

Could Bovine Appeasing Pheromone help to reduce respiratory disorders in beef cattle ?

Béatrice MOUNAIX, Laure BRUN-LAFLEUR & Marlène GUIADEUR, IDELE, 75595 Paris FRANCE
Sébastien ASSIE : ONIRIS-INRA, 44150 Ancenis FRANCE

With the contribution of:
Justine BOULLIER, ONIRIS-INRA, 44307 Nantes FRANCE
Léa MICHEL, TERRENA INNOVATION, 44150 Ancenis FRANCE



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Bovine Respiratory Diseases : #1 problem in beef cattle

- more than 75% of health troubles in French feedlots
- up to 3% mortality
- up to 70g/d loss in ADG
- 20% of beef cattle treated with antibiotic molecules
 - Collective treatments...

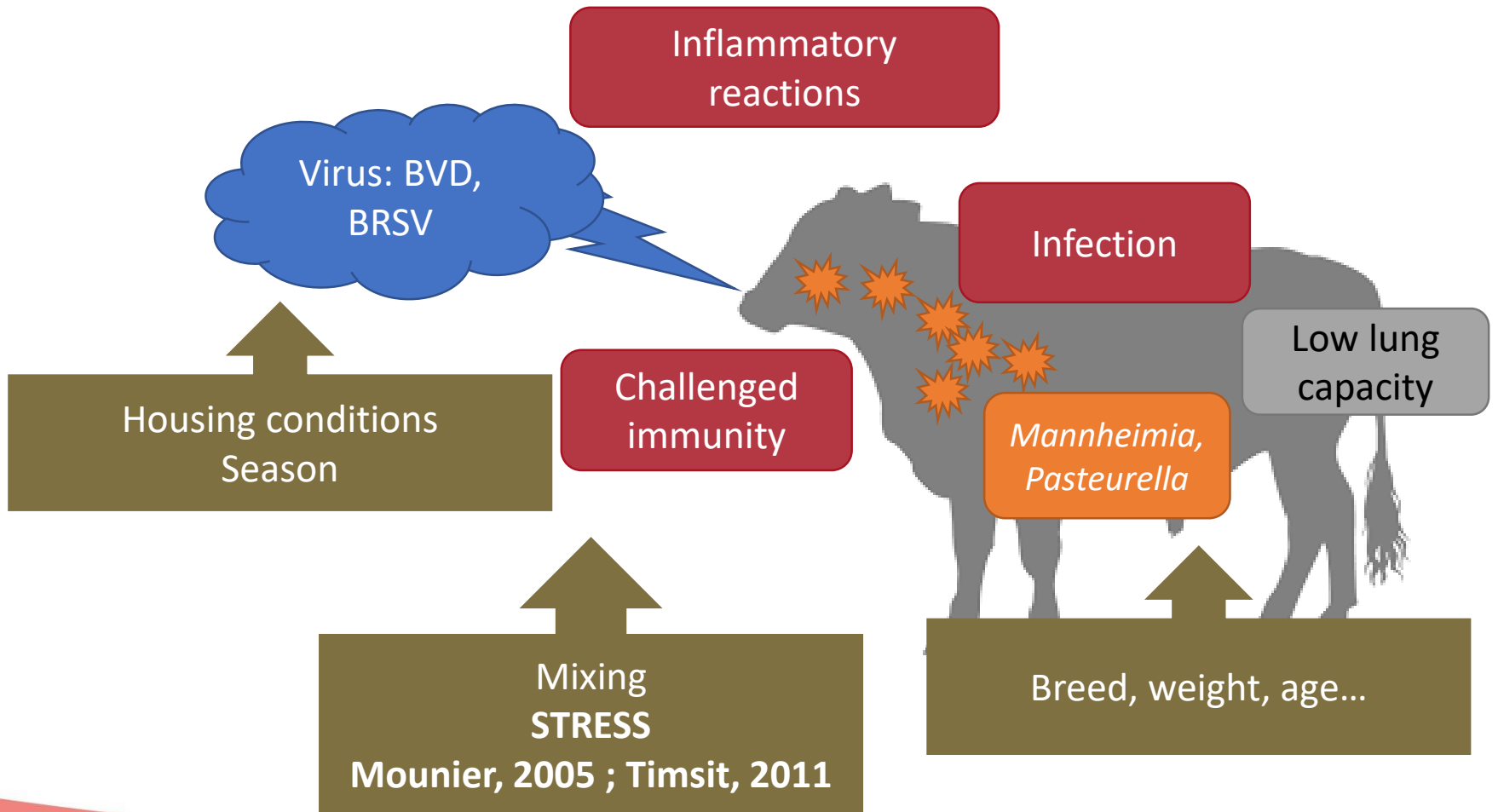
Antibiotic
resistance



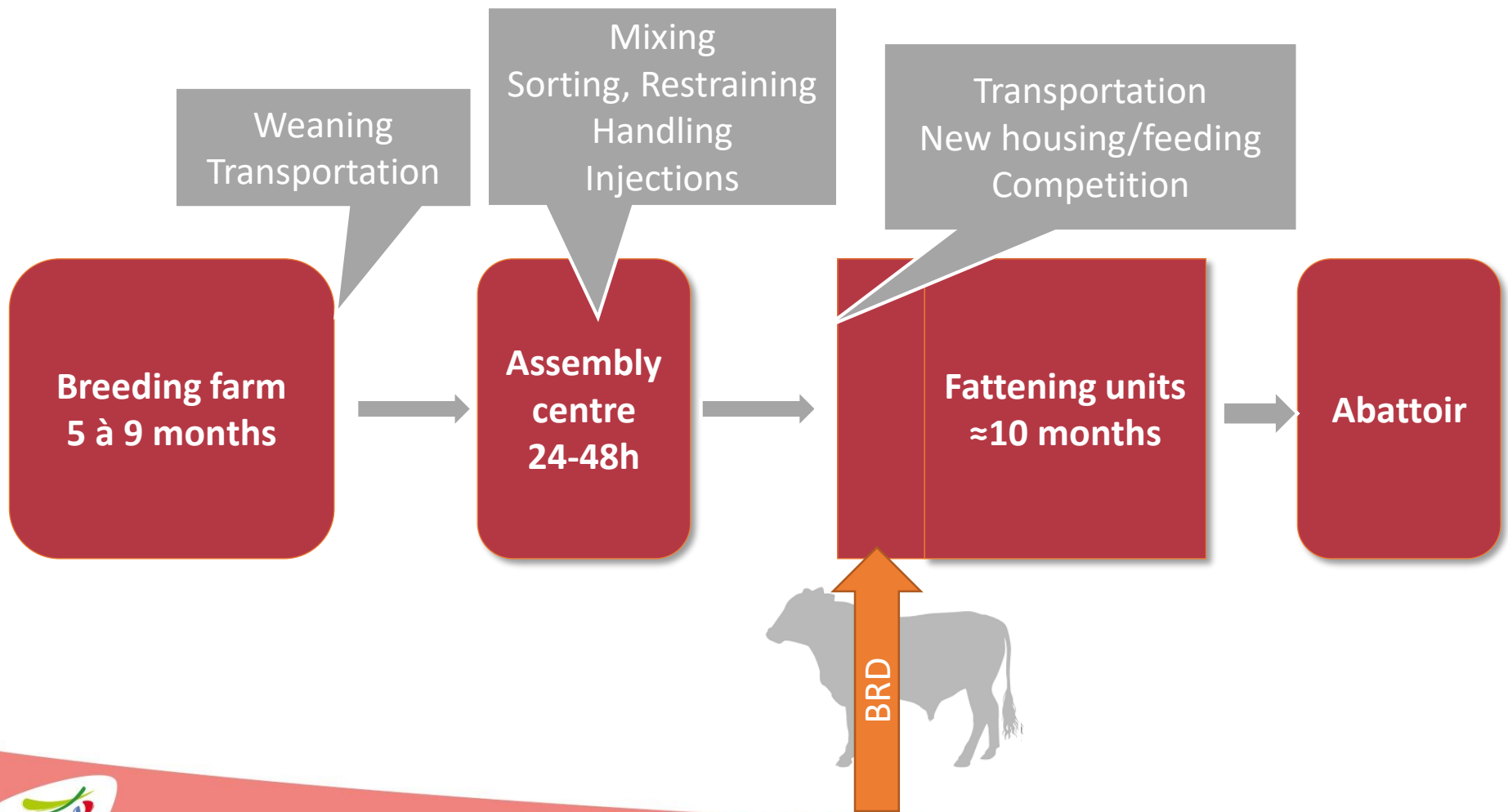
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- 2012-2016: 37% less AB used for animals
 - 2012-2016: cattle 24% less exposed to AB
- But ...**
- *Prophylactic/collective treatments = risky !*

