

Range Management—A World Problem¹

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I APPRECIATE the honour given to me by having such an opportunity to speak to the members of the American Society of Range Management. I would like also to express my pleasure for seeing so many personalities, authors and scientists whom I have always admired and frequently referred to, and again for meeting such a large group of members who share a common interest in trying to live by producing or helping to produce food and life for others.

The balance between the food our world is now producing and the gradual increase in population has been seriously disturbed. In 1949, Sir John Boyd Orr, first director of FAO of the United Nations, in an evaluation of the world food situation, wondered if the earth could be made to provide enough food for its rapidly increasing population, while the advance in human medicine is continuously diminishing the mortality rate. At the present rate of increase of about 22 million a year, it is expected that the pre-war population of 2,000 million would reach 3,000 million in 40 years.

Moreover, this increase in population has not been proportional in different parts of the world. Some countries have been more prolific than others. In Egypt, for example, the yearly increase in population per thousand was 11 persons in 1927, 12 in 1937, and shot up to 18 in 1947. Now the increase is about 20 per thousand, which is nearly double the world rate. This means that every acre of the 6 million cultivated acres in Egypt has to provide livelihood for more than three persons.

In terms of pasture each acre supports one-half cow unit. This density of population per cultivated acre makes importation of food a necessity. The continuous efforts of the new regime in Egypt for raising the standards of living, which have been neglected for centuries, if successful, will lead to an increase in demand for food. Since a similar situation exists in many countries the world's food problem will be tremendous unless production can be greatly increased.

FAO annual reports show that shortages in animal products; meat, milk, fats and eggs, have always been more evident than those of other food materials.

Doubtlessly, active control and eradication of diseases and parasites of livestock and poultry would augment production. Similar increases may be achieved through systematic animal breeding programs, improved agricultural methods and building of more and more irrigation projects. Nevertheless, it is quite obvious that producing more animal feed will continue to be the main factor in materially increasing animal production. This had been proved on a country-wide basis in New Zealand where after 24 years of work, it was found that raising the plane of nutrition among their animal population was more effective in increasing the annual butter fat production per cow than selection, grading up of herds or elimination of poor producers. Needless to say, no great increase in animal population in countries such as Egypt is possible without proportional increases in animal feed. More persons may be fed by using available grain directly for human consumption than by converting it into edible animal products, since the production

of one unit of beef requires 3.5 units of grain.

Therefore, no factor will result in an increase in the production of meat, milk and eggs more than producing an abundance of cheap animal feed which is dependent primarily on the development and improvement of our grazing lands. The grasslands of the world are considered to be the largest undeveloped resource for increasing animal feed. Grasslands cover one-half of the world's total area and more than half the total land surface is used for grazing.

Unfortunately, man throughout the past ages has exploited these grazing lands in a most unwise manner. Millions of acres of highly productive lands have been abandoned through misuse by extensive uncontrolled grazing. The grazing lands were always stocked with grazing animals far above their average capacities. The result was always depletion of plant cover. This, hand in hand with erosion, completed the tragic story of loss of fertility, causing aridity and in many cases man-made deserts.

Good range management is the answer that can lead to a stable permanent agriculture, insuring maximum production of nutrients for the present and coming generations. Demonstration, dissemination and use of scientific facts are ways by which people may be taught how to conserve the range and to restore its fertility.

Such a great aim, or only part of it, has been included in the sphere of work done by certain well-organized international and governmental organizations such as FAO, UNESCO, the International Grassland Congress and many other scientific institutions or organizations, which adopted specific schemes to help the world make proper use of grazing land.

We anticipate that the programs of these organizations will continue to expand to help solve the urgent

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present-day needs of the world. It is essential that these organizations be maintained as an effective unifying force, to enable different countries to co-operate in their research programs, but something more is needed. It must be remembered that most of those organizations have existed to solve many problems other than grassland problems. They are limited by national, political and financial policies of many countries. Then too, such international organizations have little or no contact with the people on the land. In order to insure and maintain the drive for improvement of the world's grasslands, the users themselves in each country should be aware of their own problems, and give a helping hand in overcoming these problems.

Being a military man, I might be justified in using a few military expressions. I feel that most of these institutions and organizations could be considered as a group of very efficient Army Generals and A.D.Cs. who either have no troops or have no connections with their troops. In the hands of soldiers, victory could be achieved. The recruitment and formation of well-trained armies of ranchers, farmers, shepherds, scientists and other conservationists, who can activate the plans of the Generals, is another big problem. To build such armies, these groups of people should always be supplied with all available information to keep them qualified for the job. Range management societies can do much, and would in this way be recruiting and training centers.

Experience indicates that information published in technical bulletins is not always available to most of the interested people unless they are helped by another technical agency. Just to find out that some specific information is available often requires much effort and may be impossible without some established organization. Too often such organizations do not exist. No other

agency would be more helpful in such cases than a society in which the interested people themselves are members, and would regularly receive up-to-date scientific facts. Thus we would be shortening the long period usually lost between the discovery of scientific facts and the time they are put to general use.

The importance of such dissemination of scientific facts related to range management could be realized by reviewing a few examples of achievements in this field.

The importation and introduction of grasses into different countries is quite recent when compared with that of crop plants, yet the success of certain introductions of grass species from one part of the world to the other has been in some cases outstanding. Crested wheatgrass (*Agropyron cristatum*) for example, a native of the wide plains of Siberia and Central Asia was introduced to the U.S.A. not too long ago, yet its merits in re-seeding depleted areas was first proven in the Northern Great Plains of the U.S.A. and not in the Eastern Hemisphere where it originated. Now it is considered to be perhaps more valuable than any other range forage grass known in the United States.

