

fertilizers. A knowledge also of the composition of the crop grown is indispensable with regard to its behaviour towards them in order that there may be no great waste in the application of the fertilizer. For example, the potato takes from the soil a considerable quantity, then by applying a potash fertilizer we may greatly increase the yield of potatoes. Now if we had applied large quantities of phosphoric acid we might not realize any increase in the quantity of potatoes produced and we would naturally conclude that we had made a mistake as well as sustained a loss.

There are three classes of fertilizers at our disposal. I refer to (1) green manures, (2) general manures, and (3) special fertilizers. For light and heavy soils green manures are very valuable, as they increase the power of a light soil to hold manurial ingredients, which might otherwise leach away, and they greatly improve the texture of a heavy soil, making it open and friable. Green manures are useful in orchards, to keep down weeds, to keep the soil, if heavy, open, and at the same time add to its fertility. They may be pastured and thus become a double source of profit. Any large leafed plant which will grow quickly and draws most of its nutriment from the atmosphere or sub-soil, as red clover, buckwheat, etc., are suitable for green manuring.

By general manures, I mean those which contain the three elements referred to above. They contain other elements of plant food as well. Farmyard manure and compost come under this head. If we could produce, or even buy enough of this class of manure, we would have no difficulty in making and keeping our soils very productive.

Most of us realize the value of a compost heap, but how few, comparatively speaking, make them. By throwing in a heap all the vegetable and animal waste products, occurring around our homes, together with some farmyard manure, which, when well mixed makes for us a cheap and rich manure, especially for the garden. In gathering up the refuse vegetable matter, etc., we remove a suitable hiding place for many injurious insects as well as destroy many which have already taken refuge there.

The third class of manures, of which we spoke, are called special or artificial fertilizers, that is, they contain some one or two of the three elements to which I referred. There are very many of this class of fertilizers manufactured and used at the present time.

Where we require more fertilizing material than we have at hand, there the special fertilizer comes readily in play. They are invaluable to the market gardener. In some cases, however, they should be used with caution, if we are to realize a profit from their use. By experimenting with our soil we may learn of which of the three elements it has the most need, and this will guide us in the kind of fertilizer to apply. A knowledge of what the crop to be grown requires will also be a help. Just here a word of caution may be necessary for some. Certain classes of fertilizers should be purchased subject to a chemical analysis by a competent and disinterested person. So many have been defrauded in the past that this step is almost necessary. On the other hand it may also prevent a fertilizer from being unjustly condemned.

In a paper of this kind it would be folly to give the composition and value of the many special fertilizers now offered for sale. I can only suggest general principles and leave the particulars to be brought out in the discussion.

Generally speaking I would apply nitrogenous manures or fertilizers containing nitrogen, as sulphate of ammonia, nitrate of soda, or guano, to crops or trees where vigorous growth is the object; phosphoric acid in the form of superphosphates, bone ash, bone meal, or apatite, etc., where fruit or fully developed seed is required; and potash fertilizers, as wood ashes, or kainit, are very useful in growing crops which store up considerable starch in their growth. It is needless to remind the fruit grower these days of the value of wood ashes as a fertilizer and insecticide for the orchard and garden. It pays to use all the wood ashes made at our own homes and frequently to buy from our neighbors, who offer them for sale. If we expect to grow paying crops of fruit and vegetables we must supply the elements of growth and development to those soils which are being repeatedly cropped.

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