & Top
Dressing
Hubbard's "Bone Base" Fertilizer for
Seeding Down
Hubbard's "Bone Base" Soluble Corn
& Market Garden Manure
Hubbard's "Bone Base" Soluble Potato
Manure
Hubbard's "Bone Base" Soluble To-
bacco Manure
Hubbard's Climax Tobacco Brand 5-3-5
Hubbard's Corn & Grain Fertilizer
2-12-4
Hubbard's High Potash Fertilizer 2-8-10
Hubbard's Potato Fertilizer 5-8-7
Hubbard's Tobacco Grower-Vegetable
Formula 6-3-6
Pure Raw Knuckle Bone Flour
Red H 4-8-4
Red H 4-8-7
Red H 4-8-8
Red H 4-8-10
Red H 5-8-7
Red H 5-8-10
Red H 7-6-6

Red H 8-16-14
 Sheep & Goat Manure
 Strictly Pure Fine Bone
 Superphosphate 16%
 Superphosphate 20%

O. M. Scott & Sons Co., Marysville, Ohio

Scott's 10-6-4 Turf Builder

Sewerage Commission of the City of Milwaukee, Milwaukee, Wis.

Milorganite

M. L. Shoemaker & Co., Inc., Philadelphia, Pa.

Shoemaker's "Swift Sure" 4-10-0 Tobacco Starter

A. E. Staley Manufacturing Co., Decatur, Ill.

Staley's Tobakosoy

Standard Wholesale Phosphate & Acid Works, Inc., Baltimore, Md.

Standard 4-8-4
 Standard 5-8-7
 Standard 7-6-6
 Standard 16% Superphosphate

Stump & Walter Co., 132 Church St., New York, N. Y.

Sawco Bone 2.47-24.00%
 Sawco Emerald Grass Fertilizer 5-7-3
 Sawco General Garden Fertilizer 5-10-5
 Sawco Pulverized Sheep Manure 2-1-2
 Sawconite 6-3-1
 Sawconure 3-1-1

Swift & Co. Fertilizer Works, Baltimore, Md.

Bone Meal Fertilizer
 Roselawn 5-8-7
 Swift's Pulverized Cattle Manure
 Swift's Sheep Manure 1.75-1-1.85
 Swift's Special Golf Fertilizer 12-6-4
 Vigoro 4-12-4

Synthetic Nitrogen Products Corp., 285 Madison Ave., New York, N. Y.

Calcium Nitrate (Nitrate of Lime)
 Nitrophoska 15-30-15
 Urea

Tennessee Corp., Lockland, Ohio

Loma 5-10-4
 Soil-Prep 4-2-2

I. P. Thomas & Son Co., 721 Market St., Camden, N. J.

I. P. Thomas 4-8-7
 I. P. Thomas 5-8-7
 I. P. Thomas 7-6-6
 Muriate of Potash 50% K₂O
 Pure Ground Bone 2.45% Nit. 23%
 T. P. A.
 Superphosphate 16%
 Tip Top Fertilizer 3-10-6

Virginia-Carolina Chemical Corp., Richmond, Va.

BloomAid (New Process) 4-10-3
 V-C Fairway Fertilizer (New Process) 6-4-4
 V-C Fertilizer 16%
 V-C Fertilizer 4-8-4
 V-C Fertilizer 5-8-7
 V-C Fertilizer 8-6-6

Vita-Vim Co., Baltimore, Md.

Vita-Vim 6-10-4

Walker-Gordon Laboratory Co., Inc., Plainsboro, N. J.

Bovung

Thomas Wood & Sons, Inc., 12-14 Midland Ave., Montclair, N. J.

Woodgro Pure Cow Manure Dehydrated

F. H. Woodruff & Sons, Milford, Conn.

Gro-Sod 10-6-4 Lawn Food

S. D. Woodruff & Sons, Orange, Conn.

Woodruff's Home Mixture 4-8-7

INSPECTION OF 1937

The Station Agent has visited 64 towns and villages in the State and has drawn 356 official samples of fertilizer, including all the registered brands that could be found. The classification of these and of other samples is given in the summary:

CLASSIFICATION OF FERTILIZER MATERIAL, 1937

	Number of samples	Page
I. Containing Chiefly Nitrogen		
Nitrate of soda.....	5	20
Calcium nitrate.....	2	28
Cyanamid.....	1	20
Urea.....	3	20
Ammonium sulfate.....	7	28
Castor pomace.....	15	20
Cottonseed meal.....	93	20
Cottonseed meal-Castor pomace mixture.....	19	20
Linseed meal.....	9	29
Soybean oil meal.....	11	20
II. Containing Chiefly Phosphoric Acid		
Superphosphate.....	21	20
Precipitated bone.....	4	20
Natural phosphate.....	1	20
III. Containing Chiefly Potash		
Carbonate of potash.....	1	..
Muriate of potash.....	8	21
Sulfate of potash.....	8	21
Cottonhull ashes.....	47	21
Wood ashes.....	6	..
IV. Containing Nitrogen and Potash		
Nitrate of potash.....	10	21
Nitrate of soda containing potash.....	1	21
V. Containing Nitrogen and Phosphoric Acid		
Dry ground fish.....	24	21
Tankage.....	4	21
Ground bone.....	27	21
VI. Mixed Fertilizers		
Commercial mixtures.....	218	22
Special and home mixtures.....	32	25
VII. Miscellaneous		
Sheep manure, etc.....	24	25
Lime.....	19	25
Other miscellaneous.....	41	25
Check meals and fertilizers.....	42	27
Total.....	703	

I. RAW MATERIALS CHIEFLY VALUABLE FOR NITROGEN

NITRATE OF SODA, ETC.

Analyses of official samples of this group are given in Table 1, page 28. All of the samples examined substantially met or exceeded guaranties.

Cyanamid and urea are classed as organic sources of nitrogen.

VEGETABLE PRODUCTS

Analyses of vegetable products used for fertilizer purposes as sources of nitrogen are given in Table 2, page 29.

All of the samples were found to meet or exceed the guaranties under which they were sold.

Mixtures of cottonseed meal and castor pomace are conspicuously labelled warning against the use of such mixtures for stock feeding because castor pomace is poisonous to cattle.

There has been a considerable use of soybean meal as a source of nitrogen for fertilizer purposes in the last two years. The nitrogen content is of about the same order of magnitude and activity as that of cottonseed meal. In six samples analyzed last year phosphoric acid was found to be about 1.5%, potash 2.5%, calcium 0.4% and magnesium 0.6%.

II. RAW MATERIALS CHIEFLY VALUABLE FOR PHOSPHORIC ACID

SUPERPHOSPHATE, ETC.

This raw material is one of basic importance in the fertilizer industry. It is made in this country by treating phosphate rock with sulphuric acid. The finished product contains 16 percent of available phosphoric acid and a considerable amount of calcium sulphate (gypsum). If the gypsum is largely or entirely removed, the percentage of available phosphoric acid is correspondingly higher. Thus there are so-called "double" and "triple" superphosphates on the market which are products of the process just described. They contain from 40 to 50 percent of available phosphoric acid.

The official (A.O.A.C.) definition of superphosphate is "the cured product obtained by mixing rock phosphate with sulphuric or phosphoric acid or both". The grade should always be designated, as, for example, "16 percent superphosphate", "32 percent superphosphate", etc.

Precipitated bone phosphate, generally called "precipitated bone", is a by-product obtained in the manufacture of glue from bones. It contains about 40 percent of "available" phosphoric acid. Two official samples were examined. They were guaranteed 38 percent available phosphoric acid, and all substantially met or exceeded that claim.

Mineral Colloids is a colloidal preparation of natural phosphate.

Analyses of official samples of this group of materials are given in Table 3, page 30.

Guaranties were fully or substantially met in all cases.

III. RAW MATERIALS CHIEFLY VALUABLE FOR POTASH

Analyses of official samples of muriate of potash, sulphate of potash and of cottonhull ashes are given in Table 4, page 32.

Guaranties were met or exceeded in all samples examined.

Cottonhull ashes are quite variable in potash content and for that reason are often sold on an analysis basis.

IV. RAW MATERIALS SUPPLYING NITROGEN AND POTASH

Analyses of official samples of nitrate of potash and of nitrate of soda-potash are given in Table 5, page 33.

Guaranties were substantially met or exceeded in all samples.

V. RAW MATERIALS SUPPLYING NITROGEN AND PHOSPHORIC ACID

Official samples of dry ground fish, tankage and ground bone are summarized in Tables 6, 7 and 8 respectively, pp. 34-37.

No evidence of mineral forms of nitrogen or of other added materials adversely affecting quality was detected.

Two samples of dry ground fish were slightly under the guaranties for nitrogen; phosphoric acid guaranties were fully met and, in most cases, considerably exceeded.

There were no notable deficiencies in the samples of tankage examined.

Of 22 official samples of ground bone, three samples were deficient in nitrogen and one in phosphoric acid; of 44 guaranties made, 40 were substantially met or exceeded.

VI. MIXED FERTILIZERS

SUMMARY OF INSPECTION

Analyses of 211 official samples of mixed fertilizers are given in Table 9, pp. 38-53.

The results of the inspection may be summarized as follows:

Total number of samples.....		211
Samples deficient in:		
One item.....	54	
Two items.....	5	
Three items.....	1	60
Percentage of samples meeting guaranties in all respects.....		72
Total guaranties made.....		627
Guaranties not met:		
Nitrogen.....	41	
Phosphoric acid.....	6	
Potash.....	20	67
Percentage of guaranties met.....		89

Deficiencies representing commercial values in excess of \$1.00 per ton were shown in the following samples:

Acme 8-6-6, No. 5463.

Davco Granulated 5-8-7 (Davison Chemical Co.), No. 5612.

J. B. Greens Formula 10-4-3 (Goulard & Olena), No. 5804.

Shoemaker's "Swift-Sure" Tobacco Starter 4-10-0, No. 5546.

I. P. Thomas 7-6-6, Nos. 5773 and 6124.

By laboratory methods for judging the quality of the organic nitrogen in mixed fertilizers, when values for activity of the water-insoluble organic nitrogen are below 50 percent by the alkaline method, and below 80 percent by the neutral method, the quality of such nitrogen is classed as inferior. However, when the water-soluble nitrogen plus the active water-insoluble nitrogen substantially equals or exceeds the guaranty for total nitrogen, we have raised no question of nitrogen quality.

Only six samples showed an activity of the insoluble organic nitrogen of less than 50 percent by the alkaline permanganate method. By the neutral method three of these were not sufficiently under 80 percent to warrant criticism. In two the water-soluble and the active insoluble organic nitrogen equalled or exceeded the guaranty for total nitrogen and were passed. In one, 5803, Goulard and Olena, the activity values were low by both methods, and the water-soluble plus the active insoluble organic nitrogen was less than the total nitrogen guaranteed.

A tentative method for evaluating the acid-forming or non-acid-forming quality of fertilizers has been adopted by the Association of Official Agricultural Chemists. This method has not been applied in a routine way in our laboratory procedure this year but it has been applied to a fairly representative number of samples and the results have been included in Table 9. The symbols "A" or "N.A." indicate respectively whether the mixtures are acid-forming or non-acid-forming. Samples near the border line of neutrality are designated by the symbol "N". Analyses are by W. T. Mathis of this laboratory.

We are indebted to Dr. Morgan, Station Agronomist, for a review of the data and for the following discussion of some of the features involved.

ACID-BASE BALANCE IN MIXED FERTILIZERS

M. F. Morgan

Considerable attention has been given in the last few years to studies of the tendencies of commercial fertilizers to increase or decrease the acidity of the soil. It is now generally accepted that the ammoniacal sources of nitrogen, such as ammonium sulphate and ammonium phosphate, are the most strongly acid in their effects upon the soil. Thus, it is estimated that each unit of ammonia nitrogen (amount supplied per ton for each percent) is capable of increasing soil acidity to the equivalent of 107 lbs. of calcium carbonate. So a half-ton per acre application of a 4 percent nitrogen fertilizer supplying all its nitrogen from sulphate of ammonia may require 214 lbs. of limestone to offset this acid tendency. Urea and similar water-soluble organic nitrogen sources are also acid, to the extent of about 36 lbs. of limestone per unit of nitrogen in such form. On the other hand, nitrates are somewhat basic (opposed to acid) in their effects upon the soil. A unit of nitrate nitrogen thus replaces 36 lbs. of limestone in counteracting soil acidity. Cyanamid is considerably more basic, each unit in this form replacing about 57 lbs. of limestone.

The other common fertilizer ingredients have less effect upon soil acidity. Bonemeal, precipitated bone and bone ash are somewhat basic. Superphosphate of usual grades, and both muriate and sulphate of potash are without significant effects in either direction. Carbonate of potash and cottonhull ash are definitely basic constituents of the fertilizer.

It is evident that the continued use of fertilizers supplying the bulk of their nitrogen from ammoniacal sources may result in the development of injuriously acid soils. Most soils of this region are already acid from natural causes, and a significant increase in acidity is generally objectionable. The farmer may use lime fairly liberally as a routine practice, and in such cases an acid-reacting fertilizer may be used regularly without ill effect. On the other hand, a soil already in a desirable condition from the standpoint of soil reaction is most simply maintained at that level by the use of a fertilizer that does not contribute to soil acidity.

