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FINAL PROJECT REPORT

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Should the publication of corrigenda becomes necessary, there will be posted at the project website **www.organic-revision.org**

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1 Introduction

Since 1991, organic Farming in the EU is governed by the Regulation (EEC) 2092/91¹, which sets out the rules for labelling a food product as 'organic' or equivalent terms 'biological' or 'ecological' in other languages. The Regulation was a response to growing consumer demands for organic products, building on the experience of governmental standards in several member states (Austria, Denmark, Spain, Finland, and France) and in the private sector.

The result was a legally enforceable and officially recognized common standard for organic crop production, certification, and labelling in the EU, which had to be implemented in all member states by 1993. In most areas the production rules were similar to the Basic Standards of the International Federation of Organic Agriculture Movements (IFOAM). The Regulation (EEC) 2092/91 paved the way for organic management options to be included in the EU agri-environment policy support programmes (Regulation (EEC) 2078/92)² and through its provisions for imports from non-EU countries has affected organic standards worldwide. In 1999, the Regulation was amended by Regulation (EEC) 1804/1999³ setting out rules for on organic livestock production, a flexibility clause allowing member states to maintain stricter rules on animal production, and a prohibition of GMO were introduced in 1999.

An organic regulation (or private standard) acts as the basis of a virtual contract between the organic producer and the consumer. The organic producer promises to deliver certain ethical values by following the practises set out in the standards, and the consumers receive a guarantee about what to expect from an organic product.

The Regulation (EEC) 2092/91 mainly covers rules for labelling, rules of production are covered largely in Annex I. Permitted inputs and inspection rules are covered in the other annexes. The regulation does not contain an explicit definition; organic farming is defined by the practices rather than the principles and ethical values. Since the introduction more than 25 amendments have been taken up.

In a growing market for organic food there is concern that the involvement of large companies and global trade will encourage producers to cut corners and forget about the ethical values. The concern that 'conventional' organic farming would be conducted in a more intensive, industrialised fashion and would no longer function effectively as a more sustainable alternative, has resulted in a renewed interest in the values and principles of organic farming.

Private standard-setting organisations and some governments within and outside the EU have long-established organic standards, which in some areas are more detailed and/or more demanding than the EU Regulation. Some standard setting bodies aim

¹Council Regulation (EEC) No 2092/91 of 24 June 1991 on organic production of agricultural products and indications referring thereto on agricultural products and foodstuffs. Official Journal of the European Communities **L198**(22.7.91): 1-15.

² Council Regulation (EEC) No 2078/92 of the 30 June 1992 on agricultural production methods compatible with the requirements of the protection of the environment and the maintenance of the countryside." Official journal of the European Communities **L215**(30.7.92): 85-90.

³ Council Regulation (EC) No 1804/1999 of 19 July 1999 supplementing Regulation (EEC) No 2092/91 on organic production of agricultural products and indications referring thereto on agricultural products and foodstuffs to include livestock production. Official Journal of the European Communities, **L222** (24.8.1999), 1-28.

for stricter rules as a way to differentiate the products carrying their symbol in a growing market. This and the flexibility in relation to livestock have resulted in differences in the implementation of Regulation (EEC) 2092/91 in the Member States and to private standards, which raises concerns about unfair competition and to barriers to the trade.

The European Action Plan for Organic Food and Farming⁴ called for a review of the legal framework with the aim to ensure simplification and overall coherence, to establish principles that encourage harmonisation of standards and, where possible, to reduce the level of detail. Following this, the Regulation (EEC) 2092/91 was reviewed.

This Project EEC 2092/91 (Organic) Revision was set up to support this revision of the Regulation (EEC) 2092/91. The project began in March 2004 and lasted for 38 months until April 2007 and was therefore ongoing during the first phase of the revision of the EU Regulation. A first proposal for a new regulation was published by the European Commission in December 2005⁵ and was negotiated by a Council Working Group during 2006. The opinion of the European Parliament was given in May 2007 and the text for a new Council regulation (EEC) 834/2007⁶ has been agreed in June 2007, and is to come into force in January 2009.

“According to the preamble, the main aims of the revised regulation are to ensure fair competition, a proper functioning of the internal market, and to maintain and justifying consumer confidence in products labelled as organic. This should provide conditions under which this sector can progress in line with production and market developments (CEU, 2006). The new rules set out a complete set of objectives, principles and basic rules for organic production, and include a new permanent import regime and a more consistent control regime. The use of the EU organic logo will be mandatory, but it can be accompanied by national or private logos. The place where the products were farmed has to be indicated to inform consumers. Food will only be able to carry an organic logo if at least 95 percent of the ingredients are organic. But non-organic products will be entitled to indicate organic ingredients on the ingredients list only (Europa Press release IP/07/807)”.

The consortium of project EEC 2092/91 (Organic) Revision has made contributions to inform the negotiation process on several issues, such as the integration of objectives and principles based on values and on criteria for the approval of feed ingredients. The final consolidated recommendations are included at the end of this report.

⁴ EC COM (2004) 415 final. European Action Plan for Organic Food and Farming. [Communication from the Commission \[COM\(2004\) 415 final\]](#). Brussels, Commission of the European Communities.

⁵ EC (2005) Proposal for a Council Regulation on organic production and labelling of organic products. 63847_EN final. Commission of the European Communities.

⁶ Council Regulation (EC) No 834/2007 of 28 June 2007 on organic production and labelling of organic products and repealing Regulation (EEC) No 2092/91." [Official Journal of the European Union L 189\(20.7.2007\): 1-23.](#)



Figure 1-1 Project logo

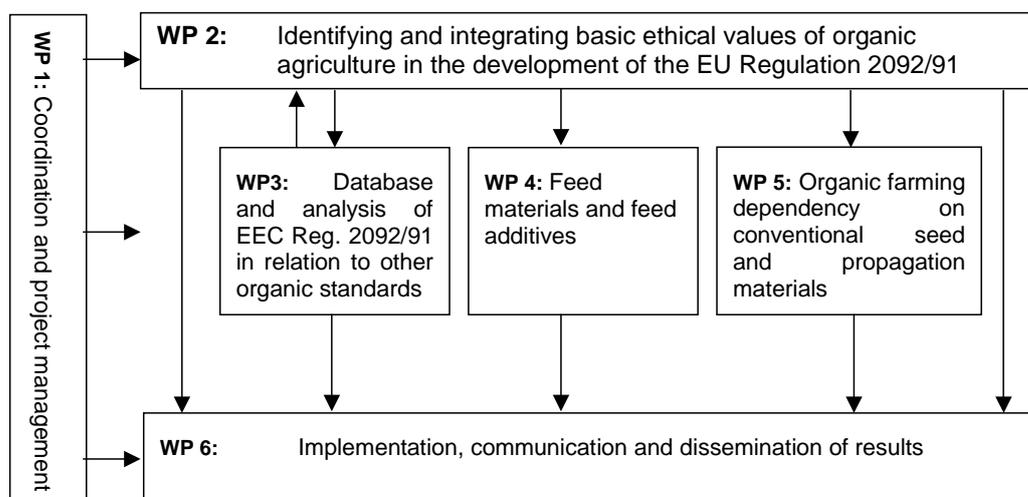
1.1 The objectives of EEC 2092/91 (Organic) Revision

The overall objective of the project EEC 2092/91 (Organic) Revision was to provide recommendations for the revision and further development of the Regulation (EEC) 2092/91 and other standards for organic agriculture.

Specific objectives were:

- to identify the basic ethical values and value differences of organic agriculture in Europe and develop a procedure for balancing and integrating the basic values in developments of EU regulation (WP2);
- to compare the organic standards from national and private organisations in Europe with the EU regulation in order to give recommendations on further harmonisation of the EU regulation (WP3);
- to provide more knowledge on how to achieve 100 % organic rations in diets for livestock (WP4);
- to provide more knowledge on how to reduce the use of seed and vegetative propagation materials from conventional sources in organic farming (WP5);
- to discuss and disseminate project results with stakeholders (WP6).

1.2 Project structure



The Project work was structured in six work packages (WPs) (see Figure 1-2

Figure 1-2 Pert Diagram of work packages (WPs) and connection

1.3 Partner organisations and responsibilities

Table 1-1 Project partner Organisations and team members

No.	Acronym	Organisation	Country	Team members
1	DARCOF / (DIAS) AU.DJF	Danish Research Centre for Organic Farming / (Danish Institute of Agricultural Sciences) University of Aarhus, Faculty of Agricultural Sciences	Denmark	Erik Steen Kristensen Lizzie Melby Jespersen Claus Bo Andreasen Hugo Fjelsted Alroe Jens Grønbech Hansen José Fernandez Sigurd Boisen Grethe Hansen Britta Breinbjerg Andersen
2	FIBL	Research Institute of Organic Agriculture	Switzerland	Otto Schmid Beate Huber Hansjakob Schaerrer Andreas Thommen Katia Ziegler Juern Sanders Christine Arncken Karutz Rahel Kilchsperger Rosmarie Belser Antonella Bondini
3	UWA	University of Wales, Aberystwyth	UK	Susanne Padel Joan Gilbert (Dean) Steve Lowman Philipa Nicholas Nic Lampkin
4	AIAB	Associazione Italiana Agricoltura Biologica	Italy	Christina Micheloni Raffaella Roviglioni Enrico Erba Vicenzo Vizoli Alessandro Triantafyllidis Alessia Cannavacioli Roberta Bernardini
5	IFOAM EU Group	International Federation of Organic Agricultural Movements EU Regional Group	Europe	Victor Gonzalves Marco Schlüter Francis Blake
6	LBI	Louis Bolk Institute	The Netherlands	Jan de Wit Henk Verhoog Jos Langhout Ton Baars Edit Lammerts van Bueren
7	UNKA	University of Kassel	Germany	Albert Sundrum Kerstin Schneider Uwe Richter Charlotte Marien Andreas Haja Mick Locke Jana Wagner Anna Katharina Koch
8	(BAL) HBLFA	(Bundesanstalt für alpenländische Landwirtschaft) Höhere Bundeslehr- und Forschungsanstalt für Landwirtschaft Raumberg-Gumpenstein	Austria	Gerhard Plakholm Elisabeth Fromm Thomas Lindenthal
9	ULUND	University of Lund	Sweden	Helena Röcklingsberg

Each work package except WP1 had a work package (WP) manager and a co-manager (see Table 1-2). These had been chosen on the basis of their expertise in the particular field, regional considerations and gender considerations to give the best possible team. The WP managers in close cooperation with the co-managers and the coordinator were responsible for the coordination of the work carried out in their respective WPs.

Table 1-2 Work package managers and co-managers

WP	WP-manager	Country	WP Co-manager	Country
1	Erik Steen Kristensen / Lizzie Melby Jespersen, DARCOF (scientific coordinator)	DK	Lizzie Melby Jespersen, DARCOF (administrative coordinator)	DK
2	Hugo Fjelsted Alrøe, DARCOF / Susanne Padel, UWA	DK	Ton Baars / Jan de Wit, LBI	NL
3	Otto Schmid, FiBL	CH	Cristina Micheloni, AIAB	IT
4	Albert Sundrum, UNKA	DE	Susanne Padel, UWA	UK
5	Cristina Micheloni, AIAB	IT	Gerhard Plakolm, BAL	AT
6	Claus Bo Andreasen, DARCOF	DK	Otto Schmid, FiBL	CH

1.4 Project outcome

The project produced 12 reports, 7 scientific publications in peer-reviewed journals (see Table 1-3), and a project web-page at www.organic-revision.org where all reports are available.

The project organised 3 workshops with stakeholders and had ongoing communication with the Unit on Organic Farming in DG Agriculture, which is responsible for the Organic Regulation.

Members of the team produced in total more than 250 dissemination items in the form of book chapters, scientific conference papers published in the proceedings, workshop presentations, posters and papers, articles in magazines and newsletters and direct E-mail communications both national languages and in English (See Appendix 1 to Scientific Project Report).

Table 1-3 Project reports and publications

Del. no.	Project reports	Lead author	Available at
2.1	Focus groups of value concepts of organic producers and other stakeholders	Susanne Padel, UWA	http://orgprints.org/6524/ www.organic-revision.org
2.3	Balancing and integrating basic values in the development of organic regulations and standards: proposal for a procedure using case studies of conflicting areas	Susanne Padel, UWA	http://orgprints.org/10940/ www.organic-revision.org
3.1	Public organic standards database on the internet with information on differences in relation to EEC2092/91 from min. 15 European organic standards	Otto Schmid, FiBL	www.organicrules.org
3.2	Report on the comparison of the EEC Reg. 2092/91 and selected national and international organic standards as regards compliance and identification of specific areas where harmonisation, regionalisation or simplification may be implemented in EEC 2092/91	Otto Schmid, FiBL	www.organic-revision.org once approved
4.1 (1)	Possibilities and limitations of protein supply in organic poultry and pig production	Albert Sundrum, UNKA	http://orgprints.org/10983/ www.organic-revision.org
4.1 (2)	Overview of supply and demand for concentrated organic feed in the EU in 2002 and 2003 with a particular focus on protein sources for mono-gastric animals	Susanne Padel, UWA	http://orgprints.org/8854/ www.organic-revision.org
4.2	Evaluation criteria for including feed materials in Annex II C and dietary supplements in Annex II D of the EC-Regulation 2092/91	Albert Sundrum, UNKA	http://orgprints.org/10074/ www.organic-revision.org
4.3	Guidance notes to operators including recommendations in relation to nutrient supply, a listing of possible feed components and examples of least cost rations for pigs and poultry.	Pip Nicholas, UWA	www.organic-revision.org once approved
5.1	Report on seed borne diseases in organic seed and propagation material	Christina Micheloni, AIAB	http://orgprints.org/10937/ www.organic-revision.org
5.2	Report on the importance of quality characterising in organic seed and propagation material	Christina Micheloni, AIAB	http://orgprints.org/11032/ www.organic-revision.org
5.3	Report on criteria list and evaluation guide for derogation regime	Andreas Thommen, FiBL	http://orgprints.org/10938/ www.organic-revision.org
6.3	Report on the second stakeholder workshop of the Organic Revision Project	Susanne Padel, UWA	www.organic-revision.org

Table 1-3 Project reports and publications continued

Scientific papers	Journal
Röcklinsberg, H (2005): Consent and Consensus in policies related to food - five core values	<i>Journal of Agricultural and Environmental Ethics</i> 19 (3): 285-299.
de Wit, J and Verhoog, H (2007) Organic values and the conventionalisation of organic agriculture	<i>NJAS Wageningen Journal of Life Sciences</i> 54 (4): 449-462
Alrøe, H F and Noe, E (2008 forthcoming) What makes organic agriculture move - protest, meaning or market? A poly-ocular approach to the dynamics and governance of organic agriculture	<i>IJARGE 7 (1) Special issue on "Continuity and change in organic farming – philosophy, practice and policy. Available at http://orgprints.org/8084/</i>
Padel, S (2008 forthcoming) Values of organic producers converting at different times: Results of a focus group study in five European countries	<i>IJARGE 7 (1) Special issue on "Continuity and change in organic farming – philosophy, practice and policy available at http://orgprints.org/9258/</i>
Padel, S., Röcklinsberg, H and Schmid, O (2008 forthcoming) The implementation of organic principles and values in the European Regulation for organic food	<i>Accepted by Food Policy. Special issue</i>
Noe, E, H F Alrøe and A M S Langvad (forthcoming): A poly ocular framework for research in multifunctional farming and rural development.	<i>Paper accepted by Sociologia Ruralis</i>
Kjeldsen, C and HF Alrøe (2007) Embeddedness of organic food networks. Draft paper..	<i>To be submitted for the scientific journal, "Progress in Human Geography" in 2007</i>

1.5 Structure of this report

This report summarises the findings of the project that have been presented in a number of separate reports and publications. In the Chapters 2 to 5 the approach, results and conclusions of the project are summarised, following the structure of the different work packages. Chapter 2 summarises the work on ethical values of organic agriculture. Chapter 3 looks at the differences in the implementation of Regulation (EEC) 2092/91 across Europe and compares the European Regulation with international standards. Chapters 4 and 5 summarise the findings that relate to reducing the dependency on non-organic inputs in the case of feed and seed.

