

24<sup>e</sup>



# Symposium sur **les bovins laitiers**

*De fibres  
et d'eau fraîche...*



24<sup>e</sup>



# Symposium sur les bovins laitiers

*Prochain conférencier*

*Éric Martineau*



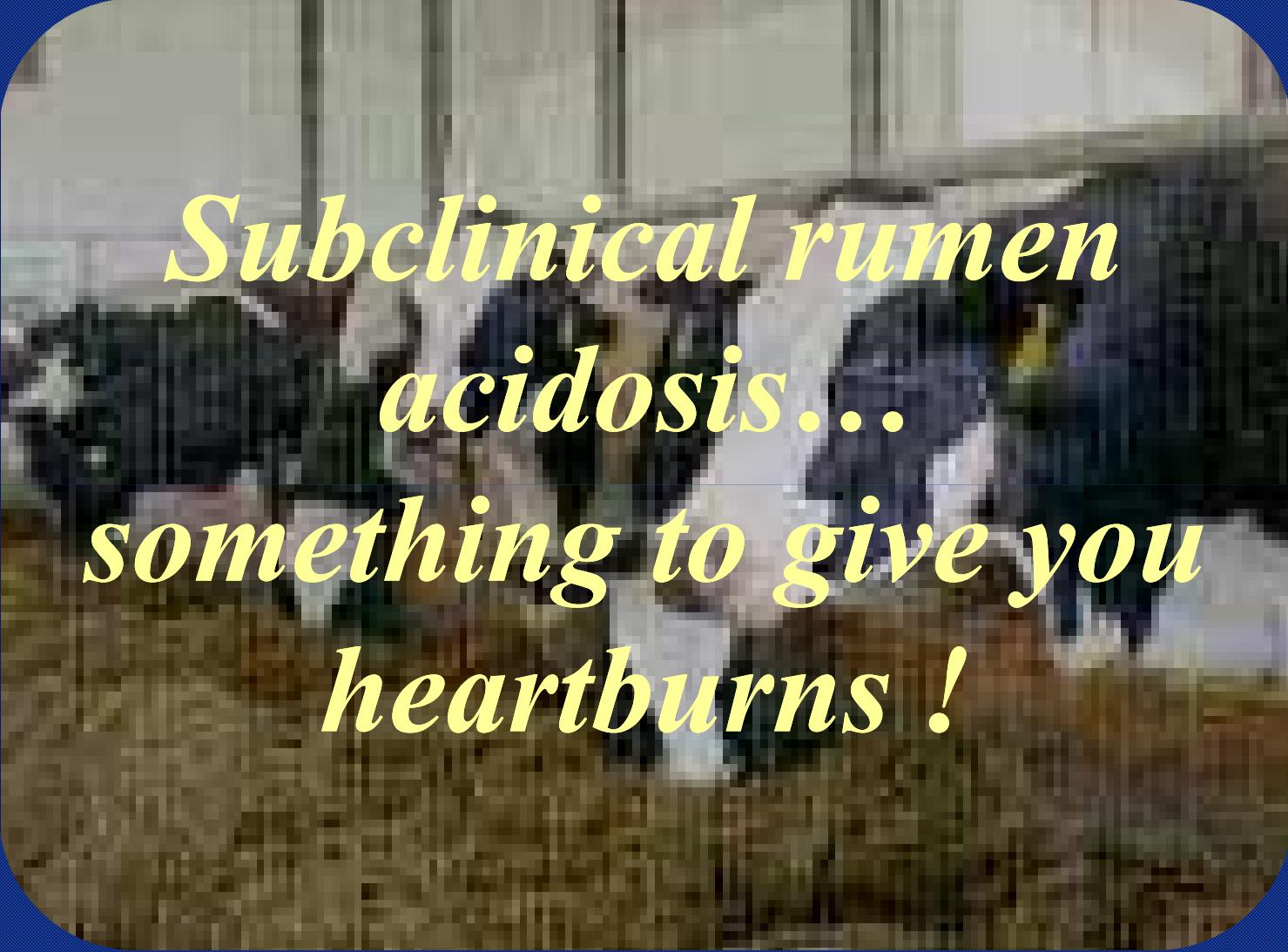
24<sup>e</sup>



# Symposium sur les bovins laitiers

*Subclinical rumen  
acidosis...  
something to give you  
heartburn*





*Subclinical rumen  
acidosis...  
something to give you  
heartburns !*

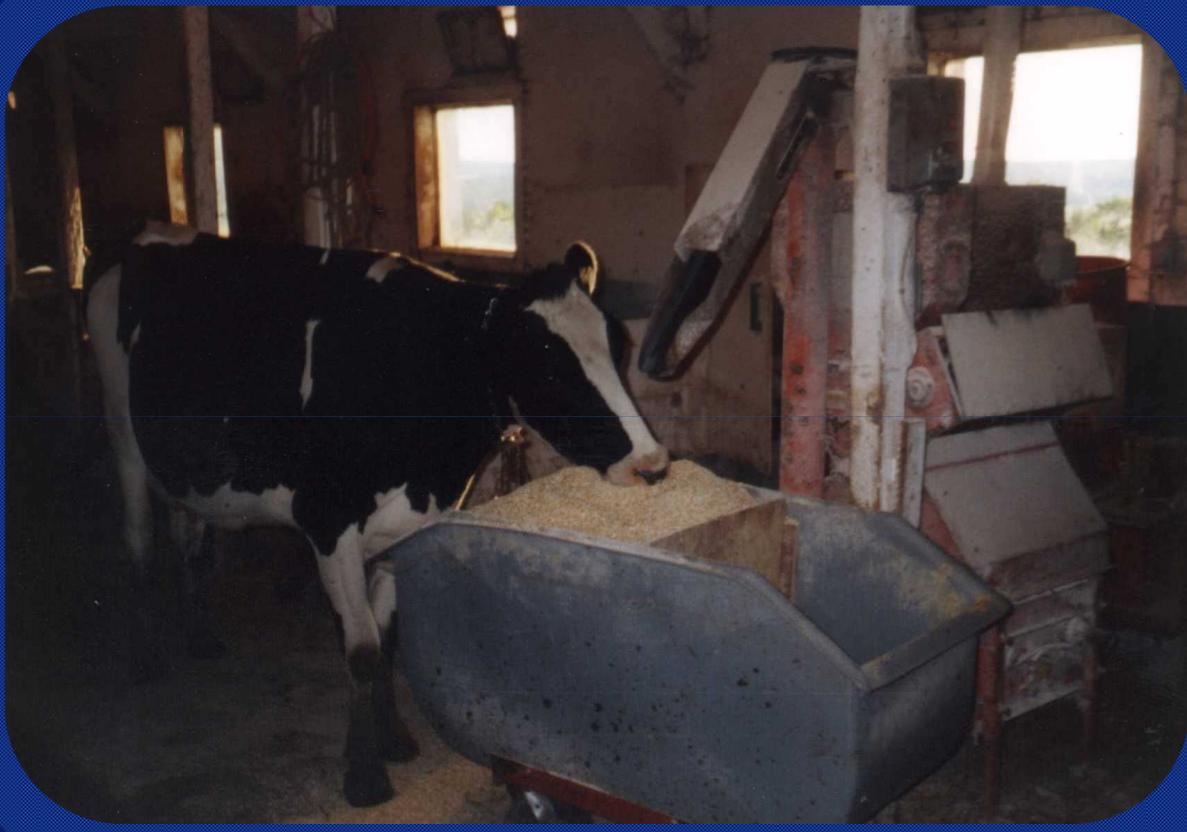