Some fertilizer manufacturers are now incorporating limestone (preferably of the dolomitic type) in fertilizer mixtures that supply appreciable amounts of acid-reacting materials. It is thus possible to produce a non-acid fertilizer containing reasonable proportions of cheap and otherwise desirable constituents, such as sulphate of ammonia.

In order to show the relation of acid-base balance to character of nitrogen furnished in the various types of mixed fertilizer commonly produced, certain data are presented in Table 9A, based upon data found in Table 9, p. 38. It is evident that the majority of samples of common fertilizers of general purpose (4-8-4 and 5-10-5), market garden or potato (4-8-7 and 5-8-7) and top dressing (7-6-6 and 8-6-6) types are distinctly acid-forming. This is readily explained on the basis of their comparatively high proportions of ammonia nitrogen. On the other hand, there are individual samples in these groups that are formulated in such a manner as to give a neutral or non-acid-forming result. This is in part due to an increased proportion of nitrate nitrogen, but has been chiefly accomplished by the use of a liming material in the formula in sufficient amount to counteract the acid-reacting components. It is also evident that with the

TABLE 9A. ACID-BASE BALANCE OF VARIOUS TYPES OF MIXED FERTILIZERS IN RELATION TO CHARACTER OF NITROGEN FURNISHED

Formula and Type	No. of Samples	Group Average in Per cent			Equivalent ¹ Acidity (-) or Basicity (+)	
		Ammonia Nitrogen	Water-Soluble Organic Nitrogen	Nitrate Nitrogen	Computed from Three Previous Columns ²	Laboratory Determined (AOAC Method)
4-8-4, A	9	2.80	.37	.49	295-	186-
4-8-4, NA	3	2.16	.73	.78	229-	143+
4-8-7, A	7	2.63	.38	.60	273-	174-
4-8-7, NA	2	1.43	.07	2.32	72-	221+
5-10-5, A	4	3.27	.64	.70	348-	252-
5-8-7, A	11	3.43	.60	.56	368-	240-
5-8-7, NA	7	3.19	.49	.81	330-	6+
7 6-6 } A	13	5.60	.56	.81	590-	432-
8-6-6 }						
7-6-6 } NA	2	2.66	.36	4.09	150-	12+
8-6-6 }						
7-3-7 } NA	15	.32	1.45	1.04	49-	160+
6-3-6 }						
5-3-5 }						

¹ In terms of lbs. of calcium carbonate per ton of fertilizer.
² On basis of: 107 lbs. calcium carbonate acid equiv. per unit of ammonia nitrogen.
 36 lbs. calcium carbonate acid equiv. per unit of water-soluble organic nitrogen.
 36 lbs. calcium carbonate basic equiv. per unit of nitrate nitrogen.

unadjusted fertilizers of the "A" type, the acid-forming tendency increases with the percentage of nitrogen. The net effect of ingredients other than ammoniates or water-soluble nitrogenous material tends to diminish their degree of acidity, to the equivalent of approximately 100 lbs. of calcium carbonate per ton in most cases.

Fertilizers commonly used for the tobacco crop, such as the 5-3-5, 6-3-6 and 7-3-7, are all non-acid-forming. This is apparently explained on the basis of their insignificant contents of ammonia nitrogen, and the common use of somewhat basic materials, such as precipitated bone, carbonate of potash or cottonhull ash in their formulation. It is significant that the continued use of heavy applications of such fertilizers over long periods has not resulted in the development of injurious degrees of acidity.

SPECIAL AND HOME MIXTURES

Analyses of fertilizers mixed on the farm or by manufacturers on special orders are given in Table 10, p. 54.

VII. MISCELLANEOUS FERTILIZERS AND OTHER MATERIALS

Analyses of commercial animal and poultry manures are given in Table 11, page 56.

Liming materials examined during the year are listed, with analyses, in Table 12, page 58.

OTHER MISCELLANEOUS MATERIALS

Forty-one samples of miscellaneous materials have been examined for farmers and others interested. The following are of interest and are recorded for reference:

4793. **Cotton waste ashes.** John J. Lynch, Fitchville. Sample contained 1.13 percent phosphoric acid and 2.71 percent potash.

4794. **Wool waste ashes.** John J. Lynch, Fitchville. Sample contained 0.58 percent phosphoric acid and 0.20 percent potash. Negligible value as fertilizer.

3879. **Cow manure.** C. Scialla, New Haven.

5136. **Pigeon manure.** Wesley Clapp, Waterbury.

5158. **Poultry manure.** Wilfred Scott, Niantic.

Analyses:

No.	3879	5136	5158
	%	%	%
Moisture.....	75.00	Air-dry	Air-dry
Nitrogen.....	0.39	4.48	2.98 ¹
Phosphoric acid.....	0.32	1.50	3.21
Potash.....	0.30	1.05	1.51
Calcium oxide.....	.....	.....	4.66

The following samples were analyzed for plant food elements and organic matter. Most of them were submitted by the Soils Department:

No.	Material	Moisture	Ash	Organic and volatile	N.	P ₂ O ₅	K ₂ O
		%	%	%	%	%	%
4842	Decaying birch chips, oil extracted.....	63.10	8.77	28.13	0.77	.....	.....
3151	West Haven sewage waste.....	5.67	35.80	58.53	2.48	0.76	0.09
5722	Greenwich sewage sludge.....	26.90	36.77	36.33	2.19	1.06	0.10
3195	Muck, Clintonville.....	7.79	28.98	63.23	2.40	.....	.....
3769	Muck, coarse, W. Hartford.....	11.27	17.13	71.60	2.97	.....	.....
3770	Muck, fine, W. Hartford.....	10.93	15.93	73.14	2.54	.....	.....
4320	Pogemo, German peat product, Tobacco Station.....	.....	.....¹	.....	3.16 ²	2.82	2.00
4350	German peat moss, F. S. Platt, New Haven.....	9.28	2.15	88.57	1.05 ³	0.11	0.04
4468	Vegetable waste resembling peat moss, containing calcium carbonate, Millane, Cromwell....	31.10	14.99	53.91	1.71	.....	.....
4801	Humus and manure, Burkhart, Noroton.....	10.06	23.35	66.59	2.58	.....	.....
5622	Muck, Tenedine, No. Haven....	77.50	9.39	13.11	0.48	0.04	0.03
5623	Muck, Tenedine, No. Haven....	77.00	2.97	20.03	0.73	0.02	0.02
6096	Humus, Nipsic.....	65.00	12.63 ⁴	22.37	0.76	0.05	0.02
6095	Humus, Tower.....	63.00	4.24 ⁵	32.76	0.70	0.09	0.04
5442	Ash from incinerator, Bridgeport ⁶	.....	.....	.....	.....	4.83	1.22
4280	Compost "Top Dressing".....	52.00	10.92 ⁷	37.08	1.25	0.40	0.82

¹ Chlorine, 0.05%; CaO, 0.21%; MgO, 0.19%.

² N. in nitrates and ammonia 1.41%; water-soluble organic 0.82; water-insoluble inorganic 0.93%.

³ All organic.

⁴ CaO, 0.06%; MgO, 0.08%.

⁵ CaO, 0.42%; MgO, 1.00%.

⁶ Glass and metal (18%) separated from sample before analysis.

⁷ CaO, 6.08%.

Several samples of "Poor burn" tobacco were submitted by the Tobacco Station, Windsor.

No.	K ₂ O %	Cl %	CaO %	MgO %	S %
4318.....	2.40	0.35	4.86	2.81	0.59
4319.....	2.95	0.49	5.59	2.86	0.62
4474.....	5.92	3.65	4.31	2.21	0.49

A sample of tobacco dust, 5382, was submitted by J. W. Alsop, Hartford.

Analysis: Nitrogen, 3.40 percent; total P₂O₅, 0.75 percent; potash, 3.84 percent.

CHECK MEALS AND FERTILIZERS

Forty-two samples of check cottonseed meals and check fertilizers have been analyzed in the collaborative programs of the American Oil Chemists Society and of the F. R. Royster Guano Company. These programs are for the purpose of checking methods of analysis and procedure for the materials mentioned and are participated in by State, commercial and industrial laboratories.

TABLE 1. ANALYSES OF NITRATE OF SODA AND OTHER NITROGENOUS MATERIALS

Station No.	Manufacturer or Jobber	Sampled from stock of	Per cent nitrogen	
			Found	Guaranteed
Nitrate of Soda				
5374	Arcadian, The American. Barrett Co., New York City.....	R. W. Hine, Cheshire...	16.20	16.00
5342	Champion Brand Chilean. Chilean Nitrate Sales Corp., New York City	T. W. Ryan, Stratford..	16.06	16.00
Calcium Nitrate (Nitrate of Lime)				
5577	Eastern States Calnitro. Eastern States Farmers' Exchange, Spring- field, Mass.....	Eastern States Branch, East Hartford.....	20.66	20.50
5810	Synthetic Nitrogen Products Corp., New York City.....	Olds & Whipple, Inc., Hartford.....	14.94	15.00
Cyanamid				
5364	21% "Aero" Granular. American Cyanamid Co., New York City....	H. D. Peters, Hamden..	21.08	21.00
Urea				
5392	Eastern States. Eastern States Farm- ers' Exchange, Springfield, Mass....	J. B. Lewis, Southington.	46.40	46.00
5571	Synthetic Nitrogen Products Corp., New York City.....	Olds & Whipple, Inc., Hartford	46.00	46.00
Sulphate of Ammonia				
5485	American Agricultural Chemical Co., North Weymouth, Mass.....	J. N. Moorhouse, So. Manchester.....	21.00	20.50
5344	Barrett Co., New York City.....	T. W. Ryan, Stratford..	20.88	20.56
5365	Arcadian. Barrett Co., New York City	H. D. Peters, Hamden..	21.04	20.56
5589	Consolidated Rendering Co., Boston, Mass.....	L. T. Frisbie Co., New Haven.....	21.00	20.50
5574	Eastern States Specially Dried. East- ern States Farmers' Exchange, Springfield, Mass.....	Eastern States Branch, East Hartford.....	20.96	20.50
5837	Ford. Ford Motor Co., Dearborn, Mich.....	New Haven Motor Sales Co., New Haven.....	20.82	20.80

TABLE 2. ANALYSES OF CASTOR POMACE, COTTONSEED MEAL, ETC.

Station No.	Manufacturer or Jobber	Sampled from stock of	Per cent nitrogen	
			Found	Guaranteed
Castor Pomace				
5594	American Agricultural Chemical Co., North Weymouth, Mass.....	American Agricultural Chem. Co., West Haven	4.78	4.50
5899	American Agricultural Chemical Co., North Weymouth, Mass.....	Spencer Bros., Suffield..	5.03	4.50
5552	Apothecaries Hall Co., Waterbury, Conn.....	Apothecaries Hall Co., East Windsor.....	5.92	4.52
5638	Apothecaries Hall Co., Waterbury, Conn.....	J. E. Shepard, So. Windsor.....	6.00	4.52
5341	Berkshire. Berkshire Chemical Co., Bridgeport, Conn.....	T. W. Ryan, Stratford..	5.54	4.50
5578	Eastern States. Eastern States Farmers' Exchange, Springfield, Mass...	Eastern States Branch, East Hartford.....	5.79	4.50
5526	Spencer Kellogg & Sons, Inc., Buffalo, N. Y.....	Rockville Grain & Coal Co., Rockville.....	5.89	4.52
5542	O&W. Olds & Whipple, Inc., Hartford, Conn.....	Brainard Nursery & Seed Co., Thompsonville...	5.87	4.50
Cottontseed Meal				
5646	Cow-Eta Brand 41%. Ashcraft-Wilkinson Co., Atlanta, Ga.....	J. E. Shepard, So. Windsor.....	6.86	6.58
5641	"Lovit Brand" 41%. L. B. Lovitt & Co., Memphis, Tenn.....	J. E. Shepard, So. Windsor.....	6.56	6.56
5642	"Lovit Brand" 41%. L. B. Lovitt & Co., Memphis, Tenn.....	J. E. Shepard, So. Windsor.....	6.70	6.56
5645	"Lovit Brand" 41%. L. B. Lovitt & Co., Memphis, Tenn.....	J. E. Shepard, So. Windsor.....	6.68	6.56
Cottontseed Meal Castor Pomace Mixture				
5970	Apothecaries Hall Co., Waterbury, Conn.....	John Edgar, Enfield....	6.24	5.75
5580	Eastern States. Eastern States Farmers' Exchange, Springfield, Mass...	Eastern States Branch, East Hartford.....	6.57	6.30
5543	95% Cottontseed Meal—5% Castor Pomace. Olds & Whipple, Inc., Hartford, Conn.....	Brainard Nursery & Seed Co., Thompsonville..	6.51	6.40
5643	95% Cottontseed Meal—5% Castor Pomace. Olds & Whipple, Inc., Hartford, Conn.....	J. E. Shepard, So. Windsor.....	6.41	6.40
5718	95% Cottontseed Meal—5% Castor Pomace. Olds & Whipple, Inc., Hartford, Conn.....	John M. Herr, East Hartford.....	6.52	6.40
Linsed Meal				
5716	32% Archer-Daniels, Midland Co., Olds & Whipple, Inc., Hartford, Conn.....	John M. Herr, East Hartford.....	5.30	5.12
Soybean Meal				
5644	Tobaksoy Fertilizer, A. E. Staley Mfg. Co., Decatur, Ill.....	J. E. Shepard, So. Windsor.....	7.16	6.56

TABLE 3. ANALYSES OF SUPERPHOSPHATE, ETC.

