

Mechanisation and Traceability of Agricultural Products: a Challenge for the Future

Theme 1

Quality of Production, Reasons and Means for Traceability, Needs of Markets and Institutional and Prescriptive Aspects in the EU Context

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The consumer and food market changes in the European Union

The recent years have seen a substantial and sudden change in the behaviour and in the relations between consumers and the agri-food chain. These changes, though characterised by distinct dynamics, have a common root in the relation with quality.

If, on one hand, the relationship between consumers and food produce has experienced, in functional terms, a growing demand of product built-in services – such as single dose packs, fast food, whether frozen, fresh in modified atmosphere or vacuum-wrapped – on the other, the demand related to the process and the production system has taken a great visibility. The consequence has been that consumers in purchase choices are considering new issues: “how is it obtained?”, “where is it produced?”, and “what are the impacts of the production methods on the environment and on land?”. Considering the market and non-market problems occurred over the last ten years, these questions seem particularly topical and urgent in the field of animal husbandry, while still involving, at least for the future, the whole agri-food sector.

The data of a recent survey on Italian consumers provide quite clear indications on the ranking of food products perceived as being of higher quality (Table 1). In other words, the table illustrates the “premium” consumers are willing to spend to ensure quality produce.

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Table 1 – How much one is willing to pay as an extra for a quality produce

	Share (%)
Nothing	5
Till 5%	20
Between 6 and 10%	33
Between 11 and 15%	16
Between 16 and 20%	11
Between 21 and 30%	6
Over 30%	5
I don't know	4

Source: Swg 2001 Investigation “The challenge of quality”.

As clearly indicated over 90% of interviewed are willing to pay a premium. In particular, one third of the sample is willing to pay between 6 and 10% more than the conventional produce. There are, however, substantial shares of consumers who are willing to recognise largely higher price differences.

A recent survey of Eurobarometro on the EU consumers does confirm these values.

Shortly, it may be stated that, from the perspective of the EU production firms and chains, quality is a choice that may find a direct return in the consumer even in economic terms. Obviously, for these indications to translate into effective economic results, it is necessary to achieve and communicate a quality that is perceived and could be recognised by the consumer.

Next to these “traditional” definitions of quality, a new issue has been recently emphasised, that is food safety. Focus on this has been induced and stimulated by particularly attracting issues for the public opinion and the media, such as the “mad cow”, the debate on biotechnologies and on genetically modified organisms (GMOs) in the food sector, and even some scandals such as the Belgian dioxin-chickens.

Moreover, looking closely at the Italian reality we discover further paradoxes that deserve some reflections. This is the case of the BSE in which Italy has seen, on one hand, the highest drop of domestic consumption of beef in Europe, and, on the other, one of the lowest numbers of affected animals in Europe.

Actually, in 2001 the Italian beef sector has experienced a 28% fall in consumption, with -30% for veal and a less, although evident, marked reduction for beef (-25%). This trend is countered by the increase in pork (+18%), poultry (14%) and rabbit meats (4%).

Such severe effects did not occur in other European countries, where the epidemic showed stronger effects: from 1987 to 2001, indeed, over 18,000 cases of infected animals were observed in Great Britain, 277 in France, 246 in Ireland and 125 in Germany, against 50 cases only recorded over the same period in Italy.

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In the same way, other affairs that have concerned the European poultry sector have not spread in our country thanks to the high health-sanitary standards adopted. Nevertheless, despite these objective data, the consumption on the domestic market has, however, decreased as a result of information campaigns and of the attention devoted by media to food scoops.

The changes and the new orientations of the EU agricultural policy

Besides the direct impacts on the market and on demand behaviour, these events have had a further effect that has no precedents in the past; they have indeed modified the attitude and the citizen-consumer relation as well as the whole chain related to foodstuffs. This has also influenced the Common Agricultural Policy (CAP), that is the system of rules, tools and economic resources aimed in the past to ensure the food requirements of the European Union but also the economic conditions and farmers' income.

For some years the CAP has been put under “observation” by the public opinion because, on one hand, it absorbs a considerable share of the Community budget, nearly 50% with an expenditure of over 40 billion euro, but, on the other, it has not been able to prevent “shocks” such as the BSE and swine fever, and to ensure the consumers' and citizens' safety, in general.

This has pointed out explicitly the issue of the quality of rules and of the agricultural policy, but also the problem of their acceptance by the public opinion. On this basis it is interesting to look at the data of the last Eurobarometro survey of 2001, which has indicated the objectives the European citizens would like to have as basis of the CAP (Table 2).

Table 2 – What do the European citizens expect from the Common Agricultural Policy

Objective	Share first option
Safe and healthy products	90%
Respect of the environment	89%
Protect small enterprises	82%
Adapt agriculture to consumers' needs	81%
Improve the living conditions in the rural world	80%
Increase the competitiveness of the EU agriculture	78%

Source: 2001 Eurobarometro Survey.