# Subclinical ruminal acidosis



- frequent disease in high producing dairy herds
- costly disease
- why veterinary intervention:
  - difficult diagnosis
  - until recently, no reliable diagnosis method



# What is subclinical rumen acidosis...

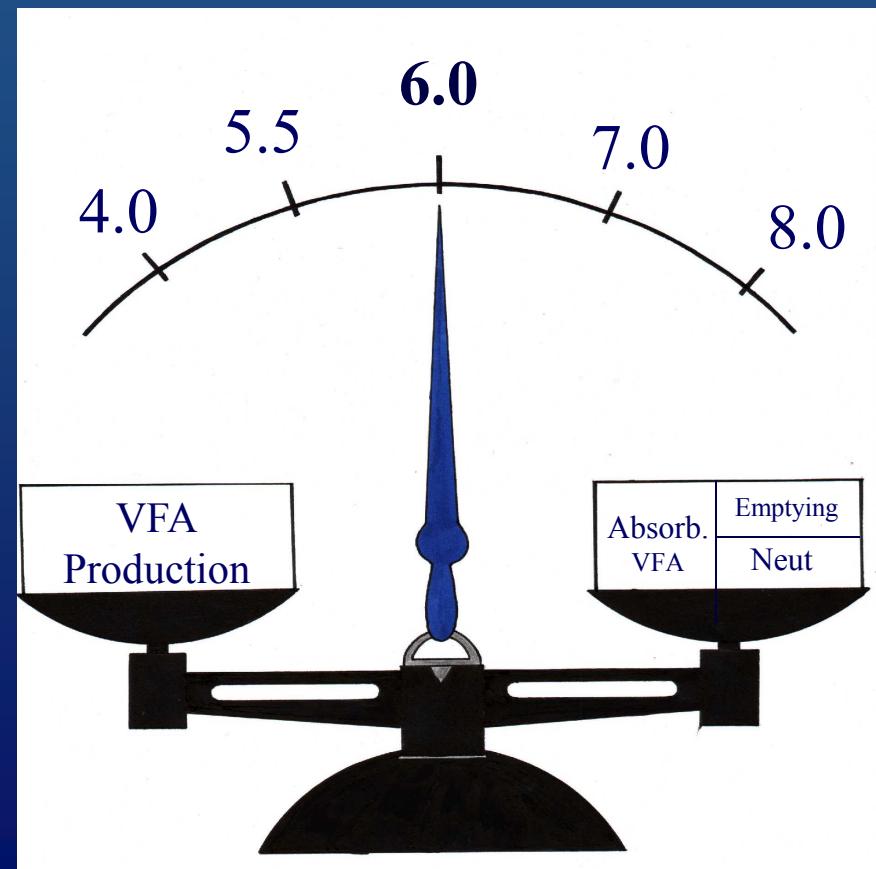


Simulation : This cow is a professional, do not try at home.

# What is subclinical rumen acidosis...

- overproduction of VFA
- lack of:
  - absorption
  - emptying
  - neutralization

