

Towards multi-functional agriculture – what motivates German farmers to realise biodiversity conservation?

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Abstract

Multifunctional agriculture is a political concept used to validate the farmers' services for society. With regard to the provision of ecological goods through biodiversity conservation and enhancement, factors influencing the farmers' participation in the respective policy measures are investigated. Results of a desk study show that German farmers participate in biodiversity-related agri-environmental measures mainly for economic reasons. However, long-term farm viability and farm development plans play a considerable role in the farmers' decision-making. Under these considerations family values and a stewardship attitude towards the land are taken into account. The activities of neighbours and peers are usually closely watched and – in the case of successful policy adoption – serve as a guiding example. However, especially in the case of biodiversity protection via regulation and restriction, opposition is strong among farmers and diverse fears are forwarded. Successful policy approaches stand out for their interactive design and their regional flexibility.

If biodiversity conservation on agricultural land shall be strengthened, not only economic incentives have to be developed. The fundamental discrepancy between farmers' self-perception as 'the best nature conservationists' and the actual effects of farming practices has to be overcome in a dialogue both at the individual level and at the societal level via appropriate policy programmes and procedures.

1 Introduction

In the EU common agricultural policy (CAP), there has been, over decades, a joint understanding that food production is agriculture's most prominent destination. This main-stream discourse has coined policy making in the agricultural sector until the eighties, focusing nearly all measures and most of the expenditures on food production. With the emerging awareness of environmental problems caused by agricultural practices in the nineteen eighties, this focus widened. Thus, environmental protective goals and also structural support for rural areas were incorporated by means of the so-called accompanying measures (regulation EEC 2078/92). This shift was accompanied by the development of the concept for a multi-functional agriculture which had been adopted – although with differing accents and perspectives - by several international institutions such as the FAO, the OECD or the European Union (cf. reg. EEC 1257/99) (Wiggering et al. 2003:8ff).

The OECD concept considers multi-functionality of agriculture mainly under the economic perspective of the provision of goods. Here, the still not satisfyingly solved problem of the market integration of externalities and public goods is of major concern (OECD 2001:13). However, this approach is considered as 'narrow' with regard to e.g. social services provided by agriculture for a sustainable regional development (Barkmann et al. 2003:20). In the FAO perspective, the focus is not only on different functions of agriculture, but 'land' is mentioned explicitly as a second basis for multi-

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functionality. Thus, it is not only by human activity but in combination with a given resource basis that goods and services (here: functions) are provided (FAO 2000). From the European Union viewpoint, the multi-functionality of agriculture concept fits into two purposes: its application supports the negotiations at WTO level, where subsidies of agricultural land users have to be justified, and it legitimises these financial transfers also at the national level with regard to tax payers.

One of the services warranting financial support to farmers is the maintenance and enhancement of biodiversity in the landscape (part of the ecological function). In Germany, the 'reward of ecological services' provided by farmers is a widely discussed issue among natural scientists and economists (e.g. Knauer 1988; Rat für Landschaftspflege 2000; Hampicke 2001) and at the political level (e.g. Gütthler 2001). It is commonly supposed that the identification of appropriate ecological indicators and the development of political institutions, preferably markets, will lead to the internalisation of negative ecological effects and the provision of the desired ecological goods. These assumptions are obviously based on the idea that economic incentives are the best choice prompting farmers to do something for biodiversity and that the best regulatory means will be the establishment of an appropriate market. First political steps in this direction have been taken by the introduction of biodiversity-oriented agri-environmental measures in the frame of EEC 2078/92 and EEC 1257/99.

In Germany, it is generally measures or activities of farmers for the enhancement of biodiversity that are rewarded. The principle of 'rewarding services' (outcomes or products) within agri-environmental policies has only been implemented so far in one federal *land* (Baden-Württemberg). Hence, we do not yet have examples of how this new concept is perceived, accepted and adopted by farmers. However, any discussion about the possibility of providing more public funds to reward ecological services or the production of ecological goods by farmers has to start with an evaluation of the experience gathered in this field. What do we know about the factors motivating farmers to participate in biodiversity conservation schemes and to foster wildlife and landscape protection?

It is generally accepted that profit maximisation most strongly determines decision-making by farmers (cf. e.g. Ahrens et al. 2000). As a consequence, policies based on this assumption are conceived predominantly as an economic incentive. In the following this assumption is challenged and a wider perspective is adopted in order to identify additional influencing and determining factors.

