# An Economic Appraisal

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There have been many reports in the veterinary literature over recent years regarding the economic benefits to the dairyman of prearranged herd health programs. It is not the purpose of this talk to review all these reports but perhaps they could be best summarized by two general characteristics; a tremendous variation in the claims made and a lack of sound economic information to support these claims.

This paper will report on an economic appraisal of one dairy herd health program.

The details of the herd health program itself have been previously described (3). The details of the economic appraisal are available in the scientific literature (1,2). Therefore, this presentation will highlight some of the more important features through a series of tables.

Twenty-seven dairy herds which had participated in a herd health program offered by the Ambulatory Clinic, Ontario Veterinary College, over an eight-year period were compared with 87 dairy farms which were enrolled in the Dairy Herd Improvement Association in Ontario. Information related to health was obtained from these 87 herds over a two-year period and since these herds relied on emergency veterinary service only, they served as the control group for this study.

This control study brought to our attention that even though the same basic herd health programs were being offered to each of the 27 participating farmers, they were making different uses of it. At one end of the scale, one group tended to make as little use of the program as possible, while at the other end, some owners participated fully by keeping full records and using all the preventive measures recommended at an increased cost. This fact is illustrated in Table 1 which tabulates veterinary expenditures (including drugs) for five response levels of dairy herd management.

When it was noted that in the herd health herds, four levels of health management were being practiced, it was decided to compare five important health parameters both in these groups and the control herds. These parameters were: average days open (Figure 1), average cow mortality (Figure 2), average calf mortality (Figure 3), average culling rate for health reasons (Figure 4) and milk production levels per cow (Figure 5). These figures are self-explanatory except for Figure 5. In this calculation, only the increased milk production which was considered to be due to improved health was recorded. Improvement due to genetic factors or better feeding methods were not included. Therefore, in the Group E herds, milk production was recorded as 13,020 pounds per cow when the actual average production was 15,000 pounds per cow.

After comparing these five health parameters, a computer modelling technique was employed to calculate the economic benefits of each herd health management level. These were calculated as a percent return on investment for various levels of milk production as illustrated in Table 2.

This information indicates that if a herd is averaging 14,000 pounds of milk the owners participating in a herd health program at the group D or E level can receive a 300% return on investment, or have a $3 return for every $1 invested in a herd health program.

A computer modelling technique was also employed to determine the average income per cow after veterinary and drug expenses for each level of herd health management related to potential milk production (Table 3).

Another method of looking at this information was also made available by the computer model in terms of calculating the probability of improving income on each of the five levels of management. This is illustrated in Table 4, and while at a B level of management there is only a 45% chance of improving income by a herd health program; there is virtually a 100% chance at the three other levels of herd health management.

The possibility of increasing income per cow by increasing veterinary expenses per cow is illustrated in Table 5.

The income per cow gradually increased as the money spent on a herd health program increased from $20 to $30 per cow. This appeared to level off at $35 per cow and further studies will be necessary to see if this is in fact true.

Herd health programs also create some benefits which were not measured in this study but are illustrated in Table 6.


### Summary

Herd health programs have been established as providing economic benefits to dairy farms in Ontario (Canada) and similar studies are being conducted in Australia (4). Documentation of these economic benefits will need to be continued in the future and the computer should prove to be most useful for some aspects of this work (5).


### References


1. Barfoot, L. W., J. F. Cote, J. B. Stone and P. A. Wright. An economic appraisal of a preventive medium program for dairy herd health management. Can Vet. J. 12: 2-10. 1971. – 2. Barfoot, L. W., J. F. Cote, J. B. Stone and P. A. Wright. An economic appraisal of a preventive medium program for dairy herd health management. Proceeding of the VI International Conference on Cattle Diseases, pages 284-293. – 3. Cote, J. F. Herd health practice. Can. Vet. J. 4: 181-184. 1963. – 4. Morris, R. S. The economic evaluation of a dairy preventive medicine programme. Victorian Veterinary Proceedings, 1968-69, pages 59-60. – 5. Madson, A. and P. Willeberg. Proceedings of the International Summer School on Computers and Research in Animal Nutrition and Veterinary Medicine. Elsinoie, Denmark. Printed by Frederiksberg Bogtrykkeri, Copenhagen 1972.

