REPORT

QualityLowInputFood

Concept papers outlining parameters for further development of Organic Food Processing - Crucial topics for the revision of the EU regulation 2092/91


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Executive summary

Four concept papers outline parameters for the further development of organic food processing. They are based on other work already executed in the subproject 5 Processing in the QLIF-project, in particular the literature survey on "Underlying Principles in Organic and "Low-Input Food" Processing – Literature Survey" published in 2004 by Schmid, Beck and Kretzschmar, as well as the "Approaches used in Organic/Low Input Food Processing - impact on food quality and safety" results of a Delphi survey from an expert consultation in 13 European countries." (Kretzschmar, Schmid, 2006).

The four crucial topics highlighted in concept papers that have been chosen are summarised below:

1rd Concept paper on the chances for a concept of "quality of origin" and on criteria and procedures for the evaluation of additives for organic food processing

This area of quality of origin is on the one hand relevant for the further development of marketing strategies. On the other hand, standard-setting/labelling organisations in particular can play an important role in developing this concept further on by developing and promoting new private rules together with their partners (operators on farm, an processing and trade level), e.g. for

- certifying "organic" additives,
- specifying lists of materials;
- standardizing evaluation processes.

Some of these possible instruments are comparable to those that have been elaborated in more detail for fertilisers and plant pest and disease control products in the EU project "Organic inputs"(www.organicinputs.org).

2nd concept paper on environmental orientation of organic foods producing processing companies

This paper describes some instruments and tools that could be integrated in EU or nationally funded promotion or research projects for organic/low-input food processing:

- Encourage "organic" companies to focus more on environmentally friendly production methods. Support these companies to implement environmental management systems (support consultants, support the establishment of a knowledge network between companies with experiences in these systems, etc.)
- Enhance public procurement of organic products and *market pull* policies. Besides the claim that the food should be organic, the public procurement could also contain a claim that the companies involved should have an EMAS certification.
- Proposals for amendments of EU Regulation 2092/91. It could be mandatory for companies to have an EMAS certification after a deadline, e.g. from 2008 on.

3rd concept paper on processing methods and their labelling

There are private as well as public instruments and tools to achieve better labelling

- The EU-legislation should give recommendations regarding what is allowed to be labelled and what cannot be labelled.

- The country authorities and private standard setting bodies have the possibility to decide in their standards what kind of information about processing methods companies should put on the labels of their products.

4th concept paper on the improvement of separation practice by parallel processing of conventional and organic products

The EU Regulation 2092/91 already gives guidance with a clear goal in requesting a "sufficient separation during the harvesting, transportation, processing and packaging of organic food".

What is missing until now has been more focus on a risk-based approach. As a consequence the EU-Legislation should explicitly request from a company with parallel processing to identify the risks and to make a company- specific HACCP concept in which the critical aspects of separation of organic and non-organic food are included. This concept will be the basis of the annual inspection and certification. Details are yet to be elaborated. Experiences gathered in a risk-oriented analysis of the supply chain from the EU project "Organic HACCP" should be taken up.

To summarize, all the 4 topics that we had outlined have a high importance from a consumer perspective, which has a certain perception of organic food production. If those expectations cannot be fulfilled, the organic food sector risks a situation in which consumers feel deceived and will buy other labelled products instead of organic products which might give the impression of being more sustainable or more authentic. Therefore, it is necessary for the organic food sector to find ways to better fulfil consumer expectations and reduce the risks of an image of damaging practises. How this will be achieved is up to the sector.

- The integrity of organic produce might be achieved by strengthening the "quality of origin concept, which can be enlarged with regard to additives which can be produced with raw materials of certified organic origin.
- A better integration of environmental issues not only in the agricultural production but also in processing might be achieved mainly through the good example of pioneer companies who have already introduced environmental management systems.
- Consumer trust could be improved by considering a specific additional labelling, to ensure that consumers are not mislead about the nature of processed products but in a way that does not discriminate against organic products compared with conventional products, which do not have to label certain processing steps.
- Risks with parallel organic and non-organic production/processing lines might be reduced primarily by a consequent introduction of specific, more flexible and effective HACCP concepts for the separation of production lines. Such systems must be established by the organic food industry and accepted by the authorities.

The feedback from the Delphi expert survey has also shown that it is important that the private sector keeps the lead in developing trustful and authentic ways of developing these areas, e.g. with a common "code of practise for organic food processing". The competent state authorities and, in particular, the EU commission should only assist this process with additional legal requirements, in case the private sector cannot successfully develop these new concepts.

The four concept papers have the purpose of stimulating the discussions on these topics, which the authors of this publication view as being highly relevant. When analysing the proposed regulation the

Commission elaborated in December 2005, we can see that several approaches of these papers are reflected. We can find some of the problem areas in the following articles Art. 1 quality of origin, Article 6 environment, Art. 18/20 labelling. The problems with the separation practice are explicitly mentioned in the separation practice of feeding stuff.

The project group is convinced of the ability of the organic food sector to adopt, improve and further develop the quality of the work and the products. More transparent standards and risked-based inspection systems on all levels are the guarantee for a positive development of the whole sector in future.

Summary of the recommendations

Topic	Private sector	Competent authorities	EU Commission
Quality of origin *Organic additives*	▪ Standards setting/labelling organisations should promote organic functional ingredients by their standards ▪ Companies should develop technological or functional ingredients from raw materials produced in accordance with the principles of organic food processing. ▪ Labelling organisations could underline that development by implementing the concept of "quality of origin" strongly in their standards ▪ Companies should use certified organic technical or functional ingredients.		Change the title of Annex VI A in "Additives and other ingredients allowed for processing of organic foods". Related to this change other formulations in Article 5 (3) c) and Article 5 (5a) d) must be changed too.
Differentiated list of technical materials	Standards setting/labelling organisations should develop materials list for trade products of additives and processing aids used in organic food processing. This list should include information's or a kind of ranking related to the sources of the materials.	Authorities and inspection bodies should use specific material lists as a tool for inspection and certification.	
Standardized evaluation process	The standards setting/labelling organisations should test and implement standardised formats and criteria for the evaluation of inputs.		* The enclosed standardized application format should be used by all applicants for new substances which are proposed for annex VI. * The criteria catalogue should be used as a basis for the further development of criteria given in EU Regulations. * Evaluation of inputs for the EU Regulation 2092/91 should be criteria based and organised by standardised formats.

Topic	**Private sector**	**Competent authorities**	**EU Commission**
Labelling certified organic food additives and processing aids	The use and the labelling of certified organic additives and other ingredients with technological functionalities should be promoted Certified organic additives should be listed in the list of ingredients by name Labelling systems for the use of certain processing aids should be developed		EU should accept the certification of substances mentioned in annex VI A as organic
Labelling processing technology/methods	Should develop labelling systems for: ▪ Blanching ▪ Pasteurization and sterilization ▪ Concentrating ▪ Extrusion ▪ Ultrafiltration ▪ Post-pasteurization ▪ Drying of milk products ▪ Reverse osmosis ▪ Microwave/infrared heating ▪ Reconstitution of dried products ▪ Packaging material		
Labelling processing methods having positive effects on quality and the environment.	Should develop labelling systems for: a) Fermentation b) Processing methods not applied in processing, e.g. processing, homogenisation in milk processing c) Biodegradable packaging materials, positive effects on environment		
Separation practise	Private sector should follow a step-wise approach: ▪ Develop organic HACCP concept as part of a Code of Practise of the organic food sector. ▪ Develop non GMO risk micro-organism, enzymes anti-caking agents with certified organic ingredients (with exception of mineral salts) ▪ Demand separate packaging boxes for organic products If these measures are not sufficient in a medium-time perspective: ▪ Verify where separate processing lines are needed (as a consequence of the implementation of the HACCP approach) ▪ In the future to support mainly those companies which produce and handle only organic products.	Authorities and Inspection bodies should further develop an organic HACCP and develop guidelines for inspection and certification with the companies and the EU Commission	The EU commission should introduce in the EU regulation 2092/91 that when parallel production is in place a company has to elaborate their specific HACCP concept in which the critical aspects on separation of organic and non-organic food are included. This concept will be the basis of the annual control and certification.

