



# Quality and safety aspects of organic and low-input food processing: Results of a Delphi survey from an expert consultation in 13 European countries

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## ABSTRACT

Organic food-processing standards generally prohibit the use of synthetic chemicals, many preservatives and other food additives that are widely used in the processing of conventional foods. However, there are frequent discussions about the underlying rationales, principles and criteria used to allow some processing methods and additives but other ones not. Consumers of low-input and organic food have specific expectations regarding quality characteristics of processed food. Organic processed products should therefore be sustainable and fulfil consumers' expectations as much as possible. Our study reviewed current approaches and concepts in organic food processing, based on the results of a literature survey and a two-step Delphi expert survey focusing on the most important and currently discussed aspects regarding organic food processing. In the first round, 250 experts in 13 European countries were involved who were asked to respond to a standardized questionnaire. Hundred and twenty experts answered in the first round and they were approached in the second round. Of these, 83 experts answered in the second round. The results show that there is an important need for clear principles and related criteria for the evaluation of additives and processing methods. In the minds of consumers, additional principles are present when compared with the present rules. The gap between consumer expectations and the rules at the time of the survey (Regulation EEC 2092/91, IFOAM Basic Standards, Codex Alimentarius Guidelines) can cause problems. So it is important to build a solid link between regulations and consumer perceptions. The principle of carefulness/careful processing might be helpful for the communication between manufactures/retailers and consumers. Generally, other means instead of new governmental rules are recommended (e.g., a code of practice).

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## 1. Introduction

The expanding market for organic food, as defined in EU Regulation (EEC) 2092/91 (since 2009 replaced by EC Regulation 834/2007 and the implementation rules EC Regulation 889/2008), is characterized by an increasing demand for processed foods, including ready to eat food, possibly also with a longer shelf life. Compared with the conventional food sector, processors of organic food can only use a small number of additives and processing aids that are allowed by EU Regulation 2092/91 (since 2009 listed in EC Regulation 889/2008). This is mainly due to the fact that many consumers expect that organic food is 'minimally processed' and only uses very little additives, visible by their E-numbers. However, when looking at organic food processing standards, there is also a large diversity in underlying principles and rationales. As a result these standards may differ significantly between sector bodies, European countries and potential export markets overseas [1]. In the overall

development of standards and EU Regulation 2092/91, food processors were not involved to a great extent, although they are facing considerable challenges with all those restrictions. When reflecting upon the further development of standards for processed organic food, it is important that many of the key processors are involved and can express their opinion in the way processing issues should be considered in the future and at which regulatory level. This was the reason why, within Subproject 5 in EU-project 'Quality low input food' (QLIF) an intensive expert consultation was planned and conducted applying the Delphi method. This survey was based on the outcome of a literature review on underlying principles of organic food processing and on the results of a review of consumer perceptions [2].

## 2. Methodology

The Delphi method is explained in detail by Linstone and Turoff [3]. In essence, it is a process allowing a group of experts to participate jointly in defining and analysing complex problems or issues where information is fragmentary or inaccessible, by contributing to successive rounds of information gathering, receiving feedback

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and, as a result, refining the information gathering process in the subsequent round. The first round of the inquiry normally concentrates on opening up issues, and allows participants a significant role in defining the framework of the investigation itself, with later rounds narrowing and refining the scope of the questionnaires. Typically, such exercises involve three rounds, although there can be more, and in some instances a bare minimum of two rounds is employed. It is well suited to situations where perspectives might differ substantially according to background, and although it does not necessarily yield a unified consensus at the end of the process, it has the advantage that each participant can reflect on and take into account views based on the range of experience of the other panel members.

The Delphi expert survey was carried out in two steps. In the first round, which was conducted in October and November 2004, 250 experts from 13 European countries (Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Great Britain, Italy, Netherlands, Slovakia, Spain, and Switzerland) were asked to respond to a standardized questionnaire. The questionnaire was distributed among the experts by mail and by e-mail. It was translated into English, French, Italian, German, Czech, Spanish and partly into Finnish.

