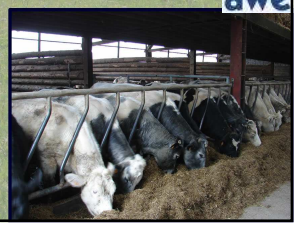
Development of a methodology to analyse reproduction problems linked to environmental factors in cattle herds in Wallonia with key indicators and decision making trees.

Knapp E., Chapaux P., Istasse L., Dufrasne I., Touati K.,



INTRODUCTION

- **Reproduction performances decrease in Wallonia**

	Herds	Years	First calving	C.I	/cow	
					Nb calving	Nb calves alive
Dairy cows	322	1985	28	391	1.06	1.01
	309	2006	30	433	0.92	0.89
Meat cows	36	1985	29	412	1.11	1.03
	55	2006	33	434	0.93	0.9

- **Reduction is responsible for increasing income losses**

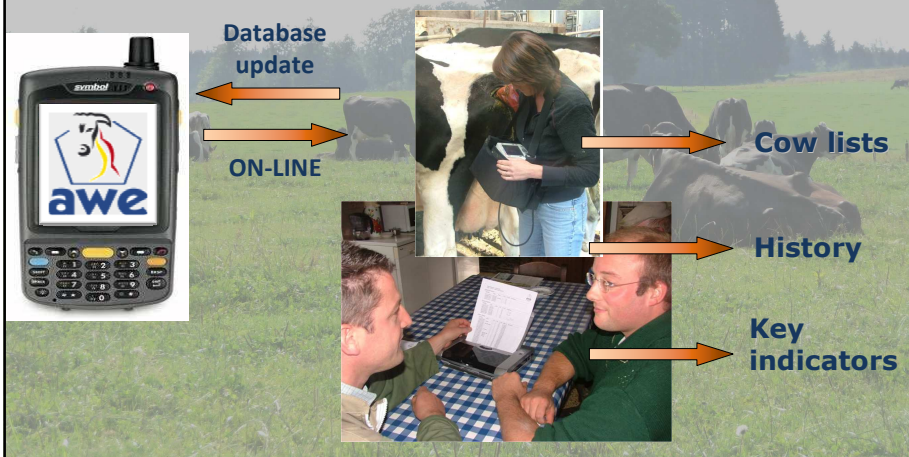
	Yields/cow/ year	Herds	First calving	C.I	Calves alive	Gross margin (€/v/an)
Dairy cows	>=8000 L	28	28	426	0.94	1.724
	< 6000 L	32	32	441	0.85	1.146
Meat cows	>= 550 Kg	32	32	426	1.06	738
	< 350 Kg	35	35	446	0.85	234

INTRODUCTION

- **Environmental factors linked to reproduction performances :**
  - Numerous, complex and interactive (nutrition, near calving pathologies, viruses, bacterium, parasites…)
  - Clinical signs are unspecific (invisible heats, infertility, abortions)
- **Aim : create a methodology to help vets and farmers to :**
  - Highlight and quantify a reproduction problem (key indicators)
  - Research of likely causes (decision making trees)

THE FIRST TOOL : KEY INDICATORS

- **Presentation of the concept :**



THE FIRST TOOL : KEY INDICATORS

- **three specificities :**
  - Indicators to answer practical questions

Where are you coming from?

What do you wish for ?

Where are you going?

  - Prospective indicators
  - Indicators are calculated on all cows during the reproductive period fixed by the farmer

1/12/08		
Retrospective C.I (120)	403	
Goals		
C.I	390	
Waiting period	80	
Result (102)		
Real waiting period	86	
Days open (0.64)	144	
Projected C.I	424	
Concept.Rate A.I 1	28%	45%
% Heat detection.	62%	65%
% Efficient Heat	17%	25%
	Cows	Heifers	Lists

THE FIRST TOOL : KEY INDICATORS

- **Example : dairy herd with 120 cows and 900 000 L quota**
  - Projected C.I shows : + 36 d.
  - Principal problem : low conception rate at the first AI

INFERTILITY PROBLEM

CAUSES ???

