

# Satellite Monitoring Resources For Agricultural Scientists

During the coming year, agricultural scientists will be

examining data from the Earth Resources Technology Satellite launched last July. The satellite is orbiting about 560 miles above the earth to monitor natural resources on a global scale.

The results should be useful in managing the earth's resources, suggests Dr. Gary W. Petersen, associate professor of soil genesis and morphology at The Pennsylvania State University.

The feasibility of using data from the satellite for making many kinds of management decisions will be tested, he says. If the experimental studies are successful, the results may be integrated into various state, federal, and commercial programs.

Known as ERTS-1, the satellite passes over the same spot on earth almost precisely the same time every 18 days. This coverage, involving about 750 pictures of the earth every day, allows the satellite to spot changes on the earth's surface over time.

Using automatic data-processing techniques, such as earth scanning should enable scientists to determine total acreage of various crops in any region - along with probable yields.

Insects and disease problems in crops and forests can be detected promptly, allowing for improved timing in applying effective control measures to reduce losses. Other data will be useful in making land use inventories and for portraying

areas undergoing land use changes.

ERTS-1 is a 1,965 pound vehicle equipped with a multi-spectral scanner for measuring electromagnetic waves reflected from the earth in four different spectral bands. Reflected energy within each of the four spectral bands is transmitted back to earth and recorded on magnetic computer tapes. Information can be retrieved directly from the tapes for computer analysis or it can be electronically converted into photographic images.

Four images, one for each spectral band, can be processed for each area scanned. These images can be combined using color-enhancement techniques to produce a color composite image.

Energy from the sun is either reflected or absorbed and then radiated as electromagnetic waves by objects on the earth, Dr. Petersen explains. Every object reflects this energy in a characteristic manner and therefore has its own "spectral signature." The data collected by the satellite can thus be visually interpreted from photographic images.

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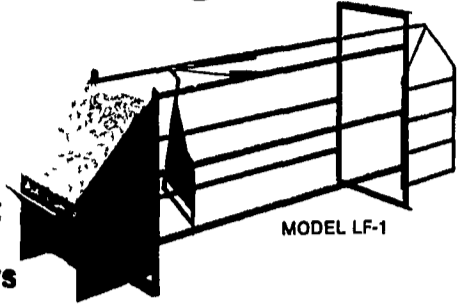
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