Station No.	Manufacturer or wholesale dealer	Dealer or purchaser	Phosphoric acid			
			Citrate insoluble	Total	Found	"Available"
			%	%	%	%
Superphosphate						
5408	Acme 16%. Acme Guano Co., Baltimore, Md.	P. Levson & Son, Middletown.....	0.19	16.99	16.80	16.00
5396	AA 16%. American Agricultural Chemical Co., North Weymouth, Mass.	Bristol Grain & Supply Co., Bristol..	0.83	17.68	16.85	16.00
5520	AA 20%. American Agricultural Chemical Co., North Weymouth, Mass.	J. N. Moorhouse, So. Manchester...	1.14	22.48	21.34	20.00
5370	16%. Apothecaries Hall Co., Waterbury, Conn.	Hamden Grain Co., Mt. Carmel.....	1.13	17.61	16.48	16.00
5373	20%. Apothecaries Hall Co., Waterbury, Conn.	R. W. Hine, Cheshire.....	1.18	22.11	20.93	20.00
5892	Armour's Big Crop. Armour Fertilizer Works, New York City.	Warehouse, Hartford.....	0.83	17.58	16.75	16.00
5351	Baughphos, The Ideal 16%. The Baugh & Sons Co., Baltimore, Md.	Hamden Lehigh Coal Co., Hamden..	0.17	17.57	17.40	16.00
5353	Baughphos, The Ideal 20%. The Baugh & Sons Co., Baltimore, Md.	Hamden Lehigh Coal Co., Hamden..	0.32	20.25	19.93	20.00
5611	Berkshire 16%. Berkshire Chemical Co., Bridgeport, Conn.	Berkshire Chemical Co., Bridgeport..	0.40	18.10	17.70	16.00
5586	16%. Consolidated Rendering Co., Boston, Mass.	Frank S. Platt Co., New Haven.....	0.15	17.66	17.51	16.00
5763	20%. Consolidated Rendering Co., Boston, Mass.	G. M. Thompson, Mansfield Depot...	0.44	21.90	21.46	20.00
5345	Davco Granulated 20%. Davison Chemical Corp., Baltimore, Md.	T. W. Ryan, Stratford.....	1.09	21.83	20.74	20.00
5610	Davco Granulated 20%. Davison Chemical Corp., Baltimore, Md.	Seymour Grain Co., Seymour.....	1.31	22.10	20.79	20.00
5390	Eastern States 20%. Eastern States Farmers' Exchange, Springfield, Mass.	J. B. Lewis, Southington.....	1.17	22.39	21.22	20.00

TABLE 3. ANALYSES OF SUPERPHOSPHATE, ETC.—Concluded

Station No.	Manufacturer or wholesale dealer	Dealer or purchaser	Phosphoric acid			
			Citrate insoluble	Total	Found	Guaranteed
			%	%	%	%
Superphosphate—Concluded						
5579	Eastern States 40% Double. Eastern States Farmers' Exchange, Springfield, Mass.	Eastern States Branch, East Hartford	1.89	43.62	41.73	40.00
5529	Old Deerfield, Old Deerfield Fertilizer Co., South Deerfield, Mass.	Rockville Grain & Coal Co., Rockville	0.52	19.03	18.51	16.00
5525	O&W. Olds & Whipple, Inc., Hartford, Conn.	F. T. Blish Hardware Co., South Manchester.	0.68	17.82	17.14	16.00
5465	16%. The Rogers & Hubbard Co., Portland, Conn.	The Rogers & Hubbard Co., Portland	0.17	17.67	17.50	16.00
5480	20%. The Rogers & Hubbard Co., Portland, Conn.	Willimantic Grain Co., Willimantic	0.23	21.35	21.12	20.00
5705	Standard 16%. Standard Wholesale Phosphate & Acid Works, Inc., Baltimore, Md.	C. W. Campbell Co., Westerly.	0.86	18.40	17.54	16.00
5360	16%. I. P. Thomas & Son Co., Camden, N. J.	H. D. Peters, Hamden.	1.00	17.73	16.73	16.00
5404	V-C 16%. Virginia-Carolina Chemical Co., Charlotte, N. J.	P. Levson & Son, Middletown.	0.62	18.67	18.05	16.00
Precipitated Bone						
5576	Eastern States. Eastern States Farmers' Exchange, Springfield, Mass.	Eastern States Branch, East Hartford	3.06	42.04	38.98	38.00
5556	O&W. Olds & Whipple, Inc., Hartford, Conn.	Olds & Whipple Inc., East Hartford	0.94	42.76	41.82	38.00
Natural Phosphate						
5860	Mineral Colloids, Colloidal Products of America, Orlando, Fla.	H. S. Coe Co., Waterbury.	...	21.76 ¹	.....	.....

¹ Guaranty 25%.

TABLE 4. ANALYSES OF POTASH SALTS, ETC.

Station No.	Manufacturer or Jobber	Sampled from stock of	Potash	
			Found	Guaranteed
Muriate of Potash			%	%
5478	American Agricultural Chemical Co., North Weymouth, Mass.....	Wm. Warren, Eastford..	52.35	50.00
5889	Armour Fertilizer Works, New York City.....	Warehouse, Hartford....	48.80	50.00
5356	The Baugh & Sons Co., Baltimore, Md.....	Hamden Lehigh Coal Co Hamden.....	50.84	50.00
5590	Consolidated Rendering Co., Boston, Mass.....	L. T. Frisbie Co., New Haven.....	51.44	50.00
5474	Eastern States Eastern States Farm- ers' Exchange, Springfield, Mass....	Eastern States Branch, Willimantic.....	60.04	60.00
5343	N. V. Potash Export My., Inc., New York City.....	T. W. Ryan, Stratford..	51.83	50.00
5363	50% K ₂ O. I. P. Thomas & Son Co., Camden, N. J.....	H. D. Peters, Hamden..	50.76	50.00
Sulphate of Potash				
5593	High Grade. American Agricultural Chemical Co., North Weymouth, Mass.....	American Agricultural Chemical Co., West Haven.....	50.25	48.00
5591	Consolidated Rendering Co., Bos- ton, Mass.....	L. T. Frisbie Co., New Haven.....	49.46	48.00
5581	Eastern States Eastern States Farm- ers' Exchange, Springfield, Mass....	Eastern States Branch, East Hartford.....	50.79	48.00
5554	N. V. Potash Export My., Inc., New York City.....	Olds & Whipple, Inc., East Hartford.....	49.83	48.00
5717	N. V. Potash Export My., Inc., New York City.....	John M. Herr, East Hartford.....	50.24	48.00
Cottonhull Ashes				
5826	"Kireal". Ted Alkire, Lubbock Texas.....	Apothecaries Hall Co., East Windsor.....	31.02	30.00
5551	Apothecaries Hall Co., Waterbury, Conn.....	Apothecaries Hall Co., East Windsor.....	26.60	... *
5816	Eastern States Farmers' Exchange, Springfield, Mass.....	Eastern States Branch, East Hartford.....	32.50	25.00
5572	O&W. Olds & Whipple, Inc., Hart- ford, Conn.....	Olds & Whipple, Inc., East Hartford.....	22.76	20.00
5640	O&W. Olds & Whipple, Inc., Hart- ford, Conn.....	J. E. Shepard, So. Windsor.....	22.30	20.00

* Sold on unit basis.

TABLE 5. ANALYSES OF NITRATE OF POTASH, ETC.

Station No.	Manufacturer or Jobber	Sampled from stock of	Nitrogen		Potash	
			Found	Guaranteed	Found	Guaranteed
	Nitrate of Potash		%	%	%	%
6038	Apothecaries Hall Co., Waterbury, Conn.	Apothecaries Hall Co., East Windsor	13.06	13.00	44.62	44.00
5583	Eastern States Eastern States Farmers' Exchange, Springfield, Mass.	Eastern States Farmers' Branch, East Hartford,	13.06	13.00	44.44	44.00
5573	O&W. Olds & Whipple, Inc., Hartford, Conn.	Olds & Whipple, Inc., East Hartford...	13.02	13.00	44.41	44.00
5714	O&W. Olds & Whipple, Inc., Hartford, Conn.	John M. Herr, East Hartford.	12.96	13.00	44.46	44.00
	Nitrate of Soda—Potash					
6039	Chilean. Chilean Nitrate Sales Corp., New York City.	Apothecaries Hall Co., East Windsor	14.70	14.00	15.31	14.00

TABLE 6. ANALYSES OF DRY GROUND FISH

Station No.	Manufacturer or wholesale dealer	Sampled from stock of	Nitrogen		Phosphoric acid	
			Total found	Total guaranteed	Total found	Total guaranteed
5781	Fish Meal. American Agricultural Chemical Co., North Weymouth, Mass.	American Agricultural Chemical Co., West Haven, Conn.	8.72	9.00	5.94	4.00
5997	Fish Meal. American Agricultural Chemical Co., North Weymouth Mass.	Spencer Bros., Suffield.	9.42	9.00	5.71	4.00
5550	Apothecaries Hall Co., Waterbury, Conn.	Apothecaries Hall Co., East Windsor	9.94	9.46	8.00	5.00
5713	Apothecaries Hall Co., Waterbury, Conn.	John M. Herr, East Hartford.	9.72	9.46	6.71	5.00
5615	Berkshire Menhaden. Berkshire Chemical Co., Bridgeport, Conn.	Berkshire Chemical Co., Bridgeport.	9.34	9.46	6.58	5.00
5691	Eastern States, Eastern States Farmers' Exchange, Springfield, Mass.	Eastern States Branch, East Hartford	9.38	9.00	5.85	5.00
5639	Japanese. Olds & Whipple, Inc., Hartford, Conn.	J. E. Shepard, So. Windsor.	9.49	9.00	5.41	5.00
5555	O & W. Olds & Whipple, Inc., Hartford, Conn.	Olds & Whipple, Inc., East Hartford	9.92	9.00	7.32	5.00

TABLE 7. ANALYSES OF TANKAGE AND SIMILAR MATERIALS

Station No.	Manufacturer or wholesale dealer	Sampled from stock of	Nitrogen		Phosphoric acid		Mechanical analysis		Station No.
			Total found	Total guaranteed	Total found	Total guaranteed	Finer than 1-50 inch	Coarser than 1-50 inch	
5818	Eone and Meat. Apothecaries Hall Co., Waterbury, Conn.	Apothecaries Hall Co., East Windsor.	3.96	2.47	20.9	22.00	38.0	62.0	5818
5819	Animal. Apothecaries Hall Co., Waterbury, Conn.	Apothecaries Hall Co., East Windsor.	10.00	10.00	.....	.....	43.5	56.5	5819
5616	Berkshire Ground. Berkshire Chemical Co., Bridgeport, Conn.	Berkshire Chemical Co., Bridgeport.	9.82	9.80	8.63	6.00	39.0	61.0	5616
5779	Ground. Consolidated Rendering Co., Boston, Mass.	L. T. Frisbie, Co., New Haven.	8.13	7.41	11.59	9.15	43.5	56.5	5779

TABLE 8. ANALYSES OF GROUND BONE

Station No.	Manufacturer and brand	Sampled from stock of	Nitrogen		Phosphoric acid		Mechanical analysis		Station No.
			Total found	Total guaranteed	Total found	Total guaranteed	Finer than 1-50 inch	Coarser than 1-50 inch	
5397	Fine Ground, American Agricultural Chemical Co., No. Weymouth, Mass.	Bristol Grain & Supply Co., Bristol	2.50	2.47	27.31	23.00	51.7	48.3	5397
5859	Apothecaries Hall Co., Waterbury, Conn.	Apothecaries Hall Co., Waterbury	2.16	2.47	25.86	22.00	64.1	35.9	5859
5700	Apothecaries Hall Co., Waterbury, Conn.	New London Grain Co., New London	4.00	3.70	19.78	21.00	42.4	57.6	5700
5891	Armour's, Armour Fertilizer Works, New York City	Warehouse, Hartford	2.84	2.47	24.20	23.00	60.5	39.5	5891
5350	Baugh's Raw Bone, The Baugh & Sons Co., Baltimore, Md.	Hamden Lehigh Coal Co., Hamden	3.80	3.70	21.45	20.50	36.4	63.6	5350
5776	Baugh's Pure Steamed, The Baugh & Sons Co., Baltimore, Md.	Hamden Lehigh Coal Co., Hamden	2.86	2.47	24.78	23.00	57.9	42.1	5776
5603	Berkshire Fine Ground, Berkshire Chemical Co., Bridgeport, Conn.	F. H. Woodruff & Son, Milford	2.14	2.05	29.73*	25.00	62.0	38.0	5603
5549	Corenco Ground, Consolidated Rendering Co., Boston, Mass.	Geo. S. Phelps & Co., Thompsonville	2.56	2.47	25.10	23.00	66.0	34.0	5549
5587	Corenco Pure Raw Bone, Consolidated Rendering Co., Boston, Mass.	Frank S. Platt Co., New Haven	4.30	3.70	22.83	20.00	48.6	51.4	5587
5466	Eastern States Ground Steamed, Eastern States Farmers' Exchange, Springfield, Mass.	Eastern States Branch, Willimantic	2.87	2.50	23.32	23.00	59.5	40.5	5466

