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## **HERD HEALTH IN COW/CALF OPERATIONS IN NORTH AMERICA (A WESTERN CANADIAN PERSPECTIVE)**

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### **1. INTRODUCTION**

If asked, most veterinarians could describe in general terms the principles of herd health, and specifically a program tailored for the cow-calf producer. Invariably, these principles would include pregnancy diagnosis, bull breeding soundness evaluations, consulting on vaccination and treatment programs, becoming involved in biosecurity and food safety issues and it may also involve organizing and reviewing a record-keeping system. A number of authors have described the components of the ideal “herd health” program for the cow-calf producer in North America (Furman, 1990; Chenoweth & Sanderson, 2005; Spire & Rogers, 1995). In Western Canada, most cow-calf practitioners routinely perform many of these various components, yet, if asked, they would say they have very few producers on a “herd health” program. This leads to a fundamental question: What is herd health? One such definition is that herd health is a planned animal health and production management program that uses a combination of regularly scheduled veterinary activities and good herd management designed to optimize animal health and productivity (Blood, 1979). Or, perhaps what sets a herd health program apart from individual animal medicine is that the herd, or group, is the unit of reference (Chenoweth & Sanderson, 2005). Perhaps another definition might be that a herd health program constitutes a system whereby the veterinarian is paid to deal with the healthy population in a herd as well as the sick population. Regardless of the definition, what is evident is that the term does not prescribe a specific set of tasks or procedures. On the contrary, herd health is merely a concept and it must be seen as a continuum of services. Unfortunately, too many cow-calf veterinarians, particularly those in Western Canada, fail to recognize that they are in fact delivering herd health programs to their clients. We believe this misconception arises from two different sources.

Historically we have educated, if not admonished, our students to evolve from being individual animal “fire engine” practices that work on a fee-for-service basis and taught that food animal practice should move towards a practice in which regularly scheduled visits are the norm and remuneration is based on the services provided to the herd. Because most cow-calf practices still have a large individual animal component within their services, veterinarians by default do not consider themselves to be providing herd health. This is reinforced when they compare what they

are doing to what veterinarians in other food animal sectors are doing in terms of herd health, particularly, poultry, swine and dairy. Unquestionably, these sectors are on the leading edge when it comes to adopting and implementing herd health and production management programs. Thus, when these sectors are used as a comparator, then beef cow-calf herd health programs appear to be in their infancy. Why is this? Why has the cow-calf industry lagged behind the others? The objectives of this paper are to describe the utilization of veterinary services by Canadian cow calf producers and to discuss the implications of the emergence of Bovine Spongiform Encephalopathy (BSE) on veterinary services for cow-calf herds in Western Canada.

## 2. DEVELOPMENT

The simplest explanation for why the cow-calf industry has not embraced more sophisticated herd programs is a matter of economics. Despite the romantic views of rural life and working with animals, the bottom line is that cow-calf producers are operating a business in an extremely competitive marketplace. The beef industry in North America operates on a free market basis. The average cost of producing a calf has increased significantly in North America over the last two to three decades. The US Department of Agriculture estimates that the cost per cow exposed has risen from \$114 per breeding to \$412 per breeding between 1972 and 1994. In Saskatchewan, cost of production per cow was estimated at between \$553 (Can) and \$650 between 2001 and 2005 (Highmoor, 2005). Cost of production has been shown to be one of the most significant determinants of profitability for the North American cow-calf producer. Standardized Performance Analysis (SPA) is a U.S. based economics analysis tool that attempts to evaluate the cost of production in cow-calf herds. A SPA study in Texas has shown that there is almost a \$200 per cow difference in net income between low cost and high cost producers. High cost herds had an annual cow cost of \$490 and weaned 441 lbs of calf/cow. Low cost herds had an annual cow cost of \$268 and weaned 418 lbs calf/cow. Low cost producers said that they had 5 ways of reducing annual cow costs including reducing supplemental feed costs, rotational grazing and pasture management, utilizing appropriate genetics, reducing labor costs and having a strong herd health program (Sprott *et al.* 1998). Many cow-calf enterprises in North America are not profitable (McGrann & Parker, 1999). In order to be profitable, cow-calf producers must control the cost of inputs. For some cow-calf producers, some of the veterinary services which are marketed as “herd health” are simply perceived as another cost with relatively little perceived economic value. There is still a significant segment of the cow-calf industry that would have very limited amounts of interaction with a veterinary professional on a yearly basis