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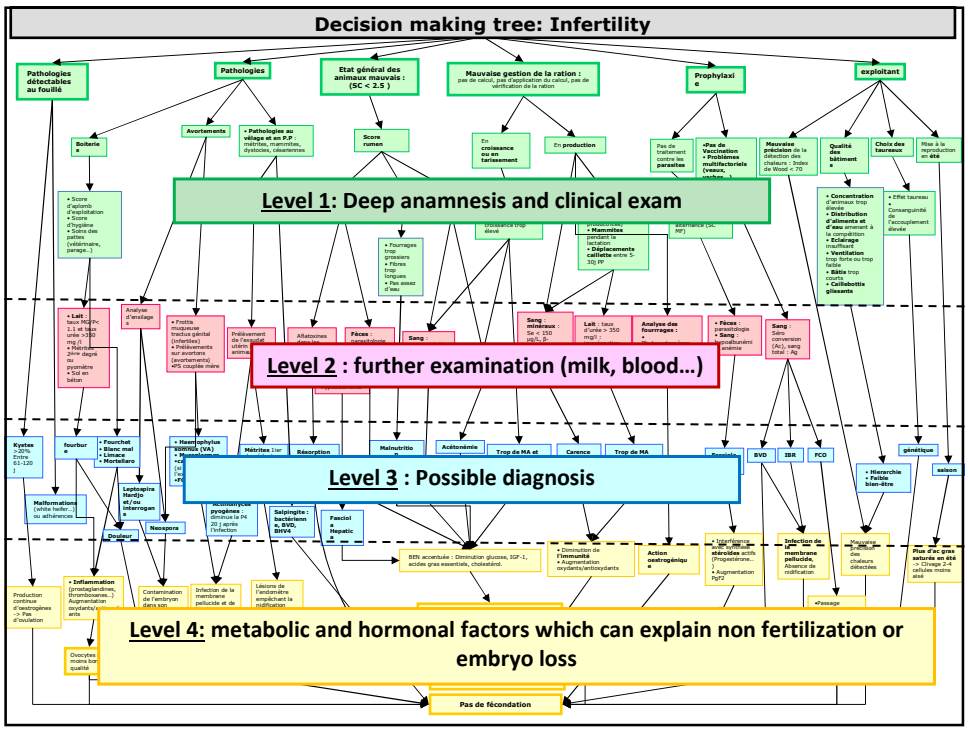
