Renewable Agriculture and Food Systems: 21(2); 95–105 DOI: 10.1079/RAF2005132

Intended and actual behavior of organic farmers in Austria after a five-year commitment period

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Accepted 12 May 2005 **Research Paper**

Abstract

Organic farmers throughout Austria were asked in 1999 if, once the first agri-environmental program (ÖPUL) ends, they intended to commit themselves to a further five-year period of organic farming. The study presented here addresses those farmers who expressed in the survey the intention to end their participation in organic farming under ÖPUL, or who were undecided at that time. The aim was to compare and analyze the intended behavior with actual behavior. The research was based on material from, and analyses of, the 1999 survey and the survey conducted in 2002. Additional information regarding the reasons for abandoning (or continuing) organic farming and the decision-making process itself was collected through a series of telephone interviews in 2004. The comparison revealed a connection between actual behavior and the intentions expressed in the 1999 survey. However, there were no clear differences in terms of the reasons given in 1999 for potentially discontinuing with organic farming between those farms that remained organic and those that reverted to conventional farming methods. There were differences between those reasons given in the 1999 survey for potentially leaving organic agriculture and the reasons that determined the actual decision, as cited in telephone interviews in 2004. In the 1999 survey, economic issues were the main reasons for potentially ceasing to farm organically. When it came to the actual decision, problems concerning organic guidelines and inspections were more prominent. The environmental attitudes and the social embedding of the farmers within organic agriculture played a decisive role on those enterprises that chose to continue farming organically. The analysis indicates that the presence of a successor is also a stabilizing factor for organic farming.

Key words: organic farming, intended and actual behavior, environmental attitudes, survey and interview, organic farmers, ÖPUL

Introduction

Organic farming in Austria expanded slowly in the 1970s and 1980s, but the 1990s saw the number of organic farms increase rapidly to over 20,000, representing about 10% of all agricultural enterprises[1]. Both organic farming support measures and an expansion in relevant marketing initiatives contributed to this upturn in numbers[2–4].

An agro-environmental program (ÖPUL—an acronym for the 'Austrian Support Program for an Environmentally Compatible, Extensive Agriculture that Protects the Natural Ecosystem') was introduced by the Austrian government in 1995, and used area payments to support organic farming methods and other practices of relevance to the environment[5,6]. Farmers who participated in any of the ÖPUL measures committed themselves to the requirements for a five-year period. The first such period expired at the end of 1999 (ÖPUL 1995). By the end of 1998, it was already apparent that not all of those farms participating in ÖPUL's organic farming measure would do so again in the next period. Given this likely development, in 1999 the opportunity was taken to conduct a written survey of organic farmers with regard to their intended behavior in this context. A questionnaire was sent to 1500 randomly chosen organic farmers (out of a total of 18,960 organic farmers all over Austria), and 600 responses were returned on the issue of further participation in the relevant organic farming measure within ÖPUL. At that time, almost

two-thirds intended to continue their participation, around 13% wanted to abandon organic farming, and some 23% were still undecided. Once the stipulated five-year period expired, the obvious question to ask was just what did these farmers actually decide regarding their participation in the successor program?

The 1999 survey was anonymous. Nevertheless, respondents were invited to voluntarily give their contact details should they be willing to be contacted again for more information. One hundred and twenty-six (around 20% of respondents) did so, thus providing an opportunity to identify their actual behavior and to compare this to the intentions they had expressed in the original survey.

The study presented here deals with those farmers who volunteered their contact details in 1999, and who indicated at the time that they would not participate in the organic farming measure within ÖPUL 2000, or who were still undecided. The research is based on the 1999 written survey and its subsequent analysis[1] and a second written survey conducted in 2002[7]. Additional telephone interviews were conducted in 2004 to collect further information regarding the farmers' decision-making processes and reasons for not continuing with organic agriculture. The aim of the research is a comparative analysis of the intended and actual behavior of the farmers. The expressed intentions with regard to continued participation in the ÖPUL organic farming measure are contrasted with the farmers' actual behavior in this context, and the reasons for discontinuing participation (or for remaining in the program) are explained. In addition, the possible explanations for any deviations between intended and actual behavior are explored. Finally, the role of environmental attitudes, the family tradition and the embedding in social networks in the farmers' decision-making is also examined.