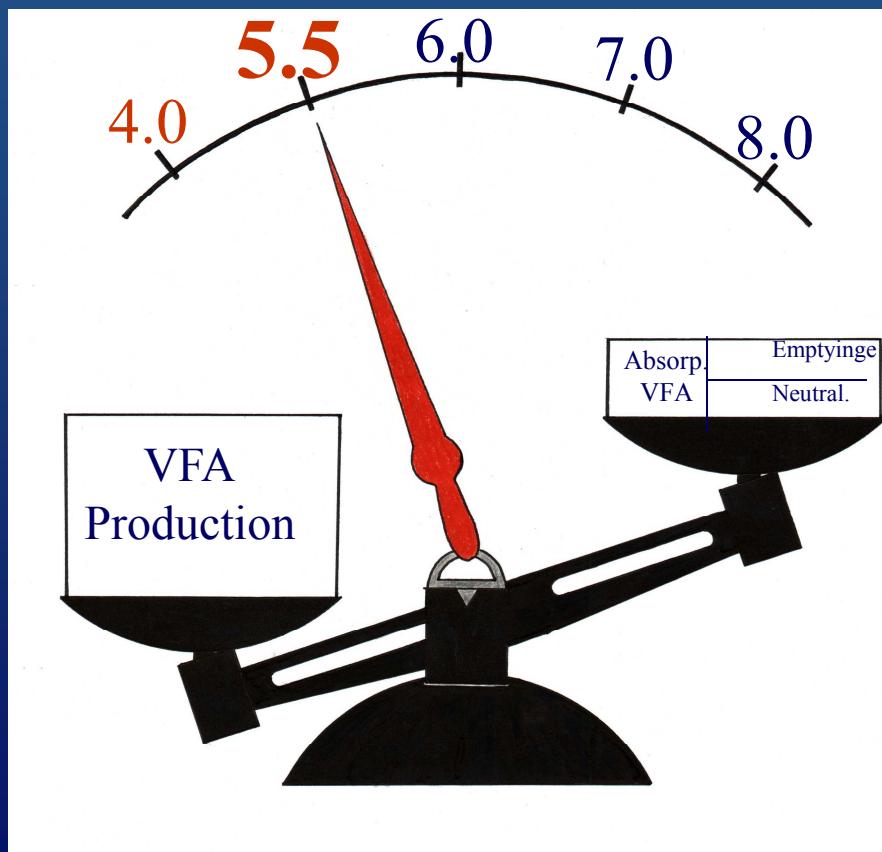
→ Drop in pH



# What is subclinical rumen acidosis...

→ Drop in pH

- Decreased efficiency of fiber digestion
- not low enough to induce acute clinical signs



# Clinical signs, consequences and symptoms

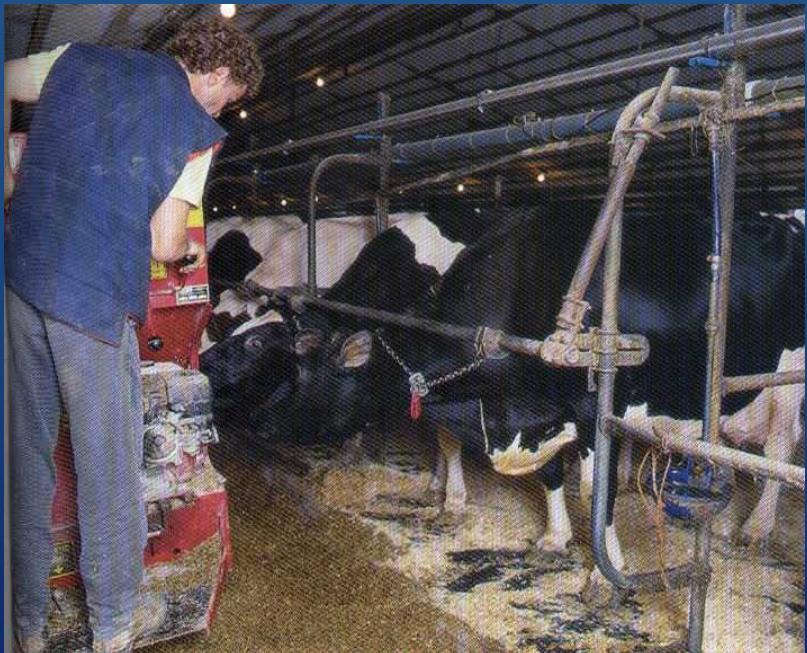
- The clinical signs:

- numerous
- can have many other sources
- are not exclusives
- are not constants

**CLINICAL SYNDROME !**



# **Subclinical acidosis: clinical syndrome...**



Producteur de lait québécois, avril 2000

## 1) Decrease in DM intake

- the most frequent observation
- decrease in feed efficiency
- difficult to measure



# **Subclinical acidosis: clinical syndrome...**



## **2) Manure consistency**

- variable
- more often, less solid
- gastro-intestinal tract irritation



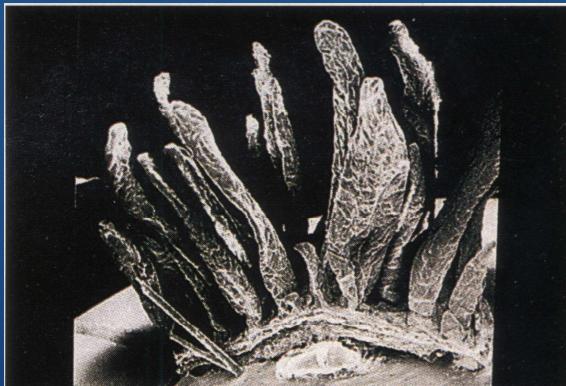
# **Subclinical acidosis: clinical syndrome...**



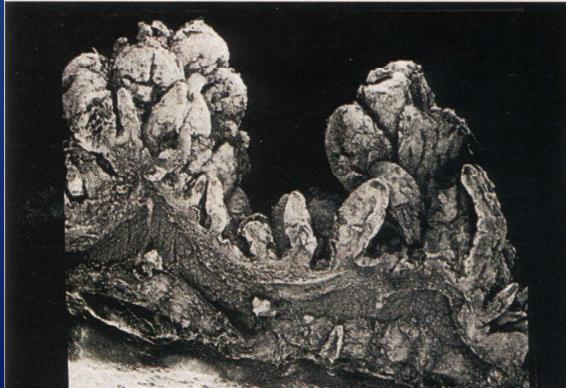
## **3) Thin cows**

- poor body condition score
- adequate energetic density of the ration

# Subclinical acidosis: clinical syndrome...



*The normal rumen lining (top) changes with acidosis (bottom).*



Bov. Vet., Sept. 1994

## 4) Rumen papillae alteration

- responsible for VFA absorption
- morphological alteration

**acid burned papillae**



# Subclinical acidosis: clinical syndrome...

Papillae alteration...



- spectacular manifestations
- aneurysms/ pulmonary abcesses



- hemoptysis and epistaxis



# Subclinical acidosis: clinical syndrome...



Paul Baillargeon, DVM

## 5) Laminitis complex

- many other causes
- alteration of the rumen permeability

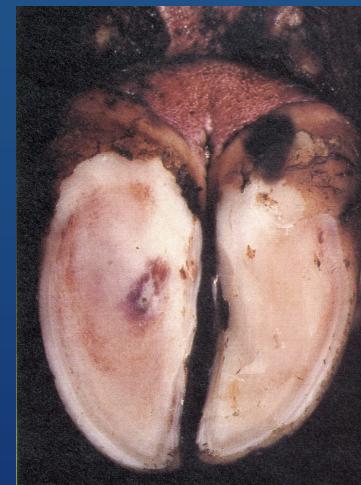
# Subclinical acidosis: clinical syndrome...