2 What are the factors influencing farmers' consideration for biodiversity protection?

The intention of the IFSA workshop N° 3 is to discuss the farmers' role and contribution in natural resources management against the background of a multifunctional agriculture. As scientists from various disciplines assemble, there is a need to develop a common language and a framework expected to support the process of building interdisciplinary communication and understanding. Before presenting results of a broadly framed, interdisciplinary desk study¹, we propose, as a first step, to reflect on the research preconditions. "Nothing is more fundamental in setting our research agenda and in forming our research methods than our view of the nature of the human beings whose behaviour we are studying." (Simon 1985:303 quoted in Williamson 2000:600) Actually, the research findings have to be interpreted on the basis of the underlying concepts of human behaviour. Under a constructivist paradigm of

1 The project BIOFACT "Assessing factors that affect farmers' willingness and ability to co-operate with biodiversity policies" is carried out by a scientific team uniting members from the Netherlands, Finland, UK, Spain, Hungary and Germany in the frame of the 5th EU research framework, key action 5 (cf. www.ecnc.nl/doc/projects/biofact/index.html). In the here presented paper, some results of the German project team are included.

knowledge generation and dissemination, we acknowledge that our notion of human beings is a consequence of our explanatory concepts, in this case of human behaviour (Glaserfeld 1992:29ff). Economics, sociology, psychology and further related social sciences make use of several concepts and theories encompassing a variety of factors that are decisive for human behaviour. Therefore, an exchange and an adjustment of the existing presumptions needs to be possible. Thus, it is important to have a joint framework that allows the integration of different theories and concepts.

For the analysis of the available publications on biodiversity protection and enhancement by farmers, which necessarily stem from different disciplines based on diverging theoretical concepts, a broad heuristic framework had to be developed. The here presented framework unites four key issues which comprise (i) farmers actual behaviour, (ii) acceptance and adoption of policies, (iii) policy instruments and political actors and (iv) the societal environment (cf. figure 1). Farmers' actual behaviour is shaped by both their willingness, meaning their internal disposition, as well as their ability to implement measures, which is a consequence of (more) objectively assessable conditions and requirements. This behaviour is expressed in the form of co-operation with or acceptance of specific policies that are promoted by different institutional actors. Policy adoption occurs within and is influenced by a given societal environment, consisting of a particular political and economic climate and socio-cultural habits, norms and rules. The societal environment can be divided into a micro-level - the immediate social surroundings - a meso-level - for example, the community or a professional association etc. - and the macro-level - that is, legal, political and socio-cultural framing conditions. Adoption of and co-operation with policies may, in turn, lead to results such as uptake, attitudinal change and environmental benefits etc. with respect to the conservation of biodiversity, habitats, landscapes and wildlife.

