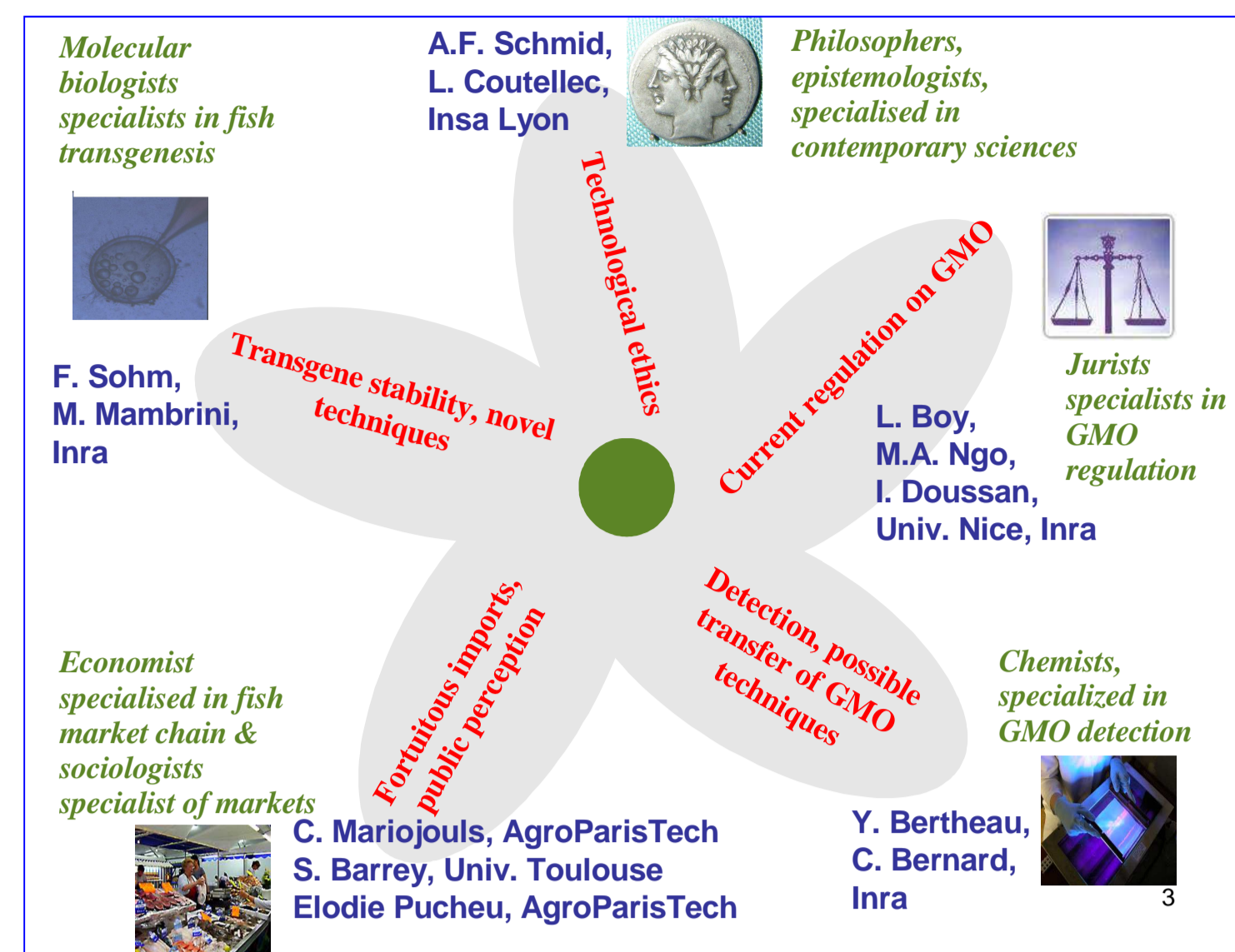


PERCEPTION IN FRANCE of ECONOMIC ACTORS and NGO about GENETICALLY MODIFIED FISH



Genetically Modified Fish for food is not allowed in any country but is at pre-market stage for salmon in USA, and already marketed as ornamental fish in some countries. Any rumor of arrival of GM Fish in European markets may cause a strong reaction. DOGMATIS is a multidisciplinary research project funded by the French Research Agency (ANR, programme ANR-OGM 2007-2010), which gathered specialists of fish transgenesis, GMO detection and regulation, fish market chain economy, consumer sociology and contemporary science philosophy and epistemology. The aim of DOGMATIS was to investigate the questions raised by the use of transgenesis on an animal, and the possible answers in case of application at economic scale, and arrival of GM Fish on food market. As for socio-economic aspects, we studied the risk of fortuitous imports (see IFET 10), and we studied the perception of the public through two methodologies : (i) two rounds of consumers focus groups organised in 2007 and 2010 (see IIFET 10), and (ii) 35 comprehensive interviews with economic actors (wholesalers, retailers, supermarkets, fish farmers) and NGO. This poster presents the key-points issued from those interviews.