The decision-making process in the context of continuing or abandoning organic farming after a certain commitment period has not been explored comprehensively. Since the material described above was available in Austria, the opportunity was taken to initiate a study on the subject of decision-making toward or against organic farming.

First, it seems necessary to give some brief information about ÖPUL 1995. Then important changes in the formal requirements associated with participation in ÖPUL 2000 and especially concerning organic farms are presented. In order to understand the relevance of this study, the changes in the number of farms quitting organic farming in the years 2000, 2001 and 2002 are presented. Since this study is based on the results of the 1999 and 2002 surveys to a great extent, information is given about the concepts of these surveys. The results of these surveys are presented in summary form, whereas emphasis is given to the various research categories of farmers emerging from the answers of the farmers. Finally, the categories of farmers relevant to the telephone interviews which were conducted for this paper in 2004 are discussed.

Background information

Relevant ÖPUL characteristics

In 1995, the first year of establishing ÖPUL 95, about 175,000 farms, around 78% of all farms in Austria, committed themselves to the program; 15,900 farmers decided for the measure organic farming. By 1999, the number of participants in this measure increased to 18,960. The organic farms cultivated, in 1999, about 270,000 ha farmland, 60,000 ha of which was arable land. The average size of the organic farms was 14.4 ha (without Alpine pastures and forests). A maximum of two animal units are allowed per hectare. About 86% of the organic farms in 1999 kept animals, 69% of them dairy cows. The milk quota of the organic dairy farms summed up to around 400,000 metric tons, about one-third of the organic milk could be sold with a premium in 1999. Only a low proportion of the beef produced in Austria was sold as organic[4,8].

Agrarmarkt Austria (AMA) administers the agro-environment program on behalf of the Ministry of Agriculture, as all other direct payments to farmers within the Common Agricultural Policy. The technical inspection service of AMA controls the proper application of the ÖPUL measures chosen by the farmers. At least 5% of farmers participating in the ÖPUL measure organic farming will be inspected each year within these controls.

All organic farmers must operate according to the Regulation (EEC) 2092/91 and the Austrian Codex Alimentarius. Since 1991, there have been major amendments of this regulation; 1804/99 covers production, labeling and inspection of the relevant livestock species. Most organic farms are affiliated to organic farm associations. These members must further fulfill the regulations reflecting the specific philosophy of the association. To ensure the EU standards and regulations, unannounced inspections are conducted at least once each year by one of the certification bodies. For a certificate, a complete and plausible inspection report and the fulfillment of all legal requirements are necessary. A valid contract with a certifying body is required to be eligible for the direct payments for organic farming and to be allowed to label products as organic. The specific regulations of the organic farm associations are controlled by the certification bodies too. The farmers have to pay for the inspections; the cost depends on the farm size; for up to 10 hectares, the farmers get a subsidy for the cost of control[9,10].

The area payments for supporting organic farming amounted in 1999 to €327 per hectare arable land and €218 per hectare meadow and pasture land (except for Alpine pastures; for those, the number of animals grazing is relevant for the payments). To compare: farmers who committed themselves to the ÖPUL measure renunciation of yield-increasing inputs received per hectare €218 for arable land and €145 for meadows and pastures. Thus the additional payments per hectare for organic farming compared to this alternative are €109 and €73 respectively (all figures rounded)[5].

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Table 1. Comparison of the characteristics of survey farms in 1999 with those of all organic farms in 1999.

