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Fertilizer analyses for the year ending December 31, 1893

R. J.J. De Roode

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NUMBER 10

BULLETIN NO. 34.

West Virginia Agricultural Experiment Station,

MORGANTOWN, W. VA.

FERTILIZER ANALYSES

—FOR THE—

Year Ending December 31, 1893.

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ANALYSES

By DR. R. J. J. DE ROODE.

~~~~~

JOHN A. MYERS,

December, 1893.

CHARLESTON:
MOSES W. DONNALLY, PUBLIC PRINTER.
1894.

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 SUSIE V. MAYERS, Stenographer and Book-keeper.

*Died Dec. 16th.

GENERAL STATEMENT.

JOHN A. MYERS

This bulletin gives the chemical analyses and relative commercial value of all the fertilizers offered for sale in the State. The number of brands offered during the past year is 142. The table of analyses shows the analysis and valuation of each sample as determined by us, and also gives the valuation at the same figures based upon the minimum claims of the manufacturers. In practice, the minimum claims are usually what the manufacturer aims to furnish the farmer. By comparing the analysis with the guarantee, the farmer will readily see how close the manufacturers are running to their guarantee. Take for example "Star Brand Tobacco Manure," the first on the list. Reading across the page, we come first to the analysis of this brand as determined in the Station laboratory. Next, the valuation based upon this analysis; then comes the valuation based upon the guarantee of the manufacturer, followed by the analysis as guaranteed by the manufacturer. After which follows a comparison of the valuations. In this case "excess of value by analysis, \$2.88," which means that the sample submitted to us analyzed better than guaranteed by the manufacturers, to the value stated, and that the farmer gets full value for money paid. Running down the column, we come to Orchilla Guano, manufactured by the Wooldridge Fertilizer Co., Baltimore, Md., which, by, analysis, is worth \$8.72; by guarantee, worth \$18, making a deficiency of \$9.28, showing that this brand offers little inducement to the farmer to invest in it. Whenever the sample submitted by the manufacturer shows an excess of valuation in the "guarantee column amounting to as much as \$1.00 over the valuation based upon analysis, it is advisable for the farmer to buy some other brand.

There is this year a very marked reduction in the percentage of fertilizers sold upon higher guarantees than their merits justify. When the inspection began two years ago, 26% of the brands of fertilizers sold in this State were being misrepresented as to their composition and were being sold upon excessive guarantees. This year it has been reduced to 11%, counting all brands that are short. There are, however, in this some brands which are evidently short

from pure accident, as it only amounts to a few cents. If we were to allow a variation of \$1 per ton due to unavoidable errors in manipulation, sampling and analysis, there are only five brands in the 142 that are really short, reducing the number of deficient brands to $3\frac{1}{2}\%$. This indicates a very commendable effort upon the part of manufacturers to supply fertilizers equal in every respect to their minimum guarantee, and the saving, in this matter alone to the farmers, will, doubtless, in the aggregate amount to many times the entire cost of conducting the inspection, besides protecting honest and reliable fertilizer firms from the pretentious claims of fraudulent manufacturers and dishonest dealers.

Farmers will do well to accustom themselves to buy *plant food* rather than *brands* of fertilizers. A comparison of the analyses will show that there is relatively little variation in the composition of the ammoniated superphosphate offered for sale by the several manufacturers, and the farmer will often be able to save considerable money by remembering that the "phosphate of A." is as good as the "Phosphate or S. C. Dissolved Bone of M." provided the chemical analysis of the two is the same. It may be well, also for the farmer to remember that the "Grass Grower" probably comes from the same heap in the ware room that the "Buckwheat-Grower" comes from, and that there is nothing of merit in the name. The manufacturers are compelled, in many cases, in order to economically use their raw material, to manufacture different brands which are sold under various names. We are free to say that we think the manufacturers make a mistake in laying so much stress upon a particular brand of fertilizer, but perhaps the lack of information among the farming classes in regard to the use and adaptation of commercial fertilizers has compelled them to pander to this idea. It will be better for the manufacturers, in our judgment, and also for the farmer to buy the fertilizers, and transact all of their business in fertilizers upon the basis of chemical composition. Both parties in that case may know exactly what they are doing, and it takes the element of empiricism, out of the business, and establishes it upon a strictly scientific basis. It may, perhaps, be a long time before the farmers are prepared to act upon this suggestion, but the manufacturers buy their crude materials upon the basis of chemical analysis, and the sooner this system is extended to the entire business, the better for all parties concerned.

