

Remote Sensing to Serve Ranching

Background:

Ranchers are often confronted with questions like, how many livestock and wildlife can my ranch support? What will the forage production be? Am I overgrazing or undergrazing? Am I over stocked or under stocked? Understanding the natural factors that control rangeland productivity and finding information that provide the necessary clues to answering these questions are the keys to successful ranch management. Ranchers in Montana have answered these questions with the help of satellite imagery.

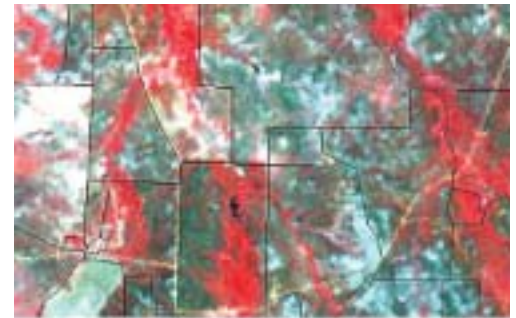
Use of Data:

The year 1999 produced healthy grass cover as seen in the early summer Landsat image. The meadows supported healthy grass due to higher water and moisture availability (red tone in the standard false color image). The field estimates showed 1500 pounds per acre of grass, which was adequate for grazing in winter, allowing the rangelands to be harvested for winter-feeding. The early season Landsat imagery for the year 2000 showed insufficient grass, only 500 pounds per acre of productivity in the same fields. This information, early in the season, enabled the rancher to decide to purchase supplemental feed for the winter of 2000-2001.

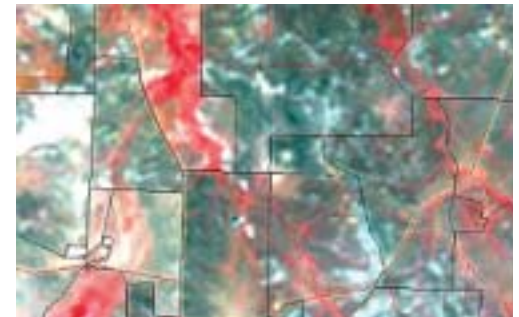
The rancher also used UMAC-supplied AVHRR NDVI for the years 1988, 1999 and 2000 to understand the end of season biomass and use it as an indicator for the next year. Late 1998 showed high biomass, indicating new additional growth, which was the take off point for the year 1999. Rains in the Fall of 1998 resulted in moist soils, making that water available for growth in 1999.

Economic and Environmental Benefits:

Based on the information derived from soil survey reports and rainfall, the rancher was able to calculate the "animal unit months," or the number of cattle the different units of his ranch could carry per month in normal, favorable, and unfavorable years. The rancher is now incorporating the management units derived from Landsat instead of the conventional fence line boundaries for higher efficiency. This, in addition to the already demonstrated benefits of early decision for purchase of supplemental feed and indication of expected biomass for the coming year, should enable advanced decisions on stock rate and result in better livestock distribution.



Landsat image of early summer 1999 showing healthy grass cover



Landsat image of early summer 2000 showing insufficient grass cover

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