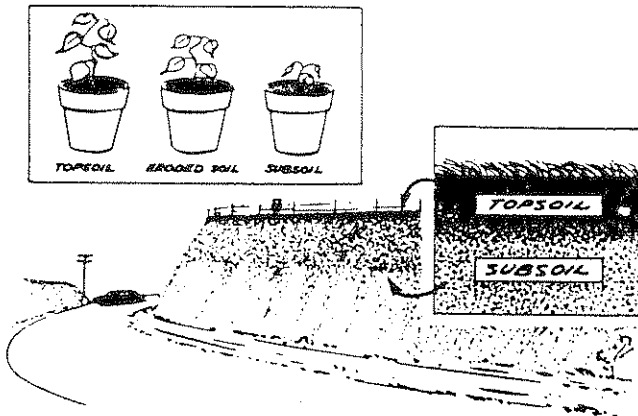


III. Compare Soils by Growing Plants in Them

Fill flowerpots with soil from the following places: (1) Topsoil from an old fence row or from a pasture that has never been plowed; (2) soil from an eroded hillside; (3) subsoil from a depth of 3 to 4 feet, which may be taken from a roadbank where the different layers of soil can be easily distinguished; (4) another sample or



two of different soils in your community, for example, from an old lakebed or a woodland.

If you live in the city, take samples from a flowerbed, from an excavation for a building, and from an eroded roadbank.

Plant a few beans in each pot—3 or 4 will be plenty. (Soaking the beans overnight in water hastens germination.) Keep the pots watered and place them where they will be warm and have some sunshine.

At the same time plant 3 or 4 beans in cotton and keep moist.

Compare the rate of growth. Keep a record of how fast the beans in each pot grow and how

each plant looks. Compare these plants with the ones grown in cotton.

INTERPRETATION

Plants take all their mineral nutrients from the soil. They are made available for plant use through weathering and other soil-forming processes. The minerals found in a soil—except those added in the form of fertilizer—depend mainly on what was in the rock the soil came from.

Some minerals decompose more rapidly than others and even though they occur in small quantities in the soil they set free their nutrient content readily.

Plants also vary in the combination of minerals they can use as plant nutrients.

In general, soils that are above average in organic matter are more productive than soils low in organic matter. Organic matter improves soil in many ways—it makes the soil more crumbly; it increases its water-holding capacity; it serves as a storehouse for plant nutrients such as nitrogen; and it provides food for the countless bacteria and other living things in the soil. Some of these organisms produce acids that in turn help break down soil minerals.

This explains why plants usually grow better in topsoil than in subsoil.

It is possible, however, to find a subsoil that is more productive than the topsoil. This might be true where water percolating down through the soil has leached plant nutrients from the topsoil and deposited them in the subsoil below. It may also be true in desert soils where organic matter seldom accumulates in the surface layer or where alkali forms at the surface and makes the soil toxic for plants.