

State of Connecticut

The Connecticut Agricultural  
Experiment Station

NEW HAVEN, CONN.

**Bulletin 223**

BEING THE

**FERTILIZER REPORT FOR 1920**

Connecticut  
Agricultural Experiment Station

NEW HAVEN, CONN.

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BULLETIN 223

OCTOBER, 1920

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**Fertilizer Report for 1920**

By E. H. JENKINS, *Director, and*  
E. MONROE BAILEY, *Chemist in Charge*  
*of the Analytical Laboratory.*

The Bulletins of this Station are mailed free to citizens of Connecticut who apply for them, and to others as far as the editions permit.

# CONNECTICUT AGRICULTURAL EXPERIMENT STATION.

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October 31, 1920.

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# Report on Commercial Fertilizers, 1920.

BY E. H. JENKINS, *Director*, and E. M. BAILEY,  
*Chemist in Charge of the Analytical Laboratory.*

In 1920, sixty-seven individuals and firms registered for sale in this State 502 brands of commercial fertilizers, classified as follows:

Nitrogenous superphosphates.....	364
Cotton seed meal and castor pomace.....	103
Other chemicals and unmixed materials.....	41
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	508

The law requires that a list of the registered brands shall be published annually.

The following is such a list of all brands of fertilizers registered for sale in this State between January 1 and December 31, 1920.

BRANDS REGISTERED FOR THE FISCAL YEAR ENDING DEC. 31, 1920.

## **Alpha Portland Cement Co., Easton, Pa.**

Alpha Potash-Lime Fertilizer

## **American Ag'l Chemical Co., 2 Rector St., New York City**

14% Acid Phosphate  
16% Acid Phosphate  
Ammoniated Fertilizer A  
Ammoniated Fertilizer AA  
Ammoniated Fertilizer AAA  
Ammoniated Fertilizer AAAA  
Ammoniated Fertilizer VX  
Basic Lime Phosphate  
Bone-Phosphate and Potash  
Castor Pomace  
Cereal and Root Fertilizer  
Double A Tobacco Fertilizer  
Dry Ground Fish  
Fine Ground Bone  
Fish and Potash  
Five Eight Fertilizer  
Grass and Lawn Top Dressing  
Grass and Oats Fertilizer  
High Grade Acid Phosphate  
High Grade Ground Bone  
Monarch Potato Manure  
Nitrate of Soda  
Pulverized Sheep Manure  
Special Vegetable Fertilizer  
Sure Growth Phosphate Revised

- Tobacco Special
  - Universal Phosphate
  - Bradley's Alkaline Bone with Potash
  - Bradley's B. D. Guano
  - Bradley's Corn Phosphate
  - Bradley's Half Century Fertilizer Revised
  - Bradley's New Method Fertilizer
  - Bradley's Patent Superphosphate Revised
  - Bradley's Potato Fertilizer
  - Bradley's Potato Manure
  - Bradley's Root Crop Manure
  - Bradley's Special Bay State
  - Bradleys Special Corn Phosphate without Potash
  - Bradley's Special Potato Fertilizer without Potash
  - Bradley's Special Potato Manure without Potash
  - Bradley's Unicorn
  - Bradley's Valley Tobacco Fertilizer
  - Bradley's X L Superphosphate of Lime
  - E. I. Black Hawk Potato and Truck Fertilizer
  - E. I. Corn King Revised
  - E. I. Economizer Phosphate
  - E. I. Mayflower
  - E. I. Tobacco Fertilizer
  - E. I. Unexcelled Fertilizer Revised
  - G. E. General
  - G. E. Northern Corn Special 1920
  - G. E. Potato Manure 1920
  - Packers' Union Animal Corn Fertilizer
  - Packers' Union Potato Manure 1920
  - Packers' Union Universal Fertilizer 1920
  - Quin. Ammoniated Dissolved Phosphate
  - Quin. Climax Phosphate
  - Quin. Corn Manure
  - Quin. Phosphate
  - Quin. Potato Phosphate
  - Quin. Potato Manure
  - Quin. Spl. Corn Manure without Potash
  - Quin. Spl. Potato Phosphate without Potash
  - Quin. Wrapper Leaf Brand Tobacco Manure Revised
  - Wheeler's Corn Fertilizer
  - Wheeler's Cuban Tobacco Grower
  - Wheeler's Potato Manure 1920
  - Williams & Clark's Americus Ammoniated Bone Superphosphate
  - Williams & Clark's Americus H. G. Spl. Revised
  - Williams & Clark's Americus Corn Phosphate
  - Williams & Clark's Americus Potato Manure
  - Williams & Clark's Matchless Fertilizer
  - Williams & Clark's Meadow Queen Fertilizer
  - Williams & Clark's Potato Phosphate
  - Williams & Clark's Prolific Fertilizer
  - Williams & Clark's Seed Leaf Tobacco Manure Revised
  - Williams & Clark's Spl. Americus Corn Phosphate without Potash
  - Williams & Clark's Spl. Americus Potato Manure without Potash
- American Nitro-Phospho Corporation, 80 Lafayette St., New York City**  
Phosphogerm (Inoculated Organic)
- Apothecaries Hall Co., Waterbury, Conn.**  
Acid Phosphate  
Castor Pomace  
Consolidated Rendering Co.'s Steamed Bone

Fish  
 Liberty Corn, Fruit and All Crops  
 Liberty Market Gardeners' Special  
 Liberty Market Gardeners' Special (Potash)  
 Liberty Potato and Vegetable Special  
 Liberty Sheep Manure  
 Liberty Tobacco Special  
 Liberty Tobacco Special (Potash)  
 Liberty Top Dresser for Grass and Grain  
 Nitrate of Soda  
 Raw Ground Phosphate Rock  
 Tankage

**Armour Fertilizer Works, 305 Broadway, New York City.**

Armour's Acid Phosphate Fertilizer  
 Armour's Bone Meal  
 Armour's Cereal Special No. 1 Fertilizer  
 Armour's Cereal Special No. 2 Fertilizer  
 Armour's Cereal Special No. 3 Fertilizer  
 Armour's Complete Potato Fertilizer  
 Armour's Crop Grower  
 Armour's 4-10-0 Fertilizer  
 Armour's 4-8-5 Fertilizer  
 Armour's Gardeners' Choice Fertilizer  
 Armour's General Crop Fertilizer  
 Armour's Grain Grower Fertilizer  
 Armour's Nitrate of Soda  
 Armour's Potato, Onion and Vegetable Fertilizer  
 Armour's Sheep Manure  
 Armour's Spl. Tobacco Grower No. 2 Fertilizer  
 Armour's Super-Grade Potato Mixture Fertilizer  
 Armour's Tobacco Special Fertilizer  
 Armour's Tobacco Special Fertilizer (5-4-3)  
 Armour's Wheat and Clover Fertilizer  
 Bidwell's Formula

**Ashcraft-Wilkinson Company, Candler Building, Atlanta, Ga.**

Paramount Brand Good Cotton Seed Meal

**Atlantic Packing Co., New Haven, Conn.**

Atlantic Fine Bone Meal  
 Atlantic Grain Fertilizer  
 Atlantic Potato Phosphate  
 Atlantic Special Vegetable  
 Atlantic 3-8-3  
 Atlantic Tobacco Grower  
 Atlantic Tobacco Special  
 Atlantic 2-8  
 Atlantic 2-8-3  
 Atlantic 4-8  
 Dry Ground Fish  
 Ground Tankage  
 Nitrate of Soda

**Baker Castor Oil Co., 120 Broadway, New York City.**

Castor Pomace

**Barrett Company, 17 Battery Place, New York City.**

Arcadian Sulphate of Ammonia

**Berkshire Fertilizer Co., Bridgeport, Conn.**

Berkshire Ammoniated Bone Phosphate  
 Berkshire Complete Fertilizer

Berkshire Complete Tobacco  
 Berkshire Dry Ground Fish  
 Berkshire Economical Grass Fertilizer  
 Berkshire Fine Ground Bone  
 Berkshire Grass Special  
 Berkshire Long Island Special  
 Berkshire Market Garden Fertilizer  
 Berkshire Potato and Vegetable Phosphate  
 Berkshire Tobacco Grower  
 Berkshire Tobacco Starter  
 Acid Phosphate  
 Castor Pomace  
 Nitrate of Soda  
 Sheep Manure

**Boardman, F. E., Middletown, Conn.**

Boardman's Fertilizer for General Crops

**Bowker Fertilizer Company, 60 Trinity Place, New York City.**

Bowker's All Round Fertilizer  
 Bowker's Conn. Valley Tobacco Fertilizer  
 Bowker's Corn, Grain and Grass Phosphate  
 Bowker's Fisherman's Brand Fish and Potash  
 Bowker's Four Ten Hill and Drill  
 Bowker's Fresh Ground Bone  
 Bowker's Hill and Drill Phosphate  
 Bowker's Lawn and Garden Dressing Revised  
 Bowker's Nitrate of Soda  
 Bowker's Potato and Vegetable Phosphate  
 Bowker's 16% Acid Phosphate  
 Bowker's Soluble Phosphate  
 Bowker's Square Brand Farm and Garden Phosphate  
 Bowker's Superphosphate with Ammonia 1%  
 Bowker's Superphosphate with Ammonia 2%  
 Bowker's Superphosphate with Ammonia 3%  
 Bowker's Superphosphate with Ammonia 4%  
 Bowker's Superphosphate with Ammonia 5%  
 Bowker's Sure Crop Phosphate Revised  
 Bowker's Three Ten All Round  
 Bowker's Tobacco Grower  
 Bowker's Two Ten Farm and Garden  
 Stockbridge Complete  
 Stockbridge Market Garden Manure  
 Stockbridge Tobacco Manure  
 Stockbridge Top Dressing and Forcing Manure

**Breck, Joseph, & Sons, Corp'n, 51 North Market St., Boston, Mass.**

Breck's Rams Head Brand Sheep Manure

**Brodé, F. W., & Co., 119 Madison Ave., Memphis, Tenn.**

Dove Brand Cotton Seed Meal  
 Jay Brand Cotton Seed Meal  
 Owl Brand High Grade Cotton Seed Meal

**Buckeye Cotton Oil Company, Cincinnati, Ohio.**

Buckeye Good Cotton Seed Meal  
 "Buco" Cottonseed Feed

**Chicago Feed & Fertilizer Company, 809 Exchange Ave., Union Stock Yards, Chicago, Ill.**

Magic Brand Pulverized Sheep Manure

**Chittenden, E. D., Company, Bridgeport, Conn.**

Chittenden's Complete Tobacco and Onion Grower  
 Chittenden's Complete Tobacco and Onion Grower without Potash  
 Chittenden's Tobacco Special with 5% Potash  
 Chittenden's Tobacco Special without Potash  
 Chittenden's Vegetable and Onion Grower without Potash

**Clark, Everett B., Seed Company, Milford, Conn.**

Special Mixture for General Use  
 Special Mixture with Potash

**Coe-Mortimer Co., 51 Chambers St., New York City.**

E. Frank Coe's Basic Fruit and Legume Phosphate (Basic Lime Phosphate) (Key-Plow Brand)  
 E. Frank Coe's Celebrated Special Potato Fertilizer Revised  
 E. Frank Coe's Columbian Corn and Potato Fertilizer  
 E. Frank Coe's Connecticut Wrapper Grower  
 E. Frank Coe's Corn King  
 E. Frank Coe's Dissolved Phosphate and Potash  
 E. Frank Coe's Gardeners' and Truckers' Special 1916  
 E. Frank Coe's Gold Brand Excelsior Guano Revised  
 E. Frank Coe's H. G. Ammoniated Superphosphate 1916  
 E. Frank Coe's New Englander Special  
 E. Frank Coe's Nitrate of Soda  
 E. Frank Coe's Prolific Crop Producer 1916  
 E. Frank Coe's 16% Superphosphate  
 E. Frank Coe's Special Grass Top Dressing  
 E. Frank Coe's Tobacco Leaf Fertilizer  
 E. Frank Coe's Tobacco Special  
 Fine Ground Bone

**Columbia Guano Co., Munsey Building, Baltimore, Md.**

Columbia Freedom Guano  
 Columbia Soluble Guano

**Conn. Fat Rendering & Fertilizing Corp'n., P. O. Box 228, New Haven, Conn.**

Tankage

**Davis, S. P., Little Rock, Ark.**

Good Luck Brand of Cottonseed Meal and Cracked Screened Cake

**Dexter Portland Cement Co., Nazareth, Pa.**

Dexter Potash Lime Fertilizer

**Essex Fertilizer Company, 39 North Market St., Boston, Mass.**

Essex Fish Fertilizer 3-8-3  
 Essex Market Garden 3-8-4  
 Essex Tobacco 5-5-4  
 Essex Tobacco 5-6  
 Essex Tobacco 5-7-2  
 Essex 1-10-1  
 Essex 2-8-2  
 Essex 3½-10  
 Essex 4-8-4

**Fertile Chemical Company, Cleveland, Ohio.**

Lime-Fertile  
 Nitro-Fertile

**Frisbie, L. T., Co., New Haven, Conn.**

Castor Pomace  
 Frisbie's Acid Phosphate 16%  
 Frisbie's Corn and Grain Fertilizer



Frisbie's Fine Bone Meal  
 Frisbie's 5-8  
 Frisbie's Special  
 Frisbie's Special Vegetable and Potato Grower  
 Frisbie's 3-8  
 Frisbie's 3-8-3  
 Frisbie's Tobacco 5-5-5  
 Frisbie's Tobacco 5-6  
 Frisbie's Tobacco Grower  
 Frisbie's Tobacco Special  
 Frisbie's 2-8  
 Frisbie's 4-10  
 Ground Tankage  
 Nitrate of Soda

**Hall, W. D., Company, Atlanta, Ga.**  
 Good Cotton Seed Meal

**Hubbard Fertilizer Co., 802 Keyser Bldg., Baltimore, Md.**

Hubbard's Excelsior Mixture  
 Hubbard's Farmers I X L  
 Hubbard's 5% Royal Seal  
 Hubbard's 4-10-0  
 Hubbard's New England Special  
 Hubbard's Nitrate of Soda  
 Hubbard's Noxall Guano  
 Hubbard's 16% Phosphate  
 Hubbard's Tobacco Fertilizer  
 Hubbard's Yellow Wrapper

**Humphreys-Godwin Co., Memphis, Tenn.**

Bull Brand Cottonseed Meal  
 Danish Brand Cottonseed Meal  
 Dixie Brand Cottonseed Meal  
 Forfat Brand Cottonseed Meal  
 Unit—1  
 Unit—2

**Industrial Cotton Oil Properties, 65 Broadway, New York City.**  
 "High Grade Cotton Seed Meal"

**International Agricultural Corporation, Buffalo Fertilizer Works, Buffalo, N. Y.**

Bone Meal  
 Buffalo Ammoniated Phosphate  
 Buffalo Economy  
 Buffalo Farmers Choice  
 Buffalo General Favorite  
 Buffalo High Grade Manure  
 Buffalo New England Special  
 Buffalo Onion, Vegetable and Potato  
 Buffalo Phosphate and Potash  
 Buffalo Three Ten  
 Buffalo Tobacco Grower  
 Buffalo Tobacco Producer  
 Buffalo Tobacco Special  
 Buffalo Top Dresser and Starter  
 I. A. C. Tobacco Crop

**Joynt, John, Lucknow, Ont.**

The Joynt Brand Canada Unbleached Hardwood Ashes

**Koster, A. L., Suffield, Conn.**

Dry Ground Fish  
Hale Tobacco Mixture

**Listers Agricultural Chemical Works, Newark, N. J.**

Listers Ammoniated Dissolved Superphosphate Revised  
Listers Bone Meal 1916  
Listers Buyer's Choice Acid Phosphate  
Listers Celebrated Ground Bone and Tankage Acidulated  
Listers Celebrated Tobacco Fertilizer  
Listers Complete Tobacco Manure  
Listers Corn and Potato Fertilizer  
Listers Eastern Pride Fertilizer  
Listers H. G. Acid Phosphate  
Listers King Bee Fertilizer  
Listers Plant Food 1916  
Listers Special Crop Producer  
Listers Special Tobacco Fertilizer  
Listers Standard Pure Superphosphate of Lime  
Listers Success Fertilizer  
Listers Superior Ammoniated Superphosphate 1916

**Lovitt, L. B., & Co., Memphis, Tenn.**

"Maloney's Pride No. 1" (7)  
"Maloney's Pride No. 2" (6)  
"Maloney's Pride No. 3" (8)

**Lowell Fertilizer Co., 40 North Market St., Boston, Mass.**

Acid Phosphate 16%  
Lowell Animal Brand 3-8-4  
Lowell Bone Fertilizer 2-8-2  
Lowell Dissolved Bone Fertilizer 2-10  
Lowell Empress Brand 1-10-1  
Lowell 3½-10  
Lowell 2-8-3  
Lowell 3-8-3  
Lowell 4-8-4  
Lowell 5-8  
Lowell 5-8-4  
Lowell Ground Bone 2½-26  
Lowell Lawn and Garden Dressing 4-7-2  
Lowell Tobacco 5-5-4  
Lowell Tobacco 5-6  
Lowell Tobacco 5-7-2  
Nitrate of Soda

**Lyle & Lyle, Huntsville, Ala.**

"Economy" C. S. Feed

**Mapes Formula & Peruvian Guano Co., 143 Liberty St., New York City.**

Mapes Corn Manure  
Mapes C. S. Tobacco Manure  
Mapes General Crop (1916 Brand)  
Mapes General Tobacco Manure  
Mapes General Truck Manure  
Mapes Grain Brand  
Mapes Potato Manure  
Mapes Potato Manure (1916 Brand)  
Mapes Tobacco Starter, Improved

**National Fertilizer Co., 60 Trinity Place, New York City.**

National Ammoniated Bone Phosphate  
National Complete Grass Fertilizer

National Complete Tobacco Fertilizer  
 National Eureka Potato Fertilizer  
 National 5-4 Tobacco Manure  
 National Market Garden Fertilizer Revised  
 National Nitrogen Phosphate Mixture No. 1  
 National Nitrogen Phosphate Mixture No. 2  
 National Nitrogen Phosphate Mixture No. 3  
 National Nitrogen Phosphate Mixture No. 4  
 National Nitrogen Phosphate Mixture No. 6  
 National Pine Tree State Potato Fertilizer  
 National Potato Phosphate  
 National 16% Plain Superphosphate  
 National Soluble Bone and Potash  
 National Special Tobacco Revised  
 National Universal Phosphate  
 National XXX Fish and Potash

**Natural Guano Co., Aurora, Ill.**

"Sheep's Head" Pulverized Sheep Manure

**New England Fertilizer Co., 40A North Market St., Boston, Mass.**

N. E. Superphosphate 3-8-4  
 N. E. Tobacco 5-4  
 N. E. Tobacco 5-5-4  
 N. E. Tobacco 5-6  
 N. E. 1-10-1  
 N. E. 2-8-2  
 N. E. 2-8-3  
 N. E. 3-8-3  
 N. E. 3 $\frac{1}{2}$ -10  
 N. E. 5-8-7

**Nitrate Agencies Co., 85 Water St., New York City.**

N. A. C. Brand Acid Phosphate  
 N. A. C. Brand 8-6-5 Truckers Top Dresser  
 N. A. C. Brand 4-8-4 Potato Formula  
 N. A. C. Brand Ground Bone  
 N. A. C. Brand Muriate of Potash  
 N. A. C. Brand Nitrate of Soda  
 N. A. C. Brand 2-8-2 All Crop Formula

**Nothern, W. C., Box 414, Memphis, Tenn.**

Special No. 1 (Cotton Seed Meal)

**Olds & Whipple, Hartford, Conn.**

Acid Phosphate  
 Nitrate of Soda  
 O & W Complete Corn, Potato and Onion Fertilizer  
 O & W Complete Tobacco Fertilizer  
 O & W Dry Ground Fish  
 O & W Grass Fertilizer  
 O & W H. G. Tobacco Starter  
 O & W Special Corn, Onion and Potato Fertilizer  
 O & W Tobacco Special Fertilizer  
 Precipitated Bone Phosphate

**Pacific Manure & Fertilizer Co., 429 Davis St., San Francisco, Calif.**

Groz-It-Brand Pulverized Sheep Manure

**Park & Pollard Co., Boston, Mass.**

P. & P. Offcolored Cottonseed Meal  
 Upland Cottonseed Meal

**Parmenter & Polsey Fertilizer Co., 41 North Market St., Boston, Mass.**

P & P Plymouth Rock 3-8-4  
 P & P Tobacco 5-4  
 P & P Tobacco 5-5-4  
 P & P 1-10-1  
 P & P 2-8-2  
 P & P 2-8-3  
 P & P 2-10  
 P & P 3½-10  
 P & P 4-8-4 for Potatoes, Corn and Vegetables

**Pawtucket Rendering Co., Pawtucket, R. I.**

Ground Bone  
 2-8-2 Brand  
 3-8-4 Animal Brand  
 4-8-4 Brand  
 5-8-4 Brand

**Piedmont-Mt. Airy Guano Co., Baltimore, Md.**

Brown's Fertilizer for Corn and Grain  
 Brown's H. G. P. and General Crop Manure  
 Brown's Potato Fertilizer  
 Brown's Special Fertilizer  
 Brown's Special O & T and Market Garden  
 Brown's Tobacco Manure  
 Muriate of Potash  
 Nitrate of Soda  
 Piedmont 3-8-4 Fertilizer  
 Piedmont 4-8-6 Fertilizer  
 Piedmont 16% Acid Phosphate  
 Piedmont 3 50 Bone Meal  
 Piedmont 6 30 Tankage  
 Shay's Corn Fertilizer  
 Shay's Potato Fertilizer  
 Shay's Special Fertilizer

**Pulverized Manure Co., 828 Exchange Ave., Union Stock Yards, Chicago, Ill.**

Wizard Brand Manure

**Quality Fertilizer Works, 52 Canal St., Stamford, Conn.**

Bartlett Brand Special Tree Fertilizer

**Robinson, George B., Jr., 18 Broadway, New York City.**

"Robin" Brand Cotton Seed Meal

**Rogers & Hubbard Company, Middletown, Conn.**

Hubbard's "Bone Base" Fertilizer for Seeding Down  
 Hubbard's "Bone Base" Oats and Top Dressing  
 Hubbard's "Bone Base" Soluble Corn and General Crops Manure  
 Hubbard's "Bone Base" Soluble Potato Manure  
 Hubbard's Pure Raw Knuckle Bone Flour  
 Hubbard's Strictly Pure Fine Bone  
 R. & H.'s All Soils-All Crops Phosphate  
 R. & H.'s Climax Tobacco Brand  
 R. & H.'s Complete Phosphate  
 R. & H.'s Cottonseed Meal  
 R. & H.'s Potato Phosphate  
 R. & H.'s Soluble Tobacco Manure  
 R. & H.'s Tobacco Grower, Vegetable Formula

**Royster, F. S., Guano Company, 1603 Munsey Bldg., Baltimore, Md.**

Dry Ground Fish  
 Kainit

Muriate of Potash  
 Nitrate of Soda  
 Royster's Arrow Head Tobacco Formula  
 Royster's Banner Guano  
 Royster's Bully Guano  
 Royster's Dreadnought Guano  
 Royster's Fish and Potash  
 Royster's Fish, Flesh and Foul Guano  
 Royster's Landmark Brand  
 Royster's Perfecto Tobacco Formula  
 Royster's Prime Fish Brand  
 Royster's Purity Brand  
 Royster's Quality Trucker  
 Royster's 16% Acid Phosphate  
 Royster's Truckers' Delight  
 Royster's Valley Tobacco Formula  
 Stevens Formula

**Sanderson Fertilizer & Chemical Co., New Haven, Conn.**

Sanderson's Acid Phosphate  
 Sanderson's Atlantic Coast Bone, Fish and Potash  
 Sanderson's Complete Tobacco Grower  
 Sanderson's Corn Superphosphate  
 Sanderson's Fine Ground Bone  
 Sanderson's Formula A  
 Sanderson's Formula B  
 Sanderson's H. G. Ammoniated Phosphate  
 Sanderson's Kelsey's Bone, Fish and Potash  
 Sanderson's Nitrate of Soda  
 Sanderson's Phosphate without Potash  
 Sanderson's Potato Manure  
 Sanderson's Special without Potash  
 Sanderson's Tobacco Grower  
 Sanderson's Top Dressing for Grass and Grain  
 Sanderson's Top Dressing for Grass and Grain without Potash  
 South American Sheep and Goat Manure

**Shoemaker, M. L., & Co., Inc., Venango St. and Delaware Ave., Philadelphia, Pa.**

Swift-Sure Bone Meal  
 Swift-Sure Superphosphate for General Use  
 Swift-Sure Superphosphate for Potatoes No. 1  
 Swift-Sure Superphosphate for Tobacco  
 Swift-Sure Tankage

**Soper, J. E., Co., 206 Chamber of Commerce, Boston, Mass.**

Pilgrim Cottonseed Meal  
 Pioneer Cottonseed Meal  
 Puritan Cottonseed Meal  
 Soper's 5% Nitrogen C/S Meal  
 Soper's 6% Nitrogen C/S Meal  
 Soper's 7% Nitrogen C/S Meal

**Southern Cotton Oil Company, Falls Building, 22 N. Front St., Memphis, Tenn.**

Cotton Seed Meal

**Springfield Rendering Co., 88 Liberty St., Springfield, Mass.**

Springfield Animal Brand  
 Springfield Fine Ground Bone  
 Springfield Grain and Grass  
 Springfield Tobacco Special

**Taylor Commission Co., Atlanta, Ga.**

(Good Cotton Seed Meal) Taylor Brand

**Union Seed & Fertilizer Co., 65 Broadway, New York City.**

American Red Tag Cotton Seed Meal

Surety Brand Cotton Seed Meal

Yellow Tag Cotton Seed Meal

**Virginia-Carolina Chemical Co., Equitable Building, 120 Broadway, New York City.**

V-C Bone Meal

V-C Challenge Brand

V-C Champion Brand

V-C Cherokee Brand

V-C Fish and Potash Brand

V-C Indian Chief Brand

V-C Monarch Brand

V-C Owl Brand

V-C Pawnee Brand

V-C Plant Food for Vegetables, Lawns and Flowers

Virginia-Carolina Plow Brand

**Wilcox Fertilizer Company, Mystic, Conn.**

Acid Phosphate

Eldredge Fish and Potash

Nitrate of Soda

Wilcox Corn Special

Wilcox Dry Ground Fish

Wilcox Fish and Potash

Wilcox Grain Fertilizer

Wilcox Grass Fertilizer

Wilcox High Grade Fish and Potash

Wilcox Potato and Vegetable Phosphate

Wilcox Potato Fertilizer

Wilcox Tobacco Special

**Witherbee, Sherman & Company, 393 Main St., Worcester, Mass.**

Barium-Phosphate Grade A

Barium-Phosphate Grade B

Barium-Phosphate Grade C

Ground Phosphate Rock

Nitrate of Soda

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

Sheep Manure

Woodruff's Home Mixture

**Worcester Rendering Co., Auburn, Mass.**

Prosperity Brand Royal Worcester Corn and Grain Fertilizer

Prosperity Brand Royal Worcester Ground Steamed Bone

Prosperity Brand Royal Worcester Potato and Vegetable Fertilizer

Prosperity Brand Royal Worcester Special Grain Fertilizer

**World's Fertilizer Process Co., Sharpsburg, Pa.**

Shur-Gro

During the year Mr. Churchill, the Station's Agent, has visited 105 towns and villages in the State and gathered 547 samples, in the manner provided by law. Twenty of these registered brands have not been sold in the State, and seventy-eight, although reported to have been sold in Connecticut, could not be found by the sampling agent and therefore have not been examined.