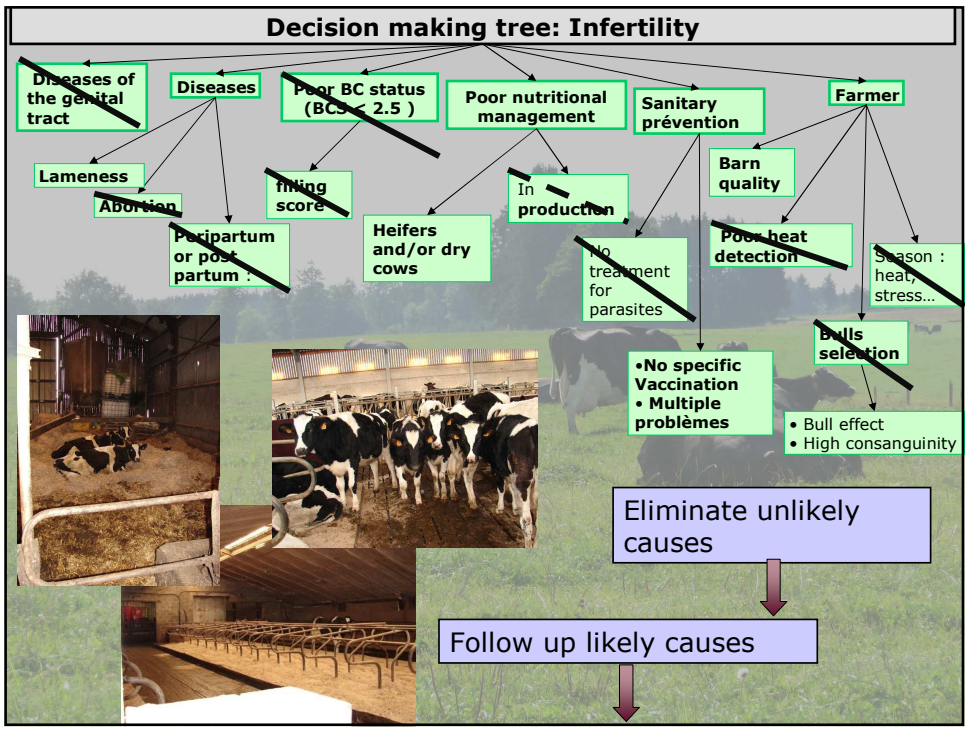
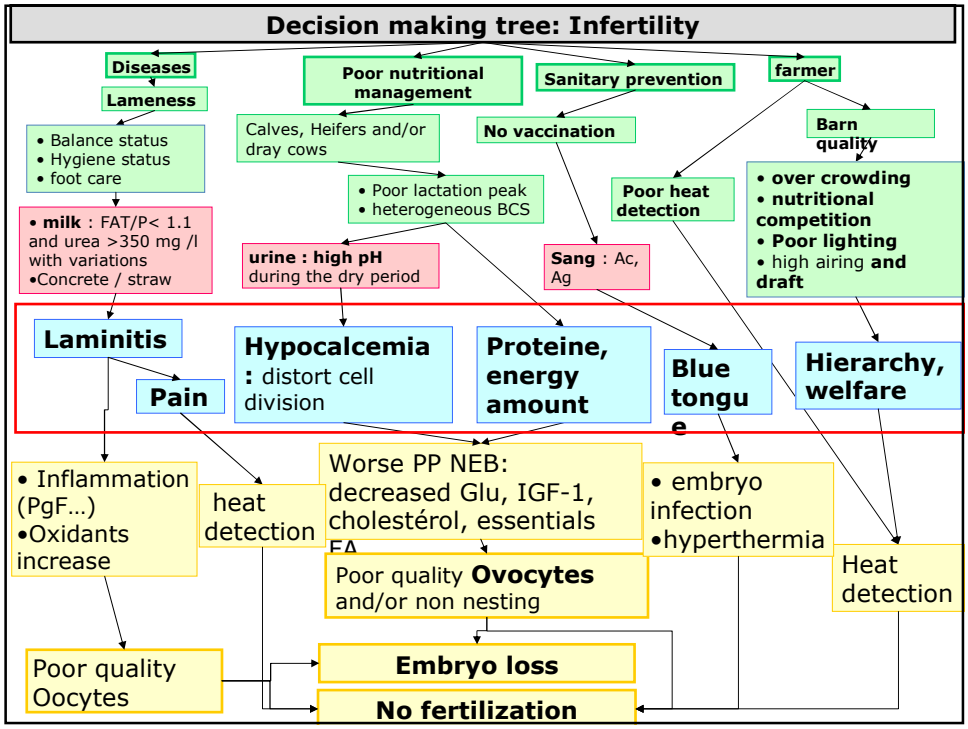
SECOND TOOL : DECISION MAKING TREES

