DISEASE MONITORING AND EXTENSION SYSTEM FOR THE SOUTH AFRICAN DAIRY INDUSTRY

Disease Trend Report: September 2014

A Milk SA Project

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This report was prepared by Dr Danie Odendaal of Veterinarian Network in support of the Disease Monitoring and Extension System for the South African dairy industry.

All information contained in this report is based on informal disease reporting and the herd veterinarian must be consulted before any specific disease prevention or treatment actions are taken, based on the information contained in this report.

This report is provided to dairy farmers in support of better herd health management with the understanding that neither the author/s nor the organisations involved accept any liability whatsoever with regard to any statement, fact or recommendation made in this report.

RuVASA
Ruminant Veterinary Association of South Africa
Herkouer Veterinêre Vereniging van Suid-Afrika

Service Providers and co-workers

Veterinarian Network Veearts Neteork

MILK SOUTH AFRICA / MELK SUID-AFRIKA

MELKPRODUSENTE-ORGANISASIE
MILK PRODUCERS’ ORGANISATION
1. Preface

*Early disease detection*

Disease monitoring starts at the place where cattle spend their time feeding (pasture or zero grazing) and resting. The workers who look after the cattle play a crucial role in the identification of the first signs of disease because they have the opportunity to observe the animals over an extended period of time while they are eating or resting.

Every type of disease follows a different but definite development process and the very first signs of disease must be identified in order to correctly identify the disease, initiate action and minimise losses.

The livestock workers who spend a lot of time with the cattle will be the best persons to recognise the first signs of disease as soon as they become visible. Although dairy cattle in milk are also monitored at least twice a day before, during and after milking, many of the subtle signs of disease will be missed during this time, when the animals are disturbed. New computer technology is increasingly being used during milking to also identify animals that show changes in behaviour and production parameters. The findings of these observations must be combined with the visual observations made by the livestock workers in order to be interpreted correctly.

To illustrate a typical disease development process the development of pneumonia will be used as a practical example of the visible signs (can be observed) and the invisible damage that takes place over a period of time.

Time is the limiting and pivotal factor in determining the outcome of a disease.
No signs of disease can be seen and the animal looks healthy and is eating.

The first sign of disease is coughing and a watery discharge from the nose. The ears are hanging and the animal starts to eat less.

The nasal discharge becomes yellow and thick. The animal stands with a lowered head and falls behind the herd when they are driven.

The animal is struggling to breathe through its nose, straining the belly and ribcage to breathe out. It lies down and is too weak to get up and in most cases the animal dies.

Germs (bacteria and viruses) from the air or upper airway are inhaled. Normally the body will trap these germs in the slime covering the smooth lining of the nose and windpipe. This slime will then be coughed out to get rid of the germs. Due to factors like cold, wind or dusty conditions the lungs can’t get rid of the germs and they start to multiply in the lungs.

Because of the very favourable environment for growth provided in the lungs, the number of germs multiplies fast and is now 10 times more. The multiplying germs start to damage the lungs. The animal’s own defence system now starts to react, attracting white blood cells to the lungs in order to kill the germs. This defence reaction causes fever – temperature above 40°C.

The number of germs is now 1000 times more. The germs and the body’s own defence reaction cause damage to large parts of the lungs - normally a very soft and delicate organ. The transfer of oxygen to the blood is now severely reduced. The animal has a fever with a temperature above 40°C.

The millions of germs and pus that were produced by the body’s defence reaction have destroyed the largest part of the lungs. The lungs can no longer function and the animal dies due to lack of oxygen. When the animal is opened up after death the lungs are very hard and dark red and sometimes filled with yellow pus.
Daily observation by the livestock worker

• Structured daily observation by the livestock worker forms the first line of defence against loss caused by diseases.
• A practical system is needed to evaluate the working of each body system on a daily basis.
• The effective working of each body system is needed for optimal production.

A unique daily observation system was developed by Afrivet Training Services specifically to enable early disease detection and the immediate initiation of action.

As part of this disease monitoring and extension system Milk SA will sponsor Daily Observation Cards that can be used by livestock workers in the field to record the first signs of disease spotted in individual cows.

