
UNIVERSITY OF MISSOURI.

COLLEGE OF AGRICULTURE AND MECHANIC ARTS.

Agricultural Experiment Station.

BULLETIN NO. 78.

**INSPECTION OF COMMERCIAL
FERTILIZERS**

COLUMBIA, MISSOURI.

January, 1908.

Press of E. W. Stephens Publishing Co., Columbia, Mo.

UNIVERSITY OF THE STATE OF MISSOURI.

COLLEGE OF AGRICULTURE AND MECHANIC ARTS.

Agricultural Experiment Station

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² In the service of the U. S. Department of Agriculture.

INSPECTION OF COMMERCIAL FERTILIZERS.

By P. F. TROWBRIDGE, *Associate Chemist.*

The following is a report of the results of analyses of the samples of commercial fertilizers collected during the season of 1907. It likewise contains a statement of the receipts and disbursements of the Fertilizer Control Fund for the year ended December 31, 1907.

Collecting the Samples.

During August and September, competent inspectors were sent by the Station to all portions of the State where commercial fertilizers are used extensively, with instructions as to the manner of drawing, packing and shipping of the samples. These samples were drawn principally from the material in the hands of the local agent, but in some cases from the supply of the farmer, and in a few instances samples were taken from the cars in transit. A large number of samples of all the principal brands was drawn. The results of the chemical analyses of these samples are shown in the following tables, in comparison with the guarantee of the manufacturer.

| No. | Date of Collection | Manufacturer and Brand | From Whom Collected | Nitrogen | | Phosphoric Acid, P ₂ O ₅ | | | | | | Potash, K ₂ O | |
|------|--------------------|---|--|--------------|---------------|--|---------------|--------------|---------------|--------------|---------------|--------------------------|---------------|
| | | | | | | Total | | Insoluble | | Available | | | |
| | | | | Gtd. per ct. | Found per ct. | Gtd. per ct. | Found per ct. | Gtd. per ct. | Found per ct. | Gtd. per ct. | Found per ct. | Gtd. per ct. | Found per ct. |
| 1086 | Sept. 19 | Michigan Carbon Works, Detroit, Mich. Red Line Phosphate and Potash..... | Ramsey Bros, Fredericktown.... | | | | 13.84 | | 6.79 | 10.00 | 7.05* | 2.00 | 1.59* |
| | | Virginia, Carolina Chemical Co., Memphis, Tenn. | | | | | | | | | | | |
| 1074 | " 11 | Royal High Grade Guano..... | Adams Hdw. Co., Lamar..... | 1.65 | 1.91 | | 15.20 | | 2.13 | 10.00 | 13.07 | 2.00 | 2.27 |
| 1063 | " 11 | Pure Raw Animal Bone..... | Adams Hdw. Co., Lamar..... | 3.30 | 3.00* | | 23.39 | 20.00 | | | | | .23 |
| | | Arkansas Fertilizer Co., Little Rock, Ark. | | | | | | | | | | | |
| 1065 | " 13 | White Diamond Pure Raw Bone Meal. | Carthage Seed Co., Carthage | 3.30 | 3.10* | 20.00 | 22.00 | 13.00 | | 7.00 | | | |
| 1087 | " 18 | Ammoniated Bone and Super-Phosphate..... | N. E. Butler, Bismark..... | 1.65 | 1.62* | 11.50 | 15.36 | 2.50 | 6.46 | 9.00 | 8.90* | 2.00 | 1.96* |
| 1099 | " 19 | Economy Fertilizer..... | Farmers & Laborers Mill, Fredericktown.. | .82 | 1.03 | 12.00 | 15.67 | 2.00 | 12.33 | 10.00 | 3.34* | 2.00 | 1.92* |
| | | Tuscarora Fertilizer Co., Chicago and E. St. Louis, Ill., Kansas City, Kansas, Omaha, Neb. | | | | | | | | | | | |
| 1094 | " 19 | Bone and Potash..... | Z. T. Berryman, Fredericktown.. | | 1.65 | | 12.28 | | 1.48 | 10.00 | 10.80 | 2.00 | 4.72 |
| 1051 | " 5 | Animal Bone..... | Henry Paul, Foristell..... | 2.47 | 1.65* | | 30.89 | 24.00 | | | | | |
| 1053 | " 6 | Steamed Bone Meal..... | A. H. Williams, Silex..... | 1.65 | 1.20* | | 34.33 | 20.00 | | | | | |
| 1047 | " 6 | Tuscarora Standard..... | A. H. Williams, Silex..... | 1.65 | 1.57* | | 22.45 | | 2.22 | 8.00 | 20.23 | 2.00 | 1.76* |
| | | Packer's Fertilizer Association, Chicago Ill | | | | | | | | | | | |
| 1087 | " 4 | Boars Head Spec. Bone Meal..... | B. B. Thurman, Auxvasse..... | 1.23 | 1.64 | 25.00 | 29.17 | | | | | | |

