

Organic values and the conventionalization of organic agriculture

J. De Wit* and H. Verhoog

Louis Bolk Institute, Hoofdstraat 24, NL-3972 LA Driebergen, The Netherlands

* Corresponding author (e-mail: j.dewit@louisbolk.nl)

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Abstract

It is debatable whether organic agriculture as a whole is conventionalizing, as historical data are almost absent. However, a short overview of a few organic sectors in the Netherlands shows that the influence of conventional agro-food commodity chains is increasing and that the use of off-farm inputs is high. So current practices in organic agriculture (OA) may have negative effects on issues like energy use, nutrient losses and recycling, even though the practices are compliant with the existing EU-regulation on OA. This reduces the distinguishability of OA, thereby threatening long-term market perspectives and public support. Whether conventionalization is problematic depends on the opinion of what 'organic agriculture' actually entails. It is argued that no conclusions can be drawn about core values of OA in a *normative* (ethical) sense from sociological research on values of various stakeholders and their motives for being active in the organic chain. Only normative values may function as a guide towards the future, inspiring practices in OA as well as long-term market perspectives and regulatory developments. The OA principles formulated by the International Federation of Organic Agriculture Movements (IFOAM) on ecology, health, care and fairness do provide such a normative value basis and appear to be firmly rooted in the values of OA identified in the literature. Looking at the consequences of conventionalization in some sectors of OA in the Netherlands, we can conclude that they conflict with all IFOAM principles, in some way, especially with the Principles of Ecology and Health. If the OA sector wants to adhere to these core values and promote long-term market perspectives as well as public support, a development is required that limits conventionalization or mitigates its negative effects. The use of off-farm inputs is an important factor in conventionalization itself and has negative effects on the core organic values. Given the influence of international trade and economic competition, this development will require regulative action at international level that is focused on a reduced use of off-farm inputs (either conventional or organic inputs transported over a long distance).

Additional keywords: arable production, intensification, off-farm input, pigs, poultry

Introduction

In discussions on organic agriculture (OA), it is often mentioned that modern organic

agriculture is showing signs of increasing intensification and specialization, similar to trends in conventional agriculture (e.g. Guthman, 2004). This paper investigates whether this conventionalization is a dominant feature of OA by analysing the development of organic arable, pig and poultry production in the Netherlands as case studies.

The practices in OA in the Netherlands are compliant with the existing EU-regulation 2092/91 on OA (Anon., 1991). This regulation entails many rules concerning inspection, labelling, allowed inputs from non-organic sources and animal housing, to “ensure conditions of fair competition between organic producers” and “to improve the credibility of organic products in the eyes of the consumers”. Yet, if the current regulation on OA leaves room for conventionalization and OA becomes less distinguishable from conventional agriculture, this might have negative consequences for the general image of OA, thereby, for example, hampering long-term market perspectives.

However, the discussion as to whether better or additional rules or standards for OA are required is not only a question of (market) strategy and distinguishability, as OA is a self-defined form of agriculture that is based on values (e.g. Kristiansen & Merfield, 2006). This discussion has become complicated, however, because different views or perspectives on what ‘organic’ means as well as different motives among organic stakeholders are reported (e.g. Zanolli & Naspetti, 2002; Meeusen *et al.*, 2003). Such findings are often the result of sociologically oriented research into the motives shown by different stakeholders in OA (producers and consumers in particular). In the second part of this paper it will be argued that such a sociologically oriented approach falls short in answering the question in which direction OA and its regulations should develop. Therefore, a normative approach is adopted, based on OA principles formulated by the International Federation of Organic Agriculture Movements (IFOAM) in 2005 (Luttikholt, 2007) after a long process of consultation and debate. In the final section of this paper, current OA practices in the Netherlands and their effects are weighed against these principles and their underlying values.

Conventionalization of organic production in the Netherlands

Studies conducted by, for example, Buck *et al.* (1997) and Guthman (2004) consider the organic sector as influenced by agribusiness and off-farm capital in rule setting, inter-sectoral dynamics and agricultural practices. In the debate, the term ‘conventionalization’ is used to describe the dynamics by which the organic sector reproduces the most salient features of conventional agriculture. According to the conventionalization hypothesis (Hall & Mogyorody, 2001), organic farming becomes a slightly modified version of modern conventional agriculture, being subjected, for example, to modernization and intensification – in which economies of scale are becoming increasingly important and farms are increasingly relying on purchased off-farm inputs such as feed, fertilizer and machinery.

