

Range Improvement and Management Problems in Argentina

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Argentina is a land of paradox and inconsistency—old in its settlement, which predates the landing of the Pilgrims in New England by more than half a century, young in its stage of economic and agricultural development. It is a “white-man’s country” both in climate and in population and the only part of South America with extensive fertile plains in the temperate zone (Whitbeck, *et al.* 1940). At least one-fourth of its more than one million square miles is a flat plain climatically suited to temperate-zone crops and livestock. This level plain, known as the Pampa, was once devoted entirely to Argentina’s range livestock industry. Today, even though the Pampa still produces tremendous numbers of livestock, it is largely cultivated. A high percentage of the range sheep

and wool are produced in Patagonia, the southerly plateau section of the country.

Beef cattle, mutton sheep, dairy and swine production are concentrated in the plains section. The higher, more arid portion, Patagonia, is better adapted to wool production. Many problems of grazing land and livestock management challenge the present-day range-livestock operator in the Argentine.

The Pampa

Originally a grassy, level plain but now largely plowed and subject to some degree of cultivation, the Pampa is by far the most important region of Argentina. It is the heart of Argentina. The Pampa extends for some 500 miles north and south between the 30th and 40th parallels and reaches westward 400 miles in its broadest extremity from the Atlantic Ocean (Fig. 1). The level land so characteristic of the Pam-

pa continues beyond the western boundary but the grass cover gives way to the xerophytic vegetation of the “monte” or brushland.

This vast area of fertile loess soil enjoys mild, temperate but irregular climate. Rainfall decreases from east to west and from north-east to southwest. For example, the city of Buenos Aires receives 1000 mm. of rain annually on the average, but only half that amount occurs in the southwestern part of the province. Rainfall occurs on 50 to 80 days annually, but these are poorly distributed. The summer months, January and February, are critical and in a dry year total annual rainfall may not equal one month’s precipitation in a wet year. The average annual temperature for the province ranges from 13 to 17 degrees C. Prevailing wind, called “Pampiana,” from the southwest is cool and dry.

Present-day grazing in the Pampa is largely by beef and dairy cattle and mutton-type sheep on artificial pastures or cereal crop rotations used in their establishment. Swine production, although correlated with dairying, has not yet taken full advantage of forage grazing possibilities. Both beef and dairy production are based entirely on grazed herbage. Steers of beef and dairy breeds are carried

¹Maintained at Berkeley, California, in cooperation with the University of California.

on grass until 3 to 4 years old, then marketed grass fat for slaughter. Surplus heifers and dry cows are handled similarly. Although many English breeds are prevalent, the dual purpose Shorthorn is predominant. The Lincoln and Romney Marsh are the most common sheep breeds.

Once composed of over three hundred grasses and other forage plants, the Pampa vegetation is now made up largely of introduced pasture grasses, alfalfa, grain cereals and corn, all of which are grown as forage. In the original vegetation numerous species of *Stipa*, *Poa*, *Bromus*, *Panicum*, *Aristida* and *Hordeum* were common (Pool, 1948).

Feeding of livestock as practiced in the Middle-West and other sections of the United States is practically unknown in Argentina. Cereal grains produced as such go directly into the export trade or are used locally for human consumption.