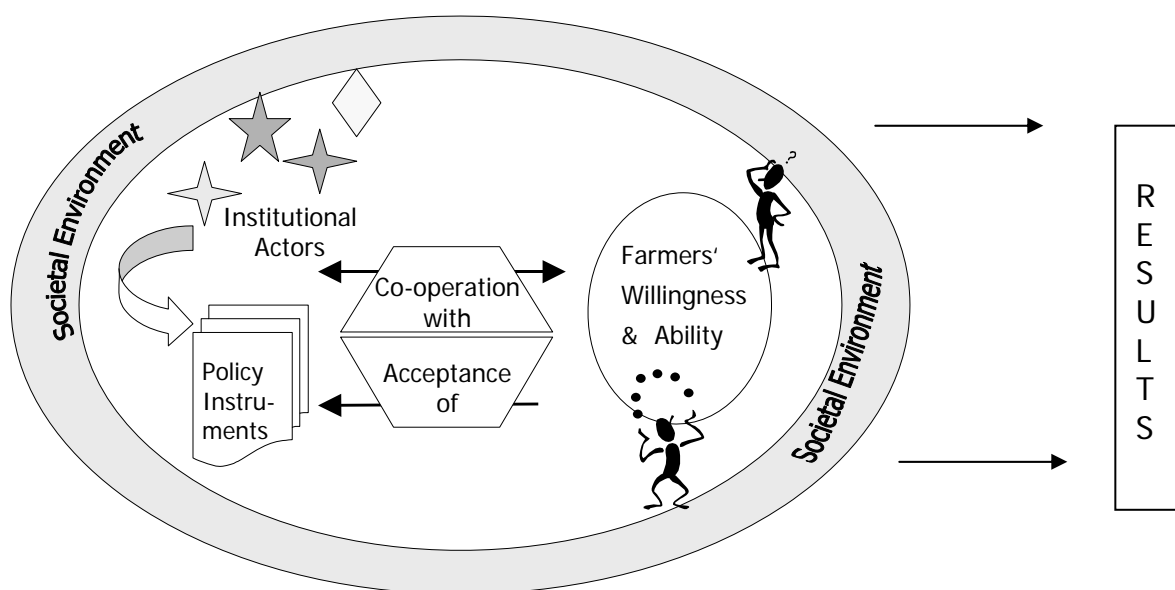


Figure 1: The key issues in the conceptual framework

The challenge of integrating research results from various disciplines therefore consists in the aggregation and valuation of such diverse information. The study presented here attempts to assemble information on the above mentioned key issues in a qualitative way and to develop contrasting and conclusive images of farmers (chapter 2.3 and 2.6). A discussion of the implications of these images and conclusions are presented in chapter 3.

2.1 Structural preconditions

What do we know about German farmers who participate in biodiversity enhancing programmes and measures? Are there specific farm conditions or personal characteristics of the farmer that shape a positive disposition for the adoption of these schemes and measures? Recently, a tendency has been observed that full-time, large modern farms participate rather than part-time, small-scale or declining farms (Kazenwadel et al. 1998; Weis et al. 2000). Still in the mid- nineties, the contrary observation had been made by Nolten (1997:81). While these findings result from studies at regional level, there is a representative national study about the adoption of agri-environmental measures. That study revealed that these measures are mainly adopted in regions of relative extensive land use by agriculture (Osterburg 2001). This is in line with comparative studies across European countries (Buller 2000). Summarising the findings, Osterburg (2001: 18ff) asserted that between 1989/90 and 1998/99:

- Participating farms increased their grassland area comparatively more than non-participants;² consequently, livestock density was declining more strongly in participating farms.
- Milk production per hectare (not per cow!) increased less or dropped in participating farms.
- Cereal yields per hectare increased less in participating farms than in non-participating ones.
- Expenditures for fertilizers were generally going down, but more so in participating farms. While expenditures for pesticides were found to decrease in participating farms, they were increasing in non-participating farms.

Decisive structural characteristics of farmers, enabling them specifically to participate in biodiversity enhancing measures, have not been confirmed by research. In particular, there was no clear correlation between age and participation. Age made no difference, according to Kazenwadel et al. (1998), but younger farmers were more open to biotope-related measures and to landscape care than farmers older than 50 years (cf. Lettmann 1995). Similarly, formation did not prove to be an unambiguous indicator of participation: Nolten (1997) found among farmers participating in nature conservation measures fewer people with a higher professional formation than among non-participants (33% to 50%) and, on average, more with a higher age (55% with 45 years and above, while 54% of non-participants were younger than 45 years).

With respect to the questions raised above, there is no evidence that German farmers' willingness to participate in biodiversity-enhancing measures is related to structural personal characteristics. Likewise, there is no information if the natural conditions themselves play an influencing role (e.g. if farmers with a high degree of biodiversity on their land are more sensitive and positive to biodiversity protection and enhancement). However, farm type and structure play a role and here a change seems to have occurred: While in the early nineties these measures were considered as support to a smooth ending of the farm, it is now considered by some as a promising strategy.

2.2 Interests, values and norms

What do we know about the farmers' personal attitude and willingness? Without doubt, the prime factor for farmers to adopt a policy measure aiming at the protection of biodiversity is the economic incentive. The analysis showed that economic interests are of eminent importance when farmers think about participation in environment and biodiversity enhancing measures. However, it has to be noted that economic interests are expressed in various terms, such as profit maximisation, long-term farm viability and / or risk minimisation (Schramek et al. 1999a; Lettmann 1995; Lütz and Bastian 2000; Weis et al.

² This differs from data in North Rhine-Westphalia, where farms participating in nature preservation and conservation measures increased their grassland less than non-participating between 1985 and 1993 (Nolten 1997:81).

2000). Another decisive criterion for the judgement of a measure is finding out whether it fits into one's own farm development plans (Lettmann 1995:98; Weis et al. 2000). Although economic reasons are mostly put forward in interviews, they are accompanied – provided that the interview techniques allows so – by other reasons and explanations. E.g. ecological arguments like the 'wish to promote environmental conservation' are endorsed (Schramek et al. 1999b:27ff) or 'maintenance or improvement of the natural environment' (Drake et al. 1999:99) are supported. And equally, social reasons often play a role in the decision making process, such as keeping the farm for future generations. Hence, it is frequently a combination of interests that we observe when investigating farmers' decisions and behaviour.