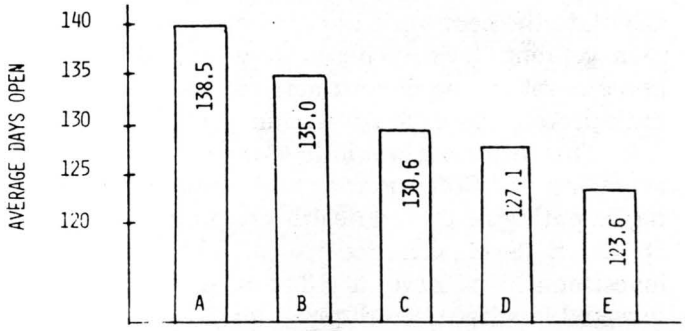




Figure 1. Average Days Open for Five Levels of Health Management.

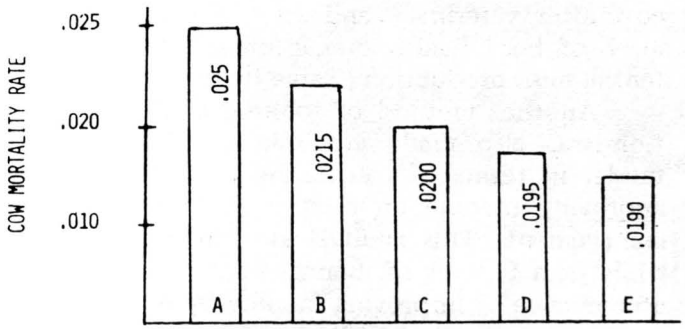



Figure 2. Average Cow Mortality for Five Levels of Health Management.

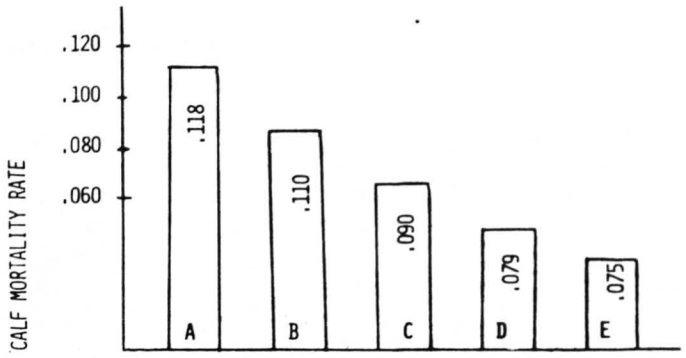



Figure 3. Average Calf Mortality Rate for Five Levels of Health Management.

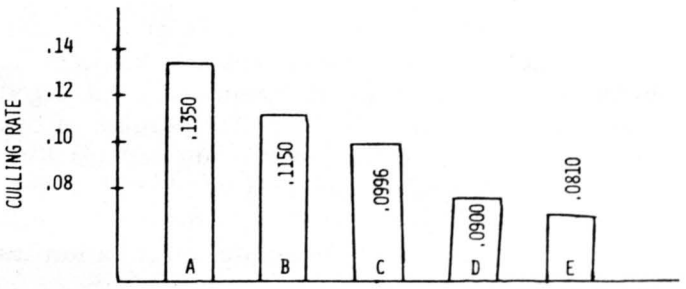



Figure 4. Average Culling Rate for Five Levels of Health Management.