• Laminated Daily Observation Cards (DOC’s) will be made available to all dairy farmers who register on the disease monitoring and extension system of Milk SA.
• These cards are used by the livestock workers who take care of the cattle and any observation is recorded on the cards which are then sent back to the office/parlour when the cows go for milking, in order to initiate action that can involve closer examination of that animal after milking.

On the next page is an example of a Daily Observation Card
Daily observation

- Behaviour
- Eyes
- Ears

- Mouth
- Nose

- Rumen Fill

- Skin/hair
- Chest
- Abdomen

- Drinking
- Breathing

- Condition
- Eating
- Chewing
- Swallowing

- Neck/breast
- Front Legs & Feet
- Back Legs & Feet

- Standing
- Lying

- Backline

Tail

Neck/breast

Dung

Teats

Milk

Udder

Urine

Vulva

Skin/hair

Chewing

Drinking

Breathing

Condition

Standing

Eating

Front Legs & Feet

Back Legs & Feet

Tail
What a livestock worker will actually be able to observe when using a structured observation system

**Start of Infection**
- **Head up**
- **Behaviour**: Clean dry
- **Eyes**: Alert
- **Ears**: Clean
- **Mouth**: Clean
- **Nose**: Smooth
- **Condition**: Normal
- **Eating**: Normal
- **Breathing**: Normal
- **Drinking**: Normal

**1-2 Days later**
- **Head down**
- **Behaviour**: Tear Eyes Ear Slightly open
- **Discharge**: Eyes Ear Hang
- **Mouth**: Clean
- **Nose**: Dry
- **Condition**: Less
- **Eating**: Less
- **Breathing**: Faster movement of the chest
- **Drinking**: Normal

**3-4 Days later**
- **Head down**
- **Behaviour**: Eyes Ear Hang
- **Discharge**: Eyes Ear Hang
- **Mouth**: Slightly open
- **Nose**: Watery discharge
- **Condition**: Lower
- **Eating**: Much less
- **Breathing**: Laboured, using chest and abdomen to breathe out
- **Drinking**: Less

**5-6 Days later**
- **Head down**
- **Behaviour**: Eyes Ear Hang
- **Discharge**: Eyes Ear Hang
- **Mouth**: Hangs open
- **Nose**: Mucous discharge
- **Condition**: Much lower
- **Eating**: Stop eating
- **Breathing**: Stop ruminating
- **Drinking**: Stop

Stages of Pneumonia:
- **24 Hour window for early treatment**
- **Bacterial infection of the lungs**
In the previous issues of this report we had a look at the identification of the problem. The conclusion was that there must be a system in place to identify the level of lameness, and to record the type of lesions during routine claw trimming or examination by a veterinarian.

Now we will continue by giving an overview of the losses that can be suffered due to lameness in order to establish priorities in the prevention or treatment of these cases.

Losses due to lameness can be broadly classified in three categories.

- **Direct**
  - Immediate visible losses especially in milk production and cost of treatment.

- **Indirect**
  - Longer term effect on especially reproduction, longevity and premature culling.

- **Welfare**
  - General health and wellness of dairy animals and reputation of the industry.
### Direct
Immediate visible losses especially in milk production.

- The direct negative effect on milk production is simply due to the decrease in intake of food. These cows spend less time eating and more time resting or taking weight off the affected leg or foot.

Research in zero grazing systems has shown that these cows stand up later than other cows when new food is delivered and then go and lie down earlier than healthy cows.

- Direct cost of treatment of affected animals.

### Indirect
Longer term effect on especially reproduction, longevity and premature culling.

- The indirect effect on cycling (showing visible signs of standing heat), and specifically conception is also very significant and will impact on the inter-calving period.
- In many cases reproduction failure combined with chronic lameness will lead to premature culling of many of these animals.

Internationally there is a specific focus on lengthening the life and production lifetime of a dairy cow in the herd as one of the main drivers to increase profitable production and decreasing the very high cost attributable to replacement heifers.