BRD are multi-factorial ...and stress is a major factor



Is stress an hopeless issue in beef cattle chain?



Bovine Appeasing Pheromones (BAP)

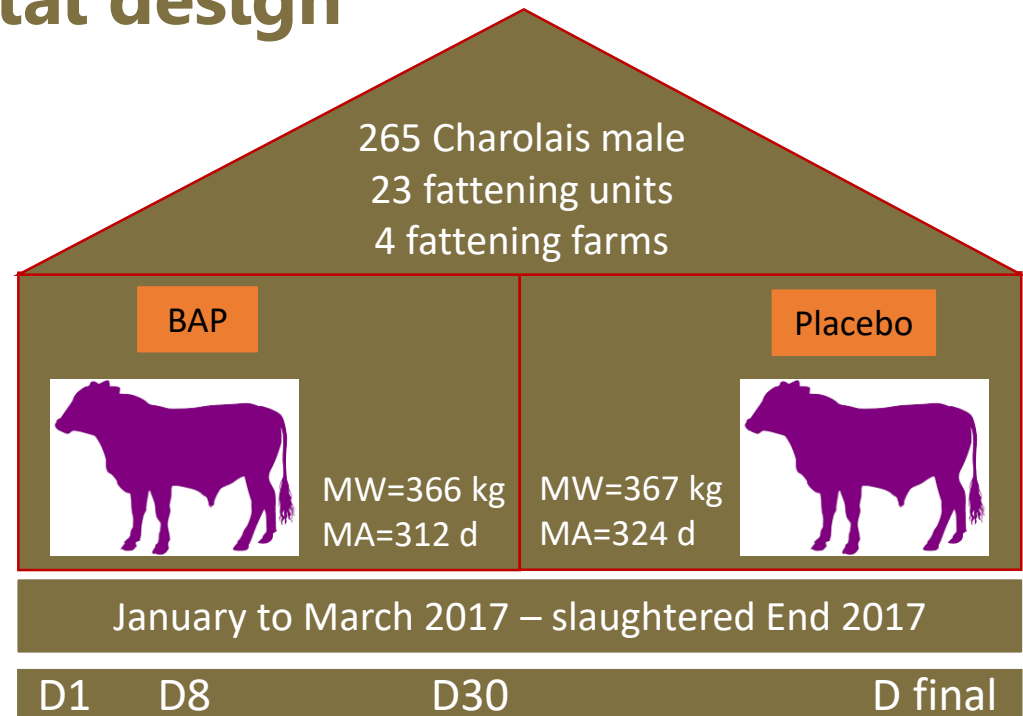
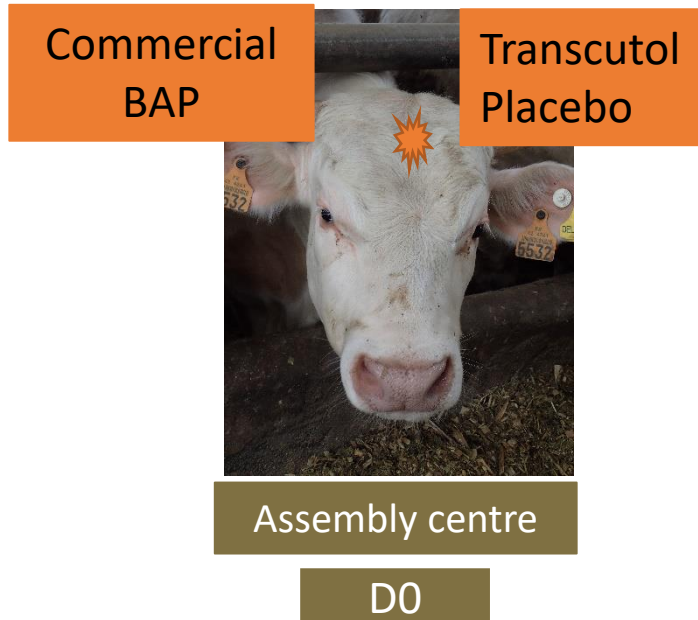
- ≠ sexual pheromones
- Appeasing pheromones produced by most mammals by sebaceous glands, close to mammary glands
- To reinforce cow-calf relationship, to reduce the stress in calves
- Aromatic molecules= highly volatile, short action
- Vomeronasal organ et olfactory epitheliums

