ACIDITY TESTS AS AN AID IN SOIL SURVEY WORK LABORATORY VIEW POINT

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One of the main reasons why a soil survey is worth while and may be justified as an expenditure of public money, is that it furnishes information about the agricultural value of different types of soil. If a soil survey is to give adequate agricultural information, it should be so made that it will distinguish soils of different productivity and of different fertilizer and lime requirements. This is particularly important in the humid sections of the country.

In this connection, I wish to state that any arguments in this paper in favor of soil classification for the purpose of distinguishing agricultural needs, should not be construed as an argument against any other type of classification which will serve some legitimate purpose.

No one test is as valuable in diagnosing the deficiencies of a soil, as an acidity test. A good acidity test not only tells whether a soil needs lime or not, but it gives a very good indication as to the phosphorus needs. In almost all instances, soils in need of lime, also are in need of phosphate. Quite often black soils high in calcium carbonate also need potash. It is true, however, that some acid soils also need potash. Every soil specialist should become familiar with the needs of the soils in his State or section, in relation to acidity and other tests. If it is known from what section a soil comes, it should not be necessary to make a complete chemical analysis to give a fairly accurate diagnosis of the soil needs.

In addition to acidity tests, it is absolutely necessary to take into consideration two additional factors: namely, the reaction of the subsoil and the organic matter content of the soil.

It is just as essential to know the reaction of the subsoil as it is the surface soil. With many soils the only apparent reason for crop success or failure, is due to the character and reaction of the subsoil.

At this point, it might be well to admit that there are no chemical methods that will infallibly show from a mere analysis, just what a soil needs. This is true of physical tests and classifications also; but if you have along with the chemical tests, a modicum of experience and a fund of good judgment, it will be possible to diagnose fairly well the more important needs of the majority of soils.

For purposes of agricultural classification, soils should be divided into those high in organic matter, and those low in organic matter. This division may be nearly always made by observation of the color of the soil. The reason this division is so important is that acidity in organic soils is very much less harmful than acidity in light colored soils. In fact, many soil acidity