### Welfare
General health and wellness of dairy animals and reputation of the industry.

- Intensive or chronic pain has a negative effect on the general health and resistance of animals.
- This can also even have an effect on the increase of diseases like mastitis because it changes the behaviour of animals, for instance they will be lying down sooner after milking (when teat sphincter is still open) than healthy animals.

Providing evidence of good animal welfare will become a standard for market access.
Lameness Management Plan

This is an initiative to get role players together in order to place some focus on awareness regarding the importance of lameness management. A first meeting of role players was held and the following initial plan of action was proposed:

- Increasing the involvement of veterinarians in identifying the causes of lameness and closer working relationship with the people providing professional hoof care services.
- Using and adapting the international models developed for improved claw care and the prevention of lameness for use under South African conditions.
- Initiate local studies to simply demonstrate the cost or loss of production caused by lameness.

Any other role players who would like to join this initiative are hereby invited to please contact us.
Jaco de Bruin: 0828546970
Jackie Tucker: 0825712165
Danie Odendaal: 0824540532

Local Studies

- Using local data recorded during routine hoof trimming, performance testing and pregnancy diagnosis to determine the production loss caused by lameness under South African conditions.
- This will be done for cows becoming lame during different stages of the production cycle.
Anaplasmosis remains a problematic disease for the dairy industry with two syndromes that need to be managed:

• New infections and disease in susceptible animals.
• Flaring up of the infection in carrier animals that normally have immunity against the disease.
The importance of local knowledge and results.

Anaplasmosis is a very good example where disease management must be adapted according to the disease status within a specific geographical area.

1. Disease reporting from the dairy farmer to the herd veterinarian is the only way in which the occurrence and importance of a disease like this one can be established for a specific geographical area and for a specific farm.
2. The overview generated by illustrating this data can then be used by the herd veterinarian to identify farms under the same environmental conditions where the disease is well controlled versus farms where it is an on-going problem.

When dairy farmers report diseases seen during the month to the herd veterinarian an overview of disease distribution can be developed to determine importance and priority.

When dairy farmers report diseases seen during the month to the herd veterinarian a

overview of disease distribution can be developed to determine importance and priority.

**Augustus 2014**

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Monthly disease reporting to the herd veterinarian then also builds up a history that can be viewed for one farmer for a specific disease like anaplasmosis over a period of time.

**Client 6: history over 2 years**

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The importance of local knowledge and results.

Monthly reporting by the dairy farmers to the herd veterinarian provides the opportunity to compare effective management of a specific disease between farms. In many cases and especially in the case of anaplasmosis, which is a very complex disease to control the veterinarian will need this information.

There is no single approach to the management of anaplasmosis in dairy herds. Control is based on results obtained over time within a specific geographical area.

The future of effective disease control in dairy herds will be based on the availability of the monthly disease occurrence and the analysis of this distribution over a period of time.

### Anaplasmosis distribution over 2 years in this area

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A DISEASE MONITORING AND EXTENSION SYSTEM FOR THE SOUTH AFRICAN DAIRY INDUSTRY
5. Call for Registration

We are continuing with the call for dairy farmers to register on the system in order to establish the dedicated, interactive communication channel needed between dairy farmers and their herd veterinarians.

As discussed in the previous report a new approach will be followed by adding a paper based disease reporting system that can be used by the farmer to report monthly disease occurrence to the herd veterinarian.

This is to provide farmers and veterinarians with a form that can be printed and used on the farm, by the farmer to record disease conditions and add comments.

This is a very practical form, easy to use and it can then be shared with the veterinarian when they visit the farm.

This is the most basic starting point but in our experience will progress to an electronic reporting system once the farmers and veterinarians understand the value of the information obtained.

If basic information about disease occurrence is not shared with your herd veterinarian, structured disease prevention strategies cannot be put in place, and you will continuously have to deal with disease emergencies as and when they occur.