In the following pages are given the analyses of all the brands which were sampled, as well as those sent for analysis by individuals. Of the latter the Station is not responsible for the accuracy of the sampling, although pains have been taken to secure from the senders certification that the Station's method of sampling was followed.

## CLASSIFICATION OF FERTILIZERS ANALYZED.

	Number of samples.
1. <i>Containing nitrogen as the chief active ingredient:</i>	
Nitrate of soda.....	14
Sulphate of ammonia.....	1
Cotton seed meal.....	115
Castor pomace.....	3
2. <i>Containing phosphoric acid as the chief active ingredient:</i>	
Barium-phosphate.....	3
Raw rock phosphate.....	2
Precipitated bone phosphate.....	1
Basic lime phosphate.....	2
Dissolved rock phosphate or acid phosphate.....	20
3. <i>Containing potash as the chief active ingredient:</i>	
Cotton hull ashes.....	1
Potash salts and potash-lime.....	4
4. <i>Raw materials containing nitrogen and phosphoric acid:</i>	
Fish manures.....	16
Slaughter house tankage.....	15
Bone manures.....	19
Mixed bone and tankage.....	1
Garbage tankage.....	1
5. <i>Mixed fertilizers:</i>	
Nitrogenous superphosphates without potash.....	92
Nitrogenous superphosphates with potash.....	246
Home mixtures.....	16
6. <i>Miscellaneous fertilizers and waste products:</i>	
Tobacco stems, stalks and dust.....	4
Nitro-Fertile and Lime-Fertile.....	2
Sheep manure.....	9
Wood ashes.....	19
Lime and lime-kiln ashes.....	4
Other miscellaneous materials.....	15
Total.....	625

## I. RAW MATERIALS CHIEFLY VALUABLE FOR NITROGEN.

## NITRATE OF SODA.

Fourteen samples were analyzed as follows:

**14484.** Sold by the Berkshire Fertilizer Co., Bridgeport. Sampled at the factory.

14487. Sold by Apothecaries Hall Co., Waterbury. Stock of R. H. Morgan, West Cheshire.
14488. Sold by F. S. Royster Guano Co., Baltimore, Md. Stock of J. R. Reinhard & Sons, West Cheshire.
15149. Sold by Coe-Mortimer Co., New York. Stock of Conyer's Farm, Greenwich.
14479. Sold by Olds & Whipple, Hartford. Sampled at the factory.
14935. Sold by Piedmont-Mt. Airy Guano Co, Baltimore, Md. Stock of Farmers' Exchange, Woodstock.
15045. Sold by the Hubbard Fertilizer Co., Baltimore, Md. Stock of H. H. McKnight, Ellington.
14419. Sold by American Agricultural Chemical Co., New York. Stock of E. N. Austin, Suffield.
15205. Sold by the Atlantic-Packing Co., New Haven. Sampled at the factory.
15206. Sold by L. T. Frisbie Co., New Haven. Stock of P. Schwartz Co., New London.
14477. Sold by Sanderson Fertilizer & Chemical Co., New Haven. Sampled at the factory.
14572. Sold by Wilcox Fertilizer Co., Mystic. Stock of G. R. Stannard, Branford.
15075. Sold by the Lowell Fertilizer Co., Boston. Stock of Litchfield County Coop. Association, Torrington.
14828. Sold by the Bowker Fertilizer Co., New York. Stock of F. B. Newton Est., Plainville.

TABLE I. ANALYSES OF NITRATE OF SODA.

Station No.	Per cent. of Nitrogen		Nitrogen costs cents	
	Guaranteed.	Found.	Cost per ton.	per pound.
14484	14.80	15.44	\$70.00	22.6
14487	15.00	15.50	70.00	22.6
14488	15.00	15.54	74.75	24.0
15149	15.00	15.40	75.00	24.3
14479	15.00	15.34	75.00	24.4
14935	15.22	15.30	75.76	24.7
15045	15.22	15.24	76.15	24.9
14419	15.00	15.68	80.00	25.5
15205	15.00	15.16	80.00	26.4
15206	15.00	15.32	85.00	27.7
14477	15.00	15.42	86.75	28.1
14572	15.00	14.94	86.00	28.8
15075	15.00	15.28	90.00	29.4
14828	15.00	15.76	.....	....

The retail cash cost of nitrogen in nitrate of soda has ranged from 22.6 to 29.4 cents per pound, and has averaged 25.6 cents per pound.

## SULPHATE OF AMMONIA.

One sample was examined.

14483. Sold by the Barrett Co., of New York City. Stock of Berkshire Fertilizer Co. Cost \$100 per ton. It contained 20.92 per cent. nitrogen.



Nitrogen in this sample costs 23.9 cents per pound. Sulphate of ammonia and nitrate of soda have been altogether the cheapest forms of available nitrogen in our market.

#### COTTON SEED MEAL.

One hundred and fifteen samples have been examined, and their analyses appear in the following table.

The per cent of nitrogen has ranged from 5.10 to 8.11 per cent, the average being 6.50—very decidedly higher than in any season since 1916.

There has been considerable fluctuation in price during the winter and spring, the average being \$79.55 per ton. Making no valuation of the phosphoric acid and potash in the meal, the average cost of nitrogen in meal has been 61.2 cents per pound.

If the phosphoric acid contained in the meal were credited at 7 cents per pound and potash at 12 cents per pound, the cost of nitrogen would be about 54½ cents per pound. Twenty-eight of the samples did not meet their guaranties, but eight of these were sold on a unit basis so that the buyer only paid for the actual amount of nitrogen received, which is altogether the most satisfactory basis of payment. The prices ranged from \$70 to \$90 per ton, following in some measure the fluctuations in the wholesale market.

TABLE II. ANALYSES OF COTTON SEED MEAL.

Station No.	Manufacturer or Jobber, Car No. or Marks.	Purchased, Sampled or Sent by	Per cent. Nitrogen.		Cost per ton.
			Found.	Guaranteed.	
14807	<b>American Cotton Oil Co., New York City.</b> American Red Tag, C. S. Meal.....	J. E. Phelps, Suffield.....	6.31	6.18	\$68.12
14512	<b>Ashcraft-Wilkinson Co., Atlanta, Ga.</b> Paramount Brand C. S. Meal.....	Station Agent from Rockville Milling Co.....	6.14	5.76	83.00
14471	<b>F. W. Brod� &amp; Co., Memphis, Tenn.</b> Owl Brand.....	A. D. Bridge's Sons, Inc., Hazard- ville.....	6.32	6.50	.....
14491	Owl Brand, E. 74666.....	W. J. Reeves, Windsorville.....	6.18	6.50	75.10
14496	Owl Brand, C. & N. W., 180500.....	Spencer Bros., Suffield.....	6.90	6.85	79.19
14501	Owl Brand.....	E. H. Rollins, Granby.....	6.56	6.50	74.50
14715	Owl Brand.....	Station Agent from A. D. Bridge's Sons.....	6.27	6.50	87.00
14806	Owl Brand, N. Y. C., 230350	G. T. Soule, New Milford.....	6.64	6.50	80.00
14827	Owl Brand.....	Station Agent from G. E. Aekley Co., New Milford.....	6.63	6.50	80.00
14885	Owl Brand.....	S. F. Holcomb & Son, West Granby	6.89	6.50	77.00
14510	Jay Brand, S. P., 84389.....	Station Agent from A. D. Bridge's Sons, Hazardville.....	5.84	5.76	79.00
14443	.....	E. H. Rollins, Granby.....	6.58	6.50	75.00
14444	.....	E. H. Rollins, Granby.....	6.60	6.50	74.00
14490	G. E. T., 18543.....	William J. Reeves, Windsorville.....	6.68	6.50	81.20
14549	Soo L., 31488.....	G. T. Soule, New Milford.....	6.29	6.50	75.00
14551	Off Color, C. S. M., S. L. 104426.....	Ahern Bros., East Windsor Hill.....	6.65	6.50	.....
14852	Off Grade, C. S. M., N. Y. C. 230350.....	A. W. Camp, Danbury.....	6.60	6.50	80.00
14988	<b>Cotton Seed Products Co., Louisville, Ky.</b> Prime C. S. Meal.....	Station Agent from Wybern Farms, Melrose.....	6.21	6.50	76.00
14383	<b>S. P. Davis, Little Rock, Ark.</b> Good Luck Brand.....	L. P. Abbe, Hazardville.....	6.78	6.50	87.00
14825	Good Luck Brand.....	Station Agent from E. M. Waller, Gaylordsville.....	6.49	6.50	82.00

TABLE II. ANALYSES OF COTTON SEED MEAL—(Continued).

Station No.	Manufacturer or Jobber, Car No. or Marks.	Purchased, Sampled or Sent by	Per cent. Nitrogen.		Cost per ton.
			Found.	Guaranteed.	
14529	<b>DeSoto Oil Co., Memphis.</b> 104426.....	R. H. Osborne, Warehouse Point	6.66	6.58	\$78.00
15021	<b>E. St. Louis Cotton Oil Co., National Stock Yards, Ill.</b> R. I. 56053.....	C. D. Cannon, Windsor Locks...	6.73	6.64	77.50
14434	<b>W. D. Hall Co., Atlanta, Ga.</b> Good C. S. Meal.....	A. D. Ellsworth, Broad Brook....	5.32	5.76	76.00
14618	Good C. S. Meal.....	Station Agent from A. E. Hall, Wallingford.....	5.89	5.76	80.00
14887	<b>Oscar Holway, Auburn, Me.</b> N. Y. C. 214957.....	William Gilligan, Windsor.....	6.80	6.70	86.28
14941	<b>Humphreys-Godwin Co., Memphis, Tenn.</b> Bull Brand.....	P. T. McCue, Windsor Locks....	6.98	6.87	82.00
15076	Bull Brand.....	Station Agent from E. Man- chester & Sons, Winsted.....	7.16	6.87	85.00
15192	Bull Brand.....	J. A. Sherwood, Long Hill.....	7.09	6.87	83.00
15222	Bull Brand.....	C. L. Luce, New Britain.....	6.92	6.87	....
14659	Danish Brand.....	Station Agent from G. S. Phelps, Thompsonville.....	5.45	5.75	80.00
15133	Danish Brand.....	The Coles Co., Middletown.....	5.84	5.75	82.00
15187	Danish Brand.....	W. E. Wheelock, Quinebaug.....	5.81	5.75	....
14507	Dixie Brand, 89546.....	Hartford Tobacco Corporation, Hartford.....	7.49	7.50	94.71
15134	Bright C. S. Meal, Penn. 32253.....	Jno. Sullivan & Son, Thompson- ville.....	5.49	5.76	72.00
15135	Bright C. S. Meal, L. V. 82216.....	Jno. Sullivan & Son, Thompson- ville.....	5.67	5.76	72.00
15164	Bright C. S. Meal, C. & N. W. 101624.....	Spencer Bros., Suffield.....	5.54	5.76	73.00
15341	26206.....	Coles Co., Middletown.....	6.16	5.76	74.00
14784	Off-Color C. S. Meal, W. B. 45334.....	G. S. Phelps & Co., Thompson- ville.....	5.67	5.75	68.00
14872	Off-Color C. S. Meal, Pa. 63451.....	Spencer Bros., Suffield.....	6.31	6.58	76.16
14901	Off-Color C. S. Meal, C. M. & St. P. 75860.....	Spencer Bros., Suffield.....	5.53	5.58	73.00
15145	Off-Color C. S. Meal, 246729	The Coles Co., Middletown.....	6.83	6.88	75.25
14386	Off-Grade C. S. Meal, A. T. & S. F. 31182.....	G. T. Soule, New Milford.....	6.26	6.27	76.10
14403	C. S. Meal, C. & O. 8803..	The Coles Co., Middletown.....	6.00	5.75	83.00
14473	C. S. Meal, 111209.....	G. S. Phelps & Co., Thompson- ville.....	5.92	5.75	67.00
14508	C. S. Meal, B. & M. 62922	L. B. Haas & Co., Hartford.....	7.34	7.50	93.75

TABLE II. ANALYSES OF COTTON SEED MEAL—(Continued).

Station No.	Manufacturer or Jobber, Car No. or Marks.	Purchased, Sampled or Sent by	Per cent. Nitrogen.		Cost per ton.
			Found.	Guaranteed.	
<b>Humphreys-Godwin Co., Memphis, Tenn. (Continued).</b>					
14530	Off-Grade C. S. Meal, P. M. 70929.....	S. J. Orr, West Suffield.....	6.44	..	\$72.81
14531	Off-Grade C. S. Meal, M. O. P. 34509.....	S. J. Orr, West Suffield.....	6.59	..	74.49
14532	Off-Grade C. S. Meal, G. T. 25226.....	S. J. Orr, West Suffield.....	6.17	..	69.75
14533	Off-Grade C. S. Meal, G. E. T. 2125.....	S. J. Orr, West Suffield.....	6.19	..	69.94
14534	Off-Grade C. S. Meal, C. C. C. & S. T. L. 53951.....	S. J. Orr, West Suffield.....	6.06	..	68.54
14535	Off-Grade C. S. Meal, N. Y. C. 255143.....	S. J. Orr, West Suffield.....	6.12	..	69.19
14556	Dark C. S. Meal, Chi., St. P. 28404.....	H. C. Nelson, West Suffield.....	5.77	5.75	66.00
15285	C. S. Meal, 101182.....	Coles Co., Middletown.....	5.76	5.76	78.00
<b>L. B. Lovitt &amp; Co., Memphis, Tenn.</b>					
14464	Off-Color C. S. Meal, M. C. 60060.....	Spencer Bros., Suffield.....	6.99	7.13	80.15
14662	Off-Color C. S. Meal.....	O. T. Cone, Warehouse Point.....	7.56	7.20	88.95
14754	Off-Color C. S. Meal.....	J. B. Parker, Poquonock.....	7.63	..	79.39
14800	Off-Color C. S. Meal, N. P. 19112.....	Spencer Bros., Suffield.....	7.64	7.57	92.24
14810	Off-Color C. S. Meal, K. C. S. 12532.....	Spencer Bros., Suffield.....	7.66	7.92	90.11
14401	Off-Color C. S. Meal, P. R. R. 48725.....	Spencer Bros., Suffield.....	7.02	6.87	80.44
14431	Off-Color C. S. Meal, C. B. Q. 105732.....	Spencer Bros., Suffield.....	7.23	7.25	82.51
14432	Off-Color C. S. Meal, St. Fe 30995.....	Spencer Bros., Suffield.....	6.30	6.29	72.23
14433	Off-Color C. S. Meal, M. C. 46667.....	Spencer Bros., Suffield.....	6.92	6.99	79.30
14438	Off-Color C. S. Meal, I. C. 24343.....	Spencer Bros., Suffield.....	6.89	6.89	78.92
14439	Off-Color C. S. Meal, Penn. 35562.....	Spencer Bros., Suffield.....	6.89	6.68	78.92
14459	Off-Color C. S. Meal, F. W. D 4635.....	Spencer Bros., Suffield.....	6.19	6.39	71.00
14462	Off-Color C. S. Meal, I. & G. N. 5507.....	Spencer Bros., Suffield.....	6.69	6.58	76.69
14463	Off-Color C. S. Meal, S. L. & S. F. 40673.....	Spencer Bros., Suffield.....	6.36	6.35	72.89

TABLE II. ANALYSES OF COTTON SEED MEAL—(Continued).

Station No.	Manufacturer or Jobber, Car No. or Marks.	Purchased, Sampled or Sent by	Per cent. Nitrogen.		Cost per ton.
			Found.	Guaranteed.	
<b>L. B. Lovitt &amp; Co., Memphis, Tenn.</b>					
<i>(Continued).</i>					
14469	Off-Color C. S. Meal, P. L. 535715.....	John Edgar, Enfield.....	6.85	6.85	\$78.54
14470	Off-Color C. S. Meal, N. Y. C. 229466.....	Spencer Bros., Suffield.....	6.78	6.87	79.75
14528	Off-Color C. S. Meal, L. E. & W. 12215.....	Spencer Bros., Suffield.....	6.80	6.82	82.01
14550	Off-Color C. S. Meal, L. V. 85869.....	Spencer Bros., Suffield.....	6.74	6.82	81.32
14801	Off-Color C. S. Meal, B. & M. 47599.....	Spencer Bros., Suffield.....	6.87	6.81	82.92
14829	Off-Color C. S. Meal, L. & N 7607.....	Spencer Bros., Suffield.....	6.60	6.50	75.62
14494	Off-Color C. S. Meal, B. & O. 89651.....	Spencer Bros., Suffield.....	8.11	8.00	97.90
14586	Off-Color C. S. Meal, A. T. & S. Fe 7460.....	Spencer Bros., Suffield.....	8.07	8.27	97.41
<b>Lyle &amp; Lyle, Huntsville, Ala.</b>					
14384	Economy Brand Sou 120566	G. T. Soule, New Milford.....	5.92	5.75	85.00
<b>W. C. Nothern, Memphis.</b>					
14377	Special No. 1, T. P. 8055.....	G. S. Phelps, Warehouse Point...	6.75	6.50	77.00
14415	Off-Color, 120719.....	J. W. Crowell, Burnside.....	6.39	5.75	77.00
<b>Park &amp; Pollard Co., Boston.</b>					
14571	Upland C. S. Meal.....	Station Agent from F. B. Newton Est., Plainville.....	5.67	5.75	83.00
14297	Off-Color C. S. Meal.....	Rockville Milling Co.....	6.67	6.50	81.00
14335	B. & L. E. 81002.....	Ahern Bros., E. Windsor Hill....	7.12	6.50	74.50
14337	.....	L. C. Daly, Warehouse Point....	7.16	6.50	78.00
14460	B. & O. 85534.....	Broad Brook Lumber & Coal Co....	7.26	7.43	83.79
14461	B-4 45144.....	Broad Brook Lumber & Coal Co....	7.03	7.28	81.13
14465	Off-Qual., C. C. C. & St. L. 9266.....	Station Agent from Broad Brook L. & C. Co.....	7.15	5.76	82.55
14500	G. T. 10102.....	E. H. Rollins, Granby.....	6.44	6.58	75.25
14504	L. & N. 3460.....	Broad Brook Lumber & Coal Co....	7.58	7.36	87.50
14505	C. of G. 60017.....	Broad Brook Lumber & Coal Co....	7.37	7.13	85.12
14630	S. S. W. 7320.....	E. H. Rollins, Granby.....	6.42	6.58	74.50
14826	Off-Grade.....	Station Agent from G. E. Ackley Co., New Milford.....	6.81	7.00	80.00
<b>The Roger &amp; Hubbard Co., Middletown.</b>					
14466	C. & O. 3223.....	Station Agent from P. F. Cham- berlain, Broad Brook.....	6.75	6.50	82.00

TABLE II. ANALYSES OF COTTON SEED MEAL—(Concluded).

