EARLY DEFINITION OF SOIL TYPES.

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The real work of the soil surveyor in any area is to map, define and describe the soil types that are distinguishable. What he has mapped as one type may later, using finer criteria, be found to be properly divisible into two types, or the differences between what he regarded as two distinct types may prove so small and inconstant that they will be combined into one. Such things are to be regarded as a normal part of the work and not reflecting upon any of the workers. The naming of the types does not necessarily come within the field of the surveyor. In order to achieve a harmonious country-wide nomenclature it may even be passed up by the head of the state organization to a federal office without any reflection upon the knowledge or judgement of the state representatives. For the accuracy of the mapping or for most of the description of the types, however, there can be little passing on of the responsibility to someone else. This must rest with the state workers and whatever federal men may assist in the field

Whatever gives promise of reducing the errors in mapping or of improving the type descriptions by making them more accurate, more comprehensive, and of more agricultural significance merits a trial.

In dealing with the survey of any county it is the general practice, we believe, to first complete the field work, mapping the soil types and making more or less complete notes, leaving the writing of the description of the soil types that have been mapped, which includes their definition as well as the agricultural development, productivity and crop adaptations of these, until the last. We submit that much might be gained by giving a part of this literary effort an earlier place on the programme of areas that are not contiguous to one or more counties already carefully surveyed. This would be the early formulation of exact definitions of the soil types as encountered, or as recognized in the course of the survey--putting them down in black and white--to be constantly revised, corrected, made more accurate and significant as the work progresses.

Uncertainty in mapping is often due to the want of sufficiently sharp definitions of the various types encountered or to an imperfect appreciation of these definitions by the field men. A really serious problem is presented by the occurrence side by side, or interpenetration, of types that have much in common, as for example several silt loams, more or less similar in origin, topography, natural vegetation and agricultural use. With these the placing of boundaries may at best be somewhat arbitrary and under ordinary circumstances it becomes largely a matter of chance to which of the types any particular field will be assigned. Two trained surveyors working independently of one another under present conditions may make very different mappings. Thus if the total acreage in one township of three such similar types, which we may refer to as 1, 2 and 3, amounts to 18,000 acres, Surveyor A might map 10,000 acres of type 1 and 2,000 acres of type 3, while Surveyor B might map only 5,000 acres of type 1, but 9,000 acres of type 3. It may be this way even when two men work together, sleep under the same roof and ride out in the same car in the morning. Many of you will probably be able to recall specific instances of this character. The larger the party that includes only one well trained and experienced man as leader the greater in general is the probability of this uncertain, and in the end misleading

mapping. This is due to the men not having in mind similar type definitions which we may regard as yardsticks or to not knowing just how to make use of these. A definition of each soil type in black and white serves as a yardstick and the constant testing and improving of it makes the field man an expert in its use.

By the exact definition of the soil types, the early formulation of which we suggest, we do not mean accurate and complete descriptions, but for each type a definition, stated in as precise language as the keenness of the surveyor's observations will warrant and his vocabulary will permit, in which will be included all the characteristics which he has observed. When he has thus put his ideas down on paper, he will in the following days recognize many serious errors in the details or in the generalizations, and may often discard the original and decide that what he regarded as several distinct types should all be mapped as one. This will also permit his co-workers in the area to have a definite statement of the leader's ideas for additions, corrections, and more exact statement--thus allowing of definitions that make use of the knowledge, powers of observation and individual experiences of the whole party. With the revised definitions--what might be called the "party definitions" in the possession of all, in their pockets, if not in their heads, they are provided with similar measuring sticks to continue the work. As all may thus have a wider and more exact acquaintance with the types that have been encountered in the parts of the area mapped by any of the party, their subsequent mapping should be more in accord. Further, the submission to a central office of these early definitions and their later revisions will permit of useful suggestions and kindly criticisms as well as an intelligent request for an acceptance of samples for laboratory examination.

How "early" in the survey of any area should the first formulation of definitions be attempted? That must depend upon the mental habits of the field men and upon their experience. We suggest that the first attempt be made not later than the evening or the morning following the second day in the field. An evident requirement for this is the furnishing to each field man of a loose-leaf note-book of convenient pocket size, with a liberal supply of form sheets printed for the purpose, so as to economize in writing, and plenty of blank pages for insertion where elaborate notations are required. From time to time, as at the end of each week, the definitions could be revised--so that all the workers could continue to use similar yardsticks.

The practice of early written definition of types would involve more mental effort on the part of the field men early in the work in each area, but there would be far less painful effort at the close of the work in trying to write accurate descriptions of profile, crop adaptations, etc. from memory and from scattered notes,--long grown cold. Not only does the practice promise to give more reliable and less arbitrary mapping and fuller and more accurate descriptions in the newer districts, but also, by so strongly encouraging the field men to check their own observations and to be more constantly on the alert, would tend to place responsibility and more rapidly differentiate the more promising young men.

Some may say that the system of early descriptions is not feasible, but to this we may reply that we have tried it during the past season. Others may say that it is already in use. If so, let the rest of us have as full information as possible as to your experience, as we had been unable to learn of such a practice in any state.