REPORT

QualityLowInputFood

Approaches Used in Organic and Low Input Food Processing – Impact on Food Quality and Safety



Results of a delphi survey from an expert consultation in 13 European countries

Ursula Kretzschmar and Otto Schmid

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Funded by the European Commission under the Sixth Framework Programme for European Research & Technological Development (2002-2006), Thematic Area Food quality and safety and the Swiss Federal Office for Education and Science (BBW).

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The following research partners have contributed as partners in the QLIF - Subproject 5 Processing. Subcontracted experts/ institutions in the subproject are listed in annex III

- Research Institute of Organic Agriculture FiBL: Ursula Kretzschmar, Otto Schmid and Dr. Alexander Beck
  Postal address: FiBL, Ackerstrasse, CH- 5070 Frick
- University of Kassel, Department of Organic Food Quality and Food Culture:
  Prof. Dr. Angelika Ploeger
  Postal address: Nordbahnhof 1a, D-37213 Witzenhausen, Germany
- University of Helsinki, Mikkeli Centre for Rural Research and Training
  Marita Leskinnen and Marjo Sarkka-Tirkkonen
  Postal address: Lönnenrotinkatu 3-5, F-50100 Mikkeli, Finland
- Danish Research Centre for Organic Farming, Technical University of Denmark, Lyngby:
  Department of Manufacturing Engineering and Management
  Associate Prof. Niels Heine Kristensen, Thorkhild Nielsen
  Postal address: Building 303, DK-2800 Lyngby, Denmark

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Foreword

This report contains the results of an expert survey on organic food processing, which has been conducted as part of a subproject on processing within a large, integrated EU funded project within the 6th Framework Research programme 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.

This survey was based on an already published literature review about processing of organic and low-input food, which describes the underlying principles, the regulatory framework, problem areas as well as consumer expectations and concepts of food processing companies (Schmid, Beck, Kretzschmar, 2004). The publication can be downloaded on the QLIF Project website www.qlif.org

The results of this Delphi expert survey have contributed to the elaboration of a "Code of Practise for Organic Food processing" as well as to "Concept papers outlining parameters for further development of Organic Food Processing" in the EU regulation 2092/91 for organic agriculture, which will be public available in December 2005.

We very much appreciated the support from the project team of the subproject 5 in contributing to the elaboration of the questionnaires.

We would also like to thank all experts, which have participated two times in responding to the questionnaire and have helped to contribute to complete this Delphi Survey. Furthermore we want to thank the following contracted and subcontracted persons, which were facilitators and key informants in different countries helping to find experts willing to participate in the survey: Prof. Dr. Angelika Ploeger and Dr. Alexander Beck (Germany), Dr. Thorkild Nielsen (Denmark), Marita Leskinen and Marjo Särkkä-Tirkkonen (Finland); Dr. Wolfgang Ginzinger (Austria), Marie-Christine Monnier (France), Cristina Micheloni (Italy), Francis Blake (United Kingdom), Victor Gonzalvez (Spain), Tom Vaclavik (Czech Republic), Hugo Baert (Belgium and Netherlands); Diane McCrea (Consumer International). A special thank goes to all persons, which have translated the 2 questionnaires: Manuel Perret, Regula van den Bergen, Stephanie Domptail, Tom Vaclavik and Victor Gonzalvez. We also thank the support by Mrs Helga Willer for the formatting of this report as well Mrs Susanne Padel for the introduction and support in the Delphi methodology.

We acknowledge the Commission of the European Communities as well as the Swiss Federal Office for Education and Science (BBW) for their financial support.

Finally, we hope that this report helps to better outline the parameters for the further development of organic food processing.

Frick, Switzerland, January 2006

Ursula Kretzschmar and Otto Schmid, FiBL

Dr. Urs Niggli, Director of FiBL

Executive Summary

1. Background

Study design

The overall objective of the subproject on processing, where the Delphi expert survey was an important task, is "to develop of a framework for the design of "minimum" and "low input" processing strategies, which guarantee food quality and safety." It should support the overall aim of the integrated QLIF Project (Quality of Low-Input Food) in improving quality, ensuring safety and reducing costs along the European organic and "low input" food supply chains through research, dissemination and training activities.

The method chosen was the Delphi method. The work was carried out in the form of a two-step Delphi survey. In the first round 250 experts in 13 countries in Europe were involved, and were asked to respond to a standardised questionnaire in October and November 2004 and the second round from March to May 2005. The Delphi expert survey was designed in such a way that the most important and currently discussed aspects regarding organic food processing have been taken up.

120 experts from 13 countries (Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Great Britain, Italy, Netherlands, Slovakia, Spain, and Switzerland) answered the first round and 83 experts from 13 countries answered the second round. Based on the experiences from other EU projects (Hamm et al. 2002), a classification was made with regard to the development stage of the country in the organic market development.

Table 1 Country classification in the organic market development.

Mature market countries	***Growth market countries***	**Emerging market countries**
Austria	Finland	Belgium
Denmark	France	Czech Republic
Switzerland	Italy	Slovenia
	Netherlands	Spain
	United Kingdom	
	Germany	

2/5 of the respondents came from mature market countries and growth market countries whereas 1/5 came from emerging countries. This corresponds quite well to the actual market situation in Europe[1] .

Expert selection

The experts were chosen in such a way as to have a good representation of food processors from the milk, meat, vegetable/fruit and cereal sector as well as processing specialists, with different field of activities

[1] Padel, S., Seymour,C.,Foster, C. (eds.) (2003).*Organic Marketing Initiatives and Rural Development QLK5-2000-01124*

(research, advice, certification, consumer information, government agencies). In the first round with a relation of 55% food processing companies to 45% non processors and in the second round 46% food processing companies to 54% non processors.

Definitions

Defining organic food processing

The main focus of the first part of the survey was to narrow and clarify definitions which are often used to characterize organic food processing. When asking questions about minimum processing and freshness/fresh produce the answers did not vary very much. However exploring the definition of careful processing and authenticity, the experts had a quite different understanding of these terms. 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 the second survey we tried to find a suitable definition. The definitions with the best acceptations of the terms careful processing, fresh product and authenticity are 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"**
A final definition of the terms "fresh product, careful processing and authenticity" seems not to be of such a high need, as originally expected. Based on the feedback from the experts we can conclude that instead of a final definition of the terms "careful processing" and "authenticity" a more elaborated definition of the production methods as well a good labelling would be more helpful for the producers as well for the consumers, when the intent of these two terms can be addressed indirectly.

General comments

Important aspects in organic food processing

The most interesting point of part 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 aspects that are recognizable to the consumer.

Food safety

Regarding food safety issues, most of the experts do not expect more problems with organic food compared to conventional food.

Nevertheless there are some experts which mentioned expecting more food safety problems. For example: higher contamination by mould spores; higher risk of contamination in food by micro-organisms; animal problems with parasites; higher residues of dioxin in organic eggs; problems arising from naturally occurring mycotoxins and toxic micro-organisms.

Ways to regulate or clarify/harmonise organic food processing issues

An important question was "which aspects should be regulated" at an EU regulation level and which ones at other levels (national, private company or label level) or do not be regulated at all. The feedback from the experts was quite differentiated depending on the different areas. At the EU regulatory level, initial first priority was stated as the minimum use of additives, followed by minimum and careful processing. Quality/sensory aspects however were not seen to be primarily at EU level, because companies should have the chance to develop individual sensorical profiles to their products. We can conclude, based on the feedback from the food processing specialists and processors in the Delphi Survey, that in the future revision of the 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.
- **Private standards:** focussing really on the special quality and regional aspects.
- **Private company level (internal quality standards):** focus on the special sensory quality and 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 => IFOAM and private umbrella organisations (e.g. of organic food processors), operators.
- **GMP (Good manufacturing practices):** elaborated by organic and other advisory/consultancy services specialised in organic agriculture and organic food processing.

The table below will give you an overview about all interviewed subjects regarding regulation or clarifying/harmonising organic food processing issues

Table 2: What to regulate at which level

ISSUE	Relevant in survey	EU Reg. /state (all)	EUReg/state (processors)	Private standard	Private company	Code of Practise	GMP private
Freshness	high	+	~	+	+	+	+
Minimum/careful processing	high	++	++	+	~	+	~
Minimal use of additives	high	+++	+++	~	~	~	~
Sensory quality	medium		~		++	+	+
Environ. friendly processing	high	+	~	+	~	+	+
Environ. friendly packaging	high	+	~	+	+	+	+
Social standards	medium	~	~	+	~	+	+
Regionality	medium	~	~	++	+	~	+
Seasonality	Lower	~	~	+	+	+	~
Whole food	Lower	~	~	~	~	+	+
Health aspects	lower	+	~	~	~	+	+
Authenticity	high	+	++	+	~	~	~
Restricted use sugar/salts	No	~	~	~	~	~	~

Scale: 0-15 % of experts = ~ not significant 15-30 % = + 30-45 % = ++ > 45 % = +++

With regard to the question of whether the EU-Regulation 2092/91 is sufficient an interesting difference between the answers of the processors and the non-processors could be observed. 45.5 % of the food processors think EU Regulation 2092/91 is sufficient as opposed to only 33.3% of the non-processing organisations. This difference between food processors and non-processing organisations could be found several times. We need to think about what the reasons for this discrepancy are. But in general it can be stated that, with the exception of having clear rules for the minimum use of additives and processing aids, no significant preferences or only tendencies regarding the possible ways to regulate or harmonise different aspects of organic food processing have been identified. A "code of practice" for the organic food sector seems however to be a good instrument which would allow not all issues to be described in detail in the EU regulation 2092/91. The organic food sector should take more self-responsibility by defining such a Code of Practice. A general Code of Practice for organic food processing will be elaborated and published as outcome of the QLIF subproject 5 until the end of 2005. (see: www.qlif.org)

In general most of the experts expect special processing methods used in the production of organic food but when asking more specific for the involved experts it was very difficult to select those methods that

are usable/suitable or not usable/suitable for it. Regarding the use of additives, however, the answers given were very clear. There is a tendency to prefer additives from certified organic origin both from processors' as well as from non-processors' point of view.

Furthermore, clear separation guidelines based on HACCP concepts (organic HACCP) in order to reduce the risk of contamination with GMO or conventional pesticides were supported, in particular by 64.8% of the experts from non-processing organisations. Processors show a nearly equal result of 45.3% pro and 39.1% contra HACCP guidelines. With regard to stricter labelling requirements, the non-processing organisations prefer to have stricter guidelines. The same preference was also expressed regarding packaging.

Table 3 possible new appendages to EU Reg. 2092/91 especially annex IV

Area	Actual	New
Flavours: 67.5 % think that flavours should be certified organic (20.5% no).	Natural flavours	Flavours certified organic
Flavour enhancers: 85.5% wouldn't allow the use of flavour enhancers.	Not clearly regulated	Prohibited
Colouring 85.5 % think that the current regulation is sufficient.	Colouring with certified organic ingredients	No revision; Colouring with certified organic ingredients
Antioxidants 74.2% prefer the use of organic antioxidants and also a high level of 60.2% would support the obligation of using certified organic antioxidants .	Synthetic antioxidant allowed	Antioxidants certified organic and of non-synthetic origin
Preservatives: the prohibition of preservatives generally in the organic food sector is acceptable for 55.4% (36.1%no).	Some preservatives are allowed	Stronger restriction for preservatives
Raising agents 67.6% think that the carrier should be certified organic.	Carrier can be non organic	Carrier must be certified organic
Emulsifiers With regard to the risk of GMO contamination 83.1 % think that emulsifiers should have to be certified organic.	Conventional	Certified organic
Enzymes 52.5% think that the use of enzymes in organic products is acceptable. 66.3 % don't accept the use of enzymes for the sole use of standardizing the process/product.	GMO free	Specific requirements depending on the use

Area	Actual	New
Micro-organisms 56.6% in 2nd round (72.5% 1st round) think that micro organisms should be certified organic in comparison to 31.3% in 2nd round(20.8% 1st round) who do not see a need.	Conventional	Certified organic
Anti-caking agents 53% think that anti-caking agents should be certified organic in comparison to 22.9 % who do not see a need.	Conventional	Certified organic
Separation in the production process (parallel processing) 68.7% think that specific separation guidelines would be helpful.	Sufficient separation	Product specific separation guidelines (based on HACCP concept)
Labelling processing methods 54.2% would prefer the processing methods to be listed on the packaging compared to 38.6% who would not.	Non-organic ingredients, certification body	Labelling of some processing methods
Labelling of processing aids: 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)
Labelling of the origin 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
Packaging 75.9% would prefer environmentally friendly packaging but 69.2 % also have the opinion that the packaging which provides the best protection of the product is acceptable instead of environmentally friendly packaging	No requirement in the regulation	No revision at the moment

The survey gives interesting information for the newly started major revision of the EU regulation 2092/91 with regard to processing, in particular for the revision of Annex VI and article 5:

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 research and develop suitable production and processing methods with regard to the requirements for an organic product and the principles of organic agriculture.

1 Introduction

The expanding market for organic food, as defined in EU-Regulation 2092/91, is characterised by an increasing demand for more and more processed foods, including ready to eat food, possibly also with longer shelf-life. Compared with the conventional food sector, processors of organic food can only use a small number of additives and processing aids, currently allowed by the EU regulation 2092/91. This is mainly due to the fact that many consumers expect that organic food is "minimum processed" and only uses very little additives, visible with their E-numbers. However, when looking in organic food processing standards, there is also a great diversity of underlying principles and rationales and as a result these standards may differ significantly between sector bodies, European countries and potential export markets overseas (Schmid, Beck and Kretzschmar, 2004).
In the overall development of standards and the 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 which way processing issues should be considered in the future and at which regulatory level. This was the reason why, within the Subproject 5 in the EU-project "Quality low input food (QLIF)", in particular Workpackage 5.1, an intensive expert consultation was planned and conducted applying the Delphi method. This survey within the EU QLIF-project was based on the outcome of a literature review on underlying principles of organic food processing as well as results of the review of consumer perceptions.

The overall objective of the subproject on processing, where the Delphi expert survey was an important step, is "to develop a framework for the design of "minimum" and "low input" processing strategies, which guarantee food quality and safety." It should support the overall aim of the integrated QLIF Project (Quality of Low-Input Food) in improving quality, ensuring safety and reducing costs along the European organic and "low input" food supply chains through research, dissemination and training activities.

2 Methodology

The Delphi method is explained in detail in Linstone and Turoff (1975).[2] 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 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 are 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.

This survey was carried out in the form of a two-step Delphi survey. In the first round
250 experts in 13 countries in Europe were involved, and were asked to respond to a standardised questionnaire in October and November 2004. The survey was sent by mail and by e-mail to the experts. The questionnaire was translated into the following languages: English, French, Italian, German, Czech, Spanish and partly into Finnish.

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

a) general question about the activity of the experts

b) general open questions about the definition of careful, minimum processing and authenticity

c) general question about quality, food safety and regulations

d) 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,
    - packaging

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[2] Linstone, H.A. and Turoff, M. (eds.) (1975). *The Delphi method: techniques and applications*. Reading, Mass.: Addison-Wesley.

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 were the basis for the second survey.

In the second round the 120 experts in 13 countries in Europe which answered the first round were involved, and were asked to respond to a standardised questionnaire in February and March 2005. The survey was sent to the experts via e-mail. The questionnaire was translated into the following languages: English, French, Italian, German, Czech, Spanish and partly into Finnish.

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

a) Clarifying definitions

b) Clarifying questions to the answers of the first round

c) Possible ways to regulate or harmonise different aspects of organic food processing

d) Specific questions: possible adaptations to Annex VI of EU regulation 2092/91

The surveys questionnaires are attached at the end of the report.

2.1 Criteria for the expert selection

Type of experts:

The experts invited to participate in the Delphi study are able to contribute their expertise on a variety of aspects of organic food processing.

At the same time, the process was open to experts with divergent perspectives who can generate a range of ideas. The aim of the survey was not to build consensus, but rather to increase understanding. Therefore it was important to include those who do not necessarily represent mainstream views; this includes 'non-organic' as well as 'organic' participants.

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 organisations

4 Government agencies

5 Processing standard setting/certification organisations

Moreover, the choice of panellists within each category should also be as evenly spread as possible. For example, in the food processors category, it was seen as preferable to have a mix of smaller and larger companies as well as companies which produce only conventional and only organic food. In addition, it was seen as desirable to include companies that have produced organic food for more than 10 years as well as "newcomers".

As far as possible the Delphi experts should not be those who are acting as key informants for the questionnaires in the QLIF-Subproject 5 Processing, although this distinction might not be possible in countries with a small organic farming sector.

Number of experts:

There will not be a 100 % response rate, so the 1st round started with a larger group of 250 experts, of which 120 responded. The aim was to have approx. 100 experts in the 2nd round.

As there are considerable variations between countries in terms of size and the importance of their organic food sector, some countries may choose to recruit more experts than the guidelines set out below, whereas the views held in other countries may be well represented by fewer experts. As a result, some countries were grouped based on the actual state of the development of the organic food market.

2.2 Experts and responses

Within the Delphi survey on organic food processing experts from 13 countries responded in the first **and** the second round, there were 12 (11 in the second round) member states of the European Union and Switzerland. The main project partners are in close contact with Denmark, Germany, Finland and Switzerland. The remainder was covered through arrangements with sub-contractors. Our aim with the Delphi study was to achieve Europe-wide coverage of experts within the whole organic food processing sectors including food technology specialists, organic and conventional food processors, consumer organisations, government agencies, processing standard setting/certification organisations. All experts were selected by the project partners and subcontractors, aiming to achieve a balanced distribution between respondents from the 2 main categories of food processing companies and non-processing companies such as consumer organisations, government agencies, processing standard setting/certification organisations.

Response rate

In the first round 250 experts were contacted with a response rate of 48%. Those which 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 120 questionnaires were mailed out, with a total of 83 responses (69%) evaluated.

From the first to the second round this represents an overall response rate of 40% comparing the questionnaires sent in the first round with responses received in the second round. As it is not known how many experts regarding to the aforementioned criteria exist in Europe, it is not possible to assess what proportion of possible total sample was covered.

2.3 Description of the random sample regarding country representation

In the second round of the Delphi survey we invited 120 experts in 13 countries which joined the first round to take part in the survey. 83 people (69%) in 12 countries responded to the survey.

Table 4 Country frequency in the first and second round

Countries	Frequency 1st	Frequency 2nd	Frequency 1st %	Frequency 2nd %	Land under organic management % [3]	Market Volume €	Market volume % of total market
Total	**120**	**83**	**100**	**100**			
Switzerland	26	22	21	27	10.8	704 million	3-4
Germany	17	13	14	16	4	3'000 million	2.3
Austria	17	11	14	13	9.2	330 million	2.9
Czech Republic	13	9	11	11	2.37	18.4 million	
Great Britain	10	5	8	6	1.74	1'436 million	1.2
Spain	9	5	8	6	1.47	144 million	
Italy	7	5	6	6	2.14	1'514 million	1.2
France	7	5	6	6	1.55	1'500 million	1
Finland	5	4	4	5	6.8	212 million-	1-2
Denmark	4	2	3	2	5.88	270 million	3.5
Belgium	3	1	3	1	1.23	300 million	2.2
Netherlands	1	1	1	1	1.7	375 million	1.4
Slovakia	1	0	1	0	1.1	nv	

nv: not available

[3] Willer, H., Richter, T. (2003)Helga. FiBL-Statistics Organic Farms. Area and Markets in Selected European Countries, Results of a FiBL survey November 2003

Figure 1 Country frequency in percentage in the second round

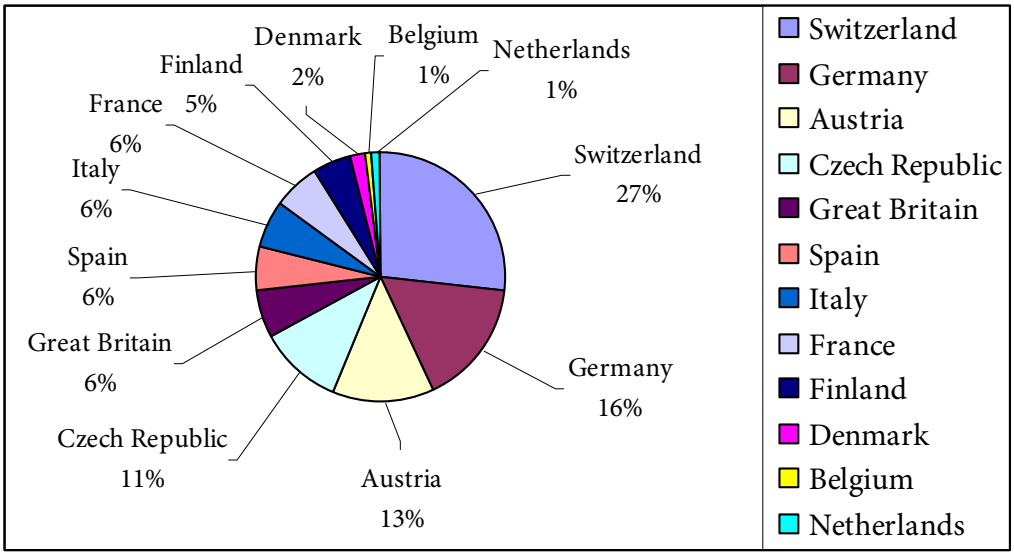
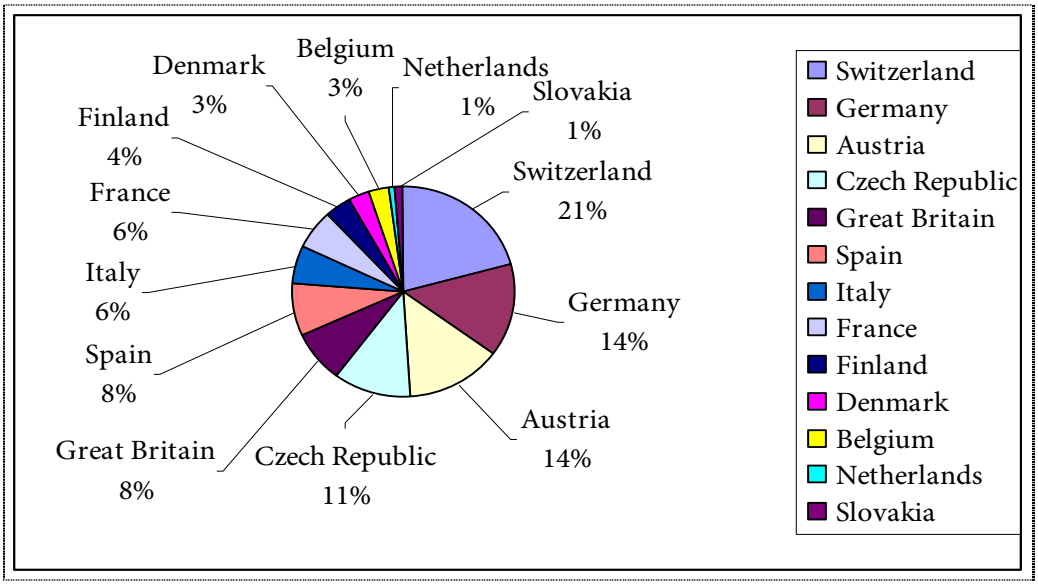


Figure2: 120 experts from 13 countries answered the first round.



Based on the experiences from other EU projects (Hamm et al. 2002) a classification was made with regard to the development stage of the country in the organic market development.

Table 5 Country classification in the organic market development.

Mature market countries	*Growth market countries*	*Emerging market countries*
Austria Denmark Switzerland	Finland France Italy Netherlands United Kingdom Germany	Belgium Czech Republic Slovenia Spain

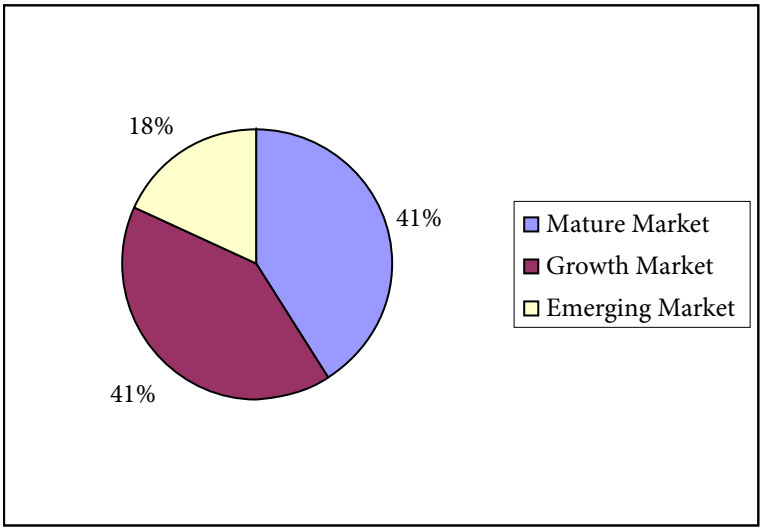
We can see in Fig. 6 where countries are classified based on the development stage of the organic food market, that 2/5 of the respondents are drawn from mature market countries and growth market countries respectively whereas 1/5 were drawn from emerging countries. This corresponds quite well to the actual market situation in Europe[4] .