As is typical of all primary producers, cow-calf producers are producing a commodity, which means they operate on a very slim profit margin. It needs to be stressed that while veterinarians perceive value in the services that we offer, we are in fact an expense to the producers. This is a critical concept because at the end of the production cycle there must be a quantifiable monetary benefit associated with our services. Like any other consumer, the producer is faced with the economic principle of “opportunity cost”, more colloquially known as “there is no free lunch”. In short, the producer has a limited amount of funds and as a good business person he will attempt to maximize the benefit of his input costs. Simply stated, the more he spends on veterinary services, the less is available for fertilizer, routine maintenance, etc. Clearly, veterinarians providing herd health services have proven to producers that herd health programs are cost-effective and the reason is probably related to the size of the operations. As producers get larger, they have more of an investment at stake and hence a full service program equates to purchasing risk management. Other niche markets have existed for cow-calf herd health programs within purebred breeding herds or within smaller “hobby” farms with significant other disposal income sources. Ironically, we believe that the discovery of BSE in Canada will become the “change agent” that leads to a faster adoption of more comprehensive herd health programs. Underpinning this assumption is the changing role of

the veterinarian in the post-BSE era, and the unabated trend of consolidation within the agriculture industry.

The Canadian beef cow-calf industry consists of approximately 90,000 beef producers, who manage over 5.3 million beef cows. The largest concentrations of these producers reside in western Canada, specifically in the provinces of Saskatchewan and Alberta. Together these two provinces account for 70% of Canada's beef production. Even by North American standards, they are considered to be major beef producing regions with Alberta and Saskatchewan being ranked 3<sup>rd</sup> and 8<sup>th</sup> respectively for beef cow numbers in North America (Figure 1).

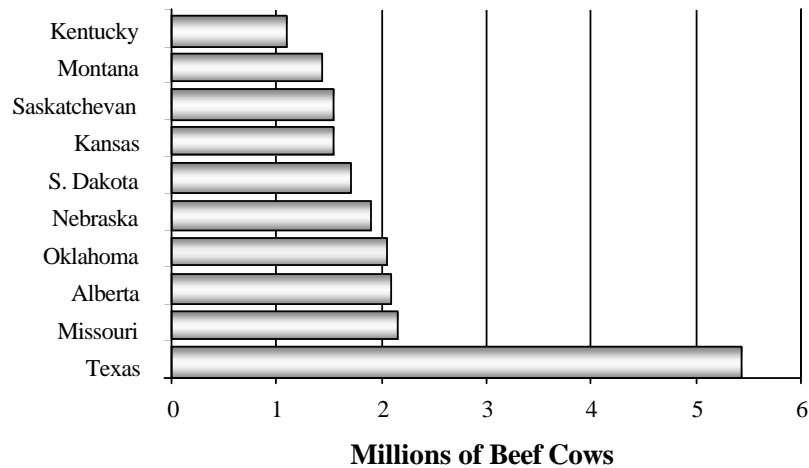
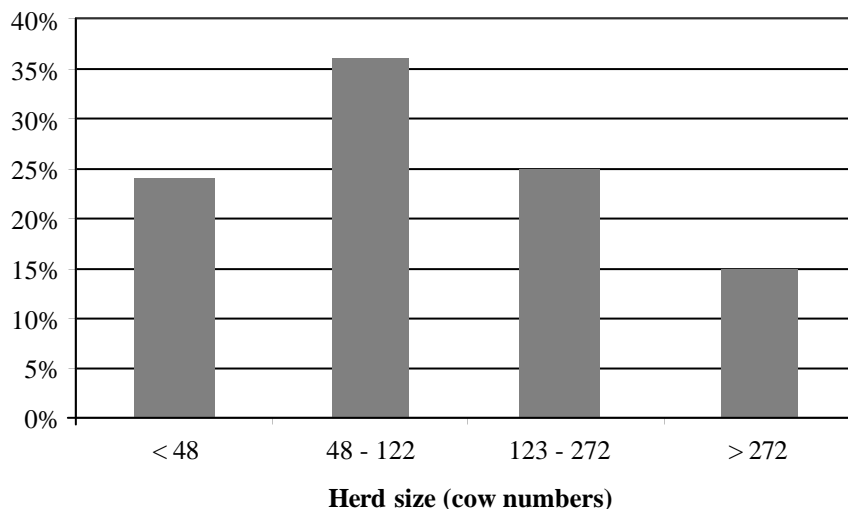