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The table shows the theme of the new objectives as compared to the past; the priorities are the “safety and healthiness of products” (90%) and the “environmental sustainability” of productions. Vice versa the economic and productive objectives that have supported the historical functions of the CAP are not considered today as being priorities.

If we consider the recent evolution of Community policies we find that some major moves have been made in the direction indicated and expected from citizens.

First of all the White Paper on food safety and the so-called “Food Law” of July 2001. In compliance with the prescriptions, in few months the Authority for food safety will be established.

Next to these horizontal “pillars”, which are essential to build a relation of confidence with the consumers, the other great effort should concern the CAP. The CAP is making, during these weeks, the first moves towards the mid-term review of the agreement on Agenda 2000, signed in 1999. This will give the opportunity both to check and improve the relationship of agriculture with the markets and to revise the relevant tools and objectives. The CAP will increasingly become a tool able to orient the farms’ and the system operators’ behaviour towards quality and consumers’ expectations.

The European agri-food chain is facing the new cause and effect relationship that relates the CAP, its cost and the objectives it is intended for. If the definition of the objectives, based on the review of the CAP scheduled for 2003, is respondent to the “new” citizens’ requirements it will be maybe possible to undertake an action of sustainable development of the agri-food chain and of its enterprises over time. In this action, more than in other options, quality products could find the appropriate space.

Nevertheless, these new bases do not only concern the European Union but also involve directly the countries and international production systems.

This is due, on one hand, to the constant increase of the international trade of agri-food products with the subsequent enlargement of the scope of the rules and requisites of products and of their production systems. On the other hand, there are an increasing number of countries in which the public opinion and the politicians address explicitly new requirements to the agricultural and agri-food sectors.

The EU approach to quality and food safety

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Without going deeply into the specific policies, these scenarios find a common denominator in the new needs of “assurance” on food safety, in general and on the transparent certification of production processes and of the single products being used and obtained.

Adequate tools should support this assurance, and it is within this context that the European Union is strengthening the need to introduce systems of product traceability. This is a choice that opens up new prospects, such as the handling of information, the labelling and segregation of sectors (the so-called identity preservation).

The development of the European food legislation has been influenced, over the last forty years, by scientific, social, political and economic forces. Within this period, the food legislation has pursued different strategic objectives, such as harmonising the national measures and supplying a basis for the domestic market, or adopting common measures within the common agricultural policy (CAP). Although not always explicit, these objectives have been indissolubly related to the creation and keeping of a high level of human health protection, consumers’ safety and safeguard. The multiple objectives have entailed some differences in the approach to food legislation as well as inconsistencies or even gaps.

On this basis, the White Paper on food safety of the European Union has defined the strategic objectives, the priorities and the work programme relative to food legislation, in general, and food safety, in particular. Actually, the White Paper has confirmed and defined the commitment of the Commission to devise an overall integrated approach to regulate the entire food chain. In particular, the White Paper has launched the proposal to establish a European Food Authority and has provided a complete range of definitions, principles and measures to ensure a high level of protection and an effective operation of the domestic market in the food sector.

The White Paper has identified the need to face the issue of consumers’ and commercial partners’ confidence in the European food sector. Consumers and commercial partners have actually lost confidence in the public bodies’ capacity to regulate and control the safety of food supplies, in the system of elaboration of the European food legislation and in the European institutions themselves. This has necessitated a substantial revision of the Community organisational system.

The need to have promptly a sound and reliable scientific consultancy in a sector that is getting more and more innovative and technological, is heavily weighing on the European system of the scientific committees in charge of devising specific views. The Community legislation makes use more and more of scientific evaluations designed to protect the European population. In the food sector such a task is charged to the scientific committees established by Commission decision No 97/579/CEE², that sets up the scientific committees in the field of consumers’ health and food safety, and decision No

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97/404/CEE3 that establishes a steering scientific committee. This growing need has inevitably enlarged the system, both in terms of the committees' ability to assess the safety of scientific papers and for the evaluation of more general issues relating public health.

This proposal reviews the organisational changes required to ensure the working out of scientific views and to encourage co-operation with the member States so as to ensure the best use of the available skills.

The regulations of the European Parliament and Council (COM2000/716), commonly known as "Food Law", have actually materialised these objectives, establishing the principles and general requisites of food legislation, and fixing some procedures for food safety, including an early warning system for food and feedingstuffs. Moreover, it has established the European Food Authority, defining its scope, tasks and responsibilities.

Contrary to the relatively recent development that food legislation has experienced at the Community level, the national laws in the food sector are much older. Therefore, the definitions of food and the general principles and requisites of food legislation are deep-rooted in the legal history of some member States.

While having similar notions and principles, national provisions show some differences in terms of methods and details, which can disrupt the domestic market operation.

In other words, they refer to some basic principles, definitions and guidelines (also in terms of obligations and responsibilities for enterprises) that could be useful for the future review of the measures in force or for working out proposals in new sectors. One of the strengths of "food law" is that it has fixed some common definitions, including the definition of "food", and has established the guidelines and general legitimate objectives of food legislation, so as to ensure a high level of health protection and an effective operation of the domestic market.