Table 6 Distribution of the experts regarding the development of the organic market

Countries	**Frequency 1st**	**Frequency 2nd**	**Frequency 1st %**	**Frequency 2nd %**
Total	120	83	100	100
Mature Market	47	34	39	41
Growth Market	49	34	41	41
Emerging Market	24	15	20	18

[4] Padel, S., Seymour,C.,Foster, C. (eds.) (2003).*Organic Marketing Initiatives and Rural Development QLK5-2000-01124*

Figure 3 Distribution based on country classification



Tab. 7 and Fig. 3 shows that compared to the first consultation round 46% food processing companies (55% in the first round) and 54% non-processing organisations (first round 45%) participated. Although in both rounds the number of participating non processors still remained higher than the number of experts from processing companies, this mixture still provides a good basis for reflecting the views of both sides and the possibility of analysing differences between processors and non-processors. As we can see later non-processing actors add, for example, more importance to the EU regulatory level than the processing companies.

Table 7: Description of the random sample with regard to field of activities

Categories	Count	%
Total	**83**	**100 %**
Food processing	38	45.8 %
Other (e.g. advisers)	15	18.1 %
Research institutes	12	14.5 %
Processing standard setting/certification organisations	10	12 %
Government agencies	5	6 %
Consumer organisations	3	3.6 %

Figure 4 Description of the random sample with regard to activities of the second round

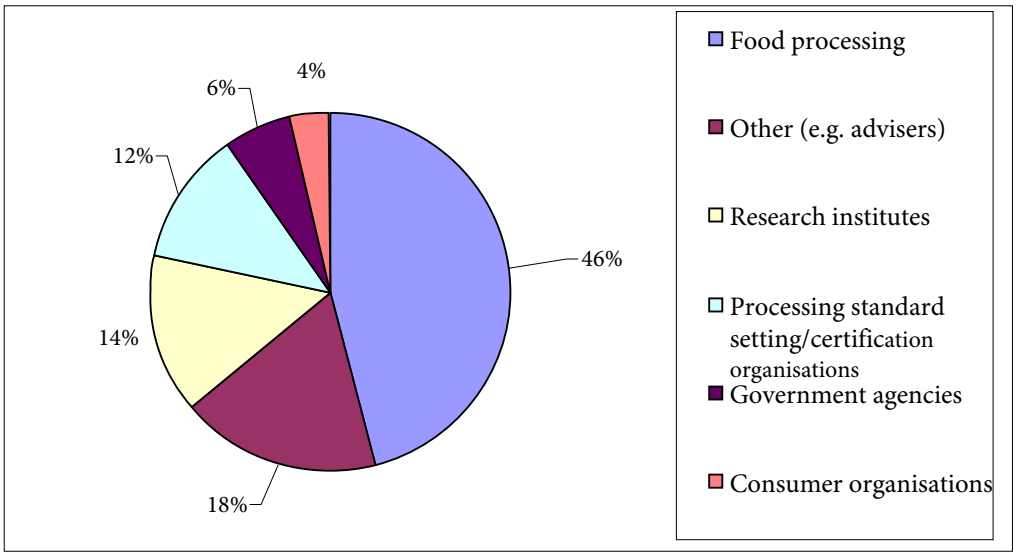
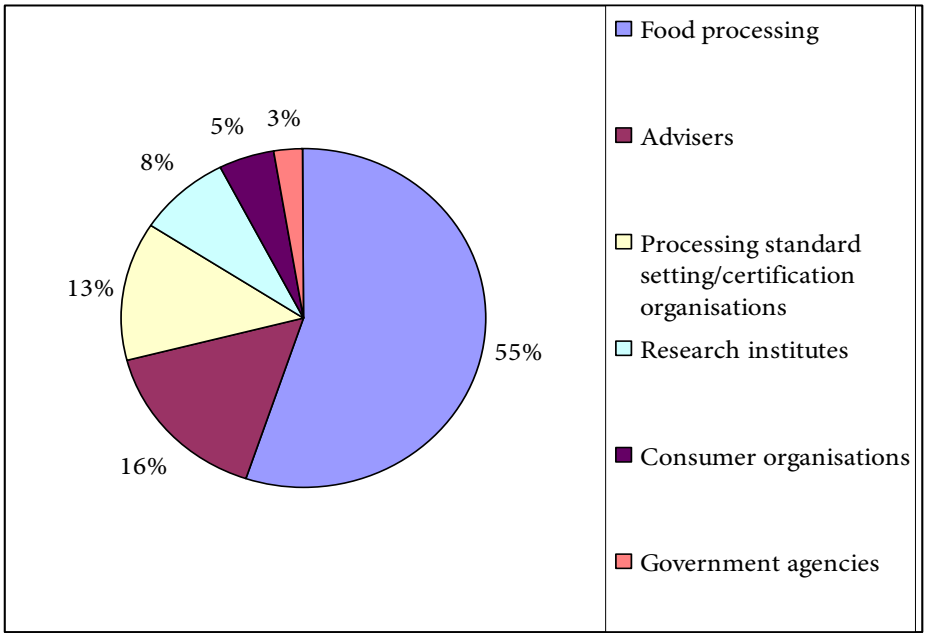


Figure5: Distribution of the random sample with regard to activities of the first round



Information about how long and to which extent the companies are dealing with organic food processing is shown in the report of the first round of the Delphi survey (see Annex).

3 Results of the Delphi 1st consultation round

3.1 Focus of the first questionnaire

In the first round 250 experts in 13 countries in Europe were involved, and were asked to respond to a standardised questionnaire in October and November 2004. The Delphi expert survey was designed in such a way that the most important and currently discussed aspects regarding organic food processing have been taken up, such as: general open questions about the definition of careful, minimum processing and authenticity; general question about quality, food safety and regulations; 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, enzymes, micro-organisms, anti-caking agents, separation in the production process, labelling, packaging.

3.2 Summary of the views expressed in the 1st Delphi Consultation round

In the first part of the survey the main focus was to narrow and clarify definitions, which are often used to characterize organic food processing. When asking questions about minimum processing and freshness/fresh product the answers did not vary very much. However exploring the definition of careful processing and authenticity the experts have a quite different understanding of these terms. On the other hand, in the second part of the survey, we have seen that authenticity is seen as very important for an organic product. Therefore there was a need to clarify this definition in the second Delphi survey round.

Also interesting to see in the questions in part two was that aspects like sensory quality, freshness, minimum use of additives and authenticity are seen as the most important aspects for success on the market, all aspects that are recognizable to the consumer.

An important question was, which aspects should be regulated. The results were quite different. In first place was the minimum use of additives, followed by minimum and careful processing, but not quality/sensory aspects because these are quite different in the different countries of Europe. These are aspects which are more important for the processors.

Regarding food safety, most of the experts did not expect more problems with organic food compared to conventional food. Nevertheless there are some experts which mentioned that they expect more food safety problems. This point was therefore analysed more detailed in the second survey.

When coming to the question if the EU-Regulation 2092/91 is sufficient, the survey showed a difference between the processors and the non-processors. 45.5 % of the food processors thought that the EU Regulation 2092/91 is sufficient whereas only 33.3% of the non-processing organisations think it is sufficient. This difference between food processors and non-processing organisations was seen several times. We need to think about what the reasons for this discrepancy are.

In general most of the experts expected to see special processing methods used in the production of organic food but when asking in detail it was very difficult to select methods that are usable or not usable in organic food production. Regarding the use of additives, the answers given, however, were very clear. There is a tendency to prefer additives from certified organic origin both from processors' as well as non-processors' viewpoints. Clear separations guidelines in order to reduce the risk of contamination with GMO or conventional pesticide were supported much more by non-processing organisations, at 64.8%, whereas the processors have a nearly equal result of 45.3% yes against 39.1% no. With regard to stricter

labelling requirements the non-processing, organisations prefer to have stricter guidelines. The same preference was also expressed regarding packaging.

To summarize the results of the first Delphi survey:

- 120 persons, 48% answered the survey.
- 42% thought it would be helpful to have a partly more detailed EU regulation in comparison to 13% who would not like to have more regulations.
- Minimum use of additives was the most important question for 84%-> a regulation for all product groups was seen as a need!
- 20% to 25% expected food safety problems in the organic food sector.
- There was an overall clear tendency to have additives like flavours, colouring, antioxidant, emulsifier and anti-caking agents certified in organic quality where applicable.
- There seemed to be a need to have micro-organisms certified as organic quality.
- Specific processing methods for organic food production were generally expected but there was no clear indication which one is acceptable.
- Stricter labelling guidelines might be desirable.
- 71% used or preferred environmentally friendly packaging but, on the other hand, 69% were in favour of a packaging that provides the best protection and not the most environmentally friendly packaging.
- Only 32% thought that it should be a goal for the organic food sector to deliver the same product range as the conventional industry.

4. Results from the second consultation round

4.1 Focus and presentation of the results

As already mentioned, the focus of the second round was to verify the results of the first round and to gain additional information about some specific areas which are of high relevance for the organic food sector and in particular the food processing companies.

All results are calculated in a percentage related to the 83 respondents.

The analysis of the results was done in three categories:

- **General**
- **Differentiation between food processing companies and non-processing companies.**
  The non-processing companies are grouped as follows: consumer organisations, government agencies, processing standard setting/certification organisations, research institutes, consumer organisations.
- **Differentiation with a country classification**

4.2. Clarifying definitions

As in the first round, some definitions were explored in the second round and the experts had the possibility to indicate their most preferred definitions.

Term "careful processing"

In organic food processing the term "careful processing" is often used but not yet defined. In the survey we tried to find a possible definition.

Table 8 Definition of careful food processing - some proposals

	Very good	Good	Partly	Not at all		Don't know	No answer
Optimised combination of processing parameters (e.g. time, temperature and pressure during processing)							
general	26.5	27.7	30.1	8.4		3.6	3.6
mature market countries	29.4	23.5	23.5	17.6		2.9	2.9
growth market countries	26.5	29.4	35.3	2.9		2.9	2.9
emerging market countries	20.0	33.3	33.3			6.7	6.7
food processors	26.3	23.7	26.3	10.5		7.9	5.3
non-processing organisations	26.7	31.1	33.3	6.7			2.2

The maximum to keep the important compounds and the maximum to avoid undesired compounds or nutritional losses.	Very good	Good	Partly	Not at all		Don't know	No answer
General	*34.9*	*28.9*	*22.9*	*7.2*			*6.0*
mature market countries	35.3	14.7	32.4	11.8			5.9
growth market countries	26.5	38.2	20.6	5.9			8.8
emerging market countries	53.3	40.0	6.7				
food processors	31.6	31.6	13.2	15.8			7.9
non-processing organisations	37.8	26.7	31.1				4.4

Careful processing means taking care of the product, the environment and people.	Very good	Good	Partly	Not at all		Don't know	No answer
general	*33.7*	*19.3*	*26.5*	*8.4*		*6.0*	*6.0*
mature market countries	47.1	11.8	23.5	8.8		2.9	5.9
growth market countries	11.8	26.5	35.3	11.8		5.9	8.8
emerging market countries	53.3	20.0	13.3			13.3	
food processors	39.5	10.5	28.9	10.5		5.3	5.3
non-processing organisations	28.9	26.7	24.4	6.7		6.7	6.7

Processing methods "appropriate" to processed food.	Very good	Good	Partly	Not at all		Don't know	No answer
General	*10.8*	*18.1*	*20.5*	*34.9*		*6.0*	*9.6*
mature market countries	17.6	5.9	17.6	38.2		8.8	11.8
growth market countries	5.9	20.6	29.4	32.4			11.8
emerging market countries	6.7	40.0	6.7	33.3		13.3	
food processors	10.5	21.1	15.8	36.8		5.3	10.5
non-processing organisations	11.1	15.6	24.4	33.3		6.7	8.9

Careful processing means ensuring food safety as much as possible	Very good	Good	Partly	Not at all		Don't know	No answer
general	*12.0*	*24.1*	*28.9*	*24.1*		*1.2*	*9.6*
mature market countries	23.5	23.5	32.4	17.6			2.9
growth market countries	2.9	23.5	23.5	32.4			17.6
emerging market countries	6.7	26.7	33.3	20.0		6.7	6.7
food processors	13.2	15.8	18.4	39.5		2.6	10.5
non-processing organisations	11.1	31.1	37.8	11.1			8.9

As little processing as possible. Restrictions on processing techniques and/or additives should be made according to product groups	Very good	Good	Partly	Not at all		Don't know	No answer
general	*16.9*	*21.7*	*30.1*	*15.7*		*4.8*	*10.8*
mature market countries	23.5	20.6	23.5	20.6			11.8
growth market countries	14.7	20.6	38.2	8.8		8.8	8.8
emerging market countries	6.7	26.7	26.7	20.0		6.7	13.3
food processors	10.5	18.4	28.9	21.1		5.3	15.8
non-processing organisations	22.2	24.4	31.1	11.1		4.4	6.7

There is no necessity to define it	Very good	Good	Partly	Not at all		Don't know	No answer
general	*3.6*	*8.4*	*6.0*	*55.4*		*7.2*	*19.3*
mature market countries	2.9	14.7	8.8	50.0		2.9	20.6
growth market countries	5.9	5.9	5.9	47.1		11.8	23.5
emerging market countries				86.7		6.7	6.7
food processors	7.9	13.2	5.3	47.4		7.9	18.4
non-processing organisations		4.4	6.7	62.2		6.7	20.0

The definition with the best acceptance was the definition **"the maximum to keep the important compounds and the maximum to avoid undesired compounds or nutritional losses"** with an average agreement of 63.8% good and very good. For the experts from emerging market countries this definition had a very high acceptance of 93.3%!

On the other hand, on average only 55.4% saw an importance in defining this term. However, there is a difference between the experts, depending on the development stage in the organic food market and

whether these are processing/and non-processing companies. For example, the experts from the emerging market countries support such a definition at 86.7%. Experts from the non-processing organisations also give a higher support (with 62.2%) for such a definition whereas only 47.4%. of the experts from processing organisations support a definition. There was also a relatively high percentage of 20% which did not have an opinion regarding the need of a definition (no answer).

We can clearly see that the different groups have different expectations, but we can also clearly say that a very high percentage support having a definition. Taking account of the remarks it is often stated that it might be better to define this by processing methods rather than by an unsatisfactory definition. This point of view will be part of the discussion.

Term "fresh product"

In several standards as well in promotion material the term "fresh product" is used. As this term is very often also used for conventional products, it was interesting to find out in which way processing specialists would define this term in relation to organic food.

Table 9 Definition of fresh product – some proposals

	Very good	Good	Partly	Not at all		Don't know	No answer
Product with a short shelf life needs to be stored at a specific temperature or under controlled temperature conditions							
general	*34.9*	*34.9*	*20.5*	*2.4*		*1.2*	*6.0*
mature market countries	41.2	32.4	20.6	2.9			2.9
growth market countries	29.4	35.3	23.5	2.9			8.8
emerging market countries	33.3	40.0	13.3			6.7	6.7
food processors	44.7	34.2	10.5			2.6	7.9
non-processing organisations	26.7	35.6	28.9	4.4			4.4

Products like fruit and vegetables with short shelf lives	Very good	Good	Partly	Not at all		Don't know	No answer
general	*30.1*	*19.3*	*34.9*	*6.0*		*2.4*	*7.2*
mature market countries	35.3	17.6	35.3	5.9			5.9
growth market countries	26.5	20.6	38.2	5.9			8.8
emerging market countries	26.7	20.0	26.7	6.7		13.3	6.7
food processors	34.2	13.2	23.7	7.9		5.3	15.8
non-processing organisations	26.7	24.4	44.4	4.4			

Products that undergo minimal quality change during storage.	Very good	Good	Partly	Not at all		Don't know	No answer
General	*6.0*	*8.4*	*18.1*	*51.8*		*3.6*	*12.0*
mature market countries	5.9	8.8	23.5	47.1			14.7
growth market countries	2.9	8.8	14.7	61.8			11.8
emerging market countries	13.3	6.7	13.3	40.0		20.0	6.7
food processors	2.6	13.2	15.8	44.7		5.3	18.4
non-processing organisations	8.9	4.4	20.0	57.8		2.2	6.7

No processing after harvesting/milking/slaughtering	Very good	Good	Partly	Not at all		Don't know	No answer
general	*8.4*	*9.6*	*31.3*	*36.1*		*3.6*	*10.8*
mature market countries	5.9	5.9	38.2	35.3			14.7
growth market countries	2.9	14.7	29.4	41.2		2.9	8.8
emerging market countries	26.7	6.7	20.0	26.7		13.3	6.7
food processors	5.3	10.5	21.1	39.5		7.9	15.8
non-processing organisations	11.1	8.9	40.0	33.3			6.7

There is no necessity to define it	Very good	Good	Partly	Not at all		Don't know	No answer
general	6.0	2.4	8.4	57.8		7.2	18.1
mature market countries	5.9	2.9	14.7	55.9			20.6
growth market countries	5.9	2.9	5.9	50.0		14.7	20.6
emerging market countries	6.7			80.0		6.7	6.7
food processors	7.9	2.6	7.9	55.3		7.9	18.4
non-processing organisations	4.4	2.2	8.9	60.0		6.7	17.8

With regard to finding a definition for the "term fresh product" the result was very clear: with 69.8% good and very good the experts support the definition of a "**Product with a short shelf- life needs to be stored at a specific temperature or under controlled temperature conditions**". On average 57.8% of the experts supported a definition of this term. There were differences between the expert groups. A high support of 80% came from the experts of the emerging market countries. The experts from non-processing organisations support a definition slightly more strongly with 60% to 55% of the food processors. Also in this block of questions, we have a high rate of an average of 18% which have not answered the question regarding the need for regulation. However, it has also to be considered that it is difficult to find a definition of fresh that covers fresh meat, fruit and vegetables, dairy products, fresh bread and cake, fresh roasted nuts and other foods. There is perhaps a difference between fresh food and freshly prepared food. A fresh food exhibits natural organoleptic qualities which deteriorate quickly as the food stales. So the question is, if a definition should be a help for the food processors or for the consumers. A definition product specifically would help to have a consistent declaration and therewith better consumer information.

Term "authenticity"

The term "authenticity" is also often used in connection with organic food but sometimes also with conventional food, in particular from low-input farming systems or for typical food. For example the Codex Alimentarius Guidelines for organically produced food, in Section 5.1, where criteria are given for the inclusion of substances and development of lists by countries, mentioned under paragraph c) for additives and processing, that „their use maintains the authenticity of the product" (2004).

Table 10 Definition of authenticity regarding food - some proposals

	Very good	Good	Partly	Not at all		Don't know	No answer
The content is "real" and fulfils the expectations of the consumers							
general	*21.7*	*22.9*	*32.5*	*13.3*		*3.6*	*6.0*
mature market countries	29.4	17.6	20.6	17.6		2.9	11.8
growth market countries	14.7	23.5	41.2	14.7		2.9	2.9
emerging market countries	20.0	33.3	40.0			6.7	
food processors	34.2	18.4	21.1	10.5		7.9	7.9
non-processing organisations	11.1	26.7	42.2	15.6			4.4

The sensory quality must be of a high enough standard that the consumer can recognize the product (in comparison with conventional products on the market)	Very good	Good	Partly	Not at all		Don't know	No answer
general	*7.2*	*15.7*	*39.8*	*25.3*		*3.6*	*8.4*
mature market countries	8.8	17.6	38.2	23.5		2.9	8.8
growth market countries	5.9	11.8	47.1	26.5			8.8
emerging market countries	6.7	20.0	26.7	26.7		13.3	6.7
food processors	10.5	15.8	31.6	26.3		5.3	10.5
non-processing organisations	4.4	15.6	46.7	24.4		2.2	6.7

Product name, list of ingredients and the sensory quality should be equivalent/corresponding/ in line with each other	Very good	Good	Partly	Not at all		Don't know	No answer
general	*20.5*	*31.3*	*31.3*	*10.8*		*2.4*	*3.6*
mature market countries	26.5	32.4	26.5	8.8		2.9	2.9
growth market countries	11.8	23.5	47.1	14.7			2.9
emerging market countries	26.7	46.7	6.7	6.7		6.7	6.7
food processors	21.1	31.6	23.7	10.5		5.3	7.9
non-processing organisations	20.0	31.1	37.8	11.1			

Production and processing steps, and the origin are visible/recognizable to the consumer	Very good	Good	Partly	Not at all		Don't know	No answer
general	*25.3*	*33.7*	*21.7*	*10.8*		*2.4*	*6.0*
mature market countries	29.4	32.4	20.6	8.8			8.8
growth market countries	17.6	44.1	20.6	14.7			2.9
emerging market countries	33.3	13.3	26.7	6.7		13.3	6.7
food processors	15.8	31.6	23.7	13.2		5.3	10.5
non-processing organisations	33.3	35.6	20.0	8.9			2.2

Food which is natural and has not been synthesised or adulterated in production, processing or storage	Very good	Good	Partly	Not at all		Don't know	No answer
general	*16.9*	*22.9*	*38.6*	*12.0*		*2.4*	*7.2*
mature market countries	17.6	26.5	38.2	8.8			8.8
growth market countries	11.8	20.6	47.1	14.7			5.9
emerging market countries	26.7	20.0	20.0	13.3		13.3	6.7
food processors	21.1	21.1	28.9	13.2		5.3	10.5
non-processing organisations	13.3	24.4	46.7	11.1			4.4

There is no necessity to define it	Very good	Good	Partly	Not at all		Don't know	No answer
general	*1.2*	*6.0*	*10.8*	*48.2*		*12.0*	*21.7*
mature market countries		8.8	14.7	52.9		5.9	17.6
growth market countries	2.9	5.9	8.8	38.2		17.6	26.5
emerging market countries			6.7	60.0		13.3	20.0
food processors	2.6	7.9	10.5	42.1		15.8	21.1
non-processing organisations		4.4	11.1	53.3		8.9	22.2

The definition **"Production and processing steps, and the origin are visible/recognizable to the consumer"** had the best acceptance with 59%, but, on the other hand, this for 10.8% this definition was not acceptable at all. 68.9% of the experts from non-processing organisations supported this definition and only 47.4% of the food processors. The food processors had a slightly different perception; they preferred, with an average of 52.6%, the definition: **The content is "real" and fulfils the expectations of the consumer.** But in general only 44.6% preferred this term.

Also in this case, the experts from non-processing organisations were much more in favour of having a definition of the term "authenticity" (53.3%) compared with the food processors (42.1%). Many food

processors mentioned that with a good declaration/labelling practise the intent of these proposed definitions can be fulfilled without having a precise legal definition

To summarize: Over 50% of the respondents had the opinion that it would be helpful to have a definition of the terms "careful processing", "fresh product", and "authenticity", however, the question of whether such a definition has to be amended in the EU regulation 2092/91 was seen differently. The non-processing organisations and the emerging market countries have more support for a legal definition of the several terms than the food processors. It has to be discussed if, instead of a definition of these terms "careful processing" and "authenticity", a more precise definition/description of the production and processing methods as well a good labelling would be much more helpful for the producers as well for the consumers. The same can be concluded with regard to the definition of a "fresh product", where several experts raised the question of whether 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. Such an approach would be a help for a more consistent and comprehensive labelling and hereby contribute to better consumer information.

4.3 Special need for regulating new areas

In the first Delphi expert consultation round a number of new areas were mentioned which might be regulated to ensure consumer trust and market success, such as environmental requirements for processing and packaging, regionality as well as the use of sugar and salt for organic food. The aim was to verify more precisely if there is a real need to regulate these areas at an EU level.

Environmental requirements for processing and packaging.

Many consumers associate organic food production with environmentally friendly processing, but how should this issue be regulated?

In the first round for 75% of the respondents environmentally friendly processing is seen as important for an organic product to be successful on the market. And 60.8% of the experts had the opinion that specific requirements would be helpful. In the second consultation round a majority of 578 % still found that a certification for environmentally friendly processing should be required. The result of the first round could be confirmed. But we can see that the experts from non-processing organisations and the experts of the growth market countries gave stronger support for having a regulation (68.9% respective 67.6%) than the food processors, with an acceptance of 44.7%. It has to be discussed if in this case a code of practice for organic food processors could be a good alternative instrument instead of having this issue regulated legally in the EU regulation 2092/91.