5665	Faesy & Besthoff, Inc., New York City.....	Silliman Hardware Co., New Canaan.....	2.43	2.25	29.28	27.00	55.5	44.5	5665
5806	G & O Ground, Goulard & Olena, Inc., New York City.....	Rackliffe Bros., New Britain.....	2.67	2.40	28.14	22.75	77.5	22.5	5806
5401	International Agricultural Corp., Boston, Mass.	Sunshine Feed Store, Plainville..	2.14	2.47	24.87	22.00	58.7	41.3	5401
5527	Old Deerfield Ground Steamed. Old Deerfield Fertilizer Co., South Deerfield, Mass.	Rockville Grain & Coal Co., Rockville.....	2.30	2.47	29.67	22.00	58.5	41.5	5527
5694	O&W, Olds & Whipple, Inc., Hartford, Conn.	Bloomfield Farmers' Exchange, Bloomfield.....	2.38	2.47	25.85	22.00	73.0	27.0	5694
5715	O&W, Olds & Whipple Inc., Hartford, Conn.	John M. Herr, East Hartford..	2.86	2.47	23.98	22.00	66.4	33.6	5715
5387	Fine Ground. The Rogers & Hubbard Co., Portland, Conn.	Cheshire Reformatory, West Cheshire.....	2.61	2.47	23.25	23.00	63.5	36.5	5387
5846	Pure Raw Knuckle Bone Flour. The Rogers & Hubbard Co., Portland, Conn.	The Rogers & Hubbard Co., Portland.....	3.90	3.70	26.22	24.70	77.2	22.8	5846
5845	Strictly Pure Fine Bone. The Rogers & Hubbard Co., Portland, Conn.	The Rogers & Hubbard Co., Portland.....	4.08	3.70	23.04	20.00	43.6	56.4	5845
5649	Sawco Bone Fertilizer. Stumpp & Walter Co., New York City.....	Stumpp & Walter Co., Stamford	2.80	2.47	26.67	24.00	45.8	54.2	5649
5482	Swift & Co. Fertilizer Works, Baltimore, Md.	Jordan Hardware Co., Williamstic.....	2.77	2.47	25.98	23.00	64.5	35.5	5482
5361	Pure Ground Bone. I. P. Thomas & Son Co., Camden, N. J.....	H. D. Peters, Hamden.....	2.66	2.45	23.70	23.00	58.6	41.4	5361

TABLE 9. ANALYSES OF MIXED FERTILIZER

Station No.	Manufacturer and brand	Place of sampling	Acid-forming (A), Non-acid-forming (NA), or near neutral (N)
Acme Guano Co., Baltimore, Md.			
5761	Acme 2-12-2	Lebanon	A
5407	Acme 4-8-4	Middletown	A
5464	Acme 5-8-7	Middletown	A
5463	Acme 8-6-6	Middletown	A
American Agricultural Chemical Co., North Weymouth, Mass.			
5521	AA Complete Manure with 10% Potash 4-8-10	So. Manchester	...
5486	AA Double Strength Fertilizer 8-16-14	So. Manchester	...
5988	AA Double Strength Fertilizer 8-16-14	West Haven	...
5658	AA General Crop Fertilizer 2-10-2	So. Norwalk	...
5548	AA Monarch Fertilizer 4-8-4	Thompsonville	...
5547	AA Peerless Fertilizer 4-8-7	Thompsonville	A
5621	AA Potato & Vegetable Fertilizer 5-8-7	Norwalk	A
5759	AA Potato & Vegetable Fertilizer 5-8-7	Colchester	...
5767	AA Prolific 10% Potash Fertilizer 2-8-10	So. Manchester	...
5907	AA Tobacco Starter 5-5-15	West Haven	N
5395	AA Top Dresser 7-6-6	Bristol	A
5760	AA Top Dresser 7-6-6	Colchester	...
5659	Agrico for Corn 3-10-6	So. Norwalk	...
5522	Agrico for Fruit 9-6-6	So. Manchester	A
5782	Agrico for Gardens 4-10-4	West Haven	...
5783	Agrico for Lawns, Trees & Shrubs 7-7-5	West Haven	...
5394	Agrico for New England 4-8-10	Bristol	...
5701	Agrico for Pastures & Top Dressing 7-6-6	Westerly	A
5666	Agrico for Potatoes & Vegetables 5-8-7	New Canaan	A
5519	Agrico for Seeding Down 4-16-20	So. Manchester	...
5848	Agrico for Tobacco 6-3-6	So. Manchester	NA
5660	Agrico for Truck 5-10-5	So. Norwalk	A
5702	Bradley's XL Fertilizer 3-10-4	Westerly	...
5849	Double A Tobacco Fertilizer 5 3-5	So. Manchester	...
5847	Sanderson's Formula B 4-8-7	So. Manchester	A
American Cyanamid Co., New York, N. Y.			
5582	"Ammono-Phos" 11-48-0	East Hartford	...
Apothecaries Hall Co., Waterbury, Conn.			
5369	Liberty Corn 2-10-2	Mt. Carmel	...
6035	Liberty Fertilizer 4-8-8	East Windsor	...
5699	Liberty Fish Bone & Potash 3-10-4	New London	...
5821	Liberty High Grade Corn 2-12-4	East Windsor	...
5367	Liberty High Grade Market Gardeners 5-8-7	Mt. Carmel	A
5817	Liberty High Grade Tobacco Manure 6-3-7	East Windsor	NA

CONTAINING NITROGEN, PHOSPHORIC ACID AND POTASH

Nitrogen					Phosphoric acid			Potash		Station No.
In nitrates	In ammonia	Organic water-soluble	Organic water-insoluble	Total	Citrate-insoluble	Total	So-called "Available"	As muriate	Total	
%	%	%	%	%	%	%	%	%	%	%
0.00	1.60	0.24	0.28	2.12	0.38	12.74	12.36	1.52	2.44	5761
0.30	3.28	0.02	0.40	4.00	0.79	8.50	7.71	2.67	4.00	5407
0.38	3.76	0.54	0.27	4.95	0.39	8.26	7.87	6.96	6.96	5464
0.25	3.48	2.52	0.89	7.14	0.70	6.26	5.56	5.78	5.78	5463
0.17	3.20	0.24	0.39	4.00	0.91	9.30	8.39	10.25	10.25	5521
0.74	6.88	0.40	0.04	8.06	0.33	17.42	17.09	12.99	12.99	5486
0.00	8.00	0.22	0.12	8.34	0.56	16.69	16.13	14.04	14.04	5988
0.00	1.64	0.35	0.33	2.32	0.70	11.11	10.41	2.35	2.35	5658
0.52	3.00	0.06	0.38	3.96	0.46	8.94	8.48	4.21	4.21	5548
0.47	3.00	0.00	0.35	3.82	0.32	8.61	8.29	6.83	6.83	5547
0.47	4.00	0.08	0.57	5.12	0.94	9.58	8.64	7.29	7.29	5621
0.48	3.40	0.46	0.33	4.67	0.45	9.15	8.70	6.67	6.67	5759
0.13	1.64	0.40	0.17	2.34	0.40	8.86	8.46	9.34	9.34	5767
0.60	2.58	0.82	0.90	4.90	0.55	6.24	5.69	1.10	15.10	5907
0.27	6.28	0.44	0.37	7.36	0.60	7.24	6.64	6.23	6.23	5395
0.84	4.24	1.34	0.35	6.77	0.36	6.42	6.06	6.04	6.04	5760
0.00	2.50	0.33	0.27	3.10	1.87	11.91	10.04	6.21	6.21	5659
0.21	8.32	0.12	0.36	9.01	0.50	7.31	6.81	6.77	6.77	5522
0.00	3.00	0.20	1.06	4.26	0.74	11.61	10.87	4.40	4.40	5782
0.78	5.20	0.20	1.32	7.50	0.41	8.56	8.15	5.68	5.68	5783
0.71	2.68	0.14	0.37	3.90	0.39	8.66	8.27	9.50	9.50	5394
0.98	5.60	0.00	0.33	6.91	0.44	6.93	6.49	5.92	5.92	5701
0.71	3.64	0.28	0.36	4.99	0.66	9.31	8.65	7.09	7.09	5666
0.73	2.84	0.32	0.07	3.96	0.36	16.38	16.02	19.68	19.68	5519
0.84	0.48	1.16	3.57	6.05	0.36	4.09	3.73	0.41	6.30	5848
0.71	3.60	0.32	0.37	5.00	0.43	11.21	10.78	5.12	5.12	5660
0.17	2.06	0.62	0.31	3.16	0.70	11.36	10.66	4.21	4.21	5702
0.45	1.36	0.48	2.76	5.05	0.11	3.30	3.19	0.57	5.58	5849
0.42	2.56	0.48	0.44	3.90	0.40	9.37	8.97	0.97	6.72	5847
0.00	10.68	0.09	0.61	11.38	1.00	51.12	50.12	.....	.....	5582
0.22	1.46	0.42	0.40	2.50	0.56	10.88	10.32	2.79	2.79	5369
0.71	2.42	0.38	0.43	3.94	0.31	8.66	8.35	8.78	8.78	6035
1.00	1.14	0.54	0.46	3.14	0.94	12.83	11.89	5.40	5.40	5699
0.00	1.24	0.84	0.52	2.60	0.66	13.10	12.44	5.08	5.08	5821
0.70	3.68	0.56	0.36	5.30	0.51	9.42	8.91	7.48	7.48	5367
0.89	0.00	0.84	4.27	6.00	0.40	4.62	4.22	0.69	7.80	5817

TABLE 9. ANALYSES OF MIXED FERTILIZER—Continued

Station No.	Manufacturer and brand	Place of sampling	Acid-forming (A), Non-acid-forming (NA) or near neutral (N)
5368	Liberty Market Gardeners Special 4-8-4	Mt. Carmel	A
6036	Liberty Onion Special (Potash as Sulphate) 4-8-7	East Windsor . . . . .	..
5481	Liberty Potato & General Crops 4-8-10	Willimantic . . . . .	..
5823	Liberty Potato & Market Gardeners Special (Potash as Muriate) 4-8-7	East Windsor	A
6037	Liberty Potato & Vegetable 2-8-10	East Windsor . . . . .	..
5822	Liberty Special Fertilizer for Fruit 7-8-6	East Windsor	A
5553	Liberty Special Fertilizer for Lawns, Gardens, etc. 4-4-0	East Windsor . . . . .	..
5820	Liberty Tobacco Mixture 7-3-7	East Windsor	NA
5902	Liberty Tobacco Special 5-3-5	East Windsor	NA
5824	Liberty Tobacco Starter 4-10-0	East Windsor	A
5825	Liberty Tobacco Starter with Potash 5-4-15	East Windsor . . . . .	..
5366	Liberty Top Dresser for Grass & Grain 8-8-8	Mt. Carmel . . . . .	..
5839	Liberty Tree & Shrub Food 10-8-8	Waterbury . . . . .	..
Armour Fertilizer Works, New York, N. Y.			
5764	Armour's Big Crop Fertilizer 3-10-4	Buckland . . . . .	..
5893	Armour's Big Crop Fertilizer 3-12-6	Hartford . . . . .	..
5544	Armour's Big Crop Fertilizer 4-8-4	Thompsonville	A
5895	Armour's Big Crop Fertilizer 4-8-7	Hartford . . . . .	..
5766	Armour's Big Crop Fertilizer 4-8-10	Buckland . . . . .	..
5703	Armour's Big Crop Fertilizer 5-8-7	Westerly	A
5704	Armour's Big Crop Fertilizer 7-6-6	Westerly	A
5765	Armour's Big Crop Fertilizer 8-16-20	Buckland . . . . .	..
5886	Armour's Big Crop Tobacco Special 5-3-5	Hartford . . . . .	..
5887	Armour's Big Crop Tobacco Special 6-3-6	Hartford	NA
5888	Armour's Big Crop Tobacco Starter 5-5-15	Hartford	NA
5894	Armour's Fertilizer 4-8-8	Hartford . . . . .	..
5896	Armour's Garden & Lawn Fertilizer 4-8-6	Hartford	A
Associated Seed Growers, Inc., New Haven, Conn.			
5608	Clark's Premier 3-10-6	Mt. Carmel . . . . .	..
5606	Clark's Special Mixture for General Use 4-8-4	Milford	A
5605	Clark's Tip Top Brand 4-8-7	Milford	A
5600	Clark's Tip Top Brand 5-8-7	Milford	A
F. A. Bartlett Tree Expert Co., Stamford, Conn.			
5654	Bartlett Green Tree Food 6-7-4	Stamford	A