1. Introduction

The concept papers in this publication are part of a subproject about organic food processing which aims at developing a more "consolidated" concept and framework for organic and low input food processing. This subproject on processing is part of a large, integrated EU funded project within the 6th Framework program in the area 5 on food safety and quality. This integrated project, the QLIF Project (Quality of Low-Input Food), aims at improving quality, ensuring safety and reducing costs along the European organic and "low input" food supply chains through research, dissemination and training activities.

These concept papers are outlining parameters for the further development of organic food processing. They are based on other work already being executed in this subproject, in particular the literature survey on "Underlying Principles in Organic and "Low-Input Food" Processing – Literature Survey." published in 2004 by Schmid, Beck and Kretzschmar, as well as the "Approaches used in Organic/Low Input Food Processing - impact on food quality and safety" results of a Delphi survey from an expert consultation in 13 European countries." (Kretzschmar, Schmid, 2006).

The above mentioned literature survey and in particular the 2 Delphi expert surveys have produced a number of interesting results, which were used for developing concept papers. Results of two seminars organised by the subproject coordinators, one at the Research Conference in Newcastle in January 2005 and one in February 2005 at the Biofach Fair/exposition in Nuremberg, are also reflected in these papers. The proposals have to be discussed intensively with regard to the major revision of the EU regulation 2092/91, which started in autumn 2005.

During the research work started in April 2004, the authors identified the need to elaborate concept papers about four crucial topics in the form of discussion papers for the EU Commission and the main actors in the organic food processing sector. This report aims to stimulate the discussion about these topics between the private sector and the competent authorities. The project team itself has included its opinion and is making proposals for the further development of these areas.

The authors are very much aware that these recommendations given in this paper should be understood as a first proposal. Only an intensive debate involving all stakeholders can clarify if and on which level these topics can or should be addressed by the organic food sector!

2. Overview of crucial topics in the 4 concept papers

An overview is given below about those four crucial topics highlighted in concept papers which have been chosen to outline parameters for the further development of organic food processing. The order is done in respect to the Revision of the EU-Regulation 2091/92.

1rd Concept paper on the chances for a concept of "quality of origin" and on criteria and procedures for the evaluation of additives for organic food processing

The concept of "quality of origin" is a central part of the whole concept of organic agriculture. Therefore it seems to be logical that this concept should also be applied for conventional inputs e.g. additives listed in Annex VI. Furthermore, the question of naturalness of such substances as well as the degree of isolation of substances is an important issue that has to be discussed. Better criteria, based on the principles of organic agriculture, might be helpful for amending Annex VI.

It seems to be interesting to prove a concept of those principles can be applied to Annex VI as well.

2nd Concept paper on environmental orientation of organic foods producing processing companies

Organic agriculture is often described as being very ecological, which means it is an environmentally friendly food production method. Organic foods are highly identified by the consumers with environmental terms (Schmid, Beck, Kretzschmar 2004). But when analysing the EU regulation 2092/91 there are practically no specific environmentally orientated requirements or standards, whereas in the area of agriculture this issue is a part of the concept. Therefore, it seems to be interesting for the further development of the sector to discuss if additional requirements for environmental friendly management of companies producing organic foods can be included in the framework. The paper will describe the situation, explore practical possibilities of improving the environmental impact of organic food chains and describe different scenarios and proposals for amendments of EU Regulation 2092/91

3rd Concept paper on processing methods and their labelling

Transparency is an important part of the organic food concept. The Delphi expert survey in this project showed that experts have different view points if there is a need and a chance or not to give more information about the applied processing methods on the labels. For years, there has also been a discussion about an enlarged ingredients list for organic products, which would provide more information for the consumers, e.g. about processing aids or processing methods. In reality, organic foods have exactly the same transparency on the label as the conventional ones! Therefore, it seems to be interesting to work on that subject. On the other hand, an enlargement of the labelling only for organic food could confuse the consumers, e.g. labelling of the use of enzymes, when the conventional products do not have such an obligation.

4th Concept paper on the improvement of separation practice by parallel processing of conventional and organic products

The whole question of parallel production will become very important in the future. In particular since the beginning of the debate on GMO organisms it has become very clear that separation practises can have a strong influence on the authenticity of organic foods. To date, the EU Regulation gave, with the exception of animal feed, only some general standards regarding how parallel production must be organised and carried out. Therefore, it seems to be important to discuss in this concept paper if the existing standards should be improved or even if additional e.g. guidelines (criteria) are needed.

3. Concept paper on the chances for a concept of "quality of origin" and on criteria and procedures for the evaluation of additives for organic food processing

Alexander Beck

3.1. Introduction

The concept of "quality of origin" is a central part of the whole organic food and farming concept. Therefore, it seems to be logical that this concept should also be applied for conventional inputs such as additives in Annex VI of the EU regulation 2092/91, which can be produced with organically produced ingredients. Hereby the question of naturalness, or with other words the degree of isolation, is an important issue, in particular when looking at the expectations of consumers (Schmid, Beck, Kretzschmar, 2004)

It seems to be interesting to check if the principles of organic agriculture can also be applied for additives and processing aids. Such an approach is related to:

1. marketing strategies of the operators;
2. the evaluation process for additives and processing aids;
3. toward the selection of trade products from accepted additives and processing aids;
4. to the systematic of the EU Regulation which actually defines substances in annex VI as substances of non-agricultural origin

3.2. State of the art and status of current regulations

Permitted substances of agriculture and non-agriculture origin are listed in Annex VI of EU Regulation 2092/91. In private standards and/or some state regulations we find similar systems with positive lists of additives and processing aids. Obviously, a number of these substances like lecithin (E 322), tocopherol (E 306-309) or gelatine are based on products of agriculture.

Nowadays we find in the market a number of such substances that are labelled as e.g. "organic lecithin" or "organic yeast". In general, the private sector agrees that this is a positive development, which helps to improve the authenticity of organic products. On the other hand, we are facing a problematic legal situation because these substances are defined by the EU Regulation 2092/91 themselves as substances of non-organic origin!

As an operator you normally have the chance to select between different given products on the market. If you want to buy an ascorbic acid, it is possible to choose between "acerola cherry powder", "ascorbic acid from natural origin", "ascorbic acid from biotechnological origin" and a "synthetic ascorbic acid". It could be discussed if the concept of "quality of origin" can be applied to the selection process for trade products on the level of operators. As a consequence this would mean that e.g. "certified organic additives" as well a "certified organic starter cultures" have to be used, if available!

Until now the evaluation process for substances, proposed for the inclusion in Annex VI, has not been strongly standardised. Therefore, for a number of years, discussions have been taking place with the aim of improving the evaluation process by giving more and more precise criteria. The EU Regulation 2092/91 does not currently have clear criteria for food processing, whereas the preamble to EU Reg. 207/93 clearly states the principle of a minimal use of additives for organic food.