The standardized semi-structured questionnaire for the first round was designed as follows:

- (1) A general question about the activity of the experts;
- (2) General open questions about the definition of careful, minimum processing and authenticity;
- (3) A general question about quality, food safety and regulations;
- (4) Specific questions about freshness, processing methods, use of semi-processed products, use of additives, (flavours and flavour enhancers, colouring agents, antioxidants, preservatives, raising agents, emulsifiers), processing aids, enzymes, micro-organisms, anti-caking agents, separation in the production process, labelling and packaging.

In the second round the results of the first round were encoded, analysed and returned to the experts in the form of an initial report. The results of the first round formed the basis for the second round of the survey.

The second round involved 120 experts who had answered the questionnaire of the first round standardized. It was conducted in February and March 2005. A standardized questionnaire was distributed among the experts via e-mail. This questionnaire was translated into the same languages as used in the first round.

The standardized questionnaire for the second round was designed as follows:

- (1) Clarifying definitions;
- (2) Clarifying questions to the answers of the first round;
- (3) Possible ways to regulate or harmonize different aspects of organic food processing;
- (4) Specific questions: possible adaptations to Annex VI of E Regulation 2092/91.

### 3. Criteria for the selection of experts

#### 3.1. Type of experts

The experts invited to participate in the Delphi survey were able to contribute with their expertise to a variety of aspects of organic food processing. At the same time, the process was open to experts with divergent perspectives who were able to generate a range of ideas. The aim of the survey was not to reach consensus, but rather to increase understanding. Therefore it was important to include experts who did not necessarily represent mainstream views; this included 'non-organic' as well as 'organic' participants.

**Table 1**

Classification of represented countries based on the development phase in which markets for organic products are.

Countries with mature markets	Countries with growing markets	Countries with emerging markets
Austria Denmark Switzerland	Finland France Italy The Netherlands United Kingdom Germany	Belgium Czech Republic Slovenia Spain

The expert panel was made up of representatives from each of the following five categories: (1) food technology specialists, (2) organic and conventional food processors, (3) consumer organizations, (4) government agencies, and (5) processing standard setting/certification organizations.

Moreover, the panellists chosen in each category should reflect the existing diversity as closely as possible. For example, in the food processors category, it was considered preferable to have a mix of smaller and larger companies as well as companies that produced only conventional food and companies that produced only organic food. In addition, it was considered desirable to include companies that had produced organic food for more than 10 years and companies that had recently entered the market ('Newcomers').

As far as possible, the Delphi experts should not be the same ones who had been acting as key informants for the questionnaires in the QLIF-Subproject 5 'Processing', although this could be difficult to realize in countries with a small organic farming sector.

#### 3.2. Number of experts

For the second round of the survey we needed about 100 experts. As we reckoned that there would not be a 100% response, we started the first round with 250 experts. Of this group only 120 responded, which was enough for the second round.

#### 3.3. Experts and responses

Thirteen European countries were represented among the experts who participated in the first and 12 in the second round. Twelve and 11 countries, respectively, were EU member states. The main partners of the QLIF Subproject 'Processing' were in close contact with Denmark, Germany, Finland and Switzerland (see Appendix A). The aim of the Delphi survey was to obtain Europe-wide coverage of experts within the whole organic food processing sector including food technology specialists, organic and conventional food processors, consumer organizations, government agencies, and processing standard setting/certification organizations. All experts were selected by the project partners and by subcontractors, aiming to obtain a balanced distribution over the two main categories of food-processing companies and non-processing companies. Based on the experiences from other EU projects [4], a classification was made with regard to the country's stage in the organic market development (Table 1).

#### 3.4. Response rate

In the first round the response rate was 48%. Those who responded to the first round received the report of that round, followed by the questionnaire of the next round. In the second and final round, the response rate was 69%. A description of the random sample with regard to activities in the second round of the survey is given in Fig. 1.