Figure 1: **Top 10 Regions for Beef Cows: North America (January, 2005)**

The Canadian beef cow herd has continued to increase since 1998 and has increased since that time by over one million beef cows. This has been accompanied by a large increase in the amount of Canadian beef which is exported around the world. Canada is a relatively small player in terms of overall beef production, but is the 4<sup>th</sup> largest exporter of beef products in the world. As the Canadian beef industry has expanded it has developed a greater reliance on export markets which creates a greater need for food safety and quality assurance issues to be addressed at the farm level (Spriggs *et al.* 2000). Despite a trend towards larger farms, the average herd size is still quite modest at approximately 53 cows per herd. Many producers utilize their cow-calf production units as a secondary enterprise along with crop production, off-farm jobs or as a hobby.



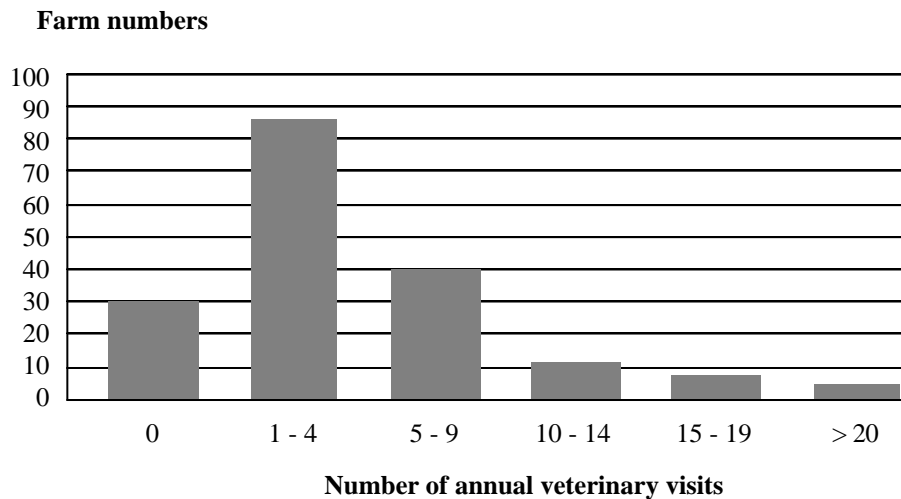
## Figure 2: Distribution of Herd Size in Canadian Beef Cow Herds

The emergence of Bovine spongiform encephalopathy in the Canadian cattle population has created significant economic impacts on Western Canadian cattle producers. The drop in value of cull cows has had an impact on the cow-calf producers' utilization of veterinary services. Anecdotally, it would appear that there is less demand for individual animal services and more emphasis being placed on herd health services and preventive medicine. BSE surveillance programs, national ID programs, age verification, and food safety/quality assurance programs have all been created in the past few years in Canada providing an opportunity for the rural veterinary practitioner to expand the traditional aspects of cow-calf practice.