	All Austrian organic farms (18,960)		Surveyed organic farms in 1999 (n = 600)		
				Confidence interval	
Characteristic	Number of farms	Mean[1]	Mean[1]	Lower critical value	Upper critical value
Agricultural land (ha)	18,960	14.4	16.0	14.9	17.0
Grassland (ha)	18,576	11.4	12.0	11.4	12.7
Arable land (ha)	7,527	8.0	9.7	7.9	11.5
Cattle (number)	16,242	20.5	21.3	20.0	22.5
Milk cows (number)	11,242	8.7	9.3	8.6	9.9
Pigs (number)	8,315	4.6	3.3	2.6	4.1
Chickens (number)	9,355	31.8	22.2	14.3	30.1
Sheep (number)	3,405	27.6	26.8	19.2	34.3

[1] Mean refers to the number of farms with grassland, arable land and particular species of animals.
Source: Invekos-Data 1999; 1999 survey.

The introduction of ÖPUL 2000 was delayed by a year. This meant that farmers could operate for an additional year under the conditions agreed within ÖPUL 1995. The length of time between the first survey in 1999 and the final deadline for making a decision on renewed ÖPUL participation was therefore extended for those organic farms who chose to add on this extra year. Also, some farms did not initially commit to organic farming in 1995, but did so at a later date (the provisions of the program allowed participating farms to later switch to the more ecologically valuable organic farming measure). The five-year period of commitment then began with the date of this change, so, for example, an enterprise that chose to operate organically from the beginning of 1997 could not then abandon organic farming until the end of 2001, at the earliest. Anyone abandoning organic farming methods before the end of the five-year commitment was obliged to pay back the relevant premia. If the farmer stopped working the farm, then there was no requirement to pay back the premia, provided someone else continued to farm the land in question organically.

The premia offered for farming grassland and specialist crops organically were increased in ÖPUL 2000; the support for organic enterprises with grassland and/or specialist crops improved relative to other measures within ÖPUL. The formalities of applying for premia were also simplified for all ÖPUL measures[11].

Changes in the number of organic farms

At the end of 1999, around 1500 enterprises (8%) ceased participating in the organic farming measure. Some 1250 enterprises (7%) left at the end of 2000, and about 600 (3%) at the end of 2001. All of these enterprises switched to other measures within ÖPUL. During this time-frame, some enterprises decided to convert to organic farming for the first time, so the total number of organic farms within ÖPUL fell from 18,960 in 1999 to around 16,300 in 2001[12]; a decline of about 14%. The total number of organic farms in Austria in any given year is between 5 and 7% higher, since not all organic farms participate in ÖPUL's organic farming measure.

1999 survey

Out of a total of 18,960 organic farms in Austria, 1500 were randomly selected. A questionnaire containing questions about: (i) characteristics of the farms and farmers; (ii) plans about future participation in organic farming and other ÖPUL measures; and (iii) possible reasons for abandoning organic farming was sent to these farmers in 1999. The respondents cultivated statistically significantly more agricultural land per farm and kept fewer chickens and pigs per farm than the average of all organic farms also statistically significant. The other six characteristics listed in Table 1 were not statistically different between the farm sample and all organic farms in 1999.

The responses of those 126 organic farmers who provided their contact details when returning the questionnaire in 1999 deviate only slightly from those of all respondents in terms of their distribution between the three relevant categories of *intending to continue farming organically under ÖPUL*, *intending to end their participation in this ÖPUL measure* and *undecided* (Table 2). As such, these 126 enterprises can be used to draw out conclusions with regard to the actual behavior at the end of the period of commitment in comparison with the intended behavior.

Of those 78 farmers who planned to continue organic farming in the successor ÖPUL, 76 actually did so, and two did not.

2002 survey

In 1999, 48 of the farmers who provided contact details either intended to abandon organic farming or were as yet undecided (Table 2). A questionnaire was sent to these farmers in 2002. The questionnaire contained: (i) the

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Table 2. Comparison of the answers given in 1999 by all respondents with those given by respondents who also provided contact details.