## Laminitis...

- vasoactive substances and bacteria



Espinasse, 1984



Espinasse, 1984

- sole is softer
- hemorrhage of the sole



# Subclinical acidosis: clinical syndrome...

Laminitis...

- sole abcesses



Espinasse, 1984



- grooves on the hoof

# Subclinical acidosis clinical syndrome...

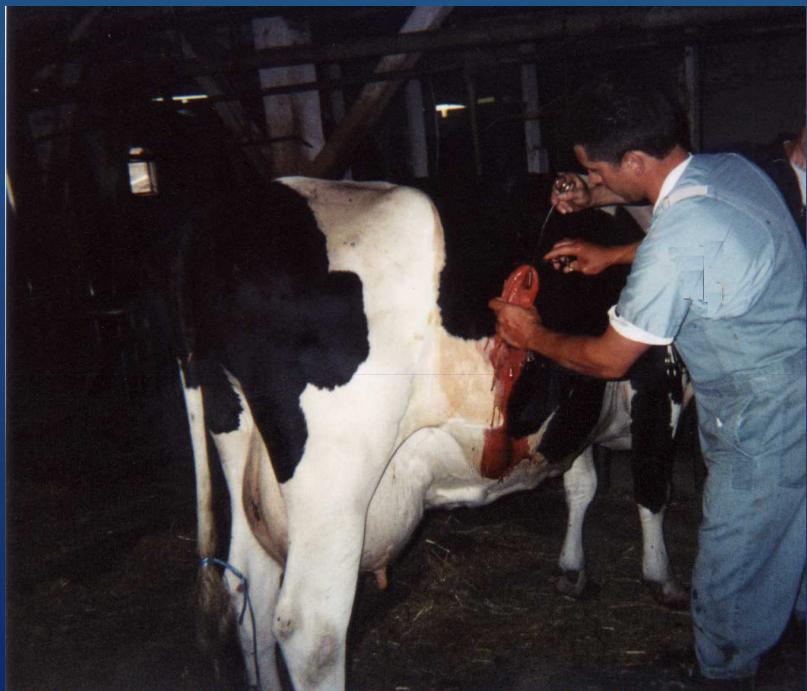
## Laminitis...

- white line separation
- outgrowth of the lateral claw



- grooves on the hoof
- growth of 1/4" per month

# **Subclinical acidosis: clinical syndrome...**



## 6) Diseases of the 4<sup>th</sup> stomach(abomasum)

- decrease of DM intake
- lack of fiber
- clinical observation



# Subclinical acidosis: clinical syndrome...

## 7) Lower butterfat test

- Other factors:
  - fat in the ration, type and quality
  - ionophores
  - genetic...
- Strongly correlated with rumen acidosis

NOT ALWAYS CONSISTENT WITH RUMEN ACIDOSIS



# Subclinical acidosis: clinical syndrome...



Producteur de lait québécois, janvier 1994

## 8) Elevated cull rate

- Up to 45% per year
- For various and not well defined reasons



# **Subclinical acidosis incidence versus lactational stage**

**2 critical period**

3 to 20 days after calving

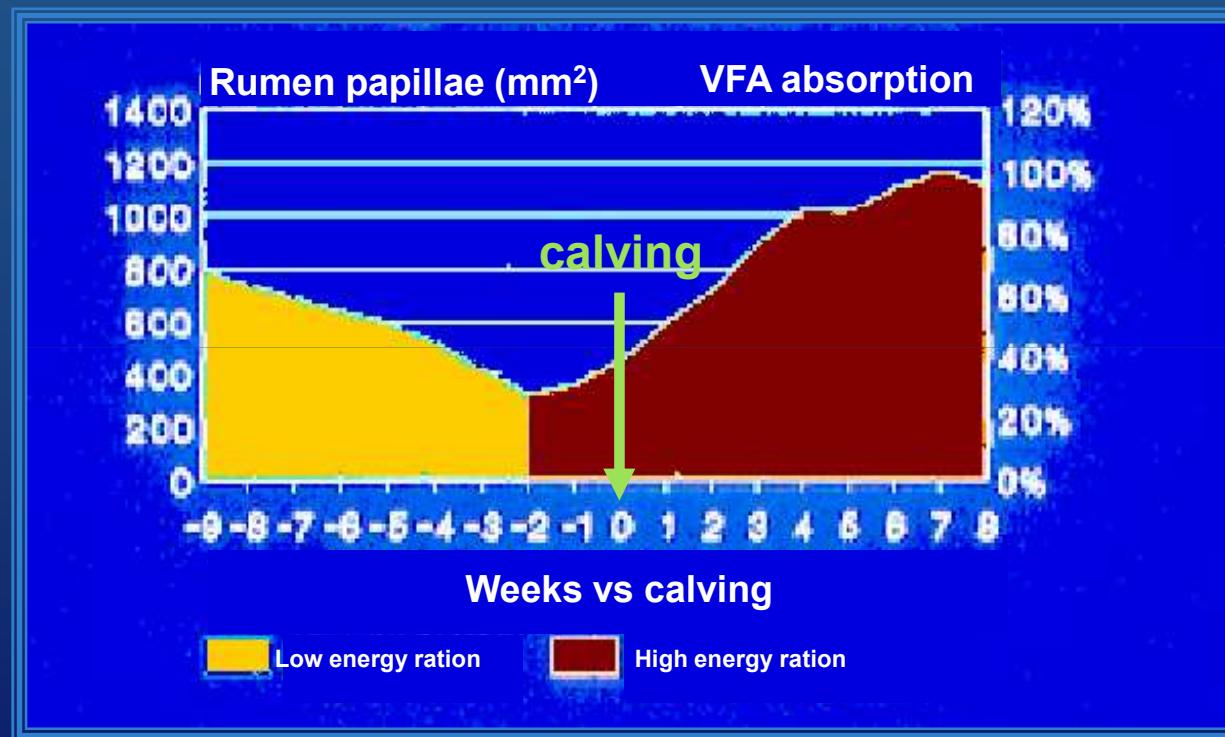
Close –up ration

40 to 130 days after calving

Group 1 ration



# Subclinical acidosis incidence...



# Suclinical acidosis incidence...

The 3 to 20 days in milk period  
calving preparation

1) rumen microflora:



