Improvement Practices Being Undertaken in Turkey

A grass and legume variety testing program was initiated in 1952. Seed was obtained from the United States through I C A and from other parts of the world through F A O of the United Nations. These varieties are being compared with their local varieties and wild types. A few of the best varieties are being increased on State Farms for distribution to villages to improve the grazing land.

Legislation is being enacted to provide opportunity for cooperative agreements to be made between the villages with community pastures in need of improvement and the ministry of agriculture to help provide facilities for a rangeland development program to be carried out. The ministry of agriculture will furnish seed and certain equipment and technical assistance in planning. The village people will agree to carry out recommended methods of land preparation and seeding practices for a period of 10 years. Improvements to the grazing land may include controlled and rotation grazing and other treatments as mutually agreed by the village people and the ministry of agriculture.

Several livestock improvement programs are being conducted by the Turkish government. For example, Montafano cattle were imported from Switzerland. These are raised on government farms for distribution to the villagers to help them improve the breeding of their cattle. Also, a goat breeding research station is maintained at Lalahan near Ankara for the improvement of the native Angora goats which are very important for mohair production.

Several hundred technicians from Turkey have been trained in the United States and in Europe. The I C A through mutual assistance projects has trained many in agriculture, engineering, and related fields who work for the Turkish government in administrative or teaching positions.

Future Developments

The outlook is bright for further development of Turkey by industrialization. This movement should enable them to manufacture more of their electrical and mechanical equipment thereby reducing the costly imports of such equipment. Construction of dams and reservoirs for irrigation and hydroelectric power has helped but the opportunity is excellent for more projects of this type to be developed.

Greater industrialization should benefit agriculture by reducing the percentage of the people living in the villages. More people will leave the rural areas when jobs become available in factories. By reducing the size of the rural population a greater acreage of arable land will be available per family unit. These larger units will then favor the use of modern equipment. The present situation precludes mechanization of agriculture in some cases where it might otherwise be justified.

A reduction in number of livestock accompanied by an increase in attention to nutritional requirements and improving the grade of product should go hand in hand with the range improvement projects already discussed. It is hoped that these industrial and agricultural developments might occur simultaneously and provide a higher standard of living for the people.

LITERATURE CITED


Overcoming the Problems of Range Livestock Production in Southern South America

W. R. CHAPLINE

Range and Watershed Consultant, Washington, D.C.

Range livestock production is a vital phase of the economy of the seven countries of southern South America. Range beef production provides a good income for many ranchers in Uruguay, Brazil, Paraguay, Argentina and Chile. Sheep production on the steep slopes in the highlands of Peru and on the plains of Argentina and Uruguay as well as in other southern South American countries provides a livelihood for many other ranchers. On many ranches both sheep and cattle are grazed.

Range, or native grazing lands, cover more than 75 percent of the land areas of these countries. Elevation, climate, vegetation and use vary tremendously. There are the low elevation humid subtropical hill and coastal areas of southern Brazil, including the natural growth on the periodically cultivated rice paddies. There are extensive areas of Paraná pine on the hills of southern Brazil where forage is produced under the trees. Vast temperate prairies and plains occur as the rolling plains of Uruguay and western Rio Grande do Sul, the humid prairies southeast of Buenos Aires or in the dry Pampa of Argentina where the native range has not been plowed to produce grain. The semiarid plateaus of Brazil form extensive plains which produce good forage for both cattle
and sheep. The semiarid ranges near Mendoza, east of the Andes in Argentina remind one of the desert areas of southern Arizona and the foothills and mountains of north central Chile remind one of California with its annual grass and brush covered hills and mountains. Finally there are the cold alpine ranges of the Andean highlands, and the bleak plains near the tip of South America.