A DISEASE MONITORING AND EXTENSION SYSTEM FOR THE SOUTH AFRICAN DAIRY INDUSTRY
## Disease Monitoring and Extension System for the South African Dairy Industry – A Milk SA Project

<table>
<thead>
<tr>
<th>Month and year</th>
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<th>Farm</th>
<th>Name of manager</th>
<th>District/Town</th>
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<th>Herd Veterinarian</th>
<th>E-mail</th>
<th>Contact number</th>
<th>Veterinarian-Network contact number</th>
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</table>

1. Go down the list of disease conditions or disease causing factors.
2. Please select and mark the ones that caused clinical cases, production losses or problems during the month. Mark as 1, 2 or 3 according to degree and priority of the problem. See scale in the column to the right.
3. If it was not a problem leave the block next to the specific disease-causing factor open.
4. If any other disease/problem occurred and it is not mentioned in that segment, please add it in the space provided.
5. If any specific diseases or conditions were marked and more information needs to be supplied, it can be done at the end/reverse side of the form where the 5 most important diseases or tendencies for the month can be described.
6. Please share this information with your herd veterinarian during a herd visit or send it to the practice at the end of the month.

### Internal Parasites
- Intestinal roundworms
- Resistant roundworms
- Tape worms
- Liver Fluke worms
- Conical Fluke worms

### External parasites
- Blue ticks
- Resistant blue ticks
- Heartwater tick
- Brown ear-tick
- Bont-legged tick

### Tick-borne diseases
- African redwater
- Asiatic redwater
- Anaplasmosis
- Heartwater

### Insect transmittable diseases
- Lumpy skin disease
- Three-day-stiffness
- Rift valley fever

### Venereal diseases
- Vibriosis
- Trichomoniasis

### Other bacterial, fungal, protozoal or viral diseases
- Blackleg/Quarter evil
- Bovine malignant catarrh
- Rabies
- Enzootic Bovine Leucosis
- Warts

### Poisoning
- Tulip poisoning
- Prussic acid poisoning
- Urea poisoning

### Macro nutritional problems
- Low condition
- Acidosis
- Urea poisoning

### Micro nutritional problems
- Copper
- Zink
- Selenium

### Environmental conditions
- Available grazing
- Heat stress
- Vitamin A

### Multi-factorial disease conditions
- Lung infection
- Diarrhoea
- Eye problems
- Abscesses

### Metabolic disease conditions
- Ketosis
- Milk fever
- Dystocia
- Metritis

### Reproductive disease conditions
- Abortion
- Poor conception
- Lameness
- Navel ill

### Dairy specific disease conditions
- Mastitis-infectious
- Mastitis-environmental
- Eye problems

### Calf diseases
- Lung infection
- Diarrhoea
- Navel ill

### Retained afterbirths

### Name other diseases not on the list.

### Poisoning

### Macro nutritional problems

### Micro nutritional problems

### Environmental conditions

### Multi-factorial disease conditions

### Metabolic disease conditions

### Reproductive disease conditions

### Dairy specific disease conditions

### Calf diseases

### Name other diseases not on the list.
Further description of the 5 most important diseases or problems that occurred during the month. The diseases have been marked already, please supply more information about the conditions and the severity of the disease in order to get the full picture.

<table>
<thead>
<tr>
<th>Disease or problem</th>
<th>Age or production group affected</th>
<th>Number of animals affected</th>
<th>Describe the conditions and the severity of the disease or problem to give the herd veterinarian better insight into the problem.</th>
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<tbody>
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</table>
Monthly general disease reports and disease distribution maps as reported by the Ruminant Veterinary Association of South Africa. This represents the country wide occurrence of diseases as informally reported by veterinarians for all livestock species.

See the full report on the website of Milk SA by opening the following link (www.milksa.co.za/content/project-reports), which gives an overview of all the general disease trends for August 2014, as reported by the veterinarians.

There are also maps that give an indication of the distribution of the different diseases as reported during August 2014.

Coming Soon

Dairy Farmers Registered on die Disease Monitoring and Extension System will also have access to an electronic searchable map that shows disease distribution per disease per month. This will be a “live map” and will be updated in real time as and when new disease reports are added by veterinarians.
You are invited to look at the short video on the webpage of Milk SA that gives an overview of the need, and working, of the disease monitoring and extension system.