CONTAINING NITROGEN, PHOSPHORIC ACID AND POTASH

Nitrogen					Phosphoric acid			Potash		Station No.
In nitrates	In ammonia	Organic water-soluble	Organic water-insoluble	Total	Citrate-insoluble	Total	So-called "Available"	As muriate	Total	
%	%	%	%	%	%	%	%	%	%	
0.43	2.94	0.38	0.39	4.14	0.66	9.49	8.83	4.35	4.55	5368
2.30	0.82	0.50	0.88	4.50	1.54	12.44	10.90	0.89	6.54	6036
0.66	2.86	0.34	0.36	4.22	0.43	9.35	8.92	10.08	10.08	5481
0.69	2.56	0.28	0.41	3.94	0.51	8.84	8.33	7.27	7.27	5823
0.00	1.04	0.51	0.95	2.50	0.54	9.43	8.89	12.29	12.29	6037
4.17	2.56	0.00	0.41	7.14	0.24	8.51	8.27	6.84	6.84	5822
0.00	0.00	0.70	3.86	4.56	3.79	9.45	5.66	....	....	5553
1.63	0.04	0.96	4.57	7.20	0.32	4.89	4.57	0.81	8.02	5820
1.40	0.00	1.02	3.00	5.42	0.14	4.72	4.58	0.62	4.97	5902
0.69	1.36	0.68	1.81	4.54	0.73	12.56	11.83	....	....	5824
2.02	0.00	0.76	2.24	5.02	0.16	5.31	5.15	0.98	17.26	5825
6.90	1.48	0.00	0.22	8.60	0.42	8.96	8.54	8.55	8.55	5366
2.00	8.08	0.32	0.26	10.66	0.39	8.96	8.57	10.12	10.12	5839
0.41	2.00	0.06	0.37	2.84	0.49	10.56	10.07	4.02	4.02	5764
0.45	1.88	0.11	0.55	3.00	0.83	13.40	12.57	6.22	6.22	5893
0.40	2.72	0.16	0.52	3.80	0.54	8.30	7.76	4.00	4.00	5544
0.56	2.34	0.28	0.62	3.80	0.59	8.67	8.08	6.93	6.93	5895
0.60	2.48	0.20	0.62	3.90	0.40	8.82	8.42	10.47	10.47	5766
0.81	3.28	0.24	0.63	4.96	1.13	9.24	8.11	7.57	7.57	5703
0.70	5.52	0.28	0.53	7.03	0.42	6.71	6.29	5.75	6.26	5704
0.92	6.86	0.14	0.08	8.00	0.22	16.74	16.52	20.16	20.16	5765
1.32	0.08	0.89	2.33	4.62	0.30	5.09	4.79	0.52	4.81	5886
1.22	0.12	1.40	3.26	6.00	0.26	3.71	3.45	0.51	6.67	5887
1.97	0.48	1.76	0.94	5.15	0.45	6.71	6.26	1.34	14.38	5888
0.60	2.36	0.20	0.70	3.86	0.53	8.94	8.41	7.91	7.91	5894
0.48	2.28	0.40	0.64	3.80	0.57	8.55	7.98	7.06	7.46	5896
0.00	2.36	0.49	0.27	3.12	0.40	12.49	12.09	5.22	6.43	5608
0.00	3.28	0.35	0.33	3.96	0.61	8.63	8.02	2.79	4.32	5606
0.00	3.40	0.34	0.28	4.02	0.86	8.61	7.75	5.81	7.07	5605
0.48	3.72	0.52	0.36	5.08	0.45	9.05	8.60	5.44	7.02	5600
0.00	4.76	0.22	0.80	5.78	1.92	11.23	9.31	5.18	5.18	5654

TABLE 9. ANALYSES OF MIXED FERTILIZER—Continued

Station No.	Manufacturer and brand	Place of sampling	Acid-forming (A), Non-acid-forming (NA) or near neutral (N)
The Baugh & Sons Co., Baltimore, Md.			
5352	Baugh's Fish, Bone & Potash Mixture 4-8-4....	Hamden.....	..
5675	Baugh's Fish, Bone & Potash Mixture 4-8-4....	Guilford.....	..
5349	Baugh's Half Century Perfection Brand 4-8-7..	Hamden.....	A
5347	Baugh's Peruvian Guano Substitute 5-8-7.....	Hamden.....	A
5676	Baugh's Peruvian Guano Substitute 5-8-7.....	Guilford.....	..
5355	Baugh's Special Top Dresser 7-6-6.....	Hamden.....	N
5684	Baugh's Special Top Dresser 7-6-6.....	Guilford.....	..
5348	Baugh's $\frac{3}{4}$ Century Perfection Brand 3-10-6....	Hamden.....	..
5354	Baugh's Truckers Favorite 5-10-5.....	Hamden.....	A
Berkshire Chemical Co., Bridgeport, Conn.			
5614	Berkshire Berry & Tomato Special 3-10-6	Bridgeport.....	..
5685	Berkshire Berry & Tomato Special 3-10-6	Guilford.....	..
5670	Berkshire Complete Fertilizer 2-12-2	New Milford.....	..
5901	Berkshire Complete Tobacco Fertilizer 5-3-5 ..	Somers.....	NA
5613	Berkshire Golf Green Fertilizer 8-5-2	Bridgeport.....	..
5609	Berkshire Grass Special Fertilizer 6-6-5	Seymour.....	A
5829	Berkshire High Grade Tobacco Fertilizer 6-3-6..	Bridgeport.....	NA
5359	Berkshire Long Island Special 4-8-7	Hamden.....	A
5601	Berkshire Long Island Special 4-8-7	Milford.....	..
6014	Berkshire Long Island Special 4-8-7	Bridgeport.....	..
5357	Berkshire Market Garden Fertilizer 4-8-4.....	Hamden.....	A
5358	Berkshire Potato & Garden Special 5-8-7	Hamden.....	N
5602	Berkshire Potato & Garden Special 5-8-7	Milford.....	..
6013	Berkshire Potato & Garden Special 5-8-7	Bridgeport.....	..
5830	Berkshire Tobacco Special Fertilizer 7-3-7	Bridgeport.....	..
Consolidated Rendering Co., Boston, Mass.			
5780	Corenco 2-10-2 Bone Brand	New Haven.....	..
5541	Corenco 3-10-4 Animal Brand	Thompsonville.....	..
5686	Corenco 3-10-4 Animal Brand	Guilford.....	..
5545	Corenco 4-8-4 Corn & Vegetable.....	Thompsonville.....	A
5668	Corenco 4-8-7 Market Garden.....	Bethel.....	A
5540	Corenco 4-8-10 Potato Grower.....	Thompsonville.....	..
6002	Corenco 4-8-10 Potato Grower.....	New Haven.....	..
5539	Corenco 5-5-5 Lawn & Shrub Fertilizer.....	Thompsonville.....	..
5619	Corenco 5-8-7 General Crop Manure.....	Southport.....	A
5762	Corenco 5-8-7 General Crop Manure.....	Mansfield Depot.....	..
5770	Corenco 5-8-10 Peerless Potato.....	Meriden.....	..
5618	Corenco 5-10-5 Super Truck.....	Southport.....	A
5909	Corenco 6-3-6 Special Tobacco Grower.....	New Haven.....	NA
5908	Corenco 7-3-7 Super Tobacco Grower.....	New Haven.....	NA
5669	Corenco 7-6-6 Complete Fruit & Top Dressing..	Bethel.....	A
5778	Corenco 8-16-14 Two in One.....	New Haven.....	..

CONTAINING NITROGEN, PHOSPHORIC ACID AND POTASH

In nitrates	Nitrogen				Phosphoric acid			Potash		Station No.
	In ammonia	Organic water-soluble	Organic water-insoluble	Total	Citrate-insoluble	Total	So-called "Available"	As muriate	Total	
%	%	%	%	%	%	%	%	%	%	
0.81	2.26	0.54	0.28	3.89	0.54	9.47	8.93	4.31	4.31	5352
0.91	2.06	0.66	0.27	3.90	0.50	9.49	8.99	4.00	4.00	5675
1.08	1.96	0.50	0.63	4.17	0.71	9.49	8.78	6.90	6.90	5349
0.96	2.44	0.72	0.72	4.84	0.76	9.44	8.68	7.33	7.33	5347
1.19	2.56	0.56	0.69	5.00	0.66	9.03	8.37	7.24	7.24	5676
4.49	2.20	0.12	0.22	7.03	0.40	7.05	6.65	6.27	6.27	5355
4.33	2.08	0.36	0.19	6.96	0.41	7.04	6.63	6.16	6.16	5684
0.79	1.12	0.52	0.44	2.87	0.91	12.40	11.49	6.47	6.47	5348
1.05	2.26	1.02	0.63	4.96	0.75	10.71	9.96	5.34	5.34	5354
0.19	2.12	0.40	0.41	3.12	0.57	11.79	11.22	6.20	6.20	5614
0.00	1.96	0.54	0.36	2.86	0.74	12.04	11.30	6.00	6.00	5685
0.00	1.54	0.53	0.43	2.50	0.97	13.15	12.18	3.06	3.06	5670
1.32	0.08	0.84	2.82	5.06	0.23	3.89	3.66	0.54	5.29	5901
0.00	2.24	0.84	4.68	7.76	0.88	6.70	5.82	2.40	2.40	5613
0.55	4.16	0.84	0.51	6.06	0.40	6.59	6.19	4.90	4.90	5609
0.56	0.74	2.26	3.44	7.00	0.29	4.44	4.15	0.53	5.83	5829
0.46	2.88	0.32	0.40	4.06	0.40	8.80	8.40	7.13	7.13	5359
0.27	2.84	0.44	0.45	4.00	0.34	8.89	8.55	6.37	6.37	5601
0.43	2.90	0.38	0.31	4.02	0.39	8.92	8.53	6.45	6.45	6014
0.44	2.72	0.58	0.42	4.16	0.41	8.60	8.19	4.17	4.17	5357
1.10	2.48	0.43	0.71	4.72	0.60	8.92	8.32	7.14	7.14	5358
0.60	2.52	0.78	0.58	4.48	0.58	9.06	8.48	7.35	7.35	5602
0.00	3.86	0.62	0.58	5.06	0.45	8.90	8.45	7.17	7.17	6013
2.16	0.08	1.52	3.24	7.00	0.27	4.22	3.95	0.54	7.93	5830
0.91	0.32	0.68	0.29	2.20	0.52	10.71	10.19	2.76	2.76	5780
0.91	1.08	0.92	0.20	3.11	0.29	10.83	10.54	4.28	4.28	5541
0.95	1.24	0.60	0.35	3.14	0.61	11.26	10.65	4.29	4.29	5686
1.11	2.40	0.60	0.19	4.30	0.06	8.77	8.71	4.17	4.17	5545
1.08	2.08	0.72	0.22	4.10	0.13	8.40	8.27	7.18	7.18	5668
0.84	2.12	0.72	0.20	3.88	0.17	8.84	8.67	9.95	9.95	5540
0.90	2.32	0.48	0.28	3.98	0.06	8.74	8.68	9.86	9.86	6002
0.00	2.16	0.70	2.14	5.00	0.45	7.26	6.81	5.62	5.62	5539
0.92	3.08	0.84	0.22	5.06	0.08	8.78	8.70	7.02	7.02	5619
0.94	3.10	0.90	0.18	5.12	0.18	8.59	8.41	7.24	7.24	5762
1.07	3.16	0.62	0.17	5.02	0.06	8.64	8.58	10.01	10.01	5770
1.04	2.96	0.80	0.24	5.04	0.14	10.63	10.49	5.10	5.10	5618
0.96	0.44	1.56	3.14	6.10	0.18	5.00	4.82	0.64	7.28	5909
1.29	0.60	2.48	2.89	7.26	0.19	4.77	4.58	0.41	7.69	5908
0.99	4.84	0.56	0.43	6.82	0.02	7.05	7.03	6.01	6.01	5669
1.14	5.92	0.42	0.51	7.99	0.56	17.01	16.45	15.02	15.02	5778

TABLE 9. ANALYSES OF MIXED FERTILIZER—Continued

Station No.	Manufacturer and brand	Place of sampling	Acid-forming (A), Non-acid-forming (NA) or near neutral (N)
Davey Tree Expert Co., Kent, Ohio			
5655	Davey Tree Food 10-3-3.....	Old Greenwich.....	A
Davison Chemical Co., Baltimore, Md.			
5612	Davco Homogenous Granulated Fertilizer 5-8-7	Bridgeport.....	N
6012	Davco Homogenous Granulated Fertilizer 5-8-7	Bridgeport.....	...
Eastern States Farmers' Exchange, Springfield, Mass.			
5391	Eastern States 0-20-20.....	Southington.....	...
5467	Eastern States 4-8-8.....	Willimantic.....	...
5475	Eastern States 4-12-4.....	Willimantic.....	...
5473	Eastern States 4-16-20.....	Willimantic.....	NA
5535	Eastern States 4-16-20.....	Ellington.....	...
5476	Eastern States 6-8-6.....	Willimantic.....	...
5851	Eastern States 8-4-8 Tobacco.....	East Hartford.....	NA
5903	Eastern States 8-12-20.....	Norwich.....	...
5477	Eastern States 8-16-16.....	Willimantic.....	...
5599	Eastern States 8-16-16.....	Orange.....	...
5690	Eastern States 8-16-16 (Low Chlorine Special)...	East Hartford.....	A
5620	Eastern States 8-20-12.....	Southport.....	A
5468	Eastern States 8-24-8.....	Willimantic.....	...
5534	Eastern States 8-24-8.....	Ellington.....	...
5850	Eastern States 10-5-10 Tobacco.....	East Hartford.....	NA
5575	Eastern States 12-16-12.....	East Hartford.....	A
Goulard & Olona, Inc., New York, N. Y.			
5803	G&O Lawn Garden and Flower Fertilizer 5-8-5.	New Britain.....	A
5804	J. B. Greens Formula 10-4-3.....	New Britain.....	A
6101	J. B. Greens Formula 10-4-3.....	New Britain.....	...
International Agricultural Corp., Boston, Mass.			
5400	International 4-8-4.....	Plainville.....	A
5399	International 5-8-7.....	Plainville.....	A
5706	International 8-16-14.....	Norwich.....	A
5905	International Caribee 5-10-10.....	Norwich.....	...