There are indications that conventionalization is a phenomenon in OA, as is shown by the following OA cases in the Netherlands. The Netherlands is probably illustrative for other densely populated regions with high labour and land prices in north-western

Europe, but this cannot be generalized without further evidence. However, it is difficult to examine trends of conventionalization as no reliable historical data are available. In the Netherlands, for example, official data collection started acknowledging the organic sector only from 1991 onwards. Livestock numbers have only become available since 1995, while data on mineral balances and origin of inputs were never systematically recorded.

Organic pig and poultry production

Early references have been made to organic farms with high animal densities on small free-range areas; for example two pig farms excreting on average 300 kg P₂O₅ per ha and one farm with laying hens excreting an estimated 1500 kg P₂O₅ per ha (Anon., 1977). But until 1995, organic poultry and pig production in the Netherlands was relatively small: no specialized pig and poultry farms were recorded until 1996 (Anon., 2006a). The animals were mainly kept in small production units, integrated in mixed farms (with dairy and/or arable production). Meat processing took place in small independent slaughterhouses, while eggs were sold either directly to the consumer or via small distribution centres to health food shops in the Netherlands and Germany. From 1995 onwards, general veterinary rules have become tighter, particularly hindering the small-scale production of pigs, mainly as a result of administrative requirements and required investments in hygienic measures. Simultaneously, marketing opportunities grew for organic meat and eggs.

In the case of Dutch organic egg production, export opportunities were a major driving force behind the expansion of production: in 2003, approximately 70% of the total number of organic eggs were exported (mainly to Germany). In the case of Dutch organic pig production, the government was a major driving force, aiming at increasing domestic organic pork consumption and creating an alternative for large-scale conventional pig production. This resulted in an agreement in 1999 to increase organic pork sales by a combined effort of meat processing and retail companies, public organizations and organic pig producers. Simultaneously, a large conventional meat processing industry (Dumeco) entered the sector. Due to these new market opportunities, several conventional pig farmers converted to organic farming. In 2003 it appeared that the sales projections for organic pig meat were too optimistic, resulting in a reorganization of the sector in which some producers were compensated for withdrawing from the sector (Meeusen *et al.*, 2005).

During these years of professionalization, most of the original pig farmers either increased their production size or ceased organic pig production altogether, mainly in reaction to two critical requirements set by the processing industry. Firstly, the minimum number of pigs produced, as the main pork-processing companies stopped collecting small numbers of pigs, and secondly, the carcass quality of the pigs, because revised payment schemes implied higher penalties on low meat and dressing percentages. In poultry production, specialization and scaling up is the dominant phenomenon.

Relatively large-scale, specialized farms now dominate animal production in the Netherlands. For example, the number of specialized organic pig and poultry farms rose from 11 in 1996 to 52 in 2003. The average number of pigs and laying hens per

farm, of all organic farms keeping pig and poultry, respectively, rose from 160 and 2000 in 1998 to 390 and 4200 in 2003 (Anon., 2006a). Since then, the total number of laying hens has nearly tripled (to 834,000 in March 2006), mainly on farms with more than 3000 hens. Thus, the average number of laying hens per farm rose to 6400, and more than 50% of all laying hens are kept on farms with more than 9000 hens (Anon., 2006b). These farms are mainly owned by recent converters with hardly any land of their own (on average around 7.5 ha per farm). For 2003 it was calculated that these farmers sold a major part of their manure production (equivalent to 540 kg N per ha) on contract to other organic farms (Prins, 2005).

Driven by market opportunities, this development could take place because the standards did not contain any provision concerning the origin of pig and poultry feed except for a limitation of feed from non-organic sources. This is in contrast with the standards for organic dairy production, where besides the requirement of organic origin at least 50% of the feed should be home-produced. Consequently, in 2003 most pig and poultry feed was from organic origin (> 80%), but only a minor part (< 10%) was produced at the pig and poultry farms themselves. Moreover, most of the animal feed concentrates (> 70%) originated from abroad, with a growing percentage of concentrate feed coming from distant areas such as Latin America and the Far East. If all animal feed were to be produced within the Netherlands, more than half of the present area of organic arable production would be required (Prins, 2005).

