

1-1-1980

# Using Soil Color/Reflectance in Predicting Soil Properties

Chris J. Johannsen

Liovando M. Dacosta

Follow this and additional works at: [http://docs.lib.purdue.edu/lars\\_symp](http://docs.lib.purdue.edu/lars_symp)

---

Johannsen, Chris J. and Dacosta, Liovando M., "Using Soil Color/Reflectance in Predicting Soil Properties" (1980). *LARS Symposia*. Paper 379.

[http://docs.lib.purdue.edu/lars\\_symp/379](http://docs.lib.purdue.edu/lars_symp/379)

This document has been made available through Purdue e-Pubs, a service of the Purdue University Libraries. Please contact [epubs@purdue.edu](mailto:epubs@purdue.edu) for additional information.

Reprinted from

**Symposium on  
Machine Processing of  
Remotely Sensed Data  
and  
Soil Information Systems  
and  
Remote Sensing and Soil Survey**

**June 3-6, 1980**

**Proceedings**

The Laboratory for Applications of Remote Sensing

Purdue University  
West Lafayette  
Indiana 47907 USA

IEEE Catalog No.  
80CH1533-9 MPRSD

Copyright © 1980 IEEE  
The Institute of Electrical and Electronics Engineers, Inc.

Copyright © 2004 IEEE. This material is provided with permission of the IEEE. Such permission of the IEEE does not in any way imply IEEE endorsement of any of the products or services of the Purdue Research Foundation/University. Internal or personal use of this material is permitted. However, permission to reprint/republish this material for advertising or promotional purposes or for creating new collective works for resale or redistribution must be obtained from the IEEE by writing to [pubs-permissions@ieee.org](mailto:pubs-permissions@ieee.org).

By choosing to view this document, you agree to all provisions of the copyright laws protecting it.

## USING SOIL COLOR/REFLECTANCE IN PREDICTING SOIL PROPERTIES

CHRIS J. JOHANSEN  
University of Missouri

LIOVANDO M. DACOSTA  
Universidade Federal de Viscosa, Brasil

Correlations of soil components, value and chroma with selected soil physical and chemical properties from 563 surface soil samples from the Great Plains area, USA revealed that clay, organic carbon, cation exchange capacity and water held at 1/3 and 15 bars were most highly correlated. Regression correlations based on these soil color components were developed to estimate many soil properties.

Surface soil samples from two study sites located in Boone County, Missouri, USA were measured by a laboratory spectral meter. These measurements showed that soil physical and chemical properties could be predicted from reflectance measurements especially in the near infrared region. A Landsat image taken over the same study sites during Spring, 1977 showed that soil reflectance could be used to assist the soil scientist in locating soil boundaries especially when there were contrasts in texture, organic matter or moisture capacity.