There have been reports of a few violations of the law that have reached this office, but upon investigation it was found that there was insufficient grounds for prosecution. Three cases are being investigated at present where there have been apparent intentional evasions of the law; which may require prosecution.

As is always the case, there have been a few disputes with manufacturers in regard to the accuracy of the analytical work, but in every case a review of our analysis has shown that our chemist was correct, and that the error or mistake had occurred either in the factory or in the laboratory of the manufacturer. We suggest that the manufacturers in every case retain a part of the sample sent us for

analysis, as most frequently they may find the cause of the error exists outside of our laboratory. Every possible provision is made for securing accurate results in our station laboratory, and no analysis is sent out until the sample has been analyzed in duplicate, starting the duplicates upon different days. The methods of analyses pursued are strictly those adopted by the Association of Official Agricultural Chemists, and our results, when transmitted to the manufacturers or to the farmers, we consider in all cases to be of sufficient accuracy to rely upon in any cases of litigation that may arise.

The table of valuation for last year was changed, as it was found that the prices adopted the year before were not sufficiently close to the actual commercial value of the fertilizer. It is impossible in a State like West Virginia to adopt a scale of prices that would be suited to all sections of the State, and hence we use simply a relative commercial valuation, which is reasonably close to the prices that farmers would have to pay for fertilizers of these particular grades. The German potash compounds are under the control of a syndicate or trust, which has adopted the following prices for 1894, for quantities of less than 12 tons:

Muriate of Potash,	guaranteed 80%,	\$ 2.32	per cwt. in N. Y.
Sulphate of Potash,	" 90%,	2.70	" " "
Sulph. Potash-Magnesia,	" 48%,	1.46	" " "
Kainit,		10.75	" ton "

Any of the above bought in bags, \$1.25 extra. The price of the above compounds is about 5 cents more per hundred in Baltimore than in New York. This does not include the freight rate from New York to point of destination. Correspondence in regard to these fertilizers should be directed to German Kali Works, Office 707 Bennett Building 93-99 Nassua St., New York.

Uleached Canadian Ashes can be had through any of the parties advertising their sale in the agricultural papers. This is a very valuable source of Potash, and is especially commended to the consideration of farmers wishing fertilizers for fruit trees, tobacco, and potatoes. So far as known to us, the ashes are not used in this State, but should be.

The attention of the farmers is also called to the value of Ground Tobacco Stems which are a valuable nitrogenous fertilizer containing small per cents of potash and phosphoric acid, and at the same time act as in insecticide or more properly insect repellent. Parties interested in the application of fertilizers to melons will find this compound, especially when fresh and strong, a valuable material to use both as a fertilizer and as a protective measure against the onslaughts of insect pests.

Another compound worthy of careful consideration as a fertilizer is Cotton Seed Meal which is a very valuable nitrogenous fertilizer.

During the year there were sold in the State about 7,500 tons of fertilizer. There is complaint upon the part of some of the manufacturers that the farmers purchase almost exclusively low grade or cheap fertilizer. It would be well for the farmers to remember that a pound of plant food is worth about so much money, and if a manufacturer sells a low priced fertilizer, the probability is that he sells relatively few pounds of plant food, for the reason that it is impossible to prepare first class goods at third class prices. It is believed to be cheaper for the farmer to buy the highest grade of fertilizers than to buy low grade goods. And under all circumstances commercial fertilizers should only be used to supplement the home product. Every source of production of manures upon the farm should be utilized before it is thought advisable to invest in commercial fertilizers, but it is very doubtful whether the cultivation of the grains and garden stuff can be made profitable in this State, without the liberal use of some of the concentrated commercial fertilizers.

Valuations for 1893.

The actual commercial value of a fertilizer depends upon so many conditions, such as demand and supply; speculative influences; freight rates; the credit of the purchaser, and the amount of competition, that it is not possible in this State to adopt a scheme of valuation which will exactly suit every locality in the State. We, therefore, adopt a system of valuation which is intended to indicate the *relative commercial value* of the several brands of fertilizers sold in the State. For some sections of the State, our valuations are lower than the actual commercial value of the fertilizers, while for other sections, they are higher than the prices at which the fertilizers are sold. This is unavoidable, and it is advisable for farmers or agents contemplating investing in fertilizers to correspond with a number of firms in regard to the prices at which they will deliver the fertilizers in car load lots.