cellulolytic bacteria

2) Rumen papillae growth:



amyloytic bacteria

10 mm<sup>2</sup> per papillae

4-6 weeks

60 mm<sup>2</sup> per papillae



# Subclinical acidosis incidence...



Producteur de lait québécois, avril 2000

- The 3 to 20 days in milk period

- **DECREASE IN DM INTAKE**

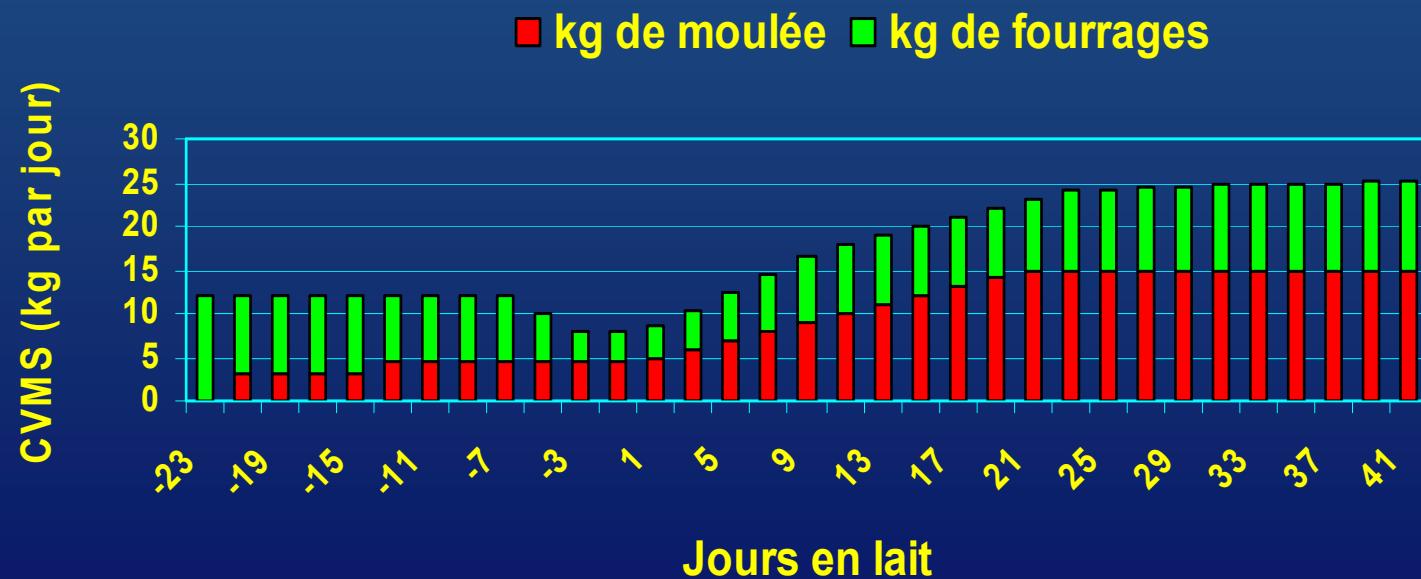
- no matter the ration preparation for calving
- hormonal effect
- prefers concentrates compare to forages



# Subclinical acidosis incidence...

Decrease the DM intake...

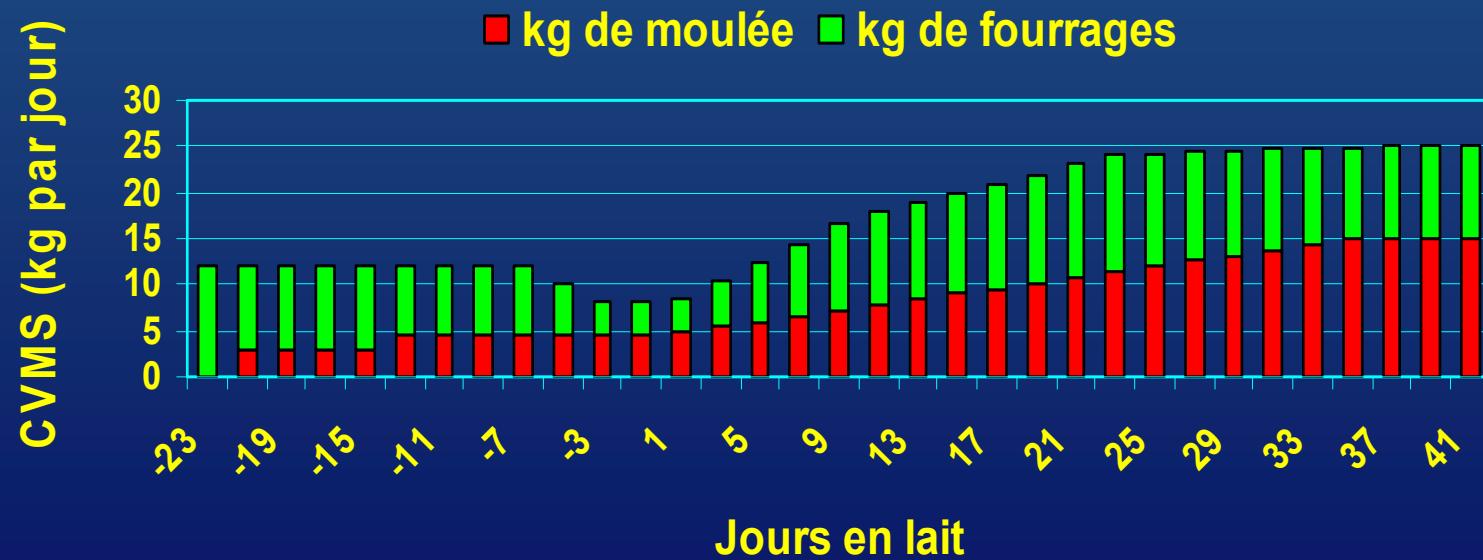
Rapid increase of concentrates (+0,5 kg/day)



# Subclinical acidosis incidence...

Decrease in DM intake...

