Conclusions and recommendations of the Seminar

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SUMMARY – The set of recommendations issued from MASMANAP concerted action is divided into the main fields of interest, including the analysis of aquatic food supply and the review and assessment of the main economic studies carried out in the field of markets and consumption. The in-depth analysis of seafood demand, based on both quantitative and qualitative surveys, is reported to be an essential tool to manage the development and diversification of the aquaculture industry. The marketing survey of new aquaculture products is also expected to provide a good insight into the potential outlets offered within the whole food sector. This paper also takes into account some of the points of view expressed by the aquaculture industry representatives during the final seminar.

Key words: Aquatic food supply, marketing of aquaculture products, aquaculture.

RESUME – *"Conclusions et recommendations du Séminaire". L'ensemble des recommandations issues de l'action concertée MASMANAP est présenté suivant les principaux domaines d'intérêt, regroupés autour de l'analyse de l'offre des produits aquatiques et de la revue et l'évaluation des principales études ou enquêtes économiques menées dans le domaine des marchés et de la consommation. L'analyse en profondeur de la demande pour les produits de la mer, sur la base d'enquêtes quantitative et qualitatives, fournit des éléments indispensables pour accompagner le développement et la diversification de l'aquaculture. La mise en place d'un outil de veille économique des "nouveaux" produits d'origine aquacole représente également un enjeu important pour analyser les débouchés potentiels de l'aquaculture dans le contexte général de l'alimentaire. Ces recommandations reprennent également un certain nombre de points de vue exprimés par les représentants du secteur de l'aquaculture durant le séminaire final.*

Mots-clés : *Offre des produits aquatiques, commercialisation des produits d'origin aquacole, aquaculture.*

Trends analysis and on-going survey of aquatic food supply

In order to perform a better on-going survey of the aquatic food market, a general recommendation aims at: (i) making access to available *detailed data* easier; and (ii) enhancing the collection of first hand sales prices. These "basic" observations apply to different purposes, field of investigation, time-scale, etc., but whatever the objective may be, the prerequisite is to understand the aquatic food market as a whole, derived from both fisheries and aquaculture supplies.

The right use of production statistical data series in the dynamic analysis of aquatic food supply

The accurate evaluation of trends in seafood apparent consumption is mainly dependant on the reliability of the national production databases.

The main reservations that have been expressed within MASMANAP are related to the heterogeneity of the different sources of data involved at the national and/or European levels, the possible breaks in the methodology used to build statistical series, the confusion resulting from the existence of different evaluations of production (official or non-official data). Due to the anteriority of the data concerned, and the difficulty in adjusting them *a posteriori*, the recommendation here

[1]This report is based on the contributions presented at the MASMANAP Seminar whose papers are included in this volume, as well as on Girard, S., Iandoli, C., Papageorgiou, P., Young, J.A. (2001*). Methodology for seafood market studies with the aim of introducing new aquaculture products.* FAIR-CT98-3500, progress report 2000, prepared for the Commission of the European Communities, Brussels.

basically stresses the need for expertise and the need for assessing the main statistical shortcomings or inaccuracies to be taken into account in the resulting trends analysis:

(i) Taking into account the heterogeneity of methodology used for aquaculture and fisheries captures production (and their respective level of exhaustiveness).

(ii) Identifying the best sources of data in each country and assessing the steadiness of statistical outputs, namely by pointing out the existing breaks in data-series.

(iii) Getting the accurate breakdown of fisheries captures per outlets (human consumption, feed and other non-food uses).

In addition, the synthesis of statistical assessment carried out per country has emphasized some inadequacies between the national statistical databases and the international sources, such as FAO (which go far beyond the difference of data unit, e.g. landed weight versus live weight).

Accordingly, a recommendation should be addressed to FAO, in order to make more transparent and more accessible to data users the harmonisation process that is carried out in the framework of international databanks (FAO, EUROSTAT).

