



THE



PROGRESSIVE



FARMER.

THE INDUSTRIAL AND EDUCATIONAL INTERESTS OF OUR PEOPLE PARAMOUNT TO ALL OTHER CONSIDERATIONS OF STATE POLICY.

Vol. 2.

RALEIGH, N. C., DECEMBER 1, 1887.

No. 41.

THE MANURIAL PROPERTIES OF COTTON SEED.

WALTER, N. C., Nov. 14, '87.
In what does the manurial value of cotton seed consist, is a perplexing question to the average farmer.

Cotton-seed-oil-mill men tell us there is no manurial value in the oil. Is this so? From what source is the oil supplied—from the earth or the air? If from the earth, it must be essential to plant growth, and if essential and we extract it from the seed and do not return it to the soil, is there danger after awhile of exhausting this oil supply? No oil no seed, no seed no plant, no plant no cotton. We would like to see an analysis of the whole cotton plant, in THE PROGRESSIVE FARMER, with the meal and the seed separate.

With many good wishes, yours truly,
J. H. CALDWELL.

We handed the above to Dr. H. B. Battle, Acting Director of our Experiment Station, and the following is his reply:

RALEIGH, Nov. 21, 1887.
In answer to the above letter from Mr. Caldwell, I think the following points would cover the questions asked:

1. What is the composition of cotton seed?

2. What is the composition and whence comes the ingredients of the oil extracted, and is it valuable as a fertilizer?

3. Wherein lies the fertilizing properties of cotton seed?

4. Can a farmer advantageously exchange cotton seed for cotton seed meal; if so, in what proportion can he do so with profit to himself?

As the subject is such an important one, and should receive more attention than is now paid to it, I will write more at length than I otherwise would do.

1. What is the composition of the seed?

Answer. In 100 lbs. cotton seed there are on an average almost exactly 50 lbs. hulls, and 50 lbs. kernels; or in other words, in cotton seed one-half is hulls and one-half is kernels. From the 50 lbs. kernels, 36 lbs. (on an average) of oil are extracted, leaving 16 lbs. cake, which when ground furnishes the meal. So in every 100 lbs. seed sold there are 16 lbs. meal.

2. What is the composition, whence comes the ingredients of the oil extracted, and is it valuable as a fertilizer?

Answer. Cotton seed oil is composed of the chemical elements, carbon, hydrogen and oxygen combined together in a very complicated arrangement. A different arrangement of these same elements would form ordinary sugar, a piece of cotton cloth or a drink of whiskey. The water we drink is made of the last two, hydrogen and oxygen, and the carbon is found in large quantities combined in different ways in both the atmosphere and the soil. In fact all three of these elements are found in abundance both above and below the surface of the ground.

The cotton plant has the power in its growth of taking up these elements through the pores of its leaves from the air and through each little rootlet from the soil, and of rearranging them to form the fiber of the stalk and the oil of the seed.

The carbon comes almost entirely from the air, and the hydrogen and oxygen (mainly in the form of water) from both air and soil, and consequently neither one can be said to have any fertilizing property either alone or combined to form the oil.

3. Wherein lies the fertilizing properties of the cotton seed?

Answer. The meal is by far the most valuable portion of the seed and contains more fertilizing ingredients than in all the other portions put together. It is the valuable (agriculturally) concentrated portion of the seed, from which all the comparatively valueless parts have been separated. It contains more fertilizing properties than the best commercial ammoniated fertilizer, but as they are not combined

in right proportion we must mix other ingredients to give the proper content of phosphoric acid, ammonia and potash.

An average of many analyses of cotton seed meal made at the experiment station gives in 100 lbs. meal, 2.80 lbs. phosphoric acid; 8.60 lbs. ammonia and 1.61 lbs. potash. We see, therefore, meal contains about four times as much ammonia as a commercial fertilizer, just equal in amount of potash, but deficient in the amount of phosphoric acid.

The hull of the cotton seed contains also, but in very small quantities, ammonia, potash and phosphoric acid.

4. Can a farmer advantageously exchange whole cotton seed for cotton seed meal; if so, in what proportion can he do so with profit to himself?

Answer. As the meal is by far the most valuable as a fertilizer of any of the ingredients of the cotton seed, a farmer can well afford to throw aside the comparatively valueless parts for the sake of getting this meal, especially if he gets more than he gives.

It is the custom of the oil mills to give 1 ton of meal in exchange for 2 tons of seed, and in some cases that have come to my knowledge have paid the freight on the seed sent to them. Let us see if this is a fair exchange.

45.60 lbs. Phosphoric acid
121.20 " Ammonia
47.20 " Potash

If these ingredients are valued just as commercial fertilizers are valued now, and for example for phosphoric acid 6 cents, for ammonia 16 cents, and for potash 5 cents per pound. The total would be \$24.71.

On the other hand, 1 ton of cotton seed meal contains:

56.00 lbs. Phosphoric acid
172.00 " Ammonia
32.20 " Potash

which when calculated as before gives the valuation of \$32.77.