Intended behavior once the period of commitment ends	All respondents		Respondents giving contact info.	
	Number	Percent	Number	Percent
Continue participation	388	64.7	78	61.9
End participation	76	12.7	18	14.3
Undecided	136	22.7	30	23.8
Total	600	100.0	126	100.0

Source: Analysis of the 1999 survey.

Table 3. Intended and actual behavior after the end of the period of commitment.

1999 survey Intended behavior		2002 survey Actual behavior	
Response	Number of enterprises	Remained organic	Reverted to conventional farming
Leave organic farming	13	5	8
Undecided	25	20	5
Total	38	25	13

Source: Analysis of the 1999 and 2002 surveys.

question of whether the farmers were at that time still participating in the ÖPUL measure organic farming; (ii) if yes, the reasons for the continued organic farming were assessed through a multiple choice question; and (iii) in case of having abandoned organic farming in the meantime, the reasons for this decision were also assessed through a multiple choice question; and finally (iv) the questionnaire also asked the responders to give some suggestions for improving the conditions of organic farming. Of the 48 farmers, 38 returned valid questionnaires.

Although this subset of farmers who provided contact details was not a selected random sample, the means of the farm characteristics were similar to the average of the respondents of the 1999 survey. On average, they cultivated 16.0 ha agricultural land, 11.7 ha grassland and 10.1 ha arable land (farms with grassland and arable land respectively).

Based on the results of this survey, 8 of 13 farmers who intended to cease their participation in the organic farming measure actually did so. Of the 25 who had been undecided, 20 continued to farm organically under ÖPUL (Table 3).

2004 survey

An interest in that final decision for or against continued organic farming led to an additional telephone survey in 2004 where those 13 farmers (Table 3, last column) who did abandon organic farming were interviewed in detail about this decision. Telephone interviews were also carried out with a second group of farmers, namely those five who had indicated in 1999 that they would abandon organic farming, but who instead continued to farm organically under the new ÖPUL regime.

Research issues

The discrepancy between the intended and actual behavior of some farmers raised the following issues:

1. Were the reasons given in 1999 for the intended exit from organic farming an adequate indicator of a farmer's actual behavior when the final decision was made?
2. What were the actual reasons for abandoning organic farming?
3. Did the actual reasons for abandoning organic farming match those given in 1999?
4. What was the decision-making process that led to abandonment and what is the attitude to converting back to organic farming?
5. What explanations are there for the behavior of those farmers who continued to farm organically despite declaring in 1999 their intent to return to conventional agriculture?
6. What insights into the role of environmental attitudes in the decision to remain in organic farming can be gained from the surveys?

Approach

The answers to the above questions were derived from pre-existing data and analyses from the 1999 and 2002 surveys[1,7], new analysis of the 2002 survey, and the telephone survey conducted in 2004. Since the exploration of each of the research issues required very different methods, it seems sensible to describe the relevant methods used when discussing each particular issue, rather than collate them all in a standalone section. As such, the rest of this paper follows the order of questions noted above.

Results

Research issue 1

Were the reasons given in 1999 for the intended exit from organic farming an adequate indicator of a farmer's actual behavior when the final decision was made?

Sixteen possible reasons for abandoning organic farming were listed as statements in the 1999 questionnaire.