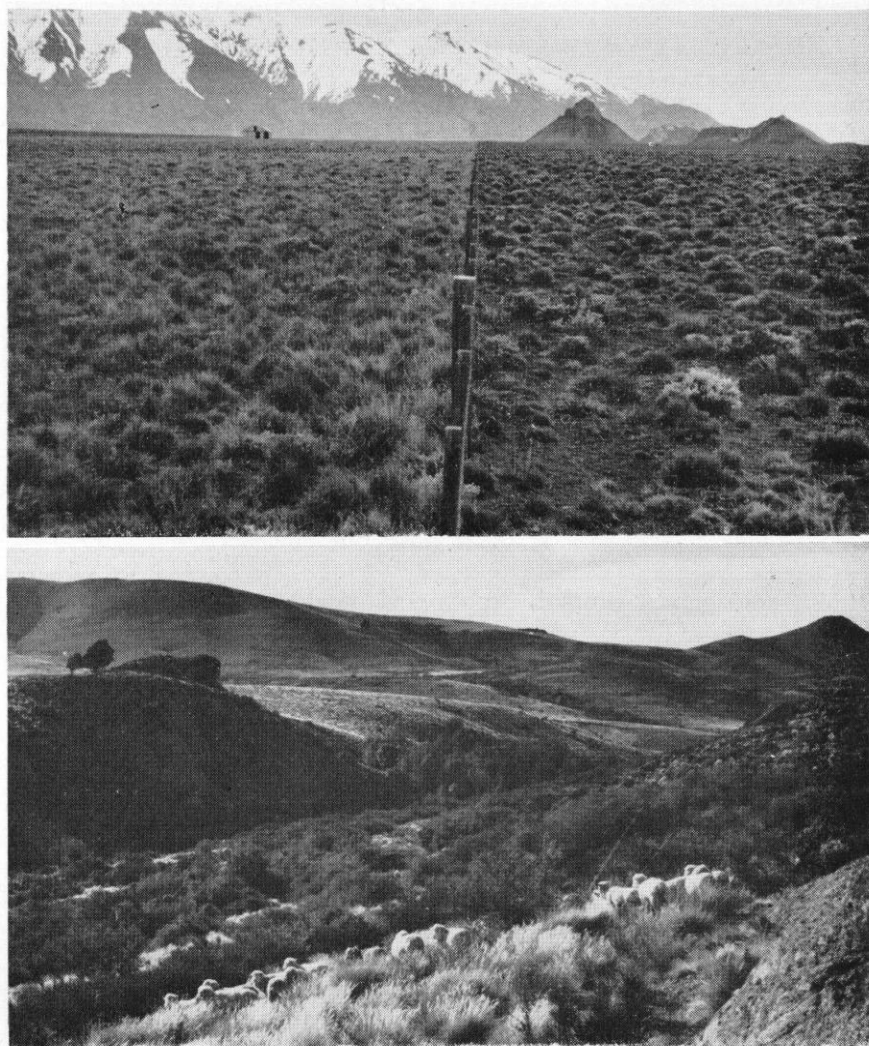


FIGURE 2. The dry ranges of Patagonia are grazed yearlong by unherded sheep. Upper. Nearly level plateau range grazed heavily and continuously for 40 years (right) and protected from sheep for 4 years (left). Lower. Typical foothill range being invaded by low-value browse.



FIGURE 1. Map of Argentina.

Patagonia

The five most southerly territories lying south of the Rio Negro in Argentina are collectively known as Patagonia (Fig. 1). Cold, disagreeable winters, violent winds at all seasons and the plateau topography contrast this region with the arid plains and mountains to the north and the flat Pampa to the northeast (Bridges, 1950).

Patagonia is the wool producing section of Argentina. Cattle are relatively unimportant. Small type Australian Merinos are run yearlong under fence on vast range areas (Fig. 2). The sparse cover of spiny shrubs, such as "Neneo" (*Mulinum spinosum*) and "Espino

negro" (*Colletia spinosissima*) and coarse perennial grasses such as "Huecu" (*Festuca argentina*) and "Coiron armargo" (*Stipa humilis*) offer poor subsistence at best under prevailing practices (Soriano, 1950, 1952). Breeding ewes are rounded up by mounted shepherds only at shearing and other desired times. All lambs are retained—the ewes for breeding herd replacements and the wethers for ranch or local consumption. Heavy winter and predator losses are common. Management on individual ranches is usually directed by a manager qualified solely by his experience in handling sheep and knowledge of