The further involvement in the dynamic analysis for the main aquatic food supplies

The interest to shift the focus of the balance sheet evaluation from global level to large commodities flows is apparent, but raises some difficulties due to the difference of structure between production statistical system and customs statistical system. While the primary production data lies on species, or group of species classification, customs declarations are based on a "product" nomenclature (a mix of preservation mode/species), which often leads to a loss of the "species" information, and consequently does not allow for a complete evaluation of supply per species. Bearing in mind that international compromise limits *de facto* the expanding of customs itemisations, some unavoidable recommendations are expressed to make the content of foreign trade database more beneficial for the users:

(i) As a recurrent remark coming from data users (intermediary users of international statistical departments as well as final individual users), to reduce the significant reporting of incompletely identified production or trade. In the case of production data, this remark means for miscellaneous species groups or others species (i.e. unclassified according to the available nomenclature), which are regrouped within FAO database under the label "nei" (not elsewhere included). In the case of customs registrations, the items "others" defined by default at different level of aggregation also cover large quantities of trade, which limits the interpretation on the more specialised markets.

(ii) The need for expert knowledge to palliate the deficiencies of customs data, in order to checking the wrong declarations and assessing the farmed or wild status of the product, in particular thanks to the country of origin.

(iii) The need for further up-dating of combined customs nomenclature, in order to be more proactive towards the new commodity flows subject to soaring international trade (for instance the new aquaculture species such as tilapia, catfish, etc. the exports of which are increasing towards to the European market, etc.), and even to anticipate the new potential species resulting for farming diversification, or more generally the development of new significant trade flows, whatever they may be (the proposal for introducing new species-items in international customs nomenclature being discussed and agreed to by the country representatives during the periodic COMEXT meetings).

(iv) The need to adopt a common weight unit to express the evaluations of apparent consumption data. In the field of economics analysis about markets and consumption of aquatic food, the "landed weight" equivalent seems to provide the best relevant unit.

Being the counterpart of the required statistical improvements, the need to go thoroughly into the balance sheet method to analyse aquatic food markets is one of the main recommendations issued from the MASMANAP concerted action. This requires the definition of relevant sub-markets with respect to the purpose of the study/research, based on volume and price segmentation, main outlets

(fresh market/processing industry, etc.). With the aim of focusing on the diversification of farmed fish production, the delimitation of the reference market would correspond to the non-pelagic fish species in the initial stage.

Setting up on-going indicators of production, trade and prices in the field of aquaculture

In complement to non-free access professional databanks, which are dedicated to private operators, a wider access to public data is expected by professional, administrative and policy makers, researchers.

With the rapid growth of the "new" fish farming industry since the end of the eighties, the need for setting up a specific statistical database about primary production has become crucial. Given the specificities of aquaculture industry versus the fisheries captures sector, the statistical system to be developed would probably differ from that set up to measure wild catches. Yet, it is essential on either side to tend towards the same degree of detail and exhaustiveness, and to aim at supplying a common "primary aquatic species production" database with similar outcomes.

Indeed, in the field of aquaculture the purpose goes far beyond the dissemination of the yearly volume of production per species, which is today assumed by FAO, thanks to the contribution of national official statistics and through its support to institutional network, such as SIPAM (information system about Mediterranean aquaculture). The ambit of the database consolidation is to include more detailed (species, size) information on both production in volume, marketed quantity and average price, at least on a one-month basis and at short notice.

A collation of these essential market indicators at the European level would make up a significant progress in continuous market survey. This measure could be initiated in the field of fish farming through the experience of the most mature and organised farming industry, as Norwegian and Scottish salmon culture, French trout farming, Greek mariculture.

The appropriate location of such databank covering the production flows and prices for the main species (and main representative sizes) produced by European countries could be the FEAP (Federation of European Aquaculture Producers), which already initiated pilot project with national producer associations.

Markets and consumption analysis: Review and assessment of existing studies

The disparities of the means dedicated to survey and analyse the seafood consumption markets in the different participant countries is the first conclusion which commands attention.

Within the inventory and assessment of seafood market studies it has been noticed that academic reports were few, and when existing, tended to address very specific issue and to cover partial areas, in both geographical and market sector terms. Indeed, academic studies are shown to deliver a great provision of detailed data, since the main fields of research investigated concern econometrics and marketing. Yet, in counterpart, it appeared that their contribution to pan-European studies or to global economics analysis about markets and consumption of aquatic food was limited.

