

## **Organic farming: An approach to make agriculture more sustainable?**

Ökologischer Landbau:

Ein Beitrag zur nachhaltigen Entwicklung der Landwirtschaft?

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### **Zusammenfassung**

In vorliegendem Beitrag wird der Frage nachgegangen, was der ökologische Landbau zu einer nachhaltigen Entwicklung der Landwirtschaft leisten kann. Aus theoretischer Sicht zeigt sich, dass die Prinzipien der ökologischen Landwirtschaft eine hohe Kompatibilität mit jenen der „strong sustainability“ aufweisen. Die empirische Überprüfung der festgestellten theoretischen Übereinstimmung kommt zu differenzierten Ergebnissen: Zahlreiche Forschungsergebnisse bestätigen die Vorzüglichkeit des ökologischen Landbaus in den Nachhaltigkeitsdimensionen Natur, Ökonomie und Gesellschaft. Allerdings trägt die aktuelle Dynamik in Agrarpolitik und Markt zu einer vermehrt kurzfristig ökonomischen Orientierung der landwirtschaftlichen Produktion auch auf Biobetrieben bei. Dies gefährdet zumindest mittelfristig betriebswirtschaftliche Rentabilität, Sozialverträglichkeit sowie ökologische Leistungen des Biolandbaus. Die Umsetzung nachhaltiger Entwicklung wird stark von gesellschaftlichen, politischen und ökonomischen Rahmenbedingungen beeinflusst; Verbesserungen erfordern eine umfassende Palette an Maßnahmen.

**Schlagerworte:** ökologischer Landbau, nachhaltige Entwicklung

### **Summary**

This paper discusses the potential contribution of organic farming to a sustainable agricultural development. From a theoretical point of view

there exists a high compatibility of the principles of organic farming and the “strong sustainability” paradigm. Empirical results show a differentiated image: Various scientific studies confirm the positive effects of organic farming regarding the sustainability dimensions nature, economy and society. Though, current political and market-driven dynamics bear the risk of steering organic farming in the direction of technologically oriented and short-term economically efficient farming systems. Subsequently, this endangers the ecological performance, economic profitability and social aspects of organic farming. Thus, the realization and improvement of sustainability within the organic sector is strongly determined by social, political and economic conditions.

**Keywords:** organic farming, sustainable development

## **1. Introduction: Principles of organic farming and sustainable development**

Organic farming (synonymous with ecological farming) is determined in EU regulation EWG No. 2092/91. Considering the actual farming practices in Central Europe, organic farming is regarded as the production system with the highest degree of ecological compatibility (BMLF, 1999a). This statement is based on the principles of organic farming (EICHENBERGER and VOGTMANN, 1981, LINDENTHAL et al., 1996), which are to a great extent corresponding with the criteria for a (ecologically strong) sustainable development as stated by DALY (1991). Moreover, in its basic standards IFOAM (2000) formulates also some principle social and economic aims of organic farming. “As such, the objective of sustainability lies at the heart of organic farming” (LAMPKIN, 1994) and its comprehension of sustainability corresponds with the one described by the “egg of sustainability” (see fig. 1): There exists a certain kind of hierarchy between the different dimensions of sustainable development; nature forms the limits for the development of all other aspects <sup>1</sup>.

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<sup>1</sup> This hierarchy is valid concerning the framework and limitations for the sustainable realization of the different dimensions. It does not imply a discrimination of a particular dimension regarding its meaning for sustainable development in general.

Naturally, dimensions are interrelated and dependent and possess - as well as the whole system - a dynamic character (in fig. 1 indicated by arrows).

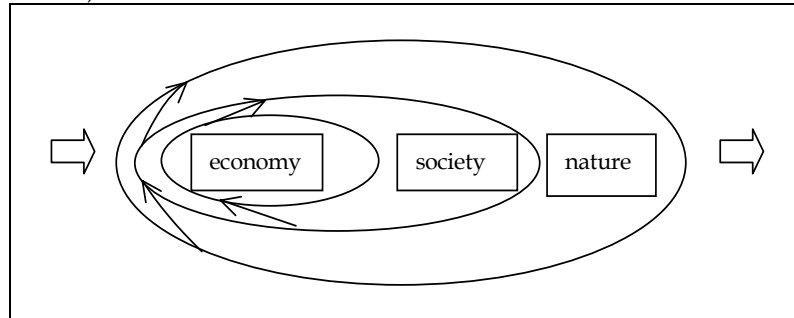


Fig. 1: The „egg of sustainability“<sup>2</sup>

Quelle: BIRKMANN, 2000, 166 following BUSCH-LÜTY, 1995, 118, adapted

Some authors suggest that the agricultural sector offers better opportunities to realize sustainability strategies than other sectors: Agriculture is the economic sector with the closest relations to nature, food has the broadest „effect of diffusion“ into society and there is evident need for political action because of agricultural surplus (STEINMÜLLER, 1993). Of course agriculture is - as well as other industries - exposed to general political conditions which restrict the ability to act sustainable (HOFREITHER and SINABELL, 1994). Nevertheless, there could be some scope to put sustainability strategies into action by combining the models of sustainable development and organic farming.