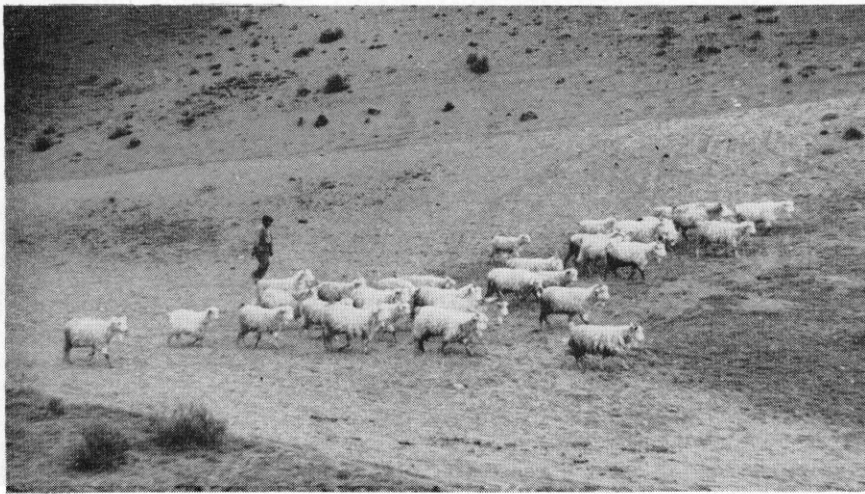


FIGURE 3. Severe deterioration on a Patagonian range caused by heavy stocking with goats.

wool grades gained through experience.

Management Problems

Present-day range-livestock practices and procedures in Argentina present a marked contrast to those in western and mid-western United States. It was inevitable, perhaps, that English, Scotch and Australian sheepmen should carry their ways and habits of handling livestock to Argentina as they emigrated and eventually dominated the industry there. Knowledge of range vegetation and its management was not and still is not comparable with general livestock handling and wool grading knowledge in the Argentine. As a result, many problems in range management have arisen and from these previously unknown livestock problems have evolved during 80-odd years of use.

Range Problems

Without doubt, the most prevalent and serious range problem in Argentina is one of too heavy stocking and resulting overgrazing. On the estancias visited, stocking rate varied around one cow per acre yearlong in the Province and in Patagonia from 1.5 to 7.5 acres per sheep yearlong, depending on the experience and general attitude of the manager, the favorableness of the season and to a lesser extent the general condition of the range. Previous stocking rates were once

considerably heavier than at present. To illustrate, one estancia of 9 leagues on the dry fringe of the Pampa was stocked with 2,000 breeding cows and 6,000 sheep, 8½ acres per animal unit yearlong, prior to 1942. The present owner stocks the same area with 850 cattle and 1800 sheep, 42 acres per animal unit, and desires to reduce further to 600 cattle and 2,000 sheep, 50 acres per animal unit yearlong.

Heavy unregulated use has inevitably resulted in reduced plant cover, disappearance of good forage species, increases in undesirable plants, heavy soil losses and reduced grazing capacity. The highly productive pasture lands of the Province have been seriously invaded by several species of thistle which rob forage plants of soil moisture and nutrients and further reduce grazing values by shading and simple mechanical interference of animal movements. At maximum summer development these plants occupy the entire surface of vast acreages and completely hide domestic animals grazing thereon. Similarly, in Patagonia heavy stocking has had marked effects on the natural vegetation (Figs. 2 and 3).

The effects of four years of protection from sheep grazing were observed using the 3-step method, Parker (1951), on the areas shown in Fig. 2 upper. Bare ground and

erosion pavement were less evident, litter more abundant and desirable species somewhat more conspicuous on the protected area. Protection in this case was only relative, since the area was continuously used by European hares which could not be fenced out. An adjacent roadway, not shown in the figure, used for all local travel and by stray livestock rated even better by this method than the continuously grazed range. Even more striking was the improved vigor of principal forage species as reflected by their height growth. *Festuca palescens*, the only grass found on all three areas, was more than twice as tall on the protected than on the continuously, heavily grazed range.

Distribution of livestock poses another serious range problem, particularly in Patagonia. This problem traces directly to the enormous size of range areas or "camps," scarcity of watering facilities, non-use of salt or supplemental feeds on the range and the tendency toward local concentration by the sheep. In the Province the necessity of daily milking precludes good distribution of cattle and aggravates the undesirable situations which develop around water, corrals, gates and fence corners.

Range rodents, particularly the gopher-like "Tucó Tucó," European hares, and the "Vizcachá" (*Lagostomus trichodactylus*) in Patagonia are of concern to the range user. These animals contribute to the increase of undesirable plants on the range and in turn benefit by the protection from enemies and shelter from the elements afforded by the plants.

