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Timely Farm Suggestions

By TAIT BUTLER

IN SOWING fall grains it is always safe to "bet" on a dry season. Wheat especially needs a firm soil.

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It is plainly evident that oats and other fall-seeded crops will be put in too late again this season on most farms. This is especially true in the northern third of the Cotton Belt. In this section oats, bur clover, crimson clover, red clover, alsike clover, white clover, vetch, etc., should be sown not later than September. Success may be obtained sometimes with later sowing, but it is always more risky.

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In breaking land for fall seeding, even though there be plenty of moisture in the soil, the disk or smoothing harrow, preferably the former, should be run immediately behind the plow. Dry weather may come later and injure the growth of the crop, even though a good stand is obtained.

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We would rather have grass, stubble and other vegetation well cut up with a disk harrow and left on top of the soil than plowed under, if dry weather should follow the sowing of fall crops. With a disk seed drill or where the seed is sown by hand and disked in considerable "trash" on the surface does no harm, if the top soil is well pulverized.

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The Oklahoma Extension Division says: "First aid to injured soil—supply humus. Follow up with **more** humus and an application of lime."

Which Will Pay Better, Dairy or Beef Cattle?

A READER who has three tracts of land, in all about 600 acres, some of which is four miles from his residence, which is two and one-half miles off the railroad, wants to know "which will pay best, beef or dairy cattle?"

With as large an area as 600 acres and that in three tracts several miles apart, probably beef cattle could be handled better than dairying. If dairying is selected it will probably be necessary to establish a dairy on each of the two larger tracts. If beef cattle were handled the necessity for maintaining two complete plants and equipment would be less urgent.

The question of which pays better, beef or dairy cattle, is an old one and can only be answered when one is in possession of more facts and knowledge of the conditions than our inquirer could give in a letter. If the greater attention and labor, which dairying demands, are given it will pay better. Dairying not only requires that as much or more intelligence be given to the breeding, care and feeding of the cattle, but also introduces the additional problem of manufacturing and handling the products. Our reader contemplates shipping cream to a creamery, and this will lessen his difficulties if the creamery is well managed so that it can pay him a fair price for his cream; but dairy cattle demand more labor, and more personal attention, and probably more technical knowledge. For this they will pay a fair price. The dairy cow is a more economical producer of human food, and on high-priced lands and with the right management, is the better proposition.

On the other hand, with cheaper lands, the South's great facilities for growing an abundance of cheap, rough forage, and the farm divided into two tracts, several miles apart, we suspect our inquirer might find beef cattle more profitable. He should, however, in either case, plan a system of cropping or farming that will give him at least one other money or sale crop besides the livestock. If it were not for the boll weevil, cotton would be the best additional money crop, but in any case some other money crop, hay if there be no better one available, might be made a sale crop. Or oats, corn or soy beans, or some other grain crop, might serve.

If beef cattle are selected, good pastures provided, silage and cottonseed meal used for wintering the stock, grade or native cows and pure-bred bulls obtained and fairly good management given, fair profits or returns from the land ought to be obtained after a few years. If dairy cattle are selected the same conditions must be brought about and more labor and equipment will be required, buf the returns should be somewhat larger and they will begin to come in at once.

THE CAPACITY OF SILOS

As a Rule Silo Capacity Is Over-estimated, Resulting in Disappointment—Some Rules to Go By in Making Calculations

THE following questions have recently been raised by our correspondents, regarding the capacity of silos:

1. Those who have built or bought silos and weighed the materials put into them have been disappointed in their capacities.

2. In calculating that a silo of a certain supposed capacity would feed a certain number of cattle for a definite period of time, many have been disappointed in having the silage give out before the end of the period.

3. In estimating or measuring the tonnage of silage material produced per acre by the supposed capacity of silo, some have produced much heavier yields than reported by those who have weighed the material into the silo.

All this confusion or disappointment, or much of it at least, comes from the fact that practically all the tables published showing the capacities of silos of different sizes are erroneous. They are frequently put out by those building or selling ready-made silos, and it is advantageous that these tables show as large a capacity as possible for a given size of silo. In most of these tables, the weight of a cubic foot of silage is over-estimated, especially in the silos less than 35 feet high, and no deduction is usually made for the portion which cannot well be filled at the top.

An error when once given publicity is hard to correct. At present, any one wanting to publish a table showing the capacities of silos of different sizes naturally takes some table already prepared, without going to the trouble of making the calculations himself. For instance, we find in a recent circular of the Agricultural Extension Division of the Missouri University capacities given which assume the following weight of a cubic foot of silage in silage of different depths:

Depth of Silage	Pounds per Cubic Foot
25 feet	36.74
30 feet	40.08
36 feet	40.28

In the first place, it is doubtful if silage 25 feet deep will average a weight of 36.74 pounds per cubic foot under usual conditions, and second, it is quite certain that if silage 36 feet deep will only have an average weight of 40.28 pounds per cubic foot, silage 30 feet deep will not average 40.08 pounds per cubic foot, other conditions being the same.

We find that from 10 to 20 per cent should be deducted from the capacities given in most tables, to approximate the actual amount of silage put in such silos.