Station No.	Manufacturer or Jobber, Car No. or Marks.	Purchased, Sampled or Sent by	Per cent. Nitrogen.		Cost per ton.
			Found.	Guaranteed.	
	<b>Sanderson Fertz. &amp; Chem. Co., New Haven.</b>				
14509	.....	Benjamin Fenn, Milford.....	6.71	..	....
	<b>J. E. Soper &amp; Co., Boston.</b>				
14351	Puritan C. S. Meal.....	J. B. Cannon, Granby.....	6.09	5.75	\$78.50
15189	Puritan C. S. Meal.....	The Coles Co., Middletown.....	5.20	5.75	80.00
14661	Puritan C. S. Meal.....	Station Agent from P. Schwartz Co., New London.....	5.26	5.75	80.00
14493	Off-Color C. S. Meal.....	Spencer Bros., Suffield.....	7.36	7.38	86.63
14497	Off-Color C. S. Meal, C. P. 205692.....	Spencer Bros., Suffield.....	7.40	7.22	84.78
14393	Off-Color C. S. Meal, 138752.....	L. C. Seymour, Windsor Locks... ..	5.10	5.76	74.00
14422	Off-Color C. S. Meal, 138752.....	Station Agent from L. C. Seymour	5.27	5.76	74.00
14831	.....	H. F. Farnham, E. Windsor Hill.	6.25	5.76	75.00
14411	Off-Color C. S. Meal, N. P. 38946.....	W. E. Bates, East Granby.....	5.84	5.76	74.00
14799	.....	C. H. Northam, Hartford.....	5.49	5.76	77.00
14886	Off-Color C. S. Meal, Penn. 608298.....	J. T. O'Neill, Burnside.....	5.95	5.76	77.50
14870	Off-Color C. S. Meal.....	Station Agent from A. Manning, So. Manchester.....	5.24	5.76	69.50
15091	Off-Color C. S. Meal.....	Arthur Manning, Manchester....	5.42	5.76	69.50
	<b>Taylor Commission Co., Atlanta, Ga.</b>				
14728	.....	Station Agent from Meech & Stod- dard, Middletown.....	5.99	5.76	78.50
	<b>Terrell Cotton Oil Co.</b>				
14495	.....	E. T. Hurlburt & Son, Somers... ..	7.16	6.75	87.50
	<b>Texarkana Cotton Oil and Fertilizer Co., Texarkana, Ark.</b>				
14416	.....	Station Agent from E. N. Austin, Suffield.....	6.56	6.58	75.00
14511	.....	Station Agent from Rockville Milling Co.....	6.50	..	81.00
	<b>Union Seed &amp; Fertz'r Co., New York.</b>				
14609	Surety Brand C. S. Meal..	Station Agent from F. H. Rolf, Guilford.....	6.19	5.76	88.00
14938	Surety Brand, Erie 110567.	Coles Co., Middletown.....	5.84	5.76	84.00
14660	Amer. Red Tag C. S. Meal	Station Agent from M. E. Thomp- son, Ellington.....	6.31	6.18	80.00
15088	Amer. Red Tag C. S. Meal	J. E. Phelps, Suffield.....	6.35	6.18	70.10
	<b>Jobber Unknown.</b>				
14830	.....	L. J. Prior, East Hartford.....	6.59	..	....
15186	.....	Arthur Manning, Manchester... ..	6.65	6.88	90.00

## CASTOR POMACE.

Three samples were analyzed as follows:

**14421.** Sold by American Agricultural Chemical Co., New York City. Stock of E. N. Austin, Suffield.

**14515.** Sold by the Apothecaries Hall Co., Waterbury. Sampled at the factory.

**14481.** Sold by Baker Castor Oil Co., New York City. Stock of Olds & Whipple, Hartford.

## ANALYSES OF CASTOR POMACE.

Station No. . . . .	14421	14515	14481
<i>Per cent. of</i>			
Nitrogen guaranteed . . . . .	4.50	4.52	4.50
Nitrogen found . . . . .	5.29	5.73	5.72
Cost per ton . . . . .	\$60.00	\$60.00	\$57.00
<b>Nitrogen costs per pound . . . . .</b>	<b>56.7</b>	<b>52.3</b>	<b>49.9</b>

II. RAW MATERIALS CHIEFLY VALUABLE FOR  
PHOSPHORIC ACID.

## BARIUM-PHOSPHATE.

**14977.** Grade A. Sold by Witherbee, Sherman & Co., Port Henry, N. Y. Stock of J. H. Miller, Stamford. Guaranteed 28 per cent. phosphoric acid.

**14932.** Grade B. Sold by Witherbee, Sherman & Co., Port Henry, N. Y. Stock of Geo. S. Carter, Clinton. Guaranteed 16 per cent. phosphoric acid. Cost \$25.00 per ton.

**14933.** Grade C. Sold by Witherbee, Sherman & Co., Port Henry, N. Y. Stock of C. E. Lyman, Middlefield. Guaranteed 14 per cent phosphoric acid. Cost \$22.00 per ton.

## ANALYSES OF BARIUM-PHOSPHATE.

Station No. . . . .	14977	14932	14933
Water-soluble phosphoric acid . .	<b>None</b>	<b>0.03</b>	<b>None</b>
Citrate-soluble phosphoric acid .	3.18	0.59	0.24
Insoluble phosphoric acid . . . .	25.16	16.68	16.21
Total phosphoric acid . . . . .	28.34	17.30	16.45
<b>Phosphoric acid cost cents per pound . . . . .</b>		<b>7.2</b>	<b>6.7</b>

## RAW ROCK PHOSPHATE.

Two samples were analyzed as follows:

**15181.** Tacco Ground Phosphate. Sold by Tennessee Agricultural Corporation, Centerville, Tenn. Sent by E. E. Burwell, New Haven.

**15150.** Raw Ground Phosphate. Sold by Apothecaries Hall Co., Waterbury. Stock of H. A. Edwards, Naugatuck.

ANALYSES OF RAW ROCK PHOSPHATE.

Station No. ....	<b>15181</b>	<b>15150</b>
Water-soluble phosphoric acid.....	0.16	0.04
Citrate-soluble phosphoric acid.....	2.31	3.12
Citrate-insoluble phosphoric acid.....	21.25	28.06
Total phosphoric acid.....	23.72	31.22
"Available" phosphoric acid found.....	2.47	3.16
Cost per ton.....	.....	\$17.00

**15181** was ground phosphate which had been saturated with strong liquid manure, worked over and exposed to the action of air and frost for a year.

PRECIPITATED BONE PHOSPHATE.

One sample was analyzed as follows:

**14480.** Sold by Olds & Whipple, Hartford. Sampled at factory. Cost \$1.50 per unit available phosphoric acid.

ANALYSIS OF PRECIPITATED BONE PHOSPHATE.

Station No. ....	<b>14480</b>
Water-soluble phosphoric acid.....	0.37
Citrate-soluble phosphoric acid.....	18.67
Citrate-insoluble phosphoric acid.....	8.26
Total phosphoric acid.....	27.30
"Available" phosphoric acid found.....	19.04
Cost of "available" phosphoric acid per pound....	7.5¢

BASIC LIME PHOSPHATE.

Two samples were analysed as follows:

**15117.** Sold by American Agricultural Chemical Co., New York City. Stock of R. E. Morgan, Windsor. Guaranteed 13 per cent. "available" phosphoric acid, 14 per cent. total phosphoric acid. Cost \$24.25 f.o.b. factory.

**14978.** Basic Fruit and Legume Phosphate. Sold by Coe-Mortimer Co., New York City. Stock of J. C. Jackson, Wilton. Cost \$22.75 per ton. Guaranteed 13 per cent. "available" phosphoric acid, 14 per cent. total phosphoric acid.

ANALYSES OF BASIC LIME PHOSPHATE.

Station No. ....	<b>15117</b>	<b>14978</b>
Water-soluble phosphoric acid.....	2.67	3.10
Citrate-soluble phosphoric acid.....	11.27	10.38
Citrate-insoluble phosphoric acid.....	1.50	1.46
Total phosphoric acid.....	15.44	14.94
"Available" phosphoric acid.....	13.94	13.48
Cost of "available" phosphoric acid per pound....	.....	8.4¢

DISSOLVED ROCK PHOSPHATE OR ACID PHOSPHATE.

The analyses of twenty samples of this material are given in the table.

The prices charged have ranged from \$27 to \$40 per ton. The average cost of available phosphoric acid has been about 10.1 cents per pound.



Twenty samples were analyzed as follows:

**14476.** Sold by Sanderson Fertilizer & Chemical Co., New Haven. Sampled at factory.

**14854.** Sold by Piedmont-Mt. Airy Guano Co., Baltimore, Md. Stock of Farmers' Exchange, South Meriden.

**15042.** Sold by the Hubbard Fertilizer Co., Baltimore, Md. Stock of H. H. McKnight, Ellington.

**15157.** Sold by Olds & Whipple, Hartford. Stock of Haviland Tobacco Co., East Windsor Hill.

**14707.** Sold by National Fertilizer Co., New York City. Stock of R. Delaney, Somersville.

**15207.** Sold by Berkshire Fertilizer Co., Bridgeport. Stock of D. L. Clarke & Sons, Milford.

**14482.** Sold by Olds & Whipple, Hartford. Sampled at factory.

**14417.** Sold by American Agricultural Chemical Co., New York City. Stock of E. N. Austin, Suffield.

TABLE III. ANALYSES OF ACID PHOSPHATE.

Station No.	Water-soluble phosphoric acid.	Citrate-soluble phosphoric acid.	Citrate-insoluble phosphoric acid.	Total phosphoric acid.	"Available" phosphoric acid found.	"Available" phosphoric acid guaranteed.	Cost per ton.	"Available" phosphoric acid costs cents per pound.
14476	15.39	1.79	0.15	17.33	17.18	16.00	\$30.00	8.7
14854	12.17	3.13	1.01	16.31	15.30	16.00	27.00	8.8
15042	14.20	1.87	0.27	16.34	16.07	16.00	29.00	9.0
15157	13.71	3.22	0.93	17.86	16.93	16.00	30.87	9.1
14707	11.16	5.25	0.55	16.96	16.41	16.00	30.90	9.4
15207	14.34	3.27	0.33	17.94	17.61	16.00	33.50	9.5
14482	12.29	3.47	0.15	15.91	15.76	16.00	30.64	9.7
14417	14.64	2.20	0.19	17.03	16.84	16.00	33.00	9.8
14934	11.36	4.64	2.01	18.01	16.00	16.00	32.00	10.0
14542	12.67	2.62	1.64	16.93	15.29	16.00	32.00	10.4
14971	13.26	2.92	0.36	16.54	16.18	14.00	35.00	10.8
15074	12.01	3.70	1.52	17.23	15.71	16.00	34.00	10.8
14499	13.33	1.89	0.90	16.12	15.22	16.00	33.00	10.8
14514	14.02	1.94	0.20	16.16	15.96	14.00	35.00	11.0
14795	13.50	3.32	0.22	17.04	16.82	16.00	38.00	11.3
15113	13.58	2.90	0.32	16.80	16.48	16.00	40.00	12.1
14478	13.55	3.37	0.26	17.18	16.92	16.00	.....	.....
14813	14.41	3.19	0.14	17.74	17.60	16.00	.....	.....
14879	12.61	2.96	1.39	16.96	15.57	16.00	.....	.....
14986	9.52	5.55	1.14	16.21	15.07	16.00	.....	.....

The percentage of available phosphoric acid in Sample 14542, Royster's Acid Phosphate, was not so high as guaranteed. A second sample 14879 of the same brand contained a higher percentage of available acid than the first, but still did not fully meet its guaranty.

**14934.** Sold by Coe-Mortimer Co., New York City. Stock of J. E. Stoddard, Abington.

**14542.** Sold by F. S. Royster Guano Co., Baltimore, Md. Stock of J. R. Reinhard & Sons, West Cheshire.

**14971.** Sold by Listers Agricultural Chemical Works, Newark, N. J. Stock of W. H. Carrier, Glastonbury.

**15074.** Sold by Lowell Fertilizer Co., Boston, Mass. Stock of H. B. Brownson, Shelton.

**14499.** Sold by Apothecaries Hall Co., Waterbury. Sampled at factory.

**14514.** Sold by American Agricultural Chemical Co., New York City. Stock of Spencer Bros., Suffield.

**14795.** Sold by Bowker Fertilizer Co., New York City. Stock of Geo. E. Ackley Co., New Milford.

**15113.** Sold by Listers Agricultural Chemical Works, Newark, N. J. Stock of B. C. Wooding, Yalesville.

**14478.** Sold by L. T. Frisbie Co., New Haven. Sampled at factory.

**14813.** Sold by Wilcox Fertilizer Co., Mystic. Sampled at factory.

**14879.** Sold by F. S. Royster Guano Co., Baltimore, Md. Stock of W. S. Brown, Trumbull.

**14986.** Sold by American Agricultural Chemical Co., New York City. Stock of W. H. Latimer & Son, Southington.

### III. RAW MATERIALS OF HIGH GRADE CONTAINING POTASH.

#### COTTON HULL ASHES.

**15171.** Sent by Olds & Whipple, Hartford. Stock of Windsor Tobacco Growers' Corp., Windsor. It contained 19.42 per cent. of potash.

#### POTASH SALTS AND OTHER MATERIALS CONTAINING WATER-SOLUBLE POTASH.

**14931.** Kainit. Sold by F. S. Royster Guano Co., Baltimore, Md. Stock of Knowles, Lombard Co., Guilford. It contained 14.21 per cent. potash and cost \$45.00 per ton, making the cost of actual potash 15.8 cents per pound.

**14929.** Muriate of potash. Sold by F. S. Royster Guano Co., Baltimore, Md. Stock of Knowles, Lombard Co., Guilford. It contained 56.68 per cent. potash and sold for \$165 per ton, making the cost of actual potash 14.5 cents per pound.

**14284.** Nebraska Potash. Sold by Standard Potash Co., Lakeside, Neb. It contained 27.30 per cent. potash.

**15023.** Potash-Lime. Sent by Dexter Portland Cement Co., Nazareth, Pa. It contained 3.13 per cent. potash and 33.28 per cent. of lime.

#### IV. MATERIALS CONTAINING NITROGEN AND PHOSPHORIC ACID.

##### FISH MANURES.

Sixteen samples were examined, eleven of which were sampled by the Station Agent and five by purchasers. Analyses appear in Table IV.

Sample **14585** was stated to be bought by Mr. Fiske for his own use from the New England Fertilizer Co. It is not a brand registered by them.

Three of the samples, **15125**, Lowell Fertilizer Co.; **15114**, Atlantic Packing Co.; and **15136**, A. L. Koster, contained much less nitrogen than was guaranteed.

The average percentage of nitrogen, though with a wide range, is about 8.33; of available phosphoric acid, 6.01; and the cost per ton, ranging from \$80 to \$115, has averaged about \$99.64.

Allowing 10 cents per pound for available phosphoric acid, the nitrogen in fish manures has had an average cost of 52.6 cents per pound.

TABLE IV. ANALYSES OF

Station No.	Manufacturer or Wholesale Dealer.	Dealer or Purchaser.
	<i>Sampled by Station:</i>	
14418	American Agr. Chem. Co.....	E. N. Austin, Suffield.....
14645	Apothecaries' Hall Co.....	Wm. Reeves, Windsorville.....
15114	Atlantic Packing Co.....	John Helm, So. Windsor.....
14574	Berkshire Fertz. Co.....	Manufacturer.....
14989	East Harbor Fertz. Co.....	Wybern Farms, Melrose.....
15130	A. L. Koster.....	Michael Cannon, Rockville.....
15125	Lowell Fertz. Co.....	T. J. Coleman, Warehouse Pt.....
14585	.....	W. E. Fiske, Warehouse Pt.....
14537	Olds & Whipple.....	Manufacturer.....
14930	F. S. Royster Guano Co.....	C. R. Woodford & Sons, Avon.....
14644	Wilcox Fertz. Co.....	Bloomstein & Adler, Burnside.....
	<i>Sampled by Purchaser:</i>	
15183 <sup>3</sup>	"Fish Meal," East Coast Fisheries Products Co.....	American Sumatra Tobacco Co., East Hartford.....
15136	A. L. Koster.....	Fassler & Silberman, Hartford....
14238	Wilcox Fertz. Co.....	American Sumatra Tobacco Co., East Hartford.....
14346	No. 2.....	Silverherz Tobacco Co., Rockville.
14345	No. 1.....	Silverherz Tobacco Co., Rockville.

<sup>1</sup> 0.39 per cent. nitrogen in nitrates.

<sup>2</sup> 0.16 per cent. nitrogen in nitrates.

<sup>3</sup> Contains 0.76 per cent. chlorine.

## SLAUGHTER HOUSE TANKAGE.

Table V, page 28.

Fifteen samples were examined. Six of these were sampled by the Station Agent, seven were submitted by purchasers, and two by a manufacturer for determinations of nitrogen availability. **14062**, Tankage base, prepared from slaughter-house tankage, contained 1.64 per cent. of water-insoluble organic nitrogen, 78.2 per cent. of which was in active form. **14063**, Bone Tankage, contained 2.79 per cent. of water-insoluble organic nitrogen, 87.0 per cent. of which was in active form. The neutral permanganate method was employed in both cases.

Analyses of the remaining samples appear in Table V.

One of the samples taken by the Station Agent, **15204**, Atlantic Packing Co., was far below its guaranty in nitrogen and phosphoric acid, and four others, **14475** and **14881**, Conn. Fat Rendering and Fertilizing Corp., **14855**, Piedmont-Mt. Airy Guano Co., and **14918**, M. L. Shoemaker & Co., were deficient in phosphoric acid.

## FISH MANURES.

Nitrogen.				Phosphoric acid.			Total phosphoric acid.		Cost per ton.
As ammonia.	As organic.	Total found.	Total guaranteed.	Water-soluble.	Citrate-soluble.	Citrate-insoluble.	Found.	Guaranteed.	
0.23	8.92	9.15	8.23	....	....	....	8.66	6.00	\$100.00
0.17	8.81	9.37 <sup>1</sup>	8.20	0.50	5.92	1.52	7.94	5.50	115.00
0.18	7.28	7.46	7.81	0.50	5.31	0.43	6.24	5.50	80.00
0.60	7.69	8.29	8.23	0.75	4.52	0.95	6.22	6.00	100.00
0.52	8.48	9.00	8.23	0.70	3.78	0.91	5.39	6.00	95.00
3.90	5.13	9.03	8.23	0.33	5.85	1.60	7.78	3.00	.....
0.21	7.08	7.29	7.81	0.51	4.86	0.23	5.60	5.50	100.00
0.26	7.67	7.93	7.41	0.43	4.93	0.38	5.74	14.00	105.00
0.20	7.85	8.05	8.23	0.57	8.99	4.45	14.01	5.50	99.75
0.23	8.28	8.51	8.22	0.35	7.77	4.03	12.15	5.00	106.00
0.66	7.96	8.78 <sup>2</sup>	8.24	1.56	4.49	0.77	6.82	5.00	.....
0.15	9.09	9.24	....	0.58	8.92	3.08	12.58	....	.....
1.16	5.13	6.29	8.23	0.50	6.40	0.58	7.48	3.00	96.00
0.46	8.10	8.56	....	2.38	2.35	0.83	5.56	....	.....
0.20	7.74	7.94	....	0.50	5.82	5.32	11.64	....	.....
0.92	7.78	8.70	....	1.23	4.51	1.33	7.07	....	.....

TABLE V. ANALYSES OF

Station No.	Manufacturer.	Dealer or Purchaser.
<i>Sampled by Station:</i>		
14486	Apothecaries Hall Co. ....	R. H. Morgan, West Cheshire. ....
15204	Atlantic Packing Co. ....	Manufacturer. ....
14475	Conn. Fat Rend. & Fertz. Corp. ....	Manufacturer. ....
14881	Conn. Fat Rend. & Fertz. Corp. ....	F. A. Forbes, East Haven. ....
14855	Piedmont—Mt. Airy Guano Co. ....	Minor Ives, South Meriden. ....
14918	M. L. Shoemaker & Co. ....	H. B. Cornwall, Meriden. ....
<i>Sampled by Purchaser:</i>		
15188	Apothecaries Hall Co. ....	Barnes Bros. Nursery Co. ....
14344	.....	Chas. Johnson, Gaylordsville. ....
15389	Apothecaries Hall Co. ....	A. N. Pierson, Inc., Cromwell. ....
15382	Godfrey Fertilizer & Chem'l Co., Newark, N. J. ....	A. N. Pierson, Inc., Cromwell. ....
15383	Godfrey Fertilizer & Chemical Co., Newark, N. J. ....	A. N. Pierson, Inc., Cromwell. ....
15384	Godfrey Fertilizer & Chemical Co., Newark, N. J. ....	A. N. Pierson, Inc., Cromwell. ....
15774	Godfrey Fertilizer & Chemical Co., Newark, N. J. ....	A. N. Pierson, Inc., Cromwell. ....

<sup>1</sup> 0.16 per cent. nitrogen in nitrates.

#### BONE MANURES.

Table VI, page 30.

The analyses of 19 samples, of which 15 were drawn by the Station Agent, are given in table VI.

14420 is not a brand registered in this State, but is stated to have been shipped by mistake to E. N. Austin by the Springfield Rendering Co., Springfield, Mass.

One sample, 15065, from the Piedmont-Mt. Airy Guano Co., failed to meet its guaranty of nitrogen.

The average amounts of nitrogen and phosphoric acid found in these samples have been 3.43 and 23.45 per cent. respectively, and the average cost, ranging from \$51.50 to \$76, has been \$63.15. Allowing 50 cents per pound for nitrogen, phosphoric acid has cost 6.1 cents.

#### GARBAGE TANKAGE.

14696 is tankage prepared from city garbage. Sent by the Health Dept., Bridgeport. It contained 2.30 per cent. of nitrogen and 3.30 per cent. of phosphoric acid. 78 per cent. of the material was in particles coarser than 1-50 inch.

## SLAUGHTER HOUSE TANKAGE.

Nitrogen.				Phosphoric acid.		Mechanical analysis.		Cost per ton.
As ammonia.	As organic.	Total found.	Total guaranteed.	Found.	Guaranteed.	Finer than 1-50 inch.	Coarser than 1-50 inch.	
0.14	5.55	5.69	5.79	16.49	15.00	33.00	67.00	\$65.00
0.61	.....	3.95	4.93	4.73	14.00	51.00	49.00	56.50
0.54	2.94	3.48	3.23	22.88	25.42	47.00	53.00	40.00
0.18	3.09	3.27	3.23	22.98	25.42	41.00	59.00	45.00
0.16	4.70	4.86	4.93	10.82	13.73	49.00	51.00	57.00
0.10	7.31	7.57 <sup>1</sup>	7.40	9.81	15.00	65.00	35.00	75.50
0.23	5.82	6.05	6.34	14.24	12.20	34.00	66.00	60.49
0.12	7.02	7.14	.....	11.82	.....	.....	.....	.....
.....	.....	3.23	.....	25.57	.....	.....	.....	.....
.....	.....	3.92	.....	5.54	.....	.....	.....	.....
.....	.....	4.46	.....	12.45	.....	.....	.....	.....
.....	.....	4.23	.....	10.93	.....	.....	.....	.....
0.30	4.20	4.50	4.84	10.67	12.00	.....	.....	.....

## MIXED BONE AND TANKAGE.

**14866.** Listers Celebrated Ground Bone and Tankage Acidulated, made by Listers Agricultural Chemical Works, Newark, N. J. Stock of S. J. Orr, West Suffield; cost \$54 per ton.

## PERCENTAGE COMPOSITION OF MIXED BONE AND TANKAGE.

Total nitrogen found.....	2.81
Total nitrogen guaranteed.....	2.67
Total phosphoric acid found.....	13.42
Total phosphoric acid guaranteed.....	12.00

## AVERAGE COST OF PLANT FOOD IN FERTILIZER MATERIALS

From the foregoing analyses of the various fertilizing materials sold in Connecticut during the present year, the following statement is prepared showing what has been the approximate average cost per pound of nitrogen, phosphoric acid and potash:

TABLE VI. ANALYSES OF

Station No.	Manufacturer and Brand.	Dealer or Purchaser.
<i>Sampled by Station:</i>		
15056	Am. Agr. Chem. Co., Fine Ground Bone..	Spencer Bros., Suffield.....
15060	Atlantic Packing Co., Fine Bone Meal..	T. H. Eldredge, Norwich.....
15062	Berkshire Fertz. Co., Fine Ground Bone..	Manufacturer.....
15057	Bowker Fertz. Co., Fresh Ground Bone..	Israel Andrews, Milldale.....
15063	Coe-Mortimer Co., Fine Ground Bone....	Morrison & Dunham, Bethel.....
15055	L. T. Frisbie Co., Fine Bone Meal.....	Stanley Svea Coal Co., New Britain
15064	Lowell Fertz. Co., Ground Bone 2½—26.	S. T. Welden, Simsbury.....
14420	Manchester Rendering Co., Manchester, New Hampshire.....	E. N. Austin, Suffield.....
15061	Pawtucket Ren. Co., Ground Bone.....	Chas. A. Templeton, Inc., Waterbury
15065	Piedmont—Mt. Airy Guano Co., Bone Meal	Farmers' Exchange, Woodstock....
15058	Rogers & Hubbard Co., Strictly Pure Fine Bone.....	Joseph Kincaid, Jr., Middletown...
15124	Rogers & Hubbard Co., Pure Raw Knuckle Bone Flour.....	Cadwell & Jones, Hartford.....
15053	Sanderson Fertz. & Chem. Co., Fine Ground Bone.....	Manufacturer.....
15054	M. L. Shoemaker, Swift-Sure Bone Meal.	Olds & Whipple, Hartford.....
15059	Worcester Rendering Co., Prosperity.... Royal Worcester Ground Steamed Bone	G. M. Williams Co., New London..
<i>Sampled by Purchaser.</i>		
15209	Armour Fertz. Co., Bone Meal.....	Horace Homer, Cos Cob.....
14298	Berkshire Fertz. Co., Bone Meal.....	A. T. Henry, Wallingford.....
14341	L. T. Frisbie Co., Pure Fine Ground Bone	A. E. Plant Son's Co., Branford....
14396	.....	John H. Gasser, Bethel.....