- **Three comprehensive decision making trees to search likely causes :**
  - One specific for each clinical sign :
    - Invisible heat
    - Infertility (example presented)
    - Abortion
  - Built on a practical progression in 4 levels :




Decision making tree: Infertility
Diseases of the genital tract
Diseases
Poor BC status (BCS < 2.5)
Poor nutritional management
Sanitary prévention
Farmer
Lameness
Abortion
filling score
Peripartum or post partum :
Heifers and/or dry cows
In production
Barn quality
No treatment for parasites
Poor heat detection
Season : heat, stress...
Bulls selection
•No specific Vaccination
• Multiple problèmes
• Bull effect
• High consanguinity
Eliminate unlikely causes
Follow up likely causes


Decision making tree: Infertility
Diseases
Lameness
• Balance status
• Hygiene status
• foot care
• milk : FAT/P< 1.1 and urea >350 mg /l with variations
•Concrete / straw
Laminitis
Pain
• Inflammation (PgF...)
•Oxidants increase
Poor quality Oocytes
Poor nutritional management
Calves, Heifers and/or dray cows
• Poor lactation peak
• heterogeneous BCS
urine : high pH during the dry period
Hypocalcemia : distort cell division
Sanitary prevention
No vaccination
Sang : Ac, Ag
Proteine, energy amount
farmer
Barn quality
• over crowding
• nutritional competition
• Poor lighting
• high airing and draft
Poor heat detection
Blue tongue
Hierarchy, welfare
heat detection
Worse PP NEB: decreased Glu, IGF-1, cholestérol, essentials FA
Poor quality Ovocytes and/or non nesting
• embryo infection
•hyperthermia
Heat detection
Embryo loss
No fertilization

CONCLUSION

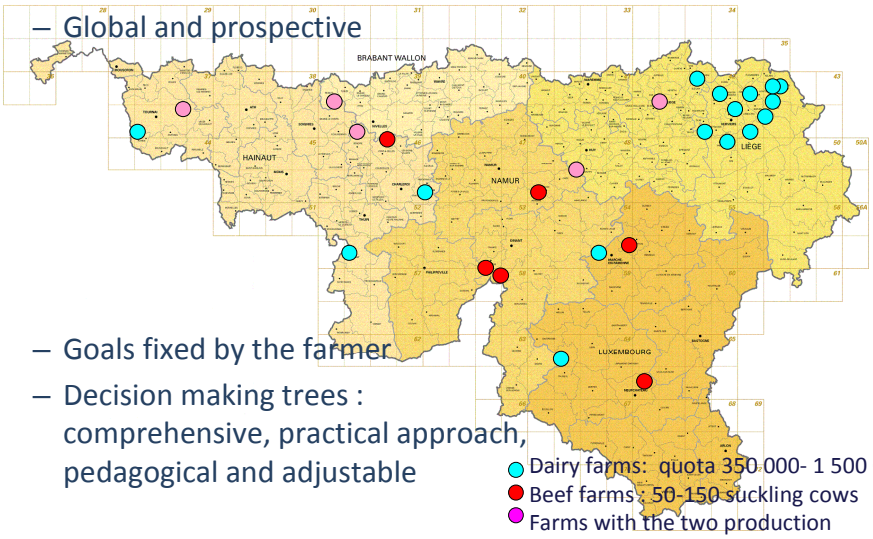
- **Methodology for a practical use :**
  - Demand of farmers and vets and tested in different farms
  - Always improve with the field actors (13 farms 2008 /27 in 2010)

DAIRY		AFC
Retrospectif CI (836)	434	29.7
Goals		
C.I	400	
Waiting period	80	
Result (655)		
Real waiting period	85	
Days open (55%)	125	
Projected C.I	407	28.6
Conception R. AI1	36% 52%	
Heat detection	60% 70%	
% Efficient Heat	36%	
Cows	Heifers	Listes

BEEF		AFC
Retrospectif C.I (1166)	455	34.2
Goals		
C.I	420	
Waiting period	90	
Results (894)		
Real waiting period	98	
Days open (48%)	147	
Projected C.I	429	30
Conception R. AI1	32% 40%	
Heat dectection	50% 66%	
% Efficient heat	26%	
Cows	Heifers	Listes

CONCLUSION

- **The PDA and the trees are complementary tools for a curative and preventive approach:**
  - Global and prospective
  - Goals fixed by the farmer
  - Decision making trees : comprehensive, practical approach, pedagogical and adjustable



Dairy farms: quota 350 000- 1 500 000 L
Beef farms : 50-150 suckling cows
Farms with the two production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