Atlantic salmon with improved growth : at pre-market stage (on-going application file to FDA, USA)

Fluorescent zebra-fish : already commercialized in Singapore, Taiwan, USA

Methodology

- ✓ 35 interviews performed in 2009 and 2010, France (32) + Belgium (3)
- ✓ Aquatic food products supply chain (16) ; Fishfarming sector (14) ; NGO (5)
- ✓ Face to face interview: 1h15 to 2h00
- ✓ Transcription complete or synthesis

General introduction to the results

- ✓ For all: PoGM are a remote object
- ✓ Our investigation invited the people met to enter a reasoning, beyond an initial reaction of concern, even of retreat, at first mention of the GM Fish, and to project themselves in scenarios which they had not considered before

A few words from interviewees:

- ✓ "It's a very very difficult topic"
- ✓ "The GM Fish Wow ! It is clear that this is even more complex"
- ✓ "It's hard to project, because this subject is exceedingly media. I think of the film about Monsanto. It was exceedingly difficult to get an idea. It is not a technique on which we can look serenely."

Perception by fish farmers

Interviews in Fish Farming Industry

11 in the production sector :
8 French fishfarmers, elected representatives in professional organizations
3 at European level : 2 in FEAP (Federation of European Aquaculture Producers) + 1 in salmon industry
3 in the aquafeed sector

GM Fish : no way today !

- ✓ French and European fishfarming sectors are today in a difficult situation
- it is out of question to adopt transgenesis technique which generates image problems (same position as 10-15 years ago)
- ✓ A subject not discussed today in professional organizations
- ✓ The problem for GMO today in these sectors focus GM plants in feed
- ✓ Transgenesis is poorly known and little understood among the range of genetic selection techniques, in the hands of specialists

- ✓ Potentially, only large businesses would be concerned by the adoption of such an innovation.
- ✓ After analyzing the changes and investments needed to organize a chain for GM Fish (control of escapes, closed farming systems, segregation of supply chains between ordinary and GMO), some interviewees questioned the economic balance that would result given the costs involved, and the interest of GM Fish.

There are multiple potential technical interests cited: the two first being the most frequently mentioned

- ✓ Improvement of growth rate
- ✓ Better resistance to diseases
- ✓ Less environmental impact
- ✓ Better feed conversion efficiency
- ✓ Improvement of quality (taste, fileting yield,...)
- ✓ Better adaptation to various natural environments
- ✓ Better survival rate
- ✓ Creation of new species better adapted to farming
- ✓ A technique potentially useful for World food security

Also there are potential risks cited:

- ✓ negative impact on the market and the environment
- ✓ then the risk of deterioration in the quality and taste
- ✓ impact on consumer health

About the potential adoption of this innovation, interviewees show a variety of attitudes:

- ✓ acceptance conditioned to a warranty by authorities
- ✓ open-mindedness, desire to adopt by belief in progress
- ✓ dilemma, refusal
- ✓ need for specific regulations, and licensing.

Market ? to sell GM Fish is still an entire issue :

- ✓ unthinkable today
- ✓ maybe possible in the future, after changing consumer attitudes after a long communication, or after a situation of economic crisis

If PoGM arrived on the market:

- ✓ need of a regulatory framework at European scale or larger, and a necessary communication
- ✓ labeling, traceability and segregation (not set)

Perception by economic actors in the fish supply chain

Interviews in the aquatic food products supply chain

6 wholesalers for fishmongers and restaurants
2 wholesalers for collective catering and chained restaurants
2 supermarkets + FCD (retail national federation)
6 processors.