The valuation adopted by us is quite close to the actual price at which fertilizers of the quality indicated can be had at any point in the State. It makes no allowance for the variation in freight rates, which is a small matter, and it neglects the agent's commission, which is a private contract.

It does not represent the agricultural value of the fertilizer, which depends upon the soil, the weather and the crop fully as much as upon the character and amounts of the ingredients of the fertilizer.

The following is the scale of prices used in making the relative commercial valuations:

Nitrogen in mixed fertilizers,	20 c. per lb.
“ fine bone and tankage,	13 c. “
“ coarse bone and tankage,	8½ c. “
“ vegetable compounds,	15 c. “
Available phosphoric acid,	6 c. “
Insoluble “ “ in fine bone & tankage,	5 c. “
“ “ “ in coarse bone & tankage,	3 c. “
“ “ “ in ground rock,	2 c. “
Potash soluble in water,	5 c. “

The relative commercial value of a fertilizer is determined as follows:

Take the analysis of any brand and multiply the percentage given by the price of the ingredient, then by 20 to reduce to tons, add the several products, and the result will be the valuation as follows:

Available Phosphoric Acid,	11% x 6x20	\$13.20
Insoluble “ “	3% x 2x20	1 20
Nitrogen “ “	3% x 20x20	12 00
Potash “ “	2% x 5x20	2.00

Relative commercial value per ton, \$28.40

LAW RELATING TO THE SALE OF COMMERCIAL FERTILIZERS IN WEST VIRGINIA.

CHAPTER LXXII.

AN ACT concerning Commercial Fertilizers and repealing chapter twenty-five of the Acts of the Legislature of West Virginia of 1879.

[Passed March 6, 1891.]

Be it enacted by the Legislature of West Virginia:

1. Every person or company who shall sell, offer or exposes for sale, in this State, any commercial fertilizer or manure, shall affix conspicuously to every package thereof a plainly printed statement, clearly and truly certifying the number of net pounds of fertilizer in the package, the name, brand or trade-mark under which the fertilizer is sold, the name and address of the manufacturer, the place of manufacture, and a chemical analysis, stating the percentage of nitrogen or its equivalent in ammonia, of potash soluble in distilled water, and of phosphoric acid in available form, soluble in distilled water, and reverted, as well as the total phosphoric acid. In the case of those fertilizers which consist of other cheaper materials, said labels shall give a correct general statement of the composition and ingredients of the elements relied upon, contained in the fertilizers which it accompanies. If any such fertilizer be sold in bulk, such printed statement shall accompany and go with every lot and parcel sold, offered or exposed for sale.

2. Before any commercial fertilizer is sold, offered or exposed for sale in this State, the manufacturer, importer or party who causes it to be sold, exposed or offered for sale, shall file with the Director of the West Virginia Agricultural Experiment Station a certified copy of the statement named in section one of this Act, and shall also deposit with said Director, a sealed glass jar or bottle, or sealed tin can, containing not less than one pound of fertilizer named and described in said statement, accompanied by an affidavit that it is a fair average sample thereof. The making of any affidavit required by this chapter falsely, shall be perjury.

3. The manufacturer, importer, agent or seller of any brand of commercial fertilizer or material used for manurial purposes, shall pay for each brand at the time he files the statement required in section one of this Act, an analysis fee of ten dollars for each of the fertilizing ingredients claimed to exist in each and every brand as

fertilizer which he sells, offers or exposes for sale within this State, provided that whenever the manufacturer, or importer, shall have paid the analysis fee herein required, for any particular brand of fertilizer, no agent or seller shall be required to pay any other or further analysis fee for said brand.

4. The analysis fee required to be paid by section three of this Act shall be paid to the Treasurer of the West Virginia University for the use of the Agricultural Experiment Station, and the party making such payments shall take from said Treasurer triplicate receipts therefor, one of which he shall retain, and the others shall be deposited, one with the Director of the Agricultural Experiment Station, and the other with the Secretary of the Board of Regents of the West Virginia University, and by them filed and preserved in their respective offices.

5. Immediately after the filing of the receipt aforesaid with the Director of the Agricultural Experiment Station, said Director shall issue a certificate to the party making such payment, stating the amount of fees paid, and the name, brand or trade-mark under which the fertilizer is sold, the name and address of the manufacture or importer, the place of manufacture and the name and place of business of the dealer, and chemical analysis as set forth in the statement by section one of this Act, and that the applicant for said certificate is authorized to sell said fertilizer within the State of West Virginia for the period of one year from the first day of January to the 31st day of December, inclusive. Said certificates may be issued at any time for and during the current year, and may be issued during the month of December for the year commencing on the first day of January thereafter.