CONTAINING NITROGEN, PHOSPHORIC ACID AND POTASH

In nitrates	Nitrogen				Phosphoric acid			Potash		Station No.
	In ammonia	Organic water-soluble	Organic water-insoluble	Total	Citrate-insoluble	Total	So-called "Available"	As muriate	Total	
%	%	%	%	%	%	%	%	%	%	
1.12	7.64	0.00	1.77	10.53	0.39	3.92	3.53	2.30	3.31	5655
0.00	4.48	0.11	0.07	4.66	0.36	8.61	8.25	6.93	6.93	5612
0.00	4.48	0.20	0.08	4.76	0.30	8.69	8.39	6.63	7.13	6012
.....	.....	.....	.....	.....	0.05	20.26	20.21	20.53	21.33	5391
0.89	2.76	0.20	0.35	4.20	0.30	9.91	9.61	9.44	9.44	5467
1.05	3.00	0.08	0.29	4.42	0.63	13.26	12.63	4.40	4.83	5475
1.05	3.04	0.14	0.17	4.40	0.07	19.00	18.93	20.47	21.14	5473
1.08	2.92	0.08	0.28	4.36	0.18	18.52	18.34	19.24	20.08	5535
1.96	3.88	0.04	0.30	6.18	0.25	9.81	9.56	5.85	6.56	5476
1.09	0.52	3.60	3.10	8.31	0.24	4.50	4.26	0.52	8.18	5851
1.79	6.00	0.00	0.23	8.02	0.09	11.80	11.71	17.94	22.19	5903
1.95	5.92	0.04	0.21	8.12	0.10	18.74	18.64	12.81	15.88	5477
2.02	5.84	0.02	0.16	8.04	0.11	17.00	16.89	13.45	16.95	5599
2.05	5.60	0.16	0.25	8.06	0.09	16.63	16.54	1.75	17.02	5690
2.17	5.28	0.00	0.21	7.66	0.17	22.53	22.36	9.28	11.93	5620
2.65	4.92	0.12	0.29	7.98	0.56	27.00	26.44	7.62	7.62	5468
2.67	5.04	0.00	0.33	8.04	0.67	26.27	25.60	8.67	11.53	5534
2.82	0.24	3.76	2.84	9.66	0.14	5.60	5.46	1.83	11.59	5850
4.05	8.00	0.00	0.25	12.30	0.24	17.01	16.77	1.26	13.28	5575
0.19	3.82	0.05	0.75	4.81	0.72	10.04	9.32	5.12	5.12	5803
0.66	0.70	1.98	5.18	8.52	2.63	6.74	4.11	3.72	3.72	5804
0.30	2.62	3.78	3.14	9.84	0.66	5.76	5.10	2.76	2.76	6101
0.78	2.60	0.40	0.21	3.99	0.20	8.95	8.75	4.20	4.20	5400
0.76	3.40	0.52	0.30	4.98	0.15	8.99	8.84	7.02	7.02	5399
1.01	6.72	0.20	0.15	8.08	0.41	17.04	16.63	13.77	13.77	5706
1.98	0.60	0.92	1.59	5.09	0.55	10.99	10.44	0.90	10.39	5905

TABLE 9. ANALYSES OF MIXED FERTILIZER—Continued

Station No.	Manufacturer and brand	Place of sampling	Acid-forming (A), Non-acid-forming (NA) or near neutral (N)
	Killen & Hall, Inc., Darien, Conn.		
5617	Tree Food 8-5-2.....	Bridgeport.....	
	Leary, The Florist, Waterbury, Conn.		
5689	All-Gro 4-8-5.....	Waterbury.....	
	Old Deerfield Fertilizer Co., So. Deerfield, Mass.		
5900	Old Deerfield Complete Tobacco Fertilizer 5-3-5	Somers.....	
5913	Old Deerfield Complete Tobacco 6-3-7.....	Broad Brook.....	NA
5914	Old Deerfield Concentrate 8-16-14.....	Broad Brook.....	
5969	Old Deerfield Grass Top Dressing 7-6-6.....	Hazardville.....	NA
5915	Old Deerfield Starter Bone & Potash 5-8-12.....	Enfield.....	
5530	Valley Brand 4-8-4.....	Rockville.....	NA
5528	Valley Brand 5-8-7.....	Rockville.....	NA
	Olds & Whipple, Inc., Hartford, Conn.		
5692	O&W 3-10-4 Corn Special Fertilizer.....	Bloomfield.....	
5523	O&W 4-8-4 Market Garden Fertilizer.....	So. Manchester.....	NA
5693	O&W 4-8-7 Potato & General Purpose Fertilizer	Bloomfield.....	NA
5912	O&W 5-4-15 High Grade Tobacco Starter and Potash Compound.....	East Hartford.....	NA
5483	O&W 5-8-7 Potato & General Purpose Fertilizer	Willimantic.....	A
5812	O&W 6-3-5 Blue Label Tobacco Fertilizer (Pot- ash derived from Cottonhull Ashes).....	East Hartford.....	
5814	O&W 6-3-6 Blue Label Tobacco Fertilizer.....	East Hartford.....	NA
5815	O&W 6-3-6 Blue Label Tobacco Fertilizer (Pot- ash derived from Cottonhull Ashes).....	East Hartford.....	NA
5524	O&W 8-6-6 Top Dressing & Grass Fertilizer....	So. Manchester.....	
5994	O&W 8-6-6 Top Dressing & Grass Fertilizer....	East Hartford.....	
5811	O&W Complete Tobacco Fertilizer 5-3-5.....	East Hartford.....	NA
	Organic Fertilizer Corp., New York, N. Y.		
5916	Fish Organo 4-3-1.....	Manchester.....	
	Outpost Nurseries, Inc., Ridgefield, Conn.		
5667	Outpost Plant Food 8-5-2.....	Ridgefield.....	

CONTAINING NITROGEN, PHOSPHORIC ACID AND POTASH

In nitrates	Nitrogen				Phosphoric acid			Potash		Station No.
	In ammonia	Organic water-soluble	Organic water-insoluble	Total	Citrate-insoluble	Total	So-called "Available"	As muriate	Total	
%	%	%	%	%	%	%	%	%	%	
0.00	2.00	1.06	4.92	7.98	0.91	6.59	5.68	2.34	2.34	5617
0.59	3.00	0.20	0.25	4.04	1.07	9.34	8.27	4.94	4.94	5689
1.64	0.00	0.94	3.19	5.77	0.74	6.55	5.81	0.62	6.27	5900
0.82	0.54	1.22	3.88	6.46	0.35	4.24	3.89	0.64	8.29	5913
0.45	3.56	2.72	0.77	7.50	0.48	17.17	16.69	11.52	15.81	5914
3.18	3.32	0.60	0.14	7.24	0.07	7.01	6.94	4.69	6.22	5969
0.43	0.12	2.34	2.33	5.22	0.50	9.86	9.36	1.30	13.51	5915
1.47	1.84	0.76	0.13	4.20	0.21	8.95	8.74	4.55	4.55	5530
2.13	2.68	0.56	0.13	5.50	0.17	9.09	8.92	5.24	7.52	5528
0.20	2.20	0.08	0.92	3.40	1.14	11.64	10.50	4.50	4.50	5692
0.79	2.64	0.08	0.75	4.26	0.70	9.35	8.65	4.36	4.36	5523
0.45	2.86	0.14	0.62	4.07	1.01	9.38	8.37	7.63	7.63	5693
2.81	0.18	0.62	1.31	4.92	0.31	5.59	5.28	0.98	15.80	5912
0.76	3.66	0.06	0.75	5.23	0.60	9.41	8.81	7.59	7.59	5483
1.09	0.50	1.40	3.27	6.26	0.29	4.21	3.92	0.78	5.85	5812
1.12	0.12	1.22	3.78	6.24	0.25	4.16	3.91	0.41	6.40	5814
1.17	0.56	1.44	3.21	6.38	0.34	4.03	3.69	0.60	6.67	5815
4.14	3.20	0.10	0.40	7.86	0.24	6.44	6.20	6.26	6.26	5524
4.41	3.32	0.24	0.55	8.52	0.34	6.91	6.57	6.62	6.62	5994
0.91	0.28	1.10	2.89	5.18	0.21	4.01	3.80	0.48	5.70	5811
0.00	0.32	0.71	2.91	3.94	2.02	5.01	2.99	0.43	1.63	5916
0.16	2.20	0.83	4.65	7.84	0.90	6.61	5.71	2.33	2.33	5667

TABLE 9. ANALYSES OF MIXED FERTILIZER—Continued

Station No.	Manufacturer and brand	Place of sampling	Acid-forming (A), Non-acid-forming (NA) or near neutral (N)
Plantspur Products Co., Ridgefield, N. J.			
5775	Plantspur Fertilizer 3-3-2.....	New Haven.....	...
Frank S. Platt Co., New Haven, Conn.			
5585	Platco Special 5-8-7.....	New Haven.....	A
5584	Platco Special Lawn Fertilizer 10-5-5.....	New Haven.....	A
The Rogers & Hubbard Co., Portland, Conn.			
5470	Golf Course Fertilizer 8-6-2.....	Portland.....	...
5471	Gro-Fast Plant Food 5-6-6.....	Portland.....	...
5671	Hubbard's All Soils All Crops Fertilizer 4-8-4.....	New Milford.....	NA
5469	Hubbard's "Bone Base" Fertilizer for Seeding Down.....	Portland.....	...
5479	Hubbard's "Bone Base" Oats & Top Dressing..	Willimantic.....	NA
5842	Hubbard's "Bone Base" Soluble Corn & Market Garden Manure.....	Portland.....	...
5841	Hubbard's "Bone Base" Soluble Potato Manure	Portland.....	N
5844	Hubbard's "Bone Base" Soluble Tobacco Manure	Portland.....	NA
5911	Hubbard's Climax Tobacco Brand 5-3-5.....	Portland.....	NA
5673	Hubbard's Corn & Grain Fertilizer 2-12-4.....	New Milford.....	...
5808	Hubbard's High Potash Fertilizer 2-8-10.....	New Britain.....	...
5688	Hubbard's Potato Fertilizer 5-8-7.....	West Cheshire.....	NA
5695	Hubbard's Potato Fertilizer 5-8-7.....	Branford.....	...
5843	Hubbard's Tobacco Grower Vegetable Formula 6-3-6.....	Portland.....	NA
5389	Red H 4-8-4.....	Plantsville.....	...
5711	Red H 4-8-4.....	West Cheshire.....	...
5672	Red H 4-8-7.....	New Milford.....	...
5707	Red H 4-8-10.....	Norwich.....	...
5388	Red H 5-8-7.....	Plantsville.....	...
5712	Red H 5-8-7.....	West Cheshire.....	...
5971	Red H 5-8-7.....	West Cheshire.....	...
5385	Red H 5-8-10.....	West Cheshire.....	...
5386	Red H 7-6-6.....	West Cheshire.....	A
5472	Red H 8-16-14.....	Portland.....	...
O. M. Scott & Sons Co., Marysville, Ohio			
5768	Scott's 10-6-4 Turf Builder.....	Meriden.....	...