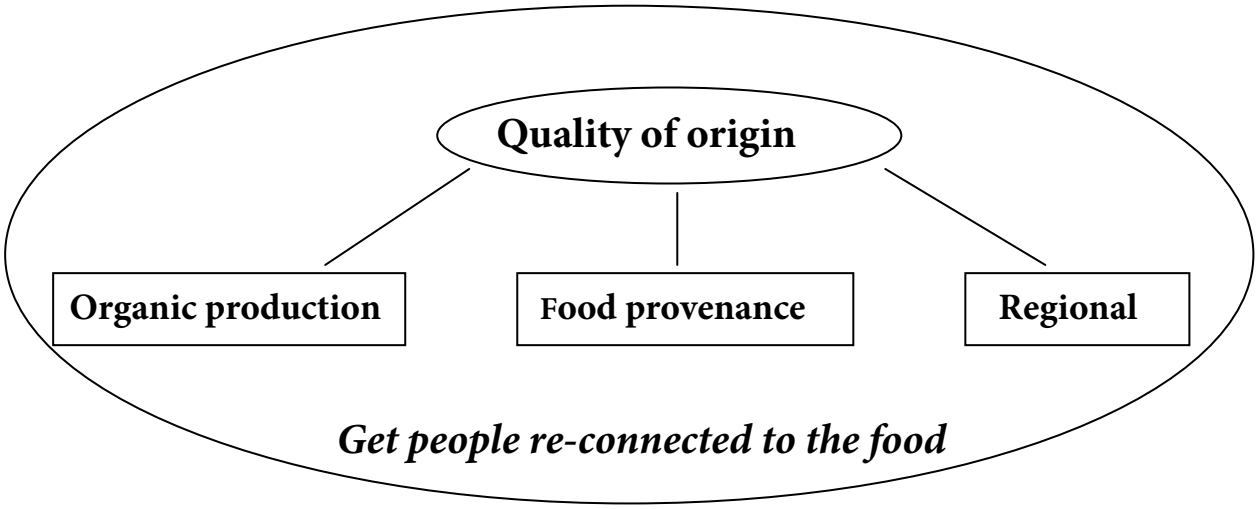
3.3 Discussion

"Quality of origin"

Since the beginning of the organic agriculture movement the concept of "quality of origin" has been a central principle. The "process orientation" which is emphasised by private standards and by the EU Regulation 2092/91 is one tool for translating this concept by defining **"organic origin"** in a practical approach. Therefore, the EU regulation requires that in a processed product with several ingredients a minimum of 95% must be from certified organic origin to be labelled as "organic product".

The second important tool for a concept of origin is the concept of **"regional foods"**.

The third important tool for a concept of "quality of origin" is the concept of "traceability". If you understand the term "traceability" the other way around you can call it a concept of **"food provenance"**. This is, however, also linked to the concept of "regional foods".



The concept of "quality of origin" contributes towards an "individualisation" of the food and therefore helps the consumer to get re-connected to the foods.

Re-connecting people to their foods is and can be transformed by companies or farmer associations or labelling organisations. Different marketing activities are in place that uses these tools to enter the market more effectively.

This area of quality of origin is, on the one hand, relevant for the further development of marketing strategies. On the other hand, standard-setting/labelling organisations in particular can play an important role in developing this concept further by developing and promoting new private rules together with their partners (operators on farm, at processing and trade level), e.g. for

- certifying "organic" additives,
- specifying list of materials;
- standardizing evaluation processes.

"Organic additive"

With regard to the regulation 2092/91, only one aspect seems to be important in relation to this topic. Annex VI A of the regulations defines which inputs of "non agriculture origin" can be used in organic food products. Related wording can be found in the main text of the regulation, too (e.g. Article 5). A number of these substances listed in Annex VI A are in reality from agricultural origin or produced from products of agricultural origin. For several years, companies have been developing "organic" lecithin, "organic" locus been gum, or "organic" yeast. The problem is however that by definition of EU Regulation 2092/91 these substances cannot be called "organic".

For the further development of the organic food sector, it is very important to ensure that technical substances are also able to be produced in "organic" quality. This would contribute towards a clear organic concept and reduce risks coming from allowed conventional inputs in organic products (e.g. GMO-contamination). The EU Regulation 2092/91 should promote such a development. Therefore, the wording and definition of "non-agricultural origin" and the need to produce certain additives from ingredients from certified organic origin, must be discussed.

When reflecting upon the structure and content of Annex VI, it should also be taken into consideration that the principle of an only minimal use of additives is a very important factor for the success of an organic product on the market, and reflects the expectations of consumers.

"Differentiated list of technical materials allowed for organic food processing"

As an operator you normally have the chance to select between different given products on the market. As already outlined, if a processor wants to have an antioxidant there are different "qualities" to choose from: "acerola cherry powder", "ascorbic acid from natural origin", "ascorbic acid from biotechnological origin" or a "synthetic ascorbic acid". In this area the companies and the standard setting/labelling organisations in particular can play a part in the further development. The development of a "list of trade products from additives and processing aids accepted by Annex VI", which gives better information about the source of the additive or processing aid, could be a tremendous step forward. At a later stage such a materials list could make a positive contribution to the certification process, too.

"Standardized evaluation process"

The evaluation of inputs for processing of organic foods is a difficult subject. Currently, the EU Regulation 2092/91 have only very few criteria, however more detailed criteria for additives are found in the general EU Regulation 207/93. The practice of the application and evaluation procedures in the last years had to follow for more standardised application formats.

All organisations (Codex Alimentarius, EU, private labelling organisations, IFOAM) involved in the evaluation of additives and processing aids for the processing of organic foods have been searching for instruments to make the evaluation process both more science-based and more transparent.

In addition, the operators in the organic food sector are searching for transparent criteria to understand which additive could be acceptable or not! Processors need clearer guidance for product development projects. Detailed criteria addressing the "quality of origin" issue would be a help for the operators as well as for the authorities and could facilitate an involvement of different stakeholders in the evaluation process.

3.4. Possible instruments and tools

In Annex 1 the following types of instruments and tools are principally outlined in more detail:

I. Administrative guidance for request of authorisation of food additives and processing aids in organic food processing

II. A procedure for evaluation as outlined in the IFOAM Basic stand

III. Criteria for additives and Processing aids of the Codex Alimentarius Guidelines

Some of these possible instruments are comparable to those that have been elaborated in more detail for fertilisers and plant pests and disease control products in the EU project "Organic inputs"(www.organicinputs.org).

3.5. Recommendations

The process of enforcing concepts on "quality of origin" needs creative approaches. A number of aspects are capable of enforcing those concepts:

For the project team it seams to be very important that the EU Regulation gave freedom to develop new concept in organic processing and labelling and enforce the further development of the sector. That should be carried out not only on a level playing field but also by regulations that are flexible enough to allow a creative further development of the sector.

It should be possible to certify technical ingredients as organic in order to improve the integrity of organic foods.

A creative concept could be to start a tender for an European innovation prize for organic processors in order to stimulate the creativity of the sector by highlighting best practice examples.

Following recommendations are given:

Topics	***Private sector***	***Competent authorities***	***EU Commission***
Organic additives	▪ Standards setting/labelling organisations should promote organic functional ingredients by their standards ▪ Companies should develop technological or functional ingredients from raw materials produced in accordance with the principles of organic food processing. ▪ Labelling organisations could underline that development by implementing the concept of "quality of origin" strongly in their standards ▪ Companies should use certified organic technical or functional ingredients.		Change the title of Annex VI A in "Additives and other ingredients allowed for processing of organic foods". Related to this change other formulations in Article 5 (3) c) and Article 5 (5a) d) must be changed too.
Differentiated list of technical materials	Standards setting/labelling organisations should develop materials lists for trade products of additives and processing aids used in organic food processing. This list should include information's or a kind of ranking related to the sources of the materials.	Authorities and inspection bodies should use specific material lists as a tool for inspection and certification.	
Standardized evaluation process	The standards setting/labelling organisations should test and implement standardised formats and criteria for the evaluation of inputs.		▪ The enclosed standardized application format should be used by all applicants for new substances which are proposed for annex VI. (Annex 1 in this report) ▪ The criteria catalogue should be used as a basis for the further development of criteria given in EU Regulations. 207/93 amending EU regulation 2092/91. (See Annex 1 of this report) ▪ Evaluation of inputs for the EU Regulation 2092/91 should be criteria based and organised by standardised formats.