*Below guarantee

| No. | Date of Collection | Manufacturer and Brand | From Whom Collected | Nitrogen | | Phosphoric Acid, P ₂ O ₅ | | | | | | Potash, K ₂ O | |
|-------|--------------------|--|--|--------------|---------------|--|---------------|--------------|---------------|--------------|---------------|--------------------------|---------------|
| | | | | | | Total | | Insoluble | | Available | | | |
| | | | | Gtd. per ct. | Found per ct. | Gtd. per ct. | Found per ct. | Gtd. per ct. | Found per ct. | Gtd. per ct. | Found per ct. | Gtd. per ct. | Found per ct. |
| 1060 | Sept. 12 | Boars Head Spec. Bone Meal..... | Avery & Brown, Mt. Vernon..... | 1.23 | 1.53 | 25.00 | 28.56 | 12.00 | 14.37 | 13.00 | 14.19 | | |
| 1092 | " 19 | " " " " " | Lutesville Mill, Lutesville..... | 1.23 | 1.85 | 25.00 | 27.56 | | | | | | |
| 1052 | " 6 | Boars Head Ammoniated Bone and Potash..... | S. B. Hayes, Silex..... | .82 | 1.02 | 12.00 | 15.93 | 2.00 | 2.51 | 10.00 | 13.42 | 1.00 | 1.03 |
| 1050 | " 6 | Boars Head World of Good Phosphate..... | S. B. Hayes, Silex..... | 2.06 | 2.36 | 10.00 | 16.72 | 2.00 | 3.48 | 8.00 | 13.24 | 1.50 | 1.47* |
| 1044 | " 5 | " " " " " | J. Wright, Truesdale..... | 2.06 | 2.48 | 10.00 | 11.19 | 2.00 | 2.64 | 8.00 | 8.55 | 1.50 | 1.45* |
| 10103 | " 19 | " " " " " | Wm. Thompson, Fredericktown.. | 2.06 | 2.08 | 10.00 | 12.18 | 2.00 | 3.56 | 8.00 | 8.62 | 1.50 | 1.40* |
| 10100 | " 11 | Boars Head Chicago Bone Meal..... | Boyd & Tartar, Miller..... | 2.47 | 2.20* | 20.00 | 26.23 | 8.00 | 12.91 | 12.00 | 8.32* | | |
| 1061 | " 16 | Boars Head Faultless Grain Grower | Farmer's Supply Co., Lebanon.. | .82 | 0.93 | 9.00 | 12.17 | 2.00 | 2.36 | 7.00 | 9.81 | 1.00 | 1.02 |
| | | Mayer Fertilizer & Junk Co., St. Louis. | | | | | | | | | | | |
| 1017 | " 19 | Anchor Brand Corn & Wheat Grower..... | J. M. Boston, Johnson..... | 2.05 | 2.09 | 11.00 | 13.50 | 3.00 | 5.86 | 8.00 | 7.64* | 3.00 | 1.96* |
| 1068 | " 19 | " " " " " | A. R. Wilder, Clinton..... | 2.05 | 2.57 | 11.00 | 12.67 | 3.00 | 4.80 | 8.00 | 7.87* | 3.00 | 2.37* |
| 1016 | " 19 | Special Wheat Grower | J. M. Boston, Johnson..... | 1.00 | 1.11 | 12.00 | 12.92 | 2.00 | 3.50 | 10.00 | 9.42* | 3.00 | 1.60* |
| 1077 | " 21 | " " " " " | Tranwich Bros., Farmington..... | 1.00 | 1.23 | 12.00 | 14.56 | 2.00 | 3.79 | 10.00 | 10.77 | 3.00 | 2.25* |
| | | North Western Fertilizer Co., Chicago, Ill. | | | | | | | | | | | |
| 1042 | " 5 | Acidulated Bone & Potash. | T. H. Britt & Son, Montgomery City | .82 | 1.08 | 12.00 | 13.78 | 2.00 | 3.56 | 10.00 | 10.22 | 1.00 | .92* |
| 1029 | " 20 | " " " " " | Kidwell & Winget, Versailles.... | .82 | 1.05 | 12.00 | 17.28 | 2.00 | 2.73 | 10.00 | 14.55 | 1.00 | 1.07 |