As it is not known how many experts there are in Europe in the different fields mentioned above, it is not possible to say what

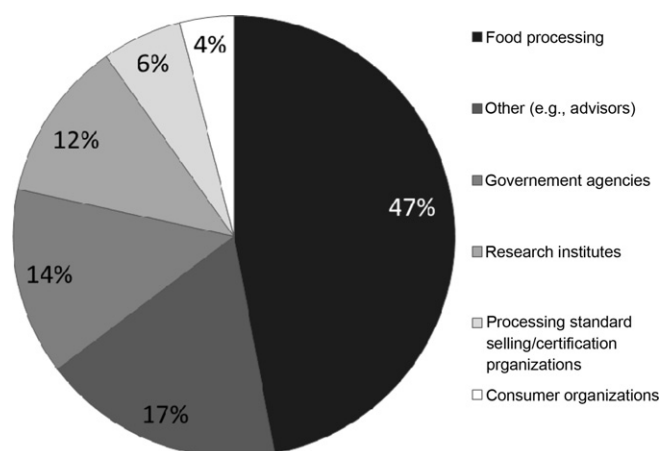


Fig. 1. Description of the random sample with regard to activities in the second round of the survey.

proportion was covered by the total sample. Forty percent of the respondents came from mature market countries and growth market countries, whereas 20% came from emerging markets. This corresponds rather well to the actual market situation in Europe [5].

## 4. Results

### 4.1. Definitions

#### 4.1.1. Defining organic food processing

The main focus of the first round of the survey was to narrow and clarify definitions that are often used to characterize organic food processing. When questions were asked about minimum processing and freshness/fresh produce the answers did not vary very much. However, exploring the definitions of careful processing and authenticity, the experts appeared to understand these terms quite differently. On the other hand, in the second round of the survey, we found out that authenticity is regarded as very important for an organic product. In this round the authors tried to find a suitable definition. The definitions with the best acceptance of the terms careful processing, fresh product and authenticity were as follows:

**Careful processing:** “The maximum to keep the important compounds and the maximum to avoid undesired compounds or nutritional losses”.

**Fresh product:** “Product with a short shelf life needs to be stored at a specific temperature or under controlled temperature conditions”.

**Authenticity:** “Production and processing steps and the origin are visible/recognizable to the consumer”.

Unlike expected at the start of the study, there did not appear a high need for a final definition of the terms *careful processing*, *fresh product* and *authenticity*. Based on the feedback from the experts we concluded that instead of a final definition of the terms *careful processing* and *authenticity* a more elaborated definition of the production methods as well as good labelling would be more helpful for both producers and consumers if the intent of these two terms can be addressed indirectly.

### 4.2. General comments

#### 4.2.1. Important aspects of organic food processing

The most interesting point of round two of the survey was the finding that aspects like sensory quality, freshness, minimum use of additives and authenticity are regarded as the most important

aspects for the success on the market. All these aspects should be recognizable to the consumer.

#### 4.2.2. Food safety

Regarding food safety issues, most of the experts did not expect more problems with organic food than with conventional food. Nevertheless, there were some experts who expected more food safety problems. For example, higher contamination by mould spores; higher risk of food contaminated by micro-organisms; animal problems with parasites; higher levels of residues of dioxin in organic eggs; problems arising from naturally occurring mycotoxins and toxic micro-organisms.

#### 4.2.3. Ways to regulate or clarify/harmonize organic food processing issues

An important question was which aspects should be regulated at an EU regulatory level and which ones at other levels (national, private company or label level) or should nothing be regulated at all. The feedback from the experts was quite differentiated depending on the different areas. At the EU regulatory level, minimum use of additives was given first priority, followed by minimum and careful processing. At EU level, quality/sensory aspects were not considered primary, because companies should have the chance to develop individual sensorial profiles for their products. We concluded based on the feedback from the food processing specialists and processors in the Delphi survey, that in the future revision of EU Regulation 2092/91 a much more differentiated approach is necessary:

**EU Regulation/State regulations:** regulatory framework but with more flexibility for regional variation and private sector rules. (*Is now included in Chapter 5 Art. 22 of EC Regulation 834/2007.*)

**Private standards:** focusing really on the special quality and regional aspects.

**Private company level (internal quality standards):** focus on the special sensory quality and on general quality management. The experts recommended clearly that some new instruments should be developed:

**Common ‘Code of practice’ of the organic food sector:** setting the overall baseline for sustainability and health aspects  $\geq$  IFOAM and private umbrella organizations (e.g., of organic food processors), operators.

