

PROGRESSIVE FARMER

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

Vol. 16.

Raleigh, N. C., February 11, 1902.

No. 52

Agriculture.

FERTILIZERS FOR COTTON AND CORN; FERTILIZING VALUE OF COTTON SEED MEAL.

Correspondence of The Progressive Farmer.

In reply to the inquiry of a PROGRESSIVE FARMER reader regarding the mixing of acid phosphate, kainit, and cotton seed meal, I suggest the following formulas as ones that have given and will give good results on cotton and corn.

FOR CORN:	
Acid phosphate 14%	875 lbs
Cotton seed meal	950 "
Kainit	175 "

These materials should be put down in alternate layers on a clean floor or in a box made for the purpose and thoroughly mixed with hoes and shovel. The lumps should, of course, be well broken and it would be well to put the material through an ordinary sand screen after mixing. The above mixture for corn will contain: available phosphoric acid 7.3 per cent.; potash 1.8 per cent.; ammonia 3.8 per cent.; 150 to 300 pounds per acre in the drill, just before planting, will give good results on corn.

FOR COTTON:	
Acid phosphate	900 lbs
Cotton seed meal	800 "
Kainit	300 "

This mixture will contain: available phosphoric acid 7.3 per cent.; potash 2.5 per cent.; ammonia 3.2 per cent. The usual application for cotton is 400 pounds per acre in the drill, just before planting. Some use a less quantity and a considerable number of farmers use 500 to 900 pounds per acre with good results.

SEE THE JANUARY BULLETIN. The January Bulletin of the Department, which will be ready for distribution in a few days, contains a number of other formulas using different materials for making home mixtures for cotton and corn. The bulletin referred to contains a report of our experimental work with fertilizers for the year 1901 and the formulas given have been made up after considering the results of our own and all other available and reliable experimental data relating to these crops. The Bulletin also contains several formulas for making composts with different materials, as well as the methods for putting down, mixing, and caring for the compost.

ABOUT COTTON SEED MEAL.

As cotton seed meal is one of the most valuable and largely used materials in the State, as well as in the South, for furnishing nitrogen (or ammonia) in fertilizers, it may be of interest to make a brief statement concerning this material at this time. Good cotton seed meal contains about 7 per cent. of nitrogen or 140 pounds in a ton. Expressed in terms of ammonia, there is a meal about 8.50 per cent., about 170 pounds of ammonia in a ton. This season cotton seed meal is not so good as it was last year and the average per cent. of ammonia will not be far from 8 per cent. There is also in meal about 3 per cent. of phosphoric acid, of which about 2½ per cent. is available to laboratory fertilizer methods, and about 2 per cent. of potash, 1½ per cent. of which is soluble in water.

TIME REQUIRED IN DECOMPOSING.

Before cotton seed meal or any other organic materials can feed plants they must first rot or decompose in the soil. By this process the nitrogen in them is changed to nitrates similar to nitrate of soda, and it is in this form that the greater portion, if not all, of the nitrogen in the soil and in fertilizers enter plants and feed them. Cotton seed meal, then, as well as other organic materials furnishing nitrogen, are valuable as fertilizers in proportion to their content of nitrogen and the rapidity with which they decay in the soil, or rather the rate of decay will determine the quickness of the action of the particular material.

With short season, quick growing crops, quickness of action is an important consideration, but with crops occupying the land during the greater portion or all of the growing season, as is the case with cotton and corn, it is better to have a fertilizer that will become available more slowly so as to feed the plant until maturity. Cotton seed meal decays fairly rapidly and will last for a considerable length of time, and it is not nearly so available as sulphate of ammonia and nitrate of soda.

Statements similar to the above, regarding the value and action of the various fertilizer materials furnishing ammonia, phosphoric acid and potash in fertilizers, have been prepared and published in the January (1900) Bulletin of the Department. This Bulletin will be furnished to all farmers who apply for it.

B. W. KILGORE, State Chemist. Wake Co., N. C.

Much more tobacco will be planted in Wake county than in many years past. Not a few farmers are thoroughly sick and tired of cotton, as well they may be.—F. A. Olds.

NEW METHOD OF TREATING COTTON SEED.

The latest invention is one treating cotton seed, used in the oil mills, which promises to revolutionize that industry, concerning which we clip the following from the Augusta Chronicle:

"By the process now employed it is stated that the cotton seed pass through six mechanical processes; (1) a machine for cleaning seed of sand; (2) machine for removing bolls, pieces of wood, etc.; (3) magnetic machine for removing iron, nails, etc.; (4) a delinting machine; (5) hulling machine; (6) reel for separating mats from the hulls.