On the other hand, all evidence suggests that most of the market studies are commercially-driven and, as such, non-freely accessible to researchers or small producers, given the strategic decision-tool they are expected to provide to the subscribers. One-off *ad-hoc* reports are mainly originated from private sector organisation and to a lesser extent from public bodies. In the latter case, more general interest leads to provide reports with a valuable breadth of coverage and a wider dissemination of the results, at least among the industry concerned. Now, regarding the majority of *ad-hoc* studies, from those which could be referred to, it seems clear that they provide for our concern very disparate and fragmented material, covering different time periods, geographical areas, market sectors. From the methodological point of view, they present many discrepancies while in terms of information sources, most of them resort to secondary data (consumer panel data or "point of sales" panel data) which are used first, and then completed by the collection of required primary data. Thus, it may be speculated

that the preliminary exploitation of secondary data influences at diverse degree the relevance of the final expertise supplied by market enquiries.

Precisely, the contribution of "panel" surveys to the economics of market and consumption has represented a key issue within the MASMANAP framework. We mainly focused upon CPS (consumer panel surveys) since they are the unique source of on-going quantitative data available to keep track of the main changes in household consumption and to analyse them in relation to different explanatory factors (structure of distribution networks, purchasing variables, regional and socio-demographic criteria). On the other hand, it has been pointed out that the survey of away from home consumption required a best coverage considering the weight of the catering sector compared to the final consumption taken as a whole. In this respect, it might be advisable to reconsider the respective boundaries of both "out-of-home" and "home" consumption jointly, in order that the respective scope of these two surveys tends to a real complementary.

Finally, the implication in qualitative studies about attitudes and perception of consumers toward aquaculture products was reported to offer an essential complementary approach to understand the purchaser's behaviour, and the methods of on-going qualitative surveys were explored.

The contribution of consumer panel data (CPD) to the analysis of aquaculture products

The analysis of the consumer panel survey (CPS), even based upon 4 countries only, allowed us to review and assess the potential outputs and to put the emphasis upon the determining elements ensuring the ambit of such surveys:

(i) The need for on-going monitoring, to get continuous information on the markets.

(ii) The required adaptation of the CPS to follow the main trends in purchasing behaviour and in demand features (related to sociological factors, such as demographic evolution of the "households" composition, evolution of "traditional" consumption patterns, etc.). In counterpart, the need to assess the results of breaks in data series induced by major changes (technical changes in recording the household purchases as well).

(iii) The key issue represented by the extent of the market investigated, the way of aquatic food categorisation and the level of detail of the itemisation.

(iv) In short, the capability of the CPS to face major changes in the targeted "home consumption" field of analysis and to be proactive with regard to the product itemisation.

In a cross-country analysis perspective, the main differences observed in terms of methodological approach have been reported in order to be in a position to interpret the consumption differentials. Within the framework of the European analysis of aquatic food consumption, the harmonisation concerns are added to the previous considerations and mainly focus upon:

(i) The need to harmonise the outcomes, and particularly as far as the presentation of CPD per demographic criteria is concerned.

(ii) The need to harmonize the product itemisations, even bearing in mind that the seafood categorisations generally reflect the structure of the national market/consumption. The purpose is to agree at least about common aggregates and sub-aggregates enabling the comparison of purchasing variables, distribution variables and "demographics" outcomes.

To enhance the contribution of CPS in the economics of aquatic food markets and consumption, further thought are required, which could open new research fields. This preliminary lies in the need of better valorisation and adding-value to the large amount of information provided by CPS. It is also expected to analyse the impact of non-economic factors on consumption, by defining *a posteriori* new categories of households, from their consumer profile.

Further involvement in the approach of away-from-home consumption survey

The market share of away from home consumption may reach from 25% to 50% of the final consumption of aquatic food depending of the country, which represents a significant outlet. Indeed we must bear in mind that the given estimations are not obtained directly from the results of the catering sector survey (primary data collection), but redressed according to secondary data (CPD where they are available, or/and the cross-checking of diverse sources of information).

In fact, it is apparent that the means dedicated to survey out-of-home consumption are proportionally inadequate considering the importance and the scattering of this sector. As the methodology attached to the survey of "away from home consumption" also lies in the monitoring of a panel's purchases, with a panel consisting of "restaurants", and the measured variables corresponding to intermediary purchases (inputs), the critical question concerns the representativeness of the sample. Though the typology used to sample the catering sector is quite complex and covers a large range of "restaurants" related to both commercial and institutional sectors, the recurrent difficulty is attached to the survey of independent commercial restaurants, in particular concerning: (i) their supply in fresh fish and shellfish inputs; and (ii) their covering of the tourist dimension of the demand.