## 2. Targets reached on organic farming's way to sustainable development

While the congruence between the aims and principles of sustainable development and organic farming is high, the ability of organic farming to reach these objectives has to be further analysed. Instead of trying to find another - necessarily incomplete - definition of sustainable

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<sup>2</sup> In this description other dimensions of sustainable development like technical or institutional aspects are included in the nature or social dimension respectively.

agriculture we will base our analysis on a number of different aspects contributing to an agricultural sustainable development.

## 2.1 Environmental aspects

Most empirical evidence is available for the nature and environmental aspects of organic farming respectively, which constitute an important starting point for the organic movement and are the most significant and consistent claims made by advocates of ecological agriculture up to today. In fact, vast empirical evidence concerning groundwater quality <sup>3</sup>, soil <sup>4</sup>, energy use <sup>5</sup> and biodiversity <sup>6</sup> prove that organic farming contributes to ecological improvements more than other farming systems.

## 2.2 Economic aspects

As socio-economic factors had less importance for the pioneers of the organic farming movement, these aspects were given attention to at a later stage. Some authors conclude that organic farming disregards and even neglects the socio-economic aspects of sustainable development (THOMAS, 1999; HOFFMANN, 2001). Nevertheless, various studies from Austria as well as other countries of the European Union show, that organic farming is not only an interesting alternative from an ecological but also from a farm economic point of view: On the one side, natural yields are often lower <sup>7</sup> and fixed costs as well as labour costs are often higher on organic farms. On the other side, the frequently lower variable costs <sup>8</sup>, higher prices and subsidies contribute to higher total profits on organic farms <sup>9</sup>. Further, profits per family labour unit of organic farms often exceed those of conventional holdings <sup>10</sup>. More-

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<sup>3</sup> DALGAARD et al. (1998), DRINKWATER et al. (1998)

<sup>4</sup> FRIEDEL et al. (2001), MÄDER et al. (2002)

<sup>5</sup> LANDBAUFORSCHUNG VÖLKENRODE (2000), WECHSELBERGER (2000)

<sup>6</sup> WACHENDORF and TAUBE (2001)

<sup>7</sup> SCHULZE PALS and NIEBERG (1997)

<sup>8</sup> KNICKEL (1995), OFFERMANN and NIEBERG (2000)

<sup>9</sup> EDER (1997), OFFERMANN and NIEBERG (2000)

<sup>10</sup> BMLF (1992-1999), BMLFUW (2000-2002)

over, organic farms are more often run by full-time farmers than conventional ones (OFFERMANN and NIEBERG, 2000) and have therefore the potential to prevent unemployment in the agricultural sector.

BATEMAN et al. (1993), SCHEELHAASE and HAKER (1999) tried to quantify possible effects of a large scale conversion to organic farming on agricultural up- and downstream sectors by using input-output-analysis. Summarizing the results, they found neutral to slightly positive influence of widespread organic farming on income and employment in the up- and downstream sectors. Losses in the fertilizer and pesticide industry were compensated by gains in the processing and marketing sectors. Moreover, KNICKEL and SCHRAMEK (2001) noticed indirect effects like an improved image of the region, the rise of other regional initiatives as well as the stabilisation of agricultural employment.

### 2.3 Social aspects

To sustain labour- and human capital it is necessary to make use of skills, talents and knowledge of local citizens (FLORA, 2000). For agriculturalists in the industrialized countries of the world, there has been a progressive de-skilling of the production process as it has become more industrialized. Organic farming contributes to maintain production skills, involving an understanding of the local ecosystems and an ability to adapt to changes in nature (NEUNTEUFEL, 2000; VOS, 2000, 252; ALBERT et al., 2001). In addition, organic farmers are on average younger, have higher levels of formal education (PADEL, 2001, 44; BMLFUW, 2002, 138) and are more open to change (PUGLIESE, 2001, 119, 123) than conventional ones. SCHOON and TE GROTENHUIS (2000, 22) point out that conventional farmers experience the lack of societal appreciation for their works as painful, whereas organic farmers feel public support for their convictions about good agriculture. This estimation of public acceptance might strengthen farmer's offensive or more guarded attitude towards factors like education, openness to change or positive faith in the future. HADATSCH and MILESTAD (2001) observed that especially organic farmers give high priority to education and training. Education activities do not take place by formal education only, but also by informal information transfer and networking among organic farmers (EGRI, 1999, 51, 62). These networks and the

transfer of knowledge are important to build and keep the organic system's capacity for self-organization and adaptability as well as the capacity to absorb change (MILESTAD and DARNHOFER, 2002).

