V. Bellon-Maurel, Cemagref
(in place of F degli Innocenti, Novamont)

Plastic films in agriculture

Context

In France, plastic in agriculture is around 200 000 T. 50% are plastic films, string…

Biodegradable plastics are a good alternative to manage plastic waste in agriculture.

In the world > 100 M Tons of plastics, 10 to 20% can be replaced Biodegradable plastics

Marketing, economic and environmental issues

The economic barrier

Matériaux	2003	2010
PE	1	1
Starch based biodegradable material	1.25 – 4	0.75 – 2.5
PLA (poly lactic acid)	2.5 – 4	1.6 – 2

Price of various materials in Euro/Kg (Bastioli, 2003).

The environmental (marketing) barrier

Consumers can be cheated by an Inappropriate marketing exploitation of The « biodegradable » property (see A real example)

Biodegradable plastics will be accepted In agriculture provided that we can guarranty:

- the level of biodegradability
- the non toxicity versus the environment

=> Labelling biodegradable platics is NECESSARY

From challenges to scientific issues

Challenge	Scientific issue
Guarantee the level of biodegradability	A methodology and an Experimental protocol for building relevant indicators of the Bidegradation level.
Guarantee the lack of toxicity Vs the environment.	A methodology and an experimental protocol for Studying eco-toxicology.

From challenges to scientific issues

Labelling Biodegradable Products

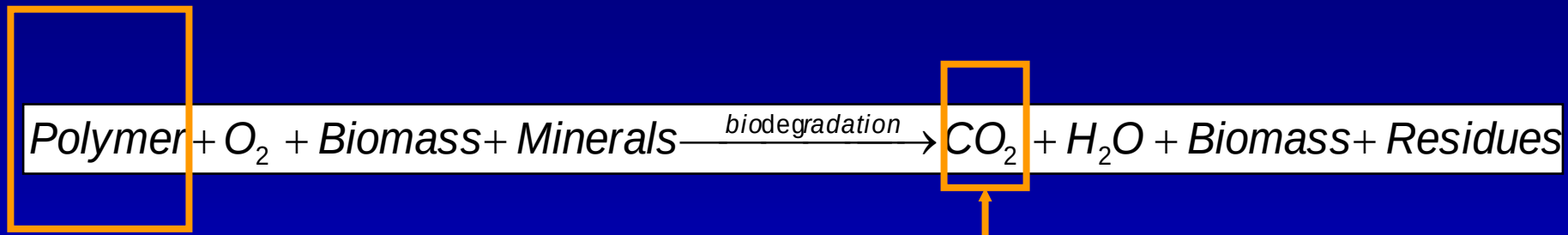
SMT 4 CT97 2187
(1998-2002)

Scientific issue

A methodology and an Experimental protocol for building relevant indicators of the Bidegradation level.

A methodology and an experimental protocol for Studying eco-toxicology.