"Instead of these six machines the new process simply dumps the seeds, just as they come from the gin, into a vat containing chemicals, and in twenty minutes it is claimed the hull will pop open and the denuded kernels fall to the bottom of the vat while the hulls float on the top of the solution. If the kernels are to be shipped a distance to an oil mill they are dried first, but if this first process is at the oil mill then the kernels are passed immediately from the vat to the crushing rolls and it is claimed there is a saving of 50 per cent. in the cost of producing crude oil. The refining process is no more expensive, and it is claimed that the finest olive oil on the market can be duplicated from the product.

"Another great saving is in the shipment of the denuded seed to cotton oil mills. The weight is reduced one-half and the bulk two-thirds. The hulls that rise to the top of the vat are in shape for paper stock and worth from \$20 to \$40 per ton, showing a gain of from \$9 to \$18 over present practices of treating cotton seed to the point of cooking the meal for extracting the oil.

"This process for which application of patent has been made is said to be in successful operation in Washington City, and can be worked at any gin, saving the large amount already mentioned to the owner of the seed. The saving under this process will permit the payment of several dollars a ton more to the farmers for cotton seed and it is claimed by the owners of the new process that it means a revolution in the business and millions of dollars to the cotton farmers of the South. It is proposed to organize and work it independent of the trust and Standard Oil Company and give the farmers a chance to enjoy the profits.

We are informed that at the next term of our Superior Court the judge presiding will be asked to charge the grand jury in regard to cultivating crops in fields not having a lawful fence. Such a charge would be of much interest to many farmers in the Rich Square section, and as many as can well do so would be present and hear what the judge may have to say on the subject.—Roanoke-Chowan Times.

A WORD OF CAUTION TO TOBACCO GROWERS.

"The Only Profit Comes by Small Crops Well Cultivated and Nicely Handled."

From what I can hear and what I see through the press, there will be a rush from cotton to tobacco this year. I want to warn the tobacco grower of the danger there is in planting a large crop this year. What I shall say is based principally on

MY OWN EXPERIENCE.

My first crop of tobacco was raised in 1884. I live in the western portion of Wake, in a splendid bright tobacco belt. In 1884 a brother and myself planted a small crop and realized about \$225 per acre, with no expense except a small fertilizer bill. We used 300 pounds fertilizer per acre then. In connection with this fertilizer we used some horse stable manure.

In 1885 we hired a 12-year-old boy and planted a little larger crop and realized \$200 per acre with no expense except the hire of the boy for about five months and a few days in housing, and our fertilizer—we used that year 400 pounds per acre.

I was the first to plant in this section. I was very much elated over my success in these two years, and commenced buying more fertilizers and planting larger crops; I thought surely I would soon get rich. My neighbors became enthused and barns began going up in every direction.

In 1886 I bought more fertilizers and planted more tobacco and made a miserable failure—hardly enough clear to pay my fertilizer bill. Since that time I have experienced several years with about the same results. I have known of several instances where good farmers on good tobacco land did not realize enough from crop to pay for fertilizers that grew it.

Prices on low grades of tobacco of crop of 1901 were as high or higher than I ever knew before. The reason is very clear: an unusually short crop, from which we ought to learn a lesson. I want to emphasize the danger of planting big crops of tobacco and give just a few of the many reasons why it is so dangerous. WHY LARGE CROPS ARE DANGEROUS.

In the first place, the demand is not hard to supply. A very small area will supply a number of people. I remember when a farmer could raise enough in the fence corners of the lane to supply his whole family.

It has, of all crops I know, the narrowest channel through which to go to reach success. A little too much rain or too dry, or wind storm, or hail, or frost, or flea beetle, or damp, foggy weather: all damage it, and some of them completely ruin it. I believe if we could get the statistics we would find more farmers have been completely broken up by raising tobacco than by raising cotton, in proportion to the number engaged in the culture of each.

THE ONLY PROFIT IN TOBACCO.

According to my experience, the only clear money there is in tobacco is in small crops well cultivated and nicely handled.

I think no one should plant more than 8,000 plants or two acres, to the horse. Raise plenty to eat at home and some to spare. By so doing the farmer will find himself always on the safe side. I want to say to my brother small farmer: Do not envy your neighbor who plants largely of tobacco. He may for a time make his thousands, but before long he will go under and you will still be swimming.

I want to say here to beginners in the culture of tobacco, Do not be led astray by the sunny tales of new beginners in new sections. I see but little in the papers from old planters in old sections. A. T. OLIVE. Wake Co., N. C.