Qualitative surveys

An on-going periodic survey of consumer's uses and attitudes toward seafood is necessary to assess the difference between what they declare and what they really purchase. So, in case of events likely to affect "regular" consumption by reducing the consumer confidence towards certain food, the impact on the consumer behaviour will be easier to understand and to estimate. In addition, carrying out polls at periodic intervals to measure the evolution of the perception of consumers about the image of aquaculture products, notably the sensibility of the latter to "food crisis", and to compare it with those of other food substitutes (wild fish, meats) offers an essential surveillance tool to anticipate appropriate communication campaigns.

Prospects on aquaculture industry growth: Species diversification/product differentiation

The management of aquaculture development and species diversification

As reported in the Green Paper on the future of the common fisheries policy (CFP), the diversification in aquaculture species production represents a recommended alternative to balance the shortage of capture fisheries. In counterpart, the future development of aquaculture production has to be managed in high connection with the market forecast, either: (i) to estimate the existing demand for new farmed species; (ii) to assess the expected competitiveness level of the industry as a whole; or (iii) to prevent market saturation of aquatic species from intensive farming production.

Moreover, the participants who attended the MASMANAP seminar in Zaragoza clearly insisted on the need to communicate the production mode (which became prescribed by new EU legislation from 2002), in order to meet the consumer requirements in term of information and to win the customers' loyalty. They recommended as well to include in all the sales promotion operations or advertising campaigns a survey about the impact of such activities on the evolution of consumer purchases.

The programme of MAMANAP CA related to the analysis of species diversification/differentiation firstly focused on the inventory of new species and their geographical location (European inland and marine areas, overseas territories). The involvement in the increase of the product range, through the diversification of size per species, was also reported as a second stage of aquaculture development. Finally, the review of all the national or regional implications in terms of quality labelling processes completed this first approach of the strategies of aquaculture diversification/differentiation initiated by the production sector.

This "state of the art" of species diversification in MASMANAP countries provided a preliminary overview of the situation of the aquaculture industry in Europe. The distinction made between different stages of development, i.e. initial species selection, research and pilot stage and commercial stage is

essential, given the significant time which elapses from the outset of research undertaken on species to their effective emergence in the markets. In this respect, the increasing need of multi-criteria approaches to select the potential candidate(s) for aquaculture species diversification was stressed, in order to limit the uncertainty of costly long-term projects. In such multi-disciplinary studies, both biological/environmental constraints, technical and economical feasibility and market/consumer concerns have to be considered with the aim of orientating the future diversification and development of aquaculture industry towards the most appropriate choice.

The marketing survey of "new" aquaculture products

In order to assess the potential outlets for the aquaculture industry, another purpose of MASMANAP was to deal with product differentiation aspects, through the inventory of the "new products" launched in each country, especially in the chilled processed market.

Because there is no official "surveillance tool" of markets available at present time, two ways of investigation were recommended: (i) the seeking of "primary" information, directly in the point of sales, in seafood exhibitions or thanks to contacts with the industry; and (ii) the exploitation of secondary information provided by specialised trade press. The analytical framework proposed to approach new product development (NPD) in the various countries consisted in filling a pre-documented grid, listing a quite exhaustive range of new products (launched in the domestic market within the last two years) based on farmed species. The preliminary findings issued from this empirical approach, mainly of a qualitative nature, have confirmed the disparity of European countries with respect to the state of diffusion of "new" products, and to explore the extent of the range of products available from the most dynamic markets for chilled value-added products, i.e. France and UK. The method used also stressed again the need for agreeing a common terminology, in order to analyse the forthcoming expansion of the demand for such convenient aquatic food.

In view of formalizing a "surveillance tool" for assessing the diffusion of "new" products (from a qualitative and quantitative point of view), in-depth reflection has to be undertaken in order:

(i) To state the definition of "new" products precisely, and delimit the outline of "innovation", in terms of preservation techniques, processing mode, product presentation, recipes, packaging, marketing, consumption mode.

(ii) To date and inventory the launching of "new" products in a systematic way. In this respect, two geographical levels have to be considered at least (national level, international or European level) to take into account the required time for innovation to penetrate on different domestic markets, according to national consumers' preferences and their propensity to adopt new purchasing and consumer behaviour.

(iii) To go beyond the qualitative approach, e.g. to tend towards a quantitative assessment of the innovative process in seafood markets thanks to relevant indicators to be determined. Such method and indicators should be determined in collaboration with the seafood processing industry, the catering sector and the large retailers which play a major role in the diffusion of new aquaculture products.