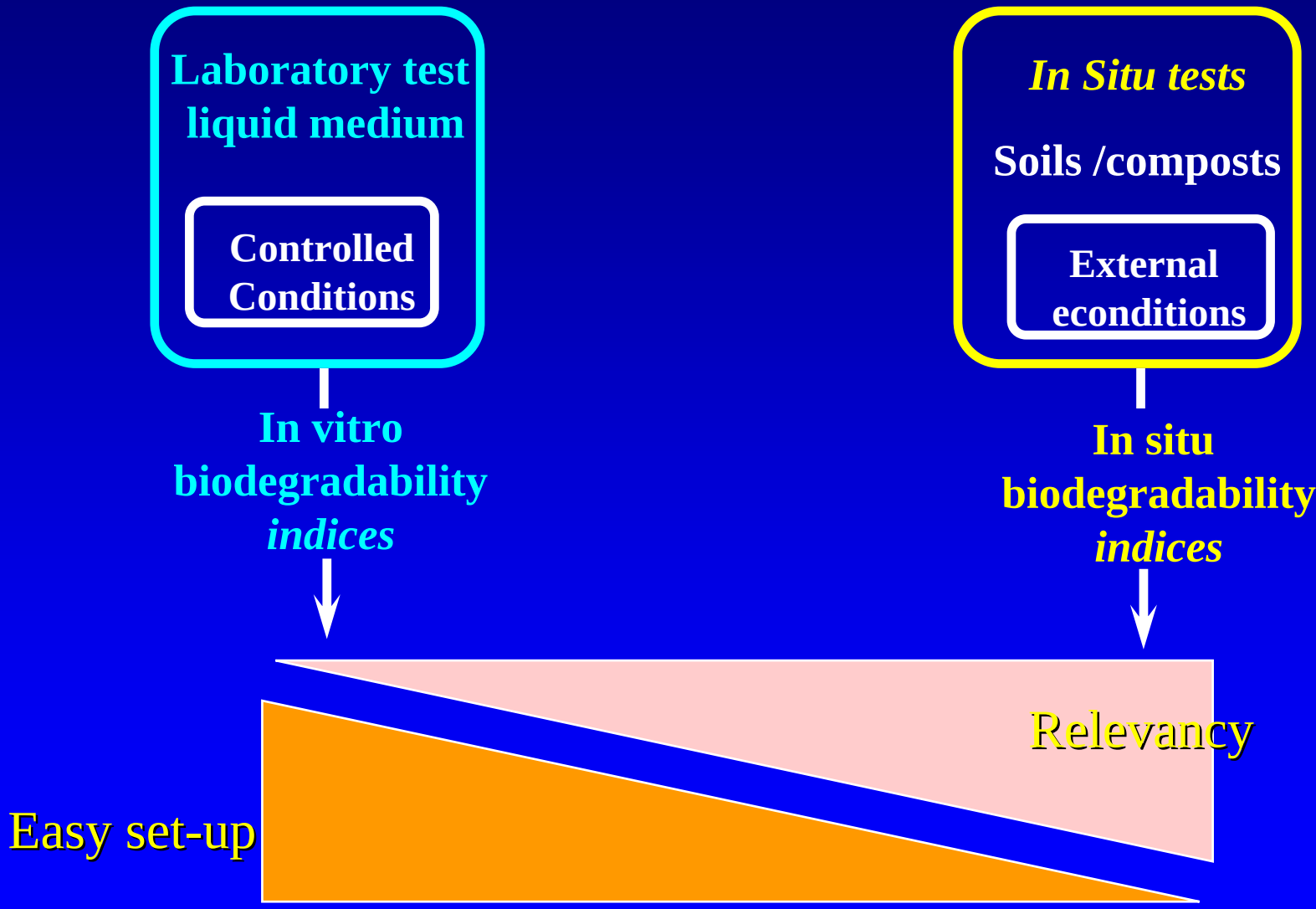
How to evaluate biodegradability ?



