61st EAAP annual meeting, 23-27 August 2010, Heraklion (Greece)

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Session 40:
"Symposium: Environmental impact of animal production - 2. Designing more sustainable LFS and food chains"
26/08/2010, 14:00 - 18:00, presentation n°6

Corresponding and presenting author: Lucie Gouttenoire, lucie.gouttenoire@clermont.inra.fr

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Abstract:

To improve sustainability, farmers may redesign their livestock farming systems in depth, e.g. by converting to organic farming. Assuming that modelling livestock farming systems can support such redesign processes, we built models of the operation of livestock farming systems in a participatory way with farmers. Farmers' viewpoints were formalised by drawing causal maps with different local groups of farmers converting or already converted to organic farming. In this communication, we will focus on the way such models can support individual farmers in their conversion processes. To that end, the content of the models was analysed so as to better structure the questions and issues raised by the farmers themselves. Then, the links between a model that was collectively built on the one hand and the individual questions and issues for participating farmers on the other hand were explored. Benefits for participating farmers can be seen at three levels: (i) Mapping and analysing the models can help farmers to gain a better understanding of the processes at stake during a conversion. (ii) Farmers can discover new ideas, analyse their weak points in the farm operation and identify where their neighbours' experience could help to overcome them. (iii) Farmers are made aware of the specificities of their objectives and strategies compared with their counterparts, and they can then analyse their consequences in a structured way. Concrete examples are given to illustrate each of those three points. The originality of our approach is to consider conversions to organic farming as individual processes within the larger context of the evolutions of a whole local professional group, which may foster both individual and collective innovation towards more sustainability.

Supporting converting processes to organic farming with models built in a participatory way with dairy farmers

Lucie Gouttenoire, Sylvie Cournut, Stéphane Ingrand

UMR1273 Métafort (INRA, VetAgroSup, Cemagref, AgroParisTech Engref)
Clermont-Ferrand, FRANCE

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Symposium 'Environmental Impact of Animal Production'

2. Designing more sustainable LFS and food chains

Livestock development under close scrutiny

Environment
Cf *Livestock's long shadow,* 2006

=> Innovating in the livestock sector to be more sustainable

Three ways of innovating in agriculture (Meynard et al., 2006)

Genetic innovation	Technological innovation	System innovation
New animal or plant genotypes	New tools to calculate animal diets or fertiliser levels	New forms of operation in livestock systems

Genetical engineering — **Agroecology**

Has been the most influent
Vanloqueren et Baret, 2009

A growing concern!

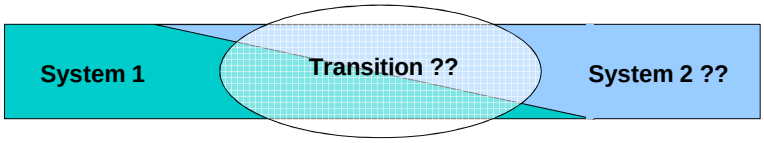
IAASTD, 2008:
Towards more holistic approaches

- **System innovation**
- **At the farm scale**
- **Initiated by the farmers themselves**

Innovation is more efficient if stakeholders are part and parcel

Farmers' redesign processes of their livestock farming systems

Example: converting to organic farming



Few studies about transitions in the literature ***(Lamine and Bellon, 2009)***

To manage transitions in a better way	**Gaining a more holistic view of the operation of livestock farming systems**

Modelling as a relevant tool

Question:
« How to model the operation of livestock farming systems in order to support farmers in the redesign processes of their whole livestock farming systems? »

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« How to model the operation of livestock farming systems in order to support farmers in the redesign processes of their whole livestock farming systems? »

Hypothesis:

- participatory modelling
- within groups of farmers facing a same redesign issue

… will foster…

- individual thinking
- collective thinking

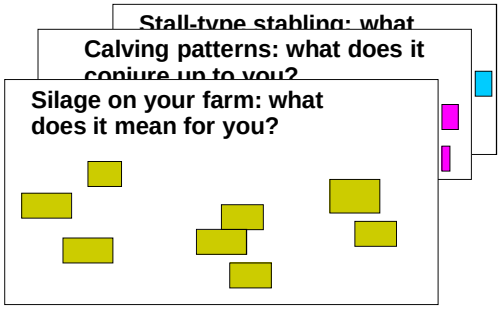
A good way to support redesign processes!