The final Chapter 6 consolidates the recommendations of the whole project arising from the various different work packages in one place. Recommendations are aimed in particular at the second stage of the ongoing revision process of the European Regulation, the transfer of the detailed rules from the Annexes of the Regulation (EEC) 2092/91 that is expected to start after the completion of the project. Further recommendations for standard setting bodies, regulators and research recommendations are also presented.

2 Identifying core ethical values of organic agriculture and developing a procedure for integrating them into the regulation (WP2)

2.1 Approach

The specific objectives of this work were to:

- identify the basic ethical values and value differences in organic farming (D 2.1) and submit two scientific papers for publication (D 2.2), and
- develop a procedure for balancing and integrating these basic values in standards leading to recommendations for the further development of the Regulation (EEC) 2092/91 (D2.3).

Ethical values of organic farming were identified in a number of ways (see D 2.3 by Padel et al., 2007). Two members of the EEC 2092/91 (Organic) Revision Project team participated in a process in co-ordination with IFOAM (International Federation of Organic Agriculture Movements) of formulating Principles of Organic Agriculture. The process involved a comprehensive gathering of available sources and several rounds of stakeholder and expert consultations. The process has also resulted in a number of publications (e.g. Alroe et al., 2006). A set of four 'Principles of Organic Agriculture (in short POA)' were proposed and accepted by a large majority at the general assembly of the world-wide members of IFOAM at the IFOAM General Assembly in Adelaide, Australia in September 2005 (IFOAM, 2005). For further analysis, the content of each of these four principles of Health, Ecology, Fairness and Care was broken down into value elements based on the detailed explanations given for each of them. These were contrasted with publications identifying ethical values and principles of organic farming, with the Regulation (EEC) 2092/91 (EC, 1991), and with the proposal for a total revision.

A focus group study comprising 16 groups with organic producers and 10 groups with other stakeholders was carried out in five EU countries (AT, CH, IT, NL, UK) aimed to identify the range of values associated with organic farming and important basic values (see D 2.1 by Padel, 2005a). The analysis used a codebook based on value elements identified in the IFOAM consultation process. The results were compared with a similar study of consumers of the OMIARD project (QLK5-2000-01124) (Zanoli, 2004).

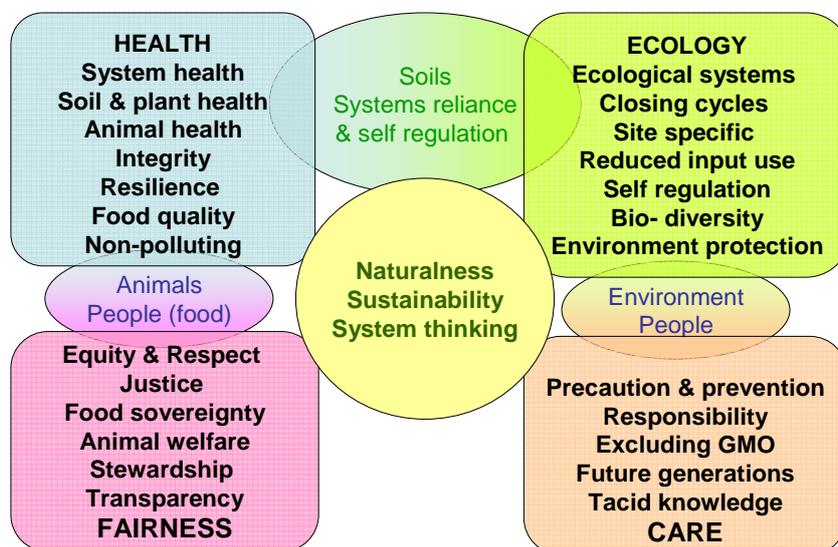
Three case studies were carried out comparing ethical values with current practice of organic farming in three contested areas of 'intensity', '(in)-dependency from non-organic inputs' and 'localness'. A report building on procedural ethics and experience with ethical dialogue in other areas outlined the implications of the aim of integrating basic organic values in organic standards and regulations in relation to decision-making (D 2.3 by Padel et al., 2007).

2.2 Core values of organic agriculture

The collaborative process with IFOAM resulted in four Principles of Organic Agriculture (POA): the principles of Health, Ecology, Fairness and Care. The principle of health states that organic agriculture should sustain and enhance the health of soil,

plant, animal, human and planet as one and indivisible. The principle of Ecology places organic agriculture in close living ecological systems and cycles, and establishes an obligation to work with them, emulate them and help sustain them. The Principle of Fairness states that organic agriculture should build on relationships that ensure fairness with regard to the common environment and life opportunities. The principle of Care sets out a precautionary principle for organic agriculture and places responsibility on the operators to protect the health and well-being of current and future generations and the environment.

These four principles of organic agriculture are ethical principles and represent a vision to improve agriculture in a global context. However, this is not the same as legal principles. The four principles together act as a whole and each principle also contains a set of explanations in which a range of value elements are referred to. Even if they do not necessarily use the same terms, they also refer to three integrative values that are frequently mentioned in the organic farming literature, namely sustainability, naturalness and systems thinking (see Figure 2-1).



Source: Padel et al. (2007)

Figure 2-1 Value elements of the IFOAM principles of organic agriculture

In identifying ethical values, it is important to distinguish between empirical (descriptive) and normative publications. The descriptive approach is directed at the discovery of differences (value pluralism) and uses a broad understanding of 'value'-similar to a 'motive' as a basic conviction relating to emotions and leading to certain behaviour. The normative approach is comparable to deontological ethics, in which certain core values or principles are formulated to assure respect for a range of fundamental values or virtues (for example respect for others). Such ethical principles can function both as a source of inspiration and as setting boundaries to certain activities (Padel et al. 2007). Since 2000, there have been a number of other publications identifying the core value base and the principles of organic farming. A comparison of these publications with the value elements covered in each of the four IFOAM principles including the integrative values of sustainability, naturalness and a systems approach shows that the values they are based on are shared by most authors.

2.3 Values important to organic producers

The focus group study showed that values of food quality, environmental protection, limited use of resources, and health were considered as important by the producers in all countries (see Table 2-1).

Table 2-1: Values important to organic and converting producers in five EU countries compared with the IFOAM principles^(a)

	AT	CH	UK	IT	NL ^(b)	IFOAM principle ^(e)
Food quality	1	X	3	X	X	Health
Environmental protection	3	X	3	X	X	Ecology
Limiting resource use	X	X	X	X	X	Ecology
Health	1	2	1	X	X	Health
Sustainability	X	1 ^(c)	2		X	Integrative
Closed production cycles	X	X	X		X	Ecology
Independence	2	X	X		X	
Respect for/farming with nature	X	3			X	Integrative
Alternative model/ Education	X ^(d)		X ^(d)	X		Care
Professional challenge, ~pride			X	X ^(d)	X	
Fairness in the food chain	X	X			X	Fairness
Systems approach		X	X		X	Integrative
Regional production	X		X		X	(Ecology) <i>site specific</i>
Animal welfare		X ^(d)	X ^(d)	X ^(d)	X	Fairness
Global fairness	X				X	Fairness
Social networks/ wellbeing	X	X ^(d)	X			Fairness
Avoiding residues/ non-polluting		X	X			Health
Farm diversity	X		X			(Ecology) <i>bio-diversity</i>
Family farm/ Future generation	X ^(d)	3 ^(d)				(Care) <i>future generations</i>
Quality of life on the farm	X					Fairness
Trust			X			(Fairness) <i>transparency</i>
Authenticity / freshness and taste			X ^(d)	X ^(d)		
Integrity			X			Health
Rural employment		X ^(d)				(Fairness)

- (a) The 3 most important values as voted by the participants of the focus groups are marked 1-3, other values of importance are marked by X.
 (b) In NL participants sorted values in clusters but did not vote on importance
 (c) In CH discussions focussed on ecological sustainability
 (d) Values found more important in groups with converting producers
 (e) Where the principle name is included in brackets, only the certain value elements stated was mentioned

Source: Padel (2008 in press) and Padel et al (2007)

Sustainability, closed production cycles and independence were important in four countries AT, CH, UK, NL). Fairness and related values were also important to many producers. They were concerned about the future viability of organic agriculture. The

financial disadvantage of organic production, because the conventional agriculture fails to account for its externalities was illustrated with many examples, such as the costs of greater diversity, of crop rotations in the greenhouse or of improved animal welfare. The downward trend for organic prices in larger trading structures and globalised markets was experienced as a threat that may prevent organic producers from realising values that are important to them.

There were few examples of differences between the importance attributed to values by the recently converted and the established organic producers. The value of organic farming as an alternative model for agriculture and its importance for education (AT, UK), animal welfare (CH, UK), job satisfaction (IT) and rural employment (CH) were more important to recently converted than established producers. The only values more important to established organic producers were closed production cycles or self-sufficiency in terms of resource use. The results did not support the widely expressed view that new entrants into organic farming are largely financially motivated and do not engage with the values of organic agriculture. Financial values were mentioned in many focus groups, both by experienced and converting organic producers.

The discussions of the values were intensive in all focus groups, irrespective of which type of producers participated. However, established producers in countries with a long organic farming history seemed to know more about “organic farming” theory and principles than the new entrants, e.g. had knowledge of the concept of closing of production cycles or ecosystems health. It is a challenge to the organic food and farming sector to ensure that all new entrants have the opportunity to learn about the wider values and principles. However, this may be difficult to achieve, particularly after periods of very rapid growth in organic agriculture.

A comparison of the values important to the stakeholders with the IFOAM principles shows considerable overlap, but some values important to European stakeholders are not covered at the same level of detail in the principles (Table 2-1). These include farm diversity, the family farm that should be passed to future generations and issues of regional production and of trust, and animal welfare and health. Independence and professional pride appeared to be values that are specific to producers and are not represented in the principles.

2.4 Comparison of core values of organic farming with Regulation (EEC) 2092/91 and with organic production practice

The comparison of core values of organic farming with the Regulation (EEC) 2092/91 shows that several important values of the principles of organic agriculture are not covered by the regulation. The regulation refers to value elements related to the IFOAM ethical principles of Ecology and Health in the preamble, in Article 6 and in Annex I (A & B). By mentioning fair competition, transparency and excluding GMOs, reference is also made to value elements of the Fairness and Care Principles, but there is no reference to the agro-ecological systems approach and to the social values.

Whether this lack of references to certain organic values in the Regulation (EEC) 2092/91 is reflected in the current practise of organic farming in Europe was evaluated in the project through analysis of the contested case study areas of ‘intensification’, ‘dependency on non-organic inputs’ and ‘localness’.

Intensification of farms is characterized by higher use of production factors, in particular external inputs and resources. Organic standards and regulations distinguish between inputs from other organic or from conventional (non-organic) sources. Farm specialisation is an indirect indicator of intensification because it does not provide direct evidence of a reliance on external inputs, but specialised systems are more likely to require them. Specialisation can also be influenced by other factors, such as location and personal skills and goals. In a cross national survey of 550 organic farms in the EU-CEE-OFP (QLK5-2-002-00917) project in 11 EU member states only 16% of the farmers classified their farms as mixed in the sense of deriving their main income from several enterprise categories. The majority of farms were specialised, i.e. derived their income from mainly one category of enterprises of grazing livestock (50%), arable (20%), permanent crops (7%), horticulture (3%) and intensive livestock (3%) (Nieberg et al., 2005).

A further indirect indicator of intensification is the concentration of livestock farming. Uptake of organic farming has been higher among livestock producers. Organic livestock production in the EU is mainly concentrated in Austria, France, Germany, Italy, Sweden, Spain and in the UK (EC, 2005). The UK and the Netherlands experience problems with the supply of organic feed because of imbalances between the organic cropping and livestock sector.

Livestock and crop production within a country are also not necessarily evenly distributed. For example in Denmark organic animal production is concentrated on the mainland, while crop production is mainly on the islands, resulting in a high 'dependency on non-organic input' of organic farms (e.g. straw and manure) because of the distance between the regions (Kyed et al., 2006). Organic arable production in the Netherlands also relies on N input from non-organic sources for up to 75% of the total N used (Prins, 2005). The limit of 170 kg N/ha/year in (EEC) 2092/91 refers only to livestock manures and not to other fertilisers.

Many pig and poultry producers in the Netherlands rely to a high degree on external feed inputs from organic as well as non-organic sources (Prins, 2005, de Wit and Verhoog, 2007). This results in an imbalance of the nutrient supply to their fields, and the nutrient concentration in the range particularly close to the stables is considered an environmental problem (Aarink et al., 2005). Therefore, the organic pig production in the Netherlands in its current form cannot be considered as land based or sustainable (Rivera-Ferre, 2006). The reliance on external feed also implies energy use for feed transport (Bos, 2006). Besides, large flock sizes could have a negative impact on welfare by reducing the time available for individual animal care. This would be particularly problematic in organic poultry production, where preventive use of medicines and (partial) beak trimming to prevent feather picking and cannibalism are not allowed (de Wit and Verhoog, 2007).

This very limited evaluation shows that there is a need to distinguish between the dependency on non-organic inputs and input intensification, which arise from use of mainly organic inputs. Standards have restricted the use of many non-organic inputs. For example, in the Regulation (EEC) 2092/91 a stepwise reduction of non-organic feeds aiming to achieve 100% organic rations in 2011 that was introduced in 2005. They have focused less on restricting the use of organic inputs, and the use of other non-organic inputs such as conventional manure, straw and fertiliser remains permitted. The use of organic inputs is indirectly regulated by input costs as organic inputs are generally more expensive than non-organic ones, but this does not function effectively, where derogations for use of conventional inputs are allowed. The underpinning organic core values of self-reliance and closing production cycles are difficult to codify, audit and regulate (Lockie et al., 2006).

The final case study examined 'localness'. It showed that realising greater localness would require substantial changes to production and consumption patterns, and in the behaviour of all actors. Nevertheless, distance and availability are closely related and 'localness' is an important organic value element and a perspective for future development which deserves further investigation.

2.5 Procedural issues of integrating values

The organic agriculture movement is by tradition value based: values are at the very core and influence both the thinking (theory) and the action (practice), but there is no shared single understanding of how to realise the core values in practice. Like all values they are *per se* ambiguous and require interpretation.

The value base of organic farming does not only extend to the way food is produced but also to the way decisions on organic standards are taken. The organic movement has a tradition of dealing with different value interpretations in a constructive manner: fairness, respect and participation are considered important.

The project therefore also considered procedural issues in relation to integrating basic organic values in standards and in particular in the revision of the Regulation (EEC) 2092/91 on organic production in relation to:

- general rules for decision-making,
- a normative reconstruction of the value base in the specific structure of the regulation (or standard), and
- developing the detailed implementing rules (the Annexes of the EU regulation) that require further interpretation of the value base.