So by the exchange the farmer gives fertilizing ingredients amounting to \$24.71, and gets back ingredients amounting to \$32.77, making \$8.08 by the transaction. Of course it is unnecessary to say that the oil mills make a profit in saving the oil which is of no value to the farmer, and using the hulls which they burn under their engines as fuel.

It must not be forgotten, however, that when the exchange has been made a large quantity of vegetable matter (the hulls of the cotton seed) has been lost to the soil, that is, if the whole seed had been applied to the soil, instead of the cotton seed meal which is gotten by the exchange.

As we saw, the hulls roughly speaking amount to one half by weight of the whole cotton seed, so in the transaction 1 ton of hulls is thereby lost. This represents so much vegetable matter which should go back to the soil, when the meal is applied to the land for the purpose of fertilizing it. This vegetable matter may be supplied in the form of leaf rakings, vegetable mould or the like, and should not be forgotten when the compost is being made.

It is quite essential that this vegetable matter should be applied to the soil; for it not only supplies ingredients valuable to the growing plant by decomposition, but it by this very change lightens up the soil also and fits it for the better development of the young sprout and the future stalk.

It may be that oil mills are all combined in one vast monopoly, but if they give back more fertilizing material than the farmer sends to them, then I would strongly advise his accepting the proposition, if he puts back on the soil the meal and an equivalent in vegetable matter to the hulls which he loses.

H. B. BATTLE.

The little kingdom of Bavaria, scarcely larger than Massachusetts, has twenty-six agricultural colleges, besides more than 200 agricultural associations. Saxony, with its dense population of 2,000,000, packed in a space scarcely larger than two American counties, has four higher colleges and twenty agricultural schools.

GREEN MANURING.

NUMBER 14.

It has been stated by a reliable writer on the subject, that green clover contains more manurial value than is contained in an equal weight of stable manure. He does not say dry clover hay, but green weight, which is from four to five times as much. This statement is a surprising one, particularly when we consider that from fifteen to twenty-five tons of clover can be grown on an acre during the year, in addition to the great mass of roots. According to this statement an average crop of clover contains manurial value to at least fifty full cart loads of best stable manure per acre.

It is considered unsafe to attempt to grow clover at the South as a renovator, but we have a plant which is of more value and is of easy and certain growth. The field or cow pea has all the good qualities of clover, without the drawbacks. The writer followed a crop of Irish potatoes with a crop of field peas, which were planted about the middle of June. This crop of nine acres produced a heavy crop of vines and a fair crop of peas. The vines in green state weighed by measured estimate about twenty-eight tons per acre, which amounted on the nine acres to two hundred and fifty tons. The cost of the crop was \$13.50, or one dollar and a half per acre. In what way can so much manure be put on a field at so small a cost? I employed women and had picked six thousand pounds of peas, which I found valuable food for my cow and Jersey calves. The picking cost twenty-five cents per hundred pounds, and as the peas are worth for food seventy-five cents per hundred in the pods the crop is worth thirty dollars more than the cost of picking. The peas more than paid the cost of production, leaving the manurial value of the vines clear profit.

The writer quoted from says: "The green crop, whatever it may be, that is raised to improve the land should be mown down in summer and autumn, and should be left upon the surface as long as possible, to prevent evaporation, to disintegrate the soil, to retain moisture, to be leached by rains and dews, and finally to enrich the ground by its total decomposition." This plan, he contends, will make a crop green for manuring, worth as much to the land as twice as many tons of barn-yard manure applied in the usual way. In other words a crop of pea vines on good land is equal to fifty tons of stable manure per acre. A.

PORK FOR HOME USE.

It may, possibly pay best to have large, fat porkers for market purposes, to suit the needs of the packers of pork, who want large, heavy pork, but when it comes to the home supply, we want our pork with but a small portion of fat. There are some breeds of pigs, noticeably so the small English Yorkshires, which produce a very large portion of fat, and, while they may please the eye of most persons, when in the living form, when killed and dressed the large proportions of fat makes the meat undesirable for most palates. It does not pay to raise pigs solely, or almost so, for lard. With the exception of, perhaps, the Berkshires, most of our well-known breeds of pigs are, in their purity, rather too much inclined to lay on fat to make them desirable for home use, and we have for a number of years been experimenting to find out how to produce just such porkers as would best meet the requirements. While the breeding has a great deal to do with having good pork for home use, the feeding plays a very important part, and the quality of the pork depends in a great measure on proper feeding. We do not like having the porkers confined to small pens, even though the pigs may fatten up more quickly than if they have plenty of exercise room, but let them have the run of a good clover lot during the summer and fall, ringing the pigs so that they cannot destroy the sod, then

supply them with grain in different forms, daily, with plenty of fresh water, at least once a day, as much as they will drink. Hogs can be kept in fair condition on plenty of clover and water, but to make them improve as they should, grain should be given. A good summer feed is made by having corn and oats ground together, say in proportion of one bushel of corn to two of oats, then making a slop of this. Our plan is to half fill a barrel with this mixture and then the mass (with cold water in summer and hot water in winter), doing this in the afternoon or evening, and then feeding it, diluted to the proper consistency, next morning, by which time it will have soured sufficiently. It is well to add a couple of handfuls of salt as well as a half peck or so of bits of charcoal. This charcoal can readily be secured on the farm, where wood fires are used, by seiving the wood ashes and using the bits of charcoal which remain in the seive.—Breeder's Journal.