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4. Concept paper on environmental orientation of organic foods producing processing companies

Thorkild Nielsen

4.1 Introduction

For many consumers, organic foods are related closely with environmental issues. But for transport, handling, packaging and processing the EU Regulation 2092/91 has practically no environmental orientated standards. When it comes to agriculture, environmental issues are parts of the organic farming concept itself. Therefore, it is interesting for the further development of EU Regulation 2092/91 to discuss whether additional requirements for environmental issues could be included.

Since the beginning of the history of organic agriculture, there has been an on-going discussion about the need for sustainable principles and methods. The organic farming system (primary production) comprises an ecological optimised production system (Köpke, 2002). Looking at the processing level, the use of organic raw materials is an important ecological task, but does not mean that the whole processing systems is fully ecological. A number of other aspects are important: waste management, energy, transportation, transport equipment and distance, cleaning and disinfection, etc. (BMU 1995).

The response of the food industry to the sustainability issue was that, in recent years, a rising number of firms have introduced new technologies (best available technology) and different environmental management systems.

Sustainable development has been recognised by the EU (EU Commission 2001 and other international and national authorities (WTO 2001, UN 2004, and World Bank 2004). It is expressed in a broad definition and enhanced by major political institutions. In many sectors the definition and policies of sustainability are taken into consideration. The open definition of sustainability is a dynamic factor – facilitating more stakeholders to subscribe to the concept. In this perspective the concept is a very helpful tool for involving more stakeholders, companies etc in the common aim of sustainability. In 1993, the EU established with EU regulation Nr. 1836/93 a regulatory basis for environmental management systems at company level. The EU Eco-Management and Audit Scheme – called EMAS - is now based on the EU Regulation Nr. 761/2001. Over the last decade a large number of food companies have introduced such a system. (www.emas.gv.at , 2004)

4.2 State of the art and status of current regulations

Environmental aspects

Most of the standard-setting bodies mention environmental aspects in their standards or regulations, but do not implement them for processing and handling organic products. To give an example: only a few details can be found with regard to transportation (distance, transportation methods, etc). Only BIO SUISSE excludes in their private standards the transportation by aircraft for certification. None of the standards require an ISO 14000 accreditation or an EU eco-audit.

The only area where some restrictions can be found (not even in all standards) was on packaging (exclusion of PVC) and on pest management agents in storage areas, where some products are excluded. An evaluation by Schmid (2000) showed that environmental (and social) aspects are mostly neglected or only mentioned in the form of recommendations. This situation has not changed in the standards currently used. There needs to be further discussion regarding which way environmental issues could be better taken up in standards.

Currently, in several European countries, an EMAS and ISO14000 system is being used by a rising number of organic food enterprises, but primarily as an internal management tool. These systems are not yet playing an important role in the communication with the consumers.

4.3 Three scenarios for the year 2012

The future development of the organic food sector can take a number of directions. Given the EU Commission's potentials to influence the direction of the further development of EU regulation 2092/91, three different scenarios or future approaches are proposed:

1. Scenario I: higher food safety and environmental certification standards of the food industry

Scenario I emphasises the private approach. As the concern for food safety has become connected to the food producer's ability to control their general input and output, environmental certification has also become a competitive tool. Successful producers of organic food have now been able to comply with EMAS or ISO 14000 systems, although these systems are not strongly promoted to the consumers. But as the main dominating food companies have experienced the importance of being able to also document environmental issues in public, this approach became a standard amongst the internationally oriented organic food companies.

Since major European food companies have established their own industry standards the EU Commission has taken up initiatives to include more environmental restrictions in the specific organic regulation.

2. Scenario II: Stricter EU regulation as a reaction on food safety and environmental incidents/scandals.

This scenario assumes that after a number of foods safety and environmental incidents/scandals with very negative environmental impact, the EU Commission decided to upgrade the organic food regulation as a part of a general revision of food legislation and regulations. The political interest in consumer protection and environmental protection became an important issue as the negative impacts had reached a dimension that caused highly expensive public rehabilitation programmes in many European countries.

These incidents were the main reasons why the EU Commission decided to develop a stricter regulation. The EMAS criteria were enforced and the certification has become mandatory for companies with more than 50 employees, which would mean over 95 % of the organic food companies. This contributed to a much higher acceptance of stricter requirements for environment in the EU regulation 2092/91.

3. Scenario III: Organic food industry supportive of stronger environmental principles

The assumption of this scenario III is that the organic aims and principles have been "watered down" over a number of years.

At the same time, organic market development began to decrease and the organic industry was facing stronger internal competition and loss of turn over. Prices and profits in the organic agricultural food chain dropped. As a consequence, some of the less effective but more holistic oriented producers stopped organic farming.

After this crisis in the organic industry, a new development and direction was decided. A new network, that included amongst others representatives and ideas from the "Slow Food Movement", gained influence. A radical change in the formerly dominant strategy started.

This also meant that today's objectives for organic food and farming were better implemented, including a stronger regulation of sustainability within each "organic" enterprise in the commodity chains. As it became obvious that the research and technology development in the organic food sector had been favouring larger enterprises for some time, it was decided to boost a technological development that complied with these overall sustainability objectives. For a long time, there remained huge obstacles to installing these stronger objectives. Only after many enterprises that were able to take advantage of new more environmentally friendly technologies implemented these new methods was market access

(re-)opened for smaller and local producers which were able to deal with environmental issues.

4.4 Discussion

Results from a recently finished consumer study of the European research OMIaRD project (Zanoli, R. et al, 2004) indicate that environmental concerns are an important motive for buying organic foods in most Europeans countries. Consumers see the consumption of organic foods as a means of contributing to a sustainable environment. Contributing to environmental protection and sustainability by buying organic products soothes the consumers' conscience and makes them feel good.

The results from this European research project also showed that there are enormous differences between the European countries with regard to environmental concern as a motive for buying organic products, with the Northern and Central European consumers appearing to be more concerned about the environment and more conscious of the relations between organic food purchase and sustainability.

Although the environmental motive is less strong than non-altruistic values, such as own health, these two motives seem to be connected. This indicates that there is a link to another important concept for organic food processing, namely "careful processing (Nielsen 2004)).

A broader environmentally oriented focus on the whole food chain (from field to fork) has been "supported" by a development in the market where supply chain management has been developed as a

more market-oriented concept. As a result of the EU regulation on organic farming the organic products in general obtain a premium price. Examples of food processing companies that have already achieved an environmental certification (EMAS or ISO 14'000) indicate that environmental restrictions might have only a marginal impact on consumer prices (Kristensen et al, 2004).

4.5 Possible instruments and tools

What possibilities exist at an EU or member state level to facilitate an environmental orientation of the organic food industry?

Below are some instruments and tools that could be integrated in EU or nationally funded promotion projects for organic/low-input food:

- Encourage "organic" companies to focus more on environmentally friendly production methods. Support these companies to implement environmental management systems (support consultants, support the establishment of a knowledge network between companies with experiences in these systems, etc.)
- Enhance public procurement of organic products and *market pull* policies. Besides the claim that the food should be organic, the public procurement could also contain a claim that the companies involved should have an EMAS certification.
- Proposals for amendments of EU Regulation 2092/91. It could be mandatory for companies to have an EMAS certification after a deadline, e.g. from 2008 on.

4.6 Recommendations

It is recommended that in the 7th EU research framework programme (or national research programmes) the following topics could be taken up:

- Evaluation of private and public standards and certification systems related to organic food manufacturing, distribution etc. with regard to sustainability aims.
- Develop new methods and technologies for small and medium sized food companies with environmentally friendly performances (inspirations from the wind turbine industry can be utilized)
- Analyze the potentials and possibilities to combine the EU regulations on organic food and environmental regulations)
- Develop a set of instrument and tools that can promote the market competition of environmentally friendly produced and manufactured organic products through out the food chain (public procurement policies, development projects, campaigns etc)
- A European innovation prize including a category environmental friendly plant design for organic processors in order to stimulate the creativity of the sector by highlighting best practice examples.