This conventionalization of organic pig and poultry production has negative side effects, such as:

- Environmental problems as a result of inefficient nutrient utilization by a high concentration of animals kept free range. Nutrient loads of these yards can be very high, particularly for the parts of the range close to the stable that are intensively used. Aarnink *et al.* (2005), for example, estimated that the nutrient load of the first 20 metres of the yard belonging to a farm with 3000 organic laying hens could reach the equivalent of more than 2800 kg N and 1600 kg P₂O₅ per hectare. Ammonia emission from the yard appeared to be rather low compared with the emission from the hen house (less than 6% of total emission).
- Higher energy consumption for feed due to transport. Bos (2006) calculated that a pig ration with 100% nationally produced feed requires 25% less energy compared with a current ration with only 15% domestic feed.
- Few and highly standardized human-livestock interactions. Animal health and welfare is a highly multi-factorial issue with much variation in OA (Rymer *et al.*, 2006). Situations of poor health and welfare certainly do occur in small farms as well. However, farm size is one of the influencing factors. Large numbers of animals on a farm limit the possibilities for adequate individual animal care, which is likely to be essential in maintaining a good animal health status (Hemsworth *et al.*, 2000). This particularly holds good for organic production, where preventive use of medicines and measures such as (partial) beak trimming – to prevent hens from feather pecking and cannibalism – is not allowed.

Organic arable production in the Netherlands

Until the late 1970s and early 1980s, organic arable production in the Netherlands was small, and was concentrated on a few specialized arable farms, some large mixed farms and many small vegetable farms. Fertilization levels appeared to be low, although exceptions have been mentioned in horticulture (Anon., 1977).

In the late 1980s and early 1990s, a number of conventional arable farmers, being concerned about environmental issues and global fairness ('critical farmers'), converted to organic arable production. These farmers introduced a high level of professionalism and technical skills into organic crop production. The products were sold through several small wholesalers, among them one co-operative in Lelystad (Nautilus), supplying specialized organic stores mainly. A growing supply and consumer demand combined with export opportunities to Germany and Great Britain strengthened the position of the Nautilus co-operative. In 2002 the co-operative had obtained a market share of more than 50% of sales of fresh produce and 80% of the sales to processors. Expected sales were pooled and co-ordinated to spread the marketing risks of individual crops among members for whom it was possible to engage in forward planning where crop rotations were concerned (Wijnands *et al.*, 2005).

A second wave of farmers converted to organic arable production in the period 1999–2001, triggered by governmental conversion payments and by a growing market, mainly caused by supermarkets entering the organic market. These farms were better capable of delivering what the market wanted in terms of volume, production per hectare and external quality, but they were no longer willing to engage in the co-operative structure. Organic production grew faster than demand. Overproduction, competition from imports and a weakened bargaining position on the part of the farmers due to the collapse of the co-operative structure all contributed to a drop in farm-gate prices. Most of the co-operative's former members now either organize the sales of their produce individually or in small regional groups. Still, a major part of the arable products are being exported (65% of the vegetables), while the position of the supermarket chains seems to stabilize at more than 50% of the organic vegetables and potatoes consumed in the Netherlands (Wijnands *et al.*, 2005).

To compensate for lower prices, farmers grew more than 50% of high-value crops in rotation, such as vegetables and potatoes (Wijnands *et al.*, 2005). Closely related to this and the market specifications, average fertilization rates increased. Increasing amounts of other 'permitted fertilizers' of conventional origin are also used: for example 'vinasse', a by-product of the sugar beet industry and a fast-releasing N source with high levels of K.

Organic animal production in the Netherlands is relatively large and is selling a major part of its manure (see above). Nevertheless, in 2003 only 7% of the total N-input of 198 kg N per hectare on average modern organic arable farms on clay soils originated from organic sources, while 150 kg (or 75%) came from non-organic animal manure. If animal manure and other permitted fertilizers of conventional origin are to be banned, manure application rates on organic arable farms will have to be reduced by more than 50%. Simultaneously, organic livestock farmers, particularly dairy farmers, should double the sale of manure (Prins, 2005).