However, not only concrete interests seem to be relevant for the farmers' attitude regarding nature conservation. Studying farmers' self-perception, there are two contradicting observations: farmers see themselves as 'the best nature conservationists', as 'protectors of the land', but at the same time, they feel to be the scapegoat in the public opinion because of negative environmental impacts of agricultural land use (Oberbeck and Oppermann 1994; Retter et al. 2002). Several studies confirm that this self-perception as a victim has been persisting over the last decade (Schur 1990; Pongratz 1992; Retter et al. 2002), which leads rather to a defensive attitude of farmers (Oberbeck and Oppermann 1994:265 name it 'deep injuries, depressions and bitterness') than to a pro-active strive for more social recognition. Still in the late nineties, farmers predominantly have seen themselves as food producers, linked to a positive attitude towards the (regionally prevalent) extensive land use system. However, this attitude does not imply a positive appreciation of nature conservation in general! Unalterably, farmers see themselves in a defensive position because of a critical public image (inducing fears to subsist - 'Existenzängste') and they link nature conservation usually with restrictions, interdictions and limitations of farming activities (Retter et al. 2002).

2.3 A static picture from the individual level

The overall static image we obtain when summarising findings at individual level, is that of a man (for we have no gender-differentiated results), who gears his decisions to the economic viability and profit of his farm. There is no indication that biodiversity as such is of special interest nor that ecological values act as activity-guiding factors. However, it becomes also clear that the farmers' decision-making frequently involves more than one reason or one interest – i.e. social as well as ecological values are taken into consideration when opting for a new farming practice. Thus, the initial assumption, i.e. questioning the single-factor determination of the farmers' behaviour can be endorsed by several examples. The phenomenon of combined interests as influencing factors is also called 'polytely of human action', a psychological concept for environmentally relevant decision-making (Lantermann 1999:9ff).

Directing the research perspective to the individual level, we found an economy-oriented reasoning to dominate which is usually embedded in multi-factorial strategic logics and influenced by an emotionally loaded self-perception. Looking from a more sociology-oriented point of view, based on social systems concepts, we find several results corroborating social interaction as influencing factor.

2.4 Social interaction

According to farmers' own statements, direct contact and interaction with family members, friends and colleagues have a clear influence on the farmers' decision-making process. Neighbours and colleagues are usually closely observed and their farming practices are continuously watched and judged (Retter et

al. 2002). Thus, a kind of ‘common sense agriculture’ is established at village level in the course of time – which might support or prevent a community-level trend towards a more biodiversity-friendly agricultural practice. Farmers name their family members (Wehinger et al. 2002) or peers and friends (Drake et al. 1999) as the most important people whose opinion or behaviour is taken into account. Luz (1994:195) found that a negative quality of the relationship between farmers and non-agricultural villagers had a bad impact on farmers’ attitude towards agri-environmental services. A major role in this is assumed by local public actors such as mayors etc. whose opinion serve as a public reference system (Oppermann et al. 1997:38ff). Their positive or negative attitude fosters or hinders the project development and the energies committed.

But the role official advisors and extension agents play, should not be underestimated either. The influence of advisors or those in charge of the programme as social partners on the farmers’ acceptance of a measure had been underlined by a series of publications (Luz 1994; Mantau 1999; Mährlein 1993a/b; Nolten 1997; Weis et al. 2000). This influence depends on

- The confidence and understanding established between the advisor and the farmer (Weis et al. 2000);
- The advisor’s ability to adapt information and measures to the special conditions and requirements at farm level (‘flexibility in programme application’ Nolten 1997:193; Weis et al. 2000:113ff); and
- The ability ‘to translate’ the landscape protection objectives into practicable, economically reasonable agricultural activities (Holst 2001; Luz 1994: 205; Lütz and Bastian 2000; Oppermann et al. 1997).

However, the advisory people do have a negative impact when farmers perceive deficits and paternalism in the communication, e.g. with representatives of environmental programmes (Mährlein 1993a/b; Heiland 1999). This observation has already transcended the individual relations and there is an extended foe image among farmers at a corporate level of the environmental authorities. Normally, this image has to be overcome before the individual actor is open for interaction at a partnership level. As a whole, the effects of direct social interaction can go either way, they may promote the farmers’ approval of biodiversity enhancing measures, likewise they may reinforce their opposition and resistance.