Seasonally, both in Patagonia and the Province, thousands of wild geese concentrate on the grazing lands, where they increase the already heavy grazing load and contaminate ungrazed herbage with their droppings. Like the weather, they are talked about, usually as "the dammed geese," but little is done about the problems they create. In one case an estancia man-

ager was paying five centavos for collection and destruction of each egg in a feeble effort at local control. Other species of birds such as the "tero tero," a large plover, and the "bandurria," an ibis, aggravate the problem, particularly on moist valley areas.

Livestock Problems

Lack of attention to and care of grazing animals are the root of most range-livestock difficulties in Argentina. Grazing unattended in vast "camps," Patagonian sheep are subject to all the hazards of the elements, predators such as foxes and wild pigs, disease, theft by nomadic peons and starvation. The prevailing handling system is responsible for the generally low level of nutrition, which in turn accounts for lamb crops ranging from 50 to 75 per cent, fleece weights of 2 to 5 kilos and heavy replacement requirements. Turnover in breeding herds may run as high as 35 per cent annually. In the case of one estancia which ran 67,000 sheep, 4,000 cattle and 1,500 horses, annual reductions in animals were as follows:

- 7,000 sheep consumed as meat
- 300 cattle consumed as meat
- 4,000 sheep lost from known causes
- 3,600 sheep unaccounted for.

On this same estancia 3,000 sheep were lost in one spring storm in 1953 which laid down a meter of snow. Lambs have no sale value in Patagonia and it is frequently more advantageous to dispose of a pelt than a live animal. The sale of old but still serviceable rams is discouraged by a government tax; therefore, they are driven into the hills and used for fox bait.

In the Province, too, stocking rates are heavy and beef animals must be carried to advanced ages, 3 or 4 years, before reaching salable weights of 400 to 500 kilos (880-1100 pounds). This practice is wasteful of grazeable herbage in this important grass-fattening area and forces retention of a larger livestock inventory than would be necessary with lighter stocking and marketing of younger animals.

Cattle diseases, Bang's and foot-and-mouth, sheep parasites and hog cholera are common in the Province. Vaccination for foot-and-mouth disease is generally unpopular, but some milk producers treat animals at frequent intervals to reduce losses. Annual turnover of dairy cows due to Bang's disease was 20 per cent in one recorded instance.

The prevailing practice of breed improvement is another deterrent to progress, especially in Patagonia. This system, called "puro por cruso," consists simply of producing half-blood sires from imported pure-breds for use with commercial breeding ewes or cows. The lack of any regular, coordinated culling practice or accounting system plus the heavy losses and generally low nutrition effectively nullifies the influence of imported high grade sires. In the Province, better accessibility, smaller holdings, more favorable climate and a ready market for fat or surplus animals make this problem less acute.

Improvement Problems

Argentina's range and livestock problems are deep-seated in national land policies and governmental control. Most of the grazing land is Federally owned. Some of the oldest and largest livestock companies still operate on leased Federal land. Hopes of eventual ownership are futile because new stipulations must be met each year in the never-ending discouraging search for a title.

Rather rigid control of all imports of equipment, materials and supplies, with resulting exorbitant costs to the individual is another major deterrent to range and livestock improvement (Fig. 5). South of the 42nd parallel in Patagonia, automobiles and farm machines may be imported duty free but cannot be taken across that parallel into the Province or other portions of the country. Automobiles and equipment received north of the 42nd parallel are subject to a 100 per cent duty plus processing and handling charges. Similar restric-

tions control seed, fertilizers and herbicides. Removal or relaxation of these restrictions would make available to the Argentina livestock and wool producer many of the materials and tools needed to improve present-day operations. Lack of seed laws is responsible for the sale of inferior and often even contaminated seed within the country. Some standardization of products and formulation of rigid rules governing trade are needed.

Manipulation of exchange rates is an added difficulty. Purchases of commodities such as grain, meat or wool with a peso-U. S. dollar ratio of 5 to 1 are common. For durable goods such as trucks and tractors the ratio may be 15 or 20 to 1. This factor will continue to deter progress in the solution of range and livestock problems.