Table 1. Average nitrate contents in carrots from randomly chosen farms in different years during the period 1996–2004.

Year	Number of farms	NO ₃ (mg kg ⁻¹)
1996	10	89
1998	11	117
2003	20	232
2004	15	230

Source: Bokhorst & Janmaat (2006).

The intensive cropping patterns and the high fertilization rates resulted in large mineral surpluses of approximately 90 kg N (excluding N-fixation), 60 kg P₂O₅ and 175 kg K₂O per hectare on the average modern organic arable farms on clay in 2003 (Prins, 2005). These phosphate surpluses are even higher than on comparable integrated conventional farms, although nitrate leaching is often lower (Spruijt-Verkerke *et al.*, 2004). Moreover, the increasing nitrate levels in carrots (see Table 1) mirror the intensified arable production and high fertilization rates. For a long time, carrot was an organic product that was hardly fertilized. But presently, nitrate levels are three times higher than in conventional carrots, with a wide range varying from 11 to 864 mg nitrate per kg (Hoogenboom *et al.*, 2006).

Conclusions on the conventionalization of Dutch organic agriculture

On the basis of the information presented above, it cannot be concluded that conventionalization is the dominant phenomenon in OA as a whole. However, in the described sub-sectors of Dutch organic agriculture there clearly is a growing influence of conventional agro-food commodity chains and of the utilization of high levels of off-farm inputs. Also, it can be concluded that this form of organic agriculture does not attain high levels of environmental protection and animal welfare. Simultaneously, standards of animal welfare and environment in conventional agriculture are increasing. So one might conclude that organic agriculture is becoming less distinguishable from conventional agriculture (Meeusen *et al.*, 2005).

Even though current practices in Dutch OA are compliant with the current EU-regulation 2092/91 on OA, these developments may have serious consequences for the general image of OA. They will hamper long-term market perspectives as well as support from (inter)national authorities, animal welfare and environmental organizations. One of the reasons they have been supporting organic agriculture is the production of so-called 'public goods' such as better animal welfare, a better environment and rural development (Stolz & Stolze, 2006). The smaller the distinction with conventional farming in this respect, the narrower the support will be.

It therefore appears necessary to have a debate as to whether a development is required to counteract the trends of conventionalization, and if so, how this development

can be achieved. This debate is complicated because additional rules will increase production costs (Bos & De Wit, 2006). This would contradict current efforts to decrease price differences with conventional products in order to realize stronger market growth, which in turn will lead to larger economies of scale and consequently decreasing price differences. Moreover, additional rules might contradict one of the objectives of the present revision of the EU-regulation, i.e., the simplification of the regulation. On the other hand, some regulation seems required as private initiatives to limit, for example, off-farm inputs have to compete in the market with those that adopt less restrictive practices if this is permitted by the (international) rules.

Organic values

Whether conventionalization is problematic can also be analysed by weighing its consequences against the values the organic movement holds. However, the different views or perspectives on what 'organic' means and which values are important for OA hamper such an analysis. It is argued that sociologically oriented research into the motives shown by different stakeholders lacks a normative judgement about the values of OA, and thus falls short in providing a normative basis for the question in which direction OA and its regulation should develop. Later in this section it is argued that the OA principles formulated by IFOAM in 2005, may serve as such a normative basis.

Organic values as motives of different stakeholders

In literature the word 'value' is used in different ways. In most sociological research on organic values, the word value is almost identical to the motives of different stakeholders in the organic sector (producers, retailers, processors, consumers) for being active in the organic sector. This type of research is often initiated by the idea that insight into the various values, motives and expectations held by stakeholders may help prioritize research, extension and marketing activities and also help establish stable organic chains. A few examples are described below.