2.5 Policy Design and Implementation

Lettmann (1995) summarises his results on biodiversity related policy acceptance among farmers as follows: the striking factor for farmers’ acceptance of policy instruments is the voluntariness of participation. This observation is corroborated by the results Schramek et al. (1999) obtained in two Hessian regions. They revealed the farmers’ preference for voluntary measures supported by financial incentives. Both findings are valid for agri-environmental measures, aiming at nature and environmental protection via extensification.

Mährlein (1993a), discussing with farmers, was surprised of the multitude of non-economic reasons forwarded for both options, participation or non-participation in grassland extensification measures. The fear of losing the land (‘expropriation’) was one of the strongest arguments against co-operation with nature conservation agencies in protected areas. With those who are farming land inside protected areas, Mährlein (1999a:184ff) investigated preferences regarding compensation options. He found out that 63% of the interviewees preferred to sell restricted areas if substitute lands were offered. Two thirds of these farmers would like to rent their former land and to tend it under restrictions. Others ranked compensation options lower, including the distribution of milk quotas and regular compensation payments. The question if flat-rate or farm specific compensation payments should be made, was dealt by farmers with political wits and social consciousness: a majority voted for flat-rate because unequal

and intransparent calculations when distributing the milk quota had caused envy and irritations among farmers at village level. The inequality of the farmers' involvement with restrictions in nature protection areas was considered as a similar situation.

Several studies at regional level show that the top-down introduction of nature protection by the establishment of protected areas (national parks, biosphere reserves, FFH-areas etc.) cause usually resistance and protests among the concerned land users (Stoll 1999; Knierim 2001; Rentsch 1988; Siebert und Knierim 1999). Even though there is a legally defined process of public and organised participation when selected protected areas are to be established, this does usually not meet the people's concerns and expectations. It can be summarised that a top-down approach does not offer a basis for the farmers' acceptance and co-operation. In contrast, if a dialogue is opened in which people representing nature conservation aims enter into a co-operation and negotiation process about biodiversity conservation on equal terms, satisfying results can be obtained. Examples are available at regional level from Brandenburg, e.g.

- a land user working group in a biosphere reserve resolving grassland use conflicts (Knierim 2003)
- round tables of land use stakeholders for the regional adjustment of agri-environmental programmes (Arzt et al. 2002)
- single farm co-operation to promote biodiversity protection on set-aside farm land (internal field segregation – Berger et al. 2002).

2.6 A dynamic concept of farmers' behaviour

Integrating the findings concerning social interaction and policy design and implementation, induces us to develop a dynamic image of farmers: they adjust their decisions also to those taken by other farmers and might get convinced by friends or peers. Communication during an innovation adoption or policy development and implementation process plays a major role in farmers' decision-making process (cf. figure 2). In particular, biodiversity conservation needs clearly more efforts from officials and extension agents in terms of explanation and promotion than agri-environmental measures. By this way, farmers can be convinced by a rather non-committal attitude to active participation. Especially joint processes of environmental and agricultural stakeholders for the development of biodiversity enhancing measures have promising features.

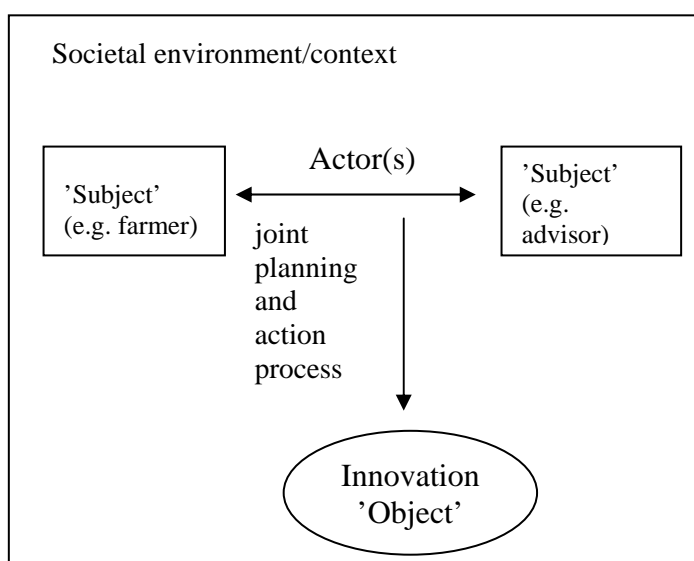


Figure 2: The co-operative approach of policy development and implementation

At a methodological level, this dynamic concept somehow questions and challenges the formerly developed static image: If biodiversity conservation by farmers is conceptualised as an interactive, co-operative process, than knowledge about typologies or common characteristics of farmers are of low importance because it is assumed that farmers might change their mind during the co-operation process and might become active partners. Hence, this approach requires scientific instruments and tools for a long-term monitoring and evaluation study of social, economic and ecological processes.