*Below guarantee

| No. | Date of Collection | Manufacturer and Brand | From Whom Collected | Nitrogen | | Phosphoric Acid, P ₂ O ₅ | | | | | | Potash, K ₂ O | | | |
|------|--------------------|--|---------------------------------|--------------|---------------|--|---------------|--------------|---------------|--------------|---------------|--------------------------|---------------|--|--|
| | | | | | | Total | | Insoluble | | Available | | | | | |
| | | | | Gtd. per ct. | Found per ct. | Gtd. per ct. | Found per ct. | Gtd. per ct. | Found per ct. | Gtd. per ct. | Found per ct. | Gtd. per ct. | Found per ct. | | |
| 1011 | Sept. 19 | Acidulated Bone & Potash | H. F. C. Grote, Rose Bud..... | .82 | .95 | 12.00 | 14.05 | 2.00 | 3.78 | 10.00 | 10.27 | 1.00 | .92* | | |
| 1013 | " 19 | Animal Bone Manure. | " " " " " | .82 | .93 | 9.00 | 11.11 | 2.00 | 2.72 | 7.00 | 8.39 | 1.00 | .93* | | |
| 1027 | " 20 | " " " | Kidwell & Winget, Versailles | .82 | .91 | 9.00 | 27.11 | 2.00 | 15.36 | 7.00 | 11.75 | 1.00 | 1.00 | | |
| 1097 | " 18 | " " " | Henry Adkins, Bismark..... | .82 | 1.02 | 9.00 | 10.00 | 2.00 | 2.84 | 7.00 | 7.16 | 1.00 | .95* | | |
| 1081 | " 17 | " " " | C. A. Hawsman, Sullivan | .82 | .98 | 9.00 | 11.89 | 2.00 | 2.76 | 7.00 | 9.13 | 1.00 | .95* | | |
| 1028 | " 20 | Bone & Potash. | Kidwell & Winget, Versailles .. | | | | 24.06 | | 2.59 | 10.00 | 21.47 | 2.00 | 1.52* | | |
| 1022 | " 19 | Special Potato Grower | E. C. Weeks, Eldon | 2.06 | 1.80* | 10.00 | 11.06 | 2.00 | 2.07 | 8.00 | 8.99 | 5.00 | 4.85* | | |
| 1021 | " 19 | Quick Acting Potash..... | " " " " | | | | 16.00 | | 3.39 | 10.00 | 12.61 | | | | |
| 1012 | " 19 | Pure Ground Bone. | H. F. C. Grote, Rose Bud..... | 2.47 | 2.24* | 20.00 | 24.47 | 8.00 | 13.66 | 12.00 | 10.81* | | | | |
| 1048 | " 6 | National Bone Dust | Riley Wells, Silex | 2.06 | 2.45 | 10.00 | 16.39 | 2.00 | 3.58 | 8.00 | 12.81 | 1.50 | 1.47* | | |
| 1030 | " 20 | Premium Bone Meal | Kidwell & Winget, Versailles... | 1.23 | 1.03* | 20.00 | 29.72 | 12.00 | 20.05 | 13.00 | 9.67* | | | | |
| 1070 | " 18 | | Feed & Fuel Co., DeSoto..... | 1.23 | 2.23 | 25.00 | 24.76* | | | 13.00 | 4.71* | | | | |
| | | Armour Packing Co., Kansas City, Kan. | | | | | | | | | | | | | |
| 1024 | " 20 | Helmet Brand No. 271 | Thorpe Bros., Versailles..... | 1.65 | 1.72 | | 13.65 | | 1.89 | 7.00 | 11.76 | 1.00 | 2.25 | | |
| 1010 | " 18 | " " Raw Bone Meal..... | Brinkmeyer Bros., Leslie..... | 3.87 | 3.92 | 22.00 | 25.72 | 14.00 | 17.27 | 8.00 | 8.35 | | | | |
| 1040 | " 5 | | L. P. & J. H. Miller, High Hill | 3.87 | 3.29* | 22.00 | 28.76 | | | 8.00 | 11.49* | | | | |
| 1078 | " 11 | | McDermitt & Co., Lockwood | 3.37 | 3.92 | 22.00 | 27.60 | | | 8.00 | 10.33 | | | | |

*Below guarantee

| No. | Date of Collection | Manufacturer and Brand | From Whom Collected | Nitrogen | | Phosphoric Acid, P ₂ O ₅ | | | | | | Potash, K ₂ O | |
|-------|--------------------|--|----------------------------------|--------------|---------------|--|---------------|--------------|---------------|--------------|---------------|--------------------------|---------------|
| | | | | | | Total | | Insoluble | | Available | | | |
| | | | | Gtd. per ct. | Found per ct. | Gtd. per ct. | Found per ct. | Gtd. per ct. | Found per ct. | Gtd. per ct. | Found per ct. | Gtd. per ct. | Found per ct. |
| 1072 | Sept. 16 | Helmet Brand Raw Bone Meal..... | Robinson Lbr. Co., Marsfield.... | 3.87 | 4.14 | 22.00 | 26.14 | 14.00 | 15.34 | 8.00 | 10.80 | | |
| 1082 | " 13 | " " " " | Dixon & Zone, Carthage..... | 3.87 | 3.91 | 22.00 | 26.66 | 14.00 | 16.32 | 8.00 | 10.34 | | |
| 1049 | " 5 | " " " " | Neiberg Mfg. Co., Wright City... | 3.87 | 3.59* | 22.00 | 28.44 | 14.00 | 18.71 | 8.00 | 9.73 | | |
| 1062 | " 14 | Helmet Brand No. 282..... | J. A. Cogatt, Jasper..... | 1.65 | 1.85 | 9.50 | 13.67 | 1.50 | 2.15 | 8.00 | 11.52 | 2.00 | 2.33 |
| 10104 | " 10 | " " " " | Foote Bros., Clinton..... | 1.65 | 1.93 | 9.50 | 13.39 | 1.50 | 3.33 | 8.00 | 10.06 | 2.00 | 2.46 |
| 1023 | " 20 | Helmet Brand Ammoniated Dissolved Bone & Potash..... | Thorpe Bros., Versailles..... | 1.65 | 1.69 | 11.50 | 14.34 | 1.50 | 1.87 | 10.00 | 12.47 | 2.00 | 2.35 |
| 1095 | " 10 | Helmet Brand Ammoniated Dissolved Bone & Potash..... | Johnannes & Son, Nevada.... | 1.65 | 1.70 | 11.50 | 14.32 | 1.50 | 2.15 | 10.00 | 12.67 | 2.00 | 2.15 |
| 1031 | " 21 | Helmet Brand Ammoniated Dissolved Bone & Potash..... | Archias Seed Co., Sedalia..... | 1.65 | 1.75 | 11.50 | 15.00 | 1.50 | 1.50 | 10.00 | 13.50 | 2.00 | 2.14 |
| 1064 | " 10 | Helmet Brand, Lawn and Garden Fertilizer.... | Foote Bros., Clinton | 2.88 | 3.11 | 9.50 | 13.89 | 1.50 | 1.50 | 8.00 | 12.39 | 4.00 | 5.20 |
| 1069 | " 10 | Helmet Brand Spec. Potato Grower..... | " " " | 1.65 | 2.48 | 9.50 | 13.78 | 1.50 | 1.93 | 8.00 | 11.85 | 10.00 | 8.68* |
| 1088 | " 10 | Helmet Brand, Pure Fine Ground Beef Bone ... | Spisy & Wilson, Fredericktown.. | 2.47 | 3.23 | 25.00 | 27.22 | 12.50 | 17.10 | 12.50 | 10.12* | | |
| 1067 | " 12 | | Orr & Co., Mt. Vernon. | 2.47 | 3.25 | | | | | | | | |
| | | Armour's Fertilizer Works, E. St. Louis, III. | | | | | | | | | | | |
| 1058 | " 24 | Corn, Wheat & Oat Grower..... | Wm. Hoech, New Truxton. | .82 | 1.00 | | 12.67 | | 1.20 | 7.00 | 11.47 | 1.00 | .98* |