Following recommendations are given:

Topic	Private sector	Competent authorities	EU Commission
Environment certification	Private sector should promote the environment certification of companies based on EMAS or ISO 14000 systems. This requirement could be taken up in a code of practise of the organic food sector.	Authorities and inspection bodies should develop concepts how the organic inspection and certification could be combined with environment certification	▪ Projects should be financed which focus on the implementation problems of more environmentally friendly processing and handling practises. ▪ A deadline could be set until then companies should follow an EMAS/ISO 14000 Certification in case the private sector measurements do not have sufficient environmental orientation

4.6 References

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5. Concept paper on processing methods and their labelling

Särkkä-Tirkkonen Marjo, Leskinen Marita

5.1. Introduction

Processing methods have, on the one hand, a strong influence on the quality of food both on the nutritional quality as well as on food safety. On the other hand, one can use different processing methods to improve the quality of food, e.g. fermentation processes. Nevertheless, most of the processing methods dilute the natural properties and the nutritional quality of food.

As organic food should be of high nutritional and high natural quality, some private standards or private companies demand that organic food should fulfil criteria of wholesome nutrition, where processing methods must be seen as relevant tools.

Transparency is an important part of the organic food concept. Transparency of processing methods as additional part of labelling has been under discussion recently. The general EU-food legislation and the organic food and farming legislation (Regulation 2092/91) only recommend or require the labelling of some selected methods, such as GMO or irradiation.

This concept paper outlines and discusses in which way a more extended labelling of processing methods could be realised.

5.2. State of the art and status of current regulations

Labelling of processing methods

Only very little information about processing methods can be found on labels of foods. Sometimes additional leaflets give a clearer picture how the food was produced. On the other hand, there are a number of processing methods that can be recognized directly when a consumer buys a specific food. Bread is always baked or frozen vegetables are obviously frozen. That means no additional information is needed.

Much trickier is the situation if bread that is sold as “fresh” is baked from a frozen piece. Normally, the consumer has no chance to be aware of that process unless he gets additional information directly from the retailer or the baker.

In current EU regulations and national legal food laws only selected processing methods have to be labelled. For example, GMO methods, irradiation or the heating methods for drinking milk must be labelled. Mandatory labelling is recommended for e.g. homogenisation of milk or milk products.

In the organic food sector the EU regulation 2092/91 does not require any further labelling in relation to the processing methods. Nearly the same situation can be found in private standards for processing of organic food. There are some exceptions in some standards (like Demeter, Bioland, Naturland in Germany or Bio Suisse in Switzerland), where at least some of the processing methods have to be listed (e.g. in the Bio Suisse processing standards: homogenisation, pasteurisation, thermisation, sterilisation, blanching, deep-freezing, use of enzymes, etc.). Only some companies give additional information about their processing methods on the labels or in product related information material.

The EU regulation 2092/91 deals with processing methods only by excluding some methods. Private standards have sometimes developed a type of positive description/list of accepted processing methods. But, once again, special labelling requirements cannot be found, with some minor exceptions.

5.3 Discussion

Influence of processing methods on the food quality

Most processing methods have more or less strong influences on product properties. Heat treatments have in general a negative impact on food with regard to nutritional quality, but with regard to food safety heat treatments have a positive impact. Heat treatments have negative impacts on lipids, proteins and vitamins. Microwave heating has an impact on lipids and proteins. By using filtration methods we change the natural relations between different compounds.

Fermentation has positive influences on food. During fermentation lactic acid bacteria and enzymes are formed. Lactic acid bacteria produce bioactive peptides, which are also good for health.

Consumer's right to know relevant processing methods

One can argue that interested consumers should have the right to know which processing methods are applied

However, generally the consumer's knowledge of the processing methods is very poor. They make decisions or form their opinions based on their feelings or information they have got from different media: newspapers, TV, radio, internet and so on. Therefore, it is very important to analyze very critically how much information we give to consumers. On the other hand, consumers who buy organic food are more interested in their health and also require accurate information. In any case, it is clear that consumers have to be educated to understand the meaning of basic food processes. And this requires money and must be resourced.

There are a number of problems that might arise when giving more information to consumers about processing methods:

- Too much additional information about processing methods can also be misunderstood by consumers. Some consumers can assume that the organic foods are more strongly processed than the conventional ones and might be frightened by getting this kind of additional information about processing methods for an organic food that is not obligatory for food in general.
- The size of the label of food product is normally very small. Food companies should give more and more information about the product because of the requirements based on the EU-food legislation. Therefore, it might be difficult to have enough space on labels for new information.
- Organic food products and the organic food market differ between different EU countries. In some countries organic food processing has just started and it is important that regulations are not too complicated. On the other hand, in some countries organic food is very common and the market is mature. From their point of view it is important to give as much information as possible about products and processing methods. Additional information concerning processing methods might also be one way to differentiate from the competitors.
- When making health claims there are some legal restrictions to follow. If some processes are stated in labelling as being good for health, like fermentation, the state authorities might require that such claims

would have to be documented with clinical experiments. Although organic food is often associated as "healthy" based on the EU regulation 2092/91, special general health claims are not allowed on the products.

There is a whole debate about misleading claims in the Codex Alimentarius Food labelling committee, which shows how difficult this issue is to handle.

5.4. Scenarios

Transparency will be an increasingly important question in future. In addition, the attitude towards food additives and processing aids including enzymes will be stronger. Consumers would like to buy home-made food from supermarkets.

There might be 3 scenarios that might be followed

- Scenario I labelling of certified organic food additives: A positive labelling of some of the relevant processing technologies
- Scenario II: Labelling of processing technologies which might mislead consumers (e.g. reconstitution of fruit juice concentrates) or might be less favourable for achieving high nutritional quality, but which do not have to be labelled by law.
- Scenario III: A special labelling of certain processing steps with special positive effects on quality and on the environment. This would make sense for labelling fermentation processes, which are perceived positively by the consumers.

Basically, scenarios can be implemented singly or all together.

5.5. Possible instruments and tools

There are private as well as public instruments and tools to achieve a better labelling

- The EU-legislation should give recommendations regarding what is allowed to be labelled and what cannot be labelled.
- The country authorities and private standard setting bodies have the possibility to decide in their standards what kind of information about processing methods companies should be put on the labels of their products.

5.6 Recommendations

Accurate labelling is a very important part of the organic concept. Therefore, the aspect of how to develop the labelling concepts further on is important. Private companies and labelling organisations have to take the first step by developing such new labelling concepts. It is of the utmost importance that the consumers can understand those new massages. Therefore, key questions have to be identified as it is proposed in that chapter.

Creative labelling solutions must be developed to enable consumers to understand the communication and to avoid the additional labelling leading to misunderstandings. In the worst case the consumers could

have the impression that, for example, additional labelled ingredients meant that the product is processed with more additives than comparable conventional products. New concepts of working with text and pictures are needed.

Perhaps new types of labelling systems that guarantee that the product is, for example "carefully processed" or "handicraft" could also be a concept to be considered.

We anticipate that an enlarged labelling could cause problems, for example with competition regulations. Therefore, the labelling regulations and other relevant regulations have to be checked to see whether conflicts may arise.