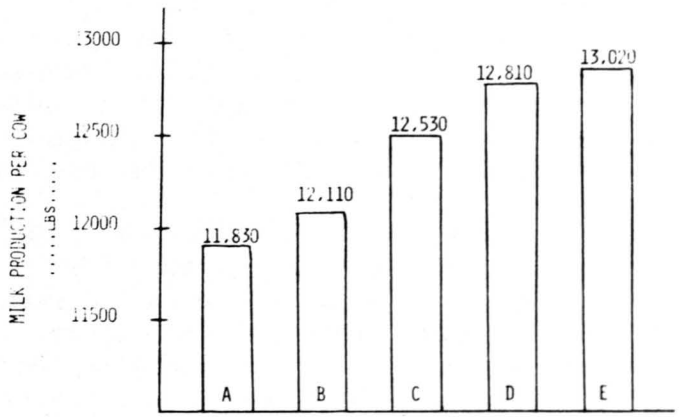
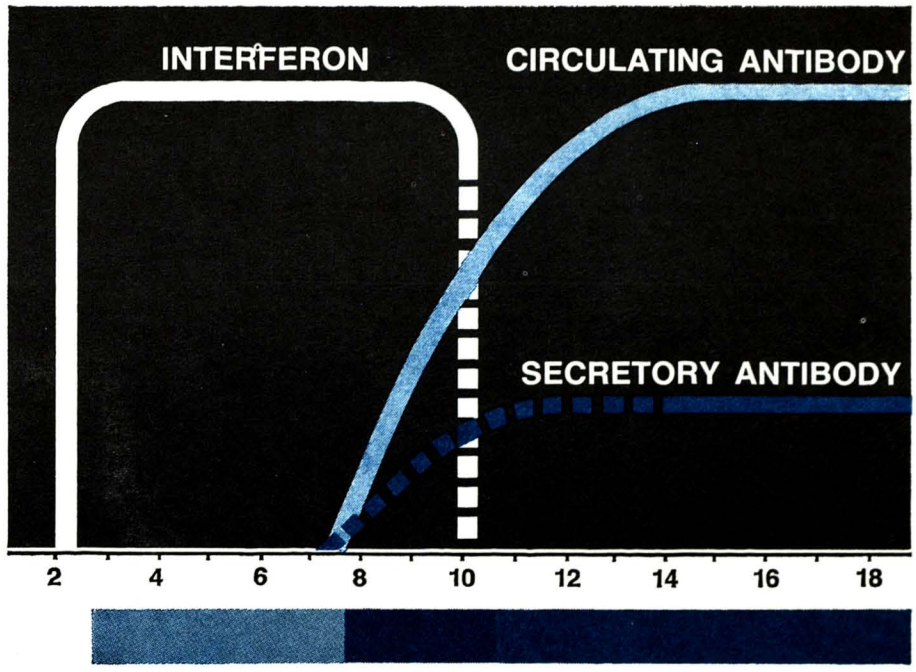



Figure 5. Milk Production Levels Per Cow for the Control Group and Four Response Levels to the Preventative Medicine Program.

Table 1

Veterinary Expenditures (including medication) for Five Response Levels of Dairy Herd Health Management

| Health Plan | Description | Expenditures on Veterinary Services and Supplies |
|---|---|---|
| A | Control group (emergency veterinary care only) | $8.00/cow |
| B | Minimum response leve to preventive medicine program | $20.00/cow |
| C | Average response level to preventive medicine program | $25.00/cow |
| D | Above average response level to preventive medicine program | $30.00/cow |
| E | Maximum response level to preventive medicine program | $35.00/cow |




INTERFERON NONSPECIFIC PROTECTION ANTIBODY PROTECTION

CHART SHOWS NUMBER OF DAYS POST VACCINATION

# NASALGEN™ IP 3 Lines of Defense Against Respiratory Disease

Because Nasalgen™ IP is administered intranasally, it offers IBR/PI-3 protection not available through other methods of vaccination.

1. **Interferon:** Resistance to IBR virus infection occurs within **40 to 72 hours** after vaccination—6 to 8 days earlier than from intramuscular vaccination. This coincides directly with the time high levels of interferon appear in respiratory secretions. These high levels remain until virus replication is halted by secretory and systemic antibodies.
2. **Secretory antibodies:** Invading viruses are neutralized before they can infect the intact epithelium. This puts protection where the problems start and can be best stimulated through intranasal vaccination.
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Table 2