Table 11 Clarifying questions to the answers of the first round - which criteria are important for an organic product to be successful on the food market?

	Yes	No		Don't know	No answer
1 Environmentally friendly processing (e.g. ISO 14000) 60.8 %[1] have the opinion that environmentally friendly processing is important/very important for an organic product. Should certification for environmentally friendly processing be required?					-
General	*57.8*	*36.1*		*6.0*	
mature market countries	52.9	38.2		8.8	
growth market countries	67.6	29.4		2.9	
emerging market countries	46.7	46.7		6.7	
food processors	44.7	52.6		2.6	
non-processing organisations	68.9	22.2		8.9	

For 60.8% of the experts environmentally friendly packaging is important for an organic product to be successful on the market. In the first round 57.5% % preferred environmentally friendly packaging. But when asking the question of whether there should be a special regulation for the packaging of organic products, we got an equal result with 45.8% of the experts supporting a regulation and 47% which did not see such a need. The experts from mature market countries as well the food processors clearly don't want to have a regulation regarding to environmentally packaging!

2 Environmentally friendly packaging Consumer studies have shown that the consumer has a varying perception of environmentally friendly packaging. Should there be special regulation and certification for the packaging of organic products?	Yes	No		Don't know	No answer
General	*45.8*	*47.0*		*7.2*	
mature market countries	38.2	55.9		5.9	
growth market countries	50.0	44.1		5.9	
emerging market countries	53.3	33.3		13.3	
food processors	34.2	60.5		5.3	
non-processing organisations	55.6	35.6		8.9	

[1] Percentage refers to the results of the first questionnaire

Regionality

Regionality was classified as being of medium importance for the success of an organic product on the market. This point of view was clearly confirmed with a result of 55.4 % of the experts which did not see a need to have a regulation whereas 38.6% would support a regulation.

Table 12 Regionality (produced, processed and sold in the region)

66.4%[1] have the opinion that regionality is important for the success of an organic product on the market. Should there be special regulation and certification regarding the regionality of organic products?	Yes	No		Don't know	No answer
General	*38.6*	*55.4*		*4.8*	*1.2*
mature market countries	44.1	55.9			
growth market countries	35.3	55.9		8.8	
emerging market countries	33.3	53.3		6.7	6.7
food processors	34.2	57.9		7.9	
non-processing organisations	42.2	53.3		2.2	2.2

Regulating the use of salt and sugar

Regarding the expectation of a healthy organic product, the question was whether there is a need to regulate the quality of salt and of sugar as well as the amount which could be used in an organic processed product. A need for a special regulation was in general clearly rejected. Only experts from the emerging market countries had a nearly equal point of view with regard to regulating or not regulating the type of salt or sugar for organic products (acceptability of a regulation: in favour 40% for salt/40.0% for sugar; not acceptable 40.0% for salt/46% for sugar).

Table 13 Use of salt

1. Is there a need to make a regulation regarding the type (e.g. iodised salt, non-iodised salt) or origin (e.g. Himalayan salt, sea salt) of salt that can be used in organic food production?	Yes	No		Don't know	No answer
General	*25.3*	*62.7*		*10.8*	*1.2*
mature market countries	20.6	73.5		5.9	
growth market countries	23.5	61.8		14.7	
emerging market countries	40.0	40.0		13.3	6.7
food processors	23.7	65.8		10.5	
non-processing organisations	26.7	60.0		11.1	2.2

2. Is there a need to regulate the amount of salt in an organic product according to product category?					
General	*21.7*	*67.5*		*9.6*	*1.2*
mature market countries	14.7	82.4		2.9	
growth market countries	20.6	64.7		14.7	
emerging market countries	40.0	40.0		13.3	6.7
food processors	18.4	65.8		15.8	
non-processing organisations	24.4	68.9		4.4	2.2

Table 14 Use of sugar

1. Is there a need to regulate the type (e.g. white sugar, Demerara sugar) or origin (e.g. cane sugar, beet sugar) of sugar that can be used in organic food production?	Yes	No		Don't know	No answer
General	*25.3*	*65.1*		*8.4*	*1.2*
mature market countries	14.7	76.5		8.8	
growth market countries	29.4	61.8		8.8	
emerging market countries	40.0	46.7		6.7	6.7
food processors	23.7	68.4		7.9	
non-processing organisations	26.7	62.2		8.9	2.2
2. Is there a need to regulate the amount of sugar in an organic product according to product category?					
General	*18.1*	*72.3*		*8.4*	*1.2*
mature market countries	11.8	79.4		8.8	
growth market countries	20.6	73.5		5.9	
emerging market countries	26.7	53.3		13.3	6.7
food processors	13.2	73.7		13.2	
non-processing organisations	22.2	71.1		4.4	2.2

4.4 Food safety issues

Because in the first consultation round a minority of experts related food safety problems with organic food, this issue was subject to an in depth analysis in the second questionnaire.

The majority of the experts (57.5%) still did not expect additional problems in general with food safety in the organic food sector. We have nearly the same judgement from experts from food processing organisations and non-processing organisations. However, we can see a different result from the experts from growth market countries, where 52.9% have the opinion that more food safety problems might occur with organic food compared with 44.1%, which do not expect special problems.

The 36.1% of the experts (in the first round 25%!), which expected problems mentioned the following most important food safety problems: higher contamination by mould spores and other spores problems; the reduced use of preservatives in food makes food itself in danger at higher risk of contamination from micro-organisms and their toxic substances due to the fact that less preservatives are used in food processing; problems with parasites and dioxin residues in organic eggs because of the free range production as well as hygienic problems related to the restrictions in cleaning and disinfection. Several times experts mentioned that organic farmers and processors need to understand that some organic farming practices mean that naturally occurring mycotoxins might be more likely and others less on their farms and that they have to ensure that simple and adequate systems are in place to prevent harmful organisms from entering the food chain.

Table 15 Food safety

In terms of food safety, organic food has to fulfil the same standards as conventional food and the same regulations are valid. 55 % of the respondents do not have or do not expect more problems with organic food safety. On the other hand 25% expected at least some or more problems with residues, toxins and pathogens in the organic food sector compared to the conventional sector. To clarify this point we would like to ask some more precise questions.	Yes	No		Don't know	No answer
1. Do you experience significant problems with food safety in the organic food sector compared to the conventional one? If yes, mention *the* most important safety problem:					
General	*36.1*	*59.0*		*3.6*	*1.2*
mature market countries	29.4	61.8		5.9	2.9
growth market countries	52.9	44.1		2.9	
emerging market countries	13.3	86.7			
food processors	36.8	60.5			2.6
non-processing organisations	35.6	57.8		6.7	

4.5 Ways to regulate or clarify/harmonise organic food processing issues

The aim of this part of the second Delphi consultation round was to find out in which way and on which level food processing issues should be regulated. The experts had the possibility to indicate for each of the different aspects on which of the following ways this should be regulated or at least be clarified/harmonised:

- Regulated by EU Regulation 2092/91/EU implementation rules;
- Regulated by label organisations / private standards;
- Individually regulated by the food processing industry;
- Code of practice for the organic food sector (still to be developed);
- General requirement/ recommendation (good manufacturing practice).

The answers achieved a high relevance,

in particular to the major revision of the EU Regulation 2092/91, which started in 2005.

Regulating freshness

The answers to this question showed again clearly that there is no need to have a regulation regarding freshness. The analysis shows a clear tendency to have only a general requirement or recommendation. But one interesting observation is that the food processors would support an adapted EU Regulation with 26.3% compared to the average of 16.9% of all experts! And the non-processing organisations prefer clearly a general requirement. However, the result also shows a discrepancy regarding consumer expectations of an organic product, for which freshness is a very important criteria.

Table 16 Possible ways to regulate or clarify/harmonise different aspects of organic food processing

43.3 % think that it would be helpful to have a more detailed regulation on organic food processing. 17.5 % think it would be of some help and only 13.3 % think that it would not be helpful to have a more detailed EU regulation 2092/91. In which way and how should a specific issue be best regulated or at least be clarified/harmonised? Please give one answer only.	**Regulated by EU Regulation 2092/91/EU implementation rules**	**Regulated by label organisations / private standards**	**Individually regulated by the food processing industry**	**Code of practice for the organic food sector**	**General requirement/ recommendation (good manufacturing practice)**	**Don't know**	**No answer**
4.1 Freshness							
General	16.9	15.7	16.9	19.3	24.1	6.0	1.2
mature market countries	20.6	29.4	20.6	8.8	14.7	5.9	
growth market countries	14.7		14.7	32.4	29.4	5.9	2.9
emerging market countries	13.3	20.0	13.3	13.3	33.3	6.7	
food processors	26.3	15.8	18.4	23.7	10.5	5.3	
non-processing organisations	8.9	15.6	15.6	15.6	35.6	6.7	2.2

Regulating minimum and careful processing methods

A regulation of minimum and careful processing would be supported in the EU Regulation with a minority of 34.9% or by the Label organisation with 21.7% of the experts. The non-processing organisations prefer a regulation in the EU-Regulation with 40.0%.

Table 17 Minimum and careful processing methods

	EU Regulation 2092/91	Label	Individuall y	Code of practice	GMP	Don't know	N answer
General	*34.9*	*21.7*	*13.3*	*14.5*	*9.6*	*3.6*	*2.4*
mature market countries	32.4	35.3	11.8	5.9	5.9	2.9	5.9
growth market countries	41.2	11.8	17.6	11.8	14.7	2.9	
emerging market countries	26.7	3.3	6.7	40.0	6.7	6.7	
food processors	28.9	18.4	21.1	13.2	10.5	5.3	2.6
non-processing organisations	40.0	24.4	6.7	15.6	8.9	2.2	2.2

Regulating minimum use of additives and processing aids.

As in the first consultation round, the use of additives and processing aids is judged as a very important aspect. The result shows very clearly that 63.9% support a regulation in the EU Regulation 2092/91. However, there is a difference between the experts from food processing companies with 47.4% support compared to 77.8% of the experts from the non-processing organisations.

Table 18 Minimum use of additives and processing aids

	EU Regulation 2092/91	Label	Individuall y	Code of practice	GMP	Don't know	No answer
General	*63.9*	*6.0*	*4.8*	*12.0*	*7.2*	*3.6*	*2.4*
mature market countries	61.8	11.8	8.8	2.9	11.8	2.9	
growth market countries	61.8	2.9	20.6	5.9	2.9	5.9	
emerging market countries	73.3	6.7		13.3		6.7	
food processors	47.4	0.5	7.9	18.4	10.5	5.3	
non-processing organisations	77.8	2.2	2.2	6.7	4.4	2.2	4.4

Regulating sensory quality

The sensory quality is the most important aspect for an organic food product to be successful on the market, but the consumer expectations regarding to the sensory quality differ strongly in the different countries. Furthermore, the requirements for sensory quality depend on which market segment the product has to establish (e.g. premium product). Therefore, the result is not astonishing: there is a clear preference to have an individual approach by the food processing industry with an average of 34.9% of all experts.

Table 19 Sensory quality (flavour, smell, taste, colour, texture)

	EU Regulation 2092/91	Label	Individuall y	Code of practice	GMP	Don't know	No answer
General	*4.8*	*9.6*	*34.9*	*15.7*	*21.7*	*7.2*	*6.0*
mature market countries		11.8	50.0	8.8	14.7	8.8	5.9
growth market countries	8.8	8.8	20.6	14.7	32.4	5.9	8.8
emerging market countries	6.7	6.7	33.3	33.3	13.3	6.7	
food processors	7.9	7.9	39.5	10.5	23.7	7.9	2.6
non-processing organisations	2.2	11.1	31.1	20.0	20.0	6.7	8.9

Regulating environmentally friendly processing

As already outlined in the chapter 4.1 on definitions, 57.8% of the experts have the opinion that the certification of environmentally friendly processing should be required. These experts support a regulation in the EU-Regulation 2092/91with nearly the same percentage of 24.1%. Although many experts welcome a certification for environmental performance, practically they supported the proposal that this issue should be taken up in a code of practice or dealt with in a recommendation for good manufacturing practises.

Table 20 Environmentally friendly processing and transportation (e.g. ISO14000)

	EU Regulation 2092/91	Label	Individuall y	Code of practice	GMP	Don't know	No answer
General	*24.1*	*15.7*	*10.8*	*18.1*	*21.7*	*7.2*	*2.4*
mature market countries	14.7	17.6	20.6	14.7	20.6	8.8	2.9
growth market countries	38.2	8.8	2.9	23.5	17.6	5.9	2.9
emerging market countries	13.3	26.7	6.7	13.3	33.3	6.7	
food processors	24.1	15.7	10.8	18.1	21.7	7.2	2.4
non-processing organisations	13.2	10.5	18.4	18.4	28.9	7.9	2.6

Regulating environmentally friendly packaging

There is no significant result with regard to environmentally friendly packaging. A stronger support to take this up in the EU-Regulation came from experts from non-processing organisations with 28.9%.

Table 21 Environmentally friendly packaging

	EU Regulation 2092/91	Label	Individuall y	Code of practice	GMP	Don't know	No answer
General	*19.3*	*20.5*	*16.9*	*16.9*	*16.9*	*7.2*	*2.4*
mature market countries	8.8	29.4	26.5	8.8	17.6	8.8	
growth market countries	20.6	14.7	11.8	23.5	17.6	5.9	5.9
emerging market countries	20.6	14.7	11.8	23.5	17.6	5.9	5.9
food processors	7.9	15.8	23.7	21.1	21.1	10.5	
non-processing organisations	28.9	24.4	11.1	13.3	13.3	4.4	4.4

Regulating social standards

The highest preference with regard to social standards given by the experts was given to integrate this issue in private label guidelines.

Table 22 Certified social standards

	EU Regulation 2092/91	Label	Individuall y	Code of practice	GMP	Don't know	No answer
General	*9.6*	*27.7*	*6.0*	*15.7*	*20.5*	*19.3*	*1.2*
mature market countries	5.9	32.4	11.8	14.7	11.8	23.5	
growth market countries	11.8	23.5	2.9	17.6	23.5	17.6	2.9
emerging market countries	13.3	26.7		13.3		33.3	13.3
food processors	5.3	26.3	5.3	13.2	26.3	23.7	
non-processing organisations	13.3	28.9	6.7	17.8	15.6	15.6	2.2

Regulating regionality

Regionality was classified as being of medium importance for the success of an organic product on the market. This point of view was clearly confirmed with a result of 55.4 % of the experts which did not see a need to have a regulation whereas 38.6% which would support a regulation.

Table 23 Regionality (produced, processed and sold in the region)

	EU Regulation 2092/91	Label	Individuall y	Code of practice	GMP	Don't know	No answer
General	*7.2*	*32.5*	*21.7*	*8.4*	*18.1*	*9.6*	*2.4*
mature market countries	5.9	38.2	29.4		14.7	11.8	
growth market countries	2.9	35.3	11.8	14.7	20.6	8.8	5.9
emerging market countries	20.0	13.3	26.7	13.3	20.0	6.7	
food processors	5.3	28.9	28.9	7.9	18.4	7.9	2.6
non-processing organisations	8.9	35.6	15.6	8.9	17.8	11.1	2.2

Regulating seasonality

With regard to regulating seasonality, there is no significant result. Seasonality should be rather regulated individually by the companies or by a code of practice or in general recommendations for good manufacturing practises.

Table 24 Seasonality

	EU Regulation 2092/91	Label	Individuall y	Code of practice	GMP	Don't know	No answer
General	6.0	16.9	21.7	18.1	18.1	14.5	4.8
mature market countries	5.9	20.6	26.5	14.7	17.6	11.8	2.9
growth market countries	2.9	17.6	14.7	20.6	17.6	17.6	8.8
emerging market countries	13.3	6.7	26.7	20.0	20.0	13.3	
food processors	10.5	18.4	26.3	15.8	10.5	13.2	5.3
non-processing organisations	2.2	15.6	17.8	20.0	24.4	15.6	4.4

Regulating whole foods and health

The question about possible ways to regulate whole food and health also shows no significant result. However, there is clear response of the experts that those aspects should not be regulated by the labels. However, with regard to health aspects, some experts would like these considered in the EU regulation.

Table 25 Whole food

	EU Regulation 2092/91	Label	Individuall y	Code of practice	GMP	Don't know	No answer
General	*14.5*	*7.2*	*14.5*	*18.1*	*19.3*	*20.5*	*6.0*
mature market countries	5.9	5.9	17.6	20.6	20.6	26.5	2.9
growth market countries	17.6	8.8	14.7	14.7	17.6	14.7	11.8
emerging market countries	26.7	6.7	6.7	20.0	20.0	20.0	
food processors	18.4	7.9	7.9	26.3	15.8	18.4	5.3
non-processing organisations	11.1	6.7	20.0	11.1	22.2	22.2	6.7

Table 26 Health

	EU Regulation 2092/91	Label	Individuall y	Code of practice	GMP	Don't know	No answer
General	24.1	6.0	12.0	16.9	20.5	13.3	7.2
mature market countries	17.6	8.8	14.7	14.7	20.6	20.6	2.9
growth market countries	26.5	2.9	11.8	20.6	14.7	8.8	14.7
emerging market countries	33.3	6.7	6.7	13.3	33.3	6.7	
food processors	23.7	7.9	5.3	23.7	18.4	13.2	7.9
non-processing organisations	24.4	4.4	17.8	11.1	22.2	13.3	6.7

Regulating authenticity

The issue of authenticity has already been discussed in chapter 4.2 with regard to the need to have a definition, where at least 40% of the experts indicated a need to define "authenticity". It is interesting that for 31.6% processors this issue could be taken up in the EU regulation whereas the support of experts from non-processing organisations was lower, with 26.7%

Table 27 Authenticity

	EU Regulation 2092/91	Label	Individuall y	Code of practice	GMP	Don't know	No answer
General	28.9	18.1	9.6	14.5	13.3	12.0	3.6
mature market countries	35.3	20.6	5.9	8.8	11.8	17.6	
growth market countries	20.6	11.8	17.6	20.6	11.8	8.8	8.8
emerging market countries	33.3	26.7		13.3	20.0	6.7	
food processors	31.6	13.2	10.5	21.1	10.5	10.5	2.6
non-processing organisations	26.7	22.2	8.9	8.9	15.6	13.3	4.4

Overview of the different aspects with regard to the way to regulate inform of a figure

Figure 6 Freshness and sensory quality

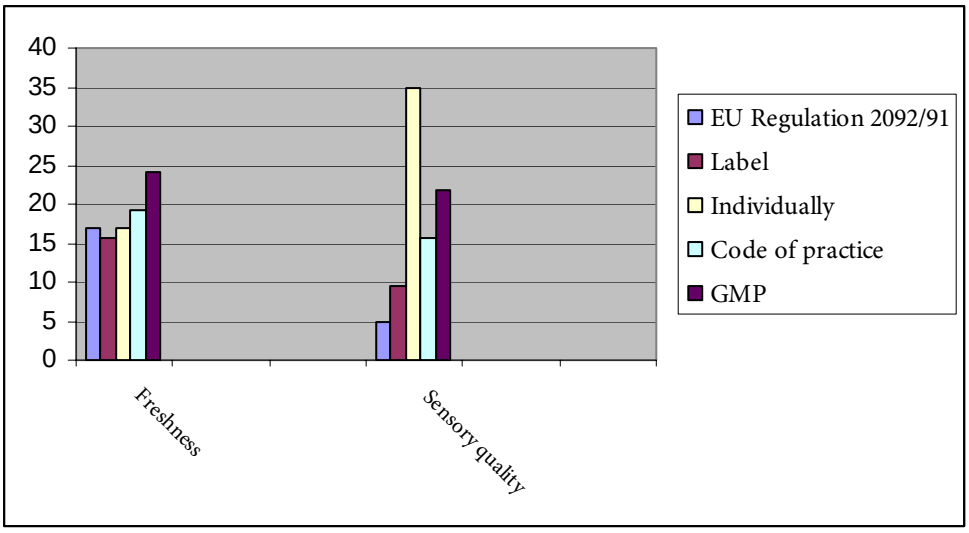


Figure 7 Minimum and careful processing methods and minimum use of additives and processing aids

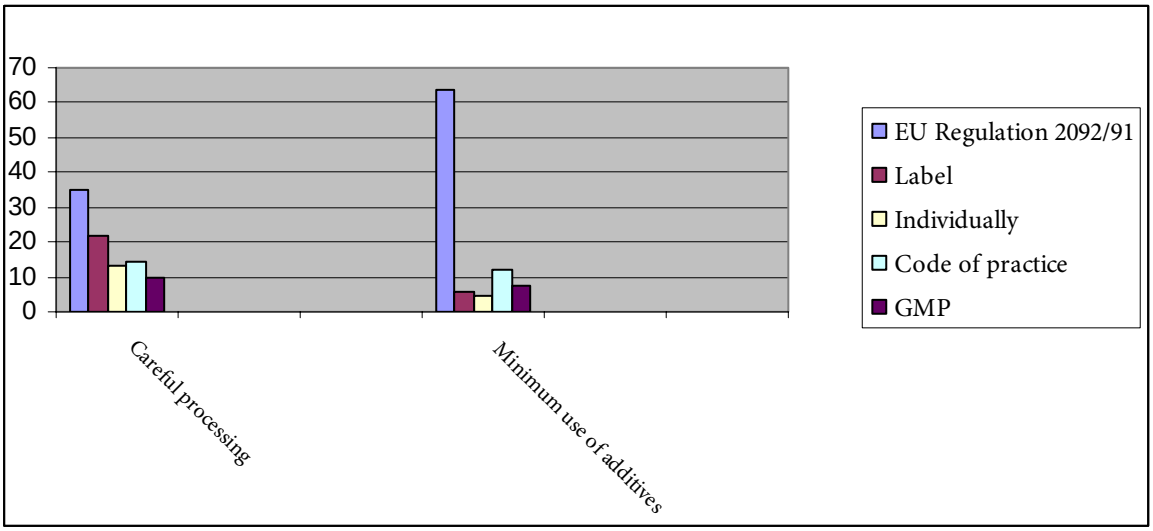


Figure 8 Environmentally friendly processing and transportation and environmentally friendly packaging