Very little range land is not in use. Much of the more productive range land in the larger well-managed haciendas, estancias, or ranches is in good condition. On the other hand a high proportion has been overgrazed for years, reducing the vigor and density of palatable and even semi-palatable species, with drastic loss of grazing capacity. In the more humid areas a good cover of vegetation usually still prevails, in some cases however, the grass cover has been converted to almost worthless weeds. Often in areas of lower rainfall, grazing has thinned the stand drastically and in places converted it to annuals. Severe soil erosion has followed such over-grazing on arid and semiarid ranges. In the highlands of Peru erosion has gashed range slopes and many have reached "bad land" conditions. The effect of such erosion can be seen in the heavily silt-and-gravel-choked streams. There is, for example, a striking contrast of the blue water of the Iguazu River where it joins the brown of the Parana. Since yearlong grazing generally prevails and many ranchers do not provide hay there is a drastic shortage of forage in winter and during dry periods. At such times animals lose much weight. Nutrition of the animals is so low in these periods that disease takes its toll, calf and lamb crops are low, many cows with suckling calves fail to breed, animals are stunted and poor quality meat results. In periodic drought years starvation losses among cattle are sometimes very high, especially on poor soil areas. In contrast to such lack of range management much effort is often evident in improved breeding and in disease control.

There are three types of operation; first, the commercial range livestock production on areas of rather poor soil, arid or semiarid climate, or otherwise not well suited for crop production.

Secondly, there is commercial production related to integrated native and improved pastures on lands capable of cultivation (Figure 1). On many ranches of this type, especially in Uruguay and Argentina, the sheep and cattle graze the native pastures moderately during the growth period and are then moved to improved pastures where they continue effective production. Later in the year they will be given supplemental feed usually produced on the cultivated lands of the ranch. Also many ranches of this type use native pastures part of the year for breeding herds, and improved pastures primarily for fattening. On the other hand, other southern South American ranchers and many operators who emphasize grain and other crop production on lands of this type, pay inadequate attention to the management of their native pastures and often are failing to obtain the livestock production which the range pastures would permit.

Thirdly, there is the grazing of livestock owned by subsistence farmers, often on land not owned by them. In the Andean highlands, for example, there are a great number of poor quality cattle, some sheep and llamas, usually turned out to eke out an existence under the care of children. The biggest need for these small farmers is a change in thinking from simply wanting some livestock and a desire for more than they now have, to a true desire for effective production from the animals, regardless of the number.

There is vast opportunity for greater and more economical production of livestock products through improvement and management of range lands, at least under the first two types of operation. This will not come from

![Figure 1. Well bred cattle on productive range provide good income on commercial operations—Uruguay.](image-url)
increasing numbers of livestock on overgrazed ranges. There are already too many on such areas.

Much has been done and there are additional opportunities for increased production through better breeding and disease and parasite control. Such possibilities are largely lost however if animals are inadequately fed for much or important parts of the year, as is the case on so many ranges.

Individual ranchers are pointing the way to better range management. Governments are beginning to take a more active interest. Major needs include a greater appreciation by the governments and most ranchers of the potential values in the range resource, a much better knowledge of suitable range management practices, application of such knowledge, elimination of low-producing, uneconomic animals and development and application of policies of leasing and use of governmental lands which will assure greater permanency in their use and rehabilitation of productivity. All of this carries through to the necessity of adequate training of many more scientists and technicians to carry forward the program, both as owners and managers of ranches and as governmental workers.

Universities give good training in certain aspects of botany, particularly taxonomy, in agronomy, animal husbandry and veterinary science, but the number of graduates is inadequate for current needs. Moreover, there is practically no training in the universities in range management and very limited training in ecology or plant physiology basic to an adequate understanding of range management. Professor Lorenzo R. Parodi of Argentina in endeavoring to lay a groundwork, has some good monographs on vegetation conditions.

There is an urgent need for range research and range extension or advisory service. Some research is underway in all countries (Figure 2). It centers primarily on the selection and development of forage plants suitable for improved pastures, on suitable seed production of such plants, on other agronomic practices, animal husbandry and disease and parasite control.