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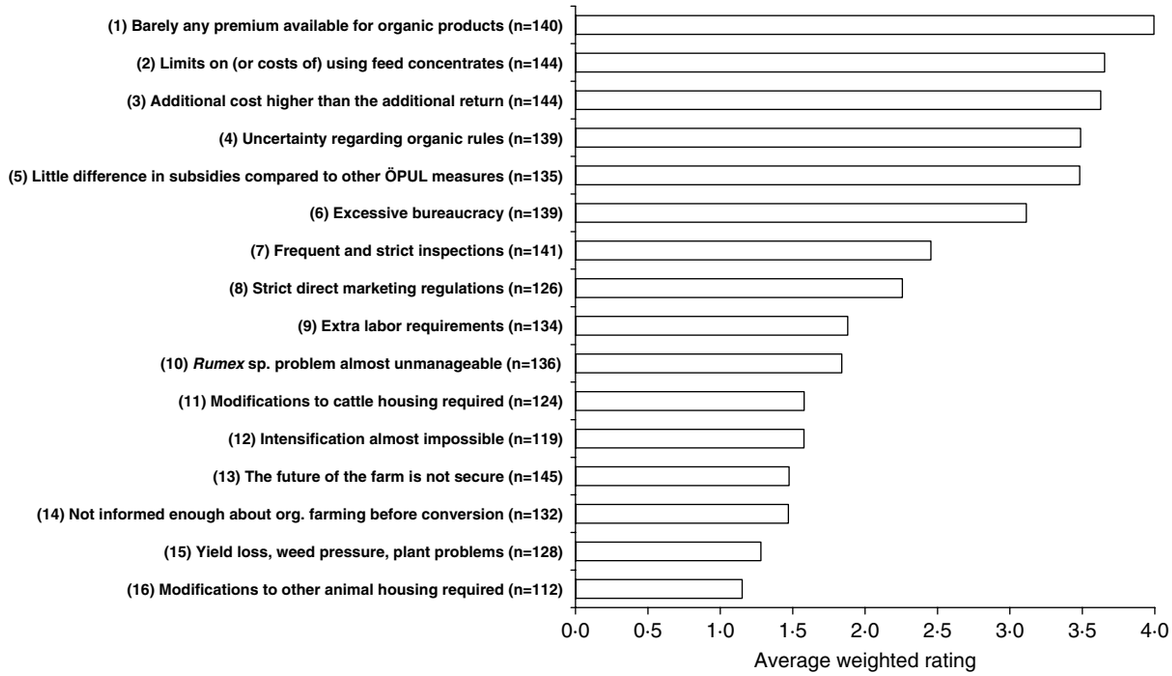

Figure 1. Average weighted rating for each potential reason for abandoning organic farming. Weighting: very relevant = 5, relevant = 3, of some relevance = 1, irrelevant = 0. Source: 1999 survey, farms planning to abandon organic farming or as yet undecided.

Farmers intending to revert to non-organic farming methods or who were as yet undecided were invited to declare the relevance of each reason to their intentions on a four-point Likert-type scale. The ratings available were 'very relevant', 'relevant', 'of some relevance' and 'irrelevant'. These were awarded the numeric weightings 5, 3, 1 and 0 respectively, and an average rating for each reason was calculated from the responses (Fig. 1). These averages were taken as indicative of the importance of each potential reason to a decision to abandon organic farming. Because of the fact that not every farmer, who planned to end participation or was undecided, rated every reason listed, the statements received between 112 and 145 ratings.

Statistical analysis showed that the reasons for abandoning organic farming are not independent of each other. Using factor analysis, four independent influential factors were drawn out of the total set of reasons and categorized as *organic regulations*, *value added*, *management* and *housing investment*[1]. *The value added* factor summarizes those reasons labeled as 1, 2, 3 and 5 in Figure 1; *organic regulations* covers reasons 4, 6, 7, 8 and 14; *management* covers reasons 9, 12, 13 and 15; *housing investment* covers reasons 11 and 16. The reason '*Rumex* sp. problem almost unmanageable' could not be allocated to any of the four factors. Figure 1 shows that the reasons given the highest average ratings relate to the two factors *value added* and *organic regulations*.