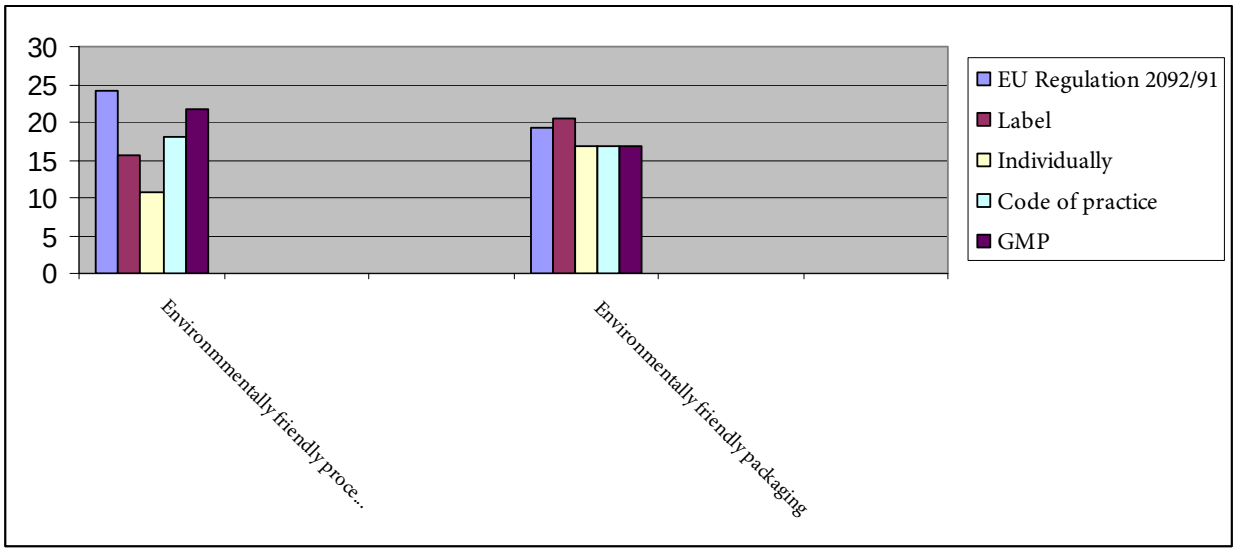


Figure 9: Certified social standard and regionality

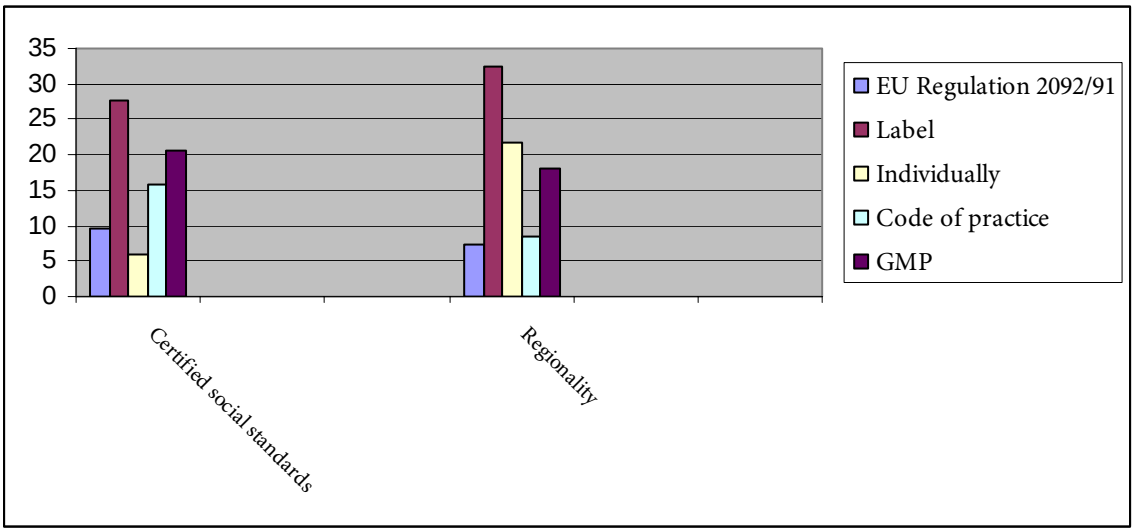


Figure 10 Seasonality and whole food

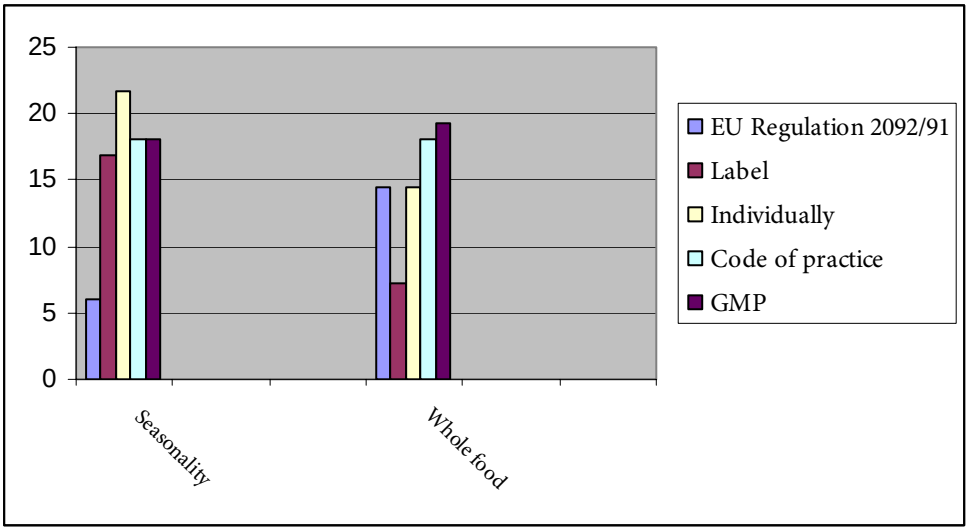
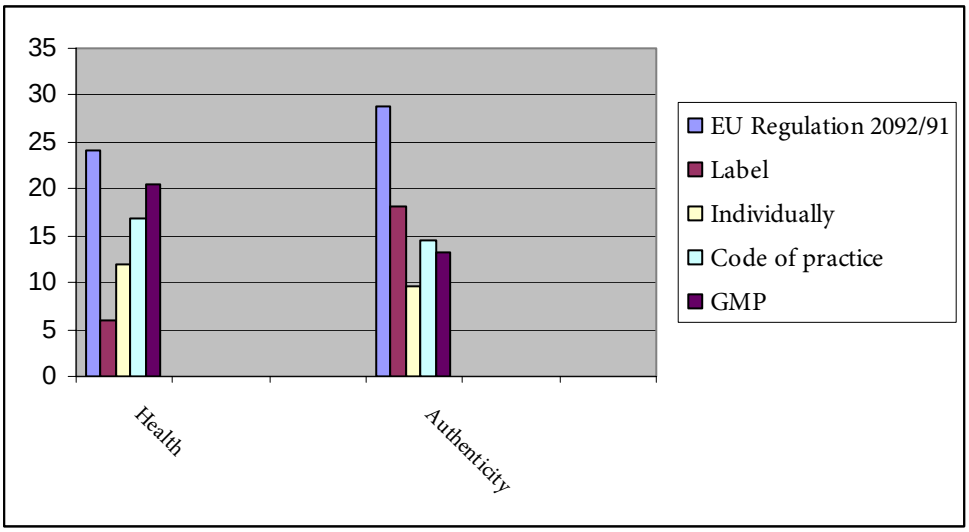


Figure 11 Health and authenticity



Conclusive remarks with regard to the ways of regulating specific aspects at different levels.

The question "which aspects should be regulated" at an EU regulatory level and which ones at other levels (national, private company or label level) was seen as very important. The feedback from the experts was quite differentiated depending on the different areas. At the EU regulatory level, in first priority the minimum use of additives, followed by minimum and careful processing was mentioned. Quality/sensory aspects, however, were not seen to be primarily at EU level, companies should have the chance to develop individual sensorical profiles and… depends on which market segment the product has to be established in.

We can conclude, based on the feedback from the food processing specialists and processors in the Delphi Survey, that in the future revision of the EU regulation 2092/91 and for the development of the organic processing sector a much more differentiated approach is necessary:

- **EU regulation / State regulations:** regulatory framework but with more flexibility for regional variation and private sector rules.
- **Private standards:** focussing really on the special quality and regional aspects.
- **Private company level (internal quality standards):** focus on the special sensory quality and 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 => IFOAM and private umbrella organisations (e.g. of organic food processors), operators.
- **GMP (Good manufacturing practices):** elaborated by organic and other advisory/consultancy services specialised for organic agriculture and organic food processing.

Table 28 What to regulate on which level

ISSUE	Relevant in survey	EU Reg. /state (all)	EUReg/state (processors)	Private standard	Private company	Code of Practise	GMP private
Freshness	high	+	~	+	+	+	+
Minimum/careful processing	high	++	++	+	~	+	~
Minimal use of additives	high	+++	+++	~	~	~	~
Sensory quality	medium		~		++	+	+
Environ. friendly processing	high	+	~	+	~	+	+
Environ. friendly packaging	high	+	~	+	+	+	+
Social standards	medium	~	~	+	~	+	+
Regionality	medium	~	~	++	+	~	+
Seasonality	Lower	~	~	+	+	+	~
Whole food	Lower	~	~	~	~	+	+
Health aspects	lower	+	~	~	~	+	+
Authenticity	high	+	++	+	~	~	~
Restricted use sugar/salts	No	~	~	~	~	~	~

Scale: 0-15 % of experts = ~ not significant 15-30 % = + 30-45 % = ++ > 45 % = +++

With regard to the question of whether the EU-Regulation 2092/91 is sufficient, an interesting difference could be observed between the answers of the processors and the non-processors. 45.5 % of the food processors think the EU Regulation 2092/91 is sufficient as opposed to only 33.3% of the non-processing organisations. This difference between food processors and non-processing organisations could be found several times. We need to think about how this discrepancy can be reduced. But in general it can be stated that, with the exception of having clear rules for the minimum use of additives and processing aids, no

significant preferences or only tendencies regarding the possible ways to regulate or harmonise different aspects of organic food processing have been identified. A "code of practice" for the organic food sector seems, however, to be a good instrument that would allow not all issues to be described in detail in the EU regulation 2092/91.

4. 6. Specific adaptation of the EU Regulation 2092/91 with regard to specific issues

The goal of this block of questions was to verify the results of the first consultation round with regard to possible adaptations of Annex VI of EU regulation 2092/91. The experts had the possibility to use the "Alternatives" box if they had other ideas or remarks e.g. in which way this issue should be clarified/harmonised by other means (e.g. with private labels or by a code of practice).

Use of flavours and flavour enhancers

The use of natural flavours in an organic product had a high level of acceptance with 63.3% to 30% non acceptance in the first consultation round. The question asked in the second round, that flavours should be certified organic, also had high levels of acceptance in all selected categories, in general with an average of 66.3% yes to 20.5% no.

Table 29 The use of additives: Flavours

82.5 % would prefer to have more detailed regulation of the use of additives in EU regulation 2092/91. Below you will find some possible additional requirements of regulation 2092/91 in Annex VI	**Actual**	**New**	**Alternatives**	**Acceptable**	**Not acceptable**	**Don't know**	**No answer**
1. Flavours: 67.5 % think that flavours should be certified organic.	**Natural flavours**	**Flavours must be certified organic**					
General				*66.3*	*20.5*	*8.4*	*4.8*
mature market countries				64.7	20.6	5.9	8.8
growth market countries				67.6	17.6	11.8	2.9
emerging market countries				66.7	26.7	6.7	
food processors				63.2	28.9	5.3	2.6
non-processing organisations				68.9	13.3	11.1	6.7

A very clear position of the experts was that the prohibition of flavour enhancer is highly acceptable and can explicitly be regulated in the EU Regulation 2092/91.

Table 30 Flavour enhancers:

77.55% would not allow the use of flavour enhancers	Not clearly regulated	**Prohibited**	**Alternatives**	**Acceptable**	**Not acceptable**	**Don't know**	**No answer**
general				*85.5*	*7.2*	*2.4*	*4.8*
mature market countries				85.3	8.8	5.9	
growth market countries				85.3	8.8		5.9
emerging market countries				86.7			13.3
food processors				*81.6*	*7.9*	*2.6*	*7.9*
non-processing organisations				88.9	6.7	2.2	2.2

Use of colouring

Regarding the question about colouring the EU-Regulation is already very restrictive with the requirement that only colouring with certified organic ingredients is allowed. There is therefore no need at all to make a change.

Table 31 Colouring

77.5 % think that the current regulation is sufficient.	Colouring with certified organic ingredients	No revision; Colouring with certified organic ingredients	**Alternatives**	**Acceptable**	**Not acceptable**	**Don't know**	**No answer**
general			*1.2*	*85.5*	*6.0*	*3.6*	*3.6*
mature market countries			2.9	79.4	5.9	2.9	8.8
growth market countries				88.2	8.8	2.9	
emerging market countries				93.3		6.7	
food processors				86.8	7.9	5.3	
non-processing organisations			1.2	85.5	6.0	3.6	3.6

Use of antioxidants

74.2% of the experts prefer the use of non-synthetic antioxidants and also a high number of the experts (60.2%) would support the obligation of using certified organic antioxidants, included the food processors with an average of 65.8% yes!

Table 32 Antioxidant

Synthetic antioxidants like synthetic ascorbic acid are allowed. 74.2 % prefer organic antioxidants like rosemary extract or acerolla cherry	Synthetic antioxidant	**Antioxidant certified organic**	**Alternatives**	**Acceptable**	**Not acceptable**	**Don't know**	**No answer**
General				*60.2*	*24.1*	*13.3*	*2.4*
mature market countries				67.6	20.6	8.8	2.9
growth market countries				52.9	29.4	17.6	
emerging market countries				60.0	20.0	13.3	6.7
food processors				65.8	23.7	10.5	
non-processing organisations				55.6	24.4	15.6	4.4

Use of preservatives

Comparing the result of the second round with the first consultation round, the acceptance to have a regulation which prohibits generally the use of preservatives in the organic food sector has decreased a little bit (from 60% of the experts in the first round to 55.4% in the second round). The result also shows the general problem that we have in defining the term preservative or preservation. Sugar or salt are used as preservatives as well as nitrate/nitrite. Nevertheless, we can see the tendency to avoid preservatives in organic food processing.

Table 33 Preservatives

28.3 % think that the use of preservatives in an organic product is acceptable and in particular 23.3% support the use of nitrate/nitrite in cheese production (to prevent flatulence). On the other hand 60% say no to the use of preservatives. In particular 53.3% do not accept the use of nitrate/nitrite in organic meat production.	Some preservatives like nitrate/nitrite are allowed	**No preser-vatives**	**Alternatives**	**Acceptable**	**Not acceptable**	**Don't know**	**No answer**
general			*1.2*	*55.4*	*36.1*	*6.0*	*1.2*
mature market countries			2.9	58.8	32.4	5.9	
growth market countries				44.1	47.1	8.8	
emerging market countries				73.3	20.0		6.7
food processors				52.6	34.2	10.5	2.6
non-processing organisations			2.2	57.8	37.8	2.2	

Use of raising agents

67.5% of the experts accept very clearly that the non organic carrier of raising agents should be from organic production und in that case should be certified. The result reflects the same result as in the first round. We can see an agreement of the food processors, too, but with a lower average of 55.9%.

Table 34 Raising agents

A lot of raising agents have a non-organic carrier like maize starch. 68.3% think that the carrier should be certified organic.	Carrier can be non organic	**Carrier must be certified organic**	**Alternatives**	**Acceptable**	**Not acceptable**	**Don't know**	**No answer**
general				*67.5*	*13.3*	*19.3*	
mature market countries				64.7	14.7	20.6	
growth market countries				67.6	11.8	20.6	
emerging market countries				73.3	13.3	13.3	
food processors				55.3	13.2	31.6	
non-processing organisations				77.8	13.3	8.9	
When the carrier has to be organic, is there a need to certify the additive?	No certification	**Certification of the additive**					
general				*60.2*	*19.3*	*18.1*	*2.4*
mature market countries				55.9	26.5	14.7	2.9
growth market countries				64.7	17.6	17.6	
emerging market countries				60.0	6.7	26.7	6.7
food processors				55.3	18.4	26.3	
non-processing organisations				64.4	20.0	11.1	4.4

Use of emulsifiers

With regard to the risk of GMO the experts agree with a stronger accentuation in the EU regulation 2092/91 that the emulsifiers should have to be certified organic.

Table 35 Emulsifiers

With regard to the risk of GMO contamination 80 % think that emulsifiers should have to be certified organic (e.g. soya-lecithin)?	Conventional	**Certified organic**	**Alternatives**	**Acceptable**	**Not acceptable**	**Don't know**	**No answer**
general				*83.1*	*9.6*	*7.2*	
mature market countries				82.4	11.8	5.9	
growth market countries				88.2	5.9	5.9	
emerging market countries				73.3	13.3	13.3	
food processors				81.6	10.5	7.9	
non-processing organisations				84.4	8.9	6.7	

Use of enzymes

A more specific regulation with regard the use of enzymes for different product groups and technological purposes is clearly supported with an average of 66.3% of the experts.

Table 36 Enzymes

52.5% think that the use of enzymes in organic products is acceptable. 47.5 % don't accept the use of enzymes for the sole use of standardizing the process/product.	GMO free	**Specific regulation depending on the use**	**Alternatives**	**Acceptable**	**Not acceptable**	**Don't know**	**No answer**
general				*66.3*	*18.1*	*14.5*	*1.2*
mature market countries				50.0	23.5	23.5	2.9
growth market countries				73.5	17.6	8.8	
emerging market countries				86.7	6.7	6.7	
food processors				65.8	23.7	10.5	
non-processing organisations				66.7	13.3	17.8	2.2

Use of micro-organisms

In the first consultation round the experts supported the requirement that micro organisms should be certified organic very clearly with 72.5%. However, in the second round fewer experts, about 56.6%, would support the certified origin of micro-organisms. The acceptance of the food processors was a bit lower but still 50%.

Table 37 Micro-organisms

72.5% think that micro organisms should be certified organic in comparison to 20.8 % who do not see a need.	Conventional	**Certified organic**	**Alternatives**	**Acceptable**	**Not acceptable**	**Don't know**	**No answer**
general				*56.6*	*31.3*	*12.0*	
mature market countries				52.9	35.3	11.8	
growth market countries				61.8	26.5	11.8	
emerging market countries				53.3	33.3	13.3	
food processors				50.0	34.2	15.8	
non-processing organisations				62.2	28.9	8.9	

Use of anti-caking agents

The result is slightly better compared to the first round. There is a slightly higher acceptance of an average of 53% (50.8% first round) to have certified organic anticaking agents.

Table 38 Anti-caking agent

50.8 % think that anti-caking agents should be certified organic in comparison to 27.5 % who don't see a need.	Conventional	**Certified organic**	**Alternatives**	**Acceptable**	**Not acceptable**	**Don't know**	**No answer**
general				*53.0*	*22.9*	*22.9*	
mature market countries				55.9	26.5	14.7	
growth market countries				47.1	20.6	32.4	
emerging market countries				60.0	20.0	20.0	
food processors				50.0	21.1	28.9	
non-processing organisations				55.6	24.4	17.8	

Separation in the production process (parallel processing)

68.7% of the experts supported product-specific separation guidelines based on HACCP concept, which was higher than in the first round (53.3 %).

Table 39 Separation in the production process (parallel processing)

53.3% think that specific separation guidelines would be helpful (28.3% say no)	Sufficient separation	**Product specific separation guidelines (based on HACCP concept)**	**Alternatives**	**Acceptable**	**Not acceptable**	**Don't know**	**No answer**
general				*68.7*	*13.3*	*14.5*	
mature market countries				52.9	26.5	14.7	
growth market countries				73.5	5.9	20.6	
emerging market countries				93.3			
food processors				68.4	15.8	15.8	
non-processing organisations				68.9	11.1	13.3	

Labelling of processing methods

When analysing the responses to the question about labelling, there are different point of views: 62.2% of the experts of the non-processing organisations would prefer the requirement of a labelling of the processing methods compared to 44.7% of the food processors, which would not. On the other hand, we have in the second round an equal result regarding the declaration of processing aids, an average of 58.5% would support this regulation (first round 64.2%).

The indication of the origin of the ingredients had a high acceptance of 69.9% (65.8% in the first round). The acceptance by processors was a bit lower but still 55.3 %.

Table 40 Labelling

a) 54.2% would prefer the processing methods to be listed on the packaging compared to 40.8% who wouldn't.	Non-organic ingredients, certification body	**Declaration of the processing methods**	**Alternatives**	**Acceptable**	**Not acceptable**	**Don't know**	**No answer**
general				*54.2*	*38.6*	*4.8*	
mature market countries				44.1	50.0	2.9	
growth market countries				52.9	38.2	5.9	
emerging market countries				80.0	13.3	6.7	
food processors				44.7	47.4	7.9	
non-processing organisations				62.2	31.1	2.2	
b) 64.2 % say yes to a declaration of the processing aids compared with 30.8% who say no.		**Declaration of the processing aids like enzymes (enlarged declaration)**					
general				*58.5*	*31.7*	*8.5*	*1.2*
mature market countries				39.4	48.5	9.1	3.0
growth market countries				70.6	23.5	5.9	
emerging market countries				73.3	13.3	13.3	
food processors				59.5	37.8	2.7	
non-processing organisations				57.8	26.7	13.3	2.2
c) 65.8% would support the declaration of the origin of the ingredient and 30.0 % would not.		**Indication of the origin of the ingredients**					
general				*69.9*	*25.3*	*3.6*	*1.2*
mature market countries				67.6	26.5	2.9	2.9
growth market countries				64.7	32.4	2.9	
emerging market countries				86.7	6.7	6.7	
food processors				55.3	36.8	7.9	
non-processing organisations				82.2	15.6		2.2

Packaging requirements

The response to the question about packaging gave a clear result: 75.9% of the experts do not see a need to have a regulation regarding packaging in the EU Regulation 2092/91.

Table 41 Packaging

71.7% would prefer environmentally friendly packaging but 69.2 % also have the opinion that the packaging which provides the best protection of the product is acceptable instead of environmentally friendly packaging	No regulation	No revision at the moment	**Alternatives**	**Acceptable**	**Not acceptable**	**Don't know**	**No answer**
general				*75.9*	*9.6*	*8.4*	*6.0*
mature market countries				85.3	2.9	2.9	8.8
growth market countries				76.5	8.8	11.8	2.9
emerging market countries				53.3	26.7	13.3	6.7
food processors				84.2	2.6	7.9	5.3
non-processing organisations				68.9	15.6	8.9	6.7

Conclusive remarks with regard to amending specific issues in the EU regulation 2092/91

In general most of the experts expect special processing methods used in the production of organic food, but when asking more specifically for the involved experts it was very difficult to select those methods that are usable/suitable or not usable/suitable for it.

Regarding the use of additives, the answers given, however, were very clear. There is a tendency to prefer additives from certified organic origin both from processors' as well as from non-processors' point of view. Furthermore, clear separation guidelines based on HACCP concepts (organic HACCP as a working title) in order to reduce the risk of contamination with GMO or conventional pesticides were supported, in particular by 64.8% of the experts from non-processing organisations. Processors show a nearly equal result of 45.3% pro and 39.1% contra HACCP guidelines. With regard to stricter labelling requirements, the non-processing organisations prefer to have stricter guidelines. The same preference was also expressed regarding packaging.

Table 43 gives a final overview about the possibilities of the development of Annex VI of the **EU Regulation 2092/91.**

Table 42 possible new appendages to EU Reg. 2092/91, and Annex VI in particular

	Actual	**New**
Flavours: 67.5 % think that flavours should be certified organic (20.5% no).	Natural flavours	**Flavours certified organic**
Flavour enhancers: 85.5% wouldn't allow the use of flavour enhancers.	Not clearly regulated	**Prohibited**
Colouring 85.5 % think that the current regulation is sufficient.	Colouring with certified organic ingredients	No revision; Colouring with certified organic ingredients

	Actual	New
Antioxidants 74.2% prefer the use of organic antioxidants and also a high level of 60.2% would support the obligation of using certified organic antioxidants .	Synthetic antioxidant allowed	Antioxidants certified organic and of non-synthetic origin
Preservatives: the prohibition of preservatives generally in the organic food sector is acceptable for 55.4% (36.1%no).	Some preservatives are allowed	Stronger restriction for preservatives
Raising agents 67.6% think that the carrier should be certified organic.	Carrier can be non organic	**Carrier must be certified organic**
Emulsifiers With regard to the risk of GMO contamination 83.1 % think that emulsifiers should have to be certified organic.	Conventional	**Certified organic**
Enzymes 52.5% think that the use of enzymes in organic products is acceptable. 66.3 % don't accept the use of enzymes for the sole use of standardizing the process/product.	GMO free	**Specific requirements depending on the use**
Micro-organisms 56.6% in 2nd round (72.5% 1st round) think that micro organisms should be certified organic in comparison to 31.3% in 2nd round(20.8% 1st round) who do not see a need.	Conventional	**Certified organic**
Anti-caking agents 53% think that anti-caking agents should be certified organic in comparison to 22.9 % who do not see a need.	Conventional	**Certified organic**

	Actual	New
Separation in the production process (parallel processing) 68.7% think that specific separation guidelines would be helpful.	Sufficient separation	**Product specific separation guidelines (based on HACCP concept)**
Labelling processing methods 54.2% would prefer the processing methods to be listed on the packaging compared to 38.6% who would not.	Non-organic ingredients, certification body	**Labelling of some processing methods**
Labelling of processing aids: 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))**
Labelling of the origin 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**
Packaging 75.9% would prefer environmentally friendly packaging but 69.2 % also have the opinion that the packaging which provides the best protection of the product is acceptable instead of environmentally friendly packaging	No requirement in the regulation	No revision at the moment

4. 7 Research needs

The Delphi Survey also raised the question of which aspects of organic food processing should be the subject of research or more research. The list below summarises the proposals of the experts without prioritizing:

Processing

- careful processing (advantages, opportunities)
- impact of the processing methods on the human organism
- availability of alternative technologies
- processing methods where additives and flavours are not needed

- impact of microwave pasteurisation or different drying systems on food
- separation in organic food processing (indirect product contamination because of insufficient separation of organic and conventional chains)
- the economics of organic food processing
- traceability
- processing methods based on principles of organic agriculture (principle of care)
- impact of different technologies on product structure
- cultural meanings of organic food processing

Additives

- alternatives to the use of nitrate/nitrite
- ecological alternatives of conservation of food

Quality and health

- vitality of food
- advancement of the sensory quality
- better knowledge about product quality parameters
- influence of nutrition on the physiological and mental situation of humans
- If the health impact and benefits of the organic food can be proven scientifically,
- alternatives to the use of additives in particular the synthetic additives
- Measure of the influence of organic or low input food on human health, allergies, immunity etc.

