

The Buying and Judicious Use of Commercial Fertilizers

Article No. 9 on "Diversification and Independence in 1915!"

By TAIT BUTLER

HAVING sold our farms piecemeal, by selling too large a part of the plant foods they contained, and having also allowed the best part of our soil to wash and leach away, we must now buy them back at greatly advanced prices. This is a simple, truthful statement of why we must now buy commercial fertilizers in such large quantities.

But having elected to sell raw products, rather than grow feedstuffs and sell finished products; or in other words, having sold our farms piecemeal, and having allowed them to leach and wash away, rather than cover the cultivated lands with winter-growing crops—legumes—we must now buy back at least a part of what we have sold, or allowed to escape otherwise, in the form of commercial fertilizers.

In this trying year of 1915 it is no theory, but a serious condition which confronts us. If a judicious use of commercial fertilizers will enable us to produce our crops more economically or with greater net profit—and all past experience proves that it will—then it is not only ridiculous, it is suicidal, to allow misguided advisers, or prejudice, or false ideas of economy to prevent us using those fertilizers which will increase our net profits.

The low price of cotton is not a good reason for using no fertilizers, but it is rather a good reason for using fertilizers. But we should use only such kinds and such quantities as the increased yield usually obtained will make profitable at present prices of crops and fertilizers.

This is no time for buying plant foods not needed, nor for paying more for our fertilizers than is necessary.

Home Mixing a Local Problem

THE question whether one should buy and use ready-mixed fertilizers or should buy the materials needed and do his own mixing is always an important one; but it is an individual question to be decided by individual conditions. The man who knows sufficient of the subject to buy the materials and mix them intelligently and uses considerable quantities may well afford to do his own mixing; but the average farmer who does not possess the knowledge necessary to buy the materials judiciously and mix them intelligently, or the man who uses only small quantities, will usually find it advantageous to buy ready-made goods.

Buying coöperatively for cash and the using of only such plant foods and in such quantities as will lead to the most economical production offer much larger opportunities for economy to the average small farmer, than does home mixing.

The most important point in the buying of any fertilizer material is to buy or pay for the material on the basis of the plant food it contains. To do this is not a difficult matter. If the buyer only remembers that "per cent" means "per hundred"; that for instance, 4 per cent of nitrogen means that in 100 pounds of the material there are 4 pounds of nitrogen, then it is a simple matter to calculate the relative cost of nitrogen in different materials. The same applies to the other term used to measure nitrogen—ammonia. And if in one material the plant food is stated in terms of nitrogen and in another in terms of ammonia it is only necessary to multiply the per cent of ammonia by 14

and divide by 17 to reduce it to nitrogen.

One other point is of importance in most cases. Nitrogen-containing materials like cottonseed meal, tankage, blood, fish scraps, etc., must decay in the soil before the nitrogen they contain is available for feeding the crops. These materials usually decay fast enough to feed a crop having a long growing period like cotton and corn. Nitrate of soda, sulphate of ammonia, cyanamid, etc., are more readily soluble and are more suitable for feeding quick growing crops. These are also suitable for feeding slow growing crops if put on while the crops are growing.

In mixed fertilizers the source of the nitrogen is not always known and in such case the amount of nitrogen guaranteed is the important point.

While nitrogen is needed for the production of the whole plant, those soils which produce a large stock and heavy foliage of a dark green color generally may be assumed to need no fertilizer containing nitrogen. In other words, a plant which is making a vigorous growth and is of a dark green color may be assumed to be receiving the nitrogen needed. Nitrogen costs from 16 to 22 cents a pound, usually around 20 cents a pound. Most Southern soils are deficient in nitrogen.

How to Buy Phosphoric Acid

IN BUYING phosphoric acid the per cent available is the important matter. In guarantees, the phosphoric acid that is guaranteed as soluble in water, citrate soluble, and reverted may be assumed to be available. Most Southern soils are deficient in phosphoric acid. The application of some material containing available phosphoric acid will, therefore, usually pay, but on some soils it will not and for that reason every farmer should do something towards finding out the needs of his soils by making tests, to a limited extent at least.

This plant food is also used in all parts of the crop, but is more largely needed for the production of seeds or fruit. Lands which make a good growth of weed or stalk which fail to fruit properly may respond profitably to the use of phosphoric acid.

Acid phosphate is probably the best source of phosphorus for the average Southern farmer. It contains from 13 to 16 per cent of phosphoric acid and the higher the grade the cheaper per pound of plant food as a general rule.

The phosphoric acid in basic slag or Thomas phosphate is less readily available than in acid phosphate, but costs less per pound. The phosphoric acid in ground phosphate rock or floats is still cheaper, per pound, and still less readily available. Because of its cheapness, however, it is the best source of phosphorus when mix-

ed with stable manure or when applied to lands rich in decaying vegetable matter or humus. There is little such land in the South and plowing under one crop of cowpeas or other crop will not produce suitable conditions for the use of ground phosphate rock on most Southern soils. Phosphoric acid usually costs four cents to five cents a pound in acid phosphate and mixed fertilizers, and one cent to a cent and a quarter a pound in ground phosphate rock.

Potash is deficient in most sandy soils, especially those of the Southeastern states. It is usually present in sufficient quantities in the heavier clay, or clay loam soils if it were only available or in such form that the plants could use it, which, however, is not always the case for certain crops like tobacco, truck, fruits, etc. Potash is not generally needed for general field crops west of Alabama, according to results of tests made by the experiment stations, except that it seems to reduce the injury of cotton from rust on soils where this disease is troublesome.