In a next step, an average rating across all the possible reasons was calculated for each farm; reasons given no rating were not included in the calculation. The aim was to address the question of whether the reasons given in 1999 for the intended or possible abandonment of organic farming were indicative of the subsequent actual behavior of the farmers. This average rating says nothing about the total number of reasons rated, yet this total could also be of relevance to the farmer's actual behavior. Therefore, the following approach was adapted from the four-field matrix of the Boston Consulting Group[13]. In Figure 2, the abscissa represents the number of reasons rated by a particular farmer, given as a proportion of the total number of reasons available for rating. The ordinate is the average value of all ratings given by that farmer. The maximum value for the ordinate is 5 (very relevant). For a farm to reach 100% on the axis of abscissas, the farmer must have rated every potential reason listed in the questionnaire. Figure 2 shows the results for 28 farms (10 of the 38 farmers who in 1999 considered leaving organic agriculture or who were undecided gave no reasons).

Figure 2 does not suggest any clear differences in ratings between those farms that eventually continued to farm organically and those that switched to other measures within ÖPUL. This would imply that the ratings given in the 1999 survey are not an indicator of the eventual choice of farming method within ÖPUL 2000. This fact was the catalyst for undertaking the telephone survey of those enterprises in the upper right quadrant of Figure 2 who still continued to farm organically, since their decision seemed to contradict the data available. This topic is examined in research issues 5 and 6.

Research issue 2

What were the actual reasons for abandoning organic farming?

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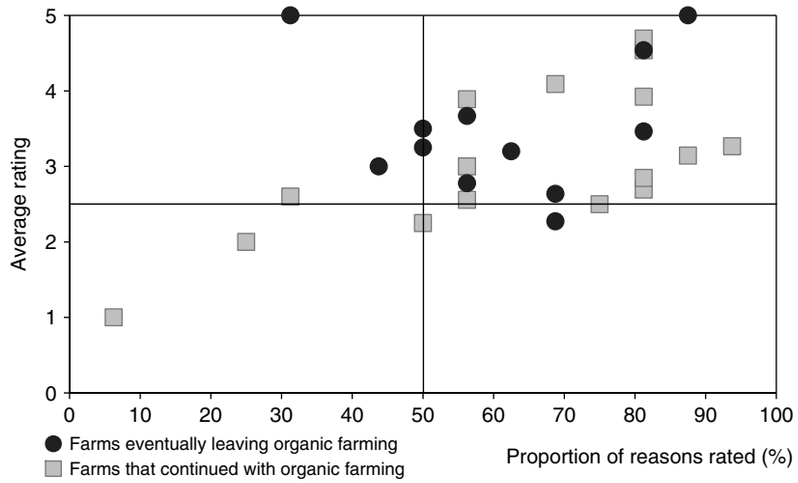

Figure 2. Average ratings given in 1999 to possible reasons for intending to abandon organic farming, differentiated according to the subsequent actual decision taken regarding farming methods. Source: based on the 1999 and 2002 surveys.

Telephone interviews were carried out with 13 farmers in 2004 to establish the actual reasons for their abandoning organic farming. Each reason given in the interviews was allocated to one of the four factors—*organic regulations*, *value added*, *management* and *housing investment*—in order to properly answer the question in hand. Selected structural characteristics of possible relevance to the decision to leave organic farming were identified to describe the farms.

In 9 of the 13 farms, the real reasons for abandoning organic farming related to only one of the four factors: the factor *organic regulations* in four cases, the factor *management* in three cases, and the factor *value added* in two cases. The remaining four farmers cited reasons applicable to two or more factors: the factors *organic regulations* and *value added* in one case, the factors *organic regulations*, *value added* and *management* in two cases, and one farmer gave reasons covering all four factors. The reason '*Rumex* sp. problem almost unmanageable' was not mentioned by any of the 13 farmers as relevant to their actual decision to cease using organic farming methods.

The explanations given by the farmers for their eventual decisions were not, therefore, uniform. It is interesting, however, to explore whether the division of farms according to their reasons for returning to conventional agriculture is matched by equivalent structural differences. Table