Methodology:

- a participatory modelling project
- with a local group of 15 dairy farmers converting and already converted to organic farming

→ **Building causal maps of the operation of LFS**

Workshops 1 One half day / group



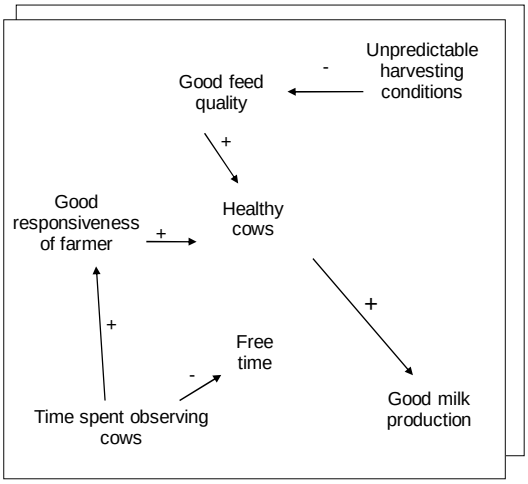
⇒ **Formulating items for the causal maps**

... by the 'Métaplan' technique (use of memo slips)

Examples of items:

- Long-term investing
- Healthy cows

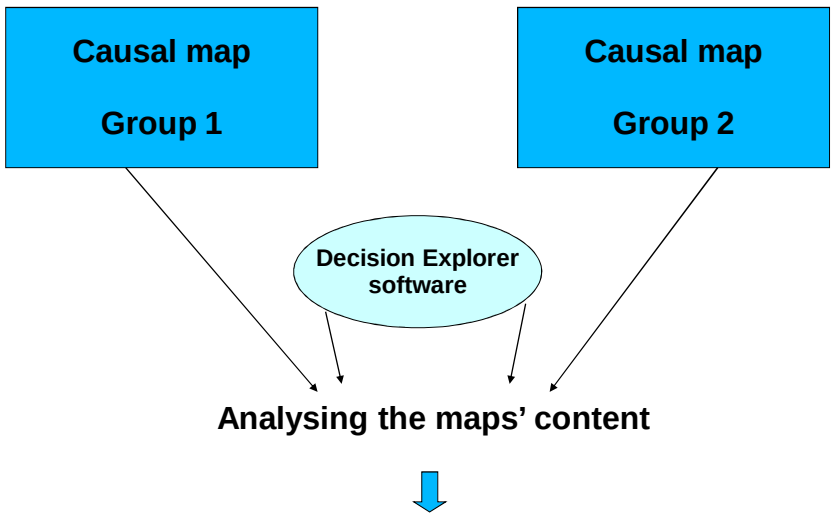
Workshops 2 One half day / group



⇒ **Formalising causal links between items**

... to build the causal maps

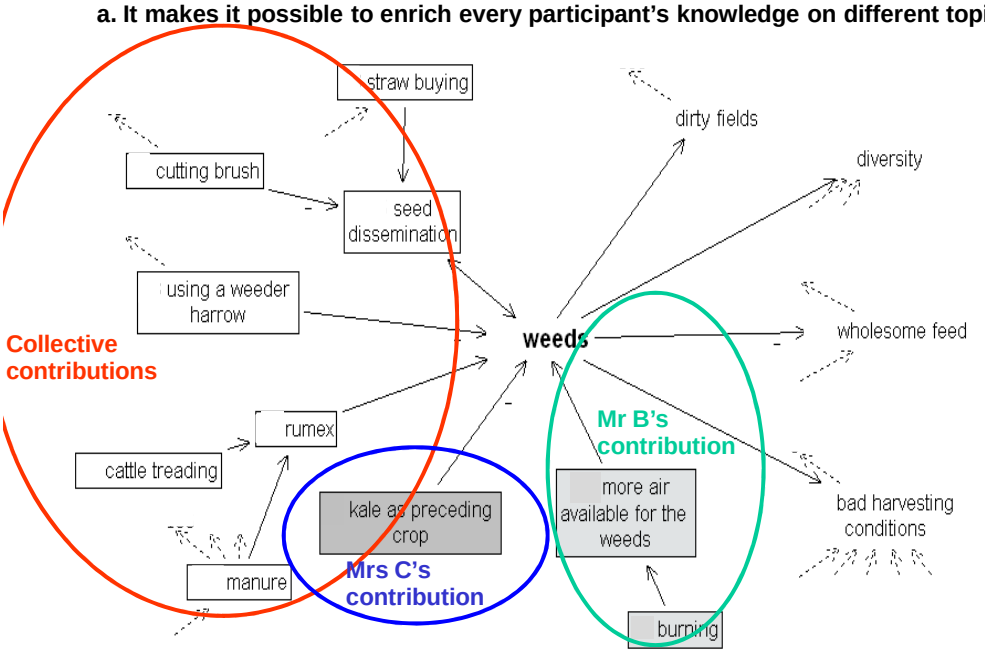
Problematic and question | Hypothesis and method | Results | Conclusion