All three are important in relation to the ongoing revision process of the EU Regulation and have relevance to the private sector.

General rules for decision-making

It is important to find a model for decision-making that is coherent with the traditions of organic agriculture i.e. aiming at broad participation, respect and democracy. Deliberative democracy or discourse ethics is relevant because it presents certain procedural rules for a democratic process in order to arrive at an ethically justified decision, rather than following certain ethical principles (Benhabib, 1996, Habermas, 1983, Habermas, 1991, Gutmann and Thompson, 1996) and could be applied to value harmonisation as well as integration into rules and regulations.

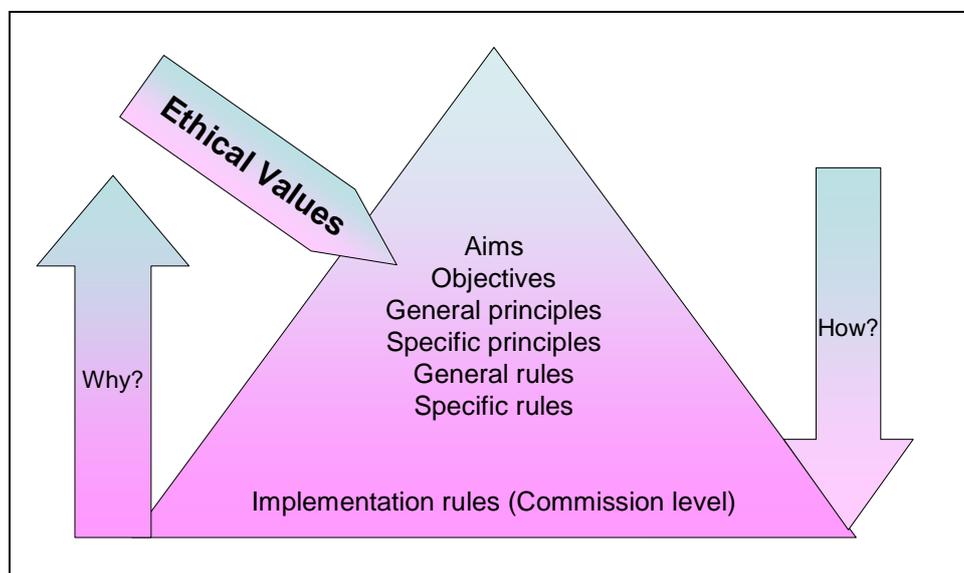
Röcklinsberg (2006) suggested five important elements of ethical dialogues in a participative and deliberative democratic process: 1) equal respect for each discussion partner, 2) respect for arguments and emotions, 3) context sensitivity, 4) developing a common understanding, and 5) relating theory (values) to practice. In addition, core values of organic agriculture should be considered in order to mirror essential organic perspectives.

This model implies that it is necessary to communicate more widely concerning the principles of organic agriculture and to develop a common understanding by reflecting more widely how the differences in conditions and in practices of organic farming across Europe interact with shared principles. Organic stakeholders' experience and expertise is necessary to relate values to practice, and to evaluate the feasibility of any proposed new rule.

Normative reconstruction of the value base in the structure of the regulation

Ethical values will function most effectively in regulations, if they are stated in one place where they can easily be identified. This is largely realised in the text of the new Council Regulation (EC) 834/2007, where most values are mentioned in the Articles 1-7 (Objectives and Principles), but there is a need for interpretation as to how these core values are to act in the structure of the regulation.

Regulation (EC) 834/2007 has a hierarchical structure, where aims, objectives and general principles and specific principles provide the basis for rules and for all other decisions on a more detailed level (see Figure 2-2). A deliberative procedure would offer important tools for a normative reconstruction to determine at which level a certain value element is important. Involving affected stakeholders could improve the coherence of the integration of core values in the regulation and contribute to context sensitivity and to coherence between theory/values and practice.



Source: Padel et al. (2007)

Figure 2-2 The pyramid structure of Regulation (EC) 834/2007

Procedure for developing the detailed implementing rules

The present decision-making structure in relation to the adoption of European Council Regulations related to Agriculture (like (EC) 834/2007) involves the European Commission and the Council of Ministers (of the Member States). Furthermore the opinion of the European Parliament has to be heard. Decisions on the implementing rules of Regulation (EC) 834/2007 (based on the Annexes of (EEC) 2092/91) are taken by the Commission assisted by a regulatory committee (Article 34). This will be similar to the Standing Committee on Organic Farming (SCOF under Article 14 of Regulation 2092/91) consisting of the national experts of the national ministries. The Commission can also seek the advice of an Advisory Group on Organic Farming. The current decision-making structure lacks transparency and participation from stakeholders such as organic organisations.

The decision-making structure should facilitate a coherent interpretation of the objectives and principles for the development of the implementing rules. Apart from the procedural traits mentioned here, the report by Padel et al. (2007) recommends

that the Commission should consult affected stakeholders and involve the Expert Panel mentioned in the European Action Plan for Organic Food and Farming⁷ in the development of the implementing rules. This could help identifying potential value conflicts before the rules become law. One of the tasks of such an expert panel should be to consider the coherence in the interpretation of the objectives and principles.

2.6 Conclusions

The specific objective of identifying the basic ethical values and value differences of organic agriculture in Europe and develop a procedure how these can be integrated into regulations and standards were achieved. The core values of organic agriculture were identified from the literature (included in D 2.3) and through stakeholder consultation (D 2.1) and a report setting out a procedure and recommendations was produced (D 2.3).

Basic ethical values of organic agriculture

Organic farming is an ethical value based system and the value-driven nature is one of the defining characteristics of this approach to agriculture. Organic standards and regulations implement the ethical values: the producer promises follow the practises based on values that are set out in an organic standard or regulation, and the consumer receives a guarantee on what they can expect from an organic product. This process is mediated by the certification bodies, many of which are private organisations.

Various organic stakeholders have value expectations that are not necessarily identical (Alrøe and Noe, 2008) but some common ethical core values can be identified. There is concern that some of these core ethical values of organic farming are forgotten with the increasing competition in a growing, global and more anonymous market, because they are not covered by the governmental standards that follow the Regulation (EEC) 2092/91.

Harmonisation of the rules in regulations should be based on harmonisation of the ethical values behind the rules and on developing of a common interpretation of the core value basis. Referring to an ethical value base accepted by the stakeholders is likely to increase the acceptance of the EU Regulation on organic production, strengthen consumer confidence, assist in the implementation of flexibility and provide room for self-regulation in the organic sector.

The core value base of organic agriculture can be described by referring to four IFOAM Principles of Organic Agriculture (POA) of Health, Ecology, Fairness and Care. The POA are well founded in the literature, and there is much common ground between them and the values of stakeholders. The POA also have been accepted by the organic movement organisations that are members of IFOAM.

The four Principles of Organic Agriculture of Health, Ecology, Fairness and Care act together, and encompass the integrative values sustainability, naturalness and systems thinking. For further analysis and comparison with standards and regulations it is helpful to refer to the value elements that contribute to each principle (see Figure 2-1).

⁷ EC COM (2004) Action 11 of the European Action Plan for Organic Food and Farming. Communication from the Commission [COM(2004) 415 final]. Commission of the European Communities. Brussels.

Under the current European Regulation (EEC) 2092/91 with the available derogations, it is possible for organic producers to rely largely on external inputs. Arable and horticultural holdings rely on non-organic (conventional) fertiliser input, pig and poultry producers rely on both organic and conventional feed materials. Both practises contradict some of the agro-ecological systems approach, aiming for closed cycles (i.e. greater resource use self sufficiency), land-related animal production, as well as environmental protection, food quality and animal health and welfare. The current regulation with its derogations does not strengthen the functional integrity of organic farming systems, which is closely related to distance.

A comparison of regulatory definitions (including the Regulation (EEC) 2092/91) with the organic core values shows that most regulations refer to elements of the IFOAM Principles of Health and Ecology, whereas Fairness and Care are less well represented (see also Section 3.2). Most standards and certification systems do not consider the whole value base, some organic core values (in particular the ecological systems approach and social values) are less widely implemented because they are more difficult to codify and audit. This does, however, not imply that they are less important to the organic sector. In particular, social values are central to the self-understanding and mirror the ideals of organic farming as contributing to a more sustainable, healthy and fair world that cares for its inhabitants.

In the process of revision of the Regulation (EEC) 2092/91 the European Unions has considered the core values of organic agriculture (as described in the POA). The newly adopted Regulation (EC) 834/2007 on organic production and labelling published in July 2007 will come into force in January 2009. This regulation makes reference to value elements of all four principles of Health, Ecology, Fairness and Care, but for some it is less far reaching than the POA.

The objectives and principles in the new regulation reflect better the 'movements' own value consensus in most areas, with the one exception of social values. Taking the values expressed in the objectives and principles of the new Regulation seriously implies that these are explicated in the detailed production rules (or Annexes) that remain to be revised.

It is the stated intention of the European Commission to transfer the technical content of the Annexes of Regulation (EEC) 2092/91 largely unchanged into the new framework. This intention could lead to contradictions between the objectives and principles of the new regulation and the implementing rules. The text of the new European Council Regulation (EC) 834/2007 refers to several values that would provide the basis for working towards balanced agro-ecological systems and for limiting the input intensification of organic farming in Europe, such as:

Recital (11): *Organic farming should primarily rely on renewable resources within locally organised agricultural systems. In order to minimise the use of non-renewable resources, wastes and by-products of plant and animal origin should be recycled to return nutrients to the land.*

Article 4: *Organic production shall be based on the following principles: a) the appropriate design and management of biological processes based on ecological systems using natural resources which are internal to the system [and] b) the restriction of the use of external inputs.*

It is likely that limiting the use of external inputs and strengthening the systems approach would contribute to greater harmonisation between the value expectations of various stakeholders and the guarantee systems based on the Regulation, national rules and standards, and the inspection system. This would address many concerns expressed in the 'conventionalisation' hypothesis and by the organic sector.

There is limited experience within the organic sector in setting standards for some of the social values, such as fairness, equity and responsibility. The private sector could have an important role as a forerunner in developing standards on how these values can be codified and audited before they are taken up by the national and international authorities. A summary of recommendation arising from this work is included in Sections 6.1 to 6.3.

Procedural issues in relation to the integration of ethical values in organic standards and regulations

Including ethical values in the context of a regulation implies to consider procedural issues, because there is no single unambiguous interpretation for many of the organic core values, which makes the implementation of certain core values at various levels difficult.

When ethical values are integrated in the context of both private standards and governmental regulations, greatest possible openness should be adopted. The interpretation of values requires the transition from a theoretical statement to specific rules for practical action. Changes to the rules have impact on many stakeholders.

The ongoing revision of the regulation of organic production in Europe has the aim of improving the transparency by including principles on organic agriculture in the regulation, as well as to reduce bureaucracy, and to maintain and enhance the integrity of organic food. The pyramid structure of the new Regulation (EC) 834/2007 mirrors an 'organic perspective' in so far, as in both cases values and principles are the point of departure for all other decisions on a more detailed level by making broad values operational for relevant sections of the rules.

Some core ethical values of organic agriculture have been expressed as objectives and principles at the top of the pyramid structure of the new regulation. It is necessary to develop coherent interpretation for each of the core values for the more detailed rules, and to develop decision-making structures that safeguard such a coherent interpretation. This corresponds with procedural ethics, stressing the importance of the process (the ideal procedure) to arrive at a 'morally' right answer as well as moral values.

Stakeholders should be involved and their feedback should be considered in the setting of standards to improve the acceptance of a harmonised value basis. There is a need to strengthen the consultation and participation of representative stakeholders in the decision-making concerning the (EC) 834/2007 and the implementing rules which are to be drafted before 2009, when it enters into force.

The model of participative and deliberative democracy is suited to processes of the interpretation of ethical values and should be adopted when formulating standards. Many decision-making procedures in relation to standard setting in the organic movement already follow a participative and deliberative model of democracy. From the very beginning, both content and the form of discussion are taken into consideration. Five elements are particularly important in participative and deliberative democracy processes:

- respect for the discussion partners,
- respect for arguments and emotions,
- context sensitivity,
- a common understanding, and
- relating the theory (values) to practice (Röcklinsberg, 2006).

To achieve context sensitivity and develop a common understanding all stakeholders should at first be given equal opportunity to state their value basis separately.

It is necessary to communicate widely about the shared value base of organic agriculture and about how differences in practices of organic farmers across Europe (for example in relation to input use) relate to certain core values, so that theory and practice can be related to each other in a judgement of a suggested regulation, i.e. in the interpretation of the ethical values and rules in a certain situation.

Such a deliberative decision-making model is particularly suited in handling potential conflicts between ethical core values, for example between animal welfare and the environment, to allow regional flexibility and to determine the details of the rules. Conflicts can occur at different levels, the value level (i.e. interpretation or definitions, formulated aims, objectives and principles), the implementation level, or a disagreement with a certain part of regulation. To resolve such conflicts it is necessary to determine at what level the value conflicts occur, and which value(s) are affected. In the next stage the explicit and implicit consequences of implementing a certain interpretation of a value should be identified. A summary of recommendation arising from this work is included in Section 6.1.

3 Differences in implementation of Regulation (EEC) 2092/91 (WP3)

3.1 Approach

Specific objectives of this work were:

- to develop a web-based database of differences in organic standards in relation to Regulation (EEC) 2092/91 that can be used by stakeholders and policy makers, and that can be kept updated by the different Member States and inspection bodies (D 3.1).
- to analyse whether the selected organic standards comply with the EU regulation in the area of general provisions and crop production, and for which requirements the standards set higher levels of regulation on animal production and to identify specific areas in the standards where revisions in terms of harmonisation, regionalisation or simplification may be implemented in Regulation (EEC) 2092/91 and national standards, taking into account the basic ethical values (D 3.2).

A database was developed for the analysis of differences between various standards and Regulation (EEC) 2092/91 in close collaboration with the Commission, building on experiences with the existing Organic E-prints self archiving database (<http://www.orgprints.org>) and software that is used by DARFCOF. The database is hosted by DARCOF and allows for decentralised web-based updating so that Member States and inspection bodies could take responsibility for the accuracy and updating of items relating to their standards.

Project partners and national standard experts were responsible to upload international and national regulations and standards plus the differences compared to the (EEC) 2092/91. The project partners covered AT, CH, DK, IT, NL and UK. National experts from the IFOAM EU group were recruited for covering of CZ, ES, FI, FR, NO, SE, SI and PL. FiBL further uploaded the following international standards: the Codex Alimentarius Guidelines, the IFOAM Basic Norms and Demeter International plus the Federal Rules of the USA (NOP National Organic Programme). In total, governmental and private standards from 14 European countries, the USA and 3 international world wide standards were entered into the database.

Each uploaded difference consisted of a brief summary of the requirements for the particular area, a description of the difference compared to the (EEC) 2092/91 and a justification for the difference. Each item could be linked to one or more of the 4 principles of organic farming. Implementation and inspection rules which are not available to the public could not be covered.