Food safety

- pest control
- residues in organic food
- the use of natural disinfectants in processing freshly-cut vegetables
- food safety: on the balance between safety and hygiene <->authentic/locally produced

Environment

- environmental performance evaluation of the food chain
- Use of renewable energy or low environmental impact energy

Packaging

- influence of the packaging on the inner quality of products
- environment respectful packaging

The responses of the experts show that careful processing and minimum use of additives are very important. Due to the limited possibility to use additives and processing aids in organic food processing, it is important to develop suitable production and processing methods in respect to the requirements for an organic product and the principles of organic agriculture. The focus of future research should be on

premium, sustainable produced quality and not on copying conventional processed products, in particular to upgrade the sensory quality of processed organic food.

A number of issues outlined in this survey have been taken up in a position paper by the IFOAM EU group for the new EU 7th Framework programme, where one proposed topic is also focussing on processing (IFOAM-EU 2005).

Food processing technology for premium and organic foods, with a view to supporting innovation of SME.

Many consumers in Europe are very suspicious about the use of additives in food processing, especially for premium quality and organic foods. However, there are interesting innovative minimal processing methods being developed which enable a number of additives to be given up by using innovative new technologies as well as by using the functional properties of ingredients. These approaches should be explored and the acceptance by consumers should be investigated. Furthermore, processing methods should be developed which allow the reduction of the different impacts on food and the improvement of sensorial and nutritional quality parameters. Heat load indicators to monitor such more careful processing methods should be developed and tested. Recommendations on how such indicators and consumer-friendly technologies can be integrated into guidelines and standards should be developed. As many open questions need experimental research, innovative SME should be integrated into such projects, e.g. with the CRAFT programme. Other examples of research and development questions are: concepts for improvement of the separation practice in parallel operations; linking quality improvement with environmental orientation of processing and trading of organic products; development of certified organic ingredients with technological effects on food and positive effects on human health; improvement of the quality systems in order to improve integrity of organic foods, including new strategies for inspection and traceability; development of new labelling concepts for processing; development of suitable enzymes and starter cultures for organic food processing (excluding use of GMOs).

Rationale and EU-context:

Premium quality food is a fast-growing and important niche of the European food industry. This kind of food includes organic, 'slow' food and traditional food as well. All these foods are essential for the international competitiveness of the European industry and belong to the European cultural heritage. Innovative processing techniques, basically pursuing the idea of minimum destruction and maximum authenticity, are a cutting edge technology with a huge impact on both the food industry and the purchasing habits of consumers.

Source: IFOAM EU research position paper "Organic farming in the 7th Research Framework Programme of the EU", November 2005

5. Discussion of the results

5.1 General conclusions and consequences for the EU regulation 2092/91

In the Delphi expert survey the goal was to figure out all important aspects regarding organic food processing in order to achieve a more consistent regulatory system. In the first part of the survey the main focus was to narrow the scope of the study and *clarify definitions* which are often used to characterize organic food processing. Regarding a definition of careful processing, we found a quite different result depending on the development stage in the organic market that 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 from experts from the processing industry and the other experts from non-processing organisations for which careful processing seems to be relevant in order to fulfil one of the main consumer expectations regarding processed organic food.

This result could be a sign that due to the fact that that organic processed food, from a legal point of view, has only to fulfil the current minimum requirements of the EU-Regulation 2092/91 a lot of products do not fulfil the expectation of a careful 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 similar result can be seen regarding the definition of the terms "fresh product" and "authenticity". It has to be discussed whether, instead of a definition of these terms "careful processing" and "authenticity", a more precise description of the suitable production and processing methods combined with a good labelling would be much more helpful for the producers as well for the consumers. The same can be concluded with regard to the definition of a "fresh product", where the question was raised by several experts 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. Such an approach would be a help for a more consistent and comprehensive labelling and hereby contribute to better consumer information.

In the second part of the 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 on which way. As described in Chapter 4 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 which are immediately recognizable to the consumers and which were mentioned in first priority and not the aspects which are linked to sustainability (such as regionality, social aspects), which are the fundamental ideas of organic agriculture. One might ask if 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?

The results of the Delphi expert survey as well as the analysis of consumer studies regarding the expectation of an organic product showed that these products have to be sustainable too. There needs to be a discussion regarding whether the sustainability aspects, like environmental friendly 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 the EU regulation 2092/91.

An important health aspect related to *"food safety"* was covered in a separate block. In the second round, 59% of the experts did not see additional food safety problems compared to conventional agriculture and

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: risk of higher contamination by mould spores and other spores problems; higher risk of contamination by micro-organisms or mycotoxins; potential risks with parasites in animal husbandry and dioxin residues in organic eggs because of the free range production as well as hygienic problems related to the restrictions in cleaning and disinfection. Several times experts mentioned that organic farmers and processors of organic food need to understand that some organic farming practices have to be aware about some food safety risks and that they have to ensure that simple and adequate monitoring systems are in place to prevent harmful organisms 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 (see EU Research project QLIF).

An important part of the study was to investigate which areas have to be regulated and /or at least clarified/harmonised on which level. The EU regulation 2092/91 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 agriculture sector might be an interesting approach.

Furthermore, the Delphi expert survey gives a clear indication, from the view point of processors and processing specialists, of how the EU regulation 2092/91 should deal with some specific issues such as the use of additives or labelling. Several proposals how the current Annex VI should be adapted or amended were made. In which way these proposals can be implemented in the best way remains open and must be discussed at EU level as well as national level.

It is clear that some of the proposals of the experts need first to be tested and explored under practical conditions. An example is, 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 gets a better knowledge about the critical aspects regarding separation of 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, which takes into account the different situation in the companies. This could be a more efficient approach than specific separation rules in the EU regulation 2092/91.

5.2. Validity of the results and methodology chosen

As outlined in Chapter 2, the survey has been conducted in 13 countries. Below are some reflections of the authors about the validity of the results.

- 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.
- Although the participation of German speaking partners was relatively strong due to the fact that the subproject coordinators came from a German speaking country, the splitting of the experts in 3 different groups of countries with different stages of organic food market development allowed a more balanced picture of situations in different countries to be achieved, which mirrors quite well the distribution of organic farmers and organic food processors in different European countries.
- Several statements and viewpoints of the first consultation were confirmed in the second round, others have slightly but not fundamentally changed.

- A disadvantage was that not all questionnaires have been translated into national languages, in some countries only English speaking experts participated. On the other hand, it could be expected that at least these experts were very familiar with the EU regulation.

The analysis of the participation and composition of the experts, it can be concluded that they reflect the different viewpoints of actors in the organic food sector quite well.

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Annex I Report on the Delphi expert survey of organic food processing in 13 European Countries: Results of the first round

Report on the Delphi Expert Survey of Organic Food Processing in 13 European Countries – Results of the First Round

Ursula Kretzschmar and Otto Schmid

The study was made within the scope of the EU "Quality Low Input Food" QLIF project

17 February 2005

1 Goal of subproject 5.1 within the EU QLIF project

This questionnaire is the first round of two expert surveys in Europe carried out between September 2004 and February 2005. The goal of subproject 5 Processing within the EU-project "Quality low input food (QLIF)"is to develop a framework for the design of "minimum" and "low input" processing strategies, which guarantee the quality and safety of organic foods.

2 Methodology

The method is explained in detail in Linstone and Turoff (1975).[5] 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 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; later rounds narrow and refine 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 are 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.

This survey will be carried out in the form of a two-step Delphi survey. In the first round

250 experts in 13 countries in Europe were involved, and were asked to respond to a standardised questionnaire in October and November 2004. The survey was sent by mail and by e-mail to the experts. The questionnaire was translated into the following languages: English, French, Italian, German, Czech, Spanish and partly into Finnish.

The standardised questionnaire for the first round was designed as follows:

1. general question about the activity of the experts
2. general open questions about the definition of careful, minimum processing and authenticity
3. 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,

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5 Linstone, H.A. and Turoff, M. (eds.) (1975). *The Delphi method: techniques and applications*. Reading, Mass.: Addison-Wesley.

    - preservatives,
    - raising agents,
    - emulsifiers,
    - enzymes,
    - micro-organisms,
- anti-caking agents,
- separation in the production process,
- labelling,
- packaging

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

The survey questionnaire is attached at the end of the report.

2.1 Criteria for the expert selection

Type of experts:

The experts invited to participate in the Delphi study are able to contribute their expertise on a variety of aspects of organic food processing.

At the same time, the process was open to experts with divergent perspectives who can generate a range of ideas. The aim of the survey was not to build consensus, but rather to increase understanding. Therefore it was important to include those who do not necessarily represent mainstream views; this includes 'non-organic' as well as 'organic' participants.

The expert panel was made up of representatives from each of the following categories:

1. Food technology specialists
2. Organic and conventional food processors
3. (Marketing and Development)
4. Consumer organisations
5. Government agencies
6. Processing standard setting/certification organisations

Moreover, the choice of panellists within each category should also be as evenly spread as possible. For example, in the food processors category, it was seen as preferable to have a mix of smaller and larger companies as well companies which produce only conventional and only organic food. In addition it was seen as desirable to include companies that have produced organic food for more than 10 years as well as "newcomers".

As far as possible the Delphi experts should not be those who are acting as key informants for the questionnaires in the QLIF-Subproject 5 Processing, although this distinction might not be possible in countries with a small organic farming sector.

Number of experts:

There will not be a 100 % response rate, so the 1st round started with a larger group of 250 experts of which 120 responded. The aim was to have approx. 100 experts in the 2nd round.

As there are considerable variations between countries in terms of size and the importance of their organic food sector, some countries may choose to recruit more experts than the guidelines set out below, whereas the views held in other countries may be well represented by fewer experts. As a result, some countries were grouped based on the actual state of the development of the organic food market.

2.2 Description of the random sample regarding country representation

In the first round of the Delphi survey we invited 250 experts in 14 countries to take part in the survey.

120 people (48%) in 13 countries responded to the survey. The response rate varies considerably within the different countries. The problem could be that the survey was translated into English, French, Italian, German, Czech, Spanish and partly into Finnish, but not into Danish, Polish and Romanian.

Table 1 Country frequency

Countries	Frequency
Total	**120**
Switzerland	26
Austria	17
Germany	17
Czech Republic	13
Great Britain	10
France	9
Finland	7
Spain	7
Italy	5
Denmark	4
Belgium	3
Netherlands	1
Slovakia	1

Figure 1 Country frequency in percentage

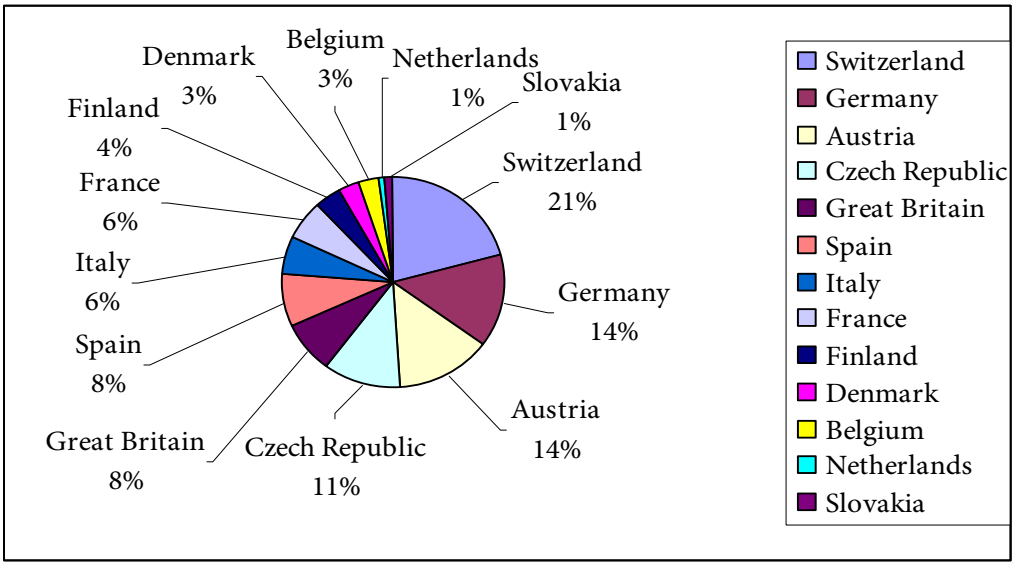

Table 2: Description of the random sample with regard to activities

The number of participating processors (66 respondents) is higher than the number of non-processors (54 respondents), which responded in the first round. This mixture provides a good basis for reflecting the views of both sides and the possibility of analysing differences in viewpoints.

Categories	Count	%
Total	120	100 %
Food processing	66	55 %
Advisers	19	15.8 %
Processing standard setting/certification organisations	16	13.4 %
Research institutes	10	8.3 %
Consumer organisations	6	5 %
Government agencies	3	2.5 %

Figure 2: Description of the random sample with regard to activities

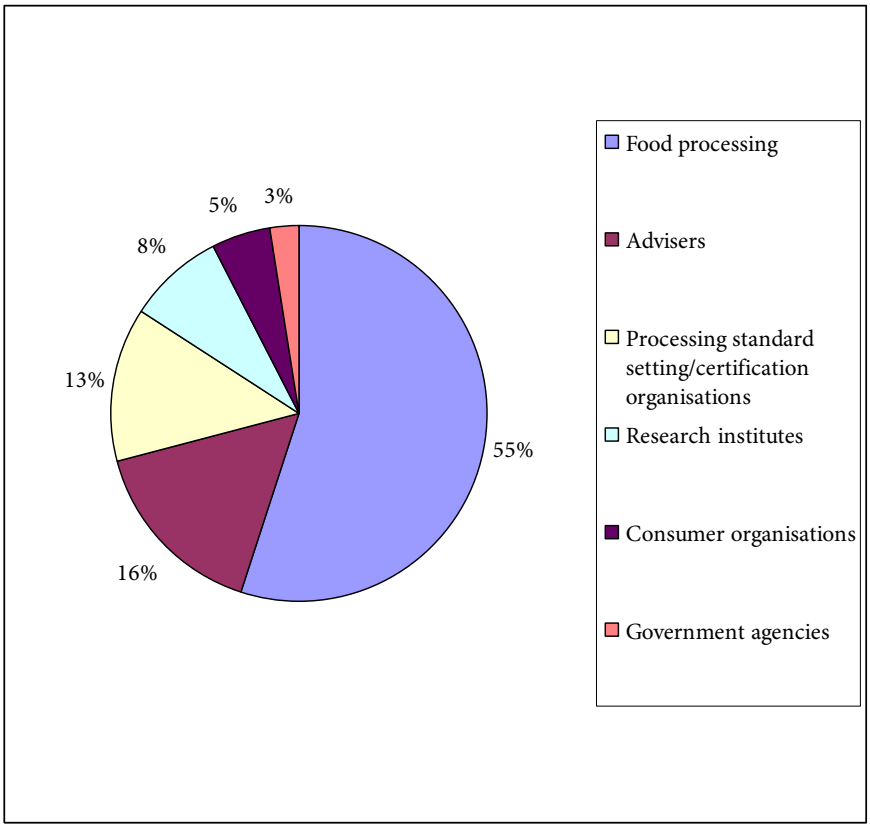

Table 3 Years dealing with organic agriculture

Categories	Count	%
Total	**66**	**100**
More than 10 years	35	54.7
5 to 10 years	12	18.8
2 to 5 years	13	20.3
Recently (last 2 years)	4	6.3

The table shows that 73.5 % of the responding processors have more than 5 years experience in producing organic food. This experience is very important for obtaining practical ideas and information about organic food processing.

Table 4 Extent to which processors deal with organic food expressed in turnover (€m)

Categories	Count	%
Total	66	100
1 or less of the turnover	5	7.6
1 to 5	10	15.2
5 to 10	7	10.6
10 to 50	16	24.2
More than 50	10	15.2
100	18	27.3

Looking at the turnover of each processing company we can see that every category is represented, smaller as well as larger companies.

3. Results

All results are calculated in a percentage related to the 120 respondents.

The analysis of the results was done in three categories:

- **general**

- **differentiation with a country classification;**

Mature market countries	*Growth market countries*	*Emerging market countries*
Austria	Finland	Belgium
Denmark	France	Czech Republic
Switzerland	Italy	Slovenia
	Netherlands	Spain
	United Kingdom	
	Germany	

- **-differentiation between food processing companies and non-processing companies.**
  The non-processing companies are grouped as follows: consumer organisations, government agencies, processing standard setting/certification organisations, research institutes, consumer organisations.

The "*general*" analysis *includes* all answer possibilities even if no answer was given. However, the "differentiation between the different country classification" and "differentiation between food processing companies and non-processing companies" only include the given responses.

General open question about the definition of careful, minimum processing

When dealing with processing of organic foods, terms such as "minimum processing", "careful processing", "freshness" and "authenticity" are often used. The aim of the questions below is to clarify these notions with regard to the processing of organic foods.

1.1 What is your understanding of minimum processing? Try to give a definition - some possible answers:

a) No processing, only fresh products

b) As few processing steps as possible from the field to the final product

c) The minimum use of resources

1.2 What is your understanding of careful food processing? Some possible answers:

a) Optimised combination of processing parameters (e.g. time, temperature and pressure during the processing)
b) Maximum effort to retain important compounds and avoid undesirable compounds or nutritional loss.
c) Careful processing means taking care of the product, the environment and people.
d) Processing methods "appropriate" to processed food.
e) Careful processing means ensuring food safety as much as possible.
f) As little processing as possible. Restrictions of processing techniques and/or additives should be made according to product groups

1.3 What is your understanding of a fresh product? Some possible answers:

a) Product with a short shelf life needs to be stored at a specific temperature or under controlled temperature conditions.
b) Products like fruit and vegetables with short shelf lives
c) Products that undergo minimal quality change during storage.
d) No processing after harvesting/milking/slaughtering

1.4 What is your understanding of authenticity, regarding food? Some possible answers:

a) The content is "real" and fulfils the expectations of the consumers
b) The sensory quality must be of a high enough standard that the consumer can recognize the product (in comparison with conventional products on the market)
c) Product name, list of ingredients and the sensory quality should be equivalent/corresponding/in line with each other
d) Production and processing steps, and the origin are visible/recognizable to the consumer
e) Food which is natural and has not been synthesised or adulterated in production, processing or storage

General questions about quality, food safety and regulations

It can be shown that the aspect of freshness is very important for the success of an organic product on the market. It is interesting to see that this aspect is more important (92.6% to 84.9) for the non-processing organisations than for the food processors.

Table 5: Which criteria are important for an organic product to be successful on the food market

	Very important	Important	Not important	Not at all important		Don't know	No answer
1. Freshness							
General	*53.3*	*35.0*	*8.3*	*1.7*		*1.7*	-
mature market countries	55.3	31.9	8.5	4.3		-	
growth market countries	51.0	38.8	8.2	-		2.0	
emerging market countries	54.2	33.3	8.3	-		4.2	
food processors	47.0	37.9	10.6	3.0		1.5	
non-processing organisations	61.1	31.5	5.6	-		1.9	

Minimum and careful processing is also an important aspect of organic product. In particular it is important and very important for 91.7 % of respondents in the emerging market countries.

2. Minimum and careful processing methods	Very important	Important	Not important	Not at all important		Don't know	No answer
General	*31.6*	*49.2*	*16.7*	*1.7*		*0.8*	
mature market countries	25.5	51.1	21.3	2.1		-	
growth market countries	32.7	46.9	16.3	2.0		2.0	
emerging market countries	41.7	50.0	8.3	-		-	
food processors	34.8	42.4	21.2	1.5			
non-processing organisations	27.8	57.4	11.1	1.9		1.9	

The minimum use of additives is a very important point for the success of an organic product on the market. These aspects are also a very good reflection of the expectations of consumers.

3. Minimum use of additives and processing aids	Very important	Important	Not important	Not at all important		Don't know	No answer
General	*62.5*	*32.5*	*4.2*	*0.8*		*0*	-
mature market countries	63.8	27.7	6.4	2.1		-	-
growth market countries	59.2	36.7	4.1	-		-	-
emerging market countries	66.7	33.3	-	-		-	-
food processors	62.1	30.3	7.6	-		-	-
non-processing organisations	63.0	35.2	1.9			-	-

The most important criterion for an organic product to be successful on the market is the sensory quality. Organic products have not only to be of certified organic origin but also tasty.

4. Sensory quality (colour, smell, taste)	Very important	Important	Not important	Not at all important		Don't know	No answer
General	*75.8*	*20.8*	*2.5*	*0*			*0.8*
mature market countries	74.5	21.3	4.3				
growth market countries	81.2	18.8					
emerging market countries	70.8	25.0	4.2				
food processors	80.0	16.9	3.1				
non-processing organisations	72.2	25.9	1.9				

We can see that environmentally friendly processing is emphasised much more by the non- processing organisations compared to the food processors.

5. Environmental friendly processing (e.g. ISO 14000)	Very important	Important	Not important	Not at all important		Don't know	No answer
General	31.7	43.3	19.2	4.2		0.8	0.8
mature market countries	31.9	40.4	23.4	4.3			
growth market countries	30.6	46.9	18.4	2.0		2.0	
emerging market countries	34.8	43.5	13.0	8.7			
food processors	23.1	44.6	26.2	4.6		1.5	
non-processing organisations	42.6	42.6	11.1	3.7			

Environmentally friendly packaging is not the most important criterion for organic food to be successful on the market. It is in fifth place behind sensory quality, minimal usage of additives, freshness and authenticity.

6. Environmentally friendly packaging	Very important	Important	Not important	Not at all important		Don't know	No answer
General	*30.0*	*50.8*	*18.3*	*0.8*			
mature market countries	27.7	44.7	27.7				
growth market countries	28.6	55.1	16.3				
emerging market countries	37.5	54.2	4.2	4.2			
food processors	24.2	53.0	21.2	1.5			
non-processing organisations	37.0	48.1	14.8				

Some organic products like chocolate or bananas are certified organic and certified based on a social standard. Analysing the results it can be shown that the food processors do not attach a high importance to these criteria in order to be successful on the market.

7. Certified social standards	Very important	Important	Not important	Not at all important		Don't know	No answer
General	*14.2*	*39.2*	*35*	*6.7*		*4.2*	*0.8*
mature market countries	14.9	31.9	42.6	8.5		2.1	
growth market countries	10.4	37.5	39.6	6.3		6.3	
emerging market countries	20.8	58.3	12.5	4.2		4.2	
food processors	9.1	36.4	39.4	9.1		6.1	
non-processing organisations	20.8	43.4	30.2	3.8		1.9	

With 66.6% regionality is classified as being of medium importance for the success of an organic product on the market.

8. Regionality (produced, processed and sold in the region)	Very important	Important	Not important	Not at all important		Don't know	No answer
General	*20.8*	*45.8*	*27.5*	*4.2*			*1.7*
mature market countries	27.7	44.7	23.4	4.3			
growth market countries	17.0	44.7	31.9	6.4			
emerging market countries	16.7	54.2	29.2				
food processors	21.9	45.3	29.7	3.1			
non-processing organisations	20.4	48.1	25.9	5.6			

It is interesting to see that the question about seasonality is much more important for the non-processing organisations than for the food processors!

9. Seasonality	Very important	Important	Not important	Not at all important		Don't know	No answer
General	*20. 0*	*36.7*	*31.7*	*7.5*		*4.2*	
mature market countries	21.3	38.3	31.9	6.4		2.1	
growth market countries	14.3	42.9	26.5	8.2		8.2	
emerging market countries	29.2	20.8	41.7	8.3			
food processors	9.1	37.9	39.4	7.6		6.1	
non-processing organisations	33.3	35.2	22.2	7.4		1.9	

Only 40% of respondents consider whole food important or very important for organic food. This shows that the concept of whole food has lost importance with regard to organic food[6].

[6] Schmid, O., Beck, A. and Kretzschmar , U. (2004), *Underlying Principles in Organic and "low- input food" Processing Literature Survey*

10. Whole food	Very important	Important	Not important	Not at all important		Don't know	No answer
General	9.2	30.8	46.7	7.5		5.8	
mature market countries	6.4	14.9	68.1	4.3		6.4	
growth market countries	12.2	26.5	40.8	14.3		6.1	
emerging market countries	8.3	70.8	16.7	4.2		4.5	
food processors	12.1	31.8	45.5	6.1			
non-processing organisations	5.6	29.6	48.1	9.3		7.4	

Health aspects are important but not the most important aspect for success on the organic food market in the opinion of the food processing experts.