Gradual increase of concentrates (+0,3 kg/day)



# Diagnosis...

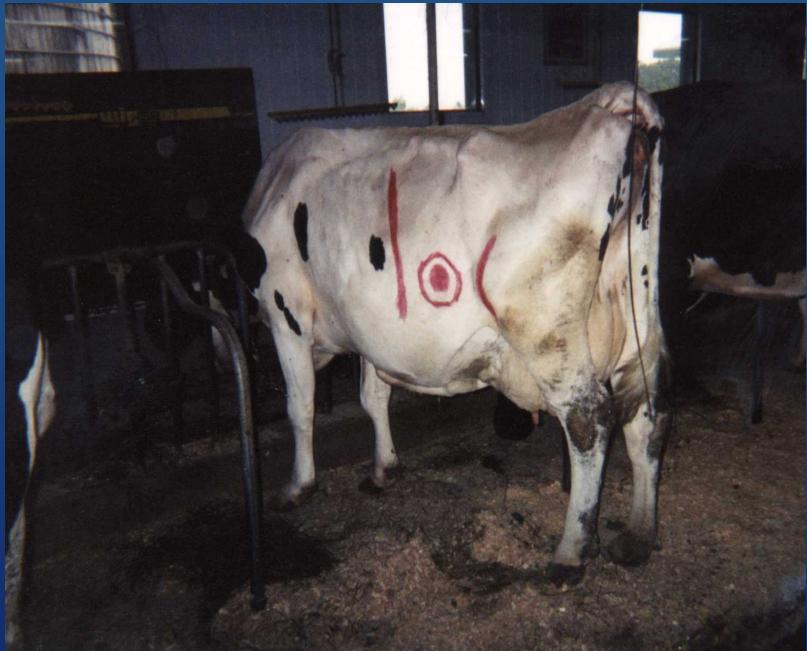
- Forage particle size analysis...

Penn State Shaker



	Corn silage	Hay silage	TMR
Top	< 5 %	< 10 à 15 %	> 10 %
Middle	> 50 %	> 40 %	> 30 %
Bottom	< 50 %	< 40 %	< 50 %

# Diagnosis...



## Ruminocentesis :

- Ruminal juice tap
- pH measure on the farm



# Diagnosis...

## Ruminocentesis...

- Tail restraint by an assistant
- Minimal risk for the animal and people



- minimal aspiration

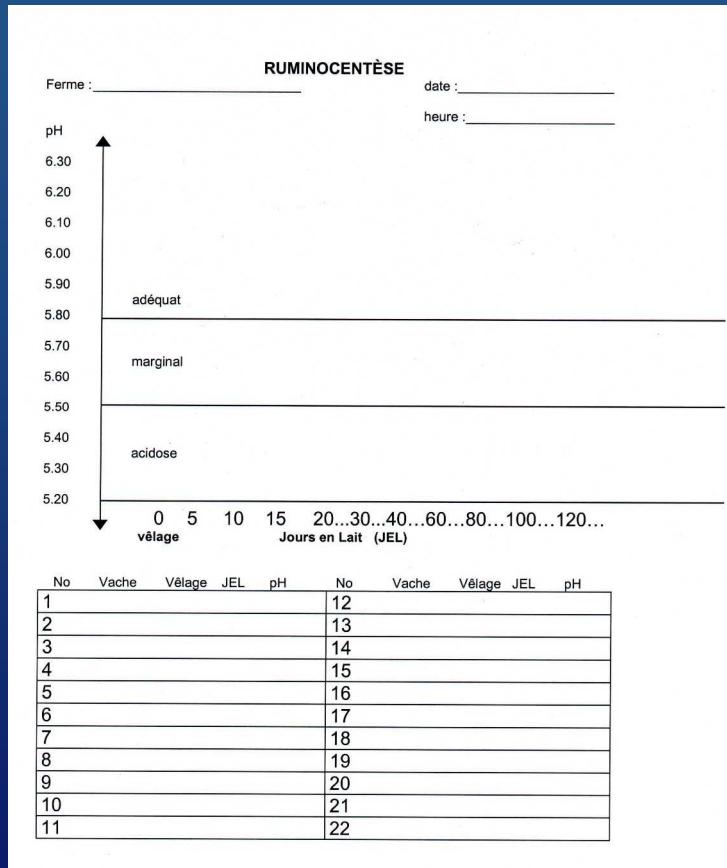
# Diagnosis...

