PROPER land use is essential to an adequate soil conservation program on agricultural lands, but soil conservation cannot be achieved through land use alone. Soil conservation in the broadest sense implies maintaining the productive capacity of the land over relatively long periods. To achieve soil conservation not only requires that land be used for the purpose for which it is best suited but also necessitates the adoption of such soil conservation practices as are required for each kind of land. In other words, soil conservation and land use are intimately related but not synonymous. An attempt will be made to discuss the various interrelationships between proper land use and adequate soil conservation.

SOIL CONSERVATION VERSUS SOIL DETERIORATION

Obviously, soil conservation is the opposite of soil deterioration, but in order fully to understand the problems involved in soil conservation, it is desirable to give attention to those processes or practices that result in soil deterioration.

Reduction in mineral nutrients.—Throughout various sections of the United States, minerals are being removed continuously from the surface soil through leaching and crop removal. Obviously the reduction of mineral constituents of the soil is more rapid in a cash-grain farming than in a livestock farming system. This continual drain of the mineral nutrients from the soil necessitates the use of various fertilizers and liming materials.

Decline in organic matter.—Organic matter in the soil increases most rapidly under a grass cover. The plowing and tilling operations in the production of cultivated crops result in a continuous and fairly rapid reduction in the organic matter content of the soil. The growing of a large proportion of cultivated crops in relation to sod crops accelerates this reduction. Changing the crop rotation to bring about a better balance between the sod, or soil conserving crops, and the cultivated or soil depleting crops retards the decline. Bradfield has shown that 40 years’ cropping on Nappanee soil in Paulding County, Ohio, has increased the weight of soil per cubic foot, in the first foot from 65.5 pounds (in virgin soil) to 81.7 pounds. The pore space, expressed as percentage of the total volume, has declined from 60.3% to 50.5%. The organic matter content has declined from 132,000 pounds per acre in the virgin soil to 89,400 pounds in the soil cropped for 40 years. The lengthening of the crop rotation by including more years of meadow or rotation pasture results in the land being plowed and

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2Regional Conservator, Region 3.


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