3 Multifunctional agriculture needs the ‘pro-active’ farmer

Both, the OECD as well as the EU concepts of multifunctional agriculture have in common that the provision of agricultural non-food products shall be promoted by valuation and remuneration. The preferred means from a governance point of view to reach this objective is the creation of markets or quasi-markets (Hampicke 2001). The inherent assumption says that utility-optimising farmers will perceive their opportunities on the market and discover or create biodiversity goods which can be produced and “sold” with a financial gain. The above presented findings on farmers’ typical behaviour do not reveal a corresponding attitude. On the contrary, farmers’ self-perception with respect to nature conservation in general is ambiguous and often not very realistic.

These mental barriers have to be overcome before farmers will be in the position to actively use and profit from the chances of a multifunctional agricultural land use. Obviously, the so far implemented policies in this field of action did not contribute substantially to raise farmers’ interest in, and concern for biodiversity enhancement. How can this be done in future? From organisational development, we know that reluctance to behavioural change is often an expression of fears, anxieties and vague expectations and that these obstacles can only be put away in a genuine communication process (Doppler and Lauterburg 1994).

Hence, the rationale that economic incentives are determining the farmers’ participation in biodiversity enhancing measures is misleading because it hides the possible existence of other interests, values or influencing norms. Policy development based on a co-operative approach is open to a great variety of objectives and purposes that guide the farmers’ decisions. A respective programme would first investigate the farmers’ interests, the farm development perspectives and eventually local or regional land use visions before creating and assigning a financial reward for ecological services. The establishment of ‘environmental co-operatives’ in the Netherlands is one example how, through empowering policy measures, farmers can be convinced to engage in biodiversity and landscape protection (cf. Slangen and Polman 2002:69ff). In Germany, positive examples are limited to the regional level (cf. examples in paragraph 2.5). Here, there is still some way to go politically until German farmers will become active partners promoting biodiversity enhancement in a multi-functional agricultural landscape.

References

- Arzt, K., E. Baranek, K. Müller, and C. Schleyer (2002). *Kooperative Partizipation – Eine komparative Analyse der Agrar-Umwelt-Foren*. In: Müller, K. et al. (eds.) *Wissenschaft und Praxis der Landschaftsnutzung - Formen interner und externer Forschungskoooperation*, Margraf Verlag, Weikersheim.
- Barkmann, J. et al. (2003). *MultiLand – Multifunctional Landscapes: towards an analytical framework for sustainability assessment of agriculture and forestry in Europe*. Periodic Report version 3. (EVK2-CT-2002-80023 (16/12/02-15/06/03)) Fifth Framework Programme 1998-2002.