At the moment the great need is for practical studies that will determine for native pastures such features as suitable rates of stocking, desirable seasonal use or division of the range so as to have fresh forage at critical periods and better nutrition to keep animals growing and in breeding condition on the many types and condition of ranges. Such studies will naturally evolve into more basic ecological and other range management research. Determining the possibilities of range reseeding, especially of deteriorated ranges, including the finding of adaptable species and developing economical methods of establishment are of great importance. Similarly, devising economical procedures for weed and shrub control will deserve attention; also determining the economic value of fertilizing the different types of range. The necessity of keeping costs of these range improvement procedures reasonable is very important since the annual returns are not as great as in this country and interest rates are often 15 percent or more and occasionally much higher.
The range livestock producers generally have an active interest in better management. Dr. ALBERTO GALLINAL, owner of Estancia San Pedro di Timote and Secretary of the Corriedale Breeders Association of Uruguay, is doing much to improve his range lands. Dr. OSVALDO BOELCKE of Argentina is an advisor of the Government, Professor and a tester of new grasses and range procedures on his own ranches. Many other names could be cited. One rancher in central Uruguay was keeping his range and improved pasture growing longer and more abundantly with an overhead sprinkling system. The manager of the Cerro de Pasco ranch operation in Peru reported in 1955 that he had doubled wool production in eight years. A major factor in this increase was due to dividing his range into four seasonal parts.

The Food and Agriculture Organization of the United Nations, the United Nations Special Fund, the U. S. Agency for International Development, the Rockefeller Foundation, and other privately financed technical assistance relating to pasture improvement and animal production have been helpful, and more productive as the years have passed. Demonstration fields are good examples of carrying the word of forage improvement to farmers and ranchers. The Interamerican Institute of Agricultural Sciences, Southern Zone, of the Organization of American States, (Figure 3) is doing an excellent job in conducting supplementary graduate courses in range and pasture management, soils, animal production, and in research and extension techniques in the various countries and in encouraging the conduct of more adequate research and advisory services relating to range management in each country. The Institute, for example, has received training since 1953 to more than 200 prominent government workers in eight pasture and range management courses. These have been designed to stimulate the thinking of participants by considering principles in the class room and then their application on the range and in improved pastures. Moreover the active program of training abroad, especially in this country, is aiding greatly in developing the staff needed.

Briefly, some of the more recent phases of growth in research and extension related to range lands in the countries include:

Argentina during the last five years has reorganized its research and extension service in a National Agricultural Institute. It has developed a network of stations and is beginning important work on pasture and other grazing problems in many parts of the country.

Uruguay has recently reorganized its work at La Estanzuela in cooperation with the Institute of Interamerican Agricultural Sciences, for pasture and animal production, with much emphasis on native pastures.

The State of Rio Grande do Sul in southern Brazil is extending its studies to native grasslands and is planning an ecological survey of its grasslands.

Other examples could be cited. Land reform programs now being urged must be handled with great care. They will gain little or nothing by dividing reasonably well managed ranch outfits into many uneconomic units having inadequate managerial foundation. To be successful land reform will require more than land distribution. To that must be added sound credit, managerial assistance, and other subsidized services, including schools, roads, and especially technical assistance to the farmers and ranchers by way of research and extension.

---

Growth in the Greenhouse of Grasses and Shrubs on Soils from Shadscale and Sagebrush Areas

A. C. HULL, JR.

Range Conservationist, Crops Research Division Agricultural Research Service, U. S. Department of Agriculture Logan, Utah

Salt-desert shrub lands often are characterized by soils high in salts which in excess hinder plant growth. To determine whether salt-desert shrub soil under shadscale (Atriplex confertifolia (Tur. & Frem.) S. Wats.) would grow seeded plants in the greenhouse, 6 species were seeded on shadscale topsoil and on big sagebrush (Artemisia tridentata Nutt.) topsoil.

Range seedings on good sagebrush lands have been successful while many failures have resulted from seedings on salt-desert shrub lands (Plummer et al., 1955). Better range management undoubtedly will be the solution for improvement of most salt-desert shrub areas. However, where soil and moisture are above average and where good forage plants are too sparse for natural revegetation, seeding may speed restoration.

Gates et al. (1956) worked on