*Below guarantee

| No. | Date of Collection | Manufacturer and Brand | From Whom Collected | Nitrogen | | Phosphoric Acid, P ₂ O ₅ | | | | | | Potash, K ₂ O | |
|-------|--------------------|--|--|--------------|---------------|--|---------------|--------------|---------------|--------------|---------------|--------------------------|---------------|
| | | | | | | Total | | Insoluble | | Available | | | |
| | | | | Gtd. per ct. | Found per ct. | Gtd. per ct. | Found per ct. | Gtd. per ct. | Found per ct. | Gtd. per ct. | Found per ct. | Gtd. per ct. | Found per ct. |
| | | P. B. Mathiason Manufacturing Co., St. Louis, Mo. | | | | | | | | | | | |
| 10102 | Sept. 16 | Increscent Brand, Grain Grower..... | Brantley Bros., Lebanon | 1.65 | 2.03 | 10.00 | 17.95 | 2.00 | 13.95 | 8.00 | 4.00* | 1.50 | 1.38* |
| 1084 | " 21 | " " " " | Hermann Herbst, Farmington ... | 1.65 | 1.74 | 10.00 | 14.72 | 2.00 | 2.51 | 8.00 | 12.21 | 1.50 | 1.71 |
| 1057 | " 24 | Increscent Brand Grain Grower..... | Capt. Hooker, New Truxton | 1.65 | 1.86 | 10.00 | 14.92 | 2.00 | 4.40 | 8.00 | 10.52 | 1.50 | 1.84 |
| 1025 | " 20 | " " " " | D. C. Hardy, Versailles | 1.65 | 1.73 | 10.00 | 19.11 | 2.00 | 3.75 | 8.00 | 15.36 | 1.50 | 2.02 |
| 102 | " 17 | " " " " | Farmer's Grain & Elev. Co., Hermann | 1.65 | 1.76 | 10.00 | 15.03 | 2.00 | 6.22 | 8.00 | 8.81 | 1.50 | 1.80 |
| 106 | " 18 | " " " " | Hempleman & Altheide, New Haven..... | 1.65 | 1.84 | 10.00 | 13.11 | 2.00 | 3.86 | 8.00 | 9.25 | 1.50 | 1.77 |
| 1071 | " 17 | Atlas Fertilizer | C. A. Hawsman, Sullivan... .. | .83 | .83 | 9.00 | 13.15 | 1.00 | 2.18 | 8.00 | 10.97 | 1.00 | .92* |
| 1028 | " 20 | Acidulated Bone & Potash..... | D. C. Hardy, Versailles | 2.47 | 2.58 | 11.00 | 22.50 | 2.00 | 4.33 | 9.00 | 18.17 | 2.00 | 2.41 |
| 1076 | " 17 | Pure Raw Bone Meal | C. A. Hawsman, Sullivan | 3.50 | 3.16* | 33.00 | 23.83* | 16.00 | 15.47* | 17.00 | 8.36* | | |
| 1059 | " 23 | " " " " | Wells Bros., Bonne Terre ... | 3.50 | 3.15* | 36.00 | 26.06* | | | 17.00 | 10.59* | | |
| 101 | " 17 | Spec. Corn & Oat Grower..... | Farmer's Grain & El. Co., Hermann..... | .90 | 1.00 | 9.00 | 14.67 | 2.00 | 6.29 | 7.00 | 8.38 | 1.00 | .76* |
| | | Nelson Morris & Co. Chicago, Ill. | | | | | | | | | | | |
| 1196 | " 19 | Big Nine, Pure Bone Phosphate..... | J. H. Shiffler & Son, Eldon | 1.50 | 2.05 | 10.00 | 14.80 | 2.00 | 2.00 | 8.00 | 12.72 | 5.00 | 4.45* |
| 1054 | " 7 | Big Six, Spec. Bone Meal..... | Grunnett & Biggs, Bowling Green | .82 | .57* | 26.00 | 27.22 | 19.00 | 21.12 | 7.00 | 6.10* | | |