- Berger, G./Pfeffer, H./Hoffmann, J./Schobert, H./Malt, S. (2002): Kleinflächige Ackerstilllegungen als Vorrangflächen für den Naturschutz. Müncheberg (Selbstverlag des Zentrums für Agrarlandschafts- und Landnutzungsforschung (ZALF) e. V.).
- Buller, H. (2000): Patterns of implementation. In: Buller et al. (eds.). The implementation of agri-environmental policies in Western Europe. Avebury Publishers, London, 219-253.
- Deutscher Rat für Landschaftspflege (2000). Honorierung von Leistungen der Landwirtschaft für Naturschutz und Landschaftspflege **71**. Ergebnisse eines Symposiums vom 9.-10. November 1998 in Bonn.
- Doppler, K., Lauterburg, C. (2000): Change Management. Frankfurt/Main - New York. 345 S.
- Drake, L. et al. (1999). Farmers' attitude and uptake. In: Huylenbroeck G.v. and M. Whitby (eds.). Countryside Stewardship: farmers, policies and markets. Oxford, UK Elsevier Science, 89-111.
- FAO (2000). Cultivating our futures. Taking Stock of the Multi-functional Character of Agriculture and Land. International Conference on Agriculture and Land Use Opens in Maastricht to Study the Many Functions of Agriculture in Society and the Economy. Maastricht, 12. September 1999.
- Glaserfeld, E. v. (1998). Konstruktion der Wirklichkeit und des Begriffs der Objektivität. In: Gumin, H. und Meier, H. (Hsg.). Einführung in den Konstruktivismus. Veröffentlichungen der Carl Friedrich von Siemens Stiftung, Bd. 5. Piper München Zürich.
- Güthler, W. (2001). Agrarumweltprogramme als Perspektive für die Kooperation zwischen Naturschutz und Landschaftspflege. In: Osterburg, B. und Nieberg, H. (Hsg.) (2001). Agrarumweltprogramme – Konzepte, Entwicklungen, künftige Ausgestaltung. Landbauforschung Völkenrode. Sonderheft 231: 119-122.
- Hampicke, U. (2001). Agrarumweltprogramme und Vorschläge für ihre Weiterentwicklung. In: Osterburg, B. und Nieberg, H. (Hsg.) (2001): Agrarumweltprogramme – Konzepte, Entwicklungen, künftige Ausgestaltung. Landbauforschung Völkenrode. Sonderheft **231**: 97-109.
- Heiland, S. (1999). Voraussetzungen erfolgreichen Naturschutzes. *ecomед*, (Schriftenreihe Angewandter Umweltschutz), Landsberg.
- Holst, H. (2001). Naturschutz- und Landschaftspflegeberatung – Die Integration von Naturschutz und Landschaftspflege in die „gute fachliche Praxis“ als Zukunftsaufgabe –. *Berichte über Landwirtschaft* **49**, 552-564.
- Kazenwadel, G., B. van der Ploeg, P. Badoux, and G. Häring (1998). Sociological and Economic Factors Influencing Farmers' Participation in Agri-environmental Schemes. In: Dabbert, S., A. Dubgaard, L. Slangen, and M. Whitby: The Economics of Landscape and Wildlife Conservation. Wallingford [u.a.]. CAB International, 187-203.
- Knierim, A. (2001). Konflikte erkennen und bearbeiten. Aktionsorientierte Forschung zwischen Landwirtschaft und Naturschutz in Brandenburg. *Sozialwissenschaftliche Schriften zur Landnutzung und ländlichen Entwicklung* **45**. Margraf Verlag, Weikersheim.
- Knierim, A. (2003). Collaborative grassland management in the making. *Policy Matters* **10**, 89-90. IUCN Commission on Environmental, Economic and Social Policy. Teheran, Iran.
- Lantermann, E.-D. (2000). Zur Polytelie umweltschonenden Handelns. In: Linneweber, V. und Kals, E. (Hsg.). Umweltgerechtes Handeln – Barrieren und Brücken. Springer Verlag Berlin Heidelberg New York, 115 S.
- Lettmann, A. (1995). Akzeptanz von Extensivierungsstrategien in Nordrhein-Westfalen. *Forschungsberichte Heft 20*, Institut für Agrarpolitik, Marktforschung und Wirtschaftssoziologie der Landwirtschaftlichen Fakultät der Friedrich-Wilhelm-Universität zu Bonn.
- Lütz, M. and O. Bastian (2000). Vom Landschaftsplan zum Bewirtschaftungsentwurf. *Zeitschrift für Kulturtechnik und Landentwicklung* **41**(6), 259-266.
- Luz, F. (1994): Zur Akzeptanz landschaftsplanerischer Projekte - Determinanten lokaler Akzeptanz und Umsetzbarkeit von landschaftsplanerischen Projekten zur Extensivierung, Biotopvernetzung und anderen Maßnahmen des Natur- und Umweltschutzes. Lang, Frankfurt/Main, Berlin, Bern, New York, Paris, Wien.
- Mährlein, A. (1993a). Einzelwirtschaftliche Auswirkungen von Naturschutzauflagen: eine theoretische und empirische Analyse unter besonderer Berücksichtigung Niedersachsens. *Schriften zur Umweltökonomik* **5**, 2. durchgesehene Auflage, Vauk, Kiel.