## Ruminocentesis...

pH measure with  
portable pHmeter



# Diagnosis...



## ● Ruminocentesis...

### ● Groups :

- 10 cows or more in each group
- if more than 30% of the cows below 5.5

## ACIDOSIS



# Clinical case 1

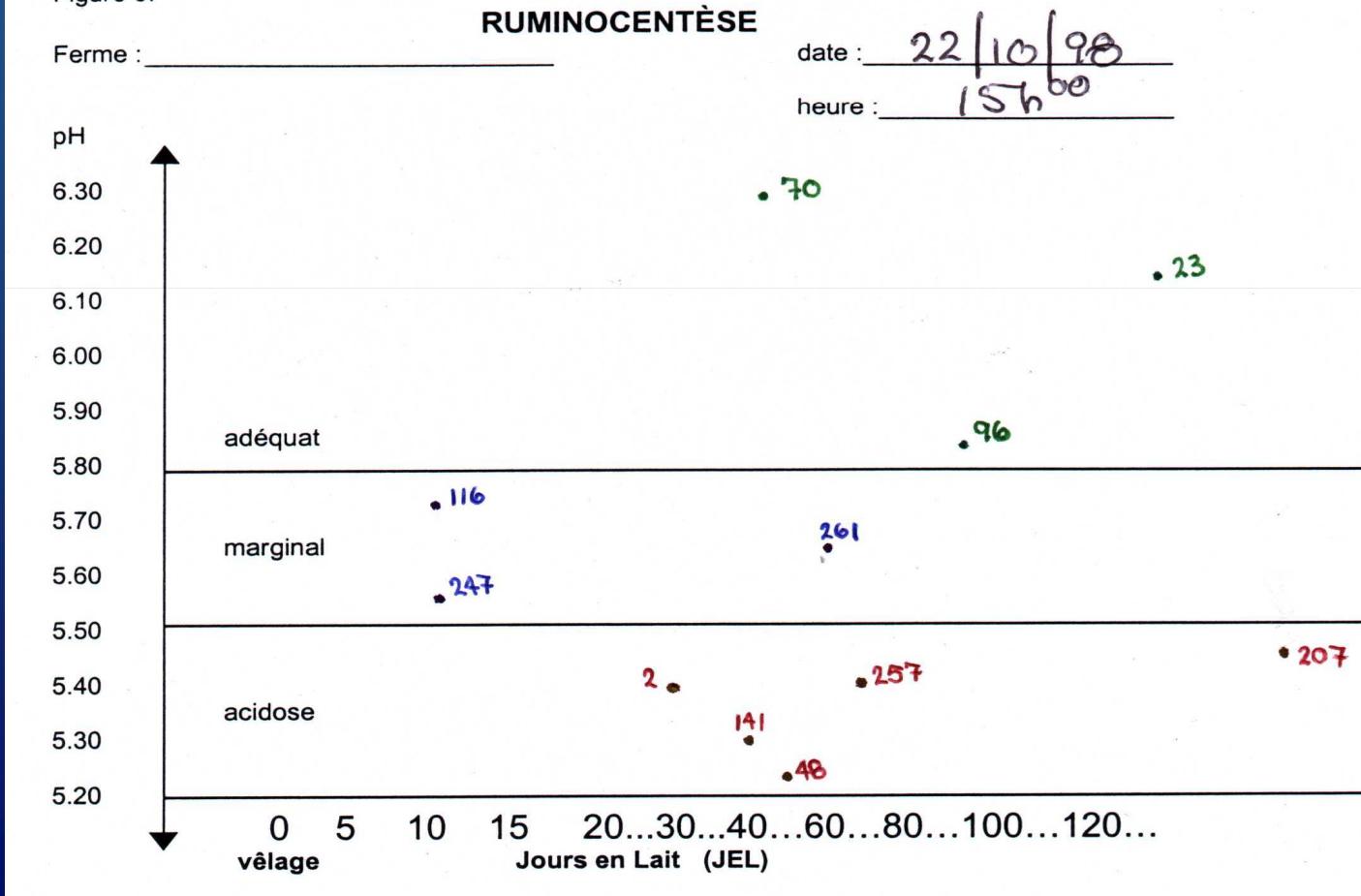


- 100 cows in lactation
- ↑ diseases 1998 :
  - 4<sup>th</sup> stomach pathologies
  - pneumonia, fever, diarrhea
- poor therapeutical response to treatments
- ↓ DM intake summer 1998
  - ↓ silage quantity



# Clinical case 1...

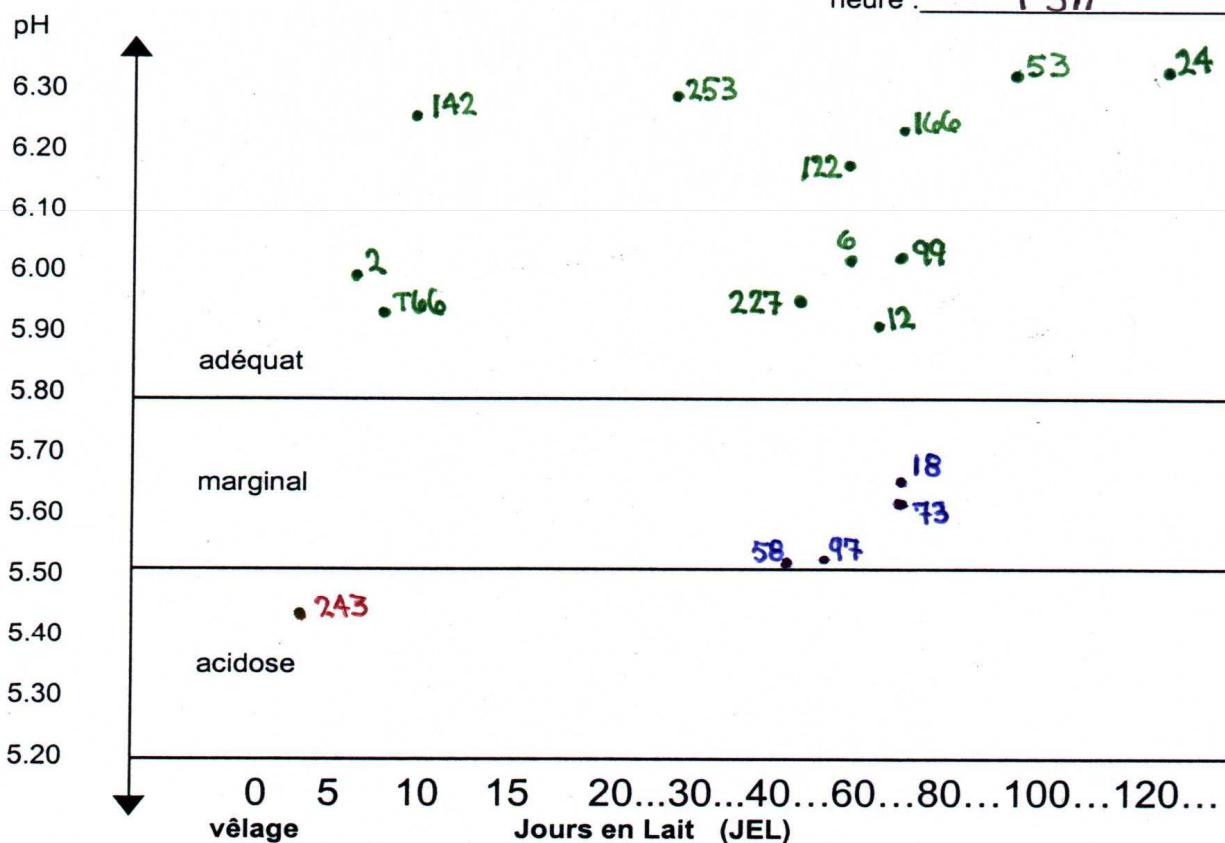
Figure 9.