In the next step, the number of differences in each main area and compliance with the (EEC) 2092/91 was evaluated (Schmid et al., 2007). Based on the justifications for the differences, and other evidence in literature the potential impact on consumers, the risk of trade distortion and conflicts with the organic principles was analysed, and recommendations for harmonisation, simplification or regionalisation of specific area of the (EEC) 2092/91 were given. Harmonisation was defined as a process to amend one standard or a group of standards in order to achieve equivalence among them, based on agreed common principles. Simplification referred to the process of reducing the wording or approach in Regulation (EEC)

2092/91 and regionalisation referred to the need to consider specific constraints caused by geography, climate, tradition, agriculture structure or governmental regulations and incentives. The analysis also helped to identify ethically problematic areas that were considered as part of the case studies for balancing of the POA (see Section 2.4)

3.2 Differences between national public and private standards and the Regulation (EEC) 2092/91

The analysis of differences between the (EEC) 2092/91 and other international and national organic standards based on expert submissions covered 34 standards from 14 European countries and the USA. In total 714 difference were uploaded (Table 3-1) of which more than 85% were related to Annex I provisions (Rules on production), followed by approximately 10% in relation to Annex II (Permitted substances).

Because Regulation (EEC) 2092/91 is the legal framework for the EU, European national governmental and private standards setters have to follow these rules and cannot be less restrictive. Some national governmental standards, e.g. the Danish, French, and Swiss ones, contain additional requirements based on specific national legislation and policies or due to specific concerns of producers, processors, consumers or the general public. Many national private standards are more detailed than the EU Regulation or the national governmental standards. Many differences (>30) were found in standards from countries that have a long tradition of organic farming such as Austria, Germany, Sweden or the UK. Many standards also include areas not covered by the EU Regulation, such as wine production, aquaculture, care of the environment and non-food production and processing.

Table 3-1: Overview of database submissions (Date: 31st of December 2006)

A: EC Council Regulation No. 2092/91	714	B: Europe	619
Preamble and principles	5	Austria	46
Scope - Art.1-3	5	Czech Republic	29
Definitions - Art.4	1	Denmark	24
Labelling and claims - Art.5	20	Finland	24
Rules of production and preparation - Art.6	14	France	44
Requirements for inclusion of substances in Annex II - Art.7	-	Germany	135
Inspection and certification system - Art.8-9	1	Italy	12
Inspection schemes and general enforcement measures - Art.10	2	Norway	33
Import from third countries - Art.11	-	Poland	8
Free movement and administrative provisions - Art.12-16	3	Slovenia	11
Annex I. Principles of organic production and processing	619	Spain	12
Annex II. Permitted substances for the production of organic foods	69	Sweden	66
Annex III - Minimum inspection Requirements/precautionary measures	36	Switzerland	70
Annex IV. - Information to be notified		- Netherlands	26
Annex V. Labelling	2	UK	78
Annex VI. Processing	28		
Annex VII. Maximum numbers of animals per ha	15		
Annex VIII. Minimum livestock surface areas indoor and outdoors	22		

Table 3-2 Analysis of difference between Regulation (EEC) 2092/91 and private, national and international standards

Main Areas	Description	No (n=714)	Countries (n=17)	Main type*	Main justification
Main regulation					
Labelling (Art 5)	No 70%-95 category; non-food labelling	20	7	P	Consumer
Seeds and seedlings (Art. 6a)	Database, derogation system; no hybrids in cereals	12	3	P	Trade Ecology principle
<i>Annex I A (Crop production)</i>					
Fertilising (IA 2 & II B)	Intensity; Manure use; Crop rotation; Permitted inputs	72	11	P N	Ecology principle National legislation
Conversion of land (I A1)	Conversion periods; full farm conversion	37	11	P N	Consumer
Pest and disease control (I A3)	Restricted or forbidden substances; steam sterilisation	13	7	P N	Ecology principle National legislation
Collection of wild plants (I A4)	More detailed requirements	14	7	P I	Ecology principle
<i>Annex I B (Livestock production)</i>					
Housing and range (IB 8) (Annex VII)	Housing, outdoor access	76	12	P N	Animal health and welfare
Animal feeding (I B4)	Conventional feed; Roughage; Feed additives; Milk for offspring	70	12	P N	Precaution Ecology Animal welfare
Livestock husbandry (I B6)	Breeding, Physical operations; Tethering Transport and slaughter	58	10	P N I	Animal welfare
Conversion of animals (I B2)	Conversion periods Full farm conversion	40	11	P N	Credibility
Disease prevention and veterinary treatment (I B5)	Withholding period Restrictions treatment(antibiotics)	26	7	P N	Precaution
Origin of animals (I B3)	Origin of animals	15	6	P	Risk of BSE
Manure (IB7) (VII)	Limiting manure and nitrogen application	24 15	8	P	Ecology, closing nutrient cycles
<i>Annex VI Processing</i>					
Processing	Methods and additives	28	10	I, P, N	Care principle Precaution Consumer health
<i>Areas not covered by Regulation 2092/91</i>					
Greenhouse and perennials	Use of energy; soil coverage, origin of stakes	54	7	P	Ecology principle
Care of environment	Ecosystem management Soil and water conservation requirements Biodiversity and landscape	9 13 16	4 8 6	P P P	Ecology principle Ecology principle Ecology principle
Aquaculture	Contamination Specific standards	15 12	8 8	P, N P	Care principle Animal welfare

*P= private standard, I = International; N = National standard

Source: Schmid et al. (2007)

Of the 206 submissions relating to crop production, the highest number covered input use and crop rotation requirements (Table 3-2). The differences referred to fertilisation in general, to permitted fertilisers and soil conditioners and to substances for pest and disease control, as well as to conversion. Of the 294 submissions relating to livestock, most were related to animal housing, feeding, and livestock husbandry. Differences in relation to animal feed cover derogations for conventional feed, roughage requirements, feed additives and milk for offspring. The high number of differences related to livestock housing and husbandry conditions reflects the different structural and climatic conditions and traditions.

A relatively high number of differences in the area of crop production were also recorded in relation to rules for special cropping systems of greenhouses and perennials covering the use of energy, water conservation, soil coverage, and the origin of stakes.

Processing is also an area with a considerable number of differences, in particular relating to specific processing rules and processing inputs. 50 differences referred to protected cropping (greenhouses), 28 to environmental impact and 12 to aquaculture, areas, which are currently not regulated by the (EEC) 2092/91.

A high number of differences also occurred in relation to care of the environment, where recorded differences refer to protection of the environment and eco-systems management, soil and water conservation, bio-diversity and landscape conservation.

A considerable number of differences also relate to issues of conversion, both in relation to the periods required for conversion of land and animals and as concerns the requirement of whole farm conversion.

The differences in the database were related by the standards experts to one or more of the POA. Of the four principles of organic agriculture, most of the submissions were related to the principle of Health (382), with fewer submissions related to the principles of Ecology (269), Fairness (262) and Care (251). Only 4 submissions related to social standards and fair trade.

3.3 Conclusions

The objective to develop a standards database and to compare the organic standards from national governmental and private organisations in Europe with the Regulation (EEC) 2092/91 in order to give recommendations on further harmonisation, of the EU regulation were achieved.

Database development

A database setting out differences between the (EEC) 2092/91 and governmental and private-sector standards was developed. This is available on the internet under www.organicrules.org. 714 expert submissions covering 34 standards from 14 European countries, the USA and 3 international standards (Codex Alimentarius Guidelines, IFOAM Basic Norms and Demeter International) were uploaded.

The vast majority of differences (over 85%) were related to the provisions of Annex I of Regulation (EEC) 2091/91. The differences mainly refer to the interpretation of technical aspects at the implementation level rather than to different core values. There appears to be a general agreement on which of the core values of organic agriculture are addressed by the standards. The maintenance and adaptation of the www.organicrules.org database could serve as a tool for increasing the transparency concerning the granting of derogations by the national public and private standards

setters in particular in relation to the flexibility provisions as foreseen in Article 22 of the Council Regulation (EC) 834/2007.

Potential areas for harmonisation of provisions in Regulation (EEC) 2092/91

Regulation (EEC) 2092/91 is the statutory legal framework that member states have to implement. It explicitly allows differences only in relation to livestock production, where indeed a higher number of differences were found than for plant production.

The analysis has shown potential areas for harmonisation of the regulation of organic production at the EU level. Harmonisation of rules should focus on areas that show a high level of differences that are important to consumers, that could distort trade, and/or that could potentially conflict with the core organic values. Many of the national private standards and governmental regulations provide indications on how to handle and reduce derogations and how to set stricter rules, because the requirements have already been implemented successfully in them.

Many recorded differences relate to fertilisation and animal feeding (see Table 3-2) which should be considered for harmonisation. Harmonisation of provisions related to the use of inputs, such as fertilisers, manure and feed, should follow the overall aim of limiting intensification of organic production by the reliance on external (conventional) inputs and of reducing environmental impact. Extending a minimal proportion of feeds, that has to come from the holding to all livestock species (similar or lower than the existing rule of at least 50% for herbivores), would also limit intensification and encourage greater balance between livestock and crop production

Also conversion is an area for potential harmonisation, both concerning the periods required for conversion of land and animals and the requirement of whole farm conversion. The Regulation (EC) 834/2007 simplifies the rules by bringing the main provisions together in one article.

Harmonisation should also aim to introduce common rules in areas not covered by the EU regulation but by many other standards, such as specialist plant production systems, environmental protection and rules for processing. Environmental protection is not considered by the European Regulation, but is an area of high policy relevance and importance to European stakeholders as indicated by the high number of differences.

Simplification of the EU Regulation would be possible by reducing derogations or providing clearer criteria for derogations. However, regional flexibility may be necessary (e.g. for seed and feed where non-availability is documented). The possibility of having different national/regional requirements is envisaged in Article 22 of Regulation (EC) 834/2007.

The area of social values could not be analysed in the database, because only very few national private standards and none of the governmental standards have implemented such values and therefore very few differences were recorded.

Harmonisation of the rules at the EU level should be supported by better communication, more transparency and by research into areas where limited experience with the implementation of the regulations and standards exists. The www.organicrules.org database could serve as a tool for increasing the transparency concerning the granting of derogations by the national public and private standards setters in particular in relation to the flexibility provisions as foreseen in Article 22 of the Council Regulation (EC) 834/2007. The overall aims of organic agriculture should always be considered when harmonising the rules. A summary of recommendations arising are included in Sections 6.1 to 6.3.

4 Reducing the dependency on non-organic inputs in the area of feed (WP4)

4.1 Approach

The detailed objectives of this work were to provide knowledge on how to achieve 100 % organic rations in diets for organic livestock by

- identifying constraints related to the restrictions in the availability of limiting amino acids for pigs and poultry in relation to animal health, product quality, productivity and economics and evaluating the availability of limiting amino acids, including the various strategies used to deal with the restrictions in different European member and candidate countries (D 4.1);
- developing evaluation criteria for including feed materials in Annex II C and dietary supplements in Annex II D of Regulation (EEC) 2092/91 (D 4.2); and
- developing guidance to operators (D 4.3).

A meta-analysis of literature provided the basis for a detailed report on the implications of the preferred use of home-grown feed and regulatory limitations on the use of non-organic feedstuffs that reduce the availability of high quality protein in the nutrition of mono-gastric animals and restrict the possibilities for adaptation of the protein supply to the specific requirements. The objective of the report was to discuss and assess whether these restrictions in the availability can be compensated for by other means that are in accordance with the principles of organic agriculture. Therefore, it was of special interest to evaluate whether nutritional imbalances encountered in practice might lead to deteriorating product quality, or have negative impact on animal health, animal welfare or environmental impact. The report reviewed literature in relation to the production of broilers, turkeys, laying hens and pigs (D 4.1 (1) by Sundrum et al., 2005).

An overview of the current situation to characterise the availability of protein sources for 100% organic diets for pigs and poultry was produced. The demand and supply of organic concentrate feeds (both cereals and protein sources) was calculated using statistical data from other sources (EUROSTAT and two EU research projects (EU-CEE-OPF: QLK5-2002-00917; OMIARD: QLK5-2000-01124) and expert opinions on feeding of organic livestock. An overview of supply and demand for concentrated feed in organic agriculture in the EU in 2002 to 2004 with a particular focus on protein sources for mono-gastric animals was produced (D 4.2 (2) and update by Padel, 2005b, Padel and Lowman, 2005).

Based on this and other sources on criteria for use of organic inputs, evaluation criteria for Annex II C: Feed materials and Annex II D: Dietary supplements of Regulation (EEC) 2092/91 were developed. The report made reference to the draft text for the total revision of the EU Regulation on organic farming published in December 2005⁸. It considered the principles of organic farming on which the more detailed rules should be based, which have implications on the criteria for which inputs should be permitted in the Annexes (D 4.2 by Sundrum and Padel, 2005).

⁸ Proposal for a Council Decision on Community strategic guidelines for rural development (Programming period 2007–2013). . COM (2005) 304 final (5.7.2005). European Commission. Brussels.

Finally, the results were summarised in a guidance to operators on how to deal with limitations in protein supply in the nutrition of mono-gastric animals in organic farming (D 4.3 by Nicholas et al., 2007).

4.2 Dietary requirements of organic pigs and poultry

Organic production of pigs and poultry is characterised by preferential use of home-grown feedstuffs and limited availability of bought-in certified organic feedstuffs. Possible implications of the limited availability of certain feedstuffs on growth performance, traits of product quality, and animal health depend to a large extent on the capacities of the animals in the various stages of their development to adapt to and compensate for variation in the nutrient supply.

The availability of limiting amino acids influences protein accretion and lean meat proportion of the carcass, but there appears to be an antagonistic relationship between traits of meat quantity and sensorial quality. For muscle growth, all the amino acids needed have to be available in synthesis compatible form. Equally, a sufficient energy provision is necessary. If one of the essential amino acids is missing, the protein biosynthesis may be reduced or the degradation of protein may be increased. The extent of the protein synthesis or accretion is thus dependent to a large extent on a balanced protein and energy provision via the feed. In the case of poultry, methionine is regarded as the first limiting amino acid while with pigs, lysine is the first- and methionine or threonine are the second-limiting ones.

As metabolic processes do not differ between organic and conventionally reared farm animals, the recommendations for an adequate nutrient supply generally follow the same rules. The exception to this is that the outdoor access required in organic systems creates a higher energy requirement. However, differences in genotype, living conditions, temperature, stocking rate, group size and stress levels all contribute to high variability in the protein accretion in organic herds, particularly for poultry. This reduces the predictability of the specific requirements and the rate of utilisation of the nutrients. General recommendations for the nutrient supply of farm animals as used both by conventional and organic farmers can never reflect fully the situation on a specific farm.

Young and growing animals have the greatest feed requirements, and there is a risk in relation to animal health and welfare at this stage, if the diet specifications are not met, although compensatory growth is sometimes possible. Feeding different specification diets at different life stages will improve the efficiency of the protein use. However, this needs to be balanced by increasing the complexity of the feed management and ration planning on the farms, if many different diets need to be mixed and stored separately and different animal groups need to be separated during feeding.

At least five diet specifications should be used when feeding organic pigs: dry sows and boars, lactating sows, piglets (starter diet), fattening pigs (starting phase), and fattening pigs (finishing phase). In the case of poultry, two diet specifications should be used for table birds (growing and fattening), two for layers (growing and laying), and four to six for turkeys (depending on the nutritional plan followed) (Sundrum et al., 2005).

The use of slow growing strains has the potential to markedly reduce the level of nutrients required in the daily ration, particularly for organic table bird production. The Regulation (EEC) 2092/91 specifies that the capacity of animals to adapt to local conditions, their vitality, and their resistance to disease should be considered when choosing breeds or strains. In order to reduce the gap between nutrient requirements

and supply, it is possible to decrease the requirements by using breeds or strains that fit to the potential nutrient capacity of the farm. Producers need to decide individually or as an industry whether slower growing strains can be used to overcome the lack of protein supply.