	Cents per pound.
Nitrogen in nitrates.....	25.6
sulphate of ammonia.....	23.6
cotton seed meal.....	54.5* to 61.2
castor pomace.....	48.6* to 52.8
fish.....	52.5†
Total phosphoric acid in raw ground rock.....	2.7
in "barium-phosphate".....	6.7 to 7.2
bone.....	6.1‡
Available phosphoric acid in precipitated phosphate..	7.5
basic lime phosphate.....	8.4
acid phosphate.....	10.1
Potash.....	(about) 16.0

\* Allowing 7 cents and 12 cents, respectively, for the phosphoric acid and potash contained in it.

† Allowing 10.1 cents per pound for available phosphoric acid.

‡ Allowing 50 cents per pound for the nitrogen.

## BONE MANURES.

Nitrogen.		Phosphoric acid.		Mechanical analysis.		Cost per ton.
Found.	Guaranteed.	Found.	Guaranteed.	Finer than 1-50 inch.	Coarser than 1-50 inch.	
3.64	2.47	23.16	22.88	40	60	\$58.00
2.72	2.05	26.38	25.00	62	38	63.00
4.20	3.30	20.24	20.00	46	54	60.00
2.59	2.47	26.17	22.88	64	36	61.00
2.51	2.47	25.13	22.83	69	31	60.00
3.24	2.47	26.02	20.00	48	52	64.00
3.32	2.05	24.82	27.00	43	57	52.00
2.85	2.50	25.38	26.00	52	48	.....
3.98	2.47	21.36	20.00	59	41	65.00
1.94	2.47	22.29	20.00	51	49	.....
3.67	3.29	23.41	20.59	60	40	73.00
3.84	3.82	24.69	24.70	76	24	76.00
3.39	2.47	23.67	22.88	45	55	51.50
4.72	4.53	24.69	20.00	65	35	70.00
2.90	2.47	23.97	20.00	54	46	68.00
2.18	.....	27.03	.....	47	53	.....
4.63	4.11	18.86	.....	..	..	.....
3.57	2.47	24.46	20.00	44	56	.....
4.04	.....	17.49	.....	..	..	60.00

It appears that mineral forms of nitrogen, in nitrates and sulphate of ammonia, have cost only half as much as in most organic forms. There is no question that they are more quickly and completely available than other forms, and under most conditions more economical to use at the present time. Moreover, in comparison with organic forms, they will have to be used in relatively larger amounts in the future. Organic materials, tankage, fish, cotton seed meal, and even bone to a smaller extent, are being used more and more as cattle feeds. Their prices have greatly increased and the supply for fertilizers greatly diminished.

In the brands of mixed fertilizers sold in the State, mineral forms of nitrogen in 1890 made 21.5 per cent. of the total nitrogen; in 1900, 22 per cent.; in 1910, 41 per cent.; and in 1919, 49 per cent.



Other forms of mineral nitrogen, such as nitrate of ammonia, nitrate of lime and phosphate of ammonia, obtained by the fixation of atmospheric nitrogen, will doubtless be put on the market in the near future.

The Stations and the users of fertilizers have the problem of determining which forms of mineral nitrogen are the most convenient and economical for use, mixed or unmixed, on our various crops.

## V. MIXED FERTILIZERS.

### NITROGENOUS SUPERPHOSPHATES WITHOUT POTASH.

In the following table are analyses of 92 samples, 89 of which were drawn by the Station Agent by the methods prescribed by law.

#### COMPOSITION AND COST OF THE BRANDS.

4 samples have a guaranty of .82 per cent. nitrogen.							
16	"	"	"	"	1.65	"	"
8	"	"	"	"	2.47	"	"
21	"	"	"	"	3.25	"	"
28	"	"	"	"	4.11	"	"
12	"	"	"	still higher nitrogen guaranty.			
<hr/>							
89							

This year 68% of the brands had 3.25 per cent. or more of nitrogen (equivalent to 4 per cent. ammonia). Last year the percentage was 58. This indicates that in general the brands sold this year have been of higher grade than last year. The National Fertilizer Association has urged on manufacturers the abandonment of low grade brands, and the Station has repeatedly pointed out the false economy of buying "cheap" or low grade goods.

The question for the buyer to decide is not what brands are cheapest, but in what brands available nitrogen, phosphoric acid and potash can be most cheaply bought.

The following average figures are taken from the table of analyses:

GUARANTY.			
Nitrogen.	Available Phos. acid.	Cost per ton.	With available phos. acid worth 10 cents per lb. nitrogen costs, cents per lb.
0.82	10	\$46.00	158.0
1.65	10	48.03	84.9
2.87	10	52.97	66.7
2.57	10	55.65	62.1
3.29	10	58.61	58.7
4.11	8	61.75	55.6

The lowest priced brand, .82-10, sells for \$46, and the nitrogen in it costs over \$1.50 per pound.

The highest priced brand, 4.11-8, sells for \$61.75, but the nitrogen in it costs only about one-third as much as it does in the lowest priced brand.

#### GUARANTIES.

Two of the brands examined were deficient in nitrogen, 13 in available phosphoric acid, and 7 in both of these ingredients.

In most cases, however, a deficiency of one ingredient was made up in money equivalent by an overrun of the other ingredient.

Nine samples, however, failed to thus make good the money equivalent by the amounts named below, available phosphoric acid being valued at 10 cents and nitrogen at 50 cents per pound.

15119	A. A. C. Co.'s Special Vegetable Fertilizer	\$3.30
15025	Armour's 4-10-0	3.80
14751	Atlantic Packing Co.'s 4-8	1.92
14546	Frisbie's 2-8	1.46
14651	" 5-8	5.62
15078	Lowell Fertz. Co.'s Tobacco 5-6	3.52
15010	Parmenter & Polsey Fertzr. Co.'s Tobacco 5-4	2.18
14945	Piedmont-Mt. Airy Guano Co.'s Brown's Special Fertilizer	6.88
14610	Royster Guano Co.'s Landmark	3.40

#### QUALITY OF THE NITROGEN.

The solubility of the organic nitrogen has been determined in all samples, and in no case was evidence found of the presence of inferior ammoniates.

#### ANALYSES NEEDING SPECIAL NOTICE.

**14651.** Frisbie's 5-8 was below its guaranteed composition in both nitrogen and "available" phosphoric acid. The firm wrote that it would endeavor to adjust the shortage with the purchaser, and believing that the analysis did not represent the average quality of the goods, asked that another sample be drawn. This was done and analysis No. **15163** of the same brand fully met the guaranty.

**14610.** Royster's Landmark was also below the guaranteed composition in both nitrogen and "available" phosphoric acid.

The firm asked to have another sample analyzed, but the sampling agent was unable to find it in stock in the state.

TABLE VII. NITROGENOUS SUPERPHOSPHATES

Station No.	Manufacturer and Brand.	Place of Sampling.
<i>Sampled by Station:</i>		
<b>American Agricultural Chem. Co., New York City.</b>		
14949	Ammoniated Fertilizer A.....	North Haven.....
14794	Ammoniated Fertilizer AA.....	New Canaan.....
14952	Ammoniated Fertilizer AAA.....	Southport.....
14525	Ammoniated Fertilizer AAAA.....	Southport.....
14875	Ammoniated Fertilizer AAAA.....	New Haven.....
15115	Five Eight Fertilizer.....	Windsor.....
15119	*Special Vegetable Fertilizer.....	Rockville.....
14862	Tobacco Special.....	Simsbury.....
14688	Bradley's Special Corn Phosphate without Potash.....	Norwich.....
14689	Bradley's Special Potato Fertz. without Potash.....	Norwich.....
<b>Apothecaries Hall Co., Waterbury, Conn.</b>		
14957	Liberty Corn, Fruit and All Crops.....	Waterbury.....
14796	Liberty Market Gardeners' Special.....	Cheshire.....
14958	Liberty Potato and Vegetable Special.....	Waterbury.....
14747	Liberty Tobacco Special.....	Windsorville.....
14858	Liberty Top Dresser for Grass and Grain.....	Waterbury.....
<b>Armour Fertilizer Works, Chrome, N. J.</b>		
15025	*4-10-0.....	Waterbury.....
<b>Atlantic Packing Co., New Haven, Conn.</b>		
14797	Atlantic 2-8.....	New Britain.....
14751	*Atlantic 4-8.....	Norwich.....
<b>Berkshire Fertilizer Co., Bridgeport, Conn.</b>		
14873	Economical Grass Fertilizer.....	Ellington.....
15024	Grass Special.....	Chester.....
14792	Long Island Special.....	Milford.....
14590	Tobacco Grower.....	Ellington.....
14904	Tobacco Starter.....	Suffield.....
<b>F. E. Boardman, Middletown, Conn.</b>		
14859	Fertilizer for General Crops.....	Middletown.....
<b>Bowker Fertilizer Co., New York City.</b>		
15035	Superphosphate with Ammonia 2%.....	Watertown.....
14597	Superphosphate with Ammonia 3%.....	Milldale.....
14744	Superphosphate with Ammonia 4%.....	Milldale.....
14909	Superphosphate with Ammonia 5%.....	South Manchester.....
14640	Tobacco Grower.....	Thompsonville.....

\* See note, page 33.

NITROGENOUS SUPERPHOSPHATES.

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WITHOUT POTASH

Dealer's cash price per ton.	Nitrogen.						Phosphoric Acid.						Station No.	
	In nitrates.	In ammonia.	Organic, water-soluble.	Organic, water-insoluble.	Total.		Water-soluble.	Citrate-soluble.	Citrate-insoluble.	Total.		So-called "Available."		
					Found.	Guaranteed.				Found.	Guaranteed.	Found.		Guaranteed.
\$50.00	none	0.26	0.37	0.41	1.04	0.82	7.50	3.24	0.82	11.56	11.00	10.74	10.00	14949
50.00	0.17	0.54	0.63	0.87	2.21	1.65	4.27	5.53	1.45	11.25	11.00	9.80	10.00	14794
63.00	0.18	0.85	0.25	1.39	2.67	2.47	5.94	4.30	1.32	11.56	11.00	10.24	10.00	14952
58.00	0.55	0.66	0.86	1.60	3.67	3.29	6.00	3.62	2.85	12.47	11.00	9.62	10.00	14525
55.00	0.52	0.67	0.80	1.58	3.57	3.29	5.89	4.10	2.61	12.60	11.00	9.99	10.00	14875
....	1.58	0.12	1.30	1.50	4.50	4.11	4.86	3.75	1.93	10.54	9.00	8.61	8.00	15115
58.00	1.15	1.00	0.04	0.83	3.02	3.29	5.89	3.81	1.39	11.09	11.00	9.70	10.00	15119
76.25	1.20	0.04	0.09	3.03	4.36	4.11	1.08	3.84	0.27	5.19	5.00	4.92	4.00	14862
48.00	none	0.45	0.47	0.92	1.84	1.65	5.84	4.40	2.53	12.77	11.00	10.24	10.00	14688
48.00	0.13	0.46	0.18	0.99	1.76	1.65	6.36	3.98	2.53	12.87	11.00	10.34	10.00	14689
43.20	none	0.33	0.73	0.84	1.90	1.65	7.23	3.06	1.30	11.59	11.00	10.29	10.00	14957
....	none	1.67	0.44	1.27	3.38	3.29	8.97	2.54	0.14	11.65	11.00	11.51	10.00	14796
48.60	none	1.09	0.67	0.80	2.56	2.47	8.69	2.59	0.78	12.06	11.00	11.28	10.00	14958
72.20	0.19	0.87	0.13	3.13	4.32	4.11	3.06	1.87	0.55	5.48	5.00	4.93	4.00	14747
66.50	0.12	3.02	0.42	1.40	4.96	4.94	6.99	1.83	0.72	9.54	9.00	8.82	8.00	14858
59.00	0.10	1.28	0.33	1.17	2.88	3.29	7.91	2.24	1.18	11.33	10.50	10.15	10.00	15025
48.00	0.07	0.54	0.43	0.59	1.63	1.64	4.38	3.42	0.29	8.09	9.00	7.80	8.00	14797
39.75	0.57	0.98	0.69	1.10	3.34	3.28	3.32	3.42	1.83	8.57	9.00	6.74	8.00	14751
82.50	5.62	0.66	0.45	0.53	7.26	7.40	2.23	3.65	0.61	6.49	8.00	5.88	4.00	14873
72.00	2.46	0.99	1.21	0.47	5.13	5.00	2.69	1.85	0.45	4.99	5.00	4.54	4.00	15024
56.50	1.80	0.18	0.27	1.26	3.51	3.30	3.04	5.43	0.61	9.08	9.00	8.47	8.00	14792
70.50	0.34	0.54	0.31	3.32	4.51	4.11	1.27	3.90	0.13	5.30	4.00	5.17	4.00	14590
....	3.05	0.46	0.40	1.38	5.29	5.00	1.37	3.52	0.33	5.22	5.00	4.89	4.00	14904
50.00	1.25	0.58	0.08	1.70	3.61	3.29	3.17	3.86	0.97	8.00	...	7.03	7.00	14859
47.00	0.22	0.20	0.32	0.97	1.71	1.65	5.18	4.85	1.75	11.78	11.00	10.03	10.00	15035
54.75	none	1.04	0.27	1.50	2.81	2.47	6.46	3.72	1.70	11.88	11.00	10.18	10.00	14597
60.75	0.97	1.22	0.09	1.28	3.56	3.29	6.55	3.94	1.19	11.68	11.00	10.49	10.00	14744
....	0.89	1.07	0.60	1.71	4.27	4.11	8.04	2.69	1.01	11.74	9.00	10.73	8.00	14909
70.00	0.72	0.53	none	3.16	4.41	4.11	1.42	3.88	0.20	5.50	5.00	5.30	4.00	14640

TABLE VII. NITROGENOUS SUPERPHOSPHATES

Station No.	Manufacturer and Brand.	Place of Sampling.
<i>Sampled by Station:</i>		
<b>E. D. Chittenden Co., Bridgeport, Conn.</b>		
14906	Complete Tobacco & Onion Grower without Potash..	Suffield
14908	Tobacco Special without Potash.....	Enfield.....
14976	Vegetable and Onion Grower without Potash.....	Greens Farms.....
<b>E. B. Clark Seed Co., Milford, Conn.</b>		
14815	Special Mixture for General Use.....	Milford.....
<b>The Coe-Mortimer Co., New York City.</b>		
14775	Gardeners' and Truckers' Special 1916.....	Greenwich.....
14814	High Grade Ammoniated Superphosphate 1916.....	Milford.....
14774	Prolific Crop Producer 1916.....	Greenwich.....
14973	Tobacco Special.....	South Windsor.....
<b>The Essex Fertilizer Co., Boston, Mass.</b>		
14914	3½-10.....	Wallingford.....
15083	Tobacco 5-6.....	East Granby.....
<b>The L. T. Frisbie Co., New Haven, Conn.</b>		
14546	*2-8.....	New Britain.....
14913	5-6.....	Glastonbury.....
14651	*5-8.....	East Hartford.....
15163	5-8.....	Branford.....
<b>The Hubbard Fertilizer Co., Baltimore, Md.</b>		
15044	4-10-0.....	Ellington.....
<b>International Agricultural Corp., Buffalo, N. Y.</b>		
14772	Buffalo Ammoniated Phosphate.....	Ansonia.....
14863	Buffalo Three Ten.....	Tariffville.....
15128	Buffalo Tobacco Grower.....	West Suffield.....
14820	Buffalo Tobacco Special.....	East Granby.....
15009	Buffalo Top Dresser and Starter.....	East Granby.....
14821	I. A. C. Tobacco Crop.....	Tariffville.....
<b>Lister's Agricultural Chemical Works, Newark, N. J.</b>		
14823	Plant Food 1916.....	Danbury.....
14822	Superior Ammoniated Superphosphate 1916.....	Danbury.....
<b>Lowell Fertilizer Co., Boston, Mass.</b>		
15082	3½-10-0.....	Bloomfield.....
14943	5-8.....	Wallingford.....
15051	Dissolved Bone Fertilizer 2-10.....	Shelton.....
15078	*Tobacco 5-6.....	South Manchester.....

\*See note, page 33.

WITHOUT POTASH—(Continued).

Dealer's cash price per ton.	Nitrogen.						Phosphoric Acid.						Station No.	
	In nitrates.	In ammonia.	Organic, water-soluble.	Organic, water-insoluble.	Total.		Water-soluble.	Citrate-soluble.	Citrate-insoluble.	Total.		"So-called Available."		
					Found.	Guaranteed.				Found.	Guaranteed.	Found.		Guaranteed.
....	1.37	1.01	0.08	0.67	3.13	3.29	9.46	1.38	0.20	11.04	11.00	10.84	10.00	14906
\$63.00	2.14	0.06	0.18	2.09	4.47	4.11	4.14	1.60	0.32	6.06	5.00	5.74	4.00	14908
....	1.33	0.52	none	0.64	2.49	2.47	7.32	3.38	0.79	11.49	11.00	10.70	10.00	14976
45.00	0.10	2.40	0.14	0.84	3.48	3.29	8.15	2.17	0.64	10.96	10.50	10.32	10.00	14815
59.75	0.97	1.80	0.37	1.07	4.21	4.11	4.57	3.82	0.87	9.26	9.00	8.39	8.00	14775
51.00	none	1.06	0.26	1.22	2.54	2.47	6.82	3.87	1.54	12.23	11.00	10.69	10.00	14814
81.00	0.82	1.07	0.51	0.95	3.35	3.29	6.78	3.58	1.20	11.56	11.00	10.36	10.00	14774
....	none	0.06	1.29	2.85	4.20	4.11	1.02	4.00	0.15	5.17	5.00	5.02	4.00	14973
55.00	0.13	1.18	0.47	1.02	2.80	2.87	6.03	3.83	0.78	10.64	11.00	9.86	10.00	14914
70.00	0.98	0.08	0.88	1.72	3.66	4.11	1.77	3.24	2.06	7.07	7.00	5.01	6.00	15083
48.00	none	0.48	0.59	0.58	1.65	1.65	4.20	3.07	0.37	7.64	9.00	7.27	8.00	14546
65.00	1.09	0.07	0.84	1.61	3.61	4.10	2.51	3.23	2.15	7.89	7.00	5.74	6.00	14913
59.75	1.24	0.10	0.81	1.50	3.65	4.10	2.93	4.51	2.92	10.36	9.00	7.44	8.00	14651
65.75	0.78	1.74	1.82		4.34	4.10	4.85	3.21	0.31	8.37	9.00	8.06	8.00	15163
....	1.59	none	1.01	0.47	3.07	3.28	9.35	1.96	0.43	11.74	11.00	11.31	10.00	15044
49.00	0.39	0.07	0.63	0.51	1.60	1.60	8.63	3.80	1.68	14.11	13.00	12.43	12.00	14772
51.50	0.79	0.07	0.76	0.74	2.36	2.50	4.45	6.19	1.33	11.97	11.00	10.64	10.00	14863
....	1.98	none	0.56	1.50	4.04	4.10	1.69	3.02	0.46	5.17	5.00	4.71	4.00	15128
63.42	1.62	0.06	0.21	1.33	3.22	3.30	1.34	2.46	0.90	4.70	4.00	3.80	3.00	14820
....	0.37	1.91	1.51	1.86	5.65	5.80	4.03	2.54	1.39	7.96	7.00	6.57	6.00	15009
73.75	2.19	0.07	0.49	1.33	4.08	4.10	2.53	2.53	1.27	6.33	5.00	5.06	4.00	14821
43.00	none	0.11	0.38	0.44	0.93	0.82	7.21	3.32	0.93	11.46	11.00	10.53	10.00	14823
60.75	1.06	1.26	0.35	0.84	3.51	3.29	7.00	2.95	1.61	11.56	11.00	9.95	10.00	14822
57.00	0.12	0.84	0.91	1.03	2.90	2.87	7.20	3.70	2.00	12.90	11.00	10.90	10.00	15082
....	0.74	1.38	0.91	1.16	4.19	4.10	5.59	3.41	0.70	9.70	9.00	9.00	8.00	14943
....	0.16	0.62	0.39	0.60	1.77	1.64	4.32	4.64	1.29	10.25	11.00	8.96	10.00	15051
73.00	1.28	none	0.92	1.54	3.74	4.10	2.12	2.92	2.12	7.16	6.00	5.04	5.00	15078

TABLE VII. NITROGENOUS SUPERPHOSPHATES

Station No.	Manufacturer and Brand.	Place of Sampling.
	<i>Sampled by Station:</i>	
	<b>The Mapes Formula and Peruvian Guano Co., New York City.</b>	
14741	General Crop 1916.....	Windsor Locks.....
	<b>National Fertilizer Co., New York City.</b>	
14588	5-4 Tobacco Manure.....	South Manchester.....
14516	Nitrogen Phosphate Mixture No. 1.....	Guilford.....
14540	Nitrogen Phosphate Mixture No. 2.....	Guilford.....
14652	Nitrogen Phosphate Mixture No. 3.....	Silver Lane.....
14740	Nitrogen Phosphate Mixture No. 4.....	Guilford.....
	<b>New England Fertilizer Co., Boston, Mass.</b>	
14833	3½-10.....	Hamden.....
14643	Tobacco 5-4.....	Warehouse Point.....
	<b>Olds &amp; Whipple, Hartford, Conn.</b>	
15148	Grass Fertilizer.....	Hartford.....
14840	High Grade Tobacco Starter.....	Simsbury.....
15156	High Grade Tobacco Starter.....	East Windsor Hill.....
14990	Tobacco Special Fertilizer.....	Hartford.....
14709	Tobacco Special Fertilizer.....	East Windsor Hill.....
	<b>Parmenter and Polsey Fertilizer Co., Boston, Mass.</b>	
15077	2-10.....	Plainville.....
14839	3½-10.....	Rocky Hill.....
15010	*Tobacco 5-4.....	Glastonbury.....
	<b>Piedmont-Mt. Airy Guano Co., Baltimore, Md.</b>	
14945	*Brown's Special Fertilizer.....	Woodstock.....
	<b>F. S. Royster Guano Co., Baltimore, Md.</b>	
14610	*Landmark.....	Waterbury.....
14880	Perfecto Tobacco Formula.....	Granby.....
14727	Prime Fish Brand.....	Shelton.....
15004	Purity.....	Plantville.....
15127	Stevens' Formula.....	Glastonbury.....
	<b>Sanderson Fertilizer and Chemical Co., New Haven, Conn.</b>	
14776	High Grade Ammoniated Phosphate.....	Highwood.....
14573	Phosphate without Potash.....	New Haven.....
14923	Special without Potash.....	Middlefield.....
14718	Tobacco Grower.....	East Hartford.....
14581	Top Dressing for Grass and Grain without Potash.....	Milford.....
14635	Top Dressing for Grass and Grain without Potash.....	Meriden.....

\* See note, page 33.

WITHOUT POTASH—(Continued).

