Grazing pressure on Saskatchewan rangelands

Don V. Gayton

Saskatchewan's cow/calf industry was born on the extensive mixed-grass and rough fescue rangelands of that Canadian Province. However, by the early part of this century, grain production began claiming more and more of the grasslands, and beef production gradually shifted to a secondary position in the Province's farming economy. Currently, less than 25% of cattle owners derive their primary income from that source, with the rest being mixed farmers (SDAF 1986).

The mixed-farming context of cow/calf production in Saskatchewan has many positive and complementary aspects, but grain and beef do compete for one critical resource: land. In order to document this competition, recent acreage and livestock trends were analyzed.

Historical Data

Statistics were assembled from a number of sources. The amount of native rangeland acreage was computed from leased and deeded rangeland (Canadian Wheat Board 1974–1988) plus the acreage of Community, Cooperative and P.F.R.A. pastures (Saskatchewan Rural Development and PFRA *Annual Reports*). Cultivated forage area (i.e., land ploughed and seeded to cultivated perennial forages) statistics were taken from Canadian Wheat Board (1974–1988). Beef Cows on Farms (Saskatchewan Dept. of Agriculture and Food, 1974–1988) was chosen as the key livestock statistic. Cow live weight at slaughter, calculated from carcass weight (Canada Department of Agriculture 1977–1988), was taken as a measure of average grazing cow weight.

Results

An extended period of good grain prices during the late 1970's and early 1980's fuelled a massive conversion of native rangeland into annual cropland (Fig. 1). Cultivated perennial forage acreage was converted to annual crops at about the same rate (Fig. 2). Parallelling the decline in forage acreage was a substantial reduction of the Province's beef cow herd (Fig. 3). Starting from a high of 1.3 million cows in 1975, the herd dwindled to a low point of three quarters of a million by 1986.

Cow live weights at slaughter (Fig. 4) increased steadily from 1977 to 1988. Saskatchewan's commercial beef cow herd, traditionally composed of Hereford and Angus cattle, shifted substantially toward the larger-framed exotics during the period studied.

Total forage acres per animal unit (Fig. 5) is a global measure of the amount of grazing land (native rangeland

Figure 1.

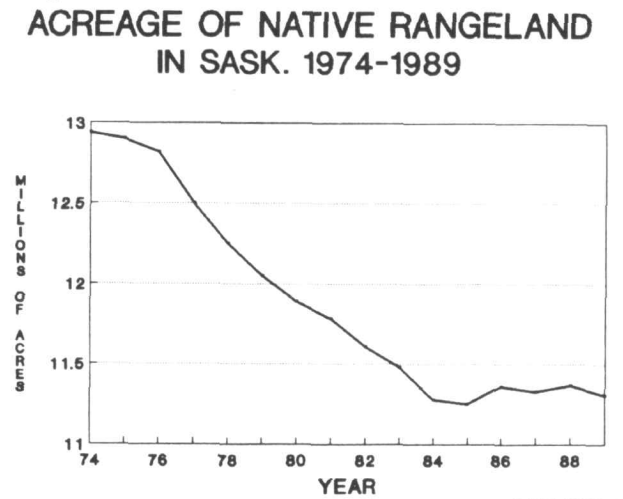


Figure 2.

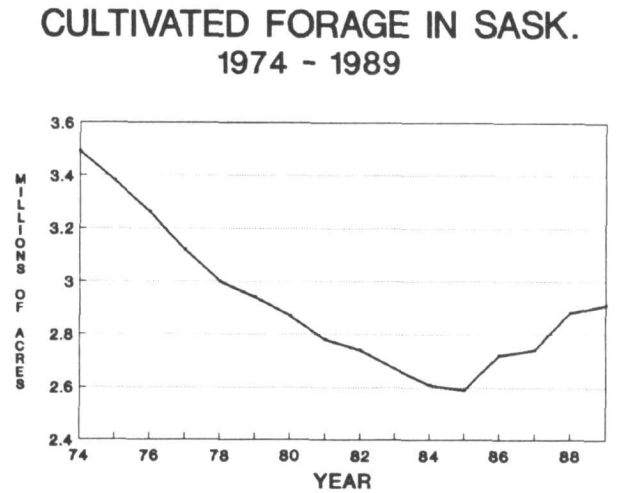
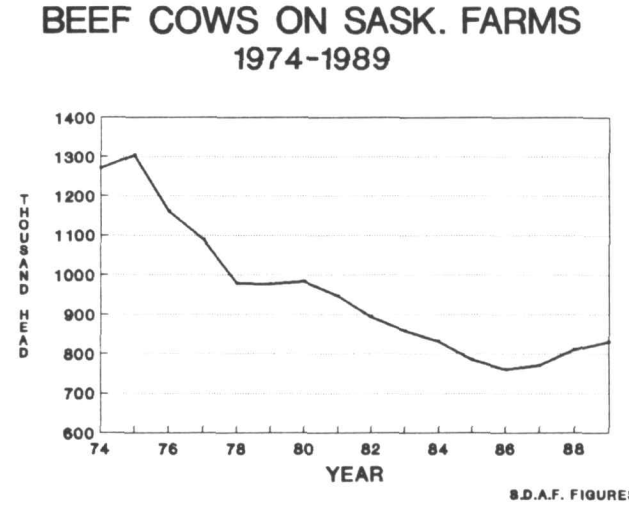


Figure 3.



