SEASONAL BEEF AND DAIRY PRODUCTION♦

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PUNTOS DE VISTA

El Dr. R.C. Martin nos ofrece sus criterios acerca de la posibilidad de implementar sistemas estacionales de producción de leche y carne, tanto en Cuba como en Canadá.

El Comité Editorial de la revista PASTOS Y FORRAJES entendió mantener el texto en inglés original, para evitar que con la traducción se perdieran las ideas esenciales del autor.

Nuestra revista respeta los puntos de vista tratados en el artículo, pero no asume la responsabilidad por lo expresado en el mismo y aclara que estos no reflejan, necesariamente, los criterios de la Institución.

INTRODUCTION

Many people in agriculture recognize the urgency of harvesting cultivated crops at the optimum time but they might allow pasture forages to grow, mature and even wither without notice. The more I watch grass grow, the more I think that it should be harvested when it is most available, at optimum quality. However, as much as possible, we should arrange for animals to harvest it. They don't complain if they work at night, they use no gasoline and they will leave lots of fertilizer in the field, where it is required. Ruminant animals have particular advantages because they convert human inedible feedstuffs such as forages to human edible food with an optimal mix of amino acids (Anonymous, 1996). I have proposed to milk dairy cows as a herd, when forage is most available and to dry them off as a herd, for 2 months during the winter or dry season, when forage is least available (Martin, 1991). Furthermore, beef cattle can also harvest forages, when the grass grows best.

OPPOSING VIEWS

I realize that many people in Canada and Cuba will object to the idea of seasonal beef and dairy production. In Canada, they will argue that cattle cannot harvest grass from December to March when there is snow and ice, so we have to harvest it, store it and feed it to them. I have been told that after developing such a system, it is more efficient to consistently use it, than to switch to another system for part of the year. In Cuba, my colleagues ask, "why not milk cows during the dry season, when it is cooler and the cows can produce more milk per day on non-pasture feeds?". I recognize these as genuine objections and will address them below, but so far I have not changed my opinion, that biology will prevail and that we should make the most of seasonal grass growth.

SEASONAL PRODUCTION

According to grazing consultant, Alistair Rayne, of New Zealand, before the 1970s, Irish dairying was similar to that in New Zealand, where cows calved in the spring and produced milk cheaply from pastures. Many were persuaded to milk longer in the winter and production per cow increased by 80 % over 10 years. However, costs increased as follows: bought feed by 450 %, grass supplements by 350 % and fertilizer by 300 %. Nevertheless, the increase in net farm income never exceeded 3 % per year. After 10 yrs, farmers received NZ $8.00/kg milk solids but the Irish high-input farmers were spending NZ $7.50/kg milk solids to produce the milk and grass based seasonal dairying farmers were much more profitable by only spending NZ$3.00/kg milk solid (Nation, 1995). I therefore suggest the following systems for eastern Canada and Cuba.

In eastern Canada, cows could be milked seasonally. I realize that the present quota system does not encourage such an approach, but with sufficient support the quota system could accommodate seasonal dairying. Let us suppose that all cows calved in May, on a Canadian dairy farm, when grass growth accelerates. The increasing grass supply could match the requirements of cows in early lactation, on a rotational grazing

♦ Currently conducting research on the milk production of cows on pastures at the University of Cienfuegos and ISCAH in Cuba

system. The challenge of converting forages to milk has been addressed to some extent in temperate regions. We have shown that cows on pasture, under MIG, can produce as much milk as those under confinement feeding but the MIG production was at a lower cost, with lower fuel, fertilizer and pesticide inputs. We are currently developing a system to optimize milk production with less grain input (Fredeen, Martin and Berkshire, 1996; Fredeen and Martin, 1997).

Perhaps some dairy cows that are more "beefy" could nurse 2 or 3 calves each, while on pasture. The calves would not eat much forage to assist with consuming the forage flush in their first grazing summer but they could be expected to adapt quickly to grazing. The calves could be roughed through the first winter on round bales of hay or silage in the field where they were placed by the baler. Electric fences could give them access to one bale at a time. There would be some wasted feed but it would not have to cost the farmer much time or money and all the nutrients would remain in the field (Bartholomew and Vollborn, 1995; Bartlett, 1995). By the next spring, the yearlings, in condition for compensatory gains, would be able to contribute significantly to coping with the flush of growing grass. As grass growth declines the steers and cull heifers could be sold for lean, clean forage-fed beef. They would not have to be carried through a second winter with their large appetites. In the meantime, the dairy cows would be advancing in their lactation as winter sets in each year. They could be dried off as a herd, in late February or early March and fed in a field or feedlot until they calve and the grass begins to grow in May. Therefore, neither the cows nor the beef cattle would require large amounts of high quality stored feed from January to May. The machine harvest-and-store system, with all its costs, would not be as essential to the functioning of the farm.