Farmers say laborers are asking more for work than usual and they are therefore slower to make arrangements. Very little work has been done on the farms for this year's crop.—Scotland Neck Cor. Post.

BURKE COUNTY FARM NOTES.

Correspondence of The Progressive Farmer.

Enclosed find \$2, for which give me credit on my subscription. It would be hard for me to be without THE PROGRESSIVE FARMER now as I have been a subscriber for 13 years. You have so many good farm writers.

The discussion of terracing was good, and I will make a trial of it soon. Shall try both level and falling plans. Level terracing I believe will do on slightly declined land, but steep land should have some fall.

We have had a very bad winter this year, hence, there is but very little farm work done, notably plowing. Wheat is making very little show for the next crop. There is complaint among some that the roots of late sowed wheat are dead, caused by the repeated freezing of the soil. Corn and wheat are getting high in price. Corn is \$1 per bushel and scarce; in fact, everything is high.

The lumber men are busy taking down our beautiful forest timber. The Southern Railroad is doing work straightening and leveling its track about Morganton. These demands for labor, with the State institutions added, make farm hands hard to get, and very high wages are wanted.

The farmers are generally in good shape with good prices for their surplus, but that is smaller than usual for our Burke farmers, shortage being caused by the rains and freshets of last year. The industrious laborer can get work when wanted while we have a class that seems to want nothing but strong drink and loafing.

R. C. WHITENER. Burke Co., N. C.

SILK CULTURE IN NORTH CAROLINA.

Correspondence of The Progressive Farmer.

The recent publication in the Bulletin of an article on silk culture in North Carolina has already borne fruit. Several requests have been received from persons at a distance for copies of the bulletin, one coming from the State of Michigan, and one from a company in New York which possesses ample capital and which purposes to establish silk farms and silk mills in some of the Southern States, where suitable land can be had at a reasonable price, and where convenient power may be available when needed. If North Carolina can secure the location of this company it means the opening of a new and very important industry for the State.

Letters received at the Department of Agriculture from this company declare the purpose of the president and others to visit North Carolina, and perhaps other Southern States, at an early date, for the purpose of examining lands and mill sites, for observing climatic conditions, adaptability of the land for growing mulberry trees, and to secure such other information as they may desire with reference to establishing their business.

It is desirable to have descriptions of lands which are for sale, and upon which the Chinese mulberry thrives. The owners of such lands are requested to file with the Department descriptions, including the present condition of land and buildings, distance from railroad, accessibility to water power, how much cleared and uncleared land, whether any Chinese or white mulberry trees are now growing upon the land, price, etc.

In this connection the Department desires to secure the names of persons in the State who have had personal experience in growing silk worms, and who might desire to produce raw silk for the new company. Please send descriptions of properties for sale and names of silk growers to the undersigned, care of the Department of Agriculture, Raleigh, N. C.

GERALD McCARTHY, Botanist and Biologist.

Roanoke-Chowan Times: The cotton acreage, in all probability, will be greatly reduced in the Rich Square section this year. Scarcity of labor is the chief cause for this. The high price of food products will also cause a reduction in cotton acreage.

Horticulture.

EARLY GRAFTING.

Correspondence of The Progressive Farmer.

Many an apparently worthless fruit tree can be converted into a profitable and satisfactory bearer by grafting some kind on it, and if the work is done properly and early enough the old stock will prove to be a valuable possession. There are many orchards where grafting should be followed regularly every season. After every one has planted a tree and it has reached maturity without giving satisfaction, it is the height of folly to let it continue another season. Do not cut it down, but simply graft some new kind of fruit on it that will pay. Time and again one is led to plant new varieties of fruit trees on the recommendations of friends or agricultural journals, and then for one reason or another disappointment follows. The trees do not thrive well in the soil or climate, the fruit is not marketable or insect enemies attack it every year so as to destroy its fruit. The only way to handle such a problem is to cut off its leading shoots and graft some old standard variety on it. When I read of disgruntled farmers cutting down their fruit trees because they have been disappointed in their bearing, I am constrained to believe they must be amateurs at the business. Why, the full grown stock in any orchard is worth half the battle. We spend ten, fifteen and twenty years in bringing this stock to a size which will make it bear well, and then somebody cuts it down through ignorance.