CONTAINING NITROGEN, PHOSPHORIC ACID AND POTASH

Nitrogen					Phosphoric acid			Potash		Station No.
In nitrates	In ammonia	Organic water-soluble	Organic water-insoluble	Total	Citrate-insoluble	Total	So-called "Available"	As muriate	Total	
%	%	%	%	%	%	%	%	%	%	
0.00	3.00	0.05	0.27	3.32	0.52	3.60	3.08	2.38	2.38	5775
0.18	3.24	1.48	0.18	5.08	0.06	8.90	8.84	6.83	6.83	5585
0.00	7.40	0.98	2.05	10.43	0.22	7.56	7.34	6.90	6.90	5584
0.00	1.38	3.14	4.04	8.56	0.79	8.01	7.22	2.69	2.69	5470
0.00	1.34	0.49	3.33	5.16	0.89	7.40	6.51	0.70	8.15	5471
0.43	1.78	1.28	0.53	4.02	0.83	9.11	8.28	4.89	4.89	5671
0.00	1.78	0.40	0.72	2.90	2.05	12.75	10.70	6.26	6.26	5469
7.69	0.12	0.24	0.29	8.34	0.76	9.02	8.26	1.78	8.54	5479
0.74	1.96	0.74	0.70	4.14	1.31	10.46	9.15	7.64	7.64	5842
1.24	1.92	0.70	1.17	5.03	0.40	9.76	9.36	0.96	8.02	5841
2.40	0.24	0.76	1.62	5.02	0.51	9.46	8.95	1.13	10.43	5844
0.70	0.24	0.90	3.30	5.14	0.24	3.94	3.70	0.73	5.64	5911
0.00	1.32	0.51	0.45	2.28	1.65	13.87	12.22	4.55	4.55	5673
0.29	1.14	0.38	0.47	2.28	0.90	9.37	8.47	10.39	10.39	5808
0.47	2.28	1.68	0.69	5.12	1.21	9.35	8.14	7.41	7.41	5688
0.48	2.26	1.66	0.67	5.07	0.94	9.79	8.85	7.45	7.45	5695
0.47	0.64	1.02	3.87	6.00	0.33	3.90	3.57	0.68	7.17	5843
0.62	2.80	0.46	0.37	4.25	0.84	9.20	8.36	4.54	4.54	5389
0.65	2.84	0.44	0.29	4.22	0.81	9.31	8.50	4.54	4.54	5711
0.74	2.84	0.32	0.28	4.18	0.61	9.19	8.58	7.27	7.27	5672
0.79	2.72	0.46	0.27	4.24	0.89	9.81	8.92	10.06	10.06	5707
0.65	3.80	0.48	0.46	5.39	1.15	9.39	8.24	7.60	7.60	5388
0.70	3.48	0.58	0.44	5.20	0.97	9.39	8.42	6.59	6.59	5712
0.79	3.60	0.40	0.41	5.20	1.04	9.21	8.17	6.53	6.53	5971
1.17	3.88	0.32	0.23	5.60	0.46	8.56	8.10	10.33	10.33	5385
0.62	6.36	0.12	0.28	7.38	0.60	7.54	6.94	6.36	6.36	5386
0.38	6.62	0.38	0.80	8.18	0.22	17.10	16.88	14.88	14.88	5472
0.00	6.08	0.55	3.53	10.16	0.20	6.38	6.18	3.39	4.98	5768

TABLE 9. ANALYSES OF MIXED FERTILIZER—Continued

Station No.	Manufacturer and brand	Place of sampling	Acid-forming (A), Non-acid-forming (NA) or near neutral (N)
	Sewerage Commission of the City of Milwaukee, Milwaukee, Wis.		
5674	Milorganite.....	Litchfield.....	...
	M. L. Shoemaker & Co., Inc., Philadelphia, Pa.		
5546	Shoemaker's "Swift-Sure" Tobacco Starter 4-10-0	Thompsonville.....	...
5992	Shoemaker's "Swift-Sure" Tobacco Starter 4-10-0	Hartford.....	...
	Standard Wholesale Phosphate & Acid Works, Baltimore, Md.		
5696	Standard 4-8-4.....	New London.....	...
5698	Standard 5-8-7.....	New London.....	A
5697	Standard 7-6-6.....	New London.....	A
	Stumpp & Walter Co., New York, N. Y.		
5652	Sawco Emerald Grass Fertilizer 5-7-3.....	Stamford.....	A
5651	Sawco General Garden Fertilizer 5-10-5.....	Stamford.....	A
5835	Sawconite 6-3-1.....	Stamford.....	...
	Swift & Co. Fertilizer Works, Baltimore, Md.		
5906	Roselawn 5-8-7.....	New Haven.....	N
6088	Swift's Special Golf Fertilizer 12-6-4.....	Watertown.....	...
5398	Vigoro 4-12-4.....	Bristol.....	N
	Tennessee Corp., Lockland, Ohio		
5904	Loma 5-10-4.....	Norwich.....	...
5836	Soil-Prep 4-2-2.....	Hartford.....	...

CONTAINING NITROGEN, PHOSPHORIC ACID AND POTASH

In nitrates	Nitrogen				Phosphoric acid			Potash		Station No.
	In ammonia	Organic water-soluble	Organic water-insoluble	Total	Citrate-insoluble	Total	So-called "Available"	As muriate	Total	
%	%	%	%	%	%	%	%	%	%	
0.00	0.00	0.75	5.08	5.83	0.56	3.18	2.62	....	....	5674
0.32	2.40	0.30	0.56	3.58	1.31	11.40	10.09	....	....	5546
0.32	2.40	0.42	0.50	3.64	1.56	11.59	10.03	....	....	5992
0.29	2.80	0.54	0.39	4.02	0.48	9.32	8.84	4.11	4.11	5696
0.00	3.78	0.46	0.54	4.78	0.68	9.17	8.49	4.31	6.44	5698
0.31	4.60	0.56	0.53	6.00	0.45	7.51	7.06	6.49	8.27	5697
0.00	3.40	0.39	1.19	4.98	0.73	8.63	7.90	3.99	3.99	5652
0.00	4.24	0.43	0.56	5.23	0.41	10.59	10.18	6.54	6.54	5651
0.00	0.12	1.52	4.45	6.09	0.35	0.98	0.63	....	0.26	5835
0.65	3.38	0.18	0.53	4.74	0.61	8.95	8.34	7.11	7.11	5906
0.82	7.26	0.16	0.18	8.42	0.20	8.46	8.26	4.29	4.29	6088
0.43	3.00	0.20	0.37	4.00	0.84	14.00	13.16	4.33	4.33	5398
0.29	4.16	0.20	0.36	5.01	0.62	11.94	11.32	3.97	3.97	5904
0.00	2.12	0.45	1.43	4.00	0.45	3.22	2.77	2.52	2.52	5836

TABLE 9. ANALYSES OF MIXED FERTILIZER—*Concluded*

Station No.	Manufacturer and brand	Place of sampling	Acid-forming (A), Non-acid-forming (NA) or near neutral (N)
I. P. Thomas & Son Co., Camden, N. J.			
5772	I. P. Thomas 5-8-7.....	North Haven.....	A
5774	I. P. Thomas 5-8-7.....	Wallingford.....	...
6125	I. P. Thomas 5-8-7.....	North Haven.....	...
5773	I. P. Thomas 7-6-6.....	North Haven.....	A
6124	I. P. Thomas 7-6-6.....	North Haven.....	...
5362	Tip Top Fertilizer 3-10-6.....	Hamden.....	A
Virginia-Carolina Chemical Co., Richmond, Va.			
5831	Bloomaid (New Process) 4-10-3.....	Bridgeport.....	...
5968	V-C Fairway Fertilizer (New Process) 6-4-4.....	Stamford.....	A
5405	V-C Fertilizer 4-8-4.....	Middletown.....	A
5403	V-C Fertilizer 5-8-7.....	Middletown.....	N
5406	V-C Fertilizer 8-6-6.....	Middletown.....	A
The Vita-Vim Co., Baltimore, Md.			
5777	Vita-Vim 6-10-4.....	Hamden.....	...
F. H. Woodruff & Sons, Milford, Conn.			
5604	Gro-Sod 10-6-4 Lawn Food.....	Milford.....	...
S. D. Woodruff & Sons, Orange, Conn.			
5838	Woodruff Home Mixture 4-8-7.....	Orange.....	NA

CONTAINING NITROGEN, PHOSPHORIC ACID AND POTASH

In nitrates	Nitrogen				Phosphoric acid			Potash		Station No.
	In ammonia	Organic water-soluble	Organic water-insoluble	total	Citrate insol ble	Total	So-called "Available"	As muriate	Total	
%	%	%	%	%	%	%	%	%	%	
0.45	3.32	0.88	0.35	5.00	0.91	9.59	8.68	6.57	6.57	5772
0.34	3.22	0.78	0.30	4.64	0.99	9.09	8.10	6.80	7.10	5774
.....	.....	.....	.....	5.03	0.43	8.90	8.47	7.28	7.28	6125
0.48	4.74	0.58	0.36	6.16	0.56	7.41	6.85	6.35	6.35	5773
.....	.....	.....	.....	5.84	0.77	8.75	7.98	4.90	4.90	6124
0.35	1.36	1.08	0.25	3.04	0.57	10.63	10.06	6.31	7.14	5362
0.22	2.60	0.44	0.94	4.20	0.51	13.45	12.94	1.37	3.31	5831
0.19	4.16	0.50	0.59	5.44	0.03	6.44	6.41	2.07	4.31	5968
0.48	2.48	0.46	0.54	3.96	0.95	9.31	8.36	4.71	4.71	5405
0.57	3.36	0.44	0.66	5.03	0.48	9.41	8.93	7.11	7.11	5403
0.49	5.44	1.14	0.75	7.82	0.60	7.77	7.17	5.75	6.94	5406
0.00	2.48	2.86	0.68	6.02	0.76	12.50	11.74	0.44	3.13	5777
0.00	5.24	2.73	2.20	10.17	0.31	7.41	7.10	4.48	4.48	5604
4.18	0.00	0.00	0.00	4.18	0.16	10.45	10.29	7.05	7.05	5838

TABLE 10. ANALYSES OF SPECIAL AND HOME MIXTURES

Station No.	Name of mixture	Place of sampling	Total nitrogen	Phosphoric acid			Potash			Station No.
				Citrate-insoluble	Total	So-called "Available"	As sulfate	Total	Chlorine	
			%	%	%	%	%	%	%	
	Sampled by Station									
5339	Home Mixture for Potatoes.....	T. W. Ryan, Stratford.....	4.79	0.87	9.61	8.74	5.43	5.43	0.45	5339
5340	Home Mixture for Vegetables.....	T. W. Ryan, Stratford.....	5.42	0.84	10.56	9.72	4.67	4.67	0.45	5340
	Sampled by Purchaser									
5440	Home Mixture No. 1.....	A. H. Brown, Windsor.....	4.84	0.19	2.80	2.61	0.29	6.49	0.45	5440
5441	Home Mixture No. 2.....	A. H. Brown, Windsor.....	12.72	0.42	3.10	2.68	...	...	0.12	5441
4734	Mixed Fertilizer Formula No. 1 B B	Consolidated Cigar Corp., Hartford.....	5.75	0.49	4.27	3.78	0.60	8.33	0.45	4734
4728	Mixed Fertilizer—B B—2.....	Consolidated Cigar Corp., Hartford.....	6.14	0.45	3.79	3.34	0.53	7.55	0.40	4728
4733	Mixed Fertilizer Formula No. 1 C R	Consolidated Cigar Corp., Hartford.....	5.67	0.56	4.21	3.65	0.58	7.94	0.44	4733
4730	Mixed Fertilizer Formula 1 G.....	Consolidated Cigar Corp., Hartford.....	5.70	0.51	4.13	3.62	0.57	8.02	0.43	4730
4727	Mixer Fertilizer Formula No. 1 P.	Consolidated Cigar Corp., Hartford.....	5.68	0.46	4.10	3.64	0.54	7.84	0.41	4727
4732	Mixed Fertilizer Formula No. 1 S.	Consolidated Cigar Corp., Hartford.....	5.72	0.51	4.19	3.68	0.54	8.10	0.41	4732
4731	Mixed Fertilizer Formula No. 1 W	Consolidated Cigar Corp., Hartford.....	5.68	0.54	4.38	3.84	0.57	8.32	0.43	4731
4823	Formula No. 1.....	Consolidated Cigar Corp., Hartford.....	5.61	0.62	4.31	3.69	0.60	8.25	0.45	4823
4824	Formula No. 1—3-12-37.....	Consolidated Cigar Corp., Hartford.....	5.68	0.45	4.10	3.65	0.53	8.39	0.40	4824

TABLE 10. ANALYSES OF SPECIAL AND HOME MIXTURES—Concluded

Station No.	Name of mixture	Place of sampling	Total nitrogen	Phosphoric acid			Potash			Station No.
				Citrate-insoluble	Total	So-called "Available"	As muriate	Total	Chlorine	
			%	%	%	%	%	%	%	
5024	Formula No. 1 Lot M.....	Consolidated Cigar Corp., Hartford.....	5.72	0.45	4.21	3.76	0.51	8.43	0.38	5024
5026	Formula No. 2 Lot M.....	Consolidated Cigar Corp., Hartford.....	5.64	0.43	3.88	3.45	0.53	6.92	0.40	5026
5025	Formula No. 2 Lot P.....	Consolidated Cigar Corp., Hartford.....	5.74	0.38	3.70	3.32	0.70	7.90	0.53	5025
5027	Formula No. 1 Lot D. V.....	Consolidated Cigar Corp., Hartford.....	5.51	0.47	4.18	3.71	0.65	8.16	0.49	5027
5023	Formula No. 1 Lot D. F.....	Consolidated Cigar Corp., Hartford.....	5.52	0.48	4.24	3.76	0.56	8.29	0.42	5028
5029	Formula No. 1 Lot P. V.....	Consolidated Cigar Corp., Hartford.....	5.75	0.43	4.17	3.74	0.53	7.79	0.40	5029
5226	Home Mixture.....	Daigle Bros., Marion.....	6.80	0.31	14.85	14.54	0.68	14.14	4.11	5226
5628	Fertilizer No. 1.....	S. A. Fassler & Co., Hartford.....	6.03	0.14	4.86	4.72	0.41	6.51	0.31	5628
5629	Home Mixture Fertilizer No. 2.....	S. A. Fassler & Co., Hartford.....	6.06	0.32	5.00	4.68	0.54	6.30	0.41	5629
5630	Fertilizer No. 3.....	S. A. Fassler & Co., Hartford.....	6.14	0.33	5.61	5.28	0.58	6.95	0.44	5630
5631	Fertilizer No. 4.....	S. A. Fassler & Co., Hartford.....	6.10	0.28	5.57	5.29	0.58	6.80	0.44	5631
5632	Fertilizer No. 5.....	S. A. Fassler & Co., Hartford.....	5.86	0.30	5.09	4.79	0.53	6.38	0.40	5632
5633	Fertilizer No. 6.....	S. A. Fassler & Co., Hartford.....	6.00	0.30	4.98	4.60	0.57	6.35	0.43	5633
5664	Fertilizer.....	S. A. Fassler & Co., Hartford.....	6.03	0.30	5.50	5.20	0.62	6.92	0.47	5664
5680	Fertilizer.....	S. A. Fassler & Co., Hartford.....	5.70	0.26	5.13	4.87	0.45	6.53	0.34	5680
5744	Home Mixed Fertilizer.....	S. A. Fassler & Co., Hartford.....	5.57	0.48	4.89	4.41	0.43	5.66	0.32	5744
5301	Home Mixture Fertilizer.....	John E. Griffiths, Sterling.....	4.59	0.25	10.66	10.41	4.30	4.30	4.30	5301
5745	Special Mixture for Tobacco.....	John Schweir, East Windsor Hill.....	7.76	0.24	5.91	5.67	0.54	8.91	0.41	5745

TABLE 11. ANALYSES OF SHEEP MANURE, ETC.