*Below guarantee

| No. | Date of Collection | Manufacturer and Brand | From Whom Collected | Nitrogen | | Phosphoric Acid, P ₂ O ₅ | | | | | | Potash, K ₂ O | | | |
|--|--------------------|-------------------------------------|--|--------------|---------------|--|---------------|--------------|---------------|--------------|---------------|--------------------------|---------------|------|-------|
| | | | | | | Total | | Insoluble | | Available | | | | | |
| | | | | Gtd. per ct. | Found per ct. | Gtd. per ct. | Found per ct. | Gtd. per ct. | Found per ct. | Gtd. per ct. | Found per ct. | Gtd. per ct. | Found per ct. | | |
| 1043 | Sept. 5 | Big Six, Spec. Bone Meal..... | Reese & Steurman, Truesdale.... | .82 | .60* | 26.00 | 30.44 | 19.00 | 14.76* | 7.00 | 15.68 | | | | |
| 1089 | " 19 | Big Two, Pure Bone Meal..... | { Taylor Merc. Co., Marble Hill...} | 2.10 | 2.00* | 26.00 | 25.93* | { 19.00 | 16.60* | 7.00 | 9.33 | | | | |
| 1093 | " 20 | | { Renter Milling Co., St. Genevieve | 2.10 | 3.53 | 26.00 | 26.66 | | | 7.00 | 10.06 | | | | |
| 1015 | " 19 | | { G. J. Baur, Rose Bud | 2.10 | 2.35 | 26.00 | 28.33 | | | 7.00 | 11.73 | | | | |
| 1014 | " 19 | | { " " " " " | 2.10 | 1.87* | 26.00 | 27.64 | | | 19.00 | 14.22* | | | 7.00 | 13.42 |
| 1035 | " 4 | | { E. B. Campbell, Auxvasse | 2.10 | 2.84 | 26.00 | 27.51 | | | 19.00 | 14.01* | | | 7.00 | 13.50 |
| 1055 | " 24 | Big Five, Pure Bone Phosphate..... | { Barker Bros., Centralia | 2.47 | 2.96 | 10.00 | 13.95 | { 4.00 | 12.86 | 6.00 | 1.09* | { 1.00 | 1.10 | | |
| 1019 | " 19 | | { J. H. Shiffler & Son, Eldon..... | 2.47 | 3.50 | 10.00 | 13.22 | | | 6.00 | 0.00* | | | | |
| 1046 | " 5 | Big Ten, Grain Grower... .. | Ober & Koch, Wright City. | 1.50 | 1.80 | 10.00 | 17.44 | 2.00 | 2.04 | 8.00 | 15.40 | 2.00 | 1.90* | | |
| 1018 | " 19 | Big Three, Pure Bone Phosphate..... | { J. H. Shiffler & Son, Eldon | 2.47 | 3.25 | 10.00 | 11.66 | { 4.00 | 8.68 | 6.00 | 2.98* | 2.00 | 2.34 | | |
| 1041 | " 5 | { " " " " " | { Jas. Cunningham, Montgomery City | 2.47 | 2.89 | 10.00 | 27.44 | | | 6.00 | 18.76 | 2.00 | 1.67* | | |
| 1036 | " 4 | Big One, Pure Raw Bone Meal..... | E. B. Campbell, Auxvasse..... | 3.30 | 3.69 | 24.00 | 24.22 | | | | | | | | |
| Ash Grove Lime Mfg. Co., Ash Grove, Mo. | | | | | | | | | | | | | | | |
| 1085 | " 11 | Wood Ashes..... | Thos. Eggar, Lamar | | | | | | | | | | 3.97 | | |
| 1080 | " 11 | Wood Ashes & Lime | " " " | | | | | | | | | | 2.22 | | |
| 92 | Aug. 13 | Hydrated Lime & Wood Ashes..... | " " " | | .20 | | 1.50 | | 0.50 | | 1.00 | | 2.43 | | |

*Below guarantee

| No. | Date of Collection | Manufacturer and Brand | From Whom Collected | Nitrogen | | Phosphoric Acid, P ₂ O ₅ | | | | | | Potash, K ₂ O | |
|-------|--------------------|---------------------------------------|------------------------------------|--------------|---------------|--|---------------|--------------|---------------|--------------|---------------|--------------------------|---------------|
| | | | | | | Total | | Insoluble | | Available | | | |
| | | | | Gtd. per ct. | Found per ct. | Gtd. per ct. | Found per ct. | Gtd. per ct. | Found per ct. | Gtd. per ct. | Found per ct. | Gtd. per ct. | Found per ct. |
| | | Swift & Co., Chicago, Ill. | | | | | | | | | | | |
| 1091 | Aug. 14 | Pure Raw Bone Meal..... | Webb Bros., Jasper..... | 3.75 | 4.52 | 23.00 | 24.61 | | | | | | |
| 1066 | " 13 | " " " " | Pierce Elev. Co., Pierce City..... | 3.75 | 4.16 | 23.00 | 25.78 | | | | | | |
| 1045 | " 5 | " " " " | G. H. Shultz, Truesdale | 3.75 | 4.00 | 23.00 | 29.72 | | | | | | |
| 1039 | " 4 | " " " " | C. A. McCue, Auxvasse..... | 3.75 | 4.06 | 23.00 | 26.83 | | | | | | |
| 104 | " 18 | " " " " | Grantemann & Co., New Haven | 3.75 | 4.08 | 23.00 | 25.44 | | | | | | |
| 108 | " 18 | " " " " | H. W. Knoop, Gerald | 3.75 | 3.77 | 23.00 | 23.70 | | 11.39 | | 12.31 | | |
| 1075 | " 16 | Swift's Pure Bone Meal..... | Newton Grain Co., Springfield. . | 2.50 | 1.83* | 25.00 | 32.83 | | | | | | |
| 1090 | " 10 | " " " " | Thos. Eggar, Lamar | 2.50 | 1.90* | 25.00 | 31.56 | | | | | | |
| 10101 | " 16 | Pure Superphosphate..... | Blount Gro. Co., Marshfield | 1.64 | 1.45* | 12.00 | 12.95 | 4.00 | 2.36* | 8.00 | 10.59 | 2.00 | 1.93* |
| 1098 | " 19 | " " | Farm. & Lab. Mill, Fredericktown | 1.64 | 1.65 | 12.00 | 10.45* | 4.00 | 1.16* | 8.00 | 9.29 | 2.00 | 1.85* |
| 105 | " 18 | " " | Granneman & Co., New Haven.. | 1.64 | 1.54* | 12.00 | 9.81* | 4.00 | 1.94* | 8.00 | 7.87* | 2.00 | 1.93* |
| 109 | " 18 | " " | H. W. Knoop, Gerald | 1.64 | 1.40* | 12.00 | 10.03* | 4.00 | 1.44* | 8.00 | 8.59 | 2.00 | 1.69* |
| 1056 | " 23 | Complete Fertilizer | J. T. Claywell, Farmington | 1.00 | .73* | 11.00 | 13.20 | 3.00 | 1.82* | 8.00 | 11.38 | 1.00 | .67* |