The emergence of BSE in the Canadian cattle population has also created significant economic impacts on Western Canadian cattle producers. Clearly, the most significant impact has been the reduction in value of the cull cow. Cull cow prices (D1, D2 cows) have dropped from a value of \$50.00 - \$60.00/cwt to a current value of approximately \$30.00 - \$35.00/cwt (Source: Canfax). Older cull cows are now virtually worthless. Bred cow prices and calf prices were also significantly reduced at various times throughout the BSE crisis. It is estimated that 20% of a cow-calf producer's income is derived from sales of cull cows and this drop in their value has significantly reduced their net income. It has also changed the way in which veterinarians are employed by the cattle industry. Because of this drop in value of a cull cow, many procedures such as surgery and other expensive medical interventions that may have been deemed to be of economic value are no longer justifiable because of the value of the cull cow. Veterinarians in Western Canada have anecdotally reported significant reductions in the number of individual cattle cases that they see on a yearly basis since BSE has emerged.

This reduction in the use of food animal veterinarians in the cattle industry may have a more significant impact than simply reducing the income of food animal veterinarians. Rural veterinarians who engage in food animal practice are the "front line" of disease surveillance for food safety and foreign animal disease threats. In the case of BSE, rural veterinarians are a key component of Canada's plan to provide a surveillance network to establish the prevalence of BSE for our foreign trading partners.

A recent research project was performed in Canada by the primary author in 2004 to assess the prevalence of a number of production limiting infectious diseases in beef cattle in Canada. As part of that survey an extensive questionnaire on management was obtained from 179 randomly selected beef producers from 7 Canadian provinces. Cow-calf production was the primary income on 48% (86/179) while 49% (87/179) of the herds listed cow-calf production as secondary income to other farm income or off-farm jobs. 3% of the herds were categorized as hobby farms. Cow herd size ranged from 10 cows to 540 cows with a mean of 88 cows (SD = 86.7). Only 61.5% of the herds routinely had a veterinarian perform pregnancy diagnosis on the cows on a yearly basis. Fifty-one percent of herds routinely had veterinarians perform breeding soundness exams on bulls. Sixty-three percent of the participating herds utilized vaccines for bovine viral diarrhea on their cow herds. Producers were also asked to estimate the number of yearly visits or consultations that they had with their veterinarian. It is interesting to note that 17% (30/179) of farms did not have a veterinarian on their farm at all (Figure 3). There was no correlation with herd size and the number of veterinary visits in this study. It is clear from this data that there is significant room for expansion of the veterinarian's role within the Canadian cow-calf industry.



**Figure 3: Distribution of number of veterinary visits/year in Canadian Cow Calf Herds**

A number of significant factors have emerged simultaneously to produce a “Perfect Storm” which has created significant economic changes within the Canadian cow-calf industry in the last few years. The expansion of the Canadian cow herd along with the continued consolidation of the industry has created a greater reliance on export markets for our product. The emergence of BSE has drastically reduced the value of the cull cow and has impacted our ability to market both beef products and live animals to our export markets. This reduction in the value of the cull cow has also moved the emphasis of veterinary services away from the individual animal services and has in fact pushed the veterinarian and the producer to consider more herd level, preventive medicine approaches. Our dependence on export markets and the emergence of BSE has also helped to continue the development of national ID programs which had already been initiated, age verification programs, and food safety quality assurance programs. Audited on-farm food safety programs have been in place in Canada for a number of years for many major commodities such as dairy, swine, poultry and the beef industries. The uptake of these programs has been somewhat slow for the cow-calf industry in particular with relatively few herds officially enrolled on the program in Western Canada. Once again, this demonstrates the need for an economic market force to push both producers and veterinarians to implement these programs on a broader scale. Spriggs *et al.* (2000) note that increased coordination with the industry and international competitiveness are the main drivers behind changing attitudes of producers towards food safety programs. If there is no perceived benefit to the producer or conversely no penalty for failing to enroll in these on-farm food safety programs, many cow-calf producers will try to minimize costs and avoid enrolling. Once market forces provide an incentive towards enrollment such as the ongoing pressure from international markets, we will certainly see an increase in the veterinarians and producers who adopt these programs. Age verification programs are providing a niche for veterinarians to become involved in record keeping at the cow-calf level. The Canadian Cattle Identification Agency (CCIA) is an industry initiated and established trace back system designed for the containment and eradication of animal disease. As of September 1, 2006; all cattle leaving their herd of origin must be tagged with a CCIA approved Radio frequency Identification (RFID) Tags. Cow-calf record keeping computer software programs are now available that allow the integration of RFID identification into the record keeping system.