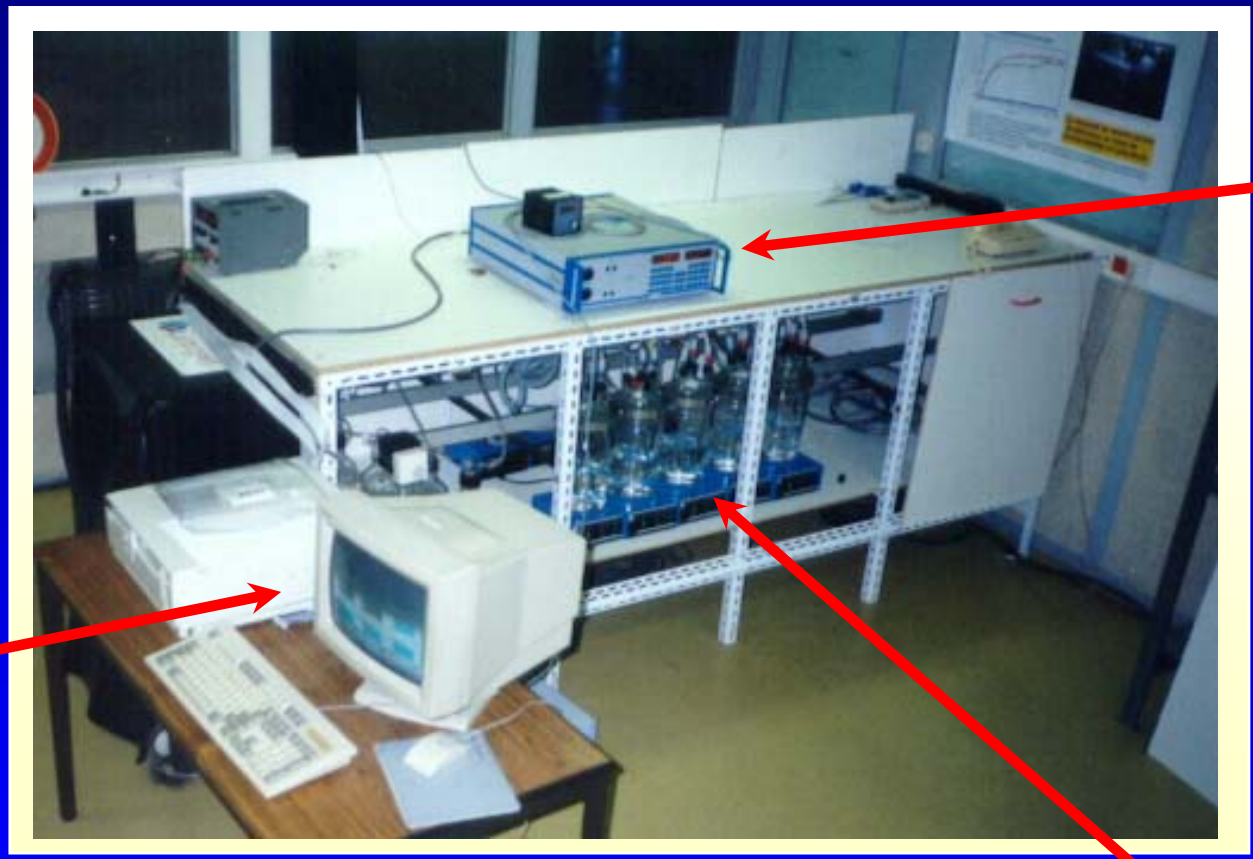
* Laboratory measurement

* In-field measurement

Testing biodegradability: experimental approach



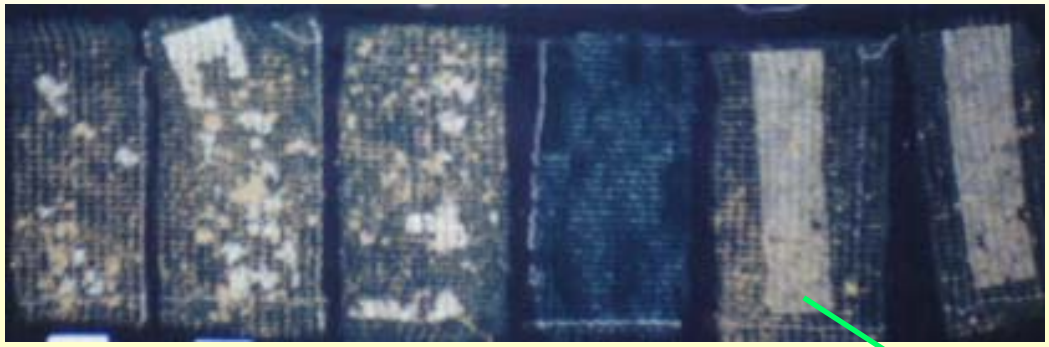
Laboratory automated measurement….