**GMP (Good manufacturing practices):** elaborated by organic and other advisory/consultancy services specialized in organic agriculture and organic food processing.

With regard to the question of whether EU Regulation 2092/91 is adequate, an interesting difference between the answers of the processors and the non-processors was observed: 45.5% of the food processors were of the opinion that EU Regulation 2092/91 was adequate as opposed to only 33.3% of the non-processing organizations. This difference between the processing organizations/experts was found several times. The reasons for this are not understood. But in general it can be concluded that, with the exception of having clear rules for the minimum use of additives and processing aids, no significant preferences or only tendencies towards possible ways to regulate or harmonize different aspects of organic food processing have been identified. However, a code of practice for the organic food sector that does not describe all issues in detail would seem a good instrument. The organic food sector should take more self-responsibility by defining such a code. A general code of practice for organic food processing was elaborated and published as outcome of QLIF-Subproject 5 [1].

In general, most of the respondents expected that special processing methods were needed in the production of organic food. However, when asking these experts more specifically it appeared

to be very difficult for them to select the methods that are most usable/suitable or not usable/suitable. Regarding the use of additives, however, the answers were very clear. Both processors and non-processors tended clearly towards preferring additives from certified organic origin.

Furthermore, there was clear support, in particular from the majority (64.8%) of experts from non-processing organizations, for clear separation guidelines based on HACCP concepts (organic HACCP) in order to reduce the risk of contamination with GMOs or conventional pesticides. Processors showed a nearly equal result of 45.3% pro and 39.1% contra HACCP guidelines. With regard to stricter labelling requirements, the non-processing organizations/experts preferred to have stricter guidelines. The same preference was also expressed regarding packaging.

Tables 2 and 3 present the regulatory situation in EG Regulation 2092/91, the proposed adaptations and the actual situation in the revised Regulations EC 834/2007 and 889/2008.

The survey yielded interesting information for the major revision of EU Regulation (EEC) 2092/91 with regard to processing, in particular for the revision of Annex VI and Art. 5. In the revised Regulations EC 834/2007 and 889/2008 the following results from the survey have been taken into account:

- The principles true nature (authenticity) and processing with care;
- Clarification as regards the list of additives for plant and animal products;
- The regulation offers the possibility to use organic additives like organic soya lecithin, implying that the term 'non-agriculture ingredients' is not used anymore;
- Possibility for regional specialties with Chapter 5 Art. 22.

For the first time the new regulation includes a legal text governing the aims and principles of organic food processing.

Minimum and careful processing methods would be interesting fields for research. Due to the limited possibility of using additives and processing aids in organic food processing, it is important to study and develop suitable production and processing methods with regard to the requirements for an organic product and the principles of organic agriculture.

## 5. Discussion and conclusions

### 5.1. Validity of the results

As stated above, the survey was conducted in 13 European countries. Below are some reflections on the validity of the results.

1. Selection of experts: in most of the participating countries, the different food processing sectors and activity areas have been covered quite well due to the fact that the selection was made by national contact persons/facilitators.
2. The participation of German speaking partners was relatively strong due to the fact that the Subproject co-ordinators came from a German speaking country. The splitting of the experts into three different groups of countries with different stages of organic food market development allowed a more balanced picture of the situation in different countries, which mirrors quite well the distribution of organic farmers and organic food processors over different European countries.
3. Several statements and viewpoints recorded in the first round were confirmed in the second round, other ones had slightly but not fundamentally changed.