In Cuba, cows could also be milked seasonally. Two or three calves could be expected to suckle the beefier cows or those with more Zebu genes, while the F1 European-Zebu dairy types, with hybrid vigour and long lactations, could be milked into the tank (Syrstad, 1991). Cows with suckling calves can increase milk yield by 25-40 % and sometimes extend their lactation, with positive carry-over effects, with only two months of suckling (Chilliard, 1991). The beefier cows could also be milked into the tank after two months of suckling. The calves would be roughed through the dry season, from December to early May, on sugar cane tops and other crop residues and if possible, with a supplement of molasses and urea or of legume tree leaves. The yearlings would be ready to consume much of the rapid forage growth as the rainy season commences. All but selected replacement heifers would be slaughtered for beef before the next dry season begins.

Every year, the milking cows could be supplemented with paddocks of king grass and leucaena in an expanded rotation as the dry season advances. They could be dried off as a herd for two months, during the dry season. Research will be necessary to determine when it is possible to effectively breed the herd, so as not to compromise reproductive efficiency in hot weather, but to still take advantage of the opportunity to milk all cows for the entire rainy season. For example, if cows are bred in May, they could give birth in February, after being dry in December and January. However it might be more efficient to breed all cows in June and have them dry in January and February, with calving in March. As in the Canadian system, the goal should be that the early-lactation milking cows and yearling beef cattle, ready to cash in on compensatory gain, would be consuming pastures as forage growth is most prominent, in the rainy season.

I understand that individual cows might produce more milk per day in the cooler dry season, with adequate feed, but at what cost of labour, energy and foreign exchange, is this feed provided? Cino, Larduet and Jordan (1996) reported that when rotationally grazing cattle on paddocks of the grass, *Panicum maximum* and the legume, *Neonotonia wightii*, the cost in Cuban pesos/L milk was 0.17 in 1987, and 0.19 in 1988, when more irrigation was required in the dry season. They noted that regular dairy units have costs of 0.30/L milk and that by saving just 0.01/L milk produced in Cuba, nine million pesos could be saved across the country. Surely the greatest savings are possible in the rainy season and the consumption of animals must be managed to match the growth of forages. If the feed requirements are the same for a herd in the dry season and the rainy season, and if enough feed can be grown for this herd in the dry season, then it seems clear that feed is wasted in the rainy season. Lotthammer (1991) noted that cattle in the tropics, during the rainy season, have excess protein and energy available to them but during the dry season, most cattle are deficient in both protein and energy.

ADDITIONAL CONSIDERATIONS

I respect the fact that, today, many farmers will not want to change their system or introduce complications with both a pasture system and a non-pasture feed system at different times of the year. Probably the incentive to change will involve the squeeze of even lower farm-gate prices or of higher off-farm input costs. Let us suppose that some farmers will decide to adopt a seasonal dairying system. Could the fluid milk supply meet the demand in March and April? In Cuba, powdered milk is already purchased from the world market at an annual cost of $US 80,000,000 (ICA researchers, 1997, personal communication) and I suggest that less money be used to purchase some milk for the dry season, while relying on efficiently produced Cuban milk when the grass

grows. Excess milk from the rainy season could also be powdered for use in the dry season. In Canada, a price system could be developed to pay farmers more for milk produced in March and April and I believe that this price should be reflected in stores. Canadians comply with higher prices for oranges, after a frost in the sub-tropics and tropics. Powdered milk could be available as well in March and April. Cheese and other milk products could be produced in the pasture season, only. For example, the greatest proportion of ice cream is consumed during this season.

CONCLUSION

My perspective is one of optimizing resource use and expecting that economic realities will eventually adjust to this as well. It is remarkably evident in Cuba that the days of cheap and readily available gasoline are over. In Canada, we still have the option of throwing more fuel or money at production bottlenecks but we also have the opportunity to watch how Cubans adapt to shortages that may eventually affect us all. Cuba is like a large laboratory of sustainable agriculture with two essential ingredients: 1) many knowledgeable agriculturalists and 2) the necessity to produce with limited inputs of fossil fuels, pesticides and fertilizers. In both Cuba and Canada, forage growth is a comparative advantage and a renewable resource to be exploited for production and environmental benefits. The trick is to convert all those grasses and legumes to meat and milk, at the right time.

Please feel free to contact me with comments, criticisms or questions (Telephone: 902-893-6679, Fax: 902-897-9762, E-mail: R.MARTIN@NSAC.NS.CA)

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