Dealer's cash price per ton.	Nitrogen.						Phosphoric Acid.						Station No.	
	In nitrates.	In ammonia.	Organic, water-soluble.	Organic, water-insoluble.	Total.		Water-soluble.	Citrate-soluble.	Citrate-insoluble.	Total.		So-called "Available".		
					Found.	Guaranteed.				Found.	Guaranteed.	Found.		Guaranteed.
\$46.00	0.93	0.07	0.09	0.72	1.81	1.65	4.73	3.71	2.38	10.82	10.00	8.44	8.00	14741
70.50	1.17	0.07	0.07	2.78	4.09	4.11	1.08	4.66	0.38	6.12	5.00	5.74	4.00	14588
45.00	none	0.23	0.56	0.37	1.16	0.82	7.65	4.03	0.73	12.41	11.00	11.68	10.00	14516
50.00	none	0.42	0.86	0.74	2.02	1.65	5.80	4.29	1.16	11.25	11.00	10.09	10.00	14540
....	0.71	0.60	0.61	1.59	3.51	2.47	6.12	3.75	2.35	12.22	11.00	9.87	10.00	14652
65.00	0.55	0.67	0.67	1.63	3.52	3.29	5.72	4.30	2.49	12.51	11.00	10.02	10.00	14740
55.00	0.15	0.81	0.65	1.29	2.90	2.87	6.71	3.59	2.72	13.02	11.00	10.30	10.00	14833
72.00	0.64	0.45	0.79	1.52	3.40	4.10	0.86	2.34	1.34	4.54	5.00	3.20	4.00	14643
61.27	2.88	0.12	0.81	1.74	5.55	4.95	3.42	5.64	0.82	9.88	8.00	9.06	8.00	15148
71.25	3.23	0.21	0.20	4.59	8.23	8.23	2.28	2.17	0.46	4.91	3.00	4.45	3.00	14840
97.38	....	....	....	....	8.04	8.23	....	....	....	5.65	3.00	....	....	15156
....	0.86	0.11	0.11	3.25	4.33	4.11	2.10	3.14	0.41	5.65	4.00	5.24	4.00	14990
....	0.66	0.11	none	3.63	4.40	4.11	0.73	5.28	0.58	6.59	4.00	6.01	4.00	14709
50.00	0.20	0.25	0.49	0.64	1.58	1.64	6.85	3.42	1.50	11.77	11.00	10.27	10.00	15077
55.60	0.16	0.81	0.29	1.68	2.94	2.87	6.84	3.27	2.85	12.96	11.00	10.11	10.00	14839
64.50	1.35	0.11	0.94	1.56	3.96	4.10	0.63	2.98	1.56	5.17	5.00	3.61	4.00	15010
49.50	1.08	0.21	0.59	0.61	2.49	3.29	7.07	3.49	1.20	11.76	...	10.56	10.00	14945
60.00	0.21	1.40	0.25	1.23	3.09	3.29	6.88	2.42	1.54	10.84	10.50	9.30	10.00	14610
73.00	0.37	0.63	0.07	2.43	3.50	4.11	3.04	1.94	0.41	5.39	4.50	4.98	4.00	14880
45.00	0.42	0.64	0.03	0.62	1.71	1.65	5.64	2.36	0.88	8.88	8.50	8.00	8.00	14727
....	0.08	0.43	none	0.49	1.00	0.82	4.41	3.70	0.92	9.03	8.50	8.11	8.00	15004
....	0.44	0.75	0.01	2.52	3.72	4.11	2.46	1.85	0.22	4.53	4.50	4.31	4.00	15127
....	0.56	0.66	0.87	1.52	3.61	3.29	5.41	4.45	3.02	12.88	11.00	9.86	10.00	14776
....	none	0.43	0.76	0.71	1.90	1.65	5.65	4.17	1.23	11.05	11.00	9.82	10.00	14573
49.00	none	0.23	0.77	1.64	2.64	2.47	7.58	2.30	1.60	11.48	11.00	9.88	10.00	14923
71.00	0.81	0.08	none	3.60	4.49	4.11	1.51	4.09	0.32	5.92	5.00	5.60	4.00	14718
....	0.56	1.13	0.63	1.76	4.08	4.11	7.19	2.84	1.59	11.62	11.00	10.03	10.00	14581
56.40	0.79	0.94	0.65	1.65	4.03	4.11	7.40	2.69	1.50	11.59	11.00	10.09	10.00	14635



TABLE VII. NITROGENOUS SUPERPHOSPHATES

Station No.	Manufacturer and Brand.	Place of Sampling.
	<i>Sampled by Station:</i>	
	<b>M. S. Shoemaker &amp; Co., Philadelphia, Pa.</b>	
14583	Swift-Sure Superphosphate for Tobacco.....	Windsor Locks.....
14877	Swift-Sure Superphosphate for Tobacco.....	Meriden.....
	<b>Virginia-Carolina Chemical Co., New York City.</b>	
15073	Monarch Brand.....	North Haven.....
15140	Pawnee Brand.....	Granby.....
	<b>Wilcox Fertilizer Co., Mystic, Conn.</b>	
14722	Grain Fertilizer.....	Mystic.....
	<i>Sampled by Purchasers:</i>	
15052	National Fertilizer Co.'s Tobacco Manure 5-4-0....	Thompsonville: Henry Davis
14373	Rogers and Hubbard's Climax Tobacco Brand.....	Windsor: F. H. Thrall.....
	<i>Manufacturer's Sample:</i>	
14308	L. T. Frisbie's 2-8.....	New Haven.....

## NITROGENOUS SUPERPHOSPHATES CONTAINING POTASH.

In the following table are given 246 analyses of brands belonging to this class, 226 of which were sampled by the Station Agent.

The number of brands containing potash is twice as great as it was the year before.

Only seven brands contained six per cent. or more but 138 contained between three and five per cent. of potash.

## COMPOSITION AND COST OF THE BRANDS.

The cost of nitrogen per pound has been calculated in all the brands having the composition given below, allowing 10 cents per pound for available phosphoric acid and 16 cents per pound for potash.

Formula.	No. of Analyses.	Average cost.	Nitrogen costs per pound.
.82-8-2	7	\$50.66	\$1.91
1.65-8-2	25	53.06	.93
2.47-8-4	15	62.87	.68
3.29-8-4	21	65.79	.56
4.11-4-3	12	82.96	.80

WITHOUT POTASH—(Concluded).

Dealer's cash price per ton.	Nitrogen.						Phosphoric Acid.						Station No.	
	In nitrates.	In ammonia.	Organic, water-soluble.	Organic, water-insoluble.	Total.		Water-soluble.	Citrate-soluble.	Citrate-insoluble.	Total.		"So-called Available".		
					Found.	Guaranteed.				Found.	Guaranteed.	Found.		Guaranteed.
\$58.00	none	0.99	0.71	1.85	3.55	3.29	3.85	5.18	3.84	12.87	12.00	9.03	10.00	<b>14583</b>
52.00	0.12	1.38	0.52	1.60	3.62	3.29	5.89	4.88	3.34	14.11	12.00	10.77	10.00	<b>14877</b>
44.00	0.13	0.16	0.47	0.95	1.71	1.65	8.76	2.63	1.24	12.63	12.00	11.39	11.00	<b>15073</b>
74.25	0.28	0.58	1.55	1.63	4.04	4.11	3.31	1.07	0.69	5.07	5.00	4.38	4.00	<b>15140</b>
....	0.18	0.30	0.19	1.15	1.82	1.64	6.33	3.27	2.60	12.20	11.00	9.60	10.00	<b>14722</b>
....	..	..	...	...	4.42	...	...	...	...	5.94	...	...	...	<b>15052</b>
....	..	..	...	...	4.02	4.11	...	...	...	5.87	5.00	...	...	<b>14373</b>
....	none	..	...	...	1.65	...	...	...	...	9.11	...	...	...	<b>14308</b>

Here again it appears that nitrogen in low grade mixtures costs more than twice as much as in the higher grades in spite of their somewhat lower price and that their purchase is wasteful.

GUARANTIES

Ninety-five out of the 226 analyses do not fully meet their guaranty in every particular. In most cases the deficiency is in one ingredient only, and is more than made good by an overrun in the other two.

In 26 cases there is a deficiency in two or three ingredients, and in the following brands this results in a deficiency in money value.

That is, the value of the amount of plant food guaranteed in a ton of goods, but not supplied, is the sum given in the following statement. For this calculation nitrogen is valued at 50 cents, available phosphoric acid 10 cents, and potash at 16 cents per pound, respectively, which is about their retail selling price. See page 56.

TABLE VIII. NITROGENOUS SUPERPHOSPHATES

Station No.	Manufacturer and Brand.	Place of Sampling.	Dealer's cash price per ton.
<i>Sampled by Station:</i> <b>American Agricultural Chemical Co., New York City.</b>			
14611	Double A Tobacco Fertilizer.....	Suffield.....	\$85.00
15116	Fish and Potash.....	Windsor.....	.....
14786	Grass and Lawn Top Dressing.....	New London.....	95.00
14947	Grass and Oats Fertilizer.....	Southington.....	.....
14953	Monarch Potato Manure.....	Southport.....	68.00
14692	Sure Growth Phosphate Revised.....	Thompsonville.....	62.00
14684	Universal Phosphate.....	New London.....	55.00
15120	Bradley's Alkaline Bone with Potash.....	Rockville.....	42.00
14951	Bradley's B. D. Guano.....	North Haven.....	47.25
14686	Bradley's Corn Phosphate.....	Norwich.....	52.00
15118	Bradley's Half Century Fertilizer Revised.....	Granby.....	.....
14793	Bradley's New Method Fertilizer.....	Norwalk.....	50.00
15118	Bradley's Patent Superphosphate Revised.....	Hamden.....	51.00
14687	Bradley's Potato Fertilizer.....	Norwich.....	55.00
14517	Bradley's Potato Manure.....	Hamden.....	62.00
14693	Bradley's Unicorn.....	Thompsonville.....	54.00
14980	Bradley's Valley Tobacco Fertilizer.....	New Milford.....	90.00
15139	Bradley's XL Superphosphate of Lime.....	Mansfield.....	59.00
15122	East India Black Hawk Potato and Truck Fertz.....	Gaylordsville.....	65.75
14950	East India Economizer Phosphate.....	North Haven.....	58.00
15034	East India Mayflower.....	Watertown.....	.....
15121	East India Tobacco Fertilizer.....	Gaylordsville.....	81.00
14954	Great Eastern General.....	Waterford.....	52.00
15031	Great Eastern North Corn Special 1920.....	Warehouse Point.....	50.00
14981	Great Eastern Potato Manure, 1920.....	New Milford.....	53.00
15046	Packer's Union Animal Corn Fertilizer.....	Litchfield.....	58.00
14965	Packer's Union Potato Manure 1920.....	Southington.....	.....
14791	Quinnipiac Ammoniated Dissolved Phosphate.....	Milford.....	47.00
14524	Quinnipiac Climax Phosphate.....	Southport.....	45.00
14657	Quinnipiac Corn Manure.....	New London.....	60.00
14790	Quinnipiac Phosphate.....	Milford.....	50.00
14545	Quinnipiac Potato Manure.....	Southport.....	61.00
14598	Quinnipiac Wrapper Leaf Brand Tobacco Manure Revised.....	Windsor.....	79.50
15032	Wheeler's Cuban Tobacco Grower.....	Warehouse Point.....	86.00
14787	Williams and Clark's Americus H. G. Special Revised.....	Waterbury.....	72.00
14788	Williams and Clark's Americus Potato Manure.....	Waterbury.....	57.50
14869	Williams and Clark's Matchless Fertilizer.....	South Manchester.....	49.50
15048	Williams and Clark's Prolific Fertilizer.....	New Britain.....	58.00
14910	Williams and Clark's Seed Leaf Tobacco Manure Revised.....	South Manchester.....	82.00
<b>Apothecaries Hall Co., Waterbury, Conn.</b>			
15040	Liberty Market Gardeners' Special.....	Waterbury.....	64.80
14649	Liberty Tobacco Special.....	Windsorville.....	82.00

WITH POTASH.

Nitrogen.						Phosphoric Acid.						Potash.			Station No.	
In nitrates.	In ammonia.	Organic, water-soluble.	Organic, water-insoluble.	Total.		Water-soluble.	Citrate-soluble.	Citrate-insoluble.	Total.		So-called "Available."		As muriate.	Total.		Guaranteed.
				Found.	Guaranteed.				Found.	Guaranteed.	Found.	Guaranteed.				
1.14	0.07	1.53	1.74	4.48	4.11	0.92	4.35	0.19	5.46	5.00	5.27	4.00	1.50	4.78	5.00	14611
0.67	0.08	0.43	1.43	2.61	2.47	5.87	4.57	2.48	12.92	11.00	10.44	10.00	2.01	2.01	3.00	15116
2.03	1.16	1.08	0.73	5.00	4.94	4.62	2.80	1.16	8.58	7.00	7.42	6.00	3.82	3.82	4.00	14786
...	...	...	...	0.65	...	6.65	5.32	0.86	12.83	13.00	11.97	12.00	0.82	2.44	2.00	14947
0.13	1.75	0.06	1.56	3.50	3.29	5.41	3.02	1.04	9.47	9.00	8.43	8.00	4.23	4.23	4.00	14953
0.70	0.52	0.39	0.94	2.55	2.47	4.23	4.97	1.71	10.91	10.00	9.20	9.00	0.45	1.92	2.00	14692
0.25	0.31	0.02	0.43	1.01	0.82	3.82	4.23	0.93	8.98	9.00	8.05	8.00	1.54	1.79	2.00	14684
0.11	0.24	0.34	0.53	1.22	0.82	6.37	5.21	0.83	12.41	13.00	11.58	12.00	2.04	2.04	2.00	15120
none	0.50	0.50	0.84	1.84	1.65	5.01	2.73	0.58	8.32	9.00	7.74	8.00	4.81	4.81	4.00	14951
0.25	0.16	0.10	0.99	1.50	1.65	3.87	4.19	1.56	9.62	9.00	8.06	8.00	1.18	1.91	2.00	14686
0.07	0.13	0.32	0.57	1.09	0.82	5.44	3.95	1.23	10.62	9.00	9.39	8.00	3.55	3.55	3.00	15118
0.22	0.46	0.54	0.84	2.06	1.65	4.75	4.02	0.63	9.40	9.00	8.77	8.00	1.82	2.36	2.00	14793
0.50	0.18	0.47	0.62	1.77	1.65	4.64	4.39	1.27	10.30	10.00	9.03	9.00	1.30	1.30	1.00	14518
0.40	0.13	0.76	1.13	2.42	2.47	5.04	3.04	1.60	9.68	9.00	8.08	8.00	2.69	2.69	3.00	14687
0.14	0.72	0.38	0.61	1.85	1.65	3.90	5.20	1.38	10.48	9.00	9.10	8.00	3.06	4.40	4.00	14517
0.97	none	0.37	3.04	4.38	4.11	4.79	3.54	1.55	9.88	9.00	8.33	8.00	2.06	2.06	2.00	14693
0.91	0.83	0.22	0.69	2.65	2.47	1.91	3.88	0.37	6.16	5.00	5.79	4.00	0.48	2.97	3.00	14980
0.73	0.06	0.77	0.96	2.52	3.29	6.74	3.39	0.49	10.62	9.00	9.32	9.00	2.33	2.33	2.00	15139
0.19	0.43	0.35	0.84	1.81	0.82	3.94	4.33	1.24	9.51	9.00	8.27	8.00	2.71	2.71	2.00	14950
0.11	0.59	0.21	0.98	1.89	1.65	6.18	3.30	2.05	11.53	9.00	9.48	8.00	2.24	2.24	2.00	15034
0.85	0.10	0.56	2.61	4.12	4.11	1.22	4.44	0.33	5.99	5.00	5.66	4.00	0.43	2.87	3.00	15121
0.31	0.05	0.08	0.32	0.76	0.82	5.46	2.84	0.22	8.52	9.00	8.30	8.00	5.56	5.56	4.00	14954
0.44	0.09	0.19	1.70	2.42	1.65	4.65	4.42	1.41	10.48	9.00	9.07	8.00	2.04	2.04	2.00	15031
0.09	0.60	0.25	0.72	1.66	1.65	5.64	2.71	0.78	9.13	9.00	8.35	8.00	3.27	3.27	3.00	14981
0.59	0.84	0.26	0.74	2.43	2.47	6.14	3.07	0.91	10.12	10.00	9.21	9.00	2.31	2.31	2.00	15046
0.17	0.31	0.37	0.94	1.79	1.65	5.68	4.58	1.01	11.27	11.00	10.26	10.00	3.99	4.35	4.00	14965
0.24	0.44	0.10	1.09	1.87	1.65	3.84	4.77	0.82	9.43	9.00	8.61	8.00	1.50	2.19	2.00	14791
0.14	0.70	0.41	0.86	2.11	0.82	5.55	2.44	1.39	9.38	9.00	7.99	8.00	2.22	2.22	2.00	14524
0.76	0.49	0.22	0.53	2.02	1.65	4.72	4.05	0.33	9.10	9.00	8.77	8.00	2.67	2.67	2.00	14657
0.30	0.80	0.15	1.39	2.64	2.47	4.35	5.08	1.28	10.71	10.00	9.43	9.00	0.90	2.02	2.00	14790
0.40	0.18	0.73	1.26	2.57	2.47	4.11	4.70	1.73	10.54	9.00	8.81	8.00	2.90	3.79	4.00	14545
1.08	0.04	0.52	2.73	4.37	4.11	0.94	5.47	0.37	6.78	5.00	6.41	4.00	0.65	3.03	3.00	14598
0.79	0.05	0.91	2.56	4.31	4.11	1.15	4.19	0.54	5.88	5.00	5.34	4.00	0.58	5.10	5.00	15032
1.20	1.01	0.54	0.68	3.43	3.29	5.54	3.00	1.02	9.56	9.00	8.54	8.00	3.87	3.87	4.00	14787
0.14	0.55	0.29	0.97	1.95	1.65	2.36	3.31	1.30	9.97	9.00	8.67	8.00	1.82	2.96	3.00	14788
0.43	0.60	0.68	1.53	3.24	1.65	5.02	3.99	1.83	10.84	9.00	9.01	8.00	2.02	2.02	2.00	14869
0.26	0.22	0.27	0.69	1.44	0.82	4.36	3.70	1.05	9.11	8.00	8.06	7.00	0.68	1.80	1.00	15048
0.15	0.96	0.82	2.34	4.27	4.11	0.36	5.40	0.12	5.88	5.00	5.76	4.00	1.22	3.29	3.00	14910
0.24	0.95	0.67	1.67	3.53	3.29	5.30	2.93	0.97	9.20	9.00	8.23	8.00	3.58	3.58	4.00	15040
0.16	0.75	0.31	3.07	4.29	4.11	2.85	1.72	0.43	5.00	5.00	4.57	4.00	0.31	2.41	3.00	14649

TABLE VIII. NITROGENOUS SUPERPHOSPHATES

Station No.	Manufacturer and Brand.	Place of Sampling.	Dealer's cash price per ton.
<i>Sampled by Station:</i>			
<b>Armour Fertilizer Works, Chrome, N. J.</b>			
14750	Cereal Special No. 1.....	New Haven.....	\$67.00
14944	Complete Potato Fertilizer.....	Rockville.....	85.00
14907	Gardeners' Choice Fertilizer.....	Thompsonville.....	62.00
14710	General Crop Fertilizer.....	New Haven.....	44.00
14694	Grain Grower Fertilizer.....	New Haven.....	56.00
14683	Potato, Onion and Vegetable Fertilizer.....	New London.....	63.00
14912	Super-Grade Potato Mixture Fertilizer.....	Rockville.....	75.00
15160	Tobacco Special Fertilizer.....	South Manchester.....	85.00
14748	*Wheat and Clover Fertilizer.....	New Haven.....	55.00
15033	Bidwell's Formula.....	Windsor Locks.....	64.00
<b>Atlantic Packing Co., New Haven, Conn.</b>			
14860	3-8-3.....	New Britain.....	65.00
14690	*Grain Fertilizer.....	Willimantic.....	60.00
14685	Potato Phosphate 3-8-4.....	Norwich.....	53.00
14861	Special Vegetable.....	New Britain.....	75.00
15050	*Tobacco Grower.....	Hockanum.....	84.00
14691	Tobacco Special.....	East Hartford.....	71.76
<b>Berkshire Fertilizer Co., Bridgeport, Conn.</b>			
14789	Ammoniated Bone Phosphate.....	Waterbury.....	54.00
14647	Complete Fertilizer.....	Ellington.....	56.00
14650	Complete Tobacco.....	Hazardville.....	82.00
14743	Market Garden Fertilizer.....	Ellington.....	65.00
14591	Potato and Vegetable Phosphate.....	Ellington.....	47.25
<b>Bowker Fertilizer Co., New York City.</b>			
14594	All Round Fertilizer.....	Hazardville.....	61.00
14641	Connecticut Valley Tobacco Fertilizer.....	Thompsonville.....	80.00
14655	Corn, Grain and Grass Phosphate.....	New London.....	60.00
14593	Fisherman's Brand Fish and Potash.....	Hazardville.....	60.00
14615	Hill and Drill Phosphate.....	Hazardville.....	56.00
14843	Lawn and Garden Dressing Revised.....	New Haven.....	66.00
14703	Potato and Vegetable Phosphate.....	Norwich.....	62.00
14638	Square Brand Farm and Garden Phosphate.....	Milldale.....	53.00
14656	Sure Crop Phosphate Revised.....	New London.....	55.00
15080	Stockbridge Complete.....	Uncasville.....	80.00
14619	Stockbridge Market Garden Manure.....	Milldale.....	70.75
15126	Stockbridge Tobacco Manure.....	Granby.....	88.00
<b>E. D. Chittenden Co., Bridgeport, Conn.</b>			
15110	†Complete Tobacco and Onion Grower.....	Suffield.....	63.00
14905	Tobacco Special with 5% Potash.....	Suffield.....	83.00

\*See note, page 56. †See note, page 57.

WITH POTASH—(Continued).

In nitrates.	Nitrogen.						Phosphoric Acid.						Potash.			Station No.
	In ammonia.	Organic, water-soluble.	Organic, water-insoluble.	Total.		Water-soluble.	Citrate-soluble.	Citrate-insoluble.	Total.		So-called "Available."		As muriate.	Total.	Guaranteed.	
				Found.	Guaranteed.				Found.	Guaranteed.	Found.	Guaranteed.				
none	0.44	0.42	0.64	1.50	1.65	8.23	1.95	0.90	11.08	10.50	10.18	10.00	6.55	6.55	6.00	14750
0.71	0.23	0.04	0.73	1.71	1.65	6.76	1.72	0.59	9.07	8.50	8.48	8.00	3.90	3.90	4.00	14944
0.26	0.80	0.45	0.91	2.42	2.47	6.16	2.37	0.96	9.49	8.50	8.53	8.00	3.84	3.84	4.00	14907
0.10	0.57	none	0.26	0.93	0.82	5.77	1.60	0.27	7.64	7.50	7.37	7.00	1.05	1.05	1.00	14710
0.16	1.04	0.08	0.43	1.71	1.65	5.64	2.19	0.73	8.56	8.50	7.83	8.00	1.88	1.88	2.00	14694
0.44	1.86	0.42	0.59	3.31	3.29	6.22	2.11	0.52	8.85	8.50	8.33	8.00	3.71	3.71	4.00	14683
none	2.45	0.60	1.07	4.12	4.11	6.54	1.95	0.90	9.39	8.50	8.49	8.00	4.83	4.83	5.00	14912
0.85	none	0.22	3.01	4.08	4.11	2.78	2.24	0.23	5.25	4.50	5.02	4.00	0.31	3.11	3.00	15160
0.18	1.24	0.09	1.11	2.62	2.47	6.94	1.30	0.29	8.53	8.50	8.24	8.00	0.20	4.87	5.00	15033
0.06	0.95	0.57	0.91	2.49	2.40	4.43	3.77	0.63	8.83	9.00	8.20	8.00	3.12	3.12	3.00	14860
0.15	0.41	0.32	0.56	1.44	1.64	4.34	2.79	0.47	7.60	9.00	7.13	8.00	2.03	2.06	2.00	14690
0.37	0.70	0.58	0.82	2.47	2.46	5.00	3.44	0.59	9.03	9.00	8.44	8.00	4.02	4.02	4.00	14685
0.16	1.80	0.19	1.03	3.18	3.28	4.46	3.91	0.92	9.29	9.00	8.37	8.00	3.91	3.91	4.00	14861
1.55	0.03	0.81	1.45	3.84	4.10	0.67	3.30	2.43	6.40	6.00	3.97	5.00	0.96	4.48	4.00	15050
1.38	0.07	0.75	1.94	4.14	4.10	1.70	3.18	2.23	7.11	6.00	4.88	5.00	0.78	1.97	2.00	14691
0.09	0.70	none	0.30	1.09	0.80	6.61	3.83	0.40	10.84	11.00	10.44	10.00	2.10	2.10	2.00	14789
0.22	1.00	0.17	1.42	2.81	2.50	4.35	3.66	1.41	9.42	9.00	8.01	8.00	3.22	3.22	3.00	14647
1.03	0.16	0.81	2.26	4.26	4.11	0.76	4.02	0.41	5.19	4.00	4.78	4.00	1.59	4.06	4.00	14650
0.47	0.92	0.14	1.77	3.30	3.30	1.72	5.86	1.54	9.12	9.00	7.58	8.00	3.93	3.93	4.00	14743
0.11	0.57	0.12	1.04	1.84	1.70	6.79	3.85	1.16	11.80	9.00	10.64	8.00	2.29	2.29	2.00	14591
0.45	0.24	0.62	1.28	2.59	2.47	3.54	5.12	1.41	10.07	9.00	8.66	8.00	4.19	4.19	4.00	14594
1.17	0.09	0.55	2.71	4.52	4.11	0.94	4.37	0.23	5.54	5.00	5.31	4.00	0.76	3.00	3.00	14641
0.71	0.41	0.23	0.56	1.91	1.65	4.97	3.66	0.82	9.45	9.00	8.63	8.00	2.03	2.29	2.00	14655
0.85	0.59	0.09	0.98	2.51	2.47	5.35	4.90	1.07	11.32	11.00	10.25	10.00	3.02	3.02	3.00	14593
0.43	0.76	0.68	0.77	2.64	2.47	2.45	6.61	1.37	10.43	10.00	9.06	9.00	0.57	1.93	2.00	14615
0.32	0.80	0.18	1.34	2.64	2.47	4.25	5.16	1.32	10.73	10.00	9.41	9.00	0.88	2.07	2.00	14843
0.56	0.12	0.19	0.95	1.82	1.65	3.38	5.15	1.65	10.18	9.00	8.53	8.00	3.37	3.37	3.00	14703
0.56	0.14	0.23	0.98	1.91	1.65	3.31	4.96	0.95	9.22	9.00	8.27	8.00	1.21	2.12	2.00	14638
0.25	0.30	none	0.38	0.93	0.82	3.61	3.97	0.90	8.48	9.00	7.58	8.00	1.71	1.99	2.00	14656
1.29	1.34	0.12	1.34	4.09	4.11	4.40	3.94	0.50	8.84	9.00	8.34	8.00	4.26	4.26	4.00	15080
1.26	0.96	0.36	0.72	3.30	3.29	4.16	4.04	1.13	9.33	9.00	8.20	8.00	3.95	3.95	4.00	14619
0.30	0.79	0.55	2.84	4.48	4.11	0.82	4.80	0.55	6.17	5.00	5.62	4.00	0.58	4.57	5.00	15126
2.56	none	0.16	0.57	3.29	3.29	4.15	3.84	0.61	8.60	9.00	7.99	8.00	4.06	4.06	4.00	15110
2.34	0.05	0.24	1.67	4.30	4.11	3.29	2.73	0.40	6.42	5.00	6.02	4.00	0.51	4.76	5.00	14905