Average Estimated Return on Investment for Four Levels of a Comprehensive Dairy Herd Health Management Program

| Health Management Level | Potential milk production | | | | |
|---|---|---|---|---|---|
| | 10000 | 12000 | 14000 | 16000 | 18000 |
| | Percent return on investment | | | | |
| B | 32.9 | 40.5 | 102.9 | 140.4 | 112.3 |
| C | 150.4 | 180.4 | 252.5 | 321.2 | 370.9 |
| D | 195.6 | 220.0 | 300.0 | 400.8 | 501.1 |
| E | 200.3 | 224.2 | 302.6 | 408.9 | 502.2 |

Table 3

Average Income per Cow After Veterinary and Drug Expenses

| Health Management Level | Potential Milk Production (lbs.) | | | | |
|---|---|---|---|---|---|
| | 10,000 | 12,000 | 14,000 | 16,000 | 18,000 |
| | $1 Cow | | | | |
| A | 371.35 | 462.21 | 533.11 | 611.07 | 680.62 |
| B | 374.09 | 465.37 | 543.39 | 626.36 | 691.75 |
| C | 393.60 | 488.47 | 571.00 | 660.67 | 737.53 |
| D | 409.06 | 505.17 | 594.09 | 692.66 | 784.24 |
| E | 419.05 | 516.35 | 608.20 | 713.87 | 808.30 |

Figure 5. Milk Production Levels Per Cow for the Control Group and Four Response Levels to the Preventative Medicine Program.

Table 4

Probability of Improving Income

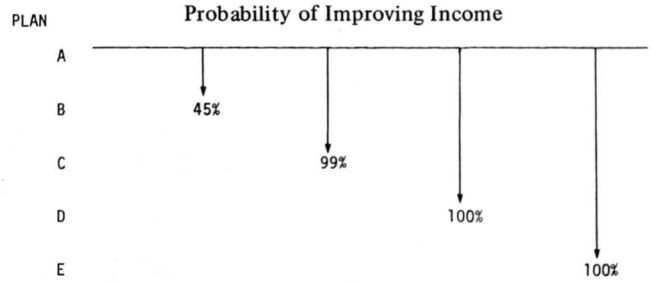


Table 5

The possibility of increasing income per cow by increasing veterinary expenses per cow is illustrated in Table V.

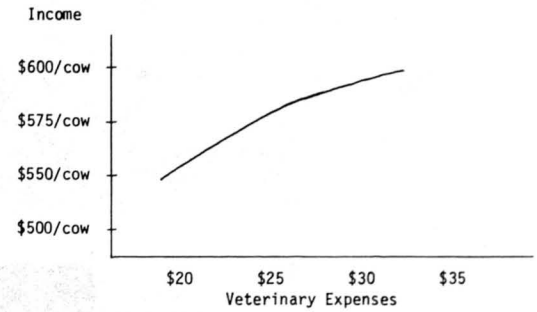


Table 6

Additional Unmeasurable Benefits

1. Improved Reliability in the Breeding Program.
2. Extension of Established Cow Families.
3. Improved Possibility for Upgrading the Herd

# The Evaluation

**Norman Magnussen**
*Dairyman*
*Lake Mills, Wisconsin*

Dr. Allenstein, friends of the dairy cow, it is true I am a dairy farmer. I am in the sale business, a cow jockey and a few other things but far from a speaker!

I have had to get my knowledge about the dairy cow from others and from personal experience and observation. If I have had any success in my day in the dairy cattle business, I must give a great amount of credit to the knowledge I gained from the men in your profession. It has been my good fortune over the years in working across the country in the sale business and before that as a test milker, as a herdsman, to meet probably some of the greatest men in your profession. It has been a terrific help to me and I wish that all herdsmen and farmers could have the same experience. It has been a great help to me, especially in herd management, in the sale management business and in the cattle trading business too. Times have changed since my day. I do think that the veterinary profession has improved itself. It improved the dairy picture more than any other profession in the agricultural field. I personally feel this way. My interest lies in the purebred dairy industry. I started as a 4-H boy and had a 4-H calf and stayed with it. I do want to just take a little bit of credit and give credit to you people and the registered dairy people.

Stockmen from Europe, South America and all over the world are coming to the United States