Illustrating how the participatory modelling process can support the redesign processes

1. Group mapping fosters individual thinking

a. It makes it possible to enrich every participant's knowledge on different topics

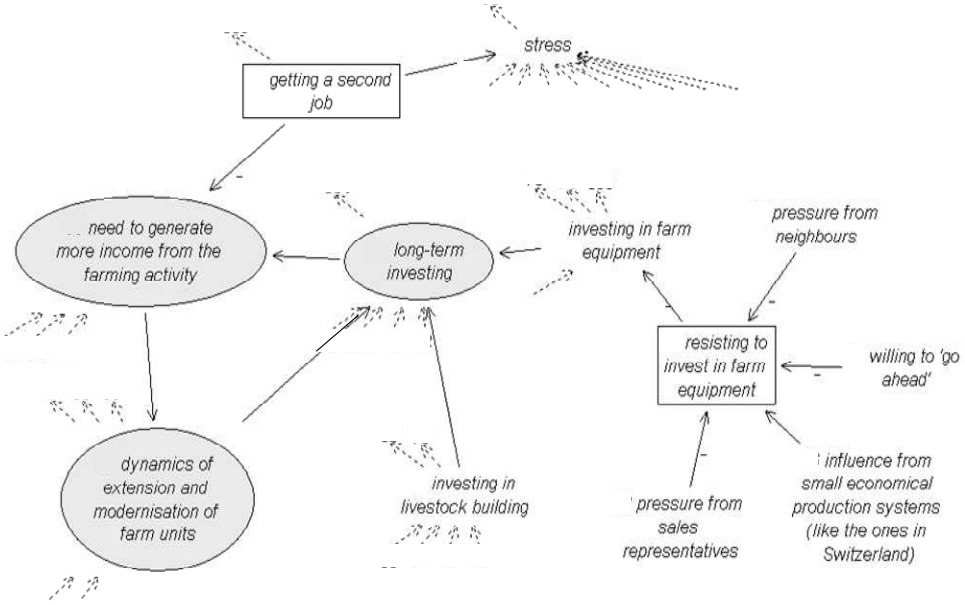


b. It helps every farmer to position their strategies within a range of possibilities

Problematic and question | Hypothesis and method | Results | Conclusion

2. Modelling helps the participants to better structure issues and problems

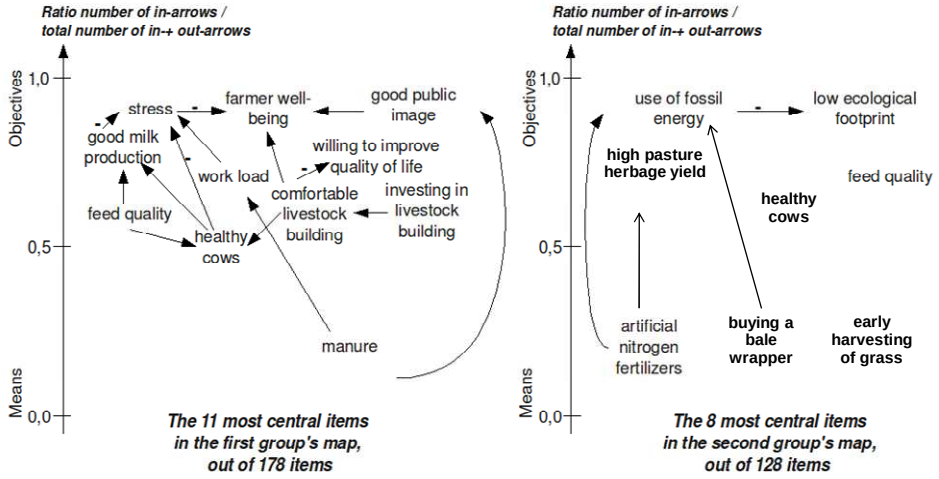
a. Identifying vicious or virtuous circles and trying to break / reinforce them



b. Identifying and reinforcing regulatory loops

3. The maps' emergent properties can foster collective thinking

Central items in the two maps, and their apparent status as objectives or means



Comparing such graphs can be used as a discussion support tool

1. **Group mapping fosters individual thinking**
2. **Modelling helps the participants to better structure issues and problems**
3. **The maps' emergent properties can foster collective thinking**

A basis to renew modelling methods in LFS research…

… so as to better support farmers in the redesigning processes of their whole LFS

THANK YOU!