In general, nutrient supply of farm animals is a function of the concentration of nutrients in the ration and the amount of feed intake. Both variables can be modified by management; not only the composition of the diet. Feed intake of farm animals (even when of the same age) varies considerably within the herd and between farms and is influenced by a number of factors, such as live weight, sex, stocking rate and the stall climate conditions (Sundrum et al., 2005). On-farm monitoring of the feed intake in the different life stages and improvement of the living conditions can help compensate for shortages of high quality feedstuffs.

For pigs, differences of approximately 30% in feed intake between different genotypes under otherwise equal conditions as regards feed rations and living conditions. Crowding, group size and group mixing are factors that markedly influence feed intake, conversion efficiency and growth rates. Feed intake is also influenced by the condition of the feed (particle size, crude fibre type and quantity, water binding capacity, anti-nutritive substances), the presence of pathogenic germs, and the physiological digestion capacity of the pigs. Pigs fed with voluminous, fibre-rich feed rations showed a higher stomach volume than pigs fed only on concentrate feeds and stomach volume is closely correlated with the long-term quantity of feed intake.

In the case of laying hens, there is an interaction between energy and methionine content, in that low methionine content increases the feed intake while a high energy supply reduces feed intake. Hence, laying hens are able to partially compensate for a suboptimal supply of limited amino acids by an increased feed intake. However, a feed ration with relatively high energy content limits feed intake. There is only limited research on feeding laying hens with 100% organic diets.

Concerning broiler production, feed intake, and feed utilization are subject to considerable variation, which depends to a large extent on the genotype, sex and environmental conditions. Feed intake decreases when stocking rate increases and long-standing heat stress can also lead to a depression in feed intake (Bessei, 1993). A suboptimal level of limited amino acids in the feed ration can be partially compensated for by increased feed intake, especially when the energy content in the diet is reduced. Studies on organic broiler husbandry and brand programmes using slow-growing lines (slaughtered after 81 days) show that with lower demands for performance, lower amino acid content in the feed is required (Bellof and Schmidt, 2005). However, so far only limited research has been carried out to investigate the implications of organic conditions on broiler production and on the capacity of broiler strains to adapt to changes in the nutrient supply. Organic table birds tend to be more sensitive (in terms of production) to variations in the diet than pigs. In order to reduce the associated risk, the single components of the diet should be analysed regularly and feed intake should be monitored regularly to calculate the formulation of the diet appropriately for the different life stages.

There is considerable variation in terms of the availability of high quality feedstuffs, the digestibility and utilization of amino acids of various feedstuffs, in the capacity of protein accretion and feed intake of genotypes, and in the housing conditions. The potentially conflicting objectives of reducing the reliance on external feed and achieving animal health and welfare have to be balanced. It is therefore difficult to develop general recommendations for the nutrient requirements of organic farm animals. To provide optimal nutrition for the livestock on organic farms, it is necessary to carry out on-farm assessment of nutrient availability (including feed analysis) and to monitor feed intake and feed conversion in the various life stages.

Lowering the intensity of production is likely to lead to an increase in the total feed demand, because of a decrease in the feed conversion rate. Some feedstuffs are readily available but lower in quality, whereas feedstuffs of higher quality are less widely available and more expensive.

There is a need for the development of farm specific strategies to find the optimal balance between the quantity and the quality of home grown and purchased feed materials. To ensure appropriate nutrient supply of the animals and balance this with other objectives of self-reliance in terms of feed supply, management tools like farm-gate feed and nutrient balance, regular analysis of home-grown feedstuffs, and the formulation of feed rations for different growth stages are essential and should contribute to improving the efficiency in the use of home-grown feedstuffs. Adopting these strategies will ensure that animal health and welfare are not compromised by nutrient imbalances, that the demand for further supplementation with external feed materials can be assessed when feeding 100 % organic diets.

4.3 Balance of supply and demand

The balance of supply and demand was calculated based on land use and livestock statistics and experts estimates. Such a calculation provides an overview of the situation in the whole of the EU. It is influenced by a number of assumptions (including yields and rations assessments) and it does not consider feed imports and feed sources of animal origin. The value of such calculations would improve with up-to date statistics of the land-use and animal numbers in organic farming.

In 2004 approximately 1.56 million head of organic cattle (dairy cows, suckler cows and other cattle), 1.9 million sheep (breeding stock and lambs), nearly half a million pigs (sows and finishing pigs) and 18 million chickens (layers and broilers) were kept in the EU. The most important countries keeping bovine organic livestock are Austria, Denmark, Germany and Italy. The most important sheep producers are France, Germany, Greece, Italy and the UK. Most pigs are kept in Denmark, France, Germany and the UK, and the most important countries producing organic poultry are France and the UK.

The total organic herd in the EU 25 increased between 2002 and 2004 by between 6 and 9 per cent, depending on the stock category. Greatest increases occurred for sheep in France, Italy, Spain and the UK. In the other livestock categories, increases in some countries were balanced by decline in others, leading to overall small increases.

Using typical diets for different species and livestock categories, it was calculated that all organic livestock kept in the EU between 2002 and 2004 would have required a total of approximately 1.1 million tonnes of certified organic concentrates per year. Approximately 58% of this demand would have been used for ruminants, 25 % for poultry and 27 % for pigs. It was estimated that 65% of this demand was covered by cereals, 26% by pulses that could be grown in most regions of the EU (peas and beans), and 9% by high quality protein sources to supplement diets of mono-gastric animals, such as soya or animal proteins. In the same period, approximately 1.8 tonnes of cereals and pulses were grown for organic food production, of which approximately 85% were cereals and 15% were pulses.

Between 2002 and 2004, the EU would have grown more than sufficient organic cereals to feed all organic livestock on a 100% organic diet. On average, there was an average deficit for pulses, because the land area for pulses declined between 2002 and 2004.

Shortages in organic feedstuffs in 2006 and 2007 indicate that the situation may have changed, but more up-to-date statistical data were not available when the work was carried out. Stock numbers may have increased, and because of climatic conditions the yields may have been lower or the organic area grown with feed crops may have declined. It is also likely that the supply and demand is not balanced in particular regions, because the main cereals producing countries are not necessarily those that also keep most of the organic livestock.

For 2002 to 2004 there would be a calculated under-supply of high quality protein sources of approx. 100,000 tonnes, which is equivalent to 33,000 ha for each year. This is equivalent to 9% of the calculated demand for concentrated feeds for the all mono-gastric organic animals. With derogations in place this shortfall would have been met by protein from conventional sources and by fishmeal.

The deficit in protein supply (both high quality and from home-grown pulses) could be reduced by about 50% if multiphase feeding and other strategies outlined above were widely implemented, but this would lead to an increase in the demand for organic feed cereals and for home grown pulses. Also, changes in the composition of the feed ration for organic ruminants (for example increased protein content or reduced concentrate intake) are likely to have an impact on the overall availability of organic concentrate feeds (including high quality protein) for organic pigs and poultry. It should be further explored, whether there are other problems apart from price that prevent organic producers from growing more organic protein rich feed materials, such as pulses and oil seeds.

4.4 A criteria based approach for feed input approval

Currently organic farm animals must be fed on organically produced feedstuffs (Annex IB 4.2) and primarily through home-grown feedstuffs (Annex IB 4.3). In this context, feedstuffs which are not home-grown are defined as external. Only if organic feed (either grown within or outside the farm system) is not available in sufficient quantity and quality (Article 4.8), a set percentage (that varies between categories of stock) of non-organic feed components can be used. These feed materials have to be listed in Annex II of the (EEC) 2092/91.

The proposal for a total revision of Regulation (EEC) 2092/91 from December 2005 envisaged no further use of non-organic feed materials (unless under special conditions of flexibility) and stated the intention to specify criteria for the inclusion of feed ingredients in the Annexes.

The project report by provided an overview of issues to be considered with regard to the inclusion of criteria for non-organic and external feed materials in the further development of the EC Regulation 2092/91 on organic food (Sundrum and Padel (2006)). It considered the suitability of a system approach as a tool for balancing the divergent and ambivalent issues.

Existing derogations to use non-organic feed materials lead to unfair competition in the market place because they favour producers that use conventional feed materials by offering them wider choice of feed materials at a lower cost compared to those that use 100% organic rations whilst both have access to the same markets.

Any further development of the feed regime including the criteria for the planned EU Commission implementing rules of the Regulation 835/2007 (the Annexes of the current EEC Regulation 2092/91) should encourage those that aim for higher integrity and follow the principles of a systems approach, land-based organic livestock production, minimising environmental damage and respecting high animal health and welfare.

Criteria should relate to the objectives and principles of organic production. The overall aim of organic farming of self-sufficiency in terms of resource use suggests that the level of external and non-organic inputs should be reduced to a minimum. This has to be balanced with the aim of high animal health and welfare that should be not be compromised because of nutrient imbalances. Of relevance is also the land-based character of organic livestock production, and the aim of minimising environmental damage.

Whereas using of non-organic inputs may be essential for some organic farms, the possibility of using them provides clear economic advantage to those holdings that could produce without non-organic input. They can use a wider range of cheaper feed materials and thus increase productivity and profitability compared to those farmers who are restricted from using them due to national governmental or private rules. This situation conflicts with the objectives of preventing unfair competition in the European Regulation.

For the revision of the feed regime at the EU level two main challenges arise:

- (1) Restricting further the use of non-organic ingredients whilst ensuring that animal health and welfare is not compromised.
- (2) Increasing flexibility without increasing the risk of unfair competition of products with different levels of organic integrity in the same market.

The *FAO/WHO Codex Alimentarius* Guidelines of 2004 (FAO/WHO, 2004)⁹ propose as criteria for the assessment of the need of feed substances 'necessary or essential to maintain animal health and welfare' and 'to contribute to an appropriate diet for the species concerned'.

In order to effectively evaluate the need for external inputs in organic systems it is necessary to establish the level of reference for the evaluation. The following reference levels can be identified in relation to external and non-organic feed inputs: individual animals; the herd of farm animals; the whole farm system; the region or country and the whole of Europe.

These criteria proposed by the Codex guidelines can only apply at the level of individual animal, but should not be used at a higher level (such as national or European) level for several reasons:

1. The nutrient requirements of an animal are a function of the intended performance level, but there is no consensus about the suitable level of performance on organic farms, nor a method to assess this.
2. Standard guidance for nutrient requirements of animals does not account for variation between animals within a herd.
3. For fattening animals, the risk of health and welfare problems due to lack of essential nutrient supply is primarily restricted to young stock in the first weeks of life. In the following stages most animals can compensate for nutrient imbalances as long as the genetic development does not stand against it. In later stages the standard nutrient requirements do not prevent animals from diseases that derive from the intensification of the production process (e.g. metabolic disorders, locomotion disorders, sudden death) and from the negative side effects of a one-sided selection for growth and yield as is described particularly in the case of poultry production.

⁹ FAO/WHO, *Codex Alimentarius* (2004) Guidelines for the production, processing, labelling and marketing of organically produced foods. Codex Alimentarius Commission and joint FAO/WHO Food Standards Programme. GL32- 1999, Rev. 1-2001, Rev. 1- 2004. Rome.

4. Organic farmers can use a range of measures to compensate for nutrient deficiencies at the farm level without any or with only a minimum amount of external inputs. Hence, evaluation of the need for external feed input can not be conducted on the basis of the nutrient requirements of farm animals alone but has to take availability and the whole farm system into account.

The criteria 'necessity of input', 'impact on animal health and welfare' can be assessed on different levels, such as the individual animals, the individual farm, the regional level and finally a national or EU level.

Sustainability and multi-functionality of agriculture and food production is particularly well suited to be studied and developed through a system approach. The new Regulation (EC) 834/2007 defines organic production as an "*overall system of farm management and food production that combines best environmental practices, a high level of biodiversity, the preservation of natural resources, the application of high animal welfare standards...*" (Recital 1).

In a systems approach an organism (or a whole farm) can only be understood and explained if all components, properties, boundaries and internal feedback mechanism are considered. Because of the variation between individual farms in relation to the availability of home-grown feed, the performance level, feed intake of genotypes, and housing conditions, the necessity for supplementary feed can only be assessed at the level of the individual farm.

The principle to use as few external and non-organic inputs as possible and as many as necessary could also be implemented on a regional level by assessing whether a demand for and the supply of organic feed material is balanced. This requires defining the boundaries of a region, and regional data on the availability and requirements of organic feed.

While previously the use of external and non-organic feed inputs was regulated by EU wide derogations and a list of permitted conventional feed materials in Annex II of the Regulation (EEC) 2092/91, it is proposed for the planned implementing rules of the new EU Council Regulation EC/834/2007 to assess the need for the use of non-organic feed materials at several different levels of the organic food system, i.e the farm gate feed balances, regional balances as well as a list of permitted non-organic feed materials that can be used under certain specified circumstances.

4.5 Conclusions

Achieving 100% organic diets for pigs and poultry

The objective to provide more knowledge on how to achieve 100 % organic rations in diets for livestock (WP4) was achieved.

A meta-analysis of literature was carried out the likely availability of organic feed materials from organic cropping was evaluated (D 4.1, Part 1 and 2) and a guide for operators on how to achieve 100% organic diets for pigs and poultry was produced (D 4.3). A preliminary draft of this report was considered by the Commission in the amendments of the Regulation (EEC) 2092/91 in August 2005, which introduced a

stepwise reduction of the use of non-organic feed materials to zero by 2011 (Regulation (EC) 1294/2005¹⁰).

The work was presented at a meeting of the expert group of the 'Standing Committee on Organic Farming' at 1st of December 2005. A guide for operators was developed (D 4.3 by Nicholas et al. 2007).

Organic production of pigs and poultry aims for a reduction in the production intensity in terms of the use of external conventional inputs and a high reliance on home grown and organic feed inputs. This is very different to the production goals of intensive conventional production of high live-weight gain, protein accretion and high feed conversion rates.

It is possible to formulate diets for organic cattle, pigs and poultry without conventional feed materials. The risk of diseases and welfare problems in organic livestock production due to suboptimal nutrient supply is restricted to the first weeks of life and can be handled by a proper management.

The protein accretion capacity in organic animal production is generally lower compared with conventional, because of the restricted availability of limiting amino acids and high quality protein feed materials limiting intensification. This can contribute to better sensorial quality of products, by preventing producers from focussing primarily on quantity traits, and limits the undesirable side effects of intensified meat production in terms of reduced animal health and welfare and negative environmental impact. Striving for balanced and land-related animal production has its benefits, but also associated costs, such as decreases in live-weight gain. It is therefore important to adopt feeding strategies that minimise the increase in production costs but that do not compromise the product and process qualities for which organic consumers are willing to pay a premium.

Because of considerable variation between individual animals and farms in relation to feed intake, genotypes and performance levels, it is not possible to come to general conclusions on how to deal with the limited availability of high quality feed stuffs in the diets of pigs and poultry that are valid for all organic farms in Europe.

Feeding strategies need to be specific to the situation on each farm and each region. The variability of specific optimisation strategies should correspond to the variability of organic livestock production systems. This makes the farmer a very important regulator in the system. Accuracy in the formulation of feed rations according to the requirements of farm animals in their different life stages (multiphase feeding) and precise allocation and monitoring of actual feed intake become essential tools in the management of organic pigs and poultry.

