

STUDY ON MASTITIS, REPRODUCTIVE DISEASES OF DAIRY CATTLE AND PREVENTION – TREATMENT SOLUTIONS

Dairy cattle raising has been developing rapidly although there were some troubles. Total dairy herd was more than 110,000 heads in the whole country, of which there were 59,958 heads in Ho Chi Minh City (June, 2006). It exceeded the Governmental plan for dairy development. However, some provinces could not keep their dairy development program continuously. They had invested on many aspects concerning with dairy production, but their dairy herd has still dropped considerably. Dairy cattle can not give a normal production and reproduction under environmental, management conditions in these regions. Some reproductive diseases, such as: anestrus, repeat-breeding, retained-placenta, metritis... have been considered the main reasons of reproduction failure of dairy cattle. Relating to the less milk production, sub-clinical mastitis has been considered a major constraint by some previous surveys. However, these factors have not yet studied detaily and their economical loss have not yet evaluated concretely. So, the project aims at:

- Determining status and reasons of reproductive diseases and mastitis of dairy cattle.

- Proposing the prevention and treatment procedure for some main reproductive diseases and mastitis in order to increase profit of dairy farmers.

Some activities have been addressed in the project as followed:

1. Survey was carried out with 4,280 dairy cows among 7,454 heads of 715 small-holder farms in 9 provinces in order to find out epidemiology reasons of both diseases. Some techniques and methodology, such as: CMT, electronic mastitis detector, bacterial culture and antibiogram, blood-parasite test, ELISA-progesterone, ultrasound scan... were used. This indicated that:

- 41.7% dairy herd with different reproductive diseases included anestrus (59.2%), repeat breeding (12.8%), retained placenta (11.7%), vaginitis/metritis (4.9%), abnormal heat cycle (4.25%), dystocia (2.3%)... An average of 12.3% dairy herds infected clinical mastitis with a ratio of one clinical mastitis to seven subclinical mastitis.



Mastitis detector



Utilization of ultra-sonic apparatus for diagnostics



ELISA kit for determining milk progesterone

- Identifying main reasons of reproductive diseases: contaminated used water, unsuitable structure of cattle shed, poor hygienic condition in cattle shed, contaminated internal environment (water, air, and floor)... *E. coli*, *Streptococcus* spp, *Staphylococcus* spp, *Enterobacter* spp, *Pseudomonas* spp. were rather widespread.

- Main reasons of mastitis are considered as contaminated used water, unsuitable structure of cattle shed, poor hygienic condition in cattle shed, improper cleaning of milking machine and instruments, contaminated internal environment (water, air, floor, sand bedding)... Then 17 types of bacteria with antibiogram of each bacterium were also detected.

2. Prevention: Treatment procedure of some major reproductive diseases has been established basing on the results of six experiments/330 dairy cattle of this project and of the previous researches. These experiments aim to evaluate the effecting factors, namely levels of crude fibre in ration, Ca : P ratio and Se, some vitamins (ADE), complete ration for

reproduction, environment factors (hygienic conditions and temperature-humidity index in cattle shed), managements (hygienic A.I., using intra-uterin antibiotic pill after calving) for prevention. Treatment therapies (combining hormone CIDR/Cue Mate/PRID with antibiotic...) were carried out on 170 dairy cattle with different reproductive diseases.



CIDR



Cue Mate



PRID

The draft procedure has also been applied on 200 cows of 13 dairy farms in four regions (HCMC, Binh Duong, Ha Noi, Ha Tay) before completing the final procedure. All the dairy farms were applied the draft procedure had improved hygienic conditions, heat stress and most dairy cows had come earlier estrus (84.7 days in post-partum), easier conception (1.8 services/conception), lower rate of retained placenta and vaginitis/metritis (11,5% in comparison with 32,8% before applying). Due to positive effects, calving interval of trial dairy herd was only 13.4 months, 3.2 months shorter than control. Thus, there was one more calf and lactation in the whole-life of cow. Improved reproduction of dairy cows had increased profits for farmer about 74,231 VND/month. It was estimated that 1 VND invested to prevention – treatment procedure has brought back about 2.5 VND of profit.

3. Prevention-Treatment Procedure of Mastitis

Five intervention trials on 250 heads proved that rations with adequate ratio of fiber, Ca:P, selenium, vitamin ADE; hygienic milking, dry-off with specific antibiotic; reducing heat stress with sprinkle and cooling fan, monthly shed disinfection... had good preventive impact on mastitis for dairy cattle. Five treatment therapies with/without antibiotic on 232 cases showed that antibiotic and non-antibiotic therapies, intra-mammary infusion and injection should be combined for getting high efficiency.

Combining previous studies and current trials, the draft prevention – treatment procedure of mastitis had been prepared. Then, the draft procedure had been applied on 250 dairy cows at 13 farms in 4 major dairy cattle raising provinces. The results showed that:

- Hygienic condition had improved considerably with significant reduction of quantity of harmful bacteria in air, water and ground inside cattle shed.
- Temperature-Humidity Index (THI) in trial cattle shed was only distressed (81.5 of THI) in comparison with severe stress before applying. We have used timer for controlling operation period of fan and sprinkle, from 11:00 a.m. to 15:00 p.m. every day.
- Rate of clinical and sub-clinical mastitis during trial period were about 20% and 2.6%, respectively with 50% of sub-clinical mastitis reduction compare to before application. Due to effective prevention of the procedure, milk production had increased considerably, about 11-23.8% depending on different trial dairy farms. Higher milk yield reduced milk production cost, so farmer have obtained higher profit (VND 42,000/cow/month). It was estimated that 1 VND invested to the procedure of mastitis prevention has brought back about 2 VND of profit. Treatment procedure of clinical mastitis also brought high efficiency with treatment cost reduced VND 66,240/case by

early and exact detection, right using of

4. Specific software for management and analysis of reproductive diseases and mastitis of dairy cattle.



The software was developed by collaboration between veterinarians, experts of dairy production, computer programmers. It was prepared on Win-MySQL version 1.4. It can be shared between relative management organizations through internet. Data can be updated frequently and divided into two groups:

- Farm situation: general information, cattle shed, type of feeding and management, method of milking and dry-off, vaccination program, A.I
- Cattle information: all information relating to reproductive diseases, mastitis and reproduction of each dairy cow.

Basing on input data, the software will show out two reports concerning reproductive disease and mastitis. Two important information are status quo and all factors can affect infection of each case

CONCLUSIONS

The research program was a national independent project. It described rather detail status quo of mastitis and some reproductive diseases of dairy cattle in different raising conditions in Vietnam and created 3 important products:

- The procedure of diagnosis-prevention-treatment to some main reproductive diseases of dairy cattle.

antibiotic, short treatment period.

- The procedure of diagnosis-prevention-treatment to mastitis of dairy cattle.
- The software for managing and analysing factors affecting infection of reproductive diseases and mastitis of dairy cattle.

Applying these results on dairy farms in some main regions has brought back useful and economical efficiency contributing to stable development of dairy industry in Vietnam.