TABLE VIII. NITROGENOUS SUPERPHOSPHATES

Station No.	Manufacturer and Brand.	Place of Sampling.	Dealer's cash price per ton.
<i>Sampled by Station:</i>			
<b>Everett B. Clark Seed Co., Milford, Conn.</b>			
14802	Special Mixture with Potash.....	Orange.....	\$53.00
<b>The Coe-Mortimer Co., New York City.</b>			
14745	Celebrated Special Potato Fertz. Revised.....	Poquonock.....	66.00
14599	Columbian Corn and Potato Fertilizer.....	Poquonock.....	51.50
14915	Corn King.....	Abington.....	55.00
14639	Connecticut Wrapper Grower.....	Poquonock.....	82.00
15081	Dissolved Phosphate and Potash.....	Gilead.....	32.00
14654	Gold Brand Excelsior Guano Revised.....	Wethersfield.....	63.00
14700	New Englander Special.....	Poquonock.....	46.00
15026	Special Grass Top Dressing.....	Plantsville.....	78.00
14972	Tobacco Leaf Fertilizer.....	Glastonbury.....	81.00
<b>Columbia Guano Co., Baltimore, Md.</b>			
15030	*†Freedom Guano.....	Melrose.....	.....
15029	Soluble Guano.....	Melrose.....	.....
<b>Essex Fertilizer Co., Boston, Mass.</b>			
14704	Fish Fertilizer 3-8-3.....	South Manchester.....	70.00
14705	Market Garden 3-8-4.....	South Manchester.....	71.00
15027	*Tobacco 5-5-4.....	Hartford.....	.....
14746	1-10-1.....	South Manchester.....	50.00
14874	*2-8-2.....	South Manchester.....	58.00
15028	*4-8-4.....	Broad Brook.....	61.25
15005	5-7-2.....	Weatogue.....	83.00
<b>L. T. Frisbie Co., New Haven, Conn.</b>			
15109	Complete Manure.....	Simsbury.....	70.00
14582	*Corn and Grain Fertz. 2-8-2.....	New Britain.....	55.00
14539	Special.....	Guilford.....	60.00
14595	Special Vegetable and Potato Grower 4-8-4.....	North Haven.....	69.00
14882	Special Vegetable and Potato Grower 4-8-4.....	Milford.....	58.70
14948	Tobacco Grower.....	Silver Lane.....	78.00
14911	*Tobacco Special.....	Rockville.....	80.00
14658	*Tobacco 5-5-5.....	East Hartford.....	78.00
14620	3-8-3.....	Plantsville.....	68.00
<b>Hubbard Fertilizer Co., Baltimore, Md.</b>			
15043	*†Noxall Guano.....	Ellington.....	59.43
<b>International Agricultural Corporation, Buffalo, N. Y.</b>			
14773	Buffalo Economy.....	Ansonia.....	51.00
15014	Buffalo Farmers' Choice.....	Ellington.....	.....
15007	Buffalo General Favorite.....	East Granby.....	.....

\*See note, page 56.

†See note, page 57.

‡See note, page 59.

WITH POTASH—(Continued)

Nitrogen.						Phosphoric Acid.						Potash.			Station No.	
In nitrates.	In ammonia.	Organic, water-soluble.	Organic, water-insoluble.	Total.		Water-soluble.	Citrate-soluble.	Citrate-insoluble.	Total.		So-called "Available."		As muriate.	Total.		Guaranteed.
				Found.	Guaranteed.				Found.	Guaranteed.	Found.	Guaranteed.				
0.14	2.54	0.13	0.85	3.66	3.29	8.08	2.05	0.72	10.85	...	10.13	10.00	3.31	3.31		3.00
0.71	0.75	0.63	1.23	3.32	3.29	3.88	5.07	1.22	10.17	9.00	8.95	8.00	3.87	4.10	4.00	14745
0.36	0.12	0.18	0.82	1.48	1.65	3.74	5.02	1.36	10.12	9.00	8.76	8.00	2.91	2.91	3.00	14599
0.53	0.65	0.41	1.01	2.60	2.47	5.51	3.48	1.83	10.82	10.00	8.99	9.00	2.33	2.33	2.00	14915
0.99	0.08	0.53	2.54	4.14	4.11	0.82	4.49	0.31	5.62	5.00	5.31	4.00	1.50	4.94	5.00	14639
..	..	..	..	..	..	7.69	4.50	0.32	12.51	13.00	12.19	12.00	2.11	2.11	2.00	15081
0.64	0.59	0.38	1.03	2.64	2.47	2.84	5.65	1.27	9.76	9.00	8.49	8.00	0.84	3.83	4.00	14654
0.14	0.08	0.02	0.76	1.00	0.82	4.33	4.66	0.87	9.86	9.00	8.99	8.00	2.08	2.08	2.00	14700
1.79	2.04	0.32	1.13	5.28	4.94	3.40	3.18	0.37	6.95	7.00	6.58	6.00	3.88	3.88	4.00	15026
1.07	none	0.60	2.61	4.28	4.11	0.62	4.86	0.14	5.62	5.00	5.48	4.00	0.80	3.09	3.00	14972
0.31	1.53	0.25	1.07	3.16	3.30	5.00	2.68	1.52	9.20	8.50	7.68	8.00	3.74	3.74	4.00	15030
0.09	0.85	0.15	0.60	1.69	1.65	5.05	2.62	1.39	9.06	8.50	7.67	8.00	1.83	1.83	2.00	15029
0.78	0.45	0.53	0.78	2.54	2.47	5.42	3.13	1.25	9.80	9.00	8.55	8.00	2.96	2.96	3.00	14704
0.96	0.12	0.56	0.67	2.31	2.46	6.39	1.79	0.61	8.79	9.00	8.18	8.00	3.99	3.99	4.00	14705
1.30	0.06	0.85	1.81	4.02	4.10	1.62	3.40	2.14	7.16	6.00	5.02	5.00	0.82	3.83	4.00	15027
none	0.09	0.53	0.40	1.02	0.82	7.47	2.89	1.27	11.63	11.00	10.36	10.00	1.20	1.20	1.00	14746
0.25	0.12	0.60	0.67	1.64	1.64	3.75	3.93	1.15	8.83	9.00	7.68	8.00	1.55	1.84	2.00	14874
0.07	1.49	0.66	0.82	3.04	3.29	4.78	3.48	0.45	8.71	9.00	8.26	8.00	3.88	3.88	4.00	15028
1.45	0.05	0.90	1.60	4.00	4.10	3.03	3.83	2.16	9.02	8.00	6.86	7.00	0.84	2.04	2.00	15005
0.46	0.92	0.65	1.10	3.13	3.29	3.55	4.17	0.95	8.67	9.00	7.72	8.00	6.42	6.42	6.00	15109
0.05	0.38	0.46	0.54	1.43	1.65	2.93	3.98	0.46	7.37	9.00	6.91	8.00	2.10	2.10	2.00	14582
0.49	0.46	0.64	0.78	2.37	2.46	4.95	3.34	0.58	8.87	9.00	8.29	8.00	4.00	4.00	4.00	14539
0.62	1.10	0.76	0.89	3.37	3.28	3.94	3.42	1.25	8.61	9.00	7.36	8.00	4.35	4.35	4.00	14595
0.11	1.73	0.69	0.99	3.52	3.28	4.28	3.92	1.01	9.21	9.00	8.20	8.00	3.80	3.80	4.00	14882
1.18	0.06	1.16	1.67	4.07	4.10	1.17	3.72	2.53	7.42	6.00	4.89	5.00	1.04	3.98	4.00	14948
1.27	0.09	0.83	1.64	3.83	4.10	1.35	3.53	2.46	7.34	6.00	4.88	5.00	0.92	1.79	2.00	14911
1.07	0.05	0.71	1.97	3.80	4.10	1.78	2.77	1.87	6.42	6.00	4.55	5.00	0.73	5.47	5.00	14658
none	0.98	0.71	0.78	2.47	2.46	4.52	3.76	1.30	9.58	9.00	8.28	8.00	3.14	3.14	3.00	14620
2.00	none	0.40	0.67	3.07	3.28	5.34	3.21	0.24	8.79	9.00	8.55	8.00	1.14	3.81	4.00	15043
0.40	0.08	0.52	0.63	1.63	1.60	5.45	2.72	1.36	9.53	9.00	8.17	8.00	2.20	2.20	2.00	14773
0.27	0.08	0.52	0.39	1.26	0.80	5.92	4.62	1.34	11.88	11.00	10.54	10.00	2.35	2.35	2.00	15014
none	0.21	0.45	0.52	1.18	0.80	5.20	4.63	0.99	10.82	9.00	9.83	8.00	0.70	1.29	1.00	15007



TABLE VIII. NITROGENOUS SUPERPHOSPHATES

Station No.	Manufacturer and Brand.	Place of Sampling.	Dealer's cash price per ton.
<i>Sampled by Station:</i>			
<b>International Agricultural Corporation, Buffalo, N. Y.</b> (Continued)			
15079	Buffalo High Grade Manure.....	East Haven.....	\$65.50
15006	Buffalo New England Special.....	Tariffville.....	57.50
14711	Buffalo Onion, Vegetable and Potato.....	Shelton.....	60.00
15008	Buffalo Tobacco Producer.....	East Granby.....	.....
<b>A. L. Koster, Suffield, Conn.</b>			
14974	Hale Tobacco Mixture.....	Windsor Locks.....	.....
<b>Lister's Agricultural Chemical Works, Newark, N. J.</b>			
14864	Celebrated Tobacco Fertilizer.....	Burnside.....	81.00
14865	*Complete Tobacco Manure.....	Burnside.....	86.00
14970	Corn and Potato Fertilizer.....	Glastonbury.....	61.00
15011	Eastern Pride Fertilizer.....	Rockville.....	.....
15111	King Bee Fertilizer.....	Yalesville.....	.....
15112	Special Crop Producer.....	Yalesville.....	.....
14979	Special Tobacco Fertilizer.....	Brookfield.....	60.00
14824	Standard Pure Superphosphate of Lime.....	Burnside.....	54.75
15047	Success Fertilizer.....	East Canaan.....	53.00
<b>Lowell Fertilizer Co., Boston, Mass.</b>			
14520	Animal Brand 3-8-4.....	Southington.....	70.00
14543	Bone Fertilizer 2-8-2.....	Southington.....	58.00
14522	Empress Brand 1-10-1.....	New Britain.....	54.00
15049	*Lawn and Garden Dressing.....	Hartford.....	.....
14706	Tobacco 5-5-4.....	Warehouse Point.....	84.00
14819	Tobacco 5-7-2.....	Granby.....	82.00
14702	2-8-3.....	Saybrook.....	60.00
14975	4-8-4.....	Westport.....	65.75
14817	*5-8-4.....	Wethersfield.....	72.00
<b>Mapes' Formula and Peruvian Guano Co., New York City.</b>			
14548	Corn Manure.....	Windsor Locks.....	56.00
14614	C. S. Tobacco Manure.....	Rockville.....	62.00
14701	General Tobacco Manure.....	Hartford.....	85.00
14742	†General Truck Manure.....	Windsor Locks.....	72.00
15013	*Grain Brand.....	Rockville.....	50.00
14527	Potato Manure.....	Windsor Locks.....	71.00
14653	†Potato Manure, 1916 Brand.....	Glastonbury.....	.....
14584	Tobacco Starter Improved.....	Windsor Locks.....	61.00

\* See note, page 56.

† See note, page 59.

NITROGENOUS SUPERPHOSPHATES.

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WITH POTASH—(Continued).

Nitrogen.						Phosphoric Acid.						Potash.			Station No.	
In nitrates.	In ammonia.	Organic, water-soluble.	Organic, water-insoluble.	Total.		Water-soluble.	Citrate-soluble.	Citrate-insoluble.	Total.		So-called "Available."		As muriate.	Total.		Guaranteed.
				Found.	Guaranteed.				Found.	Guaranteed.	Found.	Guaranteed.				
0.89	0.09	1.03	1.12	3.13	3.30	3.76	4.77	1.64	10.17	9.00	8.53	8.00	3.61	4.30		4.00
none	0.15	1.05	0.72	1.92	1.60	5.42	4.86	1.45	11.73	11.00	10.28	10.00	3.59	3.82	4.00	15006
0.97	0.07	0.61	0.77	2.42	2.50	5.86	2.68	1.46	10.00	9.00	8.54	8.00	3.07	3.07	3.00	14711
2.21	0.06	0.75	1.24	4.26	4.10	0.89	3.61	1.45	5.95	5.00	4.50	4.00	0.94	2.11	2.00	15008
1.00	0.94	0.36	2.80	5.10	4.94	1.06	5.76	1.15	7.97	...	6.82	5.00	2.18	4.81	4.00	14974
0.73	0.09	none	3.24	4.06	4.11	2.28	3.57	0.33	6.18	5.00	5.85	4.00	1.04	2.85	3.00	14864
2.83	0.19	0.49	0.61	4.12	4.11	1.84	2.42	1.15	5.41	5.00	4.26	4.00	4.33	4.33	5.00	14865
0.13	0.13	0.76	0.68	1.70	1.65	3.62	4.06	2.06	9.74	9.00	7.68	8.00	2.79	2.79	3.00	14970
0.90	0.22	0.76	0.59	2.47	2.47	6.41	2.02	1.43	9.86	9.00	8.43	8.00	3.76	3.76	4.00	15011
0.10	0.66	0.51	0.53	1.80	1.65	5.21	3.36	1.74	10.31	11.00	8.57	10.00	5.63	5.63	4.00	15111
0.11	0.11	0.26	0.44	0.92	0.82	4.61	2.82	0.73	8.16	8.00	7.43	7.00	0.51	2.16	1.00	15112
0.08	0.22	0.85	0.72	1.87	1.65	7.10	2.93	2.12	12.15	11.00	10.03	10.00	3.66	3.66	4.00	14979
1.14	0.24	0.56	0.58	2.52	2.47	4.57	4.43	1.52	10.52	10.00	9.00	9.00	0.62	1.90	2.00	14824
0.92	0.20	0.24	0.49	1.85	1.65	7.78	1.48	0.50	9.76	9.00	9.26	8.00	1.86	1.86	2.00	15047
0.07	0.92	1.22	0.71	2.92	2.46	6.12	2.44	0.83	9.39	9.00	8.56	8.00	3.58	3.58	4.00	14520
0.20	0.16	0.57	0.85	1.78	1.64	3.89	3.95	1.37	9.21	9.00	7.84	8.00	1.74	2.03	2.00	14543
0.16	0.28	0.39	0.54	1.37	0.82	6.89	3.21	0.96	11.00	11.00	10.10	10.00	1.96	1.96	1.00	14522
0.07	2.93	0.14	3.14	3.28	5.62	1.50	1.73	8.85	8.85	8.00	7.12	7.00	1.88	1.88	2.00	15049
1.22	0.09	1.12	1.72	4.15	4.10	1.49	3.08	2.15	6.72	6.00	4.57	5.00	0.90	4.22	4.00	14706
1.19	0.09	1.06	1.85	4.19	4.10	2.63	4.14	1.87	8.64	8.00	6.77	7.00	0.70	1.98	2.00	14819
0.56	0.13	0.39	0.65	1.73	1.64	5.63	2.97	1.05	9.65	9.00	8.60	8.00	3.15	3.15	3.00	14702
0.18	1.67	0.61	0.79	3.25	3.28	3.79	4.29	0.96	9.04	9.00	8.08	8.00	3.98	3.98	4.00	14975
1.01	1.01	0.68	0.91	3.61	4.10	5.23	3.11	1.20	9.54	9.00	8.34	8.00	3.78	3.78	4.00	14817
1.49	none	0.18	0.90	2.57	2.47	3.58	3.74	2.94	10.26	10.00	7.32	8.00	3.33	3.33	3.00	14548
1.44	0.09	0.65	2.07	4.25	4.12	0.49	4.38	1.25	6.12	4.00	4.87	4.00	0.70	1.45	1.00	14614
1.19	0.09	1.00	2.11	4.39	4.12	0.41	4.59	0.28	5.28	4.00	5.00	4.00	1.30	5.41	5.00	14701
2.96	0.10	0.04	1.40	4.50	4.12	2.05	4.20	1.92	8.17	8.00	6.25	6.00	5.13	5.13	5.00	14742
0.84	0.16	0.15	0.57	1.72	1.65	1.65	4.85	3.99	10.49	10.00	6.50	8.00	1.99	1.99	2.00	15013
3.12	none	0.11	0.45	3.68	3.71	3.75	3.29	1.61	8.65	8.00	7.04	7.00	4.91	4.91	5.00	14527
3.35	0.05	0.03	0.28	3.71	3.71	4.25	2.75	0.96	7.96	8.00	7.00	8.00	0.65	1.53	1.00	14653
1.85	0.07	0.86	1.77	4.55	4.12	1.82	4.27	3.67	9.76	8.00	6.09	6.00	0.54	1.50	1.00	14584

TABLE VIII. NITROGENOUS SUPERPHOSPHATES

Station No.	Manufacturer and Brand.	Place of Sampling.	Dealer's cash price per ton.
<i>Sampled by Station:</i>			
<b>National Fertilizer Co., New York City.</b>			
14818	Complete Tobacco Fertilizer	Simsbury	\$80.00
14575	Eureka Potato Fertilizer	West Cheshire	64.75
14589	Market Garden Fertilizer Revised	South Manchester	62.75
14596	Potato Phosphate	Meriden	53.00
14708	Soluble Bone and Potash	Somersville	37.60
14921	Special Tobacco, Revised	Hartford	83.00
14612	Universal Phosphate	South Manchester	45.60
14541	XXX Fish and Potash	West Cheshire	58.00
<b>New England Fertilizer Co., Boston, Mass.</b>			
14648	*Corn Phosphate 2-8-2	Rockville	55.00
14592	Standard Phosphate 1-10-1	Rockville	48.00
14816	Superphosphate 3-8-4	Hamden	67.00
14832	Tobacco 5-5-4	Warehouse Point	85.00
14526	2-8-3	Meriden	55.00
14876	2-8-3	East Wallingford	53.00
14547	3-8-3	Meriden	60.00
<b>Olds &amp; Whipple, Hartford, Conn.</b>			
14841	Complete Corn, Potato and Onion Fertilizer	Simsbury	.....
14766	Complete Tobacco Fertilizer	Hazardville	.....
14991	Complete Tobacco Fertilizer	Scitico	.....
15155	Complete Tobacco Fertilizer	East Windsor Hill	76.95
14842	Special Corn, Onion and Potato Fertilizer	Simsbury	.....
<b>Parmenter &amp; Polsey, Boston, Mass.</b>			
14767	Plymouth Rock 3-8-4	Plantsville	63.00
15151	Tobacco 5-5-4	Bloomfield	78.00
15107	1-10-1	Plantsville	45.00
14964	*2-8-2	West Hartford	50.00
<b>Pawtucket Rendering Co., Pawtucket, R. I.</b>			
14959	2-8-2	Brooklyn	.....
<b>Piedmont-Mt. Airy Guano Co., Baltimore, Md.</b>			
14856	*Brown's H. G. Potato and Gen. Crop Manure	South Meriden	60.00
14871	Brown's Potato Fertilizer	South Meriden	54.00
14857	Brown's Special O. & T. Dresser and Market Garden	Meriden	66.00
14963	*Shay's Corn Fertilizer	Chester	64.00
14962	*Shay's Potato Fertilizer	Groton	.....
14961	Shay's Special Fertilizer	Groton	.....
<b>Quality Fertilizer Works, Stamford, Conn.</b>			
15208	Bartlett Brand Special Tree Fertilizer	Stamford	60.00

\*See note, page 56.

NITROGENOUS SUPERPHOSPHATES.

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WITH POTASH—(Continued).