Value segmentations in the organic chain

The report compiled by Meeusen *et al.* (2003) forms the basis for later, more detailed research covering the organic food chain in the Netherlands (Meeusen *et al.*, 2005; Wijnands *et al.*, 2005). The authors present the results of interviews with stakeholders in the organic sector. The report further contains an extensive theoretical analysis of the literature on values, value segmentation and the relationship between values and behaviour. On this basis, the authors arrived at a segmentation based on two sets of values: individualist versus collectivist, and materialist versus non-materialist. They show that the proposed value segmentation accounts for differences in behaviour exhibited by the organic actors with respect to expectations concerning organic food (what is 'organic'), reasons for buying organic food and expectations with respect to other actors (communication and co-operation in the sector).

Meeusen *et al.* (2003) describe four 'world views', or organic 'chains'. The combination of individualist and materialist values ('calculating chain') centres mostly around financial motives, whereas in the combination collectivist-immaterial ('responsible chain') the emphasis is on non-financial motives. The latter type of actors usually opts for fully organic, i.e., no production or retailing of non-organic products. They maintain more informal relationships among each other (based on trust, not on formal contracts), with a greater willingness to give and ask for information on the product and the production methods. Individual interests are less important than collective values (public goods) such as environment, animal welfare or social justice (fair trade).

The unique chain (individualist and non-materially oriented) and the traditional chain (collectivist and materially oriented) are somewhere in between the opposites represented by the other two chains.

Attitudes expressed by organic pig farmers

In a research project about attitudes of Dutch organic pig farmers towards animal welfare issues, Van Huik & Bock (2006) found that different attitudes exist, which may be related to different farmer types in organic agriculture. These farmer types differ as to their original motivation to adopt organic farming. The 'ideological' farmer type has become an organic farmer out of ideological (ethical) motives; the 'pragmatic' farmer type is mainly motivated by the continuation of the farm and by financial arguments. The latter may have been attracted to convert to organic farming because of financial incentives offered by the government and may be ready to give up organic practices when more financial gain can be obtained through other ways of pig farming. Views on animal welfare also differ. The ideological farmer type focuses on the animals themselves and their ability to show natural behaviour, whereas the pragmatic farmer type also includes performance levels (production efficiency) in his views on animal welfare.

In conclusion, the authors believe to have found evidence supporting the view that financial incentives contribute to the conventionalization of organic farming, and thus may lead to a reduction of animal welfare standards in the organic sector as a whole through unfair competition.

Different perspectives on organic agriculture

On the basis of their extensive knowledge of the organic sector, Alrøe & Noe (2007) distinguish three perspectives on organic farming within the sector:

1. Organic as a protest movement against modern industrialized agriculture, which uses inorganic fertilizers, chemical pesticides, food additives or genetically modified organisms.
2. Organic as a logo-poietic system or ideology, i.e., a self-organizing principle ('autopoiesis') creating meaning ('logo'). Organic agriculture is seen as a system that creates itself and holds itself together by a common meaning, a shared world view, core principles.
3. Organic as a market niche: as part of the global market system and based on organic standards that define the market niche.

The authors argue that each perspective incorporates a certain understanding of organic

agriculture, featuring certain concepts and values and a particular logic or rationality, and that these perspectives cannot be merged into one.

Conclusions concerning sociological research on organic values

The short overview presented here concerning this type of sociologically oriented research on organic values leads to a series of general conclusions:

- This type of research is directed at the discovery of differences (value pluralism) in order to be able to distinguish certain groups. Meeusen *et al.* (2003) conclude that there are various interpretations of organic, albeit 'with an underlying common basis', shared by all. However, the report does not state explicitly what this value basis entails. In contrast, Alrøe & Noe (2007) do not speak about an underlying common basis that is valid for all stakeholders. Also Van Huik & Bock (2006) conclude that organic farmers cannot be perceived as a homogenous group, sharing the same beliefs and ethical standards.
- This type of research does not aim to discover a hierarchy in the values found. All groups have a similar status and should be treated equally (Alrøe & Noe, 2007). All the authors mentioned give indications of what may happen if a certain perspective becomes dominant. For example, Van Huik & Bock (2006) conclude that a dominance of the pragmatic type may lead to further conventionalization of organic agriculture and to a lower standard of animal welfare.
- The sociologically oriented approach therefore provides no firm guidance as to how certain developments of organic agriculture should be judged, for example whether conventionalization of organic agriculture is good or bad. The answer just depends on the particular perspective.
- Although 'organic values' are not discussed or defined, all examples of sociological research distinguish one specific group, i.e., a group of people who are 'motivated by organic values'. Meeusen *et al.* (2003) call this group the 'responsible chain': stakeholders who are intensely involved in organic philosophy and organic intentions. Van Huik & Bock (2006) speak about the 'ideological' farmer type, and Alrøe & Noe (2007) mention the logo-poietic perspective as one perspective amongst other. This illustrates the importance of distinguishing between the empirical and the normative domain of values.