### 5.2. The first round of the Delphi expert survey

A two-step Delphi expert survey was conducted to study the important aspects of organic food processing with the aim to achieve a more consistent regulatory system. In the first round of the survey the main focus was on narrowing down the scope of the study and clarifying the definitions that are often used to characterize organic food processing. Regarding the definition of careful processing we found different results depending on the development stage of the organic markets the experts came from. For experts from emerging markets careful processing seemed to be one of the basic principles of organic food processing whereas in countries with mature markets basic principles had become less dominant. There were also differences between the views of experts from the processing industry and the views of experts from non-processing organizations for which careful processing seemed to be relevant in order to fulfil one of the main consumer expectations regarding processed organic food. This result could indicate that due to the fact that organic processed food, from a legal point of view, has only to fulfil the current minimum requirements of EU Regulation 2092/91 (new 834/2007) many products do not fulfil the expectation of *carefully processed* food. It can be assumed that with a clear definition of this term this would have a significant influence on the already existing and accepted product range. A first step was taken with the inclusion of the principle of 'processing with care' (Art. 6 EC 834/2007).

A similar result was observed with the definition of the terms *fresh product* and *authenticity*. It has to be discussed whether, instead of a definition of the terms *careful processing* and *authenticity*, a more precise description of the suitable production and processing methods for the main product groups, combined with a good labelling, would be much more helpful for both producers and consumers. The same can be concluded with regard to the definition of a *fresh product*, where several experts raised the question if only a general definition is really a help for food processors or for consumers. The term *fresh product* should be defined specifically for different product-groups; describing the conditions/requirements how freshness is achieved and maintained. Such an approach would help a more consistent and comprehensive labelling, thereby contributing to better consumer information.

### 5.3. The second round of the Delphi survey

In the second round of the Delphi survey we wanted to find out which aspects are important for an organic product to be successful on the market and for which aspects it would be helpful to have some requirements for the operators. One of the key questions was which aspects should be regulated at which level (public or private, EU level or national level) and in which way. The minimum use of additives, sensory quality and the maintenance of authenticity are regarded as the most important aspects for the success of processed organic food on the market. These are all aspects that are immediately recognizable to the consumer and that were ranked first in priority, rather than the aspects that are linked to sustainability (such as regionality, social aspects), which are the fundamental ideas of organic agriculture. One might wonder whether or not organic food processing needs to be sustainable. Are the use of organic raw material and the minimum use of additives sufficient to have authentically processed organic food? On the other hand, in EC 834/2007 it is stated that organic production is an overall system of farm management *and* food production that combines best environmental practices! The results of the Delphi expert survey and the analysis of consumer studies on the expectation of an organic product showed that these products have to be sustainable too. There needs to be a discussion regarding whether sustainability aspects like environmentally friendly

**Table 2**

The relevance of different issues in organic food processing and the significance of the various types of regulation indicated by experts.

Issues	Relevance in survey	Type of regulation <sup>a</sup>					
		EU Reg./state (all)	EU Reg/state (processors)	Private standard	Private company	Code of practice	GMP <sup>b</sup> private label
Freshness	High	+	~	+	+	+	+
Minimum/careful processing	High	++	++	+	~	+	~
Minimal use of additives	High	+++	+++	~	~	~	~
Sensory quality	Medium	~	~	~	++	+	+
Environmentally friendly processing	High	+	~	+	~	+	+
Environmentally friendly packaging	High	+	~	+	+	+	+
Social standards	Medium	~	~	+	~	+	+
Regionality	Medium	~	~	++	+	~	+
Seasonality	Low	~	~	+	+	+	~
Whole food	Low	~	~	~	~	+	+
Health aspects	Low	+	~	~	~	+	+
Authenticity	High	+	++	+	~	~	~

<sup>a</sup> Scale: ~, indicated by 0–15% of experts, i.e., not significant; +, indicated by 15–30% of experts; ++, indicated by 30–45% of experts; +++, indicated by >45% of experts.<sup>b</sup> GMP = Good manufacturing practice**Table 3**

Possible new appendices to EU Reg. (EEC) 2092/91 especially Annex IV, replaced by new EC regulations 834/2007 and 889/2008.