- Mährlein, A. (1993b). Grünlandschutzprogramme aus Sicht der Landwirtschaft. *Zeitschrift für Kulturtechnik und Landentwicklung* **34**, 311-318.
- Mantau, R. (1999). Kooperation statt Konfrontation. *Berichte über Landwirtschaft* **77**(2), 201-213.
- Nolten, R. (1997). Implementation von Naturschutzsonderprogrammen. Eine empirische Untersuchung in Nordrhein-Westfalen. *Bonner Studien zur Wirtschaftssoziologie*, **8**, Verlag M. Wehle, Witterschlick/Bonn.
- Oberbeck, H. and R. Oppermann (1994). Agrarwirtschaft und Dörfer am Scheideweg. Erfahrungen von Landwirten mit dem Wandel gesellschaftlicher Akzeptanz der landwirtschaftlichen Intensivproduktion. *Soziale Welt* **45**(3), 259-278.
- OECD (2001). Multifunctionality: Applying the OECD Analytical Framework Guiding Policy Design. (Workshop vom 2.-3. Juli 2001). Paris: OECD In: <http://www1.oecd.org/agr/mf/index.htm> (June 2002).
- Oppermann, B., F. Luz, and G. Kaule (1997). Der "Runde Tisch" als Mittel zur Umsetzung der Landschaftsplanung. *Angewandte Landschaftsökologie*, **11**.
- Osterburg, B. (2001). Umsetzung der VO (EWG 2078/92) in Deutschland - Wirkungen auf Umwelt, landwirtschaftliche Produktion und Einkommen. *Landbauforschung Völkenrode (SH 231)*, 13-24.
- Pongratz, Hans (1992). Die Bauern und der ökologische Diskurs. München Wien.
- Rentsch, G. (1988). Die Akzeptanz eines Schutzgebietes. Untersucht am Beispiel der Einstellung der lokalen Bevölkerung zum Nationalpark Bayerischer Wald. *Münchener Geographische Hefte* **57**, Kallmünz, Regensburg.
- Retter, C., K. Stahr, and H. Boland (2002). Zur Rolle von Landwirten in dörflichen Kommunikationsnetzwerken. *Berichte über Landwirtschaft* **80** (3), 446-467.
- Slangen, L.H.G. and N.B.P. Polman (2002). Environmental Co-operatives: a New Institutional Arrangement of Farmers. In: Hagedorn, K. (ed.): *Environmental Co-operation and Institutional Change*. Edward Elgar, Cheltenham UK, p.69-89.
- Schramek, J., D. Biehl, H. Buller, and G.A. Wilson (eds.) (1999a). Implementation and effectiveness of agri-environmental schemes established under regulation 2078/92. Volume 1, Main Report. Institut für ländliche Strukturforchung Frankfurt am Main.
- Schramek, J., D. Biehl, H. Buller, and G.A. Wilson (eds.) (1999b). Implementation and effectiveness of agri-environmental schemes established under regulation 2078/92. Volume 2, Annaxis. Institut für ländliche Strukturforchung Frankfurt am Main.
- Schur, G. (1990). Umweltverhalten von Landwirten. *Campus Forschung*, **652** [u.a.], Campus-Verlag, Frankfurt am Main.
- Siebert, R. and A. Knierim (1999). Divergierende Nutzungsinteressen in Schutzgebieten – Konflikte und Lösungsansätze in Brandenburg. *Zeitschrift für Kulturtechnik und Landentwicklung*, Vol. **40**(4), 181-186.
- Stoll, S. (1999). Akzeptanzprobleme bei der Ausweisung von Großschutzgebieten. Ursachenanalyse und Ansätze zu Handlungsstrategien. Lang Frankfurt/Main, Berlin, Bern, Bruxelles, New York, Wien.
- Weis, J., T. Muchow and W. Schumacher (2000). Akzeptanz von Programmen zur Honorierung ökologischer Leistungen der Landwirtschaft. In: Schweppe-Kraft, B. Bearb.: *Innovativer Naturschutz - partizipative und marktwirtschaftliche Instrumente*. Bonn-Bad Godesberg: Bundesamt für Naturschutz. *Angewandte Landschaftsökologie* **34**), 107-120.
- Wiggering, H. et al. (2003). The Concept of Multifunctionality in Sustainable Land Development. In: Helming, K. and Wiggering, H. (2003). *Sustainable Development of Multifunctional Landscapes*. Springer Verlag Berlin Heidelberg New York, 286 p.
- Williamson, O.E. (2000). The New Institutional Economics: Taking Stock, Looking Ahead. *Journal of Economic Literature*, Vol. **XXXVIII**, 595-613.