Following recommendations are given:

	Private sector	**Competent authorities**	**EU Commission**
Ingredients, food additives and processing aids	▪ The use and the labelling of organic certified additives and other ingredients with technological functionalities should be promoted ▪ Develop a system for labelling of carry over substances ▪ Additives should be listed in the list of ingredients by name ▪ Labelling systems for the used processing aids should be developed		▪ The EU legal framework for new labelling systems has to be reconsidered and adapted ▪ EU should accept the certification of substances mentioned in annex VI A as organic
Processing technology	Should develop labelling systems for: ▪ Blanching ▪ Pasteurization and sterilization ▪ Concentrating ▪ Extrusion ▪ Ultrafiltration ▪ Post-pasteurization ▪ Drying of milk products ▪ Reverse osmosis ▪ Microwave/infrared heating ▪ Reconstitution of dried products ▪ Packaging material		The EU legal framework for new labelling systems has to be reconsidered and adapted
Processing methods having positive effects on the nutritional quality of the product or on the environment.	Should develop labelling systems for: a) Fermentation Should be mentioned because lactic acid bacteria is good for human health Lactic acid bacteria producing bioactive peptides b) If-not-used should be mentioned if the process typical for the conventional manufacturing is not used, like homogenisation in milk processing c) Biodegradable packaging materials, positive effets on environnent		The EU legal framework for new labelling systems has to be reconsidered and adapted.

6. Concept paper on parallel production and the improvement of separation practices

Ursula Kretzschmar

6.1. Introduction

The whole question of parallel production and processing of organic and non-organic products will become more significant in the future. The debate about contamination with GMO organisms shows clearly that the separation practises can have a strong influence on the authenticity of organic foods. The EU Regulation 2092/91 currently only requires some general standards regarding how parallel production must be organised and carried out. Therefore, it seems to be important to discuss if those standards/regulations should be improved for the production of organic food, or even if additional requirements (criteria) are needed. Since the "regulation for organic feeding stuff 223/2003" has become operative, the rules for producing organic feeding stuff are much stronger. The regulation contains additional risked based inspection/ measures to reduce the risks of contamination/it requires the introduction of measures in the form of a HACCP orientated concept.

6.2 State of the art and requirements of the current EU regulation 2092/91

As already mentioned, the EU Regulation 2092/91 has regulated separation of organic food from not-organic food in the following way:

EU-Regulation 2092/91, Preparation units also handling products not from organic production

Where products not referred to in Article 1 are also prepared, packaged or stored in the preparation unit concerned:

- the unit must have areas separated by place or time within the premises for the storage of products as referred to in Article 1, before and after the operations,
- operations must be carried out continuously until the complete run has been dealt with, separated by place or time from similar operations performed on products not covered by Article 1,
- if such operations are not carried out at regular times or on a fixed day, they must be announced in advance, with a deadline agreed on with the inspection body or authority,
- every measure must be taken to ensure identification of lots and to avoid mixtures or exchanges with products not obtained in accordance with the rules laid down in this Regulation,
- operations on products in accordance with the rules laid down in this Regulation must be carried out only after cleaning of the production equipment. The effectiveness of the cleaning measures must be checked and recorded.

In private standards for organic agriculture we can find similar systems requiring that the processing company has to ensure a sufficient separation during the storage, the processing and the packaging. The question is how these requirements should be implemented in practice.

6.3 Discussion

The challenge is how an operator can fulfil the legal requirements and the general wish to have a sufficient separation between organic and non-organic products, in particular when non-organic products contain genetic modified organisms (GMO). Crucial questions have to be answered, such as:

- Are the actual existing cleaning steps and the current separation practised sufficient to avoid a mixing of organic and non-organic products?
- Are the actual existing cleaning steps and the current separation practised sufficient to avoid the risk of a GMO contamination?
- Is it realistic to ask for a zero tolerance with regard to traces of GMO in organic food products?
- How significant is the risk of contamination with pesticides, fungicides, germination blockers in organic food, e.g. when organic food is transported or stored next to non-organic food or when the same packaging boxes/materials are used?

Until now, the EU regulation 2092/91 has given the operators the possibility to define their own separation concept in cooperation with the certification and inspection body. In order to fulfil the consumer expectations that organic products are produced, handled and processed separately from the field to the table, the question is if in the future the development of specific separation guidelines for each product group will be helpful or needed. Or at least it might be useful that, for specific cases and critical production chains, for example mills, it could be a goal to have separate processing lines or production places.

But even if such guidelines do exist, the general problematic of the use of the same harvester, the same transporters, the use of conventional additives, micro-organisms, enzymes, anti-caking agents is not solved at all. On the other hand the general food regulation demands an integrated HACCP concept: It has to be proven if this concept can also be adapted with regard to the separation question and whether it would be a guarantee for a good functional separation practice.

Better and more profound knowledge of the critical separation aspects with regard to different products as well the different situation in the companies could be a more efficient approach than specific separation guidelines. In an integrated HACCP concept for the separation of organic and conventional food it is necessary to identify the critical control points such as the use of the same harvester, the same transporters, the use of conventional additives, micro-organisms, enzymes, anti-caking agents, etc.

6.4. Scenario

A good and harmonized separation practice will be more and more important in the future. The authenticity of an organic product will be requested more and more. Consumers would like to buy 100% organic food. One scandal regarding a GMO contamination in organic food is always risky for the organic food sector as it questions the certification of the product as "organic".

Basically, there are 2 main scenarios or a combination of both which can be followed:

- Scenario I: A better separation practise is achieved **indirectly** with measures such as the requirement of a special HACCP concept and special requirements for certification. This can be achieved on a private basis of the organic food sector (e.g. as part of a Code of Practise) and if this is not enough strong with a legal requirement in the EU regulation 2092/91
- Scenario II: By imposing stronger separation rules not only for feed (as now planned in the EU regulation 2092/91) but also for food in the EU regulation 2092/91, making it practically impossible to have mixed processing operations.

Scenario II might be necessary if the measures in Scenario I are not successful.

6.5 Possible instruments and tool

The EU Regulation 2092/91 already provides guidance with a clear goal in requesting a "sufficient separation during the harvesting, transportation, processing and packaging of organic food".

What has been missing until now is to focus more on a risked-based approach. As a consequence, the EU legislation should explicitly request from a company with parallel processing an identification of the risks and that a company **specific HACCP concept** be drafted in which the critical aspects of separation of organic and non-organic food are included. This concept will be the basis in the annual inspection and certification. Details have to be elaborated. Experiences gathered in a risk-oriented analysis of the supply chain from the EU project "Organic HACCP" should be taken up.

Concretely, this would look as follows:

The organic HACCP concept will be built upon an existing quality management system or existing HACCP concept. Thereby all processing steps form the purchase to the production, storage and transportation will be considered. In contrast to the normal HACCP concept, the basis for the evaluation of the risks is not the health aspect or the quality. These aspects are already covered by the existing quality management system. The definitions of the risks are focussed like up mentioned regarding the specific aspects: mixing conventional-organic, risk of GMO contamination, risk of contamination with pesticides, fungicides including residues resulting from an insufficient pest control application.

This analysis of the hazard follows a systematic rating of the risk. that would be the basis for defining the additional control points for organic products. The control will be done by the companies as well as forming part of the annual inspection. An indication, if the measures are effective, is an analysis of the consumer complaints.

6.6 Recommendations

The following recommendations show possible ways to improve the separation practises and ensure the integrity of the organic food on the basis of Scenario I (HACCP approach).

Tab. Recommendations for separation practise

Topic	Private sector	Competent authorities	EU Commission
Separation practise	Private sector should follow a step-wise approach: ▪ develop organic HACCP concept as part of a Code of Practise of the organic food sector. ▪ develop non GMO risk micro-organism, enzymes anti-caking agents with certified organic ingredients (with exception of mineral salts) ▪ demand separate packaging boxes for organic products If these measurements are not sufficient in a medium-time perspective: ▪ verify where separate processing lines are needed (as a consequence of the implementation of the HACCP approach) ▪ in future to support mainly those companies which produce and handle only organic products.	Authorities and Inspection bodies should further develop an organic HACCP with the companies and the EU Commission and develop guidelines for inspection and certification	The EU commission should introduce in the EU regulation 2092/91 that when parallel production is in place a company has to elaborate their specific HACCP concept in which the critical aspects on separation of organic and non-organic food are included. This concept will be the basis of the annual control and certification.