This question of the organic identity, or the core values or principles of organic agriculture belongs clearly to the normative domain. It does not ask how organic is perceived by stakeholders, or what their motives are, but what organic ideally should be as a guide towards the future. From the motivation why certain stakeholders choose 'organic' it is not possible to draw any conclusions about the organic identity itself. When Meeusen *et al.* (2003) speak about stakeholders who are intensely involved in organic philosophy, this already presupposes that something like an organic philosophy exists, whether people are motivated by it or not. Similarly, Van Huik & Bock (2006) mention a more 'general organic philosophy', apart from the motivation to become an organic farmer. This leads to the following question: What is this organic philosophy, this consistent set of organic core values? This question is addressed in the following section.

The organic value-base

The important question of organic identity, or the core values or principles of organic agriculture can be approached in different ways, ranging from tracing the historical roots of the organic movement (from Steiner and Balfour to Carson and Schumacher), reviewing literature on values, definitions of organic agriculture underlying regulations, to empirical research among stakeholders. In empirical research aimed at getting closer to a definition of organic identity it is important to ask questions that directly focus on the ethical values or principles considered being typical of organic agriculture. This was done, for example, in research conducted by Padel (2005) on the values viewed as basic for organic agriculture, in which groups of stakeholders in the organic sector in several European countries were interviewed. Usually, the findings of such empirical research need some kind of normative reconstruction that goes beyond the results of empirical research, as was done by Alrøe *et al.* (2006) about the value 'ecological justice'. A similar approach, combining empirical research and normative reconstruction, was followed by Verhoog *et al.* (2003) on the value of 'naturalness'.

In the European research project Organic Revision, in which the authors of this paper participate, all approaches mentioned above are followed to come to the so-called organic value-base (Padel *et al.*, 2007). The main conclusion is that the four IFOAM principles of organic agriculture – i.e., the values mentioned in the explanation accompanying the principles – appear to be firmly rooted in values identified in empirical studies, in the literature and in other attempts to identify organic principles, although different sources vary in their emphasis and in their terminology. The IFOAM principles form an important document because their formulation involved a process of stakeholder participation, deliberation and reformulation in several rounds, aiming at consensus and democratic acceptance at the General Assembly of IFOAM in Australia in 2005 (Luttikholt, 2007). This procedure in itself is of interest in developing a procedure for balancing values and integrating them into standards. According to IFOAM, there are four principles on which organic agriculture is based:

1. The Principle of Health. Organic agriculture should sustain and enhance the health of soil, plants, animals, humans and the planet as one and indivisible. This principle covers values such as interconnectedness of all life, integrity and non-pollution.
2. The Principle of Ecology. Organic agriculture should be based on living ecological systems and cycles. It should work with them, emulate them and help sustain them. This principle covers values such as the exclusion of chemicals, the use of closed cycles, recycling, a reduction of fossil energy consumption and other (non-renewable) input consumption, being site-specific, the protection of biodiversity and the adoption of a holistic approach.
3. The Principle of Fairness. Organic agriculture should be built on relationships that ensure fairness with regard to the common environment and life opportunities. This principle covers values such as equality of and respect for all life opportunities, animal welfare and justice.
4. The Principle of Care. Organic agriculture should be managed in a precautionary and responsible manner to protect the health and well being of current and future generations and the environment. This principle covers values such as precaution,

transparency and participation. These principles act together and are meant to be ethical, serving to inspire the organic movement in its full diversity and thus aiming at their worldwide adoption.