Material: A B C D E F

initial

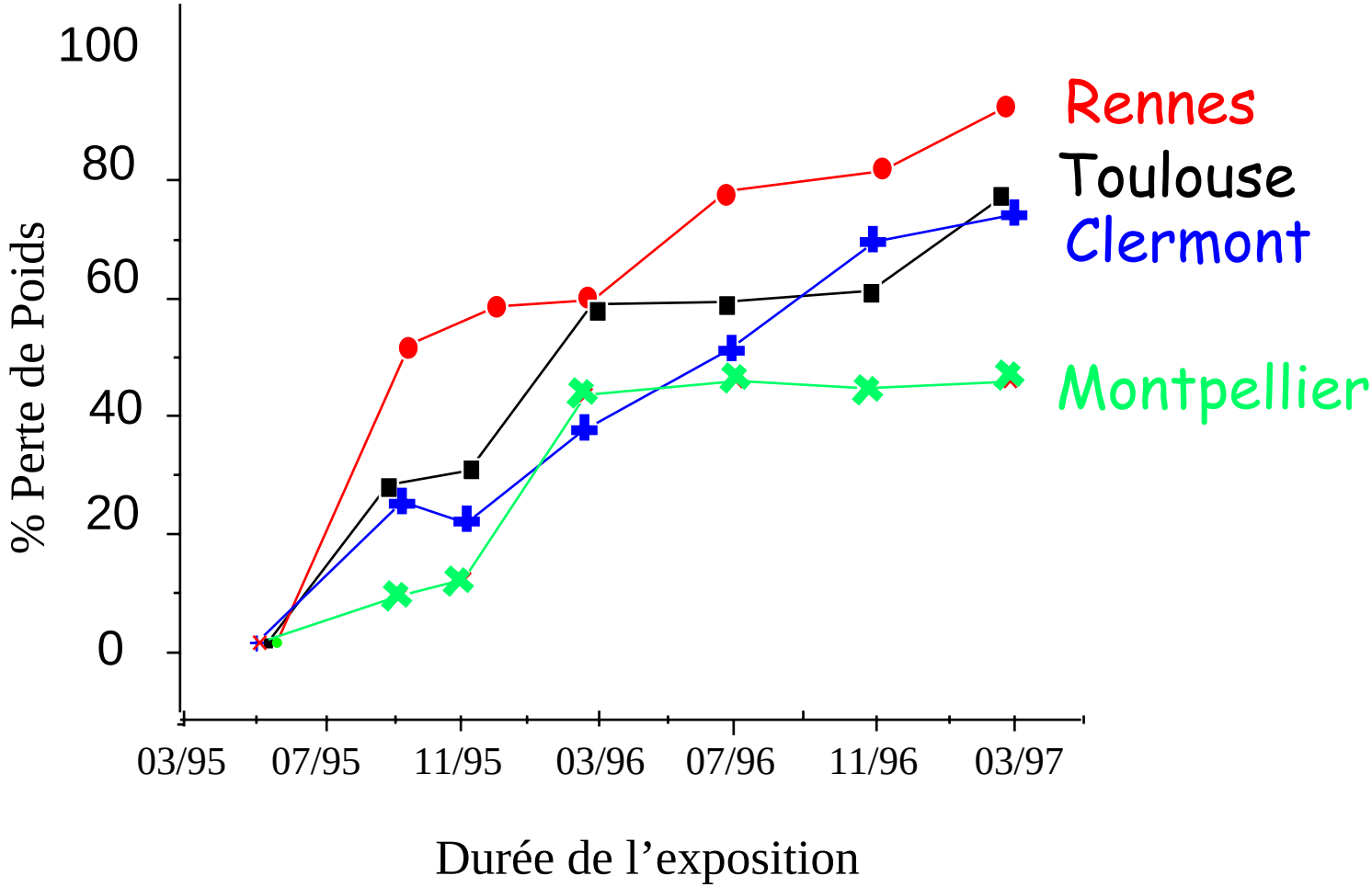
after 2 ans



% of Degraded Surface (SD)

More than 2000 samples analysed!

Degradation of PHBV



Conclusions (1/2)

Guidelines have been written in SMT project available on :
Google smt labelling biodegradable products

A french standard has been set up :
Norme NF U52-001 « Biodegradable **Materials for agricultural and horticultural films.**

At the european level: TC 249 WG 9: Plastics- testing the degradability (F degli Innocenti)

Other labels: AIB-Vinçotte www.aib-vincotte.fr
'OK Compost' (based on the CEN – 13432 standard)
OK Biodegradable (based on iSO standard)

Conclusions (2/2)
What did we learn from that experience

Labels are NECESSARY for increase the spreading of innovative products

Evaluating the environmental impact of a technology (inc product) leads to Setting up new experimental procedures

Standards are a way by certification can be enough, provided it is shared (ex AIB Vinçotte)

How to encourage the development of scientifically-based evaluation procedures at low cost appears as an issue.