In grafting we have an art that makes fruit growing a steady and reliable industry. We need to study it more, to practice it more, and make it a work whose results we can foretell. Take the old wild apple stock along the field hedges. Graft some good marketable variety to it, and in a few years we convert a dead loss into a profit of several dollars a year. The cost is mere nothing. In grafting, however, it should be made certain that the scions have come from trees, and that they are what they should be. Nurserymen now graft indoors in winter and they prepare grafts ready for the farmer's immediate use. These grafts are prepared and kept in bundles in sand in a cool cellar until spring, and then they are put out as soon as spring weather permits. But there is no reason why every farmer should not obtain his own grafts direct from his own trees, or from some neighbor's orchard. A simple method of exchange of grafts in this way would be of mutual benefit. Let each one give to the other scions from their best trees, and in this way the experience of one will be of help to another. Grafting is really one of the oldest and simplest ways of increasing trees, and of producing an abundance of excellent fruit on short notice. The time to graft outdoors is in the spring, and just as the buds are about to burst and the sap to flow upward.

S. W. CHAMBERS. DEWEEBRIES AS A MONEY CROP.

The Laurinburg Exchange publishes the following communication. The writer, whose home is in Cameron, N. C., seems to have been very successful in dewberry raising and his views are worth reading: If you will allow me space in your valuable paper, I will endeavor to tell you farmers something of the Lucretia dewberry as a money crop. I know that, as a rule, your farmers depend mostly upon cotton for their money, and as cotton is so variable in price (often sold for less than cost of production) it is a necessity that such as are suitably located, that is in two or three miles of railroad, grow some other crop that they may feel reasonably sure of getting some money out of. For such a crop I would advise the dewberry. They grow well in such soil as you have; they are a sure crop, not bothered by pests of any kind; they are also an early berry, commencing to ripen about June 1st and ends about July 1st. They sell readily for about 7%

to 13 cents per quart. They are a good shipper; when shipped in refrigerator cars they will reach as far north as Boston in good condition. I know this by actual experience, having shipped two cars there last June, and received an average of 10% to 11 cents per quart for same. We can ship by express as far as Norfolk, Richmond, Washington and Philadelphia and fruit will arrive in good condition if properly handled by express company. My crop net me one hundred and thirty one dollars per acre last year and was grown on land that would possibly have made twenty bushels of corn per acre. I would not advise any one to go into it recklessly, but plant say five acres of good, well drained land and apply about six hundred pounds of high grade fertilizer per acre, and they ought to reasonably expect not less than one hundred crates of nice marketable fruit per acre, 32 quarts per crate.

GROWING LIMA BEANS AND CARROTS

Correspondence of The Progressive Farmer. The Lima bean has become quite popular, and much in demand on our market.

We grow the white dwarf, a small bean that shells out about eight quarts to the bushel in hull. We have tried the large dwarf or bush bean; they make a poor crop here, but the small yield bountifully. Price opened last season at 12½ cents per quart and then stood at 10 cents throughout the season till frost. The pole or running Lima is late in bearing and not so hardy as the small bush or dwarf kinds. They are somewhat tedious to shell while green, but when ripe and dry hull more readily. They will yield over a thousand quarts per acre and are a good table bean the year round.

The carrot is slightly in demand winter and summer. These two articles are easily grown and both grow well on rich light land. It is often with manuring that farmers' trouble comes; they put on enough to start the plant and then it fails for want of food later on. The best plan where the land is poor and requires much manure, is to put on top and then work in from the top later on, as the carrot and bean are late growers and require much food.

R. R. MOORE. Guilford Co., N. C.

GROWING IRISH POTATOES FOR MARKET.

This is a crop that can be grown over the country generally. It is grown early in the South and will bring fancy prices if it is marketed early; but if late it is hardly worth harvesting. If grown in the fall it always brings a good price. In the North the crop sells cheap but they make a large yield.

The crop grows better on a rich loamy soil that is well drained and plowed deep. If stable manure is used it should be very thoroughly rotted and not put in contact with the potatoes.

The manure causes black spots and a scabby skin. The potatoes grown with fresh manure are of good size but the quality is decidedly poor. It is better to grow them on land that was well manured the year before, or else use a good grade of fertilizer with them.

For the best results for money invested, plant on clover sod and fertilize with phosphoric acid and potash.

If ordinary land is used, then apply a well balanced, complete fertilizer, say one which contains about 3 per cent. nitrogen, 7 per cent. potash and 7 per cent. phosphoric acid. The potato crop is one that grows quickly, and whatever is done must be done in a hurry. Fertilizer must act readily and any work needed must be given promptly.

Land should be plowed deep in fall or winter. Open a deep furrow, say six inches. Put in the fertilizer at the rate of four or five hundred pounds per acre in this furrow. Run a small plow in this furrow so that the fertilizer will not burn the potato. It is better to bed or ridge the land some time before planting, and

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