For general use the per cent of potash in a material or a fertilizer is the important point in its purchase, a pound of potash in kainit, manure salt, muriate or sulphate being about equally valuable for general crops; but it is generally thought that the sulphate is the best form for tobacco, potatoes and a few other crops.

Owing to the European war potash is scarce—more or less—and very high in price. Mixed fertilizers may contain less than usual this year and it may be more or less difficult to buy except in mixed goods, or at least it will be higher in price. It has usually cost around five cents a pound, but it may cost from seven cents to ten cents a pound this year.

No one can state what quantity of fertilizer should be used. When products are high in price a given increase in yield caused by the use of fertilizer will pay a larger net profit. As a rule while the per cent of profit is less the net gain is higher when rather liberal amounts are used on cotton, and truck crops. Corn will not pay a profit on so large quantities of commercial fertilizer on the average soils of the South. Owing to the facts that phosphoric acid and potash are not largely leached from the soil and that they are relatively cheap, it is not so important that no more be used than is needed by the crop to which they are applied, and consequently larger quantities, especially of phosphoric acid than of nitrogen are generally used.

Nitrogen May Be Leached Out

NITROGEN is leached from the soil and much of it applied is not recovered in the crops, and, because of this and its high price, it is important

that too large quantities be not used and consequently less generally is used. But it must not be forgotten that most Southern soils are deficient in nitrogen and when used intelligently no plant food gives better profits. It requires nearly 1,000 pounds of a fertilizer containing 3 per cent of nitrogen to furnish as much nitrogen as is contained in 30 bushels of corn grain. But even if this amount of nitrogen were applied to an acre of corn, the corn plants would not be able to get nearly all of it, so it is apparent that the entire needs of the crops for nitrogen cannot and should not be supplied in commercial form, but must be obtained through the growing of legumes which take nitrogen from the air to use in their growth and enrich the soil when handled properly.

For row crops, like corn, cotton and tobacco, best results are obtained by putting the fertilizer in the drill. For broadcast crops or those in narrow drills the fertilizer should be distributed broadcast.

Since phosphoric acid and potash are not largely leached from the soil, they are better put out at or before the planting of the crops, because they can be more economically put out at that time. When moderate applications are made and the source of the nitrogen is cottonseed meal, and such other materials as must decay before the nitrogen becomes available, the nitrogen may also be applied at or before planting the crop. But when large quantities of nitrogen are applied, when the rainfall is heavy, the soils sandy, and the nitrogen in a readily available form more than one application should be made to a long growing crop or the application should be made while the plants are growing and able to begin taking it up as soon as available.

In buying fertilizers plant foods are usually obtained for less, pound for pound, in high-grade goods than in the lower grades. It is not usually economy to buy low-grade materials or ready-mixed fertilizers because they are cheaper per ton; it is better business to buy the high-grade goods and use less per acre.

Don't buy fertilizers by the sack, ton or brand, buy them by the pounds of available plant foods they contain.

A Great Believer in Crimson Clover

I BOUGHT my farm of 90 acres three years ago and when I began farming on it I found the fields so rocky that I could not use machinery on it. So I began hauling off rock and making rock dams on the creek bottoms. Next I found my land washing away, as it is rolling, so I had to run terraces. Then I made my first crop and came out short, as my land was poor and all my best land grown up in briars, bushes, and such like.

So I began to clean up briar patches and sow red clover. I soon found that crimson clover did better and paid me more than red clover.

I am still clearing new land and I now have all my land except three acres sown to small grain and clover. My experience is that crimson clover with all manures applied as fast as made and turned under for corn, and rye sown and turned for cotton is the most sensible and most profitable way to produce those crops. I find that it pays well to haul out all manure as fast as made, thereby dispensing with the old way of hauling out in the spring time and strewing in the row or in the hill. The first year I made about 10 bushels of corn to the acre. The past year I averaged 37½ bushels.

I find it pays never to plow land wet, but by plowing when dry and hard I have gotten my land so it does not break up cloddy. I sow and plant all stubble land in peas as quick as I can get wheat and oats off, and mow them for hay and always save seed enough to plant and some to sell.

R. A. HUNNYCUTT,
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COMPOSITION OF FERTILIZER MATERIALS

| MATERIALS | Per Cent or Pounds in 100 | | |
|------------------------------|---------------------------|-----------------|--------|
| | Nitrogen | Phosphoric Acid | Potash |
| Acid Phosphate | ----- | 13 to 16 | ---- |
| Basic Slag | ----- | 16 to 20 | ---- |
| Ground Phosphate Rock | ----- | 26 to 32 | ---- |
| Steamed Bone Meal | 2 to 3 | 20 to 25 | ---- |
| Raw Bone Meal | 3 to 4 | 21 to 25 | ---- |
| Dried Blood (high grade) | 12 to 14 | ----- | ---- |
| Tankage (concentrated) | 10 to 12 | 2 to 3 | ---- |
| Cottonseed Meal | 6 to 6.6 | 2.5 to 2.8 | 1.8 |
| Cotton Seed | 3.2 | 1.8 | 1.2 |
| Fish Scrap | 8 to 10 | 6 to 9 | ---- |
| Nitrate of Soda | 15 to 16 | ----- | ---- |
| Sulphate of Ammonia | 19 to 20 | ----- | ---- |
| Cyanamid | 15 to 16 | ----- | ---- |
| Kainit | ----- | ----- | 12.5 |
| Potassium Chloride (muriate) | ----- | ----- | 50 |
| Potassium Sulphate | ----- | ----- | 50 |
| Manure Salt | ----- | ----- | 11 |

This series of articles will run throughout the year, the next two articles in the series being:

March 6—A Planting Calendar for Southern Farmers.

March 13—Good Preparation is Half Cultivation.