LAND CLASSIFICATION IN WISCONSIN

by

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The extensive work in revaluation of land by the Federal appraisers, the setting aside of extensive areas for forestry, and the zoning of land to prevent settlement in areas unsuitable for agricultural use has created a demand for a practical classification of land to serve these purposes. In any such classification the economic productiveness of the soil determined by its water holding capacity, fertility, suitability for tillage operations and climate are the fundamental factors to be considered. In Wisconsin, as in most states, owing to the complexity of the geology and topography, the detailed mapping of the soils has required the recognition of a large number of soil types and these form an intricate pattern over most of the state. Moreover, the description of these types in the text of the reports is not readily interpreted in terms of practical land value by those not experienced in soil mapping. A simplified scheme of classification was needed to express the fundamental facts in such a way that the mass of data of the detailed reports and maps could be readily used for the purposes mentioned.

A four-fold grouping or grading was made of the approximately 200 types and phases which have been mapped in the detailed soil survey. This grading was made chiefly to express the relative value for the production of staple feed crops, the use to which over 91% of the cultivated land of the state is put. It was based on the estimates made by the field men of the Soil Survey, the yields on our substation and demonstrational plots and on reports from 2,000 experienced farmers to whom a carefully worded questionnaire was sent. In this connection it should be pointed out that on the dairy farm on which corn, legume hay, grain and pasture are needed, it is not possible to adapt the crop to the soil as fully as in the growing of cash crops. In grading Wisconsin types, therefore, their suitability to all three types of crops was taken as the basis.

Climate

Of the climatic factors, rainfall, on the average, is quite uniformly distributed in Wisconsin while temperature, especially length of growing season for corn, is affected by latitude and altitude in about equal degrees, and since the central northern part has the highest altitude as well as latitude, this portion has a considerably shorter growing season which makes corn an uncertain crop.

Stoniness

In the detailed separation of agricultural land to prevent settlement in areas unsuitable for agricultural use which destroys the organic matter and reduces its granular structure, a four-fold classification of land into (1) practically free from stone; (2) that having stone amounting to from 2 to 20 loads per acre; (3) from 20 to 50, and (4) above 50. To establish a technique for estimating stoniness in the field, we first examined a number of fields which had been cleared and the stones piled, made a determination of the amount of stone collected in each case in terms of loads per acre and with the assistance of the farmer who had cleared the land, determined the stoniness in adjoining land equivalent to that which had been cleared. We recognize, of course, the difficulties of estimating stoniness in the work of the survey, but believe, nevertheless, that this effort to express it quantitatively in terms of a fairly definite unit is a decided advance over the older methods in which stoniness was expressed in very general terms as slightly stony, moderately or very stony, the meaning of which varied greatly with individual using these descriptive terms. Having the first two degrees of stoniness not offer very great expense in clearing land of the third or fourth degrees of stoniness may be used as pasture when it occurs in small areas in such association of less stony land as to give a suitable farm unit, while when it occurs more widespread it limits the use of the land to forestry.

Topography

For the purpose of a general land classification in Wisconsin, topography may be divided into four degrees of slope, (1) from level to 10%, (2) from 10% to 15%, (3) from 15% to 30%, (4) 30% or more. On the first class, erosion is not serious on most Wisconsin soils and can be controlled without change of farm plans; the second class having slopes of from 15% to 30%, the use of practical control measures still make it possible to use the land as to give a suitable farm unit, while on slopes of from 30% a change in the crop system is imposed reducing or eliminating intertilled crops, using the land chiefly for hay or pasture, while on slopes of 30% or more per cent agricultural use is little or nothing and the land should be largely in wood of some kind.

Erosion

That erosion of land is greatly increased by agricultural use which destroys the organic matter and reduces its granular structure now clearly recognized. While we early stated its importance in Wisconsin, and 20 years ago published a bulletin aimed at assisting in the control, we have not done sufficient work to develop a satisfactory technique for estimating and controlling its effects. The highly productive land of the central northern part, however, is especially susceptible to this evil, and if not controlled may reduce its value to a small fraction of its former worth.