### 3. CONCLUSION

Clearly, veterinarians have substantial training and skills that allow them to provide valuable services to the cow-calf industry in terms of herd health programs. Educational certificate programs in cow-calf herd health have been available for practitioners in North America at the Great Plains Veterinary Educational Centre in Nebraska and have been very successful at providing first-class

extended education for practicing cow-calf veterinarians in all aspects of herd health and economics. Many scientific studies have demonstrated the economic benefits of many of the basic herd health premises. Perhaps, we are simply not good at marketing our skills and services to cow-calf producers? Ribble (1989) stated that “the marketing literature has a lot to offer in terms of insightful thinking and new ideas, but no tested guidelines exist for how to market bovine health management programs”. Marketers also agree that intangibility is a major problem associated with marketing professional services (Ribble, 1989). It appears that although marketing principles may help in developing herd health programs to certain niche markets such as producers with purebred cattle or hobby farms with significant off-farm disposable income they have either been very unsuccessful in the commercial cow-calf industry or alternatively, veterinarians have been particularly poor at marketing their skills. We would argue that in a commodity based model such as the North American cow-calf industry, market forces will be the ultimate factor that drives the development and adoption of herd health programs. In Canada, a number of market forces such as herd consolidation, the emergence of BSE, the reliance on export markets, the development of National ID programs and age verification systems and the drop in value of the cull cow have emerged to create an economic opportunity for veterinarians to create new niches for herd health programs. Herd health programs are essentially a form of risk management for the cow-calf producer that will be driven primarily by profit based motives. Chenoweth (2005) states that “today’s veterinarians need to better market their greatest asset -health-based knowledge- within the context of economic advantage to the producer”. The veterinarians that are prepared to utilize these opportunities and that have a deep understanding of the economics of the industry will be the most successful at implementing herd health programs in the cow-calf industry.

#### **4. SUMMARY**

A number of significant global trade, disease and economic factors have converged on the Canadian cow-calf industry in the recent past. The expansion and consolidation of the Canadian cow-calf industry, a greater reliance on export markets and the emergence of BSE and the subsequent devaluation of the price of cull cows have pushed veterinarians and producers to consider new approaches to herd health in the cow-calf industry. The North American cow-calf industry is generally an extensive system with low-cost producers tending to be more profitable. Quality assurance and on-farm food safety programs, biosecurity, national ID systems, age verification and other important components of herd health programs are beginning to emerge under the economic pressures created by BSE and the reliance on export markets.

#### **5. KEY WORDS**

Beef, cow-calf, herd health, economics, BSE, food safety.

#### **6. RESUME**

Un nombre important de facteurs économiques et de pathologies ayant une grande portée sur le plan du commerce global ont récemment concerné l'industrie canadienne du marché de la vache et du veau. La consolidation et l'expansion de cette industrie, une plus grande dépendance des marchés de l'exportation ainsi que l'émergence de la BSE et la dévaluation du prix de la vache de réforme qu'elle a entraîné ont conduit les vétérinaires et les producteurs à envisager de nouvelles approches pour la santé du troupeau. L'industrie nord-américaine du marché de la vache et du veau est généralement un système extensif qui implique un coût de production faible pour un profit maximum. Les programmes d'assurance qualité et de sécurité alimentaire au niveau de la ferme, la biosécurité, les systèmes d'identification et de contrôle de l'âge des animaux ainsi que d'autres aspects des programmes de santé des troupeaux commencent à apparaître en raison des contraintes économiques créées par l'ESB et la dépendance des marchés de l'exportation.

## **7. MOTS CLES**

Boeuf, vache, veau, santé du troupeau, économie, ESB, sécurité alimentaire.

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