Cases of conventionalization against the organic core values

If the consequences following conventionalization of some organic agricultural sectors in the Netherlands are weighed against the organic values encompassed by the IFOAM principles, the evaluation turns out to be rather negative, especially concerning the principles of ecology and health.

The specialized units producing organic pigs and poultry demonstrate a high level of dependence on organic feed inputs that are transported over a considerable distance. Transporting inputs over long distances requires the use of fossil fuels and makes it less likely that nutrients are recycled. The case of specialized arable farms illustrates a strong reliance on manure from conventional sources. This dependence on inputs, irrespective of whether these are from organic or conventional sources, is in conflict with the value of closing the production cycle and of reducing reliance on external inputs, both of which are included in the principle of ecology.

In both cases there is also a contradiction with the value of avoiding pollution referred to in the principle of health. High fertilization rates as well as large numbers of animals using a free range lead to high mineral surpluses per unit land, endangering the (local) environment. The case of organic arable production, with increasing nitrate levels in the product, also highlights a conflict of current rules on input use with the value of production of high-quality nutritious food as referred to by the principle of health.

It is also likely that in the large-scale, specialized pig and poultry units, the number of human-livestock interactions is reduced. This may well conflict with the aim of maintaining good animal health and welfare, without preventive use of medicines, in accordance with the principles of health and fairness.

The principle of care is involved because there is a risk of contamination by GMOs or by traces of chemicals not permitted in OA as non-organic inputs (fertilizers) are used. This principle is also involved as off-farm inputs extend production cycles. Extending production cycles reduces the possibilities of communication, traceability and, in the process, trust. Feeling responsible for the environment, the animals, and the people in the organic chain, as implied by the principle of care, implies that there is transparency and involvement of all stakeholders.

There appears to be a potential conflict between values of closing the production cycle (principle of ecology) and avoiding pollution (principle of health), both of which supporting further restrictions on the use of conventional inputs, on the one hand, and the value of minimizing resource use that would support preference for the use of local conventional inputs rather than organic inputs that have to be transported over distance, on the other hand. However, this potential conflict can be resolved by adjusting organic production to the locally available inputs and resource base, though this contrasts current trends and practices to some extent.

Conclusions

The Dutch situation does not provide conclusive evidence for the conventionalization of OA as a whole, as sufficient historical data are lacking. However, indications pointing to conventionalization of important sectors are strong, because the influence of conventional agro-food commodity chains is increasing and the use of off-farm inputs is high. So given current standards, OA may have negative effects on issues such as energy use, nutrient losses and cycling. Furthermore, it has been shown that these consequences are a result of agricultural practices facilitated by the large-scale use of off-farm inputs of conventional origin (in the case of organic arable production) and of organic inputs transported from faraway regions.

From the short review of sociological research on the motives of different stakeholders in the organic sector it is concluded that no common organic values can be derived from it and thus no normative basis for the evaluation of developments such as the conventionalization of OA. In a normative approach, organic values serve as guides for the future or to judge whether certain activities should or should not be engaged in, because they are in conflict with accepted principles. It is stated that the OA principles formulated by IFOAM after a long process of consultation and debate, can serve as a basis for evaluating the consequences of conventionalization as these principles appear to be firmly rooted in the values identified in history, literature, regulative definitions and empirical research.

Looking at the consequences of conventionalization of OA in the Netherlands, we can conclude that they conflict to some extent with the values in all IFOAM Principles, but most of all with the values in the principles of ecology and health.

In other words, if the OA sector wants to adhere to its core values and cultivate long-term market perspectives as well as public support based on its distinguishability, a development is required to limit conventionalization or to mitigate its effects. Such effects occur in intensive situations in the Netherlands – and probably also in other parts of north-western Europe. As the use of off-farm inputs (either from conventional sources or organic inputs transported over a long distance) plays an important role both in conventionalization itself and in its negative effects on the core organic values, this development is best focused on a reduced use of off-farm inputs. Given the financial motivation of important stakeholders and the influence of international trade and economic competition, such development will require regulative action at international level. This should be focused on better rules (regulating external inputs being more important than the last tiny possible additive) or even on a regulative system in which operators (are allowed to) take responsibility to translate organic values into practice, possibly coupled to regulative procedures based on participatory guarantee systems.

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