*Below guarantee

| No. | Date of Collection | Manufacturer and Brand | From Whom Collected | Nitrogen | | Phosphoric Acid, P ₂ O ₅ | | | | | | Potash, K ₂ O | |
|-------|--------------------|------------------------------|--------------------------------|--------------|---------------|--|---------------|--------------|---------------|--------------|---------------|--------------------------|---------------|
| | | | | | | Total | | Insoluble | | Available | | | |
| | | | | Gtd. per ct. | Found per ct. | Gtd. per ct. | Found per ct. | Gtd. per ct. | Found per ct. | Gtd. per ct. | Found per ct. | Gtd. per ct. | Found per ct. |
| 1083 | Sept. 11 | Complete Fertilizer | DeSoto Wood & Coal Co., DeSoto | 1.00 | .93* | 11.00 | 10.00* | 3.00 | 1.22* | 8.00 | 8.78 | 1.00 | 1.00 |
| 107 | " 18 | " " | H. W. Knopp, Gerald | 1.00 | .89* | 11.00 | 9.36* | 3.00 | 1.67* | 8.00 | 7.69* | 1.00 | .83* |
| 1020 | " 19 | Ammoniated Bone..... | Geo. R. Weeks, Eldon..... | 5.00 | 4.19* | 17.00 | 23.11 | | | | | | |
| 103 | " 18 | Pure Bone Meal & Blood | Granneman & Co., New Haven.. | 3.75 | 3.22* | 23.00 | 26.14 | | | | | | |
| | | Miscellaneous. | | | | | | | | | | | |
| 11100 | Nov. 15 | Raw Bone Fertilizer | J. J. Wacker, Wentzville. | | | | 25.58 | | | | | | |
| 1033 | " 16 | Dried Blood | J. W. Hanna, Tarkio..... | | 9.85 | | | | | | | | |
| 1034 | " 16 | " " | " " " " | | 9.93 | | | | | | | | |

*Below guarantee

TABLE SHOWING PROPORTION OF SAMPLES ANALYZED THAT FAILED TO COME WITHIN THE MANUFACTURERS' GUARANTEE

| Name of Manufacturer | Nitrogen | | | Phosphoric Acid P ₂ O ₅ | | | | | | Potash | | Summary | | | | | | | | |
|--|---------------------------------|----------------------------------|--|---|----------------------------------|---|---------------------------------|--------------------------------------|---|---------------------------------|--------------------------------------|---|---------------------------------------|--|---|---------------------------------|--------------------------------------|---|----|------|
| | No. of analyses with guarantees | No. of analyses below guarantees | Per cent of the analyses falling below the guarantees. | Total | | Insol. | | Avail. | | No. of analyses with guarantees | No. of analyses below the guarantees | Per cent of analyses falling below the guarantees | Total No. of analyses with guarantees | Total No. of analyses below guarantees | Per cent of the total analyses falling below the guarantees | | | | | |
| | | | | No. of analyses with guarantees | No. of analyses below guarantees | Per cent of the analyses falling below the guarantees | No. of analyses with guarantees | No. of analyses below the guarantees | Per cent of the analyses falling below the guarantees | | | | | | | No. of analyses with guarantees | No. of analyses below the guarantees | Per cent of the analyses falling below the guarantees | | |
| Michigan Carbon Works..... | | | | | | | | 1 | 1 | 100. | 1 | 1 | 100. | 2 | 2 | 100. | | | | |
| Virginia Carolina Chemical Company..... | 2 | 1 | 50 | 1 | 0 | | | 1 | 0 | | 1 | 0 | | 5 | 1 | 20 | | | | |
| Arkansas Fertilizer Company..... | 3 | 2 | 66.6 | 3 | 0 | 3 | 0 | 3 | 2 | 66.6 | 2 | 2 | 100 | 14 | 6 | 42.6 | | | | |
| Tuscarora Fertilizer Company..... | 3 | 3 | 100. | 2 | 0 | 2 | 0 | 2 | 0 | | 2 | 1 | 50 | 9 | 4 | 44.4 | | | | |
| Packer's Fertilizer Company..... | 9 | 1 | 11.1 | 9 | 0 | 7 | 0 | 7 | 1 | 14.2 | 5 | 3 | 60 | 37 | 5 | 13.5 | | | | |
| Mayer Fertilizer & J. Company..... | 4 | 0 | | 4 | 0 | 4 | 0 | 4 | 3 | 75 | 4 | 4 | 100. | 20 | 7 | 35 | | | | |
| Northwestern Fertilizer Company..... | 12 | 3 | 25 | 12 | 0 | 11 | 0 | 14 | 3 | 21.4 | 10 | 8 | 80 | 59 | 14 | 23.7 | | | | |
| Armour Packing Company..... | 17 | 1 | 5.9 | 14 | 0 | 12 | 0 | 16 | 1 | 6.3 | 9 | 2 | 22.2 | 68 | 4 | 5.8 | | | | |
| P. B. Mathiason Manufacturing Company..... | 11 | 2 | 18.1 | 11 | 2 | 18.1 | 10 | 1 | 10 | 11 | 3 | 27.2 | 9 | 3 | 33.3 | 52 | 11 | 21.1 | | |
| Nelson Morris & Company..... | 14 | 4 | 28.5 | 14 | 0 | 9 | 3 | 33.3 | 13 | 4 | 30.7 | 13 | 4 | 30.7 | 5 | 3 | 60 | 55 | 14 | 25.1 |
| Swift & Company..... | 17 | 10 | 58.8 | 17 | 5 | 29.4 | 7 | 7 | 100 | 7 | 2 | 28.5 | 7 | 6 | 85.7 | 59 | 30 | 50.8 | | |
| Totals..... | 92 | 27 | 29.3 | 87 | 7 | 8 | 63 | 11 | 17.4 | 79 | 20 | 25.3 | 55 | 33 | 60 | 380 | 98 | 25.7 | | |

