

Fertilization Program Outlined for Crops and Soils of North Carolina

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TO increase most economically the yield of crops on any farm, it is necessary to use the best cultural methods, plant only seeds of each crop which have been bred for high yield and quality for the soil and climate, practice a system of crop rotation in which some adapted legumes are grown for turning under and use on them the right kind and amounts of fertilizers, applied at the right time and in the proper way.



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Although with many soils, magnesia and other minor plant-food constituents are necessary to be added for the best growth and yield of crops, yet in the main, nitrogen, phosphoric acid and potash are the chief requirements to be supplied by fertilizer and fertilizing materials. Of these constituents, nitrogen in many respects is the most important and most expensive. It, too, is the one which is most easily lost from the soil when added or when naturally present. Unguided nature seems always busy in diverse ways in liberating this constituent from its combinations in the soil without its first rendering maximum service to the farmer in the production of his crops.

Phosphoric Acid Needed

In the case of phosphoric acid the amount present in North Carolina soils is usually exceedingly small and in most cases is held in forms which crops cannot secure readily enough to meet the demands throughout their growing periods. In many soils, the supply of total potash is large, but is held largely in such unavailable combinations that many crops grown on such soils cannot get anything like an adequate supply of this nutrient for their normal development.

In many other soils it is contained in exceedingly small amounts. This being the condition of the plant-food resources of North Carolina soils, it has been found that with average soils in most cases with most crops it is necessary to add complete fertilizers to them carrying all three plant-foods in available forms in order to secure most satisfactory returns. Not only is it necessary to add these, but if best returns are to be secured they should be of the best proportioning so

that they will best meet the needs of each crop grown on each soil type or groups of soil types having similar fertilizer requirements.

Sources Important

Ordinarily, the nitrogen contained in fertilizer mixtures for most crops, other than for tobacco, had best be derived about 20 to 25 per cent from standard organic materials like cottonseed meal, high grade tankage and fish scrap, and the remaining 80 to 75 per cent from standard inorganic materials such as nitrate of soda and sulphate of ammonia.

The phosphate acid may be derived from superphosphate and the potash from such sources as kainit, muriate of potash, manure salt, sulphate of potash and sulphate of potash-magnesia. Ordinarily, the cheapest sources of potash will be muriate and manure salt. In the case of tobacco, one-third of the nitrogen should be derived from high grade organic materials of plant or animal origin, one-third from nitrate and one-third from urea and or standard inorganic sources.

The potash in tobacco fertilizers may be derived from any source that is available, provided the chlorine content of the mixture so compounded does not exceed two per cent. It is also recommended that the fertilizer mixtures used for this crop shall carry two per cent of magnesia, one per cent of which should be water soluble. If tobacco byproducts are used as a source of potash, these should be thoroughly sterilized.

Where heavy to moderate heavy applications of manure have been made or where large crops of legumes are grown on the land and plowed in after growth immediately preceding the crop to be fertilized, the percentages of nitrogen in the mixtures given below may be reduced from 25 to 50 per cent or more. This statement does not apply to tobacco which should never follow after a heavy growth of some legume either cut and removed for hay or turned under for soil improvement.

As a result of much experimental work on different soils with different crops, the Agronomy Department of the N. C. Experiment Station would make the following fertilizer recommendations per acre at planting time for different crops grown on soils in average conditions used for the production of different crops in the main regions of the state:

