

Foresight on oilseed competitiveness: Exploring collectively the possible "futures" *

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Summary : The objective of foresight (future studies) is to enlighten decision-makers, by exploring collectively the sphere of possible "futures" and bringing out different scenarios for the future. CETIOM has carried out such an approach in order to assess oilseed (rapeseed and sunflower) competitiveness in France and Europe, taking into account the European and worldwide context by 2010-2015. The competition between domestic oilseeds and other sources of fats takes place at all levels of production, transformation and consumption processes. Thus, this future study has involved about 150 people from several scientific fields, economic bodies and institutions. The overall methodology used has been designed by INRA and is based on a systemic view of the various issues addressed and requires graphic representation models. Seven strategic topics have been set up at the end of this work: agricultures and their relationships with the economic environment ; the role of information on fat consumption ; the consideration of nutritional recommendations made by the transformation industries ; the evolution of animal feeding models ; the place of oilseeds within production systems ; oilseeds and the environmental challenge ; the impact of non-food uses as a driven force for oilseed development. For each of these seven topics, various scenarios were drawn up as well as their consequences on oilseed competitiveness and on the future of the economic and social sectors concerned.

Keywords : foresight, future study, oilseeds, competitiveness, micro-scenario, strategy, prospective

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Increased uncertainty and a growing complexity of problems

The evolution of our context is characterised by increased uncertainty and by a growing complexity of problems: open world markets associated with a stronger segmentation, the globalisation of the stakes, industrialization of agriculture, new requirements in terms of environmental impact and food quality, emergence of new stakeholders involved in rural development, new deal between urban and rural areas and people, higher diversity of the decision-making centres, new challenges derived from information and biological technologies, etc. To foresee future developments is thus essential either in order to get ready for them or in order to lead them. This is precisely the role of foresight, whose mission consists in exploring collectively the spectrum of possible futures so as to clarify decision-making.

The objective of this work on foresight carried out by the CETIOM about the competitiveness of oilseed in France – within the European and worldwide contexts – is to enlighten those who are responsible for decision-making by means of the production of micro-scenarios of possible futures, taking the period 2010-2015 as the time horizon.

A foresight methodology based on a systemic view of oilseed questions

The methodology of foresight applied is known as SYSPAHMM (SYStem, Processes, Clusters of Hypotheses, Micro-scenarios, Macro-scenarios) and was developed by Michel Sebillotte at INRA's DADP. This work, done between 1998 and 2002, involved around 150 people belonging to several areas and organisations directly or indirectly linked to the oilseed sector: a reference group made up of 18 people, a permanent staff of two people, four groups of 30 experts each, a dozen experts consulted on an individual basis and methodological support from INRA-DADP. The first stage of the work consisted in representing the oilseed system graphically and in describing its current situation (1998-1999) through “processes” which explain its functioning and through “variables of state” that account for its characteristics. The second stage consisted in elaborating – starting from the processes and the variables of state – a set of hypotheses for future evolution that involve all the compartments of the oilseed system. Breaking hypotheses were also imagined starting from the new processes. A total of 105 hypotheses were retained. The third stage of the work consisted in analysing the direct influence (+, –, 0) that the hypotheses had on each other, taken in pairs. The matrix of 10,920 cells resulting from this analysis underwent mathematical treatment that highlighted the groups of hypotheses (clusters) more related among themselves than to the others. Further on, within each cluster, the meaning of the hypotheses and the relationships that link them suggested the outcome of different possible futures around a strategic topic dimension. Among the hypotheses in each cluster, driving hypotheses were selected from their ability to structure and to break loose the dynamics of different future patterns. Thus, each group of hypotheses brought forth two or more micro-scenarios depending on the different combinations of driving hypotheses which were chosen to be activated. The same procedure was used with each and every group of hypotheses (*figure 1*).

Seven groups of micro-scenarios of possible “futures”

There were seven groups of micro-scenarios built around the seven strategic topic dimensions (*figure 2*).

1) The micro-scenarios in group 1 “Agricultures and their relationships with the economic context”. Five micro-scenarios were elaborated by selecting different leaderships for agriculture. Thus, in

“enterprising agriculture” the leading actor is the farmer as an agricultural producer, but mainly as a business person and manager of his enterprise. In “an agriculture mastered by the great distribution and industry”, the downstream sector controls agriculture. Another micro-scenario presents the oilseed crushing industry as the organiser of oilseed production. In a fourth micro-scenario, it is the co-operatives and other companies which both provide supplies and collect grains who structure the agro-economic activity. In the last micro-scenario of this group, it is the farmer organizations which take on the leadership of agriculture management. They perform the animation and organise the development of rural spaces.