Editor's Note:

The author worked in Saskatchewan for 15 years and is currently acting Range Officer for the British Columbia Ministry of Forests in Nelson, British Columbia. He is a member of the British Columbia Chapter of the Society for Range Management.

Figure 4.

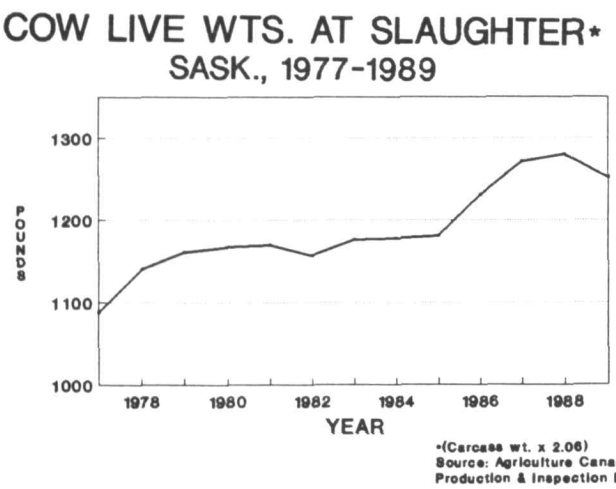
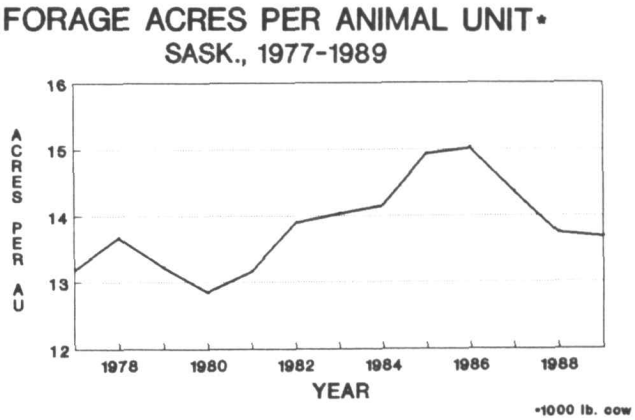


Figure 5.



plus cultivated forage land) available per standardized 1,000 lb. cow. The rapid sell-off of the beef herd from 1977 to 1986 was more than sufficient to offset loss of grazing lands and increasing cattle weights, resulting in actual decreases in grazing pressure on the remaining rangelands. However, as grain prices dropped in the late 1980's and the cow herd began to increase again, the trend line of Acres per Animal Unit becomes negative. Thus grazing pressure on Saskatchewan rangelands has been increasing steadily since 1986.

Conclusions

The data presented may be somewhat misleading without considering the following: (1), statistics on native rangeland held by non-grain producing cattlemen are not available; (2), some cultivated forage acreage is found in the government pasture component of the native rangeland category; (3) cultivated forage normally has a higher carrying capacity than native pasture, (4); the cultivated forage category includes land use for preserved forage production, and (5); cow live weights at slaughter includes a small percentage of dairy cattle. These inaccuracies result from the use of agricultural statistics as a substitute for nonexistent range statistics. However, the inaccuracies are relatively constant over time.

All components of this simple grain-beef system model are all flexible and reversible, except the native rangeland category. John Dormaar and Silver Smoliak, scientists at Agriculture Canada's Lethbridge (Alberta) Research Station, determined the time lag between grainland abandonment and full return to original prairie vegetation to be in excess of 55 years (Dormaar and Smoliak 1985). It is safe to assume that the amount of grainland converted back to native rangeland is nil.

Many observers of Saskatchewan rangelands consider the resource to be in a deteriorating condition. The gradual loss of native rangeland base and the increased grazing pressure may provide an explanation for this perceived deterioration.

Recommendations

Governments are the major landlords of range in western North America, and Saskatchewan is no exception. Many of these same government agencies do not collect sufficient data to determine land use, grazing, and range vegetation trends. Databases that eliminate inaccuracies and track the key parameters (native and cultivated grazing area, cow numbers, cow weights, and grazing duration) should be created and maintained, for both local and regional jurisdictions. These databases should be linked directly to a program of routine range condition analysis (generic term intended) so the connection between grazing manipulations and vegetation impact can be empirically derived.

Increasing cow weights is another issue that must also be addressed by range managers. The standard 1,000 lb. animal unit is a convenient administrative tool that obscures the fact that the 1,000 lb. range cow has now achieved the status of ancient myth. The amount of forage required per unit of cow weight is essentially linear; simply put, the bigger the cow, the more she eats (Alberta Agriculture 1987). In the Saskatchewan case, using an uncorrected 1,000 lb. AU for stocking rate calculations would underestimate forage consumption by at least 20 percent! A component reflecting current average range cow weights must be built into grazing calculations.

In this era of increasing public scrutiny, government range managers must find the means to acquire land use, grazing, and vegetation data, link it together in empirical monitoring systems, and begin to set a publicly defensible standard of resource management excellence.

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