

annual variable cost per cow dropped 18 percent because of lower winter feed requirements. The potential for profitability improvement depended on the manager's willingness to consider change in his operation.

To effectively bring about change in the ranch organization, the manager must continually search for new ideas and technology which might be adopted by the firm. Adopting new technology, however, without knowledge of how to properly implement it may insure failure. A new grazing system implemented by a manager who didn't understand the technical aspects of the system might fail because he was a week late moving cows. Thus, to successfully adopt new technology, the manager must allocate time to studying and evaluating its potential for his ranch operation. Attending field days and extension service programs, reading professional journals and magazines, and carrying out a certain amount of individual research and development on the ranch operation are some of the activities through which a ranch manager keeps himself current on new technology.

Improve Managerial Training

A final aspect of increasing managerial input involves improving managerial decision-making skills. Any manager can learn to become a better manager; however, he must be able to identify weak areas and seek the skills necessary for improvement. Areas in which skills may need improvement include accounting, budgeting, and problem identification. Training may be gained by formal classroom instruction or by more informal means such as extension short-courses. It is possible to improve managerial skills; however, training must be actively sought by the manager.

In summary, it is possible to increase the level of profits in a ranch business. To do so requires increased managerial input and real desire on the part of the manager to improve. To increase managerial input, the ranch manager must become a good businessman, separating family living expenses from business expenses; he must acquire necessary managerial skills; he must learn to manage risk; and he must seek out new technology and be willing to change the firm's organization if necessary. Given all of these conditions, plus hard work and a little good luck, ranch profits can be improved. ●

Safe Fall Grazing Schedule

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The Bureau of Land Management is engaged in preparing environmental statements concerning proposed domestic livestock grazing on public rangelands. Based upon detailed studies and analyses, each planning unit is found to have more or less unique problems in grazing management. This article presents a working hypothesis with respect to possible cattle losses under late fall grazing conditions.

The Cowhead/Massacre Planning Unit, located in the extreme northwestern part of Nevada and the extreme northeastern part of California, is representative of the Great Basin. Field observations within this planning unit indicate that Great Basin wildrye, a native grass of this area, in very thin stands and poor condition can be improved by restricting grazing to fall and winter. Also, the elimination of competing shrub vegetation by herbicides, brush cutters, or both will speed the rate of recovery.

There is little agreement among ranchers as to the climatic hazard for grazing animals during fall and winter. Climatic fluctuations are very great. Some ranchers claim that these rapid and hazardous changes, especially during the winter, cause animal losses. Other ranchers and experienced livestock managers insist that if such animal losses do occur, these losses are a reflection of poor livestock management.

Weather records for the Cowhead/Massacre Planning Unit were obtained from the National Climatic Center, Asheville, North Carolina, and covered three recording stations: Cedarville and Fort Bidwell, Calif.; and Sheldon, Nev. The respective number of years of records were: 84, 67, and 38. In order to have a uniform period for comparison, we chose the data from 1941-1970. This 30-year period corresponds to the "Monthly Normals of Temperature, Precipitation, and Heating and Cooling Degree Days, 1941-1970" published by the U.S. Department of

Commerce, National Oceanic and Atmospheric Administration, Environmental Data Service for California and Nevada.

A search of literature revealed no specific cause of range animal deaths under winter conditions. However, conversations with ranchers and animal scientists disclosed the uniformly held opinion that with reasonably good forage and available water, range animals can endure great stress from cold and other climatic factors.

Wind-chill should be considered because wind velocity together with temperature might serve as the basis for a fairly accurate prediction of heat loss from cattle on winter range. Unfortunately, the recording stations did not supply data on wind velocity and duration, but temperature data were supplied. No valid heat loss stress could be estimated without the necessary wind data. It was thought advisable to seek an area of stress in forage consumption. Observation on the range and discussion with ranchers indicated that when 6 inches or more of snow covered the forage, the cattle stopped grazing.

Therefore, it was assumed that 6 inches of snow on the ground for a week would seriously limit forage supplies to range animals. It was also assumed that this same snow would supply enough water for range animal survival. On these assumptions, the above weather data were examined on a weekly basis. Weeks of climatic hazards were determined by establishing which weeks had 6 inches or more of snow on the ground for a major portion of the week.

We found that Sheldon, Nev., had more frequent and deeper snow on the ground than did Fort Bidwell and Cedarville, Calif. These differences are undoubtedly associated with the fact that Sheldon is at 6,500 feet elevation while Fort Bidwell and Cedarville are at 4,500 and 4,670 feet respectively.

After field observations, studying the records, and discussions with ranchers, we determined that cattle removed from the fall range prior to the first of December each year would have only 1 chance out of 20 of being "snowed in." ●

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Editor's Note: The studies and field observations were made by the author; Ted S. Milesnick, range conservationist; and LeRoy L. Delaney, Area Manager. All are employees of the Bureau of Land Management.