| | For Coastal Plain Soils | For Piedmont Soils | For Mountain Soils |
|------------------------|----------------------------|---------------------------|--------------------------------------|
| Cotton | 400 to 500 lbs. 4-8-4 | 400 to 600 lbs. 4-10-4 | |
| Corn | 300 lbs. 4-8-4 | 300 lbs. 4-10-4 | 300 lbs. 4-10-4 |
| Sweet potatoes (late) | 600 to 800 lbs. 3-8-8 | 600 to 800 lbs. 3-8-8 | 600 to 800 lbs. 3-8-8 |
| Irish potatoes (early) | 1500 to 2000 lbs. 5-7-5 | | |
| Irish potatoes (late) | | | 800 to 1000 lbs. 3-8-6 |
| Legumes | 200 to 400 lbs. 2-8-4 | 200 to 300 lbs. 2-10-4 | 200 to 300 lbs. 2-10-4 |
| Tobacco (Bright) | 800 to 1000 lbs. 3-8-6 | 700 to 800 lbs. 3-10-6 | |
| Tobacco (Burley) | | | 800 to 1000 lbs. 2-10-6 or 2-12-6 |
| Small grains | 300 to 400 lbs. 4-8-4 | 300 lbs. 4-10-4 | 300 lbs. 4-10-4 |
| Grasses | 300 to 400 lbs. 4-8-4 | 300 to 400 lbs. 4-10-4 | 300 to 400 lbs. 4-10-4 |

Record Book Available

Keeping records is not a great deal of trouble, said R. E. L. Greene, assistant in farm management research for the North Carolina Agricultural Experiment Station, and they are well worth the time spent.

Greene suggested that farmers who are not keeping records should plan now to start them early in January.

State College has designed a record book for the North Carolina farmer. A free copy may be obtained by writing to the department of agricultural economics, State College, Raleigh.



Thinning for Profit and Protection

PICTURES above and below show a wooded area near Spartanburg, S. C., before and after thinning. James M. Gray, director of Land Utilization of the Rural Re-settlement Administration, advises that in thinning, the following trees be cut:

Trees which are well suited for firewood and the removal of which will lead to an improvement of the remaining trees in the stand.

Trees which have been overtopped by others and have had their growth stunted. Diseased trees, or trees seriously injured by insect attacks or trees extremely liable to such injury.

Badly fire-scarred trees. Trees of the less valuable species, such as beech, birch, black oak, black-jack oak, or black gum, crowding the more valuable sugar maple, white or shortleaf pines, yellow poplar, or white oak.

Crooked trees and large-crowned, short-boled trees that will not make good lumber and that are crowding or over-topping others.

Slow-growing trees crowding fast-growing species of equal value.

Sound dead trees, both standing and down.

Mature trees that have reached their full growth.



Drain on Farm Wealth Serious Problem

(Continued from Page 2)

or stop producing such crops. It will be necessary not only to stop erosion but to rebuild worn out soils that are to be occupied.

"Soil building, development of real pastures, improvement and increase in numbers of livestock, use of cheap structures such as trench silos, brick brooder houses, potato curing houses, etc., will become far more common than under the single crop system of the past. Furthermore, many of the things which used to be done on the farm, but which the industrial revolution caused to be absorbed by factories, will need to return to the farms.

"The farmer's wife will resume some of the activities of our grandmothers who made their own soaps, certain types of clothing, hats, and many of the decorative and useful articles for the home. There must be an enormous increase in the growing, processing, and preparation of the farm food supply."

Measures to Consider

As a suggestion of a few important measures that need consideration in connection with handicaps which beset farmers in one section or another, Director

Watkins names these for study:

1. Better education for farm life.
2. Limit the amount of farm land which may be owned by one person.
3. Apply a higher tax rate to lands of absentee land owners.
4. Work out a new system for the inheritance of farm lands which would prevent such transfer of wealth to the cities and make possible the acquisition of farm lands by those who remain on them.
5. Take off property taxes on acreage used for production of food stuffs for family use.
6. Stimulate rural handicraft education and development.
7. Revise railroad rate structures to favor rural locations for industrial development, thus stimulating decentralization of industry.
8. Build more hard surface roads into farm areas leading to markets.
9. Prevent land speculation in rural areas.
10. Bring back to the country some of the wealth of cities by paying parents who rear large families as is now being done in some European countries.
11. Let the government assist in decentralization industries so as to scatter local markets throughout the country as well as to provide part-time employment for farm people in such industries.