11. Health	Very important	Important	Not important	Not at all important		Don't know	No answer
general	*38.3*	*41.7*	*17.5*	*2.5*			
Mature market countries	17.0	48.9	29.8	4.3			
Growth market countries	51.0	38.8	8.2	2.0			
emerging market countries	54.2	33.3	12.5				
food processors	37.9	47.0	13.6	1.5			
non-processing organisations	38.9	35.2	22.2	3.7			

12. Authenticity	Very important	Important	Not important	Not at all important		Don't know	No answer
General	*49.2*	*35.8*	*8.3*	*2.5*		*4.2*	
Mature market countries	59.6	29.8	6.4	2.1		2.1	
Growth market countries	46.9	34.7	8.2	2.0		8.2	
emerging market countries	33.3	50.0	12.5	4.2			
food processors	53.0	31.8	6.1	3.0		6.1	
non-processing organisations	44.4	40.7	11.1	1.9		1.9	

Regarding the answers to the question "which criteria are important for an organic product to be successful on the market?", we received the following results from 12 possible criteria:

- The most important criteria is the sensory quality
- The second most important criteria is the minimum use of additives and processing aids
- Third most important is the freshness, followed by authenticity with an average of 85% very important and important.

Furthermore, environmentally friendly processing is much more important for the non-processing companies (consumer organisations, government agencies, processing standard setting/certification organisations, research institutes, consumer organisations) than for the food processing companies. Also, the aspect of freshness is more important for the non-processing companies than for the processors.

We can see that most of the interviewed experts do not expect more food safety problems compared to the conventional sector. But some experts expect special food safety problems (e.g. with residues of pesticides, growth promoters or antibiotics), in particular the experts from the emerging market countries (Belgium, Czech Republic, Slovenia, Spain).

Table 6 Food safety

Next to the nutritional value food safety is the most important quality criteria for food. Regarding the problem of residues, toxins and pathogens do you expect or have major/special problems in the organic food sector?	Yes	No		Don't know	No answer
1. Food safety is there a major/special problem with residues of pesticides, growth promoters, and antibiotics for organic food?					
General	*26.7*	*57.5*		*5*	*10.8*
mature market countries	19.1	74.5		6.4	
growth market countries	32.7	63.3		4.1	
emerging market countries	63.6	27.3		9.1	
food processors	32.1	62.5		5.4	
non-processing Organisations	27.5	66.7		5.9	

2. Food safety: absence of microbial pathogens, [e.g. E. coli, Salmonella], and prions. Is there a major/special problem compared with conventional food?	Yes	No		Don't know	No answer
General	*20.8*	*60.8*		*6.7*	*11.7*
mature market countries	19.1	72.3		8.5	
growth market countries	29.2	64.6		6.3	
emerging market countries	18.2	72.7		9.1	
food processors	19.6	71.4		8.9	
Non-processing Organisations	28.0	66.0		6.0	

3. Food safety: absence of toxins (mycotoxins, dioxin etc.). Is there a major/special problem compared with conventional food?	Yes	No		Don't know	No answer
General	*24.2*	*55.0*		*9.2*	*11.7*
mature market countries	28.3	63.0		8.7	
growth market countries	30.6	59.2		10.2	
emerging market countries	9.1	72.7		18.2	
food processors	25.5	69.1		5.5	
Non-processing Organisations	29.4	54.9		15.7	

It was shown that the existing EU regulation is sufficient for an average of 43.3% respondents and partly sufficient for 32.5%. The food processors are more satisfied, 51.6 % compared with 33.3% of the non-processing organisations. But, on the other hand, 42.2% of the food processors and 48.1% of the non-processing organisations would support some more specific regulation. Only for 13.3 % is there no need to have a more detailed regulation. But there is also a high percentage of 22.5% that does not have an opinion on this topic.

With the following questions the aspects that should have greater regulation were investigated in more detail.

Table 7 Regulations/Standards for organic food processing

	Very good	good	partly	Not at all		Don't know	No answer
1. Is EU regulation 2092/91 on organic food processing sufficient (Council Regulation (EEC) No 2092/91 of 24 June 1991 on organic production of agricultural products)?							
General	*3.3*	*40.0*	*32.5*	*6.7*		*17.5*	
mature market countries	4.3	48.9	17.0	4.3		25.5	
growth market countries	4.1	30.6	44.9	6.1		14.3	
emerging market countries		41.7	37.5	12.5		8.3	
food processors	6.1	45.5	25.8	3.0		19.7	
Non-processing Organisations		33.3	40.7	11.1		14.8	

2. Is it possible to make high quality products based on EU regulation 2092/91?	Very good	good	partly	Not at all		Don't know	No answer
General	*21.7*	*37.5*	*22.5*	*1.7*		*15.8*	*0.8*
mature market countries	21.3	40.4	12.8			25.5	
growth market countries	20.8	35.4	31.3	2.1		10.4	
emerging market countries	25.0	37.5	25.0	4.2		8.3	
food processors	16.7	40.9	22.7	1.5		18.2	
non-processing organisations	28.3	34.0	22.6	1.9		13.2	

3. Would it be helpful to have a more detailed regulation for the processing of organic foods? E.g. more specific processing techniques.	Very good	good	partly	Not at all		Don't know	No answer
General	*27.5*	*15.8*	*17.5*	*13.3*		*22.5*	*3.3*
mature market countries	12.8	6.4	25.5	17.0		38.3	
growth market countries	39.1	21.7	10.9	13.0		15.2	
emerging market countries	39.1	26.1	17.4	8.7		8.7	
food processors	25.0	17.2	15.6	18.8		23.4	
non-processing organisations	32.7	15.4	21.2	7.7		23.1	

Table 8 For which aspects would it be helpful to have more specific requirements in the EU regulation for organic products or a GMP (good manufacturing practice) handbook for organic food processing?

	Very important	Important	Low importance	Not at all important		Don't know	No answer
1. Freshness							
General	*23.3*	*32.5*	*21.7*	*12.5*		*8.3*	*1.7*
mature market countries	23.4	25.5	23.4	12.8		14.9	
growth market countries	22.9	39.6	20.8	10.4		6.3	
emerging market countries	26.1	34.8	21.7	17.4			
food processors	29.2	29.2	18.5	10.8		12.3	
non-processing organisations	17.0	37.7	26.4	15.1		3.8	

2. Minimum and careful processing methods	Very important	Important	Low importance	Not at all important		Don't know	No answer
General	*27.5*	*45.0*	*14.1*	*6.7*		*5.0*	*1.7*
mature market countries	19.1	46.8	14.9	8.5		10.6	
growth market countries	33.3	41.7	18.8	4.2		2.1	
emerging market countries	34.8	52.2	4.3	8.7			
food processors	21.5	41.5	18.5	9.2		9.2	
non-processing organisations	35.8	50.9	9.4	3.8			

3. Minimum use of additives and processing aids	Very important	Important	Low importance	Not at all important		Don't know	No answer
General	*50.8*	*33.3*	*5.8*	*4.2*		*5.0*	*.8*
mature market countries	36.2	46.8	2.1	4.3		10.6	
growth market countries	58.3	27.1	10.4	2.1		2.1	
emerging market countries	66.7	20.8	4.2	8.3			
food processors	43.9	34.8	6.1	6.1		9.1	
non-processing organisations	60.4	32.1	5.7	1.9			

4. Sensory quality (colour, smell, taste)	Very important	Important	Low importance	Not at all important		Don't know	No answer
General	*23.3*	*20.8*	*25.8*	*20.0*		*7.5*	*2.5*
mature market countries	17.4	10.9	37.0	21.7		13.0	
growth market countries	29.8	27.7	17.0	19.1		6.4	
emerging market countries	25.0	29.2	25.0	20.8			
food processors	27.7	18.5	21.5	20.0		12.3	
non-processing organisations	19.2	25.0	32.7	21.2		1.9	

5. Environmentally friendly processing (e.g. ISO14000)	Very important	Important	Low importance	Not at all important		Don't know	No answer
General	*25.8*	*35.0*	*21.7*	*8.3*		*6.7*	*2.5*
mature market countries	19.1	34.0	29.8	6.4		10.6	
growth market countries	36.2	34.0	19.1	4.3		6.4	
emerging market countries	21.7	43.5	13.0	21.7			
food processors	16.9	35.4	26.2	9.2		12.3	
non-processing organisations	38.5	36.5	17.3	7.7			

6. Environmentally friendly packaging	Very important	Important	Low importance	Not at all important		Don't know	No answer
General	*24.2*	*33.3*	*29.2*	*5.8*		*5.8*	*1.7*
mature market countries	17.0	29.8	40.4	2.1		10.6	
growth market countries	33.3	29.2	25.0	8.3		4.2	
emerging market countries	21.7	52.2	17.4	8.7			
food processors	15.2	36.4	30.3	7.6		10.6	
non-processing organisations	36.5	30.8	28.8	3.8			

7. Certified social standards	**Very important**	**Important**	**Low importance**	**Not at all important**		**Don't know**	**No answer**
General	11.7	32.5	25.0	20.0		9.2	1.7
mature market countries	8.5	25.5	25.5	29.8		10.6	
growth market countries	12.8	31.9	27.7	17.0		10.6	
emerging market countries	16.7	50.0	20.8	8.3		4.2	
food processors	9.1	27.3	25.8	24.2		13.6	
non-processing organisations	15.4	40.4	25.0	15.4		3.8	

8. Regionality (produced, processed and sold in the region)	**Very important**	**Important**	**Low importance**	**Not at all important**		**Don't know**	**No answer**
General	*11.7*	*25.8*	*35.0*	*19.2*		*6.7*	*1.7*
mature market countries	8.5	27.7	36.2	14.9		12.8	
growth market countries	12.8	27.7	29.8	25.5		4.3	
emerging market countries	16.7	20.8	45.8	16.7			
food processors	9.2	27.7	32.3	20.0		10.8	
non-processing organisations	15.1	24.5	39.6	18.9		1.9	

9. Seasonality	Very important	Important	Low importance	Not at all important		Don't know	No answer
General	13.3	23.3	30.8	23.3		6.7	2.5
mature market countries	10.6	25.5	31.9	21.3		10.6	
growth market countries	13.0	26.1	30.4	26.1		4.3	
emerging market countries	20.8	16.7	33.3	25.0		4.2	
food processors	6.3	23.4	35.9	21.9		12.5	
non-processing organisations	22.6	24.5	26.4	26.4			

10 Whole food	Very important	Important	Low importance	Not at all important		Don't know	No answer
General	*8.3*	*21.7*	*35.0*	*23.3*		*10.0*	*1.7*
mature market countries	4.3	14.9	44.7	25.5		10.6	
growth market countries	14.9	14.9	36.2	25.5		8.5	
emerging market countries	4.2	50.0	16.7	16.7		12.5	
food processors	13.6	22.7	31.8	19.7		12.1	
non-processing organisations	1.9	21.2	40.4	28.8		7.7	

11. Health	Very important	Important	Low importance	Not at all important		Don't know	No answer
General	26.7	30.0	20.0	15.8		5.8	1.7
mature market countries	12.8	31.9	25.5	19.1		10.6	
growth market countries	31.9	27.7	19.1	17.0		4.3	
emerging market countries	27.1	30.5	20.3	16.1		5.9	
food processors	29.2	33.8	15.4	10.8		10.8	
non-processing organisations	24.5	26.4	26.4	22.6			

12. Authenticity	Very important	Important	Low importance	Not at all important		Don't know	No answer
General	36.7	30.0	9.2	12.5		9.2	2.5
mature market countries	36.2	25.5	14.9	10.6		12.8	
growth market countries	43.5	30.4	2.2	15.2		8.7	
emerging market countries	29.2	41.7	12.5	12.5		4.2	
food processors	35.4	32.3	6.2	12.3		13.8	
non-processing organisations	40.4	28.8	13.5	13.5		3.8	

With the question "where would it be helpful to have more detailed regulation or more requirements?" nearly the same result as in part two came out:

- First priority was the minimum use of additives with an average of 84.1%
- Second priority was minimum and careful processing methods 72.5%
- Third priority was authenticity with 66.7%

Furthermore, the aspect of seasonality, environmentally friendly packaging and environmentally friendly processing is more important for the non-processing organisations than for the food processors. On the other hand, the issue of whole food has a higher importance for the food processors compared with the non-processing organisations.

Specific questions about freshness, processing methods, use of semi-processed products, use of additives, separation in the production process, labelling, and packaging

Freshness

Regarding the goal of having more specific requirements in terms of maximum transport time /distances of single ingredients, or ripening linked to the product categories there was a majority of respondents, between 55% and 70% , which would support these kind of requirements.

Table 9 Freshness

Fresh and well-ripened raw material(s) is the prerequisite for high quality and low losses during processing. This is particularly important because few additives are allowed in organic food processing. It could be a goal for the organic processors to have more specific requirements in terms of maximum transport time/distances of single ingredients, or of ripening.	Very important	Important	Not important	Not at all important		Don't know	No answer
1.1 Milk products: short transport and storage time between milking and processing, in order to maintain a good sensory milk quality							
General	*29.2*	*40.8*	*8.3*	*4.2*		*13.3*	*4.2*
mature market countries	33.3	37.8	11.1	4.4		13.3	
growth market countries	28.3	41.3	10.9	6.5		13.0	
emerging market countries	29.2	54.2				16.7	
food processors	30.6	35.5	8.1	6.5		19.4	
non-processing organisations	30.2	50.9	9.4	1.9		7.5	

1.2 Meat and meat products: sufficient ripening time with respect to different meat qualities							
General	*25.0*	*37.5*	*8.3*	*3.3*		*22.5*	*3.3*
mature market countries	24.4	33.3	13.3	2.2		26.7	
growth market countries	29.8	44.7	6.4	6.4		12.8	
emerging market countries	20.8	37.5	4.2			37.5	
food processors	23.8	33.3	9.5	4.8		28.6	
non-processing organisations	28.3	45.3	7.5	1.9		17.0	

1.3 Cereal: flour ripening with respect to the different cereal qualities							
General	*17.5*	*38.3*	*12.5*	*4.2*		*21.7*	*5.8*
mature market countries	22.7	27.3	15.9			34.1	
growth market countries	13.3	53.3	13.3	8.9		11.1	
emerging market countries	20.8	41.7	8.3	4.2		25.0	
food processors	18.3	35.0	15.0	6.7		25.0	
non-processing organisations	18.9	47.2	11.3	1.9		20.8	

Processing methods

Regarding the aspects of processing methods we wanted to know who is using or expecting different methods in the production of organic food in comparison with conventional ones. Over 50% are using or expecting different processing methods in organic food production. However, we can see that in the emerging market countries this aspect has a higher importance than in those countries with mature and growth markets.

Table 10 Processing methods

A goal to strive for could be the use of the most cautious and environmentally friendly techniques for the processing of organic foods. For the following product groups, do you use or expect different methods in the production of organic foods in comparison with the production of conventional ones?	Yes	No		Don't know	No answer
2.1 Milk and Milk products					
General	*52.5*	*30.8*		*10.8*	*5.8*
mature market countries	42.2	46.7		11.1	
growth market countries	57.8	31.1		11.1	
emerging market countries	78.3	8.7		13.0	
food processors	43.3	40.0		16.7	
non-processing organisations	69.8	24.5		5.7	

2.2 Meat and meat products	Yes	No		Don't know	No answer
General	*55*	*23.3*		*15.8*	*5.8*
mature market countries	45.5	34.1		20.5	
growth market countries	65.2	23.9		10.9	
emerging market countries	69.6	8.7		21.7	
food processors	49.2	24.6		26.2	
non-processing organisations	69.2	25.0		5.8	

2.3. Fruit and fruit products	Yes	No		Don't know	No answer
General	*60.0*	*20.8*		*11.7*	*7.5*
mature market countries	51.2	27.9		20.9	
growth market countries	71.1	22.2		6.7	
emerging Market countries	78.3	13.0		8.7	
food processors	52.5	28.8		18.6	
non-processing organisations	78.8	15.4		5.8	

2.4 Vegetable and vegetable products	Yes	No		Don't know	No answer
General	*59.2*	*22.5*		*12.5*	*5.8*
mature market countries	50.0	29.5		20.5	
growth market countries	71.7	19.6		8.7	
emerging market countries	69.6	21.7		8.7	
food processors	55.7	26.2		18.0	
non-processing organisations	71.2	21.2		7.7	

2.5 Cereal and cereal products	Yes	No		Don't know	No answer
General	*54.2*	*31.7*		*8.3*	*5.8*
mature market countries	41.9	44.2		14.0	
growth market countries	69.6	28.3		2.2	
emerging market countries	62.5	25.0		12.5	
food processors	49.2	39.3		11.5	
non-processing organisations	67.3	26.9		5.8	

Specific processing methods and the use of semi-processed products

Different answers were given with regard to the use of different specific processing methods and the use of semi-processed products.

For the use of microwaves for organic food production there is an equal result: it is acceptable for 44.2% and not acceptable for 40%.

The use of extrusion in the production of cereals and pastas is clearly acceptable with 51.7% (cereals) and 55.8% (pasta) yes to 19.2%(cereals) and 15.0% (pasta) no.

Regarding the use of reverse osmosis, slightly more experts assess this method as acceptable. Regarding the use of ion exchange, however, more experts have the opinion that the method is in general not acceptable for the production of organic food.

For the use of isolated compounds for organic food production we have a slightly higher rejection. There is only explicit results for the use of concentrated fruit juice and deep frozen vegetables as a semi-processed product. More than 70% think that the use of those semi-processed products is generally acceptable for organic food production.

Conclusion: specific processing methods for organic food production are generally expected but if we try to figure out what kind of methods are acceptable we get a large variation and no explicit result.

Table 10 Specific processing methods and the use of semi-processed products

There are new technologies in use like microwaves, extrusion for cereal products, reverse osmosis in cheese or wine production. Food can be designed with isolated food ingredients.	Yes	No		Don't know	No answer
3.1 Is the use of microwaves (e.g. pasteurisation of pasta) acceptable for organic foods?					
General	*44.2*	*40.0*		*15.0*	*0.8*
mature market countries	51.1	38.3		10.6	
growth market countries	50.0	37.5		12.5	
emerging market countries	20.8	50.0		29.2	
food processors	39.4	39.4		21.2	
non-processing organisations	50.9	41.5		7.5	

3.2 a) Is the use of extrusion acceptable in the production of cereal for organic foods?	Yes	No		Don't know	No answer
General	*51.7*	*19.2*		*25.8*	*3.3*
mature market countries	47.8	26.1		26.1	
growth market countries	61.7	17.0		21.3	
emerging market countries	47.8	13.0		39.1	
food processors	53.1	17.2		29.7	
non-processing organisations	53.8	23.1		23.1	
3.2 b) Is the use of extrusion acceptable in the production of pasta products for organic foods?					
General	*55.8*	*15.0*		*25.8*	*3.3*
mature market countries	54.3	17.4		28.3	
growth market countries	70.2	10.6		19.1	
emerging market countries	39.1	21.7		39.1	
food processors	56.3	15.6		28.1	
non-processing organisations	59.6	15.4		25.0	

3.3 Is the use of reverse osmosis in the production of cheese or wine (concentration of milk and grape juice) acceptable for organic foods?	Yes	No		Don't know	No answer
General	*45.0*	*30.0*		*24.2*	*.8*
mature market countries	44.7	40.4		14.9	
growth market countries	54.2	22.9		22.9	
emerging market countries	29.2	25.0		45.8	
food processors	45.5	27.3		27.3	
non-processing organisations	45.3	34.0		20.8	

3.4 In the EU the use of ionic exchange for the production of organic food is in discussion (e.g. to decolour starch syrup, milk industry, fruit juice industry). **Is the use of ion exchange for organic food production acceptable?**	Yes	No		Don't know	No answer
General	*30.8*	*40.8*		*26.7*	*1.7*
mature market countries	27.7	55.3		17.0	
growth market countries	38.3	27.7		34.0	
emerging market countries	25.0	41.7		33.3	
food processors	33.3	37.9		28.8	
non-processing organisations	28.8	46.2		25.0	

3.5 Could you accept organic foods which were composed of isolated compounds such as proteins or starch?	Yes	No		Don't know	No answer
General	*38.3*	*46.7*		*9.2*	*5.8*
mature market countries	31.1	60.0		8.9	
growth market countries	40.0	53.3		6.7	
emerging market countries	60.9	21.7		17.4	
food processors	45.9	44.3		9.8	
non-processing organisations	34.6	55.8		9.6	

3.6. Fruit and fruit products: **Is the use of concentrated fruit juice as a semi-processed product acceptable?**	Yes	No		Don't know	No answer
General	*73.3*	*14.2*		*10.0*	*2.5*
mature market countries	67.4	28.3		4.3	
growth market countries	85.1	4.3		10.6	
emerging market countries	70.8	8.3		20.8	
food processors	68.8	17.2		14.1	
non-processing organisations	83.0	11.3		5.7	

3.7 Vegetable and vegetable products: **Is the use of deep frozen vegetables as a semi-processed product acceptable?**	Yes	No		Don't know	No answer
General	*78.3*	*8.3*		*11.7*	*1.7*
mature market countries	80.9	8.5		10.6	
growth market countries	89.4	2.1		8.5	
emerging market countries	58.3	20.8		20.8	
food processors	78.8	4.5		16.7	
non-processing organisations	80.8	13.5		5.8	

The use of additives

The majority of experts explicitly want a more detailed EU regulation 2092/91 for the use of additives for all product groups. In general, synthetic additives should be excluded from the processing of organic food.

The use of natural flavours in an organic product has high level of acceptance with 63.3% yes to 30% no. The vast majority think that the use of flavour enhancers should be excluded.

There is a tendency in favour of requiring that natural colours, flavours, antioxidant, emulsifiers, anti caking agents and the carrier of the additives should be certified organic.

In general there is a low acceptance of adding preservatives to organic food products.

The use of enzymes should generally not be allowed.