6. It shall be the duty of the Director of the West Virginia Agricultural Experiment Station to make or cause to be made a chemical analysis of every sample of commercial fertilizer so furnished him, and he shall print the result of such analysis in the form of a label or tag. Such printed label or tag shall set forth the name of the manufacturer, the place of manufacture, the brand of the fertilizer, and the essential ingredients contained in said fertilizer, expressed in terms and manner approved by the Director, together with a certificate from the Director, setting forth that said analysis is a true and complete analysis of the sample furnished him of such brand of fertilizer of the ingredients claimed to be contained therein. And he shall also place upon each label or tag the money value per ton of such fertilizer, computed from its composition as he may determine. The Director shall furnish such labels or tags in quantities of one hundred, or multiple thereof, to any person or company complying with this Act, and desiring to sell, offer or expose for sale, any commercial fertilizer in this State, and shall receive therefor the sum of fifty cents for every one hundred so delivered, and shall without delay pay the same to the Treasurer of the West Virginia University for the use of the Agricultural Experiment Station, and take duplicate receipts therefor, one of which he shall retain and the other he shall deliver to

the Secretary of the Board of Regents, who shall file and preserve the same in his office.

7. The Board of Regents of the West Virginia University shall expend the money received under the provisions of this Act in meeting the legitimate expenses of the Station, in making analyses of fertilizers, in experimental tests of the same, and in such other experimental work and purchases as shall inure to the benefit of of the farmers of this State, and shall include in their annual report a statement of the receipts and disbursements thereof,

8. The Directors of said Experiment Station is hereby authorized in person or by deputy to take samples from any lot or from any commercial fertilizer which may be in the possession of any dealer in the State. And he is hereby authorized to prescribe and enforce such rules and regulations as he may deem necessary to carry fully into effect the true intent and meaning of this act; and any agriculturalist, a purchaser of any commercial fertilizer in this State, may take a sample of the same under the rules and regulations of the Director of the said Experimental Station, or forward the same to the Experimental Station for analysis, and if the Director has reason to believe that the manufacturer of, or dealer in, said fertilizer has made any false or fraudulent representation in regard to said fertilizer, he shall cause the said sample to be analyzed free of charge, and certify the same to the person forwarding the sample.

9 Said Director shall also publish, by bulletin, the brand, name and location of the manufacturer, and chemical analysis of every fertilizer analyzed or caused to be analyzed by him. Said last publication to be made, if practicable, before the time at which said fertilizer is to be applied to the soil

10. Any manufacturer or vendor of any chemical fertilizer who shall sell, or offer or expose for sale, any commercial fertilizer without having previously complied with the provisions of this act hereinbefore set forth, shall be deemed guilty of a misdemeanor, and upon conviction thereof, shall be fined not less than fifty nor more than five hundred dollars.

11. Any company, firm or person who shall wilfully remove from or deface or change any label, or tag, or brand affixed to any package or fertilizer under the provisions of this act, before such fertilizer has been used for manurial purposes, or who shall sell such fertilizer without such label or tag being affixed thereto at the time of the sale, shall be deemed guilty of a misdemeanor, and upon conviction thereof, shall be fined not less than ten nor more than fifty dollars for each offense.

12. Any company, firm or person who shall remove from or cause to be removed from any package of commercial fertilizer any statement, label or tag affixed thereto under the provisions of this act, and affix or cause the same to be affixed to any other package of commercial fertilizer, shall be deemed guilty of a misdemeanor, and upon conviction thereof, shall be fined not less than ten nor more than fifty dollar for each offense.

13. Any company, firm or person violating any of the provisions

of this act, or who fails to comply with the requirements of this act, shall be deemed guilty of a misdemeanor, and upon conviction thereof, shall, when no other penalty is prescribed, be fined not less than ten nor more than one hundred dollars for each offense. But this act shall not be construed to apply to any one who manufactures fertilizers for his own use and not for sale.

14. The Director of said Experiment Station shall report to the prosecuting attorney of the county wherein the offense was committed, all violations of the provisions of this act, and failure to comply therewith, and a copy of any statement, label or tag required to be filed with said Director, or prepared by him, and any analysis made or caused to be made by him, when duly certified by said Director, shall be received in evidence in any prosecution or a suit for any violation of the provisions of this act.