Harding grass (*Phalaris tuberosa*) and subterranean clover (*Trifolium subterranean*), both Mediterranean species, are now considered to be the best adapted to many areas in Southern Australia. No native grass in Australia was sufficiently vigorous to withstand the pressure of new conditions created by the advent of the white man.

Some species of love grasses (*Eragrostis spp.*) from South and Central Africa have proven to be of much use in re-seeding different localities under varied conditions of soil and moisture.

Buffle grass (*Pennisetum ciliare*), blue panic (*Panicum antidotale*) and King-Ranch bluestem (*Andropogon ischaemum*), which have given excellent results in Texas, are also

successful African and Asiatic introductions in many countries.

It is estimated that alfalfa (*Medicago sativa* and *M. falcata*), natives of the Mediterranean and Central Asia, respectively, now cover approximately 15 million acres in the U.S.A.

Even weeds that grow in one country might possess characteristics of high economic value in another country under different conditions of environment and control. In recent years, *Kochia indica* Wight, a native of India and Pakistan, has proven to be of some use under semi-arid conditions in the Egyptian coastal belt of the Mediterranean. Seeds of *K. indica* had been sent to Egypt in 1945 by Prof. H. C. Trumble of the Waite Agricultural Institute. The successful establishment of this highly palatable plant in the Mersa Matruh area, which has an annual rainfall of six inches, led to experimental studies by the writer on the adaptability, feeding and grazing properties, and ecological aspects of the species. Other plant species were tested under the semi-arid conditions of the Western Egyptian Desert and from a large collection of drought-resistant species donated by nurseries from all over the world, a limited number gave fairly good results. On the basis of these preliminary tests, a Pilot Range Improvement Project was initiated to increase the productivity of vast areas of semi-arid lands with the technical assistance programs of the FOA and the United States.

The use of improved agricultural equipment in re-seeding and the success of chemical and mechanical weed killers in weed and brush control have contributed greatly to range management. These practices have, in many cases, resulted in a substantial increase in productivity (as much as 300 percent or more). These examples show clearly how the dissemination of such scientific facts can help increase the productivity of our range lands.

Now, let us consider how those of you in professional range management can help yourselves and your colleagues engaged in the world's oldest profession—grazing of live-stock—to properly use and maintain the productivity of our resources. In many countries and for many centuries, grass and grazing lands have been neglected, even by those who loved them and whose living they supplied. At present, there are definite indications of an awakened interest in grasses and grazing lands. The number of interested persons could be much greater and there is a need for societies concerned with grazing. Societies enable people to do many things which seem impossible to the individual. The success achieved by the American Society of Range Management in exchange of materials and ideas through its Journal and its meetings demonstrates the value of such organizations in serving other countries of the world, thus putting in the hands of interested people the experience and knowledge of scientists and experts working in this field.

The decision to make membership in this Society open to anyone interested in range management and allied subjects rather than to set certain professional standards of eligibility made a big stride in its development. It has given the Society a unique position which enabled it to broaden its scope of activities in a manner which brought together the technical people such as botanists, ecologists, animal husbandmen, meteorologists and others, with the practical men, the ranchers, the farmers and the students. The rapid development of

this Society from a local meeting of intragency range committees in 1948 to such a highly-developed organization enlisting about 3,000 members from so many countries might suggest a further development towards more world co-operation.

The world has seen a similar example in the development of the International Grassland Congress from mere periodical personal visits of four, far-sighted European scientists (Dr. A. Elopson of Uppsala, Sweden; Prof. A. Falka and Mr. Schneider-Kleeberg of Germany; and Prof. A. Volkart of Switzerland) into a European congress, eventually reaching its present international status.

The American Society of Range Management might well undergo a similar development into an international group. In an editorial in the September, 1953 issue of the JOURNAL OF RANGE MANAGEMENT, under the title "Let's Broaden the Journal's Horizons", M. A. McDonald and C. M. Williams discussed the objectives of the Society and presented the need for increasing the scope of the Journal since many members cannot subscribe to several other journals and are not located in an area where a library is readily available. In an evaluation of the references listed in the 1951 FAO report "Improving the World's Grasslands", more than half the number were found to be from countries outside of North America. It was asserted that workers in Australia, New Zealand and South Africa have made more progress in some phases of range management than that accomplished in North America. These authors concluded

that the Journal should solicit the aid and experience of workers from other countries who have already solved some of the many problems of range management.

H. C. Trumble, the Australian range scientist, in his book "Blades of Grass", written after perhaps the longest journey ever made for the study of grasses and grasslands, has demonstrated the need for world co-operation in grass studies. Ritchie Calder, in his book "Men Against the Deserts", has supported similar ideas.

Personally, after this long tour¹ in your country which covered so many thousands of miles, in visits of many experimental stations, agricultural institutions and ranches in different states, the writer feels that you need the cooperation of other countries no less than other countries need yours. This co-operation will be essential if we are to protect the range and conserve our resources for generations yet unborn—our partners in inheriting this world. Let us pave the road for increasing food production for the continuously increasing world population by the co-ordination of schemes and co-operation of the interested people.

It might prove that the unity of the interest people in different professions and fields of activities would be a better and easier way to achieve world understanding, peace and unity than the still ineffective and sometimes ill-founded or conditioned political attempts.

¹ See Floyd D. Larson, "Near East Tour studies Range Waterspreading and Management in Western States", *Jour. Range Managt.* 7(2): 81-82, 1954.