7. Conclusion

Alexander Beck and Otto Schmid

The four concept papers, which are based on the results of the Literature survey (Schmid, Beck, Kretzschmar) and the expert consultation with the Delphi method (Kretzschmar, Schmid, 2005) in this project, indicate crucial topics and parameters for further development of organic food processing. These topics have to be discussed carefully among the parties involved. In the report the authors try to indicate which parties (private sector, competent authorities or the EU commission) could have what kind of role in the future discussion and development process.

It is quite clear that a number of these proposals have to be first developed and implemented by the private sector. This would provide the possibility to prove if the proposed concepts are working. The organic food industry must have the chance to fulfil the different demands! New labelling concepts have firstly to be communicated and established. Finally, the messages must be understandable and must have an importance for the consumer and, therefore, a meaning for the market.

To summarize, all the 4 topics that we outlined have a high importance from a consumer perspective, which has a certain perception of organic food production. If those expectations cannot be fulfilled, the organic food sector risks consumers feeling deceived and buying other labelled products instead of organic products that might give the impression of being more sustainable or more authentic. Therefore, it is necessary that the organic food sector finds ways to better fulfil consumer expectations and reduce risks from image damaging practises. How this will be achieved is up to the sector.

- A better integration of environmental issues not only in the agricultural production but also in processing might be achieved mainly through the good example of pioneer companies who have already introduced environmental management systems.
- Risks with parallel organic and non-organic production/processing lines might be reduced primarily by a consequent introduction of specific more flexible and effective HACCP concepts for the separation of production lines. Such systems must be established by the organic food industry and accepted by the authorities.
- The integrity of organic produce might be achieved by strengthening the “quality of origin" concept, which can be enlarged with regard to additives that can be produced with raw materials of certified organic origin.
- Consumer trust could be improved by considering a selective additional labelling, to ensure that consumers are not mislead about the nature of processed products but in a way that does not discriminate against organic products compared with conventional products which do not have to label certain processing steps.

The feedback from the Delphi expert survey has also shown that it is important that the private sector keeps the lead in developing trustful and authentic ways of developing these areas, e.g. with a common “code of practise for organic food processing”. The compete tent state authorities and, in particular, the EU commission should only assist this process with additional legal requirements, in case the private sector cannot successfully develop these new concepts.

The four concept papers had the purpose of stimulating the discussions on these topics, which the authors of this publication view as being highly relevant at the present time.

The project group is convinced of the ability of the organic food sector to adopt, improve and further develop the quality of the work and the products. More transparent standards and risked-based inspection systems on all levels are the guarantee for a positive development of the whole sector in future.

Annex I

Administrative guidance for request of authorisation of food additives and processing aids in organic food processing

The objective of this document is to give the applicant of new substances for annex VI of the EU Regulation 2092/91 guidance for the presentation of a dossier on his subject.

The formalisation of the application dossier document is an important basis for a transparent evaluation and an efficient authorisation process. This document can also be the basis for further expert evaluation.

Dossier table of content—Processing and Handling

Summary of the dossier

I.Dates of applicant/author of the dossier

* Full name and address of the applicant (company organisation, responsible representative,..)
* The name and position of the person/expert which is responsible for the dossier:
* Date of delivery:
* List of contents:

II.Basic information

II.1 Description of the substance:

Common name(s):
Chemical name:
Other names:
INS code:
CAS number:
Other codes:
Chemical characterization: composition

II.2 Production of the substance:

Origin: (biotechnological substances. No GMO)

II.3 Technical application of the substance in food

For consideration as Food Additive Processing Aid
Specific applications or uses:
Historic use

II.4 Technological function of the substance in food

II.5 Basic toxicological data (ADI level)

II.6 Organic and regulatory status

Codex Alimentarius
European Union EC 2092/91
US National Organic Program
Japanese Agricultural Standards
Accredited Certification Bodies:

III. Other criteria

The substance must be evaluated with regard to the given criteria (EU Regulation, Codex Alimentarius Guidelines, IFOAM Basic standards. Information should be given in written text and as conclusion in the criteria list. See example with IFOAM criteria

1.	***Necessity and Alternatives***—Explain why the substance is necessary and why there are no alternatives.	
1.1	Explain the reasons why the substance is necessary to process certain foods and why raw agricultural ingredients or substances that already appear in the Appendix do not fulfil these requirements.	
1.2	Provide technical specifications that require use of the substance.	
1.3	Refer to any other available ingredients or techniques that may serve as an alternative.	
1.4	Provide established standards of identity, governmental regulations, or studies to support consumer expectations	

2.	***Origin and production***—provide complete information on the source and manufacturing process of the substance.	
2.1	If the substance is derived from a biological source, please document that: it is not agricultural, it is from a naturally occurring (e.g. non-GMO) source It is derived or extracted using biological, mechanical, or physical methods.	
2.2	If the substance is from a natural, non-renewable source, document that it is obtained by physical and mechanical means, and is not rendered synthetic by chemical reaction. Provide technical specifications for limits on contaminants such as heavy metals, radioactive isotopes, or salinity.	
2.3	If the substance is a synthetic nature-identical product, provide documentation that the natural form is not available in sufficient quantity or of sufficient quality.	
2.4	If the substance is synthetic and is not found in nature, provide a complete description of the source and manufacturing process.	

3	***Environment***—document the environmental impacts of the manufacture and use of the substance on the environment	
3.1	Provide data on the substances persistence (e.g. half-life), degradation, and areas of concentration.	

4	Health—Document all impacts of the use of the substance on human health, including impacts both consumers and workers who are exposed during processing and handling.	
4.1	Acute and chronic toxicity; Allergenicity; Half-lives, Degradants, Metabolites. Any reported adverse health effects	
4.2	Document all possible pathways of exposure, including manufacturing processes, application, use, and ingestion.	
4.3	Provide the evaluation by the Joint FAO/WHO Expert Committee on Food Additives (JECFA) of the Codex Alimentarius.[1]	

5.	Quality—Document the impact of the use of the substance on product quality.	
5.1	Document the substance's effect on overall quality, including nutrition, flavour, taste, storage, and appearance.	
5.2	Provide data on the effect of the substance on the nutritional quality of the product.	
5.3	State all of the uses of a substance.	
5.4	Describe how the substance must be used to maintain the authenticity or overall quality of the product and not deceive the consumer of the product's value.	
5.5	Describe the specific uses and applications that are absolutely essential and necessary for the production of a specific food consistent with organic principles stated in the IBS.	

6.	*Social and economical aspects*	
6.1	Document the substance's social, economic, and cultural implications, including the impact on communities caused by the manufacture and use of the substance, the scale of operations that are favoured by use the substance, and any historical use in traditional foods.	
6.2	Provide any studies regarding consumer perceptions of the substance.	

IV. References

V. Appendix (If needed)

[1] http://apps3.fao.org/jecfa/additive_specs/foodad-q.jsp

Annex II

B. IFOAM Criteria for the evaluation of processing inputs (Appendix 5 IFOAM Basic standards 2005)

Processing and Handling Criteria for Food

Introduction

These criteria apply to the evaluation of food additives and food processing aids. Substances used for technical, sensory, and dietary purposes are subject to these criteria. The criteria may also apply to substances in contact with food. For food processing, an input, non-organic ingredient, additive, or processing aid shall be essential to maintain or improve human health, environmental safety, animal welfare, product quality, production efficiency, consumer acceptance, ecological protection, biodiversity, or landscape. Carriers and preservatives used in the preparation of additives and processing aids must also be taken into consideration. The following aspects and criteria should be used to evaluate additives and processing aids in organic food products. All of the criteria below shall be fully and positively documented in a dossier and review for an input to be allowed in organic processing.