- **Taylor et Mills, 2007: help puppy dog to better adapt**
- **Falewee *et al.* (2006): decrease stress in horses**



Would BAP be a way to partly reduce stress and subsequent BRD in fattening lots?

On-farm experimental design

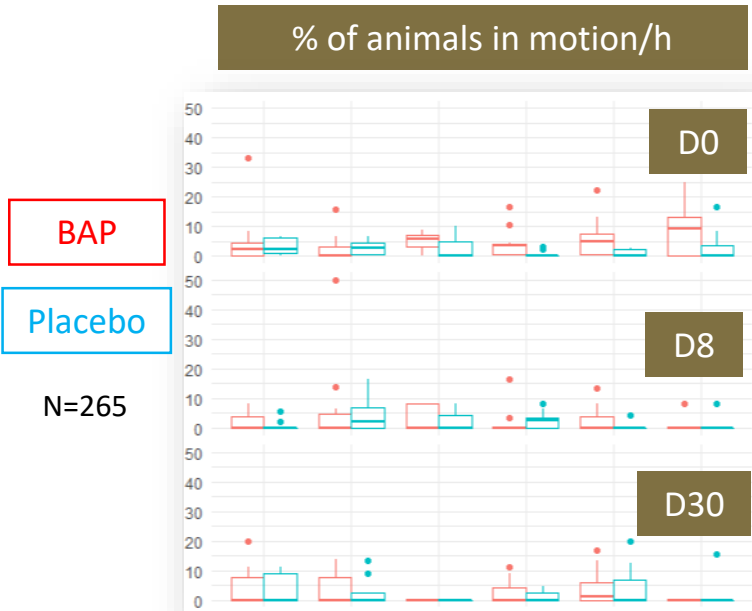


≈268 days fattening

- Measurements:

- Behavioural patterns: feeding, drinking, rumination, resting, moving around, social behaviour, stress behaviour
- BRD clinical signs: cough, nasal and ocular discharge, respiration rate (vet)
- Growth: Average Daily Gain, fattening duration, carcass conformation

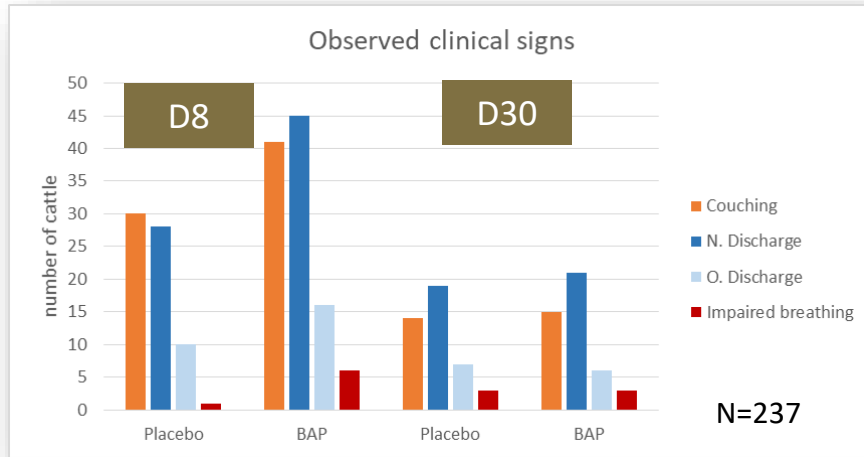
A moderate effect on behaviour*



- **Significantly more animals moving around in BAP groups***
⇒ exploratory motion behaviour?
 - No difference in the proportion of animals standing, feeding, ruminating.
 - No difference in social behaviour
 - No difference in stress behaviour
- ⇒ behaviour strongly related to the group size
- ⇒ no behavioural observation at night

