



LITHOSOL AREA with extensive rock ← outcrop on upper portions of the slopes. Note how vegetation is concentrated in areas directly below the bare rock, where it receives runoff water.

vegetated rock outcrop. The rock outcrop acts as a 100 percent runoff area, adding the water it receives from precipitation to the deep cracks under the Lithosols.

Mostly in Mountains

Lithosols are found in every area of the state. However they are generally associated with the steep mountain ranges. Classification of Lithosols into soil series depends largely upon the type of underlying bedrock.

Some of the soil series in the Lithosol group recognized in Arizona include the Winona series on limestone, the Barkerville series on granite, the House Mountain series on basalt and the Faraway series on rhyolite and andesite.

Good Water Source

When considered as part of Arizona's total soil resource, Lithosols should be considered as valuable, not primarily for the vegetation they produce, but more so as watershed areas. If it were not for the presence of these soils in the watershed areas, important sources of irrigation water such as the Verde, Salt, and Gila Rivers would not supply nearly as much water for the state's irrigated agriculture.

LITHOSOLS IN ARIZONA

S. W. Buol

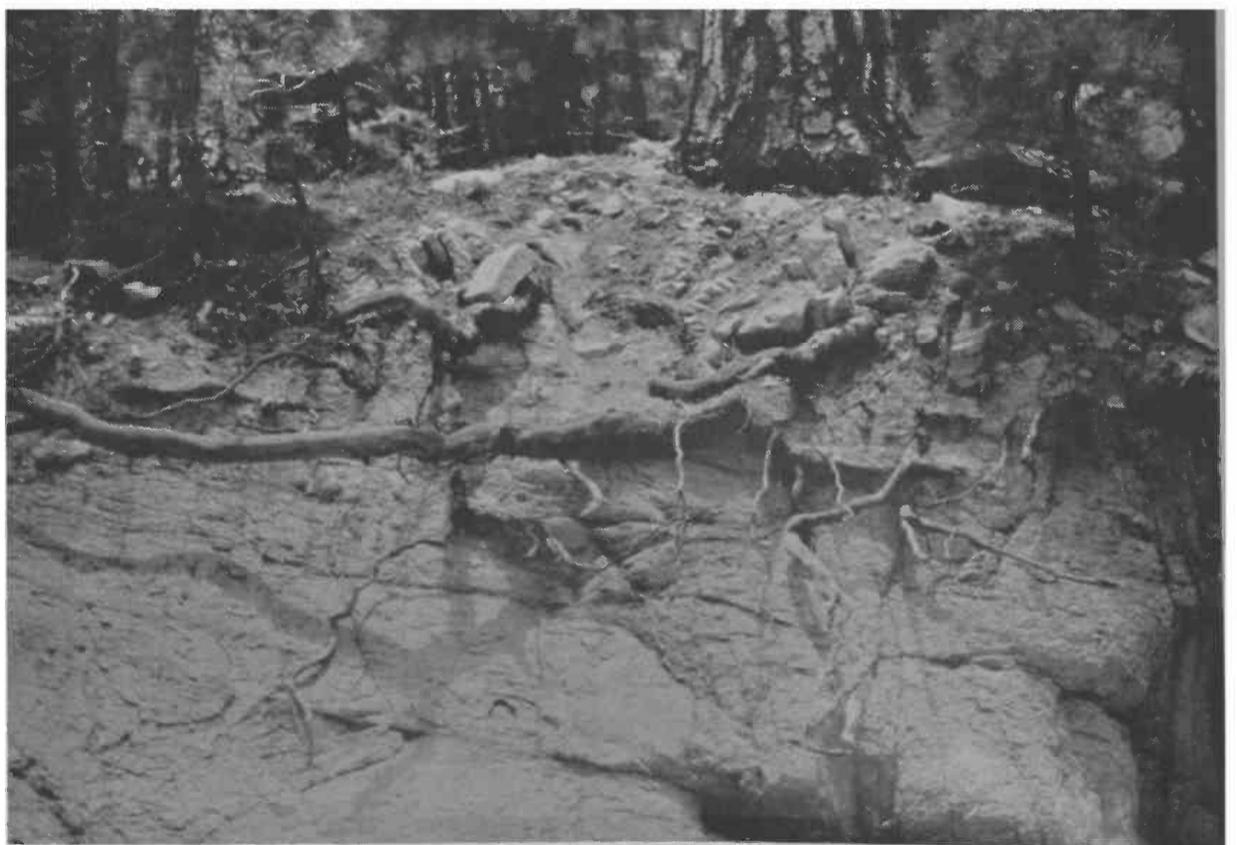
For many years most of the areas of Lithosols in Arizona were ignored by soil scientists. The expense of mapping and classifying these shallow (less than 20 inches to bedrock) soils over consolidated rock was not considered justified. It is true that these soils are generally very low producers of vegetation, either for range or timber, and they are of little value for irrigated agriculture.

Their shallow depth restricts root growth and limits their water storage capacity. This results in the vegetation being very dependent on frequent rains, as it cannot depend on the soil water to carry it through droughty periods. In some areas, however, trees and other woody plants are able to attain fair to good growth in sparse stands.

These stands usually occur where the trees are able to extend roots into

deep cracks in the bedrock and thereby obtain a more favorable moisture supply. This result is best seen in areas where the Lithosols occur in close association with areas of un-

IN PHOTO BELOW, Lithosol profile with Ponderosa pine vegetation, showing the root penetration along fractures of the bedrock. Note how the large root has grown horizontally at the contact of the soil and the bedrock, and how vertical cracks are occupied by many smaller roots.



Fourth article in a series regarding the soils of Arizona. Dr. Buol, author of the series, is engaged in a cooperative project for mapping Arizona soils. He is a member of the Department of Agricultural Chemistry and Soils.