1 Necessity and Alternatives

All dossiers shall document the necessity of the additive, processing aid, or carrier, its essential nature in organic processing and for the proposed application, and the availability of alternative methods, practices, and inputs.
Each substance shall be evaluated with respect to its specific uses and applications, and shall be added when it is demonstrated to be absolutely essential and necessary for the production of a specific food that is consistent with organic principles stated in the IFOAM Basic Standards (IBS).

1.1. All dossiers shall take into consideration the technical feasibility of the following alternatives:
- a. Whole foods that are organically produced according to the IBS.
- b. Foods that are organically produced and processed according to the IBS.
- c. Purified products of raw materials of non-agricultural origin, e.g. salt.
- d. Purified products of raw materials of an agricultural origin that have not been organically produced and processed according to the IBS but appear on Appendix 4.

1.2 If an ingredient is required to manufacture a processed food product to independently established minimum technical specifications recognized by consumers, and no organic substitute is available, then a non-organic ingredient can be deemed essential.

1.3 A given additive, processing aid, or carrier shall be evaluated with reference to other available ingredients or techniques that may be used as alternatives to the substance.

1.4 A substance is considered essential if a processed food product requires that substance in order to meet established standards of identity, governmental regulations, or widely accepted consumer expectations.

2 Source and Manufacturing Process

All dossiers shall document the substance's sources and manufacturing processes.

2.1 Additives and processing aids from biological sources, such as fermentation cultures, enzymes, flavors, and gums must be derived from naturally occurring organisms by the use of biological, mechanical, and physical methods. Non-organic forms are allowed in organic products only if there are no organic sources.

2.2 Natural non-renewable resources — such as salt and mined minerals — must be obtained by physical and mechanical means, and are not rendered synthetic by chemical reaction. Dossiers must document and meet *Food Chemical Codex* specifications for natural contaminants, such as heavy metals, radioactive isotopes, and salinity, and may be prohibited or restricted based on unacceptable levels of contamination.

2.3 Synthetic nature-identical products that are not available in sufficient quantities and qualities in their natural form may be allowed provided all other criteria are satisfied.

2.4 Synthetic substances from non-renewable resources are generally prohibited as additives and processing aids.

3 Environment

All dossiers shall document the substance's environmental impact.

Documentation for environmental impact:
The release of any harmful waste stream or by-products from both manufacturing and use in processing. Food additives and processing aids that result in toxic by-products or polluting waste may be restricted or prohibited. This includes persistence, degradation, and areas of concentration.

4 Human Health

All dossiers shall document the impacts of the substance on human health.

4.1 Documentation about human health includes, but is not limited to: acute and chronic toxicity, allergenicity, half-lives, degradants, and metabolites. Substances reported to have adverse effects may be prohibited or restricted in their use to reduce potential risks to human health.

4.2 Dossiers shall document any human who might be exposed by all possible pathways: workers and farmers who manufacture, apply, or otherwise use the substance; neighbors who may be exposed through release into the environment; and consumers exposed by ingestion of food-borne residues.

4.3 IFOAM will consider only processing aids and additives evaluated by the Joint FAO/WHO Expert Committee on Food Additives (JECFA) of the Codex Alimentarius.[2]

a. A food additive shall have an Acceptable Daily Intake (ADI) level that is either 'not specified' or 'not limited' to qualify for use without limitation.
b. A food additive with any other status shall either be prohibited or have specific use restrictions to limit dietary exposure.
c. Evaluation of food additives shall also take into account known allergenicity and immunological responses.

4.4 Information about the practical daily intake of the substance by several groups of human should be taken into account. It should be demonstrated that no group has a normal intake, which is higher than the accepted ADI.

5 Quality (in processed products)

5.1 All dossiers shall document the substance's effect on overall product quality, including but not limited to, nutrition, flavor, taste, storage, and appearance.

5.2 Additives and processing aids shall not detract from the nutritional quality of the product.

5.3 A substance shall not be used solely or primarily as a preservative, to create, recreate or improve characteristics such as flavors, colors, or textures, or to restore or improve nutritive value lost during processing, except where the replacement of nutrients is required by law.

5.4 Non-organic ingredients, additives, or processing aids used to process organic products shall not compromise the authenticity or overall quality of the product or deceive the consumer of the product's value.

5.5 Each additive shall be evaluated with respect to its specific uses and applications without preference for any specific techniques or equipment, and shall be added to the list only when it is demonstrated to be absolutely essential and necessary for the formulation and production of a specific food that is consistent with organic principles stated in the IFOAM Basic Standards.

6 Social, Economic, and Ethical Considerations

6.1 All dossiers shall document the substance's social, economic, and cultural, implications.

6.2 Social, economic, implications include, but are not limited to, adverse impacts on communities caused by the manufacture and use of the substance, whether certain economic structures or scales are favored by the use of the processing aid; and the historical use of the additive or processing aid in traditional foods.

6.3 Consumer perceptions of the compatibility of additives and processing aids shall be taken into account. Any additives and processing aids shall respect consumer preferences and be accepted by

[2] http://apps3.fao.org/jecfa/additive_specs/foodad-q.jsp

organic consumers. An input might be reasonably considered by consumers to be incompatible with organic production in situations where there is scientific uncertainty about the impact of the substance on the environment or human health. Inputs should respect the general opinion of consumers about what is natural and organic, e.g. genetic engineering is neither natural nor organic.

Annex III

Criteria for food additives and processing aids in Codex Alimentarius Guidelines for organic food 2004.

SECTION 5. REQUIREMENTS FOR INCLUSION OF SUBSTANCES IN ANNEX 2 AND CRITERIA FOR THE DEVELOPMENT OF LISTS OF SUBSTANCES BY COUNTRIES

5.1 At least the following criteria should be used for the purposes of amending the permitted substance lists referred to in Section 4. In using these criteria to evaluate new substances for use in organic production, countries should take into account all applicable statutory and regulatory provisions and make them available to other countries upon request.

Any proposals for the inclusion in Annex 2 of new substances must meet the following general criteria:

i) they are consistent with principles of organic production as outlined in these Guidelines;

ii) use of the substance is necessary/essential for its intended use;

iii) manufacture, use and disposal of the substance does not result in, or contribute to, harmful effects on the environment;

iv) they have the lowest negative impact on human or animal health and quality of life; and

v) approved alternatives are not available in sufficient quantity and/or quality.

The above criteria are intended to be evaluated as a whole in order to protect the integrity of organic production. In addition, the following criteria should be applied in the evaluation process:

a) if they are used for fertilization, soil conditioning purposes: ...

b) if they are used for the purpose of plant disease or pest and weed control: ...

c) if they are used as additives or processing aids in the preparation or preservation of the food :

- - these substances are used only if it has been shown that, without having recourse to them, it is impossible to:
- - produce or preserve the food, in the case of additives, or
- - produce the food, in the case of processing aids
- in the absence of other available technology that satisfies these Guidelines;
- these substances are found in nature and may have undergone mechanical/physical processes (e.g. extraction, precipitation), biological/enzymatic processes and microbial processes (e.g. fermentation),
- or, if these substances mentioned above are not available from such methods and technologies in sufficient quantities, then those substances that have been chemically synthesized may be considered for inclusion in exceptional circumstances;
- their use maintains the authenticity of the product;
- the consumer will not be deceived concerning the nature, substance and quality of the food;
- the additives and processing aids do not detract from the overall quality of the product.

In the evaluation process of substances for inclusion on lists all stakeholders should have the opportunity to be involved.