As pointed out by Beetle (1954), Argentina has many outstanding specialists, principally taxonomists, ecologists and plant geographers—most of them concentrated in the city of Buenos Aires. Many of these technicians are employed by both

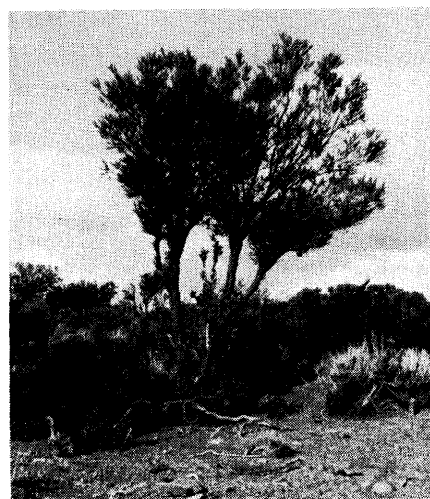


FIGURE 4. Palo piche (*Fabiana imbricata*), usually an unpalatable shrub, high-lined on overstocked Patagonian sheep range.

the University of Eva Peron and the Argentine Ministry of Agriculture and in their spare time serve as consultants or advisors to as many estancia owners or managers as they are able to serve. Too few of these highly trained men spend full time in extension effort,



FIGURE 5. This small, old-fashioned tractor and disk used to remove unpalatable needlegrass prior to seeding of crested wheatgrass, and a small disk drill not shown, cost more than 5,000 U. S. dollars in Argentina.

and too little information from range livestock experience and research is available.

The 1953 International Pasture Management course conducted co-operatively by the Inter-American Institute of Agricultural Sciences, the Argentine government and FAO, brought together a representative group of Argentine technicians plus selected individuals from four neighboring countries (Boelcke, 1954). Many of these men, well trained and highly skilled in their own right, lacked the "know-how" of putting range research results into practice.

Existing experiment stations are largely devoted to plant breeding and varietal trials while adjacent operators continue to plow thousands of acres annually to control brush and unpalatable grass growth but stop short of a complete job by failing to seed a good perennial forage species on the prepared land. In one such case the operator depended upon the winds and grazing animals to bring in the seeds of good forage species. It hadn't occurred to him that these same agencies would bring in the seeds of undesirable species too. A small experiment station less than 50 kilometers away had been growing crested wheatgrass successfully for five years but he had never been to the station and no one at the station had ever come to him even though the dust blowing from his plowed ranges signalled resource destruction for miles.

The manager of a large, well-established estancia in Patagonia summarized his range management system with this statement, "We don't manage the range. We just put sheep on a camp and when they start dying of starvation we bloody well move them to another camp." This manager, with a lifetime in the range sheep business, justified his position by saying that the companies, his in particular, overgrazed less than the small holders. Observation indicated that in some cases, at least, just the reverse might be true.

Range research is just now getting under way in Argentina.

The Inter-American Institute of Agricultural Sciences now has a full-time man whose duties are to train specialists in the application of range research findings and to initiate range research in member countries.

Figure 5 illustrates the first known attempt to rehabilitate, through reseeding, deteriorated range in Patagonia. This high valley or "malline," once highly productive of palatable herbage, now supports only a dense stand of unpalatable desert needlegrass (*Stipa speciosa*). Owned by Ing. Agr. Osvaldo Boelcke, Chief, Indigenous Plant Section, Institute of Botany of the Ministry of Agriculture and Livestock of the Nation, this valley on the estancia Fortin Chacabuco is the site of recent experimental plantings of crested wheatgrass, intermediate wheatgrass and hard

fescue. Mr. Boelcke has also initiated several good range and livestock management practices such as conservative stocking, separation of winter and summer ranges, supplemental winter feeding, salting, controlled breeding, etc., designed to increase production and improve his range. All of these measures were taken as a direct result of the range management course held in Argentina in 1953.

Prospects

Lack of "know-how" is a major obstacle to range and livestock improvement in Argentina. A step in the right direction has been taken. Hope for the future lies with those progressive, intelligent individuals who are interested in the welfare of their country and of posterity as well as themselves. This means the native Argentines—not the transplanted Europeans or Australians who have dominated the scene too long.

Many, if not most, of the problems cited herein have existed in other major range areas throughout the world and particularly in western United States. In our western range states they have been solved largely through coordination of Federal, State and individual effort. In Argentina their solution will be more difficult.

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