It appears that Europe could grow sufficient organic cereals to feed all organic livestock on a 100% organic diet, but the situation in relation to protein appears more uncertain. The implementation of multiphase feeding and other improvements in the feeding strategies could reduce the demand for high quality protein for pigs and poultry significantly. The availability of protein feed stuffs for pigs and poultry is also influenced by the diets of organic ruminants, because they account for more than half of the total feed demand in the organic animal husbandry sector.

¹⁰ Commission Regulation (EC) No 1294/2005 of 5 August 2005 amending Annex I to Council Regulation (EEC) No 2092/91 on organic production of agricultural products and indications referring thereto on agricultural products and foodstuffs. *Official Journal of the European Communities*, L 205 16-17.

Recent shortages for organic feed indicate that the balance between supply and demand in the market can easily be upset. Supply could be increased if more arable producers would grow suitable crops but also decline if they fail to do so. Higher prices (particularly for protein rich crops) are likely to stimulate higher production, but this would increase cost of production for organic livestock producers maybe above a level that consumers are willing to pay for. Regional imbalances occur, because the main countries producing feed materials are not necessarily those that also keep most organic livestock. The current rules permit pig and poultry producers to rely exclusively on purchased feed for their stock, irrespective of where this is grown, which is not in accordance with the POA.

It is necessary to have a debate on which types of organic production systems and diets for pigs and poultry represent the best compromise between the different principles of organic farming, when taking decisions on the rules in this area. As the availability of limiting amino acids is the most relevant precondition for a high protein accretion, the reduced availability of high protein feed materials appears to be a suitable tool to limit intensification of animal production with its undesirable side effects for animal health and welfare. The ongoing discussion in relation to organic poultry production in particular illustrates this need for communication and consultation on how different the core values of organic agriculture can be interpreted. A summary of recommendation from this work is included in Section 6.2.

Criteria for the approval of feed inputs

The objective of providing recommendations was achieved (D 4.3 by Sundrum and Padel, 2006). The findings of this work were considered in the drafting of the criteria for the permission of organic inputs (Article 11 of Regulation (EC) 8602/01/07 Rev 1).

There is a need to differentiate between the following categories of external feed inputs that can be used on an organic farm and that carry different risks to the integrity of organic production:

- External organic feed materials from plant and animal origin and by-products of organic processing (max 50% of total feed intake);
- Non-organic basic feed materials from plant and animal origin and non-organic industrial by-products (set derogations or flexibility rules, Annex II C 1 & 2);
- Non-organic feed materials of mineral origin and feed additives (Annex II C 3 and Annex II D).

The rules for feed should aim to provide an incentive for the further development of the product (such as meat quality) and the process quality of organic livestock production (such as animal welfare, environmental impact) and strengthen the self-regulating properties of organic farming in line with the general principles of organic farming.

The input criteria of 'necessary to maintain animal health and welfare' included in the *Codex Alimentarius* guidelines of 2004 relates the availability and the balance of supply and demand. This can be assessed at a number of different levels of the systems, from the individual animal to the whole EU. To realise the principle 'of using as few external and non-organic inputs as possible and as many as necessary', the need should be assessed at the lowest possible level.

At the farm level necessity can be monitored through farm gate feed balances, supplemented by feed analysis and the ration formulation for specific categories of livestock considering their performance level. Such farm specific feeding strategies would help improve the efficient use of home-grown feedstuff, prevent imbalances harmful to the animal of the environment, and strengthen the functional integrity and

resource use self-sufficiency of the system. The implementation of similar feed back mechanisms could also be used to assess the necessity for supplementary non-organic feed materials at the regional level, but the boundaries for a region would need to be defined and mechanism how to monitor balance implemented. This would implement flexibility in so far as it requires treating different situations differently but working towards the common overall objective of organic production by achieving a balance within a defined system and therefore justifies the use of a common organic label.

Further research is needed to assess the availability of and requirements for vitamins for pig and poultry production under the conditions of organic farming in various regions. A feed demand and supply balance can be achieved irrespectively of the specific conditions and can be offered to the consumers as a qualitative performance of the organic production method.

A summary of recommendation arising are included in Sections 6.3, 6.4 and 6.10.

5 Reducing the dependency on non-organic inputs in the area of seed (WP5)

5.1 Approach

The work in relation to seed had the following detailed objectives:

- To provide knowledge to overcome problems related to seed borne diseases in cereals, legumes and vegetables (D 5.1)
- To provide knowledge to overcome problems related to selection of varieties with sufficient quality characteristics for organic farming (task 5.2)
- To develop decision criteria and recommendations for the derogation regime on seed and propagation materials under Commission Regulation (EEC) 1452/2003¹¹ (D 5.3).

The report on seed quality focused on a number of questions, such as the importance of seed borne diseases as an obstacle to production and use of organic seeds, methods to control seed borne diseases and their effectiveness acceptable for use in organic farming, differences in thresholds for seed borne diseases among various EU member states and changes in health status of organically produced seed in the last years. Identification of the relevant characteristics is also important for a good performance in organic farming and processing of selected varieties of cereals, vegetables, fodder crops etc. The questions were addressed through a literature review of 68 scientific publications in 2005, which was up-dated in July 2006 on methods and products for control of seed borne diseases, potentially acceptable in organic farming. Afterwards an expert survey (questionnaire) was carried out with 20 experts in eight countries, involved in research, production, trade and use of organic seeds. Documents outlining EU, international, national and private regulations, thresholds concerning seed borne diseases on seeds (organic and conventional) were analysed, as well as national reports on the status of organic seed health for the last 3 years. Furthermore five national workshops were organised with stakeholders (D 5.1 by Micheloni et al., 2007).

A survey of variety trials in organic farming, supplemented by expert consultations was carried out to describe and analyse the requirements of organic farming systems in terms of variety selection and breeding. Based on these studies recommendations were made for the identification of species, for which derogations may continuously be needed (D 5.2 by Micheloni and Plakolm, 2007).

Finally, the national reports from 12 member states on the implementation of the seed derogation regime according to (EC) 1452/2003 were analysed. Reports from further EU member states were not accessible and were therefore only occasionally quoted. The national derogation reports were either downloaded from the official

¹¹ Commission Regulation (EC) No 1452/2003 of 14 August 2003 maintaining the derogation provided for in Article 6(3)(a) of Council Regulation (EEC) No 2092/91 with regard to certain species of seed and vegetative propagating material and laying down procedural rules and criteria relating to that derogation. Official Journal of the European Communities L206 (15.8.03):17-21.

organic seed websites of the EU member states or obtained directly from the derogation officers of the respective states.

A list of criteria for the appropriateness of the available varieties for organic production and a guide for the evaluation of the seed derogation regime was made and the relevance of these criteria was shown for major crops. Recommendations were made on how the seed derogation system and data-base system can be harmonised at the EU level in order to prevent competitive advantages or disadvantages for growers in various EU member states due to the lack of clear criteria for the derogations (D 5.3 by Thommen, 2007).

5.2 Seed health and quality

Seed borne diseases are an important factor influencing seed production and seed use in organic agriculture, but they are not the only obstacle that exists at the moment. Awareness of the importance of seed health in organic agriculture has increased considerably in recent years and has been acknowledged by organizations such as ISF (International Seed Federation) or ISTA (International Seed Testing Association).

Because of crucial role of seed health, it is important that seed treatments are identified, which are in accordance with the organic principles and standards. In the last 5 to 10 years several methods and products of non-synthetic seed treatments (physical, microbiological, plant-based, etc.) have been successfully tested on different host-parasite combinations and they are potentially available for use in organic farming. However, there are no general treatments available that are effective for all host-pathogen combinations and currently no treatments are permitted according to Annex II of Regulation (EEC) 2029/91.

Besides the legal restrictions on quarantine seed diseases, most of the EU member states have legal thresholds for seed borne diseases in cereals, but these vary between member states. This may cause distortion in trade and use of organic seeds, as one country may allow the import of seeds (from another member state) that do not meet the thresholds in the importing country, but that are fully certifiable in the member state where they are produced. For vegetables and legumes, EU member states only have general requirements on seed health.

Data on the status of organic seed health are only available in very few countries. If the EU member states kept annual records of the health status of organic seed-lots, it would enable monitoring of the presence of seed borne diseases and calculate the likely risks, and to take steps for their prevention.

Available data for cereals do not show a clear trend of seed health development, but highlight the influence of the climate. The report by Micheloni et al. (2007, D 5.1) states a trend of a general increase of *Tilletia caries*, which may correlate with lower control levels, especially as regards on-farm seed production. It is likely that the risk of seed-born diseases is higher in organic farming since very few disease control agents are available.

5.3 Suitability and availability of varieties

The criteria for selection of varieties in organic farming are partly different from those in conventional farming in relation to yield stability, processing properties and root-system development.

Valuable guidelines for cereal variety testing in organic farming have been produced by the SUSVAR (Sustainable low-input cereal production: required variety characteristics and crop diversity-COST Action 860). General guidelines for vegetable variety testing are difficult to identify, because the characteristics and requirements of vegetable species are very crop specific species.

However, it is not easy to state a clear definition of 'appropriateness' in relation to the choice of variety in organic farming, as this may involve different aspects and depend on the perspectives (producer, processor, trader etc.). In the report (D 5.2) a list of characteristics is presented that should be considered within such a selection programme. These include weed competitiveness, disease resistance/tolerance; nutrient use efficiency (particularly nitrogen) and processing quality considering specific organic characteristics, e.g. baking with whole wheat flour.

There is no common evaluation of the actual 'availability' of a variety among EU member states. In general terms, the availability of cereal varieties for organic production is reasonably good, whereas varieties for vegetable production and fodder crops are less widely available and the supply varies considerably among the member states.

5.4 Analysis of the derogation regime

Finally, the national derogation reports were analysed with respect to total seed use of selected species and subspecies (D 5.3 by Thommen 2007). The feedback from expert interviews and meetings regarding the implementation of the new seed regulation was considered to make recommendations for further improvement of the organic seed regulation.

The national annual organic seed reports of 2004 and 2005 differ much in form and quality between member states. The data displayed in the reports show considerable differences among the reporting EU member states in the availability of organic seeds and the authorisations to use non-organic seeds.

If authorisations for the use of non-organic seeds or a general derogation are given this means a financial benefit for the respective farmers. The cost of seeds is a considerable part of the total costs of production that cannot be ignored. Farmers in countries with high rates of authorisations allowing the use of non-organic seeds have a competitive advantage over producers from countries, where fewer derogations are granted.

Therefore, harmonisation of the seed derogation policy on the EU-level as well as on the national level should be of high importance for the public authorities. A number of measures were proposed to increase the use of organic seed that have been summarised as part of the conclusions and recommendations below.

5.5 Conclusions

The objectives to provide more knowledge on how to reduce the use of seed and vegetative propagation materials from conventional sources in organic farming (WP5) and to develop decision criteria and recommendations for the derogation regime were achieved. The importance of seed health and variety choice was evaluated and the reporting by EU members states of the number of seed derogation analysed.

An analysis of literature and national seed health reports has shown a lack of control of seed borne diseases. This is one but not the only obstacle to production and use

of organic seeds. Because of the high emphasis on prevention in organic systems and therefore the importance of seed health, it would be helpful if all member states would annually produce phytosanitary reports of organic seed. Other factors that may adversely affect the use of organic seeds are legal restrictions for quarantine diseases and -for cereals- different thresholds for seed borne diseases.

Council Regulation (EEC) 2092/91 on organic farming does not mention any specific seed treatment. A number of seed treatments (physical, microbiological, plant-based etc.) were reviewed and considered acceptable for organic guidelines. Authorizing some of these available treatments in organic farming would increase security for organic producers. Further research about the efficacy of the new treatments for additional host parasite combinations is much needed. Seed physiology and side effects of treatments on germination need to be considered in such trials.

An analysis of twelve national organic seed derogation reports identified considerable differences in the use of non-organic seeds. In general terms, the availability of appropriate varieties is reasonably good for organic cereal production, whereas varieties for vegetables and fodder crops are less available. Availability varies considerably between EU member states

Availability of an appropriate variety is a criterion on which decisions about the granting of derogations for the use of non-organic seeds are based. There are no common guidelines for the assessment of the 'appropriateness of varieties among member states. Criteria for variety selection for organic farming are different than in conventional farming, especially in relation to yield stability, weed competitiveness, disease and pest tolerance, processing properties, root-system and nutrient efficiency. However, it is not possible to define general standards for 'appropriate' varieties for organic systems. Establishing lists of equivalent varieties, which are approved for organic farming could provide a more objective basis for the derogation decision of control bodies.

Any authorisation for the use of non-organic seeds gives a competitive advantage for the respective farmers over other producers that use the expensive organic seed. The harmonisation of the derogation policy should therefore be of high importance for the authorities. A summary of the recommendations from the report in this work package is included in Sections 6.2, 6.8 and 6.10.

6 Recommendations

Most individual project reports of the Project EEC 2092/91 (organic) revision contain a number of recommendations, both to the European Commission and to other actors within the field of regulation and standards setting for organic production. Several of these recommendations have been considered during the development and negotiation of the new Council Regulation (EC) 834/2007 on organic production and labelling. In this chapter of the final project report only a summary of all recommendations is presented.

Section 6.1 sets out general recommendations to the European Commission for the development of the implementing rules of the new Council Regulation (EC) 834/2007.

The sections 6.2 to 6.7 set out more detailed recommendations in relation to specific areas of the implementing rules, such as the crop and livestock production rules (in line with Articles 12 and 14 (EC/834/2007), rules for conversion (in line with Article 17) and rules for processing (in relation to Article 18). The sections refer to the relevant articles of the new regulation for which implementation rules have to be written, as well as the numbering in the current Annexes of Regulation (EEC) 2092/901. It includes two areas not covered by Regulation (EEC) 2092/91, for which rules should be considered, i.e. special cropping systems and rules for care of the environment.

Section 6.8 summarises recommendations in relation to reporting requirements and the granting of derogations in relation to the use of organic seeds and propagation materials (Regulation EC/1452/2003) and introducing of reporting requirements for feed materials. Section 6.9 sets out recommendations for standards setting bodies and Section 6.10 sets out recommendations on further research needs.

6.1 General recommendations to the European Commission in relation to the development of the implementing rules of Regulation (EC) 834/2007

The Organic Revision Project recommends reconsidering the stated intention to transfer the technical content all of the existing Annexes of Regulation (EEC) 2092/91 unchanged into new implementation rules, because of some apparent contradictions between current practises and the principles laid down in Title II of the Regulation (EC) 834/2007.

The new Regulation (EC) 834/2007 has clear statements on objectives and principles of organic production. This provides the basis for harmonisation of the detailed rules in the light of the core values of organic agriculture. It should be examined carefully, whether some changes to the current rules should be proposed, in particular in relation to the use of external inputs on organic farms with the aim to impose some restrictions on intensification of organic agriculture. Further detailed recommendations are set out in the following sections.

Clear limits for the total use of both organic and non-organic (conventional) N-sources (manures and fertilisers) and the use of external feed would explicate the core values of a balanced system and self-sufficiency as regards resource use that are expressed in Article 4 a and b of the Regulation (EC) 834/2007. The principle of 'imposing restrictions on the use of external inputs' should be applied to both non-organic and organic inputs in the order mentioned, and the rules for input use and

input approval should encourage the 'appropriate design and management of biological processes based on ecological systems' as far as possible.