Station No.	Manufacturer and brand	Place of sampling	Nitrogen		Total phosphoric acid		Potash		Station No.
			Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	
			%	%	%	%	%	%	
5393	Pulverized Sheep and Goat Manure, American Agricultural Chemical Co., North Weymouth, Mass.	Bristol...	1.70	1.25	1.38	1.00	3.78	2.00	5393
5809	Sheep Manure, Domestic. Apothecaries Hall Co., Waterbury, Conn.	Stanley Svea Coal Co., New Britain...	1.44	1.00	0.96	0.75	3.12	1.50	5809
5371	Sheep and Goat Manure. Apothecaries Hall Co., Waterbury, Conn.	R. W. Hine, Cheshire.....	1.68	1.25	1.50	0.50	4.24	2.00	5371
5834	Driconure. Atkins & Durbrow, Inc., New York City.....	J. B. McArdle, Old Greenwich.....	2.06	1.00	1.05	1.00	1.78	1.00	5834
5807	Henure. Atkins & Durbrow, Inc., New York City.....	Rackliffe Bros., New Britain.....	2.88	2.00	3.84	1.00	1.28	1.00	5807
5687	Berkshire Sheep and Goat Manure. Berkshire Chemical Co., Bridgeport, Ct.	Knowles-Lombard Co., Guilford.....	1.30	1.25	1.32	1.00	3.24	2.00	5687
5592	Corenco Sheep Manure. Consolidated Rendering Co., Boston, Mass.	L. T. Frisbie Co., New Haven.....	1.30	1.25	1.45	1.00	3.06	2.00	5592
5657	Corenco Sheep Manure. Consolidated Rendering Co., Boston, Mass.	Davis Grain Co., Noroton Heights...	1.30	1.25	1.15	1.00	3.02	2.00	5657
5832	Organo Brand Poultry Manure. H. Ernest Conwell, Inc., Milton, Del.	J. B. McArdle, Old Greenwich.....	1.90	1.60	2.25	...	1.49	1.10	5832
5656	Davey Shredded Cattle Manure. Davey Tree Expert Co., Kent, Ohio.	R. E. Landis, Old Greenwich.....	2.14	1.00	2.70	1.00 ²	2.93	2.00	5656
5805	G & O Sheep Manure. Goulard & Olena, Inc., New York City.....	Rackliffe Bros., New Britain.....	2.20	1.50	1.69	1.50	3.05	2.00	5805

¹ Guaranteed "available" phosphoric acid 0.95%; found 2.14%.² Guaranteed "available" phosphoric acid 1.00%; found 2.45%.

TABLE 11. ANALYSES OF SHEEP MANURE, ETC.—Concluded

Station No.	Manufacturer and brand	Place of sampling	Nitrogen		Total phosphoric acid		Potash		Station No.
			Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	
5484	Sheep's Head Pulverized Sheep Manure. Natural Guano Co., Aurora, Ill.	Jordan Hardware Co., Willimantic...	2.44	2.00	1.39	...	4.17	2.00	5484
5537	Premier Brand Pulverized Poultry Manure. North American Car Corp. Premier Poultry Manure Div., Chicago, Ill.	Brainard Nursery & Seed Co., Thompsonville	5.42	4.93	2.62	2.75 ⁴	1.40	1.30	5537
5538	Wizard Brand Cow Manure. Pulverized Manure Co., Chicago, Ill.	Brainard Nursery & Seed Co., Thompsonville	2.00	2.00	1.34	...	1.25	1.00	5538
5536	Wizard Brand Pulverized Sheep Manure. Pulverized Manure Co., Chicago, Ill.	Brainard Nursery & Seed Co., Thompsonville	2.14	2.00	2.17	...	3.51	2.00	5536
5828	Sheep and Goat Manure. The Rogers & Hubbard Co., Portland, Conn.	Chas. C. Hart Seed Co., Wethersfield	1.64	1.25	2.23	...	3.67	2.00	5828
5653	Sawconure. Stumpp & Walter Co., New York City	Stumpp & Walter Co., Stamford	2.59	3.00	2.99	...	1.12	1.00	5653
5650	Sawco Pulverized Sheep Manure. Stumpp & Walter Co., New York City	Stumpp & Walter Co., Stamford	2.22	2.00	2.17	...	3.59	2.00	5650
5833	Swift's Pulverized Cattle Manure. Swift & Co., Fertilizer Works, Baltimore, Md.	J. B. McArdle, Old Greenwich	2.08	1.85	1.44	0.75	2.49	1.50	5833
5910	Swift's Sheep Manure. Swift & Co. Fertilizer Works, Baltimore, Md.	Danbury Hardware Co., Danbury	2.36	1.75	1.89	1.00	2.93	1.85	5910
5588	Boyung. Walker-Gordon Laboratory Co., Inc., Plainsboro, N. J.	Frank S. Platt Co., New Haven	2.16	2.00	2.38	...	2.67	2.00	5588
5769	Woodgro Pure Cow Manure Dehydrated. Thos. Wood & Sons, Inc., Montclair, N. J.	Church & Morse, Meriden	2.00	2.00	3.62	...	2.07	3.00	5769

³ Guaranteed "available" phosphoric acid 1.00%; found 1.03%
⁴ Guaranteed "available" phosphoric acid 2.50%; found 2.49%
⁵ Guaranteed "available" phosphoric acid 1.00%; found 2.01%
⁶ Guaranteed "available" phosphoric acid 1.00%; found 1.86%
⁷ Guaranteed "available" phosphoric acid 1.00%; found 2.85%
⁸ Guaranteed "available" phosphoric acid 1.00%; found 1.96%
⁹ Guaranteed "available" phosphoric acid 2.00%; found 2.20%
¹⁰ Guaranteed "available" phosphoric acid 2.00%; found 3.15%

TABLE 12. ANALYSES OF LIMESTONE
AND SIMILAR MATERIALS

Station No.	Manufacturer and brand	Sampled from stock of or sent by.
	R. S. Coe, Northford, Conn.	
5942	Limestone.....	R. S. Coe, Northford.....
	Harris Lime Co , Saylesville, R. I.	
4646	Waste Lime.....	Leonard Shekleton, Killingly.....
	Lee Lime Corp., Lee, Mass.	
5034	Lee Lime.....	Cullman Bros., Hartford.....
	Limecrest Products Co., Newton, N. J.	
4908	Limestone.....	Mr. Anderson, Woodstock.....
	Limestone Products Corp. of America, Newton, N. J.	
6097	Lime.....	E. L. Huntington, Putnam.....
	New England Lime Co., Pittsfield, Mass.	
5749	Agricultural Limestone.....	Community Service, Inc., Canaan....
4666	Lime No. 6.....	Consolidated Cigar Corp., Hartford...
	United States Gypsum Co., Falls Village, Conn.	
2983	Agricultural Limestone.....	James R. Place, Canaan.....
6098	Lime.....	E. L. Huntington, Putnam.....
	Manufacturer Unknown	
4351	Lime.....	John W. Oster, New Britain.....
4473	White Lime.....	Killshire Farm, Wallingford.....
4472	Gray Lime.....	Killshire Farm, Wallingford.....
4660	Land Plaster.....	L. B. Haas & Co., Inc., Hartford.....
4577	Snow Fluff Lime.....	Olds & Whipple Inc., Hartford.....
5460	Land Plaster.....	A. N. Shepard & Son, Hartford.....
4805	Dolomitic Limestone.....	John Tomeko, Willimantic.....
5045	Bell Mine High Calcium Hydrated Lime	Dr. Garman, Entomology Dept.....
5943	Limestone.....	R. S. Coe, Northford.....

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Superphosphate 16%	18, 20, 31
Superphosphate 20%	18, 20, 31
O. M. Scott & Sons Co., Marysville, Ohio	
Scott's 10-6-4 Turf Builder	18, 48
Sewerage Commission of the City of Milwaukee, Milwaukee, Wis.	
Milorganite	18, 50
Sheep Manure and other Materials	25
analyses of	56
M. L. Shoemaker & Co. Inc., Philadelphia, Pa.	
Shoemaker's "Swift Sure" 4-10-0 Tobacco Starter	18, 50
Soybean Oil Meal, analysis of	29
Special and home mixtures	25
analyses of	54
A. E. Staley Manufacturing Co., Decatur, Ill.	
Staley's Tobakosoy	18, 20, 29
Standard Wholesale Phosphate & Acid Works, Inc., Baltimore, Md.	
Standard 4-8-4	18, 50
Standard 5-8-7	18, 50
Standard 7-6-6	18, 50
Standard 16% Superphosphate	18, 20, 31
Stump & Walter Co., 132 Church St., New York City	
Sawco Bone 2.47—24.00%	18, 21, 37
Sawco Emerald Grass Fertilizer 5-7-3	18, 50
Sawco General Garden Fertilizer 5-10-5	18, 50
Sawco Pulverized Sheep Manure 2-1-2	18, 25, 57
Sawconite 6-3-1	18, 50
Sawconure 3-1-1	18, 25, 57
Sulfate of ammonia, analyses of	28
Superphosphate (acid phosphate)	20
analyses of	30, 31
Swift & Co. Fertilizer Works, Baltimore, Md.	
Bone Meal Fertilizer	18, 21, 37
Roselawn 5-8-7	18, 50
Swift's Pulverized Cattle Manure	18, 25, 57
Swift's Sheep Manure 1.75-1-1.85	18, 25, 57
Swift's Special Golf Fertilizer 12-6-4	18, 50
Vigoro 4-12-4	18, 50

Synthetic Nitrogen Products Corp., 285 Madison Ave., New York City	
Calcium Nitrate (Nitrate of Lime)	18, 28
Nitrophoska 15-30-15	18
Urea	18, 20, 28
Tankage	21
analyses of	35
Tennessee Corp., Lockland, Ohio	
Loma 5-10-4	18, 50
Soil-Prep 4-2-2	18, 50
I. P. Thomas & Son Co., 721 Market St., Camden, N. J.	
I. P. Thomas 4-8-7	18
I. P. Thomas 5-8-7	18, 52
I. P. Thomas 7-6-6	18, 52
Muriate of Potash 50% K_2O	18, 21, 32
Pure Ground Bone 2.45% Nit., 23% T.P.A.	18, 21, 37
Superphosphate 16%	18, 20, 31
Tip Top Fertilizer 3-10-6	18, 52
Tobacco, "Poor burn"	27
Vegetable Waste Sold as "Top Dressing"	6
Urea, analyses of	28
Virginia-Carolina Chemical Corp., Richmond, Va.	
BloomAid (New Process) 4-10-3	18, 52
V-C Fairway Fertilizer (New Process) 6-4-4	18, 52
V-C Fertilizer 16%	18, 20, 31
V-C Fertilizer 4-8-4	18, 52
V-C Fertilizer 5-8-7	18, 52
V-C Fertilizer 8-6-6	18, 52
Vita-Vim Co., Baltimore, Md.	
Vita-Vim 6-10-4	18, 52
Walker-Gordon Laboratory Co., Inc., Plainsboro, N. J.	
Bovung	18, 25, 57
Thomas Wood & Sons, Inc., 12-14 Midland Ave., Montclair, N. J.	
Woodgro Pure Cow Manure Dehydrated	18, 25, 57
F. H. Woodruff & Sons, Milford, Conn.	
Gro-Sod 10-6-4 Lawn Food	18, 52
S. D. Woodruff & Sons, Orange, Conn.	
Woodruff's Home Mixture 4-8-7	18, 52