Ranchers, Range, and Remote Sensing

W.E. Boyd

Ranching as a business is becoming more complex daily. Knowing certain characteristics of ranchers and something about how they make decisions would be instructive for both ranchers and technical research range workers. Data from a study recently completed at Texas A&M’s Remote Sensing Center give some insight into these areas.

Remote Sensing and Information

Remote sensing is the observation of a target by a device separated from it by a distance. It is mainly concerned with photography, image-producing scanners, radars, and other similar systems. In these systems the most important physical link between the target and the remote sensing measuring device is electromagnetic energy—the same type of energy as radio waves.

Remote sensing as a management tool has been in use for quite a while. Efforts have ranged from cameras in balloons used to record enemy installations during the Civil War to recent NASA satellite systems using thermal infrared scanners. Products commonly available and used in resource management include such aerial-photo based products as soil type maps and photo-infrared crop stress pictures as well as Landsat digital data based “pictures.”

Landsat is the name given to a series of earth-observing satellites, the first of which was launched in 1972. At present the second and third series are operational. All three have carried the same imaging scanner system. Each Landsat circles the earth in an orbit which brings it back over the same point on the surface each 18 days. One or the other of the present Landsats views a given spot on the earth every 9 days, since their orbits are separated by that much. Now Landsat based products show great promise in applications where frequently repeated coverage is needed.

The Survey

In the study to determine the data requirements and source of ranchers, a survey questionnaire was sent to approximately 3,600 ranchers in a 36-county area in West Texas. Seven hundred and sixty-two completed and returned questionnaires were analyzed. Not all questions were answered by all responders. The first series of questions dealt primarily with the distribution and vital statistics of the sample group.

The average age of the reply group is 48.66 years. The largest age group is greater than 60 years (30%); the smallest less than 30 years (5%).

Approximately 30% of the reply group are college graduates, with a total of 60% of the group having had college level exposure.

Another question requested an estimate of the percent of net income over the previous 5 years which came from a list of sources. Analysis revealed several surprises. Of the 705 respondents to the questions, only 19.3% received all of their income from agricultural sources and 67.4% received no income from hunting leases. The real surprise is in oil: 51.6% of the people queried received no income from petroleum.

The total acreage operated by respondents to this survey was 9,912,357 acres or about 7% of the total state acreage. The most frequently occurring ranch size was 1,001–2,500 acres (21%), followed by 5,001–10,000 acres at 17%; 2,501–5,000 at 15.6%; and 501–1,000 at 10.4%. These four acreage classes account for 64% of the operating ranches. The acreage classes accounting for most of the land area involved, however, were those of greater than 5,000 acres operated (43% of the respondents operating 92% of the land). If only operators of more than 10,000 acres are considered, this is 26% of the ranchers and 82% of the land.

The Present

Two of the questions dealt with defining the sources and frequencies of information used to make decisions on the ranch. For determining present range forage production, the most frequent information sources used were on-site evaluation, ranch personnel reports and previous records, and experience. Neighbors were a frequently cited miscellaneous source. Of those answering this question, 78% felt that their present information was adequate to determine current range forage production.

Of those responding, 52.6% do not think that the present method of predicting future forage production is adequate. The most frequently used present information sources are weather forecasts, current forage production, and past forage production. Personal experience was a frequently cited other method.

When the ranchers were asked to rank the value of accurate information on a ranch basis, several items were shown to be extremely valuable.

They are:
- Change in ground cover due to drought or rainfall
- Rainfall distribution and amounts
- Extent of brush density
- Change in ground cover following range improvement practices
- Extent of noxious plant infestations.

When the ranchers were asked about sources of information concerning new ranching practices, the six most frequently cited were other local ranch operators, Soil Conservation Service, newspapers, A.S.C.S., County Extension Agent, and T.V or radio. The Society for Range Management meetings or tours came in next to last at 11% (79/752).

Of the ranchers contacted 62% have implemented a planned grazing system within the last 5 years. Of these systems, 52% are deferred rotation systems, 42% are decision deferred, and 22% are short duration.
Membership in agricultural organizations was also requested. Only 5% (40/712) of the responders belonged to the SRM and 24% (130/540) of them occasionally attend SRM meetings or tours.

Now, you ask, what does all of this mean? Ranchers in Texas are fairly old, possibly because of the large financial investment necessary. They are a lot better educated than one might suspect. They do have off-ranch income sources and are not awash in oil money. Several potential sources of income are not being exploited fully (recreation and hunting leases). Relatively few people control the bulk of the land surface.

Friends and neighbors are consulted frequently and a lot of ranching decisions are based on past experiences. The SRM is not a big force in most ranchers' lives, although grazing research by SRM-member scientists has been widely utilized.

The Future
The need for new, more accurate information sources is evident. Too many ranching decisions are made without adequate, accurate information. However, in some cases if better information was available, it couldn’t be stored or used. Both of these problems are being solved. On-ranch computers are becoming more and more common. They make data storage and manipulation much easier. Advances in remote sensing, both from photography and satellite sensors, are beginning to be applied in management contexts with encouraging results. Several of the items these ranchers ranked as extremely valuable are now available on a research basis from Landsat. Some of the items will be available on a semiproduction basis in the next few months.

The combination of on-ranch computers, educated and managerially sophisticated ranchers, and more accurate remotely sensed data should allow present and future range managers to better cope with a hostile world.

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