PoGM and transgenesis are virtually unknown or little known, a "non-issue" in business because "there is no risk"

- ✓ Yet a concern GMOs already present in the specifications lists (of supermarkets and wholesalers for catering and chains restaurants) for the purchase of farmed fish: exclusion of GMOs in food and for the fish.
- ✓ Some positions taken by large companies to refuse GM fish: Carrefour, smoked salmon companies, Marine Harvest
- ✓ FCD has not issued any position / PoGM but refers to its position on cloning and GMOs
- ✓ Existence of special sourcing strategies to protect from the risk of presence of GM Fish, emphasizing origins from France and Europe

Essential: a European regulatory framework and international

- ✓ authorization by the government after studying leading guarantees, information-communication by the authorities
- ✓ implementation of controls (by public services and internal, with technics supposedly available)
- ✓ labeling (for transparency to consumers)
- ✓ traceability (already existing, should be re-reinforced)
- ✓ segregation pathways (apprehended unevenly)
- + For certain people: need of a prior public debate, need of a public warning system

A market ?

- ✓ Today: impossible to bring GM Fish to the market, "not ripe", it would cause a crisis, an outcry.
- ✓ Tomorrow: possible only after a long time period (5, 10, 20, 30 years...), after an extensive communication AND within a European or international regulatory framework
- ✓ Concern among some players, because of: their responsibility vis-à-vis their clients concerning the risk of accidental imports, their inability to pay additional costs (SMEs) or even an obligation to trade GM Fish imposed by a low prize.

The price of PoGM ? For most respondents, a low price would be needed to find a market
Another perspective: imagine a PoGM with benefits that justify a higher price

Perception by NGO

Interviews with NGO

6 interviews in 5 NGO :
Greenpeace, WWF, IUCN, ATTAC, UFC Que Choisir (2)

The GM Fish : "it's not our priority! "

- ✓ "It's not a hot topic" (5 NGOs).
- ✓ Obama will never allow the FDA to authorize the marketing of this product" (3 NGOs following a press release from Obama against GMOs)
- ✓ "Lack of staff to document and monitor this issue" (3 NGOs)
- ✓ Lack of interest among French consumers for the fish as a product (1 NGO)
- Considering GM Fish : a GMO among others

GMO issues vary according to NGO:

- ✓ Greenpeace, WWF and IUCN: risk of release of GMOs in the environment
- ✓ Greenpeace: food safety for the consumer (GM animals would have increased effects compared to GM plants)
- ✓ UFC: The right of consumers to information, the labeling of GMO products including the products made out animals fed with GMOs
- ✓ ATTAC: the marketization of the commons (knowledge, life ...)

Positions of NGO about GMO

UFC	Not against GMO a priori, under 3 conditions :
Que choisir (Consumers Union)	1/ There are no risk for human health at middle and long term, and no risk for environment, 2/ There is some usefulness for consumers « Just now, it is 0 » 3/ There is no conventional alternative.
Greenpeace	Against all GMO
WWF	Against all GMO
IUCN	No official position about GMO. Unofficially unfavourable.
ATTAC	Against all GMO

How to act if PoGM arrived ?

- ✓ Trust the current control system, but expose its flaws (2 NGOs).
- ✓ Do not rely on the system that has already shown the flaws with the GM plant, "we must prevent that to happen, deal with the problem upstream" (3 NGOs)

Methods of action are identical to those already implemented for GMO plants ... But:

- ✓ "You could not pull them out as GM plants";
- ✓ "We would monitor processors and distributors, but they would not have fun and play that game with fish "(regarded as a natural product for the consumer).
- ✓ "A GM animal, it would necessarily be more visible than a GM plant"

Conclusion

If summarized to a practical viewpoint, the perception of GM Fish by economic actors, both in the fish farming sector and in the aquatic food products chain, clearly show that transgenic fish have no possible place today in the farms or in the markets in France or in Europe, because of a global idea of public non-acceptance, especially by consumers. Obviously, those results are linked with the French and European context, where GMO is an issue largely discussed, raising questions and unfavourable reactions. It can be recalled that our consumers focus groups showed very elaborated perceptions of the GM Fish, through a real ability to build argumentations including various aspects related to GM Fish and transgenesis : relation man – nature and environment, relation to science and techniques, economics and politics, etc. In fact, apart from their viewpoint linked to their professional function, a number of interviewees also showed such ability to consider GM Fish under various approaches. As for NGO, there is no time today for a special treatment concerning GM Fish, which is treated mostly as one GMO among others. All interviewed NGO declared a position clearly against any GMO, except UFC (consumers union) which showed a possible open attitude but under very restricted conditions. Our findings reinforce the conclusion that transgenesis applied to fish cannot be simply considered as a technique and a source of potential new food product.