In the first place, about 10 per cent should be deducted for the unfilled portion at the top. Moreover, it is a mistake to assume that the average weight per cubic foot of silage will be as much as 40 pounds in a silo less than 35 feet deep. A silo with not over 25 feet of silage will probably give an average weight of about 35 pounds, or even less, per cubic foot; of course, the silage at the bottom of a silo will weigh more per cubic foot, probably as much as 60 pounds or more per cubic foot, and the deeper the silage the greater will be the weight.

Those who use the silo capacity tables generally published, for measuring the yield of silage crops per acre are almost certain to over-estimate the yields. This means that they underestimate the cost of production per ton and also that they are going to be disappointed in the length of time the silage will feed a given number of cattle.

The stage of maturity of the crops, the lengths into which the material is cut, the height of the silo and the packing are the main factors which determine the weight per cubic foot of silage in the silo.

In our Reference Special, March 6, 1915, page 4, we gave a table of silo capacities which experience has shown much more nearly represents actual results obtained than the tables generally used.

SOME FERTILIZER TERMS DEFINED

What Acid Phosphate, Phosphoric Acid and Phosphorus Should Mean to the Man Who Uses Them

A READER, in writing about an article that recently appeared in The Progressive Farmer, comparing the "phosphoric acid", so-called, in acid phosphate and ground phosphate rock, shows that he does not understand what is meant by "phosphoric acid", and confuses this with sulphuric acid used in making acid phosphate.

It is unfortunate that the term "phosphoric acid" was ever used, and still more unfortunate that the chemists, when they found out their error, did not have the courage to discard the old and erroneous usage before it became popular and use the correct term, "phosphorus", as the measure of this plant food in fertilizer materials. The longer we continue the use of the misleading term "phosphoric acid" and the more people who become familiar with it, the more difficult it will become to make a change to the correct term, phosphorus.

If we had used phosphorus as the measure of the plant food in acid phosphate and ground phosphate rock no confusion could have occurred. For instance, if we stated that a certain grade of ground phosphate rock contained 14 per cent of phosphorus and with 100 pounds of this ground rock is mixed 100 pounds of sulphuric acid in making acid phosphate, then any one would understand that the acid phosphate could only contain one-half as much phosphorus per 100 pounds, or 7 per cent, and no confusion could possibly have occurred.

There is really no excuse for the use of the term "phosphoric acid", because that is not what is meant, but phosphorus pentoxide, a mixture of 62 parts of phosphorus and 80 parts of oxygen by weight. "Phosphoric acid" is really something else, and sulphuric acid used in making acid phosphate contains no "phosphoric acid", therefore, both should be ignored in considering the composition of acid phosphate, except in so far as the sulphuric acid lowers the grade or per cent of plant food in the mixture.

Acid phosphate does not contain any "phosphoric acid" or sulphuric acid, as such, and we should dismiss any idea of "acids", and our trouble in understanding the amount of plant food, phosphorus, it contains, would disappear at once. Ground phosphate rock does not contain any "phosphoric acid" as such and we should forget it again, in considering the composition of ground phosphate rock. The ground rocks does contain, in combination with calcium, the plant food phosphorus, and that is all we need concern ourselves about.

It is unfortunate that we must still use "phosphoric acid", when we really mean phosphorus pentoxide, to measure the plant food in these materials, especially since we really care nothing about either, but want to know the amount of phosphorus. But if our readers would once get clearly fixed in their minds what is meant by phosphorus, "phosphoric acid," acid phosphate and ground phosphate rock, no confusion need exist.

Phosphorus is an element, a plant food, and the thing actually of use to us as a fertilizer.

Phosphoric acid is a term used when something else, phosphorus pentoxide, is meant, which contains 62 parts of phosphorus to 80 parts of oxygen by weight.

Ground phosphate rock is a natural rock ground fine, which contains largely phosphorus and calcium in combination, from 12 to 16 per cent being phosphorus.

Acid phosphate is a mixture of ground phosphate rock and sulphuric acid, mixed for the purpose of making the phosphorus more readily available or soluble for feeding the plants, but the mixture contains no free acid or acid as such. Because the ground rock is diluted or mixed with an equal weight of sulphuric acid, which contains no phosphorus, the mixture, or "acid phosphate", only contains one-half as much phosphorus as the ground rock from which it is made, or from 6 to 8 per cent of phosphorus.

But the term, or the size of the measure, need not confuse us. If we must use "phosphoric acid" as the measure, then all we have to do is to remember that this is the measure and that a material containing 24 per cent of phosphoric acid contains a half more plant food than one containing 16 per cent, and that one containing 32 per cent contains twice as much plant food as the one containing 16 per cent. Of course, the availability or solubility of the plant food is another and a most important question, but there is really nothing complicated or difficult in determining the relative amounts of plant foods in materials when the per cent is stated, no matter what the terms or the measure used. We could agree to call it anything else, which it is not just as we call the plant food "phosphoric acid", when it is not; but that should not prevent us from knowing the relative values of two grades containing, say 14 and 16 per cent. If we must continue the use of the term "phosphoric acid", because it has become the habit, then let us keep in mind that this "phosphoric acid" or the per cent of it in a mixture is the thing which measures the plant food or fertilizer it contains.