2) The micro-scenarios in group 2 “The role of information in lipid consumption”. Three micro-scenarios differ from each other by the kind of information which determines the choice of food by European consumers. In the first one, the nutritional information is determining for consumers' food spending patterns. This micro-scenario presents an extreme variant in which human beings feed themselves according to nutritional tables and respecting their individual nutritional requirements. In the last one, food consumer choice is driven by their preferences for authentic and traditional agro-food products, without taking into account the nutritional recommendations (e.g. the geographical origin of products and their traceability become important in this micro-scenario) (*figure 3*).

3) The micro-scenarios in group 3 “The industries of transformation take into account the nutritional recommendations” are based on the degree of evolution of the lipid nutritional recommendations and their interpretation by the consumers. If these recommendations were very variable, three micro-scenarios would result: one in which the oils and the products of the agro-food industries are both nutritionally balanced; another one in which the oil industries and the agro-food industries produce supplementary goods in the area of lipid nutrition; and a third one, in which the industries produce oils by combining fat acids obtained from oils. If the nutritional recommendations do not undergo important variations, six micro-scenarios could occur: i) the consumption of linoleic fatty acid faces a crisis; ii) linolenic fatty acid is considered as inescapable; iii) there is a preference for olive oil; iv) there is an increasing achievement of a balanced ratio between omega 6/omega 3 sources as well as for oleic fatty acid; v) rapeseed oil becomes dominant; vi) soybean oil becomes dominant.

4) The micro-scenario in group 4 “Evolution of animal feeding models”. Three micro-scenarios differ on the protein content in the sources used to feed livestock. In the first micro-scenario, the main source of protein is the soybean meal. In the second one, industrial amino-acids are widely used to achieve feed balances and to reduce the imports of soya. In the third one, new animal feeding models using only domestic protein sources (oilseeds, grain legumes, forage, etc...) are designed (*figure 4*).

5) The micro-scenarios in group 5 “Oilseeds within European production systems”. Six micro-scenarios differ on the technical innovations in cropping systems (yield, resistance to diseases, etc...) achieved and on the acreage changes that such innovations would bring. The micro-scenarios present various combinations of acreage for rapeseed, sunflower, wheat, grain legumes and other crops (*figure 5*).

6) The micro-scenarios in group 6 “Oilseeds facing the challenge of the environment”. The environmental issues have been considered as a major concern for society and are present in all of three micro-scenarios of this group. They differ due to the liberalisation, or not, of world agriculture, and on the development, or not, of a European policy which favours territorial and sustainable

agriculture. The micro-scenarios elaborated are: i) oilseed development within the framework of sustainable agriculture; ii) in the absence of a policy favourable to sustainable agriculture and in the presence of taxes on environmental pollution, the ecological advantage of oilseeds becomes an economic advantage; iii) oilseeds within the context of a liberal agriculture. This last micro-scenario presents two variants: “resistance of the agriculture of production” and “agriculture of production declines”.

7) The micro-scenarios in group 7 “The impact of non-food uses in the development of oilseeds”. The four micro-scenarios worked out differ on the development of non-food products manufactured from vegetable oils. In three of them, the non-food uses of vegetable oils increase within the European Union through several factors: environmental policy, energy policy, image. In the last micro-scenario, the use of vegetable oils for non-food consumption declines in favour of animal fats and other new sources of energy.

The micro-scenarios: a major outcome but not the only one

The seven strategic topic dimensions around which the micro-scenarios have been built are not a predetermined entrance, but the outcome of analysing the influences among the hypotheses. Each strategic dimension focuses on a specific question, but the hypotheses that lie in its core involve almost every component of the oilseed system. Thus, every micro-scenario allows us to focus on one problem, without losing sight of the relationships with the oilseed system as a whole. Micro-scenarios are a major outcome of this foresight, but they are not the only one. Indeed the construction of a systemic vision of the oilseed system (graphic representation as well as static and dynamic description) becomes an outcome in itself and requires a process of synthesis of both several written (publications or grey literature) and oral pieces of information rarely put to work as a whole.

The micro-scenarios lend themselves to analysing different tensions within the oilseed system, such as the confrontation between the economic and the social actors about agriculture; the effects of the quantitative and the qualitative changes in oilseed production; the consequences of potential animal feeding changes on the farming systems and on the crushing industry; the difficulties to establish a direct relationship between the characteristics of consumers' demands and those of oilseed production.

The micro-scenarios as a tool to enlighten decision-makers

Starting from the idea that the future is not predetermined, but that there may be some intervention in its construction, the micro-scenarios describe various possible futures that decision-makers may wish to promote or avoid. Thus, through an adequate method, the micro-scenarios are a tool to help in decision-making, to orient the general policies and to elaborate the strategies.

Following a systemic approach, this work analyses and relates processes which take place in the different sectors of the oilseed system. Thus, agricultural issues are dealt with in relation to other dimensions, such as industry, distribution, consumption, investigation, etc. This is a key point for decision-making because it makes us aware of the impacts which decision-making in a sector may have on the whole oilseed system.

CETIOM, INRA as well as other institutions are currently using these results to manage their research programmes.

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