GOOD FARMING.

Capt. H. P. Jones, whose farm is near this town, immediately on the Enoc at the foot of the Oconneechee mountain, raised this year on 10 or 12 acres, 100 barrels of good assorted corn. The Captain worked only one horse and one hand. This hand, besides the farm work, did the necessary work about the house, such as cutting wood, milking three cows, attending the stock, &c. He also raised four stacks of oats and three stacks of hay. From the product of three cows, Mrs. Jones sent three or four children to school, and paid their tuition. All this crop was raised without any fertilizers. We call this good farming by a good practical farmer.—Hillsboro Record.

DEMANDS OF THE NATIONAL FARMERS' ALLIANCE UPON CONGRESS.

Below we print in full the demands made by the National Farmers' Alliance in convention at Shreveport.

They are sound to the core and show in ringing language the more important purposes of this great body, and the ends they propose to achieve.

This body was composed of farmers representing all the Southern States, and the resolutions appended were passed unanimously.

Resolved, That we the National Farmers' Alliance and Co-operative Union of America, in convention assembled, advocate and endorse the following principles as in accord with the sentiments and demands of the tillers of the soil:

1st. We demand, first, the recognition, by incorporation, of trades, unions, co-operative stores and such other associations as may be organized by the industrial classes to improve their financial condition, or promote their general welfare.

2d. We demand that all public lands be held in small bodies, not exceeding three hundred and twenty acres to each purchaser, for actual settlers, on easy terms of payment.

3d. That large bodies of land held by private individuals or corporations, shall be assessed for taxation, at such rates as they are offered to purchasers, on a credit of one, two and three years, in bodies of one hundred and sixty acres or less.

4th That whereas, large bodies of our public lands, have been sold to foreign capitalists, thus tending to the establishment of a landed aristocracy in this country, similar to that which has reduced the people of Ireland, and other monarchical Governments, to a condition of abject serfdom; we demand the passage of laws forbidding the ownership of lands, by aliens, whose allegiance belongs to other nations, and that the public domain be held as the heritage of our own people and our children after us.

5th. That all lands forfeitable by railroads or other corporations, immediately revert to the government and be declared open for purchase by actual

settlers, on the same terms as other public lands.

7th. We demand that all fences be removed, by force if necessary, from public lands unlawfully fenced by cattle companies, syndicates, or any other form or name of monopoly.

8th. We demand the extinguishment of the public debt of the United States by operating the mints to their fullest capacity, in coining silver and gold; and the tendering of the same without discrimination, to the public creditors of the Nation, according to contract.

9th. We demand the substitution of legal-tender treasury notes for the issues of national banks; that the Congress of the United States shall regulate the amount of such issue by per capita circulation, that shall increase and keep pace with the growth of the country's population, and the expansion of her business interests. We further demand the repeal of the present National banking system.

10th. We demand that the department of agriculture be made one of the departments of State; that it shall be increased in scope and efficiency, and in connection therewith, there shall be established a bureau of labor statistics.

11th. We demand the enactment of laws to compel corporations to pay their employees according to contract, in lawful money for their services, and the giving to mechanics and laborers a first lien upon the products of their labor to the extent of their full wages.

12th. That the laws relating to the suppression of the transmission of immoral, profane or obscene literature through the mails, be made more stringent; and be extended so as to suppress the transmission of such literature by any public carrier.

13th. We demand that the U. S. Government purchase, by right of eminent domain, the telephone and telegraph lines, and operate them as adjuncts of the U. S. postal service.

14th. That in view of the fact that the delegates to this body represent a majority of the cotton producers of the cotton belt of America, which belt produces over two-thirds of the cotton of the whole world, and in view of the further fact that two-thirds of the cotton in the cotton belt is demanded and used for export to a foreign power, which fixes the price on every pound of our cotton; and in view of the fact that the said power is debarred from returning to this country a single yard of manufactured cotton, thereby making said power interested in crowding down to the lowest figure the price of cotton; we hereby demand that the U. S. Government adopt a speedy system of reduction of the import duty on manufactured cottons, in such a way as to do justice to this, the greatest of all classes of producers.

14th. We demand such a revision of the tariff as will lay the heaviest burdens on the luxuries and the lightest on the necessities of life; and as will reduce the incomes from imports to a strictly revenue basis.

15th. That as a remedy against the unjust accumulation and encroachment of capital, we demand a graduated income tax.

16th. That as upon the intelligence of the people depend the stability and perpetuity of our own free government, we demand for the masses a well regulated system of industrial and agricultural education.

17th. That we oppose the continued influx of pauper labor from the monarchies of Europe, whose anarchic views and communistic doctrines are breeding discontent, and disloyalty to law, order, peace and good government; and by an overplus of worthless labor, reducing our own laboring classes to starvation, we therefore demand more stringent laws to prevent this country being further used as an asylum for the communists and paupers of other countries.

18th. We demand that the constitutions, both State and National, be so amended as to provide for the election of U. S. Senators by direct vote of the people.