# Clinical case 1...

Figure 9.

Ferme : \_\_\_\_\_ RUMINOCENTÈSE date : 05/11/99  
heure : 13h00



# Clinical case 2



- 150 cows in lactation
  - ↑ diseases :
    - 4<sup>th</sup> stomach pathologies
    - hoof pathologies
- Corn silage 50 % of the ration :
  - « kennell processor »
  - TLC 3/8"



# Clinical case 2...

## Forage particle size analysis (Penn State Shaker)

	TMR	Standard
Top	3 %	> 10 %
Middle	24 %	> 30 %
Bottom	73 %	< 50 %

# Clinical case 2...



## Corrections:

- buffers added
- 2 kg dry hay
- 75 knives/200



# Clinical case 2...

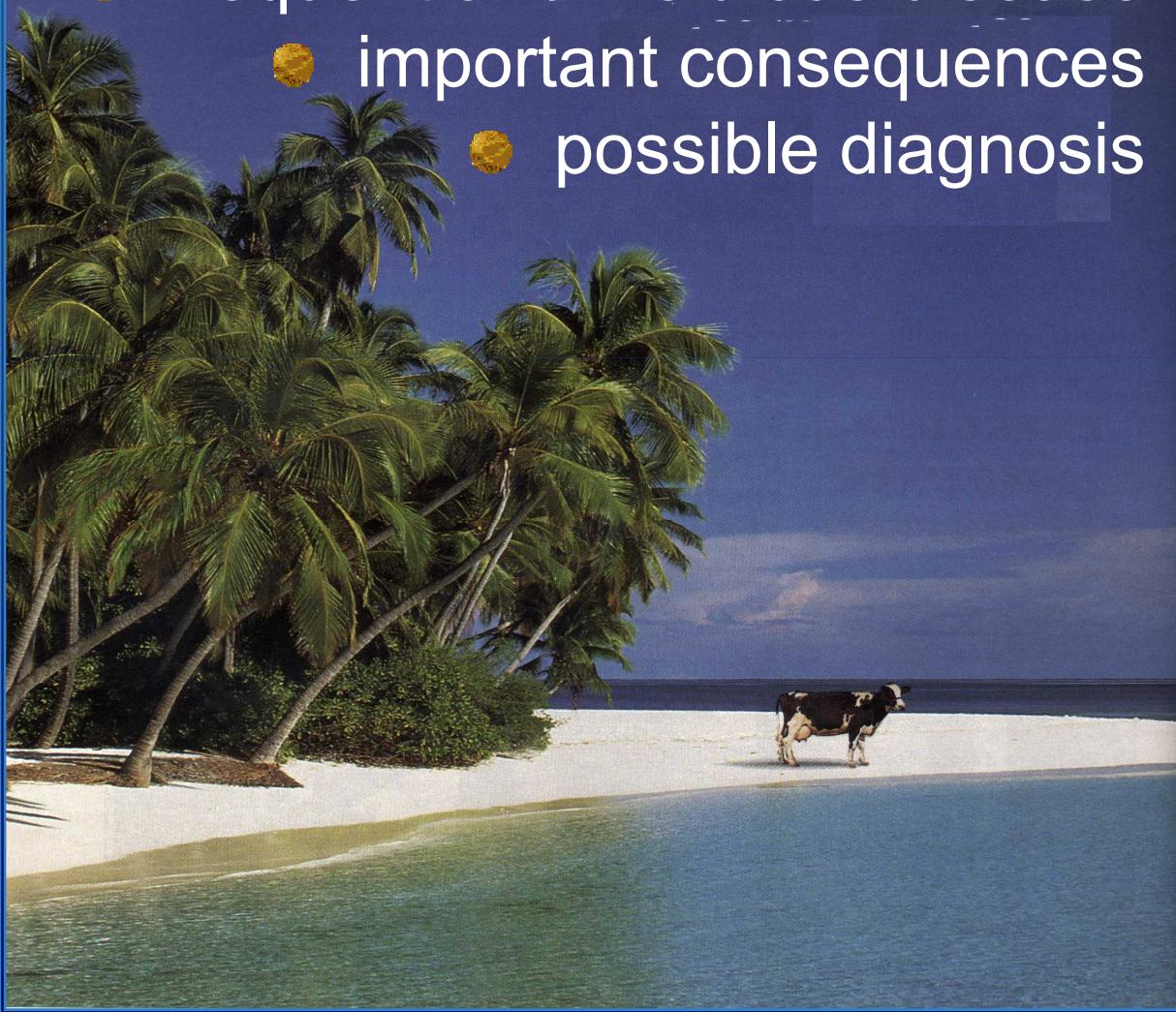
## Analyse de granulométrie

(Penn State Shaker)

	TMR	Standard
Top	11 %	> 10 %
Middle	37 %	> 30 %
Bottom	52 %	< 50 %

# Conclusion

- frequent and insidious disease
- important consequences
- possible diagnosis



# Questions ?

