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CORRELATION OF SPECTRAL CLASSES DERIVED FROM LANDSAT MSS DATA TO SOIL SERIES AND SOIL CONDITIONS FOR JASPER COUNTY, INDIANA

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The process of soil survey has been an on-going program in the United States since the early 1930's with aerial photography greatly increasing the speed and accuracy of the survey. Recent innovations in remote sensing techniques have offered the soil scientist a tool to aid in surveying the soils of this country and the world.

Recent work utilizing computer-aided analysis of Landsat MSS data resulted in a spectral soils map of Jasper County, Indiana. This map displayed fifty-two spectral classes which represented the soils found within six distinct parent material areas.

A correlation of the spectral classes with the soils and soil conditions was achieved by inventorying soils on twenty-eight 160-acre randomly chosen sites. The soils data and spectral data were manually overlaid and a dot grid count was made to determine the relative percentages of soils within each spectral class. From these percentages a descriptive legend was developed identifying the dominant soils represented by the spectral class as well as soils that represent significant inclusions.

In addition to developing a legend for each spectral class, various factors involved in the analysis and interpretation of remotely sensed data for soil survey were identified. These factors included: soil-vegetation complexes, crusting of the surface soil, subhorizon exposure, soil surface moisture, organic matter content, texture, and free sand on the surface. Of these, soil-vegetation complexes presented the most widespread problem in interpreting the spectral data. The other factors all altered the spectral response of the soil to some degree, but their influence appeared rather localized.

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