### **3. Traps, fallacies and shortcomings on organic farming's way to sustainable development**

#### **3.1 Current dynamics in organic farming**

In the last few years the organic sector has changed fundamentally. In the EU, between 1986 and 1996 the organically cultivated land grew annually by 30 %, the market for organic food (which is - amounting to 1,5 % of the total food market - still small) shows yearly growth rates from 5 - 10 % to 30 - 40 % in different EU countries (WILLER and YUSSEFI, 2000). Pioneering achieved by the organic farmers association and early organic farmers as well as governmental subsidies and the improved market power through new organic brands offered by big food chains at a later stage encouraged a considerable number of farmers to convert to organic farming. In contrast to the "traditional" organic producers, who identified themselves closely with the principles of organic farming, a high number of the newly converting farmers were mainly motivated by "extrinsic" factors (SCHOON and TE GROTENHUIS, 2000; RIGBY and CACERES, 2001; SCHERMER, 2001).

Subsequently, the supply of certain organic produce like milk and beef exceeded the (Austrian domestic) demand and for market crops export markets were made accessible. As a result, under recent market conditions in the German speaking countries especially arable farms are able to achieve higher profits. On the other hand, nowadays dairy-farms frequently suffer from low or non-existent premium prices and are therefore not necessarily able to gain higher profits in comparison to conventional farms (KIRNER, 2001). Looking at profit development during the last few years, e.g. Swiss organic farms experienced a decrease of profits in relation to conventional ones (OFFERMANN and NIEBERG, 2000).

Prices are not only a result of market dynamics but also of political and institutional factors like agri-political influenced price schemes: A similar development of organic prices as conventional prices under the

Agenda 2000 price regime would cause large decreases in organic farm's profits and would bring them close to the conventional level (EDER, 1999). Beside premium prices, subsidies play an important role concerning the ability to gain higher profits: During the last few years Austrian organic arable farms got about 40 % more financial support per year than their conventional counterparts (BMLF, 1993-1995, BMLF, 1998-1999, BMLFUW, 2000-2002)<sup>11</sup>. However, most organic farms are forage-growing and located in less favoured and/or mountainous areas, which are underprivileged by the current subsidy scheme (HOVORKA, 1996; WAGNER, 1996; EDER et al., 1999).

Well established food processing facilities and marketing channels for organic produce are further requirements for a stable socio-economic development in the organic sector. In Tyrol (Austria) the lack of organic dairies constitutes a strong impediment for a further increase of organic farming (SCHERMER, 2001a). Though the mere existence of such facilities is not necessarily sufficient to sustain the economic development of organic farms, the composition of different distribution channels seems to be important too: In general, the organic food sector shows a much more diversified structure of market channels than the conventional one (e.g. direct marketing: 11 % of turnover in the organic sector, less than 1 % in the conventional (BMLFUW, 2001, 135)). Nevertheless the marketing via food chains is by far the most important (about 73 % of organic food is sold by this distribution channel (SCHÖPPL, 2001, cit. in FREYER et al., 2001)). Austria's highest degree of concentration in the food retail trade in Europe (BMLF and CULINAR, 1997) increases the food chains' power in the organic food market. Thus, the role of supermarket chains is a crucial one: On the one hand their entrance into the organic market has been important for increasing consumers consciousness for environmentally friendly products in general, the reputation and consumption of organic foods as well as the demand at the farm level. On the other hand they profit economically from pioneering and organizational structures built up by the organic farmers association while at the same time potentially reducing the

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<sup>11</sup> Its important to note that this figure is, depending on the year, based on only 17 to 51 pairs of conventional respectively organic farms compared.

diversity of associations and diminishing their power. Moreover, they have the potential to put smaller natural food stores and coops out of business (KLONSKY, 2000, 241) and "...lead to an organic agriculture that increasingly resembles the conventional food industry" (KLONSKY, 2000, 233).

### 3.2 Consequences

The outlined current dynamics in the organic sector bear the risk of steering organic farming in the direction of technologically oriented and (short-term) economically efficient farming systems (ALLEN and KOVACH, 2000): Farmers have a strengthened economic incentive to increase their profits at the risk of ecological soundness. This leads to practices dominated by the "input substitution approach" (ROSSET and ALTIERI, 1997): The main focus within this type of farming is to substitute less noxious inputs for agrochemicals. This approach is a highly technological one and denies agroecological causalities. Organic farming practices fall notably short of agroecological ideals, although they remain within the letter of organic rules and regulations (GUTHMAN, 2000, 265). According to ALLEN and KOVACH (2000) the nature of organic standards as well as the existing economic system tend to favour the input substitution approach above the original holistic paradigm also in organic farming. Moreover the chance to meet "key needs" for agricultural sustainability, which are also evident challenges within organic farming, decreases (e.g. the lack of landscape structures and the use of fossil energy (HADATSCH et al., 2000; NEUNTEUFEL, 2000; RIGBY and CÁCERES, 2001)).