Table 11 The use of additives

In EU regulation 2092/91 on organic food the use of additives is only regulated for plant products with the exception of wine and not for animal products.	Yes	No		Don't know	No answer
1. Would it be helpful to have a regulation for all product categories (plant-, animal- and wine-products?					
General	*82.5*	*6.7*		*7.5*	*3.3*
mature market countries	80.9	8.5		10.6	
growth market countries	89.1	6.5		4.3	
emerging market countries	87.0	4.3		8.7	
food processors	77.4	9.7		12.9	
non-processing organisations	94.4	3.7		1.9	

2. Should synthetic additives be excluded from the processing of organic foods?	Yes	No		Don't know	No answer
General	*62.5*	*19.2*		*14.2*	*4.2*
mature market countries	67.4	23.9		8.7	
growth market countries	60.0	20.0		20.0	
emerging market countries	70.8	12.5		16.7	
food processors	69.2	18.5		12.3	
non-processing organisations	60.0	22.0		18.0	

3. Flavours and flavour enhancers: Consumers are used to products that have a constant flavour. During food processing flavours are lost. Yet only natural flavours are allowed in organic foods. Some private standards even exclude flavours entirely. The use of flavour enhancers to support the flavour is not clearly regulated by the EU regulation 2092/91.	Yes	No		Don't know	No answer
3.1 Do you accept the addition of natural flavours (isolated on the plant or animal) in an organic product?					
General	63.3	30.0		5.8	0.8
mature market countries	66.0	34.0			
growth market countries	62.5	27.1		10.4	
emerging market countries	62.5	29.2		8.3	
food processors	65.2	30.3		4.5	
non-processing organisations	62.3	30.2		7.5	

3.2 Should the flavours be certified organic	Yes	No		Don't know	No answer
General	*67.5*	*21.7*		*5.8*	*5.0*
mature market countries	62.8	30.2		7.0	
growth market countries	78.7	17.0		4.3	
emerging market countries	70.8	20.8		8.3	
food processors	70.3	28.1		1.6	
non-processing organisations	72.0	16.0		12.0	

3.3 Would you accept the addition of flavour enhancers to an organic product?	Yes	No		Don't know	No answer
General	*12.5*	*77.5*		*8.3*	*1.7*
mature market countries	10.6	85.1		4.3	
growth market countries	10.6	78.7		10.6	
emerging market countries	20.8	66.7		12.5	
food processors	15.4	73.8		10.8	
non-processing organisations	9.4	84.9		5.7	

4. Colouring: During food processing the colour of the product might change. EU regulation 2092/91 allows colouring only with ingredients like caramel or sugar. Some private standards even exclude the use of colouring additives entirely.	Yes	No		Don't know	No answer
4.1 Would you accept the addition of colouring additives to organic foods?					
General	*15.8*	*75.0*		*7.5*	*1.7*
mature market countries	23.4	70.2		6.4	
growth market countries	14.6	75.0		10.4	
emerging market countries	4.3	91.3		4.3	
food processors	20.0	70.8		9.2	
non-processing organisations	11.3	83.0		5.7	

4.2 Would you accept the addition of natural colours to an organic product?	Yes	No		Don't know	No answer
General	*70.0*	*26.7*		*2.5*	*8*
mature market countries	74.5	25.5			
growth market countries	66.7	29.2		4.2	
emerging market countries	70.8	25.0		4.2	
food processors	71.2	25.8		3.0	
non-processing organisations	69.8	28.3		1.9	

4.3 Should the colours be organically certified, like organic beetroot juice?	Yes	No		Don't know	No answer
General	*77.5*	*15*		*5.0*	*2.5*
mature market countries	79.5	20.5			
growth market countries	81.6	10.2		8.2	
emerging market countries	75.0	16.7		8.3	
food processors	80.0	15.4		4.6	
non-processing organisations	78.8	15.4		5.8	

5 Antioxidant: There are organic natural and synthetic antioxidants in use. EU regulation 2092/91 allows both categories. Some private standards only allow natural antioxidants.	Yes	No		Don't know	No answer
5.1 Is it acceptable to use a synthetic antioxidant in an organic product, synthetic ascorbic acid for example?					
General	*39.2*	*50.8*		*9.2*	*8*
mature market countries	46.8	44.7		8.5	
growth market countries	45.8	45.8		8.3	
emerging market countries	12.5	75.0		12.5	
food processors	37.9	53.0		9.1	
non-processing organisations	41.5	49.1		9.4	

5.2 Would you prefer an antioxidant of organic quality, such as acerolla cherry with a high content of natural vitamin C, or organic extract of rosemary?	Yes	No		Don't know	No answer
General	*74.2*	*10.8*		*13.3*	*1.7*
mature market countries	71.7	17.4		10.9	
growth market countries	77.1	10.4		12.5	
emerging market countries	79.2			20.8	
food processors	75.8	12.1		12.1	
non-processing organisations	75.0	9.6		15.4	

5.3 Do you prefer fermented forms of acids like citric acid instead of acids of synthetic origin?	Yes	No		Don't know	No answer
General	*63.3*	*18.3*		*16.7*	*1.7*
mature market countries	52.2	26.1		21.7	
growth market countries	68.8	18.8		12.5	
emerging market countries	79.2	4.2		16.7	
food processors	62.1	21.2		16.7	
non-processing organisations	67.3	15.4		17.3	

6. Preservatives: The use of preservatives is generally not allowed in organic food products. But there is a discussion on whether nitrite/nitrate should be allowed for meat products**.**	Yes	No		Don't know	No answer
6.1 Is it generally acceptable to add preservatives to processed organic food products?					
General	*28.3*	*60.8*		*9.2*	*1.7*
mature market countries	23.4	68.1		8.5	
growth market countries	44.7	51.1		4.3	
emerging market countries	8.3	70.8		20.8	
food processors	24.2	66.7		9.1	
non-processing organisations	34.6	55.8		9.6	

6.2 Would you support the use of nitrite/nitrate in organic meat processing?	Yes	No		Don't know	No answer
General	*23.3*	*53.3*		*11.7*	*11.7*
mature market countries	25.5	68.1		6.4	
growth market countries	33.3	47.9		18.8	
emerging market countries		81.8		18.2	
food processors	25.5	58.2		16.4	
non-processing organisations	27.5	62.7		9.8	

6.3 Would you support the use of nitrate in cheese processing?	Yes	No		Don't know	No answer
General	*30.0*	*50.8*		*18.3*	*8*
mature market countries	40.4	46.8		12.8	
growth market countries	33.3	45.8		20.8	
emerging market countries	4.2	70.8		25.0	
food processors	24.6	49.2		26.2	
non-processing organisations	37.0	53.7		9.3	

7. Raising agents: Raising agents are generally used to produce bakery products. EU regulation 2092/91 allows different forms of raising agents. One of them contains phosphate (E341 Monocalciumphosphate)	Yes	No		Don't know	No answer
7.1 Are raising agents that contain phosphates acceptable for organic food products?					
general	*26.7*	*40.8*		*32.5*	-
mature market countries	27.7	31.9		40.4	
growth market countries	34.7	38.8		26.5	
emerging market countries	8.3	62.5		29.2	
food processors	30.3	36.4		33.3	
non-processing organisations	22.2	46.3		31.5	

7.2 Should the carrier (e.g. maize starch) be from certified organic origin?					
general	*68.3*	*12.5*		*17.5*	*1.7*
mature market countries	71.7	13.0		15.2	
growth market countries	63.3	16.3		20.4	
emerging market countries	78.3	4.3		17.4	
food processors	65.6	14.1		20.3	
non-processing organisations	74.1	11.1		14.8	

8. Emulsifiers: EU regulation 2092/91 allows the use of E 322 Lecithin.	Yes	No		Don't know	No answer
8.1 With regards to the risk of GMO contamination should some emulsifiers be certified organic (e.g. soya-lecithin)?					
general	*80.0*	*13.4*		*5.8*	*8*
mature market countries	78.7	17.0		4.3	
growth market countries	81.3	10.4		8.3	
emerging market countries	83.3	12.5		4.2	
food processors	78.8	16.7		4.5	
non-processing organisations	83.0	9.4		7.5	

9. Enzymes: All preparations of enzymes normally used in food processing are allowed with the exception of genetically modified enzymes. Taking the risk of contamination into consideration, one wonders if it will be possible in the future to obtain GMO free enzymes.	Yes	No		Don't know	No answer
9.1 Regarding the GMO problem, should it generally be allowed to use enzymes in organic food products (e.g. bakery products, milk products, brewery, meat, fruit juice)?					
general	*52.5*	*33.3*		*12.5*	*1.7*
mature market countries	65.2	28.3		6.5	
growth market countries	50.0	33.3		16.7	
emerging market countries	37.5	45.8		16.7	
food processors	54.5	33.3		12.1	
non-processing organisations	51.9	34.6		13.5	

9.2 Is it acceptable to use enzymes in organic bread flour with the sole purpose of producing a more standardised process/product?	Yes	No		Don't know	No answer
general	*27.5*	*47.5*		*23.3*	*1.7*
mature market countries	34.8	37.0		28.3	
growth market countries	31.3	47.9		20.8	
emerging market countries	8.3	70.8		20.8	
food processors	30.3	40.9		28.8	
non-processing organisations	25.0	57.7		17.3	

9.3 Should the use of enzymes be allowed in meat production (e.g. transglutaminase to make restructured meat from small meat pieces)	Yes	No		Don't know	No answer
general	*10.0*	*63.3*		*23.3*	*3.4*
mature market countries	8.9	68.9		22.2	
growth market countries	16.7	62.5		20.8	
emerging market countries		65.2		34.8	
food processors	7.7	66.2		26.2	
non-processing organisations	13.7	64.7		21.6	

10 Micro-organisms: All preparations of micro-organisms normally used in food processing are allowed with the exception of genetically modified micro-organisms.	Yes	No		Don't know	No answer
10.1 Should micro-organisms like yeast, cultures for dairy or meat products etc. be grown on/in a medium which fulfils the organic food standards?					
general	*72.5*	*20.8*		*5.8*	*8*
mature market countries	70.2	21.3		8.5	
growth market countries	70.8	22.9		6.3	
emerging market countries		16.7		83.3	
food processors	71.2	21.2		7.6	
non-processing organisations	75.5	20.8		3.8	

10.2 Is the use of conventional micro-organisms misleading the organic food consumers?	Yes	No		Don't know	No answer
general	*34.2*	*50.8*		*14.2*	*8*
mature market countries	34.0	55.3		10.6	
growth market countries	27.1	52.1		20.8	
emerging market countries	50.0	41.7		8.3	
food processors	30.3	53.0		16.7	
non-processing organisations	39.6	49.1		11.3	

10.3 Should rennet enzymes originate from organic calves?	Yes	No		Don't know	No answer
general	*44.2*	*36.7*		*16.7*	*2.4*
mature market countries	44.7	44.7		10.6	
growth market countries	42.6	40.4		17.0	
emerging market countries	52.2	17.4		30.4	
food processors	41.5	40.0		18.5	
non-processing organisations	50.0	34.6		15.4	

11. Anti-caking agents Several processing aids and in particular anti-caking agents are listed in EU regulation 2091/92 (e.g. rice meal, beeswax, vegetable oils…)	Yes	No		Don't know	No answer
11.1 Should the use of conventional anti-caking agents be allowed in organic products?					
General	*27.5*	*50.8*		*19.2*	*2.5*
mature market countries	32.6	45.7		21.7	
growth market countries	25.5	57.4		17.0	
emerging market countries	25.0	54.2		20.8	
food processors	27.7	46.2		26.2	
non-processing organisations	28.8	59.6		11.5	

11.2 Are you already using organic anti-caking agents?	Yes	No		Don't know	No answer
General	*11.7*	*54.2*		*20.8*	*13.3*
mature market countries	13.6	63.6		22.7	
growth market countries	12.8	56.4		30.8	
emerging market countries	14.3	71.4		14.3	
food processors	11.3	79.0		9.7	
non-processing organisations	16.7	38.1		45.2	

Separation in the production process

Specific separation guidelines for each product group are helpful for 53.3%. But there is a significant difference between food processors and non-processing organisations. The non -processing organisations see a higher importance in having guidelines for clearer separation than the food processors: We can also see that the experts from mature market countries with greater experience in organic food processing don't see the importance of having specific guidelines. The question about separate processing lines is answered with a balanced result between yes and no.

Table 12 Separation in the production process

EU regulation 2091/92 states: appropriate measures have been taken to ensure the permanent separation of the products obtained from each unit concerned.	Yes	No		Don't know	No answer
1. Would it be helpful to have specific separation guidelines for each product group?					
general	53.3	28.3		16.7	1.7
mature market countries	34.0	48.9		17.0	
growth market countries	70.2	12.8		17.0	
emerging market countries	62.5	20.8		16.7	
food processors	45.3	39.1		15.6	
non-processing organisations	64.8	16.7		18.5	

2.Could it be a goal to have separate processing lines (EU regulation demands separate processing lines for feed from 2008 on)?					
general	*42.5*	*43.3*		*12.5*	*1.7*
mature market countries	34.0	57.4		8.5	
growth market countries	48.9	38.3		12.8	
emerging market countries	50.0	29.2		20.8	
food processors	34.4	56.3		9.4	
non-processing organisations	53.7	29.6		16.7	

Labelling

There is a light tendency in favour of processing methods, processing agents like enzymes and the origin of the ingredients being indicated on the packaging. The non-processing organisations support these requirements more than the food processors.

Table 13 Labelling

Organic food products must be labelled with the certification body and non-organic ingredients have to be named specifically. With the intention of providing consumers with good information, some labelling-organisations have stricter labelling guidelines.	Yes	No		Don't know	No answer
1. Should processing methods be listed on the packaging?					
general	*54.2*	*40.8*		*4.2*	*8*
mature market countries	46.8	51.1		2.1	
growth market countries	52.1	41.7		6.3	
emerging market countries	75.0	20.8		4.2	
food processors	43.1	50.8		6.2	
non-processing organisations	68.5	29.6		1.9	

2. Should the use of processing agents like enzymes be indicated?	Yes	No		Don't know	No answer
general	*64.2*	*30.8*		*3.3*	*1.7*
mature market countries	55.3	40.4		4.3	
growth market countries	70.2	27.7		2.1	
emerging market countries	75.0	20.8		4.2	
food processors	56.3	42.2		1.6	
non-processing organisations	75.9	18.5		5.6	

3. Should the origin of the ingredients be indicated?	Yes	No		Don't know	No answer
general	*65.8*	*30.0*		*1.7*	*2.5*
mature market countries	66.7	33.3			
growth market countries	64.6	33.3		2.1	
emerging market countries	75.0	20.8		4.2	
food processors	61.5	36.9		1.5	
non-processing organisations	75.0	23.1		1.9	

Packaging

71.7% use or prefer environmentally friendly packaging. However, on the other hand, 69.2 % favour the packaging that provides the best protection compared to environmentally friendly packaging.

Table 14 Packaging

To protect organic product sufficiently (microbiological, shelf-life) it is not always possible to use the most environmentally friendly packaging.	Yes	No		Don't know	No answer
1. Do you use/prefer environmentally friendly packaging?					
general	*71.7*	*18.3*		*6.7*	*3.3*
mature market countries	66.0	29.8		4.3	
growth market countries	73.9	13.0		13.0	
emerging market countries	91.3	8.7			
food processors	69.2	26.2		4.6	
non-processing organisations	80.4	9.8		9.8	

2. Is it acceptable for consumers to buy organic products that have packaging that provides the best protection, instead of environmentally friendly packaging (e.g. use of aluminium or "tetra-pack")?	Yes	No		Don't know	No answer
general	*69.2*	*17.5*		*10.0*	*3.3*
mature market countries	73.9	21.7		4.3	
growth market countries	69.6	17.4		13.0	
emerging market countries	70.8	12.5		16.7	
food processors	78.8	13.6		7.6	
non-processing organisations	62.0	24.0		14.0	

Is it a goal for the organic food sector to deliver the same product range as the conventional industry?

31.7% Yes	60% No	8.3% No answer

Please formulate your definition of over-packaging:

The following mentioned definitions were given most often:

- All additional packaging which not only protects the product but is also used for convenience or marketing/advertising
- For the product to have needless secondary packaging to optimise transport handling
- Packaging which protects the product longer than the shelf life of the product.

4. Discussion

The Delphi expert survey was designed in such a way that the most important and currently discussed aspects regarding organic food processing have been taken up.

In the first part the main focus was to narrow and clarify definitions, which are often used to characterize organic food processing. When asking questions about minimum processing and freshness/fresh product the answers did not vary very much. However, exploring the definition of careful processing and authenticity the experts have a quite different understanding of these terms. On the other hand in the second part of the survey, we have seen that authenticity is seen as very important for an organic product. Therefore, we have to clarify this definition in the second Delphi survey round.

Also interesting to see in the questions in part two is that aspects like sensory quality, freshness, minimum use of additives and authenticity are the most important aspects for success on the market, all aspects that are recognizable to the consumer.

An important question was which aspects should be regulated, then the result is different. In first place is the minimum use of additives, followed by minimum and careful processing, not quality/sensory aspects because they are quite different in the different countries of Europe. These are aspects that are important for the processors.

Regarding food safety, most of the experts do not expect more problems with organic food compared to conventional food. Nevertheless, there are some experts that mentioned more food safety problems. This point will therefore be analysed in more detail in the second survey.

When coming to the question of whether the EU-Regulation 2092/91 is sufficient, we have a difference between the processors and the non-processors. 45.5 % of the food processors think is sufficient and 33.3% of the non-processing organisations think EU Regulation 2092/91 is sufficient. This difference between food processors and non-processing organisations is seen several times. We need to think about how this discrepancy can be reduced.

In general most of the experts expect to see special processing methods used in the production of organic food but we asked in detail it was very difficult to select methods that are usable or not usable in organic food production. Regarding the use of additives, the answers given however were very clear. There is a tendency to prefer additives from certified organic origin both from processors as well as non-processors viewpoints. Clear separations guidelines in order to reduce the risk of contamination with GMO or conventional pesticide were supported much more by non-processing organisations, with 64.8%, whereas

the processors have a nearly equal result of 45.3% yes against 39.1% no. With regard to stricter labelling requirements, the non-processing organisations prefer to have stricter guidelines. The same preference was also expressed regarding packaging.

In the second Delphi expert consultation round, it is planned. that,

- those areas where views diverge considerably will be repeated;
- additional questions and clarifying questions about the first round will be added
- proposals for amendments to the regulation in comparison with the existing EU regulation 2092/91 will be made.
- proposals for new regulations in comparison with the existing EU regulation 2092/91 will be made

5. Summary

- 120 persons, 48% answered the survey;
- 42.3% think it would be helpful to have a partly more detailed EU regulation in comparison to 13.3% who would not like to have more regulations;
- Minimum use of additives is the most important question for 84.1%-> a regulation for all product groups is seen as a requirement!
- 20% to 25% expect food safety problems in the organic food sector.
- There is an overall clear tendency to have additives like flavours, colouring, antioxidant, emulsifier and anti-caking agents certified as **organic quality** where applicable;
- There seems to be a need to have micro-organisms certified as organic quality
- Specific processing methods for organic food production are generally expected but there is no clear indication which ones are acceptable;
- Stricter labelling guidelines might be desirable;
- 71.7% use or prefer environmentally friendly packaging but, on the other hand, 69.2 % favour the packaging that provides the best protection to environmentally friendly packaging.
- Only 31.7% think that it should be a goal for the organic food sector to deliver the same product range as the conventional industry.

6. Bibliography

Linstone, H.A. and Turoff, M. (eds.) (1975). *The Delphi method: techniques and applications*. Reading, Mass.: Addison-Wesley.

Schmid, O., Beck, A. and Kretzschmar , U. (2004), *Underlying Principles in Organic and "low- input food" Processing Literature Survey*

Annex II Delphi questionnaire first round

QLIF 28.9.04

QLIF Delphi Expert survey
on organic food processing

This questionnaire is the first of two expert surveys in Europe that will be carried out between October 2004 and February 2005. The goal of the project "Quality low input food (QLIF)"is to develop a framework for the design of "minimum" and "low input" processing strategies, which guarantee the quality and safety **of organic foods**.

The aim of this first phase is to become familiar with the hot issues of the subject and gather as many different perspectives about QLIF as possible. The aim is not to achieve consensus; therefore, please feel free to include your views, even if they are unusual or unpopular. There is also space for you to address anything that you feel we might have omitted at this early stage of the expert survey. We particularly welcome your comments concerning the questions in our questionnaire. Please continue your answers on additional sheets if needed; if you would like to complete an electronic version of the questionnaire you will find one on the Internet at the address **www.qlif.org**

Please return the completed questionnaire by the **22.10.2004** using the enclosed envelope or by e-mail to ursula.kretzschmar@fibl.ch. The survey's results will be encoded, analysed and returned to you in the form of an initial report. They will also be used to elaborate a second survey, which will indicate the proportion of those among you having suggested particular perspectives.

For further guidance or assistance in completing this form, please contact Ursula Kretzschmar, FIBL (Research Institute of Organic Agriculture), Tel. Tuesday and Wednesday: **+41 62 865 04 10, Fax: +41 62 865 72 73**,
email: ursula.kretzschmar@fibl.ch
Internet: www.fibl.org

We would like to inform you that the ***"Literature survey on underlying principles of organic food processing***" can be ordered in PDF format at www.fibl.org or www.qlif.org.

Thank you for your participation!

About your activity:

What is your business area?

□ **Food processing** □ marketing □ research □ production

Producer/processor of which product group(s):

□ Milk and dairy products
□ Meat and meat products
□ Fruit and vegetables and their products (including mushrooms and sprouts)
□ Cereals and cereal products
□ Alcoholic drinks and vinegar (beverages)
□ Vegetable oils and fats, as well as margarine
□ Eggs and egg products
□ Spices, bouillons, soups, sauces
□ Baby food
□ Cakes and pastries
□ Health food
□ Other **……**

To what percentage are you producing/dealing with organic food?

1 or less of the turnover □, 1 to 5 □, 5 to 10 , 5 to 10 , □10 to 50 ,
more than 50 □, 100 □

□ Organic food quality based on which regulations/ standards
……..
□ Other quality food than organic such as:
……
Involved in food processing issues since
□ more than 10 years □ 5 to 10 year's □ 2 to 5 years
□ recently (last 2 years)

□ **Consumer organisation**
□ **Government agency**
□ **Processing standard setting/ certification organisation**
□ **Research institute**
□ **Other……**

1. General questions

When dealing with processing of organic foods, terms such as "minimum processing", "careful processing", "freshness" and "authenticity" are often present. The aim of the questions below is to clarify these notions with regard to the processing of organic foods.

1.1 What is your understanding of minimum processing? Try to give a definition from your point of view:

……..…...…….

……

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1.2 What is your understanding of careful food processing? Try to find a definition:

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……

1.3 What is your understanding of a fresh product? Try to find a definition:

……

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……

1.4 What is your understanding of authenticity, as far as food is concerned?

……

……

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……

2. Which criteria are important for an organic product to be successful on the food market	Very important	Important	Not important	Not at all important		Don't know
2.1 Freshness	☐	☐	☐	☐		☐
2.2 Minimum and careful processing methods	☐	☐	☐	☐		☐
2.3 Minimum use of additives and processing aids	☐	☐	☐	☐		☐
2.4 Sensory quality (colour, smell, taste)	☐	☐	☐	☐		☐
2.5 Environmentally friendly processing (e.g. ISO 14000)	☐	☐	☐	☐		☐
2.6 Environment friendly packaging	☐	☐	☐	☐		☐
2.7 Certified social standards	☐	☐	☐	☐		☐
2.8 Regionality (produced, processed and sold in the region)	☐	☐	☐	☐		☐
2.9 Seasonality	☐	☐	☐	☐		☐
2.10 Whole food	☐	☐	☐	☐		☐
2.11 Health	☐	☐	☐	☐		☐
2.12 Authenticity	☐	☐	☐	☐		☐

Remarks:…..……

3. Food safety **Next to nutritional value, food safety is the most important quality criteria for food. Regarding the problem of residues, toxins and pathogens, do you expect or have major/special problems in the organic food sector?**	Yes	No		Don't know
3.1 Food safety: is there a major/special problem with residues of pesticides, growth promoters, and antibiotics for organic food? If yes what kind? ……..				
3.2 Food safety: absence of microbial pathogens, [e.g. E. coli, Salmonella], and prions. Is there a major/special problem compared with conventional food? If yes, which one(s)? …….				

3.3 Food safety: absence of toxins (mycotoxins, dioxin etc.). Is there a major/special problem compared with conventional food? If yes, which one(s)? ……..					