Nitrogen.						Phosphoric Acid.						Potash.			Station No	
In nitrates.	In ammonia.	Organic, water-soluble.	Organic, water-insoluble.	Total.		Water-soluble.	Citrate-soluble.	Citrate-insoluble.	Total.		So-called "Available."		As muriate.	Total.		Guaranteed.
				Found.	Guaranteed.				Found.	Guaranteed.	Found.	Guaranteed.				
0.26	0.73	0.66	2.65	4.24	4.11	0.90	4.84	0.36	6.10	5.00	5.74	4.00	0.82	4.41	5.00	14818
0.80	1.13	0.64	0.94	3.51	3.29	0.13	7.84	1.68	9.65	9.00	7.97	8.00	0.74	4.08	4.00	14575
0.49	0.16	0.60	1.19	2.44	2.47	3.92	5.14	1.33	10.39	9.00	9.06	8.00	3.39	4.24	4.00	14589
0.48	0.17	0.22	0.98	1.85	1.65	3.87	4.72	1.39	9.98	9.00	8.59	8.00	3.29	3.29	3.00	14596
						7.10	4.68	0.90	12.68	13.00	11.78	12.00	2.05	2.05	2.00	14708
1.01	0.05	0.65	2.62	4.33	4.11	0.54	4.85	0.14	5.53	5.00	5.39	4.00	0.90	3.17	3.00	14921
0.08	0.11	0.25	0.59	1.03	0.82	5.15	3.13	0.99	9.27	9.00	8.28	8.00	2.02	2.02	2.00	14612
0.79	0.87	0.25	0.73	2.64	2.47	4.74	5.31	1.20	11.25	11.00	10.05	10.00	0.93	2.88	3.00	14541
0.13	0.17	0.62	0.73	1.65	1.64	3.55	3.75	1.41	8.71	9.00	7.30	8.00	1.49	1.84	2.00	14648
0.11	0.10	0.35	0.48	1.04	0.82	7.48	3.35	1.05	11.88	11.00	10.83	10.00	1.12	1.12	1.00	14592
0.11	0.01	0.69	0.73	2.54	2.46	5.64	2.48	0.68	8.80	9.00	8.12	8.00	3.57	3.57	4.00	14816
1.46	0.06	0.89	1.90	4.31	4.10	1.28	3.27	1.97	6.52	6.00	4.55	5.00	0.90	3.65	4.00	14832
0.46	0.14	0.49	0.57	1.66	1.64	5.56	2.83	0.82	9.21	9.00	8.39	8.00	2.83	2.83	3.00	14526
0.59	0.10	0.32	0.58	1.59	1.64	5.31	3.19	0.81	9.31	9.00	8.50	8.00	3.04	3.04	3.00	14876
0.96	0.12	0.65	0.77	2.50	2.46	5.21	2.76	1.46	9.43	9.00	7.97	8.00	2.83	2.83	3.00	14547
0.98	0.08	0.65	1.66	3.37	3.30	2.06	5.60	1.32	8.98	8.00	7.66	8.00	4.98	4.98	4.00	14841
0.44	0.16	0.58	3.19	4.37	4.11	0.57	4.20	0.65	5.42	4.00	4.77	4.00	0.90	4.52	4.00	14766
0.79	none	0.44	3.15	4.38	4.11	0.71	4.03	0.22	4.96	4.00	4.74	4.00	0.56	4.29	4.00	14991
				4.30	4.11				4.84	4.00				4.07	4.00	15155
0.82	0.16	0.55	0.92	2.45	2.45	2.83	5.61	1.60	10.04	8.00	8.44	8.00	2.69	2.69	2.00	14842
0.12	1.24	0.54	0.77	2.67	2.46	5.54	2.49	0.69	8.72	9.00	8.03	8.00	4.13	4.13	4.00	14767
1.47	0.06	0.96	1.73	4.22	4.10	0.49	5.14	1.78	7.41	6.00	5.63	5.00	0.98	3.92	4.00	15151
0.13	0.04	0.30	0.45	0.92	0.82	6.88	3.50	1.11	11.49	11.00	10.38	10.00	1.03	1.03	1.00	15107
0.25	0.39	0.54	0.63	1.81	1.64	2.30	3.98	1.43	7.71	9.00	6.28	8.00	2.02	2.02	2.00	14964
0.20	0.34	0.27	0.96	1.77	1.64	5.77	3.19	0.47	9.43	8.00	8.96	7.00	2.35	2.35	2.00	14959
0.22	0.90	0.60	1.20	2.92	3.29	4.37	3.34	0.86	8.57	...	7.71	8.00	4.00	4.00	4.00	14856
0.09	0.67	0.58	1.56	2.90	2.47	6.10	3.23	1.48	10.81	...	9.33	8.00	3.53	3.53	4.00	14871
0.12	0.65	0.71	1.47	2.95	4.53	6.07	3.38	1.50	10.95	...	9.45	8.00	3.50	3.50	3.00	14857
0.95	0.15	0.12	0.85	2.07	2.47	6.06	1.93	0.68	8.67	...	7.99	8.00	2.99	2.99	3.00	14963
1.10	0.20	0.42	1.01	2.73	3.29	5.09	2.73	0.84	8.66	...	7.82	8.00	4.18	4.18	4.00	14962
0.11	0.21	0.54	0.54	1.40	1.65	5.15	2.99	0.97	9.11	...	8.14	8.00	2.60	2.60	2.00	14961
0.73	1.41	0.53	0.68	3.35	4.00	6.05	2.24	0.60	8.89	8.50	8.29	8.00	3.95	3.95	4.00	15208

TABLE VIII. NITROGENOUS SUPERPHOSPHATES

Station No.	Manufacturer and Brand.	Place of Sampling.	Dealer's cash price per ton
<i>Sampled by Station:</i>			
<b>Rogers and Hubbard Co., Middletown, Conn.</b>			
14924	Hubbard's Bone Base Fertilizer for Seeding Down.	Newington.	\$61.00
14616	Hubbard's Bone Base Oats and Top Dressing.	Hazardville.	85.00
14883	*Hubbard's Bone Base Oats and Top Dressing.	Hamden.	86.50
14716	Hubbard's Bone Base Soluble Corn and General Crop Manure.	Hazardville.	62.00
14884	Hubbard's Bone Base Soluble Potato Manure.	Hamden.	79.75
14617	Hubbard's Bone Base Soluble Potato Manure.	Hazardville.	79.00
14834	R. and H. All Soils-All Crops Phosphate.	Hamden.	74.00
15015	R. and H. Climax Tobacco Brand.	Glastonbury.	.....
14719	R. and H. Complete Phosphate.	Middletown.	50.00
14726	R. and H. Potato Phosphate.	Hazardville.	53.00
14838	R. and H. Soluble Tobacco Manure.	Gildersleeve.	80.00
14837	R. and H. Tobacco Grower, Vegetable Formula.	Gildersleeve.	100.00
<b>F. S. Royster Guano Co., Baltimore, Md.</b>			
14777	Arrow Head Tobacco Formula.	New Milford.	93.00
14946	Banner Guano.	Putnam.	76.00
14544	†Bully Guano.	Waterbury.	65.00
14867	Dreadnought Guano.	Naugatuck.	59.00
14771	‡Fish, Flesh and Fowl Guano.	Shelton.	54.00
15358	Fish, Flesh and Fowl Guano.	Branford.	54.00
14578	Fish and Potash.	Waterbury.	55.00
14927	†Quality Trucker.	Putnam.	79.00
14868	†Truckers' Delight.	Glastonbury.	.....
14878	Valley Tobacco Formula.	Glastonbury.	.....
<b>Sanderson Fertilizer and Chemical Co., New Haven, Conn.</b>			
14637	Atlantic Coast Bone, Fish and Potash.	Meriden.	46.53
14768	Complete Tobacco Grower.	Glastonbury.	85.00
14634	Corn Superphosphate.	Meriden.	43.71
14720	Formula "A"	Guilford.	65.00
15129	Formula "B"	Milford.	.....
14580	Potato Manure.	Milford.	.....
14636	Potato Manure.	Meriden.	54.75
14925	Top Dressing for Grass and Grain.	Glastonbury.	.....
14917	South American Sheep and Goat Manure.	New Canaan.	50.00
14922	Kelsey's Bone, Fish and Potash.	Clinton.	59.00
<b>M. L. Shoemaker and Co., Philadelphia, Pa.</b>			
14835	Swift-Sure Superphosphate for General Use.	Meriden.	55.00
14836	Swift-Sure Superphosphate for Potatoes No. 1.	Meriden.	67.00

\*See note, page 59.

†See note, page 56.

‡See note, page 57.

WITH POTASH—(Continued).

In nitrates.	Nitrogen.				Phosphoric Acid.								Potash.			Station No.
	In ammonia.	Organic, water-soluble.	Organic, water-insoluble.	Total.		Water-soluble.	Citrate-soluble.	Citrate-insoluble.	Total.		"So-called Available."		As muriate.	Total.	Guaranteed.	
				Found.	Guaranteed.				Found.	Guaranteed.	Found.	Guaranteed.				
none	0.27	0.34	2.17	2.78	2.46	0.08	7.75	8.26	16.09	15.00	7.83	6.00	4.35	4.35	4.00	14924
6.64	0.08	0.44	0.88	8.04	8.22	0.54	4.92	2.92	8.38	8.00	5.46	3.00	4.00	4.00	4.00	14616
6.22	0.04	0.77	1.21	8.24	8.22	0.07	5.06	2.37	7.50	8.00	5.13	3.00	4.50	4.50	4.00	14883
1.50	0.18	0.14	0.51	2.33	2.46	1.69	7.07	1.82	10.58	10.00	8.76	8.00	4.49	4.49	4.00	14716
2.92	0.18	0.58	0.61	4.29	4.11	1.64	6.71	1.48	9.83	10.00	8.35	8.00	1.22	6.27	6.00	14884
2.25	0.25	0.68	0.78	3.96	4.11	0.12	8.49	2.75	11.36	10.00	8.61	8.00	1.57	5.94	6.00	14617
1.45	0.59	0.45	0.58	3.07	3.29	3.28	5.56	1.43	10.27	9.00	8.84	8.00	6.50	6.50	6.00	14834
2.17	none	0.51	1.63	4.31	4.11	0.76	2.90	2.19	5.85	5.00	3.66	4.00	0.78	2.96	3.00	15015
0.32	0.11	0.01	0.36	0.80	0.82	4.19	4.69	1.42	10.30	9.00	8.88	8.00	2.14	2.14	2.00	14719
0.84	0.16	0.13	0.50	1.63	1.64	3.23	5.47	1.30	10.00	9.00	8.70	8.00	4.35	4.35	4.00	14726
2.24	0.26	0.56	1.70	4.76	4.93	1.17	7.70	2.99	11.86	10.00	8.87	8.00	1.08	4.44	4.00	14838
1.07	0.09	0.41	3.42	4.99	4.93	0.76	4.41	0.68	5.85	5.00	5.17	4.00	1.10	3.94	4.00	14837
0.50	0.83	0.05	2.70	4.08	4.11	2.28	1.67	0.35	4.30	4.50	3.95	4.00	0.24	2.88	3.00	14777
0.08	0.90	0.14	0.50	1.62	1.65	6.41	2.06	1.24	9.71	8.50	8.47	8.00	8.91	8.91	10.00	14946
0.26	0.68	0.13	0.52	1.59	1.65	5.55	1.94	0.95	8.44	8.50	7.49	8.00	4.72	4.72	5.00	14544
0.05	0.91	0.28	0.50	1.74	1.65	5.96	1.85	0.90	8.71	8.50	7.81	8.00	2.00	2.00	2.00	14867
0.31	0.67	none	0.56	1.54	1.65	6.25	1.49	1.05	8.79	8.50	7.74	8.00	2.54	2.54	3.00	14771
0.12	0.95	0.09	0.71	1.87	1.65	6.41	2.20	0.31	8.92	8.50	8.61	8.00	2.83	2.83	3.00	15358
0.11	2.02	0.46	0.47	3.06	3.30	5.72	2.71	1.29	9.72	8.50	8.43	8.00	5.78	5.78	7.00	14927
0.14	1.74	0.44	0.71	3.04	3.30	5.53	2.46	1.18	9.17	8.50	7.99	8.00	3.64	3.64	4.00	14868
0.53	0.82	0.06	2.46	3.87	4.11	2.33	2.05	0.40	4.78	4.50	4.38	4.00	0.30	5.20	5.00	14878
0.07	0.15	0.58	0.99	1.79	1.65	3.45	4.98	2.03	10.46	9.00	8.43	8.00	3.08	3.08	3.00	14637
0.97	0.07	0.11	3.38	4.53	4.11	0.91	4.40	0.23	5.54	5.00	5.31	4.00	1.00	4.15	5.00	14768
0.26	0.37	0.62	0.82	2.07	1.65	4.67	3.96	1.16	9.79	9.00	8.63	8.00	1.88	1.88	2.00	14634
0.16	1.32	0.99	1.24	3.71	3.29	4.47	3.92	1.56	9.95	9.00	8.39	8.00	3.17	3.17	4.00	14720
1.14	none	0.96	1.77	3.87	3.29	6.75	3.09	1.02	10.86	9.00	9.84	8.00	4.52	4.52	4.00	15129
0.58	0.42	0.64	0.84	2.48	2.47	5.08	3.72	1.11	9.91	9.00	8.80	8.00	3.81	3.81	4.00	14580
0.75	0.13	0.64	1.13	2.65	2.47	5.22	2.90	1.78	9.90	9.00	8.12	8.00	4.05	4.05	4.00	14636
0.07	0.91	1.30	1.76	4.04	4.11	6.34	3.01	2.00	11.35	9.00	9.35	8.00	4.19	4.19	4.00	14925
none	0.18	1.25	1.43	1.23	0.05	1.00	0.13	1.18	1.00	1.00	1.05	.....	2.27	3.12	3.00	14917
0.53	0.76	0.49	1.83	3.61	2.47	6.30	2.99	1.56	10.85	11.00	9.29	10.00	4.68	4.68	3.00	14922
0.61	none	0.47	1.44	2.52	2.46	4.94	3.63	2.53	11.10	11.00	8.57	8.00	3.72	3.72	3.00	14835
0.63	0.12	0.73	1.63	3.11	3.30	7.47	2.71	1.64	11.82	11.00	10.18	8.00	4.44	4.44	5.00	14836

TABLE VIII. NITROGENOUS SUPERPHOSPHATES

Station No.	Manufacturer and Brand.	Place of Sampling.	Dealer's cash price per ton.
<i>Sampled by Station:</i> <b>Springfield Rendering Co., Springfield, Mass.</b>			
14642	Animal Brand.....	Thompsonville.....	\$62.00
14919	Grain and Grass.....	Suffield.....	50.00
14920	Tobacco Special.....	Hazardville.....	88.00
<b>Virginia-Carolina Chemical Co., New York City.</b>			
14724	Challenge Brand.....	Hartford.....	56.00
14725	Champion Brand.....	Hartford.....	70.00
14966	Cherokee Brand.....	Glastonbury.....	78.00
14968	Indian Chief Brand.....	Glastonbury.....	83.00
14967	Owl Brand.....	Glastonbury.....	.....
15084	Plant Food for Vegetables, Lawns and Flowers.....	Waterbury.....	.....
<b>Wilcox Fertilizer Co., Mystic, Conn.</b>			
14577	Corn Special.....	Branford.....	64.00
15123	*Fish and Potash.....	Branford.....	56.00
14721	Grass Fertilizer.....	Mystic.....	65.50
14717	High Grade Fish and Potash.....	Burnside.....	.....
14576	Potato Fertilizer.....	Branford.....	53.00
14723	*Potato and Vegetable Phosphate.....	Jewett City.....	68.00
15012	Tobacco Special.....	Ellington.....	81.00
<b>S. D. Woodruff and Sons, Orange, Conn.</b>			
14498	Home Mixture.....	Orange.....	58.00
<b>Worcester Rendering Co., Auburn, Mass.</b>			
14928	Prosperity Brand Royal Worcester Corn and Grain Fertz.	Putnam.....	48.00
14926	†Prosperity Brand Royal Worcester Potato and Vegetable Fertz.....	Willimantic.....	66.00
14960	Prosperity Brand Royal Worcester Special Grain Fertz.	Greenville.....	48.00
<b>The World's Fertilizer Process Co., Sharpsburg, Pa.</b>			
14769	Shur-Gro.....	Hartford.....	.....
<i>Sampled by Purchaser:</i>			
15330	American Ag'l Chem'l Co. 5-8-7.....	Winsted.....	80.25
14783	Apothecaries Hall Co.'s Liberty Brand 4-8-4.....	Branford.....	65.75
15143	Atlantic Packing Co.'s Potato Phosphate 3-8-4.....	Westville.....	.....
15089	†Berkshire Tobacco Starter.....	Suffield.....	98.75
14752	Frisbie's 4-8-4.....	Milford.....	58.70
14804	Frisbie's 5-5-4.....	Somers.....	.....
14682	Frisbie's Bone Base 4-8-4.....	Woodmont.....	.....
15087	Mapes' Corn Manure.....	Hartford.....	.....

\*See note, page 59.

†See note, page 56.

‡See note, page 57.

## WITH POTASH—(Continued).

In nitrates.	Nitrogen.						Phosphoric Acid.						Potash.			Station No.
	In ammonia.	Organic water-soluble.	Organic water-insoluble.	Total.		Water-soluble.	Citrate-soluble.	Citrate-insoluble.	Total.		So-called "Available."		As muriate.	Total.	Guaranteed.	
				Found.	Guaranteed.				Found.	Guaranteed.	Found.	Guaranteed.				
none	0.84	1.24	0.68	2.76	2.46	4.92	3.31	0.88	9.11	9.00	8.23	8.00	4.38	4.38	4.00	14642
0.25	0.35	0.68	0.53	1.81	1.64	5.26	3.19	0.40	8.85	9.00	8.45	8.00	2.39	2.39	2.00	14919
1.41	0.08	1.08	1.75	4.32	4.10	1.50	3.40	1.88	6.78	6.00	4.90	5.00	0.80	4.03	4.00	14920
0.08	0.15	0.26	0.48	0.97	0.82	7.07	2.26	1.28	10.61	...	9.33	9.00	3.04	3.04	3.00	14724
0.16	1.07	0.67	1.30	3.20	3.29	5.47	3.02	1.18	9.67	...	8.49	8.00	4.19	4.19	4.00	14725
0.26	0.86	0.35	3.23	4.70	4.11	1.84	1.95	0.20	3.99	...	3.79	4.00	0.30	3.33	3.00	14966
0.19	1.09	0.35	2.73	4.36	4.11	2.29	1.70	0.32	4.31	...	3.99	4.00	0.51	7.18	5.00	14968
1.06	0.08	0.37	0.27	1.78	1.65	5.97	1.67	0.65	8.29	...	7.64	8.00	2.57	2.57	3.00	14967
0.24	3.27	0.13	1.40	5.04	4.94	5.26	3.22	1.92	10.40	...	8.48	8.00	0.90	1.77	2.00	15084
0.33	0.65	none	2.80	3.78	3.29	3.42	5.24	3.89	12.55	9.00	8.66	8.00	0.45	2.67	2.00	14577
0.19	0.27	0.34	1.76	2.56	2.46	6.36	2.60	0.51	9.47	9.00	8.96	8.00	1.33	1.33	1.00	15123
1.87	0.16	0.25	1.73	4.01	4.12	5.64	2.38	0.40	8.42	9.00	8.02	8.00	2.23	2.23	2.00	14721
0.86	0.29	0.30	1.37	2.82	2.46	6.27	2.42	0.24	8.93	9.00	8.69	8.00	3.26	3.26	3.00	14717
0.37	0.13	0.23	1.46	2.19	1.65	6.58	2.20	2.41	11.19	9.00	8.78	8.00	2.44	2.44	2.00	14576
1.40	0.21	0.20	1.48	3.29	3.29	5.80	2.37	1.68	9.85	9.00	8.17	8.00	3.90	3.90	4.00	14723
0.87	0.11	0.35	2.84	4.17	4.12	0.50	2.73	2.25	5.48	5.00	3.23	3.00	0.41	4.18	4.00	15012
0.58	0.07	2.49	3.14	3.29	2.79	3.63	1.50	7.92	8.00	6.42	...	1.34	4.24	3.00	14498	
0.28	0.45	0.61	0.44	1.78	1.64	6.08	3.04	0.73	9.85	9.00	9.12	8.00	2.26	2.26	2.00	14928
0.10	0.92	0.96	1.14	3.12	3.29	4.16	3.88	1.00	9.04	9.00	8.04	8.00	4.08	4.08	4.00	14926
none	0.06	0.51	0.38	0.95	0.82	7.12	3.25	1.14	11.51	11.00	10.37	10.00	1.04	1.04	1.00	14960
..	..	..	..	0.13	..	0.62	6.81	0.54	7.97	5.50	7.43	5.00	0.40	2.00	2.00	14769
0.98	1.27	0.60	0.59	3.44	4.13	5.57	3.77	1.01	10.35	...	9.34	8.00	5.54	6.12	7.00	15330
0.28	1.07	0.72	1.51	3.58	3.29	5.55	2.62	0.82	8.99	...	8.17	8.00	3.86	3.86	4.00	14783
..	..	..	..	2.44	2.47	..	..	..	8.16	9.00	...	...	..	4.06	4.00	15143
3.00	0.02	1.96	4.98	5.00	0.54	2.99	0.09	3.62	5.00	3.53	4.00	1.71	7.56	8.00	15089	
..	..	..	..	3.09	3.28	..	..	1.11	9.17	9.00	8.06	8.00	..	3.68	4.00	14752
..	..	..	..	..	..	..	..	..	..	..	..	..	0.70	4.00	4.00	14804
..	..	..	..	3.40	3.29	4.19	3.51	1.15	8.85	..	7.70	8.00	..	4.26	4.00	14682
..	..	..	..	2.66	2.47	..	..	..	10.29	10.00	..	..	..	3.10	3.00	15087



TABLE VIII. NITROGENOUS SUPERPHOSPHATES

Station No.	Manufacturer and Brand.	Place of Sampling.	Dealer's cash price per ton.
<i>Sampled by Purchaser:</i>			
15068	Mapes' General Tobacco Manure.....	Hartford.....	.....
15069	Mapes' Potato Manure 1916.....	Hartford.....	.....
15067	Mapes' Tobacco Starter, Improved.....	Hartford.....	.....
15022	Olds & Whipple's Complete Tobacco Fertilizer.....	Tariffville.....	\$84.00
14506	Rogers & Hubbard's Oats and Top Dressing.....	Winsted.....	86.50
15036	Rogers & Hubbard's Soluble Tobacco Manure.....	Glastonbury.....	72.50
15070	Sanderson's Bone Fish and Potash.....	Branford.....	55.50
<i>Sampled by Manufacturer:</i>			
14307	Frisbie's 2-8-2.....	New Haven.....	.....
14306	Frisbie's 3-8-4.....	New Haven.....	.....
14305	Frisbie's Complete Fertilizer 3-8-4.....	New Haven.....	.....
14379	Frisbie's 3-8-4.....	New Haven.....	.....
14380	Frisbie's 4-8-4.....	New Haven.....	.....

	Deficiency.
14748 Armour's Wheat and Clover Fertilizer.....	\$5.40
14690 Atlantic Packing Co.'s Grain Fertilizer.....	3.55
15050 Atlantic Packing Co.'s Tobacco Grower.....	3.12
15030 Columbia Guano Co.'s Freedom Guano.....	2.87
15027 Essex Fertilizer Co.'s Tobacco 5-5-4.....	1.30
14874 Essex Fertilizer Co.'s 2-8-2.....	1.15
15028 Essex Fertilizer Co.'s 4-8-4.....	2.36
14582 L. T. Frisbie Co.'s 2-8-2.....	4.06
14911 L. T. Frisbie Co.'s Tobacco Special.....	3.61
14658 L. T. Frisbie Co.'s Tobacco 5-5-5.....	2.40
15043 Hubbard Fertilizer Co.'s Noxall Guano.....	1.61
14865 Lister's Agl. Chem'l Works, Complete Tobacco Manure..	1.52
15049 Lowell Fertilizer Co.'s Lawn and Garden Dressing.....	1.54
14817 Lowell Fertilizer Co.'s 5-8-4.....	4.92
15013 Mapes F. & G. P. Co.'s Grain Brand.....	2.33
14648 New England Fertilizer Co.'s Corn Phosphate 2-8-2.....	1.81
14964 Parmenter & Polsey's 2-8-2.....	1.68
14856 Piedmont-Mt. Airy Guano Co.'s Brown's H. G. Potato and General Crop.....	4.28
14963 Piedmont-Mt. Airy Guano Co.'s Shay's Corn Fertilizer..	4.00
14962 Piedmont-Mt. Airy Guano Co.'s Shay's Potato Fertilizer	5.88
14544 F. S. Royster Guano Co.'s Bully Guano.....	2.52
14927 F. S. Royster Guano Co.'s Quality Trucker.....	5.44
14868 F. S. Royster Guano Co.'s Trucker's Delight.....	3.75
14926 Worcester Rendering Co.'s Prosperity Brand Potato and Vegetable Fertilizer.....	1.36

## WITH POTASH—(Concluded).

Nitrogen.				Phosphoric Acid.						Potash.			Station No.			
In nitrates.	In ammonia.	Organic, water-soluble.	Organic, water-insoluble.	Total.			Water-soluble.	Citrate-soluble.	Citrate-insoluble.	Total.		So-called "Available."		As muriate.	Total.	Guaranteed.
				Found.	Guaranteed.	Found.				Guaranteed.	Found.					
..	..	..	..	3.95	4.12	..	..	..	4.89	4.00	..	..	..	5.01	5.00	15068
..	..	..	..	3.81	3.71	..	..	..	10.07	8.00	..	..	..	1.40	1.00	15069
..	..	..	..	4.19	4.12	..	..	..	9.07	8.00	..	..	..	1.51	1.00	15067
..	..	..	..	4.53	4.11	..	..	..	5.16	4.00	..	..	..	4.18	4.00	15022
6.71	0.03	1.58	..	8.32	8.22	0.41	4.75	2.69	7.85	8.00	5.16	3.00	4.30	4.30	4.00	14506
..	..	..	..	4.64	4.93	..	..	..	10.76	10.00	..	..	1.10	4.80	4.00	15036
0.09	0.45	2.22	..	2.76	1.65	5.18	3.33	1.84	10.35	..	8.51	8.00	4.18	4.18	3.00	15070
..	..	..	..	2.01	..	..	..	..	10.73	..	..	..	..	2.01	..	14307
..	..	..	..	2.47	..	..	..	..	8.79	..	..	..	..	4.32	..	14306
..	..	..	..	2.52	..	..	..	..	9.26	..	..	..	..	3.90	..	14305
..	..	..	..	3.03	..	..	..	1.02	10.17	..	9.15	..	..	3.84	..	14379
..	..	..	..	3.72	..	..	..	1.10	9.43	..	8.33	..	..	3.78	..	14380

## QUALITY OF THE NITROGEN.

The solubility of the nitrogen was tested in every sample examined, and in none was evidence found of the use of inferior ammoniates.