15. That chapter 25 of the Acts of the Legislature of West Virginia, passed on the 4th day of March, 1879, entitled "An act to protect the purchasers of fertilizers in this State," be and the same is hereby repealed.

Directions for Taking Samples of Fertilizers for Analysis.

1st. All analytical work is based upon the supposition that the chemist receives a fair sample for analysis and all persons should exercise special care in securing an average, fair sample, which may best be accomplished—

(A) If from bulk—

By taking a shovel or scoop full from a number of places in the pile and rapidly and thoroughly mixing these quantities together, then taking the sample from this mixed mass. The mixing may be done upon a clean floor with the shovel or scoop by repeatedly shoveling the heaps together after separating it into several parts. The whole operation should be continuous and rapid so that there will be no appreciable change of moisture. The mixing should be sufficient to cause soft or moist masses to be broken up and thoroughly inter-mixed with the body of the fertilizer, but care should be observed not to pulverize hard dry lumps so as to change the physical character of the fertilizer. In other words the chemist should receive a fair sample both as to chemical and physical properties.

(B) If from barrels, sacks or packages.

By opening the sack, barrel or package and thoroughly mixing the contents down to about one-half of its depth by means of a shovel or scoop, then if need be withdrawing several scoops full and thoroughly mixing upon a floor exactly as under "A." It is best to take scoops or shovels full from several sacks or packages and mix

these as directed, then take the same for analysis from the mixed mass. Observe the conditions given under "A." Fair samples are best secured from fresh packages, and *farmers will do well to draw all samples immediately after purchasing.*

2nd. Care should be observed to attend to the drawing of the sample without delay and sample should be promptly selected, labeled and shipped. In the case of a manufacturer or dealer this sample is accompanied by the affidavit required by law (see directions to manufacturers). If the sample be sent by a farmer, for mutual protection, *it is best, though not required*, that it be drawn and sealed in the presence of a disinterested party who should join the farmer in certifying that the sample fairly represents the goods as purchased by him. *In the case of the farmer there is no charge for the analysis, but the express charges upon the sample should be prepaid.* Proper blanks will be provided by the Director free of charge for all farmers applying for them.

Instructions to Manufacturers and General Agents.

Manufacturers of Commercial Fertilizers, selling their goods in this State, will please observe the following points in complying with the Acts of the Legislature of West Virginia, passed March 6th, 1891, and now in force:

1st. A compliance with the law requires that before any commercial fertilizer is sold, offered or exposed for sale in this State, the manufacturer, importer or party who causes it to be sold, exposed or offered for sale, shall file an affidavit with the Director of the West Virginia Agricultural Experiment Station, at Morgantown, W. Va., giving a correct statement of the net pounds in the packages, the name of the brand or trade-mark under which the fertilizer is sold, the name and address of the manufacturer, the place of manufacture, and the chemical analysis stating the percentage of nitrogen, or its equivalent in ammonia, the percentage of potash soluble in distilled water, and the percentage of phosphoric acid in available form, soluble in distilled water, and reverted, as well as the total phosphoric acid. In the case of those fertilizers which consist of other cheaper materials, the affidavit shall give a correct general statement of the composition and ingredients of the elements in the fertilizer relied upon to produce fertilizing effect upon the soil.

*2d. The manufacturer is required to send with the affidavit a fair sample of the fertilizer in a sealed jar, bottle or tin can for analysis. An ordinary quart fruit jar or can filled with a fair sample of the fertilizer will answer. Each can or jar should be properly sealed, labeled and packed, and shipped prepaid by express to Dr. John A. Myers, Morgantown, W. Va.

3d. The manufacturer is required to pay at the time of filing the

*Manufacturers will please keep a sample of the same lot for analysis by their own chemist

affidavit an analysis fee of \$10 for each and every fertilizer ingredient claimed by him. If he claims potash, phosphoric acid and nitrogen, it is \$10 for each, or \$30 for a complete fertilizer, consisting of all three of the above named elements of plant food. This fee should be sent in a draft upon New York or Baltimore, payable to "The Treasurer of the West Virginia University."

