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The Australian Rangeland Society

THE ROLE OF LIVESTOCK IN RANGE MANAGEMENT

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Introduction

Historically, livestock have been the main method of converting rangeland production into financial returns. It is possible that livestock will continue in this role, for the major portion of Australia's settled rangelands. However, while fulfilling this role livestock should also be considered as useful range management tools.

Traditionally, increased output from livestock has tended to rely rather heavily on genetic improvement. While gains can be made in this manner, reflection of the achievement will not be great unless nutrition is adequate in the short-term and stable in the longer-term. Management of our range sites has tended to look at the short-term end of the scale, with the longer-term result being lowered range condition and lower livestock production.

Background

The basis of utilizing Australias rangelands, will remain livestock. We should not only consider the effects that livestock have on our rangelands but also, how these can be used to our advantage.

Most of us recognise that some degree of degeneration has followed the establishment of grazing industries on our rangelands. The degree of degeneration varies with range site and time. It is continuing on some sites, stable on others. Also probable is that some alteration to the pristine state is desirable in maximising livestock productivity. However, the range condition that maximises livestock production over time, while maintaining a stable range site, has not been realised on most sites. Many reasons for this have been postulated. The most likely is that managers of our rangelands have managed their stock on a seasonal basis rather than their rangelands. Using this approach, short-term animal productivity has been maximised while long-term condition may have been adversely affected.

A concept that has been considered basic to the utilization of range sites is that a particular site is good sheep country and not good cattle country, or vice versa. This philosophy has led to the depasturing of predominately single animal species on range sites without consideration of what may be the long-term effect. Production has been measured as the amount of wool produced, lambs marked or cattle sold. In short-term economic analysis these units of produce may have given the best return.

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However, a more suitable measure might be units of animal protein turned-off as a whole, its components being made up of wool, cattle or sheep. Such an approach, is not as affected by short-term price fluctuations, but is more conducive to longer-term management of rangelands.

Philosophy

A look at almost any range site will reveal a collection of plants that differ in their ability to be harvested, their response to harvest, and their requirements for growth. Range managers will tell you which they consider best in maximising livestock production. In broad terms we know that sheep prefer and do best on short green herbages and grasses and that cattle prefer longer grasses. The reasons are easily confirmed by animal physiology and observation. Rarely does a range site contain plants suitable to only sheep or cattle, yet they are usually managed in this manner.

A common sign of degraded range sites is "invasion" by scrub. Even with scrub being present and increasing on some sites, we do not attempt to depasture an animal that may utilise some scrub species. We persist with sheep or cattle neither of which prefer to utilise much browse. The introduction of a browsing animal to range sites that have a scrub component can lead to more balanced utilization. The most obvious animal to introduce, because of its relative abundance, is the goat. Like sheep and cattle, they do not rely solely on one component of the range site nor do they consume all plants available in that component. However, at present almost all scrub species are not consumed by either sheep or cattle unless pressed by drought or like management. In seasons of high rainfall most scrub species are able to grow without the threat of harvest by sheep or cattle. They are therefore able to become firmly established during the good seasons and thus to provide a threat to the growth of other range components during lower rainfall seasons.

Application

If rangeland conditions deteriorate sufficiently, it is sometimes necessary to introduce somewhat drastic procedures to restore productivity. Techniques such as ridge furrowing, pitting, water-ponding and clearing, all with or without re-seeding, may be employed. While successful in re-vegetating suitable areas, and sometimes giving good short-term economic returns, future management of treated areas requires consideration. If treated areas are to remain productive and not return to a state where similar treatment is again necessary, then sound management is necessary.

Recognising the plants to be encouraged in treated range sites will give clues to the future management required. The ability of various livestock species to utilize range components can suggest the species of livestock to be depastured. Obviously their rate of stocking and the time of year will have to be considered.

Although many of the factors needed to be known about the growth of individual plant species are yet to be studied, a simple stocking plan can be drawn. Stocking rate and length of deferment before grazing will be suggested from local experience, rainfall events and like factors. The type of stock depastured will be determined by the plants existing in the treated area and the plants to be encouraged. If scrub is likely to be a problem then goats may be considered, while light stocking rates of cattle will encourage perennial grass and shrub growth. Stocking with sheep to utilize herbage growth over winter may be considered.

Until such time as sufficient information is available from floristic studies and defoliation/carbohydrate reserve studies, broad management plans can be evolved. Exploitation of the diet preferences of livestock can be seen as a means of obtaining a balanced level of defoliation, while deferment or rests during critical growth periods of plants, may also be considered. Even without the aid of floristic studies, the growth of preferred species at a particular time of the year following a particular rainfall event is generally known. Under a given set of conditions, a prediction of the value of deferrment on a particular species can be made. If the species chosen is a preferred species and is perennial, then deferment during its growth to seed set stage would allow the plant to maximise root and aerial growth and carbohydrate storage, while allowing the production of a new lot of seed. A vigorous plant, capable of withstanding subsequent grazing and a replenished seed store results from such treatment.

Conclusion

Many aspects of rangelands require study to fully develop the knowledge needed to design the most desirable management for a range site. However, recognition of the preferred diet of livestock and consideration of plant requirements will allow us to develop range management programmes capable of at least holding many range sites in their current condition.

In this sense, livestock can be viewed as being another range management tool as well as being the principal means of harvesting rangelands. In order that the full potential of livestock as range management tools be realised, research on animal diets and plant growth rythms is needed. This work should be done on a selected range site under a best bet management system.

Such an approach allows study of individual livestock and plant species or combinations of these while allowing assessment of overall effect. A site developed to this standard would allow for the development of range assessment techniques suitable for use by researchers and managers alike.

Livestock will remain the main means of harvesting our rangelands. They should also be recognised as an important tool available for use in rangeland management. Combined with treatments designed to assist the growth of desirable plant species, livestock can be manipulated in multi-animal grazing systems designed to ensure the long-term stability of our rangelands.