The current derogations for the use of non-organic feed materials and seeds lead to unfair competition, favouring organic producers that make use of cheaper non-organic inputs but sell into the same market as organic producers that use only organic inputs. The planned new implementing rules of the EU Commission should encourage operators to use as few inputs as possible and as many as necessary'. Non-organic feed inputs can no longer be considered essential from a health and welfare point of view, so the project recommends that the current derogations for the use of non-organic feed materials should not be extended beyond 31 December 2011. However, the organic sector in Europe needs to be encouraged to continuously produce sufficient feed materials for the organic livestock. Strengthening the linkages between production and use of feed materials and introducing a reporting requirement for feed derogations could help achieving this. Besides, the reporting regime for seed derogation should be improved and harmonised.

Differences between EU member states in the implementation of the European Regulatory framework for organic production and labelling are not just a question of the rules, but arise also because of differences in the interpretation of the rules at inspection/certification body and national authority level. It is recommended to maintain and adapt the internet database on organic standards (www.organicrules.org) as a tool for increasing the transparency concerning the granting of derogations by the national public and private standards setters, in particular in relation to the flexibility provisions that is foreseen in the newly adopted Council Regulation on organic production EC/834/2007 (Article. 22).

It is further recommended to introduce new EU wide basic common rules for special cropping systems, such as protected cropping of vegetables and ornamentals with provisions in relation to energy and resource use, and for permanent crops.

It should also be considered to include new implementing rules for care of the environment at the European level in line with the stated objective of 'encouraging processes that do not harm the environment' (Article 3 c). This area appears particularly important to European stakeholders and could build on the experience of several national governmental and private standards.

The implementing rules should aim at harmonisation at the international level with the Codex Alimentarius FAO/WHO Guidelines and the IFOAM International Norms, although the latter two are not directly used for inspection and certification like the Regulation (EEC) 2092/91 and its replacement.

Like most existing organic standards, Regulation (EC) 834/2007 does not cover social values which would therefore remain an area in which the private sector may continue to differentiate.

The rules and procedures for the participation of all stakeholders in the development of the implementing rules should be communicated clearly. Stakeholders could be involved in national consultations and the results of these consultations could then be presented by the national members of the regulatory committee. Stakeholders could be also be consulted directly by the Commission through internet consultations, as it has been done by e.g. DG Research on several issues. The result of such consultation should be published. Besides, the Advisory Group on Organic Farming of DG Agriculture should be frequently consulted during the process of finalising the implementing rules of the new regulation (EC) 834/2007. A further possibility would be to hold integrative seminars with various stakeholder representatives, when a first draft of the new rules has been published.

The Organic Farming Unit in DG Agriculture needs to have sufficient resources to carry out the additional tasks of wider communication with and consultation of the stakeholders in organic production.

Further, the Expert Panel for Organic Farming mentioned in Action 11 of the European Action Plan for Organic Food and Farming¹² should be set up as soon as possible, so that it can advise the Commission also on the developing of a coherent interpretation of the objectives and principles set out in Title II for the implementation rules.

6.2 Detailed recommendations relating to implementation rules for crop production (in line with Article 12, currently Annex IA)

Fertilisation (in line with Article 12.1 (a)-(f), currently Annex IA2, IB 7 and II A)

Intensity of fertilisation: It is recommended to harmonise the rules on the intensity of fertilisation and their interpretation by setting a common upper limit for the total application of nitrogen per ha/year (or production cycle) that covers manure as well as other fertilisers. Harmonising fertilisation rules should follow the overall aim of reducing the environmental impact (in line with Articles 3a, 3c, 5a, 5d, & 12b of Regulation EC/834/2007).

This total limit should be supplemented with a limit of e.g. 50 % of the proportion of total N that can come from conventional manures and fertilisers allowed according to Annex II A (of EC/2092/91). Further regional studies of different production systems (especially intensive vegetable and green house production) and climatic conditions should be carried out to establish at which level such a common limit for N application should be set and whether some flexibility will be necessary for nitrogen demanding special cropping systems.

Further crop requirements: It is further recommended to set clear criteria for the crop diversity in time and/or space (through rotation or mixed cropping), minimum winter cover and conditions for the composition of substrates (peat) and the use of substrates (avoid soil-less cultivation systems). These specifications could be subject to regional variation and should consider special cropping systems, such as perennials and horticultural system (see below).

Use of organic seeds (Article 12.1 (i))

Seed treatments: It should be considered whether some seed treatments can be permitted for organic farming and be specified in the crop production rules or listed in Annex II B (products for plant protection). Where applicable their evaluation should be based, on the criteria laid down in the new Council Regulation EC/834/2007.

The following options exist:

- Physical methods (e.g. brushing, thermic treatments etc.) are considered to be allowed in organic farming (although not explicitly listed in Annex II B). The

¹² EC (2004) European Action Plan for Organic Food and Farming. Communication from the Commission [COM(2004) 415 final]. Commission of the European Communities. Brussels.

Electron treatment is probably not allowed, because it must be considered as “ionizing radiation”.

- Micro-organisms (e.g. *Pseudomonas chlororaphis*) and copper based fungicides are also allowed listed in Annex II B. These might be used as seed treatments, if they are registered (under Dir. 91/414)¹³ for that purpose. *P. chlororaphis* is already registered.
- Plant based products and plant extracts (e.g. mustard powder) could also be considered for use on organic seeds, but would need to be listed in Annex II, and registered under Dir 91/414.
- Some disinfectants which are currently allowed for disinfection of stables etc. (e.g. ethanol, peracetic acid, hydrogen peroxide; see Dir. 2092/91, Annex II E) could also be considered for use as seed treatments. These would probably need to be listed individually in Annex II B, and registered under 91/414.

Labelling requirements of organic seeds: Specific labelling rules for organic seed should be considered. If any seed treatments are listed in Annex II B and can be used, these should be declared on the organic seed label as they may influence the germination.

It should be considered whether stricter thresholds for seed borne diseases can be introduced for organic seed lots to avoid the spread of seed borne diseases, at least for the most common (and widely traded) species. Further research would be needed to establish suitable thresholds. Further detailed recommendations in relation to reporting of seed derogations are presented in Section 0.

Implementing rules for collection of wild plants (Art 12.2)

It is recommended to further specify the requirements on collection of wild plant products from natural habitats in the new implementing rules by defining criteria for sustainable collection including requirements concerning registration and monitoring of the natural habitats and the education of the collectors. Regional aspects should be considered.

Implementing rules for special cropping systems

Protected cropping: In line with Article 3a of (EC) 834/2007 (responsible use of energy and natural resources) it is recommended to introduce basic rules for protected cropping (in greenhouses) at the EU level that limit the consumption of fossil energy, water and other natural resources and reduce the emission of the green house gas CO₂. It is further recommended to introduce some basic requirements for the conversion of greenhouses, fertilisation of green house cultures and the composition of growing media for greenhouse cultures including ornamentals.

Perennials: Basic rules for growing of perennials concerning the requirement of plant cover in between rows to reduce the risk of soil erosion, nutrient run-off and leaching and to increase the biodiversity in perennial crops should also be included as part of the new implementing rules.

The European Commission may build on the experience of some national governmental and private standards setters to develop such rules.

¹³ Council Directive 91/414/EEC of 15 July 1991 concerning the placing of plant protection products on the market. QJ L **230**, 19.8.1991, p. 1–32

6.3 Detailed recommendations relating to implementation rules for livestock (in line with Article 14, currently Annex IB)

Implementing rules for livestock breeding (in line with Article 14 (c iv))

There is a need to define the term 'slow growing strains' for poultry (Annex IB 6.1 of Regulation EEC2092/91) to ensure that the genetic capacity of protein accretion of such strains is adapted to the reduced availability of high protein feedstuffs in organic farming by specifying the growing intensity (a maximum in daily weight gain), especially for turkeys.

Implementing rules for feeding (in line with Article 14 (d), currently Annex IB 4 & Annex II C and D)

In line with the objectives of organic production set out in Article 3 and with the livestock production rules for feeding of Article 14(d) of Regulation (EC) 834/2007 the rules on feeding should aim to provide an incentive for the further development of the product and process quality of organic livestock production and strengthen the self-regulating properties of organic livestock farms as self-referencing systems.

Different categories of feed inputs need to be distinguished that carry different risks to the integrity of organic production. Decision criteria like '*necessity to use non-organic feed inputs*', '*impact on animal health and welfare*' and '*impact on the environment*' are related to the availability and to the balance of supply and demand of feed materials and should be assessed at the lowest possible systems level.

Organic feed from the holding: No restrictions apply, other than that for ruminants a 60% proportion of daily dry matter intake has to consist of roughage. It is recommended to consider raising this percentage of roughage in the daily ration of herbivores (Annex IB, 4.7), in line with the rules of several standards in Europe, but further research would be needed to investigate at what level such a higher threshold could be set and whether any exemptions (for example for young mammals) are necessary.

External organic feed materials from plant and animal origin and organic by-products from processing (Annex IB, 4.2 of Regulation (EEC) 2092/91): These can only be used to a maximum of 50% of the feed intake for herbivores, but for pigs and poultry no such limit exists in Regulation (EEC) 2092/91.

The availability of organic feed materials from the holding is farm and region specific. It is recommended that the requirement for farm-gate feed balance sheets should be integrated into the organic certification process and become part of the regular inspection. Farm-gate feed balance sheets would allow monitoring the use of external resources (in line with Article 4 b and 5b) and the risk of nutrient pollution of the environment (in line with Article 3c, Regulation EC 834/2007).

The requirement of producing at least 50% of the feed on the own farm unit or in cooperation with other farms for herbivores should gradually be extended to all species as a step towards harmonisation with private standard setters at the national and international level. Guidance on what type of co-operation should be required or what boundaries apply to a "region" should be provided.

Conventional basic feed materials from plant and animal origin and conventional industrial by-products (Article 16 1.c Regulation EC 834/2007; Annex IB 4.8, IIC 1 & 2 of Regulation (EEC) 2092/91): Conventional feed materials are no longer essential to formulate organic rations for mono-gastric animals, but there appear to be continuous problems with the availability of some feed components in organic quality, in particular high quality protein sources. Only certain non-organic products can be used and a stepwise reduction until 2011 has been implemented.

The project recommends that the current derogations for the use of conventional feed materials should not be extended beyond 31 December 2011. The use of cereals should be further restricted to avoid unfair competition in the transition period until 2012. The conditions for flexibility envisaged in Article 22 (Regulation EC/834/2007) are sufficient to cover all events under which the use of conventional feed ingredients is likely to be necessary in future. Such derogations should be restricted to a proven lack of availability of suitable organic feed materials in certain regions and to emergencies. Special consideration should be given to the feeding of mono-gastric young-stock in the first weeks of life. Derogations should be handled at the regional/national level based on guidelines and reporting requirements provided by the Commission.

Implementing rules for disease prevention (Article 14 e; currently Annex IB, 5)

Disease prevention: The implementing rules to Regulation (EC/834/2007) should be kept at a high level regarding disease prevention and veterinary treatment in order to meet consumers' expectations. However, care must be taken that the animal will not suffer due to withholding of treatment because of too strict rules on medical treatment.

The mandatory introduction of animal health plans should be explored to emphasise that disease prevention is of highest priority. Because of the problems that can be caused by the more limited availability of high quality protein, health planning should pay special attention to the feeding strategies for young animals in their first weeks of life.

6.4 Implementing rules for input approval (in line with Article 16)

The new Regulation (EC/834/2007) includes common criteria for evaluation of new inputs. Decisions on which inputs are permitted or not permitted based on these criteria should be transparent. In particular, the exceptional allowance of use of certain synthetic substances is of concern to some stakeholders.

Pest control: Further harmonisation of the process for the approval of substances allowed for pest and disease control in agriculture in general in the EU member states would reduce the competitive differences, due to differences in the way plant strengtheners are dealt with and differences in the approval of the specific products listed in Annex IIB of the (EEC) 2092/91, but this is unfortunately an issue outside the "organic" regulation.

6.5 Implementing rules for conversion (in line with Article 17)

Conversion of land: Harmonisation and simplification of the existing rules can be achieved by imposing a standardised conversion period of 12 months (including a full growing season) with a defined date of commencement (e.g. the date of application for inspection, which should take place before the growing season). Hereby a lot of bureaucracy concerning rules, use and control of in-conversion areas and products could be avoided. At the same time it is recommended to revoke the system of retrospective recognition, as this is not needed with a shorter conversion period. If retrospective recognition, however, is to be maintained, the detailed provisions should be defined and the EU member states should be obliged to provide reliable documentation.

Clear conversion rules for glasshouse production and other specialist cropping systems should be formulated.

Conversion of livestock: It is recommended to consider harmonisation and simplification of the different conversion periods related to land and to livestock in relation to the feeding rules and veterinary rules as well as the use of in-conversion feed materials and the possibility of simultaneous conversion of the whole farm.

Whole farm conversion: A medium-term perspective of full farm conversion by operators would contribute towards consumer trust and simplify the inspection process. However, such a period for conversion of the whole farm may vary depending on the production type, size and the number and types of productions on the farm. Holdings with agro-forestry and other perennial non-food production may be excluded from the requirement of full farm conversion.

The Implementing rules of the Regulation (EC) 834/2007 should include definitions on “holding”, “farm unit” etc. to avoid different interpretations by national authorities and public and private certifiers.

6.6 Implementing rules for processing (in line with Article 18, Annex VI of 2092/91)

The proposed principles and criteria for processing of organic food in the newly adopted Council Regulation (EC/834/2007) is an important step towards better harmonisation of the rules for processing. However, the necessity and suitability of using some of the additives currently listed (e.g. nitrates and nitrites) is much debated. Several national governmental and private standards have excluded some of the additives and processing aids permitted by the Regulation (EEC) 2092/91, but according to the new Council Regulation EC 834/2007 this will no longer be possible. This could reduce the incentive to further restrict the number of permitted ingredients and additives and thereby present an obstacle to the further dynamic development of organic production in line with the core principles of organic farming. The list of additives and processing aids should therefore continuously be re-evaluated at the EU level, with the aim to further restrict the number of additives and processing aids.

General implementing rules for processing need to be developed. It should, however, be considered whether product-specific rules for processing methods should that define in detail the processing technologies/method may remain a field for private standard-setting organisations and the organic food industry, e.g. by developing a common code of practice.

6.7 Implementing rules for care of the environment (in line with Article 3c)

Of the areas currently not covered by Regulation (EEC) 2092/91, environmental protection and ecosystem management should be considered for harmonisation by developing common implementing rules at European level. This area is of high importance to European stakeholders and to policy, such as agri-environment programmes supporting producers in conversion to and maintaining organic agriculture. The European Union could build on the experience of some private standards that specify a certain share of natural land as habitat and/or have rules for biodiversity protection or limit the use of non-renewable resources (soil, energy and water) in protected cropping systems.

6.8 Reporting requirements

In relation to Commission Regulation (EC) 1452/2003 on the granting of organic seed derogations

Harmonisation of the derogation system: There is a need to harmonise the procedures how authorisations for the use of non-organic seeds according Regulation (EC) 1452/2003 are granted by Member States.

- A time limit of three years should be set by which the 'general derogation' (according to Article 5.4) can no longer be used for arable crops and for the most important annual vegetable species /subspecies.
- A time limit of five years should be set, by when a level of below 5% derogations for important arable crops, annual vegetables and the most important biennial vegetables is reached.

Annex of species for which derogations cannot be granted It is recommended that not only species but also sub-species (crop types according use and cultivation, variety groups, e.g. cherry tomatoes) can be listed in the Annex of the Regulation 1452/2003 on European level.