## ANALYSES REQUIRING SPECIAL NOTICE.

- 15110 Chittenden's Complete Tobacco and Onion Grower was tagged Potato Special with Four Per Cent. Potash through an error at the factory which was corrected.
- 15030 Columbia Guano Co.'s Freedom Guano was deficient in all three guaranteed ingredients. It is suggested that two brands were mixed through a mistake in tagging. All the packages sampled by our agent bore the above brand.
- 14771 Royster's Fish, Flesh and Fowl Guano was deficient in all three guaranteed ingredients. The manufacturer felt that this sample did not fairly represent the composition of this brand. A second sample was therefore analyzed, 15358 which while deficient in potash more nearly met the guaranty.
- 15089 A special mixture with 8 per cent. of potash guaranteed. This sample was sent by J. E. Phelps, Suffield. As it failed to meet its guaranty, at the request of the manufacturer, the Station agent drew a sample in October

from 12 bags remaining in T. F. Devine's stock. He found the bags wet on the outside, and the resulting analysis, No. 15444, showing nitrogen 4.44, phosphoric acid 3.16, and potash 7.61 per cent., could not have represented the quality of the goods as sold.

#### BORAX IN COMMERCIAL FERTILIZERS.

Injury to farm crops caused by borax in the fertilizers used was first brought to serious attention by the experience of corn growers in Indiana in 1917. Later the same trouble was reported from the potato districts of Maine and cotton districts in the South. Evidence indicated that injury followed the use of fertilizers containing potash with considerable amounts of borax. The damage was greatest where the largest amount of potash had been applied; and also in fields where the fertilizer was drilled in with the seed and conditions resulted which left the seed in contact with the fertilizer too long.

The explanation of how borax acts to cause the effects noted is largely speculative at the present time. It has been suggested, and it appears quite plausible, that borax unites with some constituent of the nutrient juices in plants in such a way as to prevent or hinder the ready diffusion of food material to the various parts of the plant system. Interference with enzyme action and other causes have been suggested.

There are no data upon which to base an accurate statement as to the limits of tolerance to borax exhibited by plants. If such limits were definitely established they would be modified by varying field conditions. It was with a view to insuring an ample margin of safety that the Secretary of Agriculture issued an order<sup>1</sup> concerning borax in mixed fertilizers which limited the amount of boron, expressed as anhydrous borax, in any fertilizer or fertilizer ingredient sold for application to the soil to one-tenth of one per cent. unless the goods so sold were plainly marked to show the amount present.

During the past season all mixed fertilizers and potash and nitrate salts inspected by this Station have been examined for borax. Preliminary qualitative tests were made and these were followed by quantitative determinations in suspicious cases.

The qualitative test employed was substantially that proposed by Bartlett<sup>2</sup> but modified in this laboratory<sup>3</sup> in that the fertilizer suspension was more strongly acidified and the turmeric strips were dried out at room temperature to avoid the charring due to hydrochloric acid at the temperature of boiling water.

<sup>1</sup> S. R. A., Bureau of Soils, Dec. 23, 1919.

<sup>2</sup> Maine Experiment Station.

<sup>3</sup> By Mr. C. E. Shepard.

Our procedure is as follows:

Digest about 5 grams of fertilizer with 10cc of water for 10 minutes on a steam bath. Acidify with 2cc of concentrated hydrochloric acid, stir thoroughly and allow to settle. Moisten a strip of turmeric paper with the supernatant liquid and allow to dry at room temperature or in a desiccator if the atmosphere is humid. Color due to boric acid is generally indicated in about 10 minutes and results may be noted within an hour.

For the quantitative determination of borax the methods of Ross and Deemer<sup>1</sup> and of J. M. Bartlett<sup>2</sup> have been used with about equally satisfactory results.

None of the brands examined at this Station during the past season contained borax in an amount likely to be injurious to crops unless applied close to the seed in large amounts, say 2,000 pounds per acre.

The brands in which more than one-tenth per cent. of borax was found were the following:

	Per cent. Borax.
15043 Hubbard's Noxall Guano.....	0.22
14742 Mapes' General Truck Manure.....	0.17
14653 Mapes' Potato Manure 1916 Brand.....	0.12
14883 R. & H.'s Hubbard's Bone Base Oats and Top Dressing..	0.19
15123 Wilcox Fertilizer Co.'s Fish and Potash.....	0.14
14723 Wilcox Fertilizer Co.'s Potato and Vegetable Phosphate.	0.18

During the winter and spring the Stations in the Northeastern States co-operated in carrying out elaborate potato experiments with corn, beans and potatoes, to study the action of borax on the growth of these crops. This experiment was conducted at the Vermont Station through the co-operation of Dr. J. L. Hills, Director, and was in direct charge of Mr. J. R. Neller.

A full account of this work is not yet ready for publication. Some of the more important results are briefly as follows:

Borax-containing fertilizers applied below the seed are much more liable to injure them than applied above the seed or broadcast.

One or two pounds of borax in the fertilizer were not harmful to either crop, whether broadcast or applied in the drill, but it was not conclusively shown that the five-pound application in the drill was harmless. Ten and twenty pounds of borax per acre were certainly injurious or ruinous.

Lime and gypsum, as well as manure, seemed partially to neutralize the poisonous action.

#### HOME-MIXED NITROGENOUS SUPERPHOSPHATES.

14782. Mixed by the Apothecaries Hall Co., Waterbury, to order of the A. E. Plant Sons Co., Branford. 200 lbs. nitrate of soda, 900 lbs. tankage, 900 lbs. phosphate.

<sup>1</sup> Respectively, Bureau of Soils and Bureau of Plant Industry Washington, D. C.

<sup>2</sup> Maine Experiment Station.

**15142.** Mixed by the Apothecaries Hall Co., Waterbury, to order of Paul Cavanna, South Glastonbury. 2,800 lbs. nitrate of soda, 2,800 lbs. bone tankage (3-50), 4,200 lbs. acid phosphate, 4,200 lbs. cottonseed meal.

**15092, 15094, 15095, 15097, 15099, 15101, 15102 and 15103.** Mixed by A. L. Koster, Suffield, to order of the American Sumatra Tobacco Co., Hartford. Each analysis represents a sample taken from a car lot.

**14713.** Made by V. E. Lucchini, Meriden. Acid phosphate, nitrate of soda and tankage.

**14714.** Made by V. E. Lucchini, Meriden. Acid phosphate, nitrate of soda and tankage.

**14427.** Mixed by Olds & Whipple, Hartford, to order of American Sumatra Tobacco Co., Hartford.

**15096.** Mixed by Olds & Whipple, Hartford, to order of American Sumatra Tobacco Co., Hartford.

**15098.** Mixed by Olds & Whipple, Hartford, to order of American Sumatra Tobacco Co., Hartford.

**15100.** Mixed by Olds & Whipple, Hartford, to order of American Sumatra Tobacco Co., Hartford.

TABLE IX. ANALYSES OF HOME-MIXED NITROGENOUS SUPERPHOSPHATES.

Station No.	Nitrogen					Phosphoric Acid.					Potash.	
	In nitrates.	In ammonia.	Organic water-soluble.	Organic water-insoluble.	Total found.	Water-soluble.	Citrate-soluble.	Citrate-insoluble.	Total found.	So-called "Available" found.	As muriate.	Total found.
14782	1.83	0.14	0.74	1.30	4.01	6.36	3.79	4.23	14.38	10.15	.....	.....
15142	2.39	None	2.31	4.70	2.28	4.81	0.59	7.68	7.09	0.62	0.86	
15092	None	1.08	4.26	5.34	0.92	4.83	0.92	6.67	5.75	1.73	4.31	
15094	0.81	1.01	3.62	5.44	1.01	5.44	1.43	7.88	6.45	1.62	4.17	
15095	0.91	0.80	3.17	4.88	1.10	5.89	1.73	8.72	6.99	2.13	3.80	
15097	0.70	1.00	3.33	5.03	0.81	5.26	1.82	7.89	6.07	1.42	3.98	
15099	0.97	0.77	3.62	5.36	0.82	5.51	0.96	7.29	6.33	1.62	4.58	
15101	0.80	0.72	3.77	5.29	0.88	5.17	0.83	6.88	6.05	1.20	3.58	
15102	0.69	1.00	3.15	4.84	0.86	5.12	1.89	7.87	5.98	1.46	4.24	
15103	0.90	0.75	3.08	4.73	0.72	4.98	1.45	7.15	5.70	1.54	4.40	
14713	.....	.....	.....	.....	5.33	4.63	4.07	4.63	13.33	8.70	.....	.....
14714	.....	.....	.....	.....	4.19	4.68	4.49	5.00	14.17	9.17	.....	.....
14427	.....	.....	.....	.....	5.99	0.50	5.61	0.17	6.28	6.11	.....	1.37
15096	0.77	0.07	5.56	6.40	1.30	4.37	0.19	5.86	5.67	0.52	1.33	
15098	0.57	0.07	5.34	5.98	1.17	4.51	0.23	5.91	5.68	0.70	1.40	
15100	0.72	0.04	5.34	6.10	1.29	4.52	0.20	6.01	5.81	0.53	1.45	

## VI. MISCELLANEOUS FERTILIZERS AND WASTE PRODUCTS.

### TOBACCO STEMS AND DUST.

Four samples were analyzed as follows:

- 14382.** Tobacco Stems. Sent by the Everett B. Clark Seed Co., Milford.  
**14309.** Stem Butts. Sent by Morgan & Dickinson, Windsor.  
**14310.** Tobacco Dust. Sent by J. N. Root, W. Suffield.  
**14429.** Tobacco Stems. Sent by Gordon Scholes, Warehouse Point.

#### ANALYSES OF TOBACCO STEMS AND DUST.

Station No. ....	14382	14309	14310	14429
Nitrogen.....	2.28	1.59 <sup>1</sup>	2.20 <sup>2</sup>	3.13
Phosphoric acid.....	0.32	0.40	0.47	....
Potash (total).....	4.86	4.50	2.14	7.86

<sup>1</sup> 0.47 nitrogen in nitrates.

<sup>2</sup> 0.66 nitrogen in nitrates.

### LIME-FERTILE AND NITRO-FERTILE.

- 14485.** Lime-Fertile, made by Fertile Chemical Co., Cleveland, Ohio. Stock of A. R. Brewer, Hartford.  
**14538.** Nitro-Fertile, made by Fertile Chemical Co., Cleveland, Ohio. Stock of Church & Morse, Meriden.

#### ANALYSES OF LIME-FERTILE AND NITRO-FERTILE.

Station No. ....	14485		14538	
	Found	Guaranteed	Found	Guaranteed
Nitrogen as nitrates.....	....	....	1.12	....
Nitrogen (total).....	....	....	2.08	2.00
Phosphoric acid.....	3.17	3.00	3.48	3.00
Potash calculated as sulphate.....	....	....	1.71	....
Potash calculated as muriate.....	....	....	2.60	....
Potash (total).....	....	....	4.31	3.00
Lime.....	28.65	....	....	....

Nitro-fertile is a solution for use on potted plants, costing 35 cents per half-pint, and Lime-fertile is also sold in small packages, five pounds for 25 cents. The plant food in a package, at the ordinary rates for fertilizers, is worth at most about 2½ cents.

### SHEEP MANURE.

Nine samples were analyzed as follows:

- 14519.** Pulverized Sheep Manure. Sold by American Agricultural Chemical Co., New York City. Stock of Southington Lumber Co., Southington.  
**14521.** Liberty Brand Sheep Manure. Sold by Apothecaries Hall Co., Waterbury. Sampled at factory.

**15159.** Sheep Manure. Berkshire Fertz. Co., Bridgeport. Sampled at factory.

**15108.** Rams Head Brand. Sold by Joseph Breck & Sons Corp., Boston. Stock of G. M. Williams Co., New London.

**14613.** Magic Brand Pulverized Sheep Manure. Sold by Chicago Feed & Fertz. Co., Chicago, Ill. Stock of Blish Hardware Co., South Manchester.

**14770.** "Sheep's Head" Pulverized Sheep Manure. Sold by Natural Guano Co., Aurora, Ill. Stock of Cadwell & Jones, Hartford.

**15041.** Groz-It Brand Sheep Manure. Sold by Pacific Manure and Fertilizer Co., San Francisco, Calif. Stock of F. M. Cole, Putnam.

**14523.** Wizard Brand Sheep Manure. Sold by Pulverized Manure Co., Chicago, Ill. Stock of S. P. Strople, New Britain.

**14579.** Sheep Manure. Sold by S. D. Woodruff & Sons, Orange. Stock of Rackliffe Bros Co., New Britain.

TABLE X. ANALYSES OF SHEEP MANURE.

Station No.....	14519	14521	15159	15108	14613	14770	15041	14523	14579
<i>Per cent. of</i>									
Nitrogen as nitrates.....	None	0.14	0.12	.....	0.14	None	0.17	None	0.11
"    "    ammonia.....	0.45	0.09	0.18	0.50	0.09	0.40	0.05	0.10	0.19
"    "    organic.....	2.25	1.32	1.91	2.09	1.47	2.10	1.28	1.65	1.31
"    "    total found....	2.70	1.55	2.21	2.59	1.70	2.50	1.50	1.75	1.61
"    "    " guaranteed.	2.06	1.50	1.70	1.84	1.85	2.25	1.84	1.80	1.50
Phosphoric acid, water-soluble.....	0.98	0.26	0.13	0.94	0.06	0.95	0.11	0.34	0.24
Phosphoric acid, citrate-soluble.....	0.55	0.45	1.70	0.77	0.67	0.84	0.73	0.77	0.57
Phosphoric acid, citrate-insoluble.....	0.12	0.17	0.10	0.09	0.19	0.13	0.03	0.14	0.14
Phosphoric acid, total found	1.65	0.88	1.93	1.80	0.92	1.92	0.87	1.25	0.95
Phosphoric acid, total guaranteed.....	1.25	1.00	1.00	1.25	1.43	1.25	1.25	1.00	1.00
Water-soluble potash found.	2.37	3.36	2.14	2.43	3.57	2.60	3.39	2.17	3.20
Water-soluble potash guaranteed.....	1.00	2.00	1.00	3.00	1.25	1.50	3.00	1.00	2.50
Chlorine.....	0.89	1.58	.....	0.84	2.30	0.53	1.73	0.44	1.86
Cost per ton.....	\$33.00	35.00	40.00	65.00	50.00	48.00	48.00	57.00	55.00

**14613.** Magic Brand, and **15041** Groz-It Brand, fail to meet their guaranties of nitrogen and phosphoric acid.

Sheep manure, being fine and dry, is well adapted to greenhouse work and for a dressing for lawns.

A comparison with New York horse manure is as follows:

Pounds of the ingredients named in one ton.

	Sheep Manure	Horse Manure
Organic matter.....	1426	540
Nitrogen.....	40	13
Phosphoric acid.....	27	9
Potash.....	56	.12

Three and one-half tons of horse manure contain on the average as much plant food as does one ton of sheep manure.

The prices quoted by dealers range from \$33 to \$65 per ton, the higher prices probably are quoted for sales in small quantities.

It is doubtful if sheep manure will promote bacterial activity in the soil as effectively as fresh manures, but if the cost of fresh manure rises much further the dried manures may come into use on the farm where it is felt that manure must be used.

#### LIME AND LIME-KILN ASHES.

**14235.** Agricultural Lime. Sold by Grangers' Agricultural Lime Co., West Stockbridge, Mass. Sent by E. H. Ocain, Falls Village.

**14629.** Lime. Sent by Raymond Bros., South Norwalk.

**14803.** Ground Limestone. Sold by the Stearns Lime Co., Danbury. Sent by C. R. Treat, Orange.

**15161.** Lime-Kiln Ashes. Sent by A. B. Smith, Clintonville.

#### ANALYSES OF LIME AND LIME-KILN ASHES.

Station No.....	14235	14629	14803	15161
Water-soluble potash.....				2.17
Lime.....	39.74	37.50	38.56	41.34
Insol. in acid.....	13.58		25.68	14.71

**14803** was stated by Mr. Treat to have a guaranty of 45 per cent. calcium oxide and 75 per cent. to pass a 100-mesh screen. Only 60 per cent. of the sample passed such a screen.

The manufacturers state that the hard winter and the great demand for lime made it necessary to fill orders as best they could, and some lime of inferior quality like **14803** got shipped out which was quite inferior to the normal product.

In the last ten years ten analyses of lime from this firm show percentages of lime ranging from 43.44 to 47.36 and averaging 45.43 per cent. of lime, equivalent to 81.1 per cent. of calcium carbonate, with 3.23 per cent. of magnesia.

#### WOOD ASHES.

In a table, page 65, are given analyses of wood ashes.

**15106** is from the furnace of the Cheshire Mill.

**14646** was sent by R. S. Griswold, who stated that the ashes were bought of A. E. Dickenson & Co., of Essex, with a guaranty that they should be as good as those bought the year before.



This sample contained 32.18 per cent. of insoluble matter and only 1.31 per cent. of water-soluble potash.

Later the sampling agent of the Station drew a sample of these ashes at Mr. Griswold's request, the analysis of which appears as No. 15086.

Ten car lots of ashes from John Joynt, Lucknow, Can., six of them sold to the American Sumatra Tobacco Co., Nos. 14844 to 14848 and 15093, and four other car lots, Nos. 14252, 14467, 14985 and 15017, were of excellent quality.

But three other samples from the same dealer were of very inferior composition, 14513, 14888 and 14984.

15367 from Geo. Stevens, Peterborough, Can., is not *unleached* hard wood ashes.

At \$5.50 per unit, potash in wood ashes costs 27 cents per pound, at \$6.00 per unit, potash costs 30 cents per pound. This is about double the cost in potash salts mentioned on page 25. Ashes, however, contain 1.5 to 2.0 per cent. of phosphoric acid and about 30 per cent. of lime in form of carbonate, which add considerably to their value.

14987. Phos-Pho-Germ. Made by the American Nitro-Phospho Corporation, 80 Lafayette St., New York City.

It is claimed to be a mixture of humus, raw phosphate, lime, wood ashes, sulphur and various bacterial foods, and inoculated with many strains of vigorous, beneficial soil bacteria.

The sample drawn by a Station agent from stock of George Yuengling, New Canaan, had a guaranty of 0.82 per cent. nitrogen, 8.00 per cent phosphoric acid, of which 0.25 is available, and 0.15 per cent. of potash.

The analysis is as follows:

<i>Per cent. of</i>	
Nitrogen.....	0.50%
Available phosphoric acid.....	1.16
Total phosphoric acid.....	17.27
Potash.....	0.22
Cost per ton.....	\$45.00

It fails to meet its guaranty of nitrogen. The plant food in a ton of it is, liberally estimated, worth about \$15. Whether the "vigorous, beneficial soil bacteria" in a ton of it are worth \$30, the difference between the value of the plant food and the ton price, may well be doubted.

A sample stated to be Cocoon Dust, 15214, sent by the National Spun Silk Co. of New Bedford, Mass., contained 8.99 per cent. of nitrogen in fairly soluble and available condition, 1.41 per cent. of phosphoric acid and 0.25 per cent. of potash with 83.13 per cent. of organic matter; apparently an excellent nitrogenous fertilizer.

15210. Wool Waste from A. B. Smith, Clintenville. Contained 1.35 per cent. nitrogen, probably in inert form.

TABLE XI. ANALYSES OF WOOD ASHES.

Station No.	Car No. and Dealer or Purchaser.	Insoluble in acid (sand).	Water-soluble, potash.	Lime.	Phosphoric acid.	Cost per ton.
14808	Car C. G. R. No. 250022 Frank Bailey, Barre, Vt. Frank N. Brockett, Suffield.....	21.78	4.20	25.85	1.47	\$25.00
15106	Conn. Brass & Mfg. Corp., Waterbury.....	7.96	4.72	43.76	2.70	.....
14646	E. E. Dickenson & Co. R. S. Griswold, Wethersfield,.....	32.18	1.31	16.37	1.54	.....
15086	E. E. Dickenson & Co. R. S. Griswold, Wethersfield.....	.....	1.84	16.82	1.71	.....
14844	Car No. 201591. John Joynt, Lucknow, Ont. American Sumatra Tobacco Co., Bloomfield..	20.50	6.05	30.24	2.02	( <sup>1</sup> )
14845	Car No. 19698. John Joynt, Lucknow, Ont. American Sumatra Tobacco Co., Bloomfield..	10.40	5.63	36.98	2.24	( <sup>1</sup> )
14846	Car No. 16567. John Joynt, Lucknow, Ont. American Sumatra Tobacco Co., Bloomfield..	12.90	7.18	34.80	2.26	( <sup>1</sup> )
14847	Car No. 6920. John Joynt, Lucknow, Ont. American Sumatra Tobacco Co., Bloomfield..	16.69	6.50	31.74	2.19	( <sup>1</sup> )
14848	Car No. 4067. John Joynt, Lucknow, Ont. American Sumatra Tobacco Co., Bloomfield..	15.12	6.63	32.00	2.41	( <sup>1</sup> )
14252	Car No. 11609. John Joynt, Lucknow, Ont. John Wolf, Windsor .....	10.04	4.79	31.67	1.00	( <sup>2</sup> )
14467	Car No. 80633. John Joynt, Lucknow, Ont. J. N. Lasbury, Broad Brook .....	12.65	4.96	28.03	1.59	.....
14513	John Joynt, Lucknow, Ont. A. D. Bridge Sons Co., Hazardville.....	25.41	1.42	18.55	0.58	22.00
14888	Car No. 243740. John Joynt, Lucknow, Ont. Geo. T. Soule, New Milford .....	27.58	0.52	21.21	1.66	26.00
14984	John Joynt, Lucknow, Ont. Geo. T. Soule, New Milford.....	21.34	0.85	28.70	1.33	26.00
14985	Car No. 84738. John Joynt, Lucknow, Ont. N. Jones, South Windsor.....	13.30	5.72	31.64	2.02	( <sup>1</sup> )
15017	Car No. 50110. John Joynt, Lucknow, Ont. N. Jones, South Windsor.....	23.35	4.63	26.18	2.26	( <sup>1</sup> )
15093	Car No. 10301. John Joynt, Lucknow, Ont. American Sumatra Tobacco Co., Hartford...	13.34	6.56	34.27	2.06	.....
15367	Geo. Stevens, Peterborough, Can. F. W. Judson, Waterbury.....	16.22	0.88	.....	3.99	15.00
15381	From Chase Metal Works, Waterbury. Sent by A. F. Greene, Woodbury.....	9.08	5.49	.....	1.61	.....

<sup>1</sup> \$5.50 per unit of water-soluble potash. <sup>2</sup> \$6.00 per unit of water-soluble potash.

**14753.** Stated to be "a factory waste." Sent by F. A. Jordan, Woodstock. Contained 7.63 per cent. of nitrogen, .40 per cent. of which was in form of ammonia and all of which appeared to be in available form.

**14939.** Stated to be Chili Saltpeter. Guaranteed 15.50 per cent. nitrogen and 17.20 per cent. potash.

It contained 11.38 per cent. of nitrogen, 17.05 per cent. of potash, and 0.38 per cent. of borax. It is apparently a waste product from the refining of nitrate of soda.

**14940.** Stated to be a residue from a Welsbach burner factory and sent by Prof. Browning of Yale University. It contained:

Water-soluble phosphoric acid. . . . .	0.50%
Citrate-soluble phosphoric acid. . . . .	16.90
Citrate-insoluble phosphoric acid. . . . .	10.78
Total phosphoric acid. . . . .	28.18

**14916.** Stated to be a solution in which refuse rubber is heated under steam pressure.

It had a sp. gr. of 1.017, contained 2.86 per cent. of solid matter, 1.21 per cent. of potash and a little combined sulphur. Of no value as an insecticide or fungicide.

**13575.** Thought to be wood ashes, contained 33.63 per cent. of insoluble matter, 0.77 per cent. of phosphoric acid and 0.45 of potash.

**14937.** A sample of fresh menhaden fish. They contain an average of water 77.0 per cent., oil 4.00 per cent., nitrogen 1.5, phosphoric acid 1.5, and potash 0.3 per cent.

**14399.** A mixture of several brands of fertilizer. Sent by F. J. Harrison, Waterbury. Contained 0.88 per cent. nitrogen, 14.90 of phosphoric acid and 0.07 of potash.

Five other samples were examined qualitatively, but have no general interest of importance.