

Data Combination to Select Forage Species to Sow

Background:

Inconsistencies in crop growth over a field can seriously reduce a farmer's income. Factors out of a farmer's control, such as soil type and weather conditions, can accentuate growth variability. The use of remote sensing as part of a multi-layered information system can help to identify the characteristics of those heterogeneous zones and enable farmers to adjust their management practices to improve yield. A Montana farmer was concerned about a large area of bare, unproductive soil in the middle of an irrigated alfalfa field. He was interested in determining how he could make the area more productive.



Kodak 420 color infrared aerial image of bare area.
(Image courtesy Chuck Merja)

Use of Data:

The farmer used imagery from both Landsat ETM+ and a KODAK 420 color infrared camera (CIR). The advantage of the CIR system is that it gives farmers more flexibility in data acquisition time and dates. The imagery, coupled with soil conductivity information from the VERIS system, soil maps, and field scouting/soil testing, enabled the farmer to identify characteristics of the unproductive area of the field (Figure, circled area). He found that the soil in the middle of the field had a high salt content, a characteristic unsuitable for alfalfa growth.

Economic and Environmental Benefits:

Based on the results of his analysis, the farmer decided to plant another crop in the affected area. He sowed a more salt tolerant species, which enabled him to obtain greater productivity and therefore made his field more profitable. In addition to the economic benefits, planting the alternative species was environmentally sound. The increased vegetative cover reduced the amount of bare soil, thereby reducing wind and water erosion. Landsat imagery and aerial color infra-red images, combined with the other data, played an important role in the successful management decision.

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