*Permutation test, χ^2 observed vs estimated χ^2
Interaction day X treatment included
Effects included: fattening group, group size, fattening farm

A moderate effect on health*



- Less animal showing clinical signs after 30 days in both groups
- **3 times less animals showing both coughing and nasal discharge in BAP groups (4%) 30 days after arrival compared to Placebo groups (14%)***
- No difference in the proportion of animals showing one sign only
- No difference in the number of animals treated by farmers



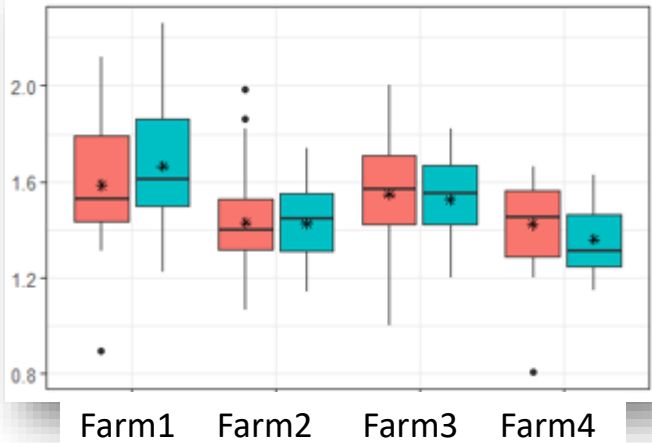
*Logistic mixed model
Interaction day X treatment included
Effects included: fattening group, fattening farm

No effect on growth*

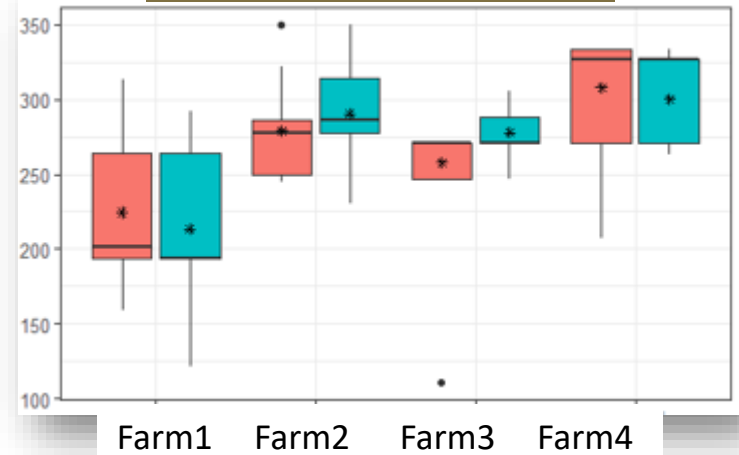
Average Daily Gain (g/d)

BAP
Placebo

N=240



Fattening duration (d)



- No difference in final ADG
- No difference in fattening duration
- No difference in carcass conformation

*Logistic mixed model, 240 cattle
Effects included: fattening group, group size, fattening farm

Conclusion:

Some effects:

- Commercial BAP showed no visible effect on the behavioural indicators we measured
 - Un-conclusive regarding stress
 - Improve behaviour measurements? Stress indicators?
 - No visible impact on competition behaviour
- Commercial BAP showed a significant effect on health
 - Reduced impact of BRD in fattening groups at the end of the risky period
 - Improved immunity?
 - Reduction of stress would be the best hypothesis

Any visible benefits for farmers?

- Commercial BAP not efficient enough to reduce AB uses in feedlots in our on-farm conditions?
- To be used before the beginning of stress?

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