For a defined period these Annexes should be published and tested on national level. From 2009 onwards this can be handled under the flexibility rules of the new EU Council regulation EC/834/2007.

In cases of unforeseen shortage of organic seed, the ability of national authorities to allow individual derogations according Article 5.1 of the Regulation (EC) 1452/2003 should cover species listed in a to be developed Annex 1.

The following procedures are recommended to harmonise and increase the **availability of organic seed** and propagation material:

- Foreign seed companies with a local distributor should be able to enter information on a national database of a Member State.
- The national organic seed databases should include vegetative propagation material other than potatoes.
- It remains very difficult to produce forage mixtures (grass/legumes) with 100% organic components. Mixtures with a defined minimal proportion of organic seed should get access to the organic seed databases.

Harmonisation of the seed derogation reports: The commission should provide a template for reporting and set clear criteria how the data according to Article 12 of

Regulation (EC) 1452/2003 have to be presented in the national annual seed derogation reports. For the sake of transparency, the information provided in the annual reports should be published by the Commission (e.g. on the internet). The value of the report to the industry could be improved, if further details would be included, such as variety name, amount of seed used per variety, acreage planted, detailed reasons for authorisations. A list of the most common reasons for authorisation calls is provided in the report D 5.3 (Thommen, 2007).

Seed health status of organic seed lots: Seed health authorities should be required to include a special reporting on organic seed in their regular annual phytosanitary reports.

Reporting in relation to feed derogations

Currently very little information is available on the actual amounts of non-organic and organic feed materials that are used in organic animal production. Because the criteria of 'necessity' is closely related to availability, it should be considered whether similar reporting requirements as for seed can be introduced in relation to feed materials and the issuing of derogation of non-organic feed, and how the information flow about availability of organic feed material can be improved at the national and the EU level.

6.9 Recommendations for standard setting bodies and regulators

Standard setting bodies should consider the value-based approach of organic agriculture in which different perspectives and value expectations exist. Ethical values are per se in need of interpretation, and there is no unambiguous interpretation of the organic core values. It is therefore necessary to consider issues how decisions are reached, as well as which core values are and can be covered, in relation to integrating basic ethical values in organic standards and regulations.

All standard setting bodies should aim to adopt an open and transparent process on how to reach decisions on explication of core values. The procedure should involve stakeholders, through providing information and seeking feedback at certain key stages of the process. The process should give equal consideration to different voices and stakeholders, whilst ensuring coherence in the interpretation of the core organic values.

Organic farming in its current form has developed through the involvement of private operators at various levels and the private organic sector fulfils statutory functions in the organic inspection and certification systems that need to be recognised when regulating organic agriculture.

All standard setting bodies and regulators in Europe should aim for harmonisation of the ethical values behind the rules on the basis of the four principles of organic agriculture (POA) of Health, Ecology, Fairness and Care, and develop a common interpretation of the core value basis for further harmonisation of the rules.

There is limited experience in organic standards setting on how to implement some of the core values in the rules, especially the social values of fairness and care. The important task of developing new rules to implement these values so that they can become part of the organic guarantee system of inspection and certification in the future is a challenge for all standards setting bodies and offers opportunity for differentiation of private operators in the market place.

Guidelines for decision-making processes in the context of organic standards setting should be further developed building on important elements of ethical dialogue, such as respect for the arguments and emotions of the discussion partners, developing a common understanding and context sensitivity and a common understanding, and by relating theory (values) to practise.

6.10 Research recommendations

Intensification: Further research should be carried out on how the agro-ecological systems approach can be implemented and monitored in a balanced way so that the input driven intensification can be limited, in particular in the area of fertilisation and animal feeding, considering the implications on various specialist production systems different climatic regions.

Seed health of organic seeds: Further research is needed to increase the knowledge on the efficacy of the seed treatments that may be acceptable in organic farming for a greater range of host/parasite combinations taking into account the seed physiology and possible side effects on the germination. Further research is also needed to establish suitable threshold values for seed borne diseases, which can be used as an additional criterion for the quality of organic seeds and to establish lists of equivalent varieties of certain species as a more objective basis for the derogation decision of control bodies.

Organic production of mono-gastric animals (pigs and poultry): Organic livestock production can play a pioneer role to further the development of animal production systems that are land based and that limit intensification by restricting the use of certain inputs (feed materials) with the aim to produce products of high quality rather than maximizing production. However, because organic and conventional production systems for mono-gastric animals have different objectives and framework conditions, conclusions derived from research in conventional systems are not fully transferable to organic production.

Research should support the debate as to which types of pig and poultry production systems represent the best compromise between the different principles of organic farming. Further research is needed to develop feeding and overall management strategies for mono-gastric animals under the conditions of organic farming, including the suitability and choice of breeds/strains, feeding strategies and the composition of diets. Measures which help to increase the sensorial product quality and the production quality in relation to animal health and welfare should be developed and tested so that the findings can be considered in the organic certification process. Further research is needed to assess the availability of and requirements for vitamins in pig and poultry production under organic farming conditions.

Organic feed: There is a need for continuous assessment of the availability of organic feedstuffs (esp. cereals and pulses) in relation to different regions and countries of the EU. The balance between supply of and demand for organic feed materials should be monitored regularly on a regional and on the EU level. This should enable a better basis for future decisions on the necessity for allowing conventional feed materials according to Article 22 and make the decision process more transparent.

Animal husbandry: Further research is needed to assess the possibilities for further simplification of the EU rules on animal husbandry and housing that complies with the objective of achieving a high status of animal health and welfare

7 References

- Aarink, A. J. A., Hol, J. M. G., Beurkens, A. G. C. and Wagemans, M. J. M. (2005) Ammoniakemissie en mineralenbelasting op de uitloop van leghennen Wageningen. Report 337, Agrotechnology and Food Innovations - WUR
- Alroe, H. F., Byrne, J. and Glover, L. (2006) Organic Agriculture and Ecological Justice: ethics and practise. In: Halberg, N., Alroe, H. F., Knudsen, M. T. and Kristensen, E. S. eds. *Global Development of Organic Agriculture: Challenges and Prospects* Wallingford: CAB International, pp. 75-112.
- Alrøe, H. F. and Noe, E. (2008) What makes organic agriculture move - protest, meaning or market? A polyocular approach to the dynamics and governance of organic agriculture. *International Journal of Agricultural Resources, Governance and Ecology*, in press.
- Bellof, E. and Schmidt, E. (2005) Broiler production with 100 % organic feed is possible In: Hess, J., Rahmann, G. eds. *8th Scientific conference on Organic Farming 2 to 4 March 2005*. Kassel: Kassel University Press GmbH,, pp. p. 321-324.
- Benhabib, S. (1996) Toward a Deliberative Model of Democratic Legitimacy. In: Benhabib, S. eds. *Democracy and Difference. Contesting the Boundaries of the Political*. Princeton: Princeton University Press, pp.
- Bessei, W. (1993) Der Einfluss der Besatzdichte auf Leistung, Verhalten und Gesundheit von Broilern - Literaturübersicht. *Arch. Geflügelk.*, 57 97-102.
- Bos, J. F. F. P. (2006) Intersectorale samenwerking in de biologische landbouw; Mengvoergrondstoffen met binnen- of buitenlandse oorsprong: effect op energieverbruik van mengvoerproductie. . Wageningen UR and Louis Bolk Instituut Wageningen and Driebergen.
- CEU (2006) *Proposals for Council Regulations on organic production and labeling of organic products. Consolidated text of the general approach agreed by the Agriculture/Fisheries Council on 19-20 December 2006*. . Brussels: European Commission
- de Wit, J. and Verhoog, H. (2007) Organic values and the conventionlisation of organic agriculture. *NJAS Wageningen Journal of Life Sciences*, 54 (4), 449-462.
- EC-COM (2004) European Action Plan for Organic Food and Farming. Communication from the Commission [COM(2004) 415 final]. Commission of the European Communities. Brussels.
- EC-COM (2005) Proposal for a Council Decision on Community strategic guidelines for rural development (Programming period 2007–2013). . COM (2005) 304 final (5.7.2005). European Commission. Brussels.
- EC (1991) Council Regulation (EEC) No 2092/91 of 24 June 1991 on organic production of agricultural products and indications referring thereto on agricultural products and foodstuffs. *Official Journal of the European Communities*, L198 (22.7.91), 1-15.
- EC (1992) Council Regulation (EEC) No 2078/92 of the 30 June 1992 on agricultural production methods compatible with the requirements of the protection of the environment and the maintenance of the countryside. *Official journal of the European Communities*, L215 (30.7.92), 85-90.
- EC (1999) Council Regulation (EC) No 1804/1999 of 19 July 1999 supplementing Regulation (EEC) No. 2092/91 on organic crop production of agricultural products and indications referring thereto on agricultural products and foodstuffs to include livestock production. *Official Journal of the European Communities*, L222 (24.8.1999), 1-28.
- EC (2003) Commission Regulation (EC) No 1452/2003 of 14 August 2003 maintaining the derogation provided for in Article 6(3)(a) of Council Regulation (EEC) No 2092/91 with regard to certain species of seed and vegetative propagating material and laying

- down procedural rules and criteria relating to that derogation. . *Official Journal of the European Communities*, L206 17-21
- EC (2005) Organic Farming in the European Union: Facts and Figures. Analyses économiques et évaluation G.2. Analyses quantitatives, prévisions, statistiques. European Commission, DG Agriculture and Rural Development. Brussels.
- EC (2007) Council Regulation (EC) No 834/2007 of 28 June 2007 on organic production and labelling of organic products and repealing Regulation (EEC) No 2092/91. *Official Journal of the European Union*, L 189 (20.7.2007), 1-23.
- FAO/WHO (2004) Guidelines for the production, processing, labelling and marketing of organically produced foods. Codex Alimentarius Commission and joint FAO/WHO Food Standards Programme. GL32- 1999, Rev. 1-2001, Rev. 1- 2004. Rome.
- Gutmann, A. and Thompson, D. (1996) *Democracy and Disagreement: Why Moral Conflict Cannot Be Avoided in Politics, and What Should be Done About It.* . Cambridge: Belknap Press of Harvard University Press,.
- Habermas, J. (1983) *Moralbewußtsein und kommunikatives Handeln* Frankfurt am Main: Suhrkamp.
- Habermas, J. (1991) *Erläuterungen zur Diskursethik.* Frankfurt am Main: Suhrkamp
- IFOAM (2005) Principles of Organic Agriculture International Federation of Organic Agriculture Movements. Bonn.
- Kyed, S., Kristensen, I. B. and Tvedegaard, N. (2006) Gødning og halm i økologisk jordbrug [Manure and straw in organic agriculture]. . Økologisk Landsforening; Danmarks JordbrugsForskning; Fødevareøkonomisk Institut, KVL Copenhagen.
- Lockie, S., Lyons, K., Lawrence, G. and Halpin, D. (2006) *Going Organic. Mobilizing Networks for Environmentally Responsible Food Production.* Wallingford: CABI Publishing.
- Michelsoni, C. and Plakolm, G. (2007) Report on quality characteristics of varieties to be used in organic farming. EEC 2092/91 (Organic) Revision: Project report D 5.2. Associazione Italiana Agricoltura Biologica (AIAB). Rome.
- Michelsoni, C., Plakolm, G. and Schärer, H. (2007) Report on seed born diseases in organic seed and propagation material. EEC 2092/91 (Organic) Revision: Project Report D 5.1. Associazione Italiana Agricoltura Biologica (AIAB). Rome.
- Nicholas, P. K., Sundrum, A. and Padel, S. (2007) Guidance notes to operators including recommendations in relation to nutrient supply. EEC 2092/91 (Organic) Revision: Project report D 4.3. Institute of Rural Sciences, University of Wales (UWA) and University of Kassel (UNKA). Aberystwyth and Kassel.
- Nieberg, H., Offermann, F., Zander, K. and Jägersberg, P. (2005) Further Development of Organic Farming Policy in Europe, with Particular Emphasis on EU Enlargement D12: Report on the farm level economic impacts of OFP and Agenda 2000 implementation. EU CEE OFP European Organic Farming Policy QLK5-2002-00917.
- Padel, S. (2005a) Focus groups of value concepts of organic producers and other stakeholders. EEC 2092/91 (Organic) Revision: Project report D 2.1. University of Wales, Aberystwyth (UWA). Aberystwyth.
- Padel, S. (2005b) Overview of supply and demand for concentrated organic feed in the EU in 2002 and 2003 with a particular focus on protein sources for mono-gastric animals. EEC 2092/91 (Organic) Revision: Project Report D 4.1 Part 2. Institute of Rural Sciences, University of Wales, Aberystwyth (UWA). Aberystwyth.
- Padel, S. (2008 in press) Values of organic producers converting at different times: Results of a focus group study in five European countries. *Int. J. Agricultural Resources, Governance and Ecology*, 7 (1),
- Padel, S. and Lowman, S. (2005) Draft 2004 update of supply and demand for concentrated organic feed in the EU. EEC 2092/91 (organic) Revision: Update to project report D 4.1 part 2. University of Wales, Aberystwyth (UWA). Aberystwyth.

- Padel, S., Röcklinsberg, H., Verhoog, H., Schmid, O., de Wit, J., Alrøe, H. F. and Kjeldsen, C. (2007) Balancing and integrating basic values in the development of organic regulations and standards: proposal for a procedure using case studies of conflicting areas. EEC2092/91 (Organic) Revision (SSPE-CT-2004-502397): Project report D 2.3. University of Wales, Aberystwyth (UWA) and Danish Research Centre for organic Farming (DARCOF). Aberystwyth, Tjele.
- Prins, U. (2005) Verzelfstandiging van de biologische landbouw op het gebied van mest, voer en stro Louis Bolk Institute Driebergen.
- Rivera-Ferre, M. (2006) How environmentally (un)sustainable is organic production? The Dutch case. *International Journal of Agricultural Sustainability*, 4 (1), 15-21.
- Röcklinsberg, H. (2006) Consent and Consensus in Policies Related to Food - Five Core Values. *Journal of Agricultural and Environmental Ethics* 19 (3), 285-299.
- Schmid, O., Huber, B., Ziegler, K., Jespersen, L. M., Jens Gronbech Hansen, Plakolm, G., Gilbert, J., Lomann, S., Micheloni, C. and Padel, S. (2007) Comparison of the EEC Reg.2092/91 and selected national and international organic standards as regards compliance and identification of specific areas where harmonisation, regionalisation or simplification may be implemented in EEC 2092/91. EEC 2092/91 (Organic) Revision: Project report D 3.2. Forschungsinstitut Biologischer Landbau (FiBL). Frick.
- Sundrum, A. and Padel, S. (2006) Evaluation criteria for including feed materials in Annex II C and dietary supplements in Annex II D of the EC-Regulation 2092/91. EEC 2092/91 (organic) Revision: Project report D 4.2. University of Kassel (UNKA) and University of Wales, Aberystwyth (UWA).
- Sundrum, A., Schneider, K. and Richter, U. (2005) Possibilities and limitations of protein supply in organic poultry and pig production. EEC 2092/91 (Organic) Revision: Project report D 4.1. University of Kassel (UNKA). Witzenhausen.
- Thommen, A. (2007) Report on criteria list and evaluation guide for derogation regime. EEC 2092/91 (Organic) Revision: Project report D 5.3. Forschungsinstitut Biologischer Landbau (FiBL). Frick.
- Zanoli, R. (Ed.) (2004) *The European Consumer and Organic Food*, Aberystwyth School of Management and Business, University of Wales.