Area	EU Reg. (EEC) 2092/91	Proposed by the expert consultation	Actual EC 834/2007 and 889/2008
<i>Flavours</i> : 67.5% think that flavours should be certified organic (20.5% no).	Natural flavours	Flavours certified organic	Organic flavours are not demanded but can be produced by Art. 27
<i>Flavour enhancers</i> : 85.5% would not allow the use of flavour enhancers	Not clearly regulated	Prohibited	Prohibited
<i>Colouring</i> : 85.5% think that the current regulation is sufficient	Colouring with certified organic ingredients	No revision; Colouring with certified organic ingredients	Colouring with certified organic ingredients
<i>Antioxidants</i> : 74.2% prefer the use of organic antioxidants; 60.2% would support the obligation of using certified organic antioxidants	Synthetic antioxidant allowed	Antioxidants certified organic and of non-synthetic origin	Synthetic antioxidant allowed
<i>Preservatives</i> : the prohibition of preservatives generally in the organic food sector is acceptable for 55.4% (36.1% no).	Some preservatives are allowed	Stronger restriction on preservatives	Some preservatives are allowed but nitrate and nitrites for meat products will be re-evaluated at the end of 2010
<i>Raising agents</i> : 67.6% think that the carrier should be certified organic	Carrier can be non-organic	Carrier must be certified organic	Carrier can be non-organic
<i>Emulsifiers</i> : With regard to the risk of GMO contamination 83.1% think that emulsifiers should be certified organic	Conventional	Certified organic	Conventional
<i>Enzymes</i> : 52.5% think that the use of enzymes in organic products is acceptable. 66.3% do not accept the use of enzymes for the sole use of standardizing the process/product	GMO free	Specific requirements depending on the use	GMO free
Area	Actual	New	Actual EC 834/2007 and 889/2008
<i>Micro-organisms</i> : 56.6% in second round (72.5% first round) think that micro-organisms should be certified organic in comparison to 31.3% in second round (20.8% 1st round) who do not see a need	Conventional	Certified organic	Conventional
<i>Anti-caking agents</i> : 53% think that anti-caking agents should be certified organic in comparison to 22.9% who do not see a need	Conventional	Certified organic	Conventional
<i>Separation in the production process (parallel processing)</i> : 68.7% think that specific separation guidelines would be helpful	Sufficient separation	Product specific separation guidelines (based on HACCP concept)	Sufficient separation
<i>Labelling processing methods</i> : 54.2% would prefer the processing methods to be listed on the packaging compared with 38.6% who would not	Non-organic ingredients, certification body	Labelling of some processing methods	All organic ingredients, certification body 70% rule is deleted New logo Labelling of origin
<i>Labelling of processing aids</i> : 58.5% say yes to a labelling of processing aids compared with 31.7% who say no	Non-organic ingredients, certification body	Declaration of certain processing aids, like enzymes (extended labelling rules)	All organic ingredients, certification body 70% rule is deleted New logo Labelling of origin
<i>Labelling of the origin</i> : 69.9% would support the labelling of the origin of the ingredients and 25.3% would not	Non-organic ingredients, certification body	Indication of the origin of the ingredients	Labelling of origin
<i>Packaging</i> : 75.9% would prefer environmentally friendly packaging but 69.2% also have the opinion that the packaging that provides the best protection of the product is acceptable instead of environmentally friendly packaging	No requirement in the regulation	No revision at the moment	No requirement in the regulation

packaging, processing, regionality or social justice, would not be better integrated in a private code of practice for organic food processors instead of having these issues regulated legally in EC Regulation 834/2007.