4th. The manufacturer is required to place a label or tag upon each package, giving the name of the brand, its correct net weight, analysis and commercial valuation per ton. These labels are provided only by the Director of the West Virginia Agricultural Experiment Station, are regularly numbered and can only be had by the parties filing the affidavit before mentioned. The law establishes the price at 50 cents per 100 labels or tags. Manufacturers requiring these tags or labels should indicate to the Director the number of each kind required, and send a check payable to John A. Myers, Director, for the amount. They will be sold in packages of 100 each, and manufacturers will please order by even hundreds.

Manufacturers and agents will therefore please to take immediate steps to comply with the above indicated provisions, which are intended to guide them. The Director will furnish the necessary blanks for complying with the law, free of charge, and will aid the manufacturers in any way in his power to comply with its requirements. All affidavits and applications for labels should be filed as soon as possible.

Address all communications to

DR. JOHN A. MYERS,
Morgantown, West Va.

Samples received at the Experiment Station from Manufacturers will be analyzed in the order received. *Manufacturers and dealers are, therefore urged not to wait to the last moment to send in their samples, but to send them as soon as possible.*

MANUFACTURERS' BLANK.

Blank copies of the same will be furnished by the Director free of charge upon application.

Manufacturers or dealers sending samples of Commercial Fertilizers for analysis under the "Act Concerning Commercial Fertilizers" in West Virginia, will please fill out and send with the samples the following affidavit, Addressed to Dr. John A. Myers, Morgantown, W. Va.:

I, _____ of _____ do hereby certify that the sample of the following named Commercial Fertilizer _____ sent this day by _____ to Dr. John A. Myers Morgantown, W. Va., contained in _____, correctly labelled and securely sealed, for analysis under the Act of the Legislature of West Virginia, "Concerning Commercial Fertilizers," to the best of my knowledge and belief truly and fairly represents the chemical composition of the fertilizer _____ as manufactured and offered for sale by us in the State of West Virginia. The manufacturers guarantee the following minimum analysis:

Name and trade mark of fertilizer.	Manufacturers name and address.	Name and address of sender.	Minimum per cent. of nitrogen guaranteed.	Minimum per cent. of soluble phosphoric acid guaranteed.	Minimum per cent. of re-verted phosphoric acid guaranteed.	Minimum per cent. of available phosphoric acid guaranteed.	Minimum per cent. of total phosphoric acid guaranteed.	Minimum per cent. of potash guaranteed.	Minimum net weight of package guaranteed.
1									
2									
3									
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7									
8									

Given under my hand and seal this _____ day of _____, 189____, a notary public within and for the county of _____ State of _____
 I, _____ do hereby certify that the above statement was sworn to before me by _____ day of _____, 189____.
 Given under my hand and official seal as Notary Public, this _____ day of _____, 189____.
 _____ Notary Public.

FARMERS' BLANK.

The following blank is supplied to farmers, free of charge, who may wish to submit samples under section 8 of the Act:

Farmers sending samples of fertilizers for analysis under the Act of the Legislature of West Virginia, passed March 6th, 1891, will please fill out and send the following blank by mail to Dr. John A. Myers, Morgantown, W. Va.:

I hereby certify that the sample of fertilizer known and sold as

.....
(Name of Brand.)

was bought by me of.....

.....
(Dealer's Name and Address.)

West Virginia,.....and that it rep-

.....
(Date of Purchase.)

resents fairly the quality of the fertilizer as delivered to me. The fertilizer is guaranteed by the manufacturer to have the following chemical composition:

.....
(Copy the Analysis.)

.....
It is sold at \$.....per ton cash or \$.....per ton upon time.

The Director's tag taken from one of the packages is enclosed with the sample.

Sign.....

Date,, 189..

Address,

I hereby certify that I witnessed the taking of the above named sample by....., and that I believe it represents fairly the quality of fertilizer bought by him, and sampled for analysis. I further state that I have no financial interest in the above transaction.

Sign,

.....
(Name of some other person.)

Date,, 189..

Address,

NOTICE — Farmers and others in taking samples for Analysis will please follow closely the directions given for sampling fertilizers.

JOHN A. MYERS, *Director.*

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TABLE—Showing the Chemical Analyses and Guaranteed
Percentages of All of the Brands of Fertilizers Sold

Analyses by DR. RUDOLPH J. J. DE ROODE, Chemist

Composition, Together with Relative Commercial Value of the Minerals Found in West Virginia During the Year 1893.

West Virginia Agricultural Experiment Station

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