**Detailed Statement of Receipts and Disbursements on the
Fertilizer Control Account for the Year Ending
December 31, 1907**

| | | |
|----------|----------------|-----------|
| 1907 | | |
| Jan. 1 | To balance.... | \$2735 01 |
| " 31 | " sale of tags | 908 76 |
| Feb. 28 | " sale of tags | 379 50 |
| Mar. 31 | " sale of tags | 132 98 |
| Apr. 30 | " sale of tags | 780 00 |
| May 31 | " sale of tags | 48 00 |
| Jun. 30 | " sale of tags | 630 00 |
| July 31 | " sale of tags | 1161 00 |
| Aug. 31 | " sale of tags | 227 40 |
| Sept. 30 | " sale of tags | 1738 95 |
| Oct. 31 | " sale of tags | 105 00 |
| Nov. 30 | " sale of tags | 30 00 |
| Dec. 31 | " sale of tags | 154 65 |

| | | | |
|---------|----|--|-----------|
| 1907 | | | |
| Jan. 31 | By | H. J. Waters, salary, etc..... | \$ 196 57 |
| " " | " | R. M. Bird, salary | 75 00 |
| " " | " | L. F. Childers, salary | 50 00 |
| " " | " | R. C. Doneghue, salary | 25 00 |
| " " | " | Sabra E. Kennedy, salary | 25 00 |
| " " | " | National Paper Co., tags | 168 30 |
| " " | " | F. W. Liepsner, salary | 57 00 |
| " " | " | J. H. Bell, labor | 37 65 |
| " " | " | C. F. Marbut, trav. exp. | 22 70 |
| " " | " | Byron McFarland, labor | 19 81 |
| " " | " | J. L. McCormack, sundries | 18 95 |
| " " | " | M. M. McCool, labor | 15 00 |
| " " | " | Univ. Co-Op store, stationery | 7 00 |
| " " | " | Higgins & Co., supplies | 6 00 |
| " " | " | Mary A. Cochel, labor | 4 50 |
| Feb. 28 | " | R. M. Bird, salary | 75 00 |
| " " | " | L. F. Childers, salary | 50 00 |
| " " | " | R. C. Doneghue, salary | 25 00 |
| " " | " | Sabra E. Kennedy, salary | 25 00 |
| " " | " | Bernie Venable, labor | 16 00 |
| Mar. 31 | " | R. M. Bird, salary | 75 00 |
| " " | " | Sabra E. Kennedy, salary | 25 00 |
| Apr. 30 | " | L. F. Childers, salary | 100 00 |
| " " | " | R. M. Bird, salary | 75 00 |
| " " | " | Sabra E. Kennedy, salary | 25 00 |
| " " | " | R. C. Doneghue, salary | 25 00 |
| " " | " | C. A. Griesciraner, seed corn | 13 75 |
| " " | " | Mary A. Cochel, labor | 12 00 |
| " " | " | W. E. Johnson, seed | 10 00 |
| " " | " | National Paper Co., stationery | 8 00 |
| May 31 | " | H. J. Waters, salary, etc..... | 170 27 |
| " " | " | J. C. Whitten, salary | 112 50 |
| " " | " | Jno. W. Conaway, salary | 112 50 |
| " " | " | J. M. Stedman, salary | 108 38 |
| " " | " | R. M. Bird, salary | 75 00 |
| " " | " | L. F. Childers, salary | 50 00 |
| " " | " | Paul Schweitzer, salary | 50 00 |
| " " | " | M. F. Miller, salary | 48 75 |
| " " | " | John Schnabel, salary | 37 50 |
| " " | " | Bertha Eves, salary | 25 00 |
| " " | " | Sabra E. Kennedy, salary | 25 00 |
| " " | " | Joe W. Ammerman, salary | 25 00 |
| " " | " | M. E. Sherwin, salary | 15 00 |
| " " | " | Robert F. Howard, salary | 15 00 |
| " " | " | J. Ben Hill, salary | 15 00 |
| " " | " | Bertha Cunningham, salary | 12 50 |
| " " | " | Boone Co. Mill & El. Co., feed | 271 75 |
| " " | " | Columbia Postoffice, postage | 217 00 |
| " " | " | Taylor-Estes Lber Co., fert'r & lber | 119 80 |
| " " | " | J. E. A. Ingram, labor | 45 00 |
| " " | " | Oscar Rawlings, labor | 37 50 |
| " " | " | J. M. Pennington, labor | 35 00 |
| " " | " | Chester Pollock, labor | 35 00 |
| " " | " | Coombe Bros., sundries | 33 90 |
| " " | " | Michaels Eng. Co., publications | 31 88 |
| " " | " | J. W. Waller, publications | 26 75 |
| " " | " | Chas. Matthews, sundries | 24 80 |
| May 31 | By | N. D. Robnett, Sundries | 18 30 |
| " " | " | E. R. Barkwell, labor | 17 50 |
| " " | " | McAlester Lb. Co., sundries | 15 22 |
| " " | " | C. C. Newman & Co., sundries | 14 85 |
| " " | " | Univ. Co-op. Store, stationery | 14 00 |
| " " | " | Bush & Mitchell, feeding stuff | 7 70 |
| " " | " | Mary A. Cochel, labor | 3 75 |
| " " | " | F. A. Muth, labor | 2 37 |
| " " | " | Allen Music Co., supplies | 2 00 |
| " " | " | Lemcke & Buechner, library | 1 82 |
| " " | " | P. Keller & Co., sundries | 1 02 |
| June 30 | By | H. J. Waters, salary | 160 66 |
| " " | " | L. F. Childers, salary | 144 24 |
| " " | " | M. F. Miller, salary | 124 35 |