In conclusion, focussing on the legal issues related to the origin, the recent food scandals (BSE and dioxin) have shown that the possibility to identify the origin of feedingstuffs and foods, including the ingredients and food sources, plays a major role for consumers' protection. In particular, the traceability facilitates the possible withdrawal of foods at risk, and allows consumers to have ad-hoc and accurate information on the products concerned. The recent proposals of the Commission that are directed to re-formulating legislation in the field of food hygiene indicate the general requisites applicable in this field and enable, however, derogating the need of traceability in the sectors where it is not feasible while establishing, where necessary, more specific requisites.

In particular, there is already an existing trend for all feedstuff and food producing companies to establish systems enabling them to identify their own suppliers of food, feedstuffs and animals intended for human consumption, as well as those who, in turn, supply their own products.

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This is to be made available, upon request, to the relevant authorities. This provision also concerns importers, as they should be able to identify those who have exported a given product from a third country. This measure is intended to ensure that enterprises are at least able to identify the previous and subsequent rings of the food chain, unless specific provisions require a greater traceability.

Enterprises and chains towards traceability: new roles for mechanisation

Without going deeply into the regulatory and legal aspects, it is now possible to address the key issue of my presentation, that is the implications and effects of new quality tools, in particular traceability, on the agricultural sector.

First of all, it is important to underline that the past experience points out that the single components of the sector cannot, per se, satisfy the conditions required to ensure the consumer effectively: it is therefore essential to ensure an integrated sector-based approach, which has long been accepted at the European level, and emphasised in the White Paper on food safety.

This means that each operator of the food chain, ranging from agriculture to distribution, should be responsible for his/her competence, developing "sector protocols" that include also the points of change and transition from a phase to the next.

If considering the quantitative aspects, the experience of countries that are currently involved in the production of GMO agricultural products– such as the USA – provides important indications showing that there are– above all– direct effects on **production costs**.

From a recent study of the EU Commission referred to the segregated management of maize and soy-bean in the USA, it results that farms have experienced an increase in production costs between +6/7% and +16/17%. The cost items with the highest impact are those referred to the management of contamination and to the transportation and storage phases.

But the effects of this situation affect the whole sector, including the first buyers such as the milling and feedingstuff industries. The purchase price of “ogm-free segregated” maize and soybean in the USA experience exceeds the conventional price by about 13 US\$/ton for maize (about 10% of the price) and 40-45 US\$ for soybean (about 15% of the price).

Nevertheless, we should frame these brief indications in a larger context. Above all these significant impacts on costs could change significantly as related to the scale economies resulting from a large spreading of these methods. On the other hand, the recent experience does confirm that the adoption of these methods can support policies of supply

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differentiation and commercial upgrading, thus shifting actually on final buyers all or part of the actual increase in cost.

Lastly, we cannot ignore that in some cases, these new production orientations are not an option but a forced choice to aim at the long-term sustainability of agricultural activities and of the agricultural policy as well.

In the light of these indications, we can draw some conclusions on the effects of these scenarios on the future prospects of agricultural mechanisation. These prospects could be analysed at two levels:

- both directly
- and indirectly.

The first level is the one that derives directly from the application in food sectors of traceability systems, and hence their extension to all production phases, including those related to the field.

Within this prospect the major relevant item for agricultural mechanisation is related to the issue of segregation, that is the autonomous or fully separated management of entire production chains. At present, the needs of traceability associated to segregation are strong for “ogm-free” and organic sectors. Nevertheless, these needs are likely to extend in the forthcoming years to other certified productions that shall be segregated.

These methods of chain management necessitate and will increasingly necessitate a special focus on the possible sources of crossed contamination. Within this frame the demand for specific mechanical tools and means related to the needs of segregated management will grow and will demand both technical solutions able to respond effectively to crossed contamination problems (attention is to be paid to the cleaning of means and mechanical parts) and mechanical means, more flexible in use and likely to be efficient even at different scales from the present ones.

On the other hand, it is necessary to assess the “indirect” effects resulting from the prospect of technical means demand in relation to the new agricultural and food scenarios. These scenarios could lead to:

- re-define the geographical distribution of productions in different world areas, within single macro-areas or within the European Union;
- reduce the subsidies (despite the recent change in trend in the USA), notably those oriented to direct objectives of increase in production and productivity, with possible negative impacts on the capacity to invest in technical means;
- further trade liberalisation, with the major effects of China accession to the WTO and the future accession of Russia;
- and lastly new demands even for technical means will emerge; in this sense the most relevant case is that of Eastern Europe countries that will join the European Union

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starting from 2004, thus causing an enlargement of the European agriculture by over 60 million hectares.

Next to these dynamics there are other major variables that are still very uncertain; they range from the signing of agreements on international trade (especially for the contents related to the Trips and the international protection of designations), to the mid-term review of the European Union agricultural policy (Agenda 2000).

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