An important health aspect related to food safety was covered in a separate part of the survey. In the second round of our survey, 59% of the experts did not see additional food safety problems compared with conventional agriculture and conventional food processing. However, although only a minority of experts mentioned some problems, it has to be explored how these problems could be solved or reduced: risks of higher contamination by mould spores and other spore problems; higher risks of contamination by micro-organisms or mycotoxins; potential risks with parasites in animal husbandry and dioxin residues in organic eggs because of free range production as well as hygienic problems related to the restrictions of cleaning and disinfection. Several times, experts mentioned that organic farmers and processors of organic food need to understand that some organic farming practices might create some food safety risks and that they have to ensure that simple and adequate monitoring systems are in place to prevent harmful organisms from entering the food chain. Research in this field is partly already completed and indicates that these problems have been overestimated, but further research is still needed.

#### 5.4. The need for regulation or harmonization

An important part of the study dealt with the question which areas have to be regulated and/or at least clarified/harmonized and at which level. The EU Regulation for organic production is not the only place where areas and issues related to food processing should or could be regulated or implemented. New instruments such as a new code of practice of the organic processing sector might be an interesting approach. Furthermore, the Delphi expert survey provided a clear indication, from the view point of processors and processing specialists, of how EU Regulation 2092/91 should deal with some specific issues such as the use of additives or labelling. Several proposals of how Annex VI should be adapted or amended were made. In which way these proposals could be implemented in the best way remains open and must be discussed at both EU and national levels. It is clear that some of the proposals of the experts need first to be tested and explored in practice. For example, the issue of separation in the production/processing lines. The general food regulation requires an integrated HACCP concept. It should be explored if this concept can also be practically adapted with regard to this type of separation. The key would be that the operator obtains a better knowledge about the critical aspects of separating different product groups from organic and non-organic products. Such an adapted HACCP approach would have to be integrated in a specific code of practice for organic food processing that takes into account the different situations in the companies. This could be a more efficient approach than specific separation rules in the EU Regulation for organic production.

#### 5.5. Conclusions

We conclude that some of the outcome of the Delphi expert survey influenced the revised EC Regulation 834/2007 and the implementation rules EC 889/2008.

The new regulation includes for the first time a legal text governing the aims and principles for organic food processing:

- The principles true nature (authenticity) and processing with care;
- Clarification with the list of additives for plant and animal products;
- The regulation gives the possibility to have organic additives like organic soya lecithin as the term non-agricultural ingredients is not used anymore;
- Possibility for regional specialities with chapter 5 Art. 22;
- Regulation for organic yeast.

The first steps have been taken, but many questions still remain like the definition and realization of careful and environmentally friendly processing, the definition of the term true nature/authenticity, and clear regulation of the separation. The code of practice worked out in the QLIF project [1] provides a good basis for including and clarifying these questions that would help to prevent the EU regulation from becoming over-prescriptive.

#### Appendix A. Partners in the Subprojects 'Processing'

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#### References

- [1] A. Beck A. Code of Practice for Organic Food Processing. With contributions from U. Kretzschmar A, Ploeger and O. Schmid, FiBL Report. Research Institute of Organic Agriculture (FiBL), Frick, Switzerland. <http://orgprints.org/7031/> (2006).
- [2] O. Schmid, A. Beck, U. Kretzschmar (Eds.), Underlying Principles in Organic and "Low-Input Food" Processing. Literature Survey, 2004.
- [3] H.A. Linstone, M. Turoff (Eds.), The Delphi Method: Techniques and Applications. Reading, Mass, Addison-Wesley, 1975.
- [4] U. Hamm, F. Gronefeld, D. Halpin, Analysis of the European market for organic food Organic Marketing Initiatives and Rural Development (OMIaRD) series, vol.1, University of Wales, Aberystwyth, 2002.
- [5] S. Padel, C. Seymour, C. Foster (Eds.), Organic Marketing Initiatives and Rural Development QLK5-2000 (Research, Advice, Certification, Consumer Information, Government Agencies), 2003.