| | | |
|-------------|-------------------------------------|---------|
| June 30 By | J. C. Whitten, salary | 112 50 |
| " | Jno. W. Connaway, salary | 112 50 |
| " | J. M. Stedman, salary | 108 34 |
| " | R. M. Bird, salary | 75 00 |
| " | Paul Schweitzer, salary | 50 00 |
| " | Jno. Schnabel, salary | 37 50 |
| " | C. B. Hutchison, salary | 33 33 |
| " | J. M. Evvard, salary | 26 66 |
| " | Joe W. Ammerman, salary | 25 00 |
| " | Sabra E. Kennedy, salary | 25 00 |
| " | Bertha Eves, salary | 25 00 |
| " | P. L. Gile, salary | 18 33 |
| " | Bertha Cunningham, salary | 12 50 |
| " | E. W. Stephens Pub. Co., publicat. | 385 00 |
| " | M. E. Sherwin, labor | 50 00 |
| " | J. E. A. Ingrum, labor | 45 00 |
| " | Lewis Rundson, labor | 40 00 |
| " | Chester Pollock, labor | 35 00 |
| " | J. M. Pennington, labor | 35 00 |
| " | J. W. Read, labor | 31 00 |
| " | Mary A. Cochel, labor | 24 00 |
| " | E. G. Mendenhall, machinery | 21 50 |
| " | E. R. Barkwell, labor | 17 50 |
| " | C. C. Newman & Co., sundries | 14 53 |
| " | E. D. Martin, heat, light, etc. | 11 25 |
| " | Chas. Matthews, sundries | 11 07 |
| " | Bush & Mitchell, sundries | 9 90 |
| " | W. L. Howard, Trav. Exp. | 8 64 |
| " | Geo. H. Sly, Seeds | 8 25 |
| " | Columbia Tel. Co., freight and exp. | 7 60 |
| " | A. H. Shepard, sundries | 7 50 |
| " | A. J. McDowell, freight and exp. | 6 66 |
| " | Jno. M. Palmer, labor | 4 80 |
| " | Jno. Walden, labor | 1 50 |
| " | Van Horn & Smith, sundries | 1 35 |
| " | Jacob & Mountjoy, sundries | 1 25 |
| July 31 By | P. L. Gile, salary | 50 00 |
| " | C. W. Saunders, salary | 25 00 |
| " | Mary A. Cochel, labor | 40 00 |
| " | Henry Heil Chem. Co., chem. sup. | 32 66 |
| " | P. B. Mathiason Mfg. Co., fert'r. | 9 22 |
| " | Gilman & Dorsey, Chem. supplies | 3 50 |
| " | Boone Co. Mill & El. Co., sundries | 1 25 |
| " | Taylor-Estes Lbr. Co., fertilizer | 1 10 |
| Aug. 31 By | R. M. Bird, salary | 75 00 |
| " | F. W. Liepsner, salary | 75 00 |
| " | Paul Schweitzer, salary | 50 00 |
| " | C. W. Saunders, salary | 11 67 |
| Sept. 30 By | H. J. Waters, salary | 166 66 |
| " | P. F. Trowbridge, salary | 83 34 |
| " | L. F. Shackell, salary | 37 50 |
| " | J. M. Doughty, salary | 30 00 |
| " | Sabra E. Kennedy, salary | 25 00 |
| " | Armour Pkg. Co., fertilizer | 37 02 |
| " | P. B. Mathiason Co., fertilizer | 5 54 |
| Oct. 31 By | L. F. Shackell, salary | 75 00 |
| " | C. R. Moulton, salary | 67 50 |
| " | J. M. Doughty, labor | 103 75 |
| " | P. F. Trowbridge, trav. expenses | 85 00 |
| " | M. E. Sherwin, labor | 37 82 |
| " | National Paper Co., stationery | 26 50 |
| " | E. W. Stephens Pub. Co. publicat. | 16 73 |
| " | W. B. McPike, labor | 14 50 |
| " | P. B. Mathiason Mfg. Co., sund | 3 95 |
| Nov. 30 By | P. F. Trowbridge, salary | 83 33 |
| " | L. F. Shackell, salary | 75 00 |
| " | Sabra E. Kennedy, salary | 25 00 |
| " | National Paper Co., stationery | 45 00 |
| " | Armour Pkg. Co., fertilizer | 1 38 |
| Dec. 31 By | L. F. Shackell, salary | 75 00 |
| " | Balance | 2505 13 |

9031 25

\$ 9031 25