4. Regulations/Standards for organic food processing	Very good	good	partly	Not at all		Don't know
4.1 Is EU regulation 2092/91 on organic food processing sufficient (Council Regulation (EEC) No 2092/91 of 24 June 1991 on organic production of agricultural products)?	☐	☐	☐	☐		☐
4.2 Is it possible to make high quality products based on the EU regulation 2092/91?	☐	☐	☐	☐		☐
4.3 Would it be helpful to have a more detailed regulation on the processing of organic foods? E.g. more specific processing techniques.	☐	☐	☐	☐		☐

Remarks:…..……

5. For which aspects would it be helpful to have more specific requirements in the EU regulation for organic products or a ghp (good manufacturing practice) handbook for organic food processing?	Very important	Important	Little important	Not at all important		Don't know
5.1 Freshness	☐	☐	☐	☐		☐
5.2 Minimum and careful processing methods	☐	☐	☐	☐		☐
5.3 Minimum use of additives and processing aids	☐	☐	☐	☐		☐
5.4 Sensory quality (colour, smell, taste)	☐	☐	☐	☐		☐
5.5 Environmentally friendly processing (e.g. ISO14000)	☐	☐	☐	☐		☐
5.6 Environmentally friendly packaging	☐	☐	☐	☐		☐
5.7 Certified social standards	☐	☐	☐	☐		☐
5.8 Regionality (produced, processed and sold in the region)	☐	☐	☐	☐		☐
5.9 Seasonality	☐	☐	☐	☐		☐
5.10 Whole food	☐	☐	☐	☐		☐
5.11 Health	☐	☐	☐	☐		☐
5.12 Authenticity	☐	☐	☐	☐		☐

Remarks:…..……

6. Specific questions

6.1 Freshness Fresh and well-ripened raw material(s) is the prerequisite for high quality and low losses during processing. This is particularly important because few additives are allowed in organic food processing. It could be a goal for organic processors to have more specific requirements in terms of maximum transport time/distances of single ingredients, or of ripening.	Very important	Important	Not important	Not at all important		Don't know
6.1.1 Milk products: short transport and storage time between milking and processing, in order to maintain a good sensory milk quality	☐	☐	☐	☐		☐
6.1.2 Meat and meat products: sufficient ripening time with respect to different meat qualities	☐	☐	☐	☐		☐
6.1.3 Cereal: flour ripening with respect to different cereal qualities	☐	☐	☐	☐		☐

Remarks:…..……

6.2 Processing methods A goal to strive for could be the use of the most cautious and environmentally friendly techniques for the processing of organic foods. For the following product groups, do you use or expect different methods in the production of organic foods in comparison with the production of conventional ones?	Yes	No		Don't know
6.2.1 Milk and Milk products	☐	☐		☐
6.2.2 Meat and meat products	☐	☐		☐
6.2.3. Fruit and fruit products	☐	☐		☐
6.2.4 Vegetable and vegetable products	☐	☐		☐
6.2.5 Cereal and cereal products	☐	☐		☐

Remarks:…..……

6.3 Specific processing methods and the use of semi-processed products There are new technologies in use like microwaves, extrusion for cereal products, reverse osmosis in cheese or wine production. Food can be designed with isolated food ingredients.	Yes	No		Don't know

6.3.1 Is the use of microwaves (e.g. pasteurisation of pasta) acceptable for organic foods?	☐	☐		☐
6.3.2 Is the use of extrusion a) in the production of cereal b) in the production of pasta products acceptable for organic foods?	☐ ☐	☐ ☐		☐ ☐
6.3.3 Is the use of reverse osmosis in the production of cheese or wine (concentration of milk and grape-juice) acceptable for organic foods?	☐	☐		☐
6.3.4 In the EU the use of ionic exchange for the production of organic food is in discussion (e.g. to decolour starch syrup, milk industry, fruit juice industry). Is the use of ion exchange acceptable for the organic food production ? If yes for which applications:…….	☐	☐		☐
6.3.5 Could you accept organic foods which were composed of isolated compounds such as proteins or starch?				
6.3.6. Fruit and fruit products: Is the use of concentrated fruit juice as a semi-processed product acceptable?	☐	☐		☐
6.3.7 Vegetable and vegetable products: Is the use of deep frozen vegetables as a semi-processed product acceptable?	☐	☐		☐

Remarks:…..……

6.4. The use of additives In EU regulation 2092/91 on organic food the use of additives is only regulated for plant products with the exception of wine and not for animal products.	Yes	No		Don't know
6.4.1 Would it be helpful to have a regulation for all product categories (plant-, animal- and wine-products?	☐	☐		☐
6.4.2 Should synthetic additives be excluded from the processing of organic foods?	☐	☐		☐

Remarks:…..……

6.5 Flavours and flavour enhancers: Consumers are used to products that have a constant flavour. During food processing flavours are lost. Yet only natural flavours are allowed in organic foods. Some private standards even exclude flavours entirely. The use of flavour enhancers to support the flavour is not clearly regulated by EU regulation 2092/91.	Yes	No		Don't know

6.5.1 Do you accept the addition of natural flavours (isolated on the plant or animal) in an organic product?	☐	☐		☐
6.5.2 Should the flavours be certified organic	☐	☐		☐
6.5.3 Would you accept the addition of flavour enhancers to an organic product?	☐	☐		☐

Remarks:…..……

6.6 Colouring: During food processing the colour of the product might change. EU regulation 2092/91 allows colouring only with ingredients like caramel or sugar. Some private standards even exclude the use of colouring additives entirely.	Yes	No		Don't know
6.6.1 Would you accept the addition of colouring additives to organic foods?	☐	☐		☐
6.6.2 Would you accept the addition of natural colours to an organic product?	☐	☐		☐
6.6.3 Should the colours be organically certified, like organic beetroot juice?	☐	☐		☐

Remarks:…..……

6.7 Antioxidant: There are organic natural and synthetic antioxidants in use. EU regulation 2092/91 allows both categories. Some private standards only allow natural antioxidants.	Yes	No		Don't know
6.7.1 Is it acceptable to use a synthetic antioxidant in an organic product, for example, synthetic ascorbic acid?	☐	☐		☐
6.7.2 Would you prefer an antioxidant of organic quality, such as acerolla cherry with a high content of natural vitamin C, or organic extract of rosemary?	☐	☐		☐
6.7.3 Do you prefer fermented forms of acids like citric acid to acids of synthetic origin?	☐	☐		☐

Remarks:…..……

6.8 Preservatives: The use of preservatives is generally not allowed in organic food products. But there is a discussion on whether nitrite/nitrate should be allowed for meat products.	Yes	No		Don't know
6.8.1 Is it generally acceptable to add preservatives to processed organic food products?	☐	☐		☐
6.8.2 Would you support the use of nitrite/nitrate in organic meat processing?	☐	☐		☐

6.8.3 Would you support the use of nitrate in cheese processing?	☐	☐		☐

Remarks:…...……

6.9 Raising agents: Raising agents are generally used to produce bakery products. EU regulation 2092/91 allows different forms of raising agents. One of them contains phosphate (E341 Monocalciumphosphate)	Yes	No		Don't know
6.9.1 Are raising agents that contain phosphates acceptable for organic food products?	☐	☐		☐
6.9.2 Should the carrier (e.g. maize starch) be from certified organic origin?	☐	☐		☐

Remarks:…...……

6.10 Emulsifiers: EU regulation 2092/91 allows the use of E 322 Lecithin.	Yes	No		Don't know
6.10.1 With regard to the risk of GMO contamination should some emulsifiers be certified organic (e.g. soya-lecithin)?	☐	☐		☐

Remarks:…...……

6.11 Enzymes: All preparations of enzymes normally used in food processing are allowed with the exception of genetically modified enzymes. Taking the risk of contamination into consideration, one wonders if it will be possible in the future to obtain GMO free enzymes.	Yes	No		Don't know
6.11.1 Regarding the GMO problem, should it generally be allowed to use enzymes in organic food products (e.g. bakery products, milk products, brewery, meat, fruit juice)?	☐	☐		☐
6.11.2 Is it acceptable to use enzymes in organic bread flour with the sole purpose of producing a more standardised process/product?	☐	☐		☐
6.11.3 Should the use of enzymes be allowed in meat production (e.g. transglutaminase to make restructured meat from small meat pieces)	☐	☐		☐

Remarks:…...……

6.12 Micro-organisms: All preparations of micro-organisms normally used in food processing are allowed with the exception of genetically modified micro-organisms.	Yes	No		Don't know
6.12.1 Should micro-organisms like yeast, cultures for dairy or meat products etc. be grown on/in a medium, which fulfils the organic food standards?	☐	☐		☐
6.12.2 Is the use of conventional micro-organisms misleading the organic food consumers?	☐	☐		☐
6.12.3 Should rennet enzymes originate from organic calves?	☐	☐		☐

Remarks:…..……

6.13 Anti-caking agents Several processing aids and in particular anti-caking agents are listed in EU regulation 2091/92 (e.g. rice meal, beeswax, vegetable oils…)	Yes	No		Don't know
6.13.1 Should the use of conventional anti-caking agents be allowed in organic products?	☐	☐		☐
6.13.2 Are you already using organic anti-caking agents?	☐	☐		☐

Remarks:…..……

6.14 Separation in the production process EU regulation 2091/92 states: appropriate measures have been taken to ensure the permanent separation of the products obtained from each unit concerned.	Yes	No		Don't know
6.14.1 Would it be helpful to have specific separation guidelines for each product group?	☐	☐		☐
6.14.2 Could it be a goal to have separate processing lines (EU regulation demands separate processing lines for feed from 2008 on)?	☐	☐		☐

Remarks:…..……

6.15 Labelling Organic food products must be labelled with the certification body and non-organic ingredients have to be named specifically. With the intention of providing consumers with good information, some labelling-organisations have stricter labelling guidelines.	Yes	No		Don't know
6.15.1 Should processing methods be listed on the packaging?	☐	☐		☐

6.15.2 Should the use of processing agents like enzymes be indicated?	☐	☐		☐
6.15.3 Should the origin of the ingredients be indicated?	☐	☐		☐

Remarks:…..……

6.16 Packaging To sufficiently protect an organic product (microbiological, shelf-life) it is not always possible to use the most environmentally friendly packaging.	Yes	No		Don't know
6.16.1 Do you use/prefer environmentally friendly packaging?	☐	☐		☐
6.16.2 Is it acceptable for consumers to buy organic products that have packaging that provides the best protection, instead of environmentally friendly packaging (e.g. use of aluminium or "tetra-pack")?	☐	☐		☐

Please formulate your definition of over-packaging:
……
……

Remarks:…..……

<u>6.2 Is it a goal for the organic industry to deliver the same product range as the conventional industry?</u>

Yes ☐ No ☐
Why?

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…….

…….

…….

…….

<u>6.3 General remarks</u>

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Thank you for your participation

Appendix III Description of Subproject 5 of th Q-Lif Project: Development of a framework for the design of "minimum" and "low input" processing strategies, which guarantee food quality and safety

Organic processing standards prohibit the use of chemicals, many preservatives and other food additives, which are widely used in the processing of conventional foods. However, there are frequent discussions as to the underlying rationales and criteria used to allow some (e.g. salt, sugar, nitrate) but not other processing methods and additives, especially when new processing technologies (e.g. ozone, microbial inocula) or additives (e.g. essential oils) have to be assessed for conformity with organic processing standards. There is also evidence that consumers of "low input" and organic foods have specific expectations with respect to quality characteristics of processed food. These may relate to the degree of processing, concern about specific additives, nutritional composition, integrity or whole food concepts, the degree of convenience, the level of energy use and transportation distances, but also food safety.

There can also be conflicts between the desire to "minimally process" in order to avoid negative effects on the nutritional and sensory quality, and considerations of shelf life and food safety. For example, when chlorine is not used as a disinfection agent, shelf life of ready-to-eat salad products is relatively short and enteric pathogen contamination problems can occur for example in the production of bean sprouts.

It is therefore essential to develop a framework/code of practice, which can be used to determine whether novel processing strategies are compatible with:

i. Organic processing standards and/or principles and

ii. Consumer demands and expectations (those determined under Subproject 1, which may or may not match organic processing standards and principles)

Where changes in general processing legislation and/or organic farming standards result in food safety risks (e.g. the non-use of chlorine as a sanitising agent), it is also essential to identify alternative strategies which are compatible with legislation/standards and minimize food safety risks for the consumer.

Where novel processing methods are proposed which improve the nutritional value (e.g. milk processing methods, which increase the Conjugated Linoleic Acid (CLA) content of foods, the claims made for such "functional foods" need to be verified. It also needs to be confirmed that novel processing methods conform to other criteria of organic processing standards and principles and expectations of consumers (e.g. sensory quality).

Subproject 5 addresses these issues through 3research areas (work packages):

- Workpackage 5.1 Development of a consolidated framework/Code of practice for the evaluation of "minimum" and "added value" processing strategies in organic and "low input" food production and processing with respect to food quality and safety
- Workpackage 5.2 Case study 1: Assessment of chlorine replacement strategies for fresh cut vegetables
- Workpackage 5.3 Case study 2: Assessment of processing technologies that may improve the nutritional composition of dairy products

Annex IV List of subcontracted experts/institutions

The following. subcontracted experts/institutions are working on the project

- **Soil Association: Francis Blake**
  Postal address: Bristola House, 40-56 Victoria Street BS1 6 BY Bristol, England
- **Probila-Unitrab, Belgian National Professional Association of Processors and Distributors of Products originating from the Organic Agriculture**: Hugo Baert Postal address: Leuvensebaan, 368, B-3040 St. Agatha Rode
- **AIAB, Comitato Scientifico: Christina Micheloni** Postal address:Via dei Tigli,2 I-230234 Fagagna**,** Italy
- **Sociedad Española de Agricoltura Ecologica (SEAE), ECA: Victor Gonzálvez** Postal address Camino del Puerto, s/n. Apdo 397 46470 Catarroja (Valencia, Spain)
- **Bundesanstalt für Alpenländische Milchwirtschaft: Dr. Wolfgang Ginzinger** Postal address Ramsau 100, A-5324 Faistenau, Austria
- **Green Marketing Consultancy for the Organic Business in CEE countries Tom Vaclavik** Postal address: Vinohradska 261,664 34 Moravske Kninice
  Czech Republic
- **Warsaw Agricultural University SGGW, Faculty of Nutrition Science and Consumption, Dr. Sylwia Zakowska, Dr. Urszula Soltysiak** Postal address UI. Nowoursynowska 166 PL-02-78 Warszawa
- **Marie Christine Monnier** Postal address 3 Rue du corps de garde, F-44100 Nantes
- **Consumer International Consultancy Diane Mc Crea** Postal address 127 Havannah Street Cardiff Bay, CARDIFF, CF 10 5SF Wales UK

Annex V Delphi questionnaire second round

QLIF Feb 2005

QLIF Delphi expert survey on

organic food processing
Second round

This questionnaire is the second of two expert surveys on organic food processing in Europe as a part of a large EU research project on "quality low input food" (QLIF). In the first round, which was carried out in October 2004, 120 experts from 13 countries returned the questionnaire. Enclosed you will find the analysis of the first survey and the second and final questionnaire within this QLIF processing strategy subproject. The goal of this sub-project on organic food processing is to develop a framework for the design of "minimum" and "low input" processing strategies, which guarantee the **quality and safety of organic foods**.

The second survey is structured as follows:

- more precise general questions
- some clarifying questions
- proposals for new regulations in comparison with the existing EU regulation 2092/91

Please return the completed questionnaire by 20.03.2005 using the enclosed envelope or by e-mail to ursula.kretzschmar@fibl.ch. **The survey's results will be encoded, analysed and returned to you in the form of an initial report.** We need the enclosed personal data sheet so that we can contact you. Thank you for your understanding.

For further guidance or assistance in completing this form, please contact Ursula Kretzschmar, FIBL (Research Institute of Organic Agriculture), Tel. Tuesday and Wednesday: **+41 62 865 04 10, Fax: +41 62 865 72 73**,
email: ursula.kretzschmar@fibl.ch
Internet: www.fibl.org

The national contact person for this subproject will also be able to help you.

Thank you for your participation in the second and final round!

Data sheet:

Name of company/institution:

_____

Name of contact person:

_____

Country:

_____

Activity:

□ Food processing
□ Consumer organisation
□ Government agency
□ Processing standard setting/ certification organisation
□ Research institute
□ Other……

1. Clarifying definitions

In organic food processing terms are often used which are not yet defined. Is there a need to define them? Enclosed you will find the definitions which were named most frequently in the first survey. *Multiple answers are possible***.**

1. 1 Definition of careful food processing - some proposals	Very good	Good	Partly	Not at all		Don't know
Optimised combination of processing parameters (e.g. time, temperature and pressure during processing)	☐	☐	☐	☐		☐
The maximum to keep the important compounds and the maximum to avoid undesired compounds or nutritional losses.	☐	☐	☐	☐		☐
Careful processing means taking care of the product, the environment and to the people.	☐	☐	☐	☐		☐
Processing methods "appropriate" to processed food.	☐	☐	☐	☐		☐
Careful processing means ensuring food safety as much as possible	☐	☐	☐	☐		☐
As little processing as possible. Restrictions on processing techniques and/or additives should be made according to product groups	☐	☐	☐	☐		☐
There is no necessity to define it	☐	☐	☐	☐		☐

Remarks:…..……

1. 2 Definitions of fresh product - some proposals	Very good	Good	Partly	Not at all		Don't know
Products with a short shelf life need to be stored at a specific temperature or under controlled temperature conditions.	☐	☐	☐	☐		☐
Products like fruit and vegetables with short shelf lives	☐	☐	☐	☐		☐
Products that undergo minimal quality change during storage.	☐	☐	☐	☐		☐
No processing after harvesting/milking/slaughtering	☐	☐	☐	☐		☐
There is no necessity to define it	☐	☐	☐	☐		☐

Remarks:…..……

1. 3 Definitions of authenticity regarding food - some proposals	Very good	Good	Partly	Not at all		Don't know
The content is "real" and fulfils the expectations of the consumers	☐	☐	☐	☐		☐
The sensory quality must be of a high enough standard that the consumer can recognize the product (in comparison with conventional products on the market)	☐	☐	☐	☐		☐
Product name, list of ingredients and the sensory quality should be equivalent/corresponding/ in line with each other	☐	☐	☐	☐		☐
Production and processing steps, and the origin are visible/recognizable to the consumer	☐	☐	☐	☐		☐
Food which is natural and has not been synthesised or adulterated in production, processing or storage	☐	☐	☐	☐		☐
There is no necessity to define it	☐	☐	☐	☐		☐

Remarks:…..……

2. Clarifying questions to the answers of the first round - which criteria are important for an organic product to be successful on the food market?	Yes	No		Don't know
2.1 Environmentally friendly processing (e.g. ISO 14000) 60.8 %[1] have the opinion that environmentally friendly processing is important/very important for an organic product. Should certification for environmentally friendly processing be required?	☐	☐		☐
2.2 Environmentally friendly packaging Consumer studies have shown that the consumer has a varying perception of environmentally friendly packaging. Should there be special regulation and certification for the packaging of organic products?	☐	☐		☐
2.3 Regionality (produced, processed and sold in the region) 66.4%[1] have the opinion that regionality is important for the success of an organic product on the market. Should there be special regulation and certification regarding the regionality of organic products?	☐	☐		☐
2.4 Use of salt 2.4.1 Is there a need to make a regulation regarding the type (e.g. iodised salt, non-iodised salt) or origin (e.g. Himalayan salt, sea salt) of salt that can be used in organic food production? 2.4.2 Is there a need to regulate the amount of salt in an organic product according to product category?	☐ ☐	☐ ☐		☐ ☐
2.5 Use of sugar 2.5.1 Is there a need to regulate the type (e.g. white sugar, Demerara sugar) or origin (e.g. cane sugar, beet sugar) of sugar that can be used in organic food production? 2.5.2 Is there a need to regulate the amount of sugar in an organic product according to product category?	☐ ☐	☐ ☐		☐ ☐

Remarks:…..……

[1] Percentage refers to the results of the first questionnaire

3. Food safety In terms of food safety, organic food has to fulfil the same standards as conventional food and the same regulations are valid. 55 % of the respondents do not have or do not expect more problems with organic food safety. On the other hand 25% expected at least some or more problems with residues, toxins and pathogens in the organic food sector compared to the conventional sector. To clarify this point we would like to ask some more precise questions.	Yes	No		Don't know
3.1 Do you experience significant problems with food safety in the organic food sector compared to the conventional one? If yes, mention *the* most important safety problem: …….. …….. …….. …….. ……..				

4. Possible ways to regulate or clarify/harmonise different aspects of organic food processing 43.3 % think that it would be helpful to have a more detailed regulation on organic food processing. 17.5 % think it would be of some help and only 13.3 % think that it would not be helpful to have a more detailed EU regulation 2092/91. In which way and how should a specific issue be best regulated or at least be clarified/harmonised? Please give one answer only.	**Regulated by EU Regulation 2092/91/EU implementation rules**	**Regulated by label organisations / private standards**	**Individually regulated by the food processing industry**	**Code of practice for the organic food sector**	**General requirement/ recommendation (good manufacturing practice)**		Don't know
4.1 Freshness	☐	☐	☐	☐	☐		☐
4.2 Minimum and careful processing methods	☐	☐	☐	☐	☐		☐
4.3 Minimum use of additives and processing aids	☐	☐	☐	☐	☐		☐
4.4 Sensory quality (flavour, smell, taste, colour, texture)	☐	☐	☐	☐	☐		☐
4.5 Environmentally friendly processing and transportation (e.g. ISO14000)	☐	☐	☐	☐	☐		☐
4.6 Environmentally friendly packaging	☐	☐	☐	☐	☐		☐
4.7 Certified social standards	☐	☐	☐	☐	☐		☐
4.8 Regionality (produced, processed and sold in the region)	☐	☐	☐	☐	☐		☐
4.9 Seasonality	☐	☐	☐	☐	☐		☐
4.10 Whole food	☐	☐	☐	☐	☐		☐
4.11 Health	☐	☐	☐	☐	☐		☐
4.12 Authenticity	☐	☐	☐	☐	☐		☐

Remarks:…..……

5. Specific questions

Enclosed you will find the results of the first consultation on possible adaptations to Annex VI of EU regulation 2092/91. Please use the "Alternatives" box if you have other ideas or remarks e.g. that this issue should be clarified/harmonised by other means (e.g. with private labels or by a code of practice)

5.1. The use of additives 82.5 % would prefer to have more detailed regulation of the use of additives in EU regulation 2092/91. Below you will find some possible additional requirements of regulation 2092/91 in Annex VI	Actual	**New**	**Alternatives**		**Acceptable**	**Not acceptable**	**Don't know**
5.1.1 Flavours: 67.5 % think that flavours should be certified organic.	Natural flavours	**Flavours must be certified organic**			☐	☐	☐
5.1.2 Flavour enhancers: 77.55% would not allow the use of flavour enhancers	Not clearly regulated	**Prohibited**			☐	☐	☐
5.1.3 Colouring 77.5 % think that the current regulation is sufficient.	Colouring with certified organic ingredients	No revision; Colouring with certified organic ingredients			☐	☐	☐
5.1.4 Antioxidant Synthetic antioxidants like synthetic ascorbic acid are allowed. 74.2 % prefer organic antioxidants like rosemary extract or acerolla cherry	Synthetic antioxidant	**Antioxidant certified organic**			☐	☐	☐
5.1.5 Preservatives 28.3 % think that the use of preservatives in an organic product is acceptable and, in particular, 23.3% support the use of nitrate/nitrite in cheese production (to prevent flatulence). On the other hand 60% say no to the use of preservatives. In particular 53.3% do not accept the use of nitrate/nitrite in organic meat production.	Some preservatives like nitrate/nitrite are allowed	**No preser-vatives**			☐	☐	☐

	Actual	New	Alternatives		Acceptable	Not acceptable	Don't know
5.1.6 Raising agents A lot of raising agents have a non- organic carrier like maize starch. 68.3% think that the carrier should be certified organic.	Carrier can be non organic	**Carrier must be certified organic**			☐	☐	☐
When the carrier has to be organic, is there a need to certify the additive?	No certificatio n	**Certification of the additive**			☐	☐	☐
5.1.7 Emulsifiers With regard to the risk of GMO contamination 80 % think that emulsifiers should have to be certified organic (e.g. soya-lecithin)?	Conventio nal	**Certified organic**			☐	☐	☐
5.1.8 Enzymes 52.5% think that the use of enzymes in organic products is acceptable. 47.5 % do not accept the use of enzymes for the sole use of standardizing the process/product.	GMO free	**Specific regulation depending on the use**			☐	☐	☐
5.1.9 Micro-organisms 72.5% think that micro-organisms should be certified organic in comparison to 20.8 % who do not see a need.	Conventio nal	**Certified organic**			☐	☐	☐
5.1.10 Anti-caking agent 50.8 % think that anti-caking agents should be certified organic in comparison to 27.5 % who do not see a need.	Conventio nal	**Certified organic**			☐	☐	☐

	Actual	New	Alternatives		Acceptable	Not acceptable	Don't know
5.1.11 Separation in the production process (parallel processing) 53.3% think that specific separation guidelines would be helpful (28.3% say no)	Sufficient separation	**Product specific separation guidelines (based on HACCP concept)**			☐	☐	☐
5.1.12 Labelling 54.2% would prefer the processing methods to be listed on the packaging compared to 40.8% who wouldn't. 64.2 % say yes to a declaration of the processing aids compared with 30.8% who say no. 65.8% would support the declaration of the origin of the ingredient and 30.0 % would not.	Non-organic ingredients, certification body	**Declaration of the processing methods** **Declaration of the processing aids like enzymes (enlarged declaration)** **Indication of the origin of the ingredients**			☐ ☐ ☐	☐ ☐ ☐	☐ ☐ ☐
5.1.13 Packaging 71.7% would prefer environmentally friendly packaging but 69.2 % also have the opinion that the packaging which provides the best protection of the product is acceptable instead of environmentally friendly packaging	No regulation	No revision at the moment			☐	☐	☐

Remarks:

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6. On which aspect of organic food processing should research or more research be made? Please make some proposals:

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General remarks:

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Thank you for your participation

Annex VI List of subcontracted experts/institutions

The following. subcontracted experts/institutions are working on the project

- **Soil Association: Francis Blake,** *Postal address: Bristol House, 40-56 Victoria Street BS1 6 BY Bristol, England*
- **Probila-Unitrab, Belgian National Professional Association of Processors and Distributors of Products originating from the Organic Agriculture,: Hugo Baert** *Postal address: Leuvensebaan, 368, B-3040 St. Agatha Rode, Belgium*
- **AIAB, Comitato Scientifico: Christina Micheloni,** *Postal address:Via dei Tigli,2 I-230234 Fagagna***,** Italy
- ***Sociedad* Española de Agricoltura Ecologica (SEAE), ECA: Victor Gonzálvez** *Postal address Camino del Puerto, s/n. Apdo 397 46470 Catarroja (Valencia, Spain)*
- ***Bundesanstalt für Alpenländische Milchwirtschaft: Dr. Wolfgang Ginzinger*** *Postal address Ramsau 100, A-5324 Faistenau, Austria*
- **Green Marketing Consultancy for the Organic Business in CEE countries: Tom Vaclavik** *Postal address: Vinohradska 261,664 34 Moravske Kninice, Czech Republic*
- **Warsaw Agricultural University SGGW, Faculty of Nutrition Science and Consumption: Dr. Sylwia Zakowska, Dr. Urszula Soltysiak** *Postal address Ul. Nowoursynowska 166 PL-02-78 Warszawa*
- **Marie Christine Monnier** *Postal address 3 Rue du corps de garde, F-44100 Nantes*
- **Consumer International Consultancy: Diane Mc Crea** *Postal address 127 Havannah Street Cardiff Bay, CARDIFF, CF 10 5SF Wales UK*