It is also important to mention that beside the ecological risks there are also social consequences of enhanced economic pressure: working conditions on organic farms get worse, especially on those engaged in labour-intensive cropping or direct marketing. Furthermore, the pressures outlined can threaten the ability of organic farms to realize their resilience building potential, e.g. their buffer capacity, capacity for self-organization and adaptability (MILESTAD and DARNHOFER, 2002, 8).

The outlined traps, fallacies and shortcomings show that even in the organic system the boundaries of the economy within the "egg of sustainability" (see Fig. 1) tend to expand at the expense of nature and



society. So, under current conditions the possibilities for the organic farming system to act sustainable seem to be strongly restricted. Moreover, it can be concluded that there is only limited scope for one single sector of the economy to become more sustainable, when its surroundings respectively the other sectors remain unsustainable (SZERENCSETS et al., s.t.). This fact can be theorized by applying NORGAARD's coevolutionary perspective of development, interpreting organic farming as a subsystem of the whole society: If one subsystem evolves or innovates, it affects – because of the interrelatedness of (sub-)systems – not only itself but also the other subsystems and therefore the whole (NORGAARD and SIKOR, 1995, 25). Whether new components and relations introduced by innovation, changes or discoveries are maintained in the whole system depends on whether they prove fit with respect to the other subsystems (NORGAARD, 1992, 81).

#### **4. Conclusions: Challenges and necessities to ensure organic farming's way to sustainable development**

To enable organic farming to keep its environmental, social and economic advantages and sustain its development, it is therefore necessary to improve several factors not only concerning the organic farming system but also society as a whole. Moreover, it is important to mention that a solid development requires all-embracing changes (LYNGGAARD, 2001, 107) and that social complexity demands rather a mix of political instruments than single and isolated measures (HINTERBERGER et al. 1996, 292). We suggest the following measures (HADATSCH et al., 2000; ALBERT et al., 2001, complemented, using the systematics of LYNGGAARD, 2001, 90, adapted):

##### **General political framework:**

1. introduction of ecopolitical instruments to internalize (e.g. ecological tax reform)
2. modification of the world market's terms of trade towards ecological criteria (for details see WOHLMEYER & QUENDLER, 2001)

##### **Agricultural policy:**

3. clear up agricultural policy from inconsistencies (world market oriented price policy versus subsidies for agri-environmental pro-

grammes and less favoured areas, subsidies for energy saving technologies and subsidies for low fuel prices at the same time)

4. re-design of the system for (agricultural) subsidies (closer connection between ecological and socio-economic benefits of farming methods and the amount of subsidies, labour instead of acreage and/or livestock as base for the distribution of subsidies, expansion of innovation funds to stimulate technological and socio-economic innovations for rural areas)
5. raise policy makers' awareness of organic farming

**Farming community:**

6. especially in the case of "extrinsic" motivation for the conversion to organic farming, it is necessary to encourage and develop farmers' "intrinsic" motivation (SCHERMER, 2001)
7. strengthen relationships and communication between (organic) farmers to improve community initiatives, develop mutual trust, and shared vision and ensure the transfer of (traditional) ecological knowledge (FLORA, 2000)
8. improvement of extension and training facilities

**Food market:**

9. raise consumers consciousness for agriculture and its vast functions in general and for organic produce in particular
10. further diversification of market channels, promotion of local and regional distribution channels.
11. intensify cooperation between regional (organic) agriculture and other sectors of the economy to increase regional added value and employment

In spite of the manifold traps, fallacies and to-do's sketched above there are some promising facts indicating a renewal of the organic sector using the scope left for a sustainable development: In some Austrian (KRATOCHVIL et al., 2001) and Italian regions (PUGLIESE, 2001, 121, 123f) a new endogenous regional development movement is taking place recently, which has the target to build „Bioregions“. Networks of organic farmers constitute important pressure groups for these „Bioregions“ and try to establish organic agriculture as an integrative, driving force of the regional economy. This initiatives are in line with observations made by CAMPBELL and LIEPINS (2001, 35) in the case of New

Zealand. CAMPELL and LIEPINS (2001, 36) conclude that “the organic industry seems to be unable to be disentangled from the organic social movement [... and] will continue to act as a counterpoint, moment of contestation, or site of dialogue with the globalizing food system”. Despite current dynamics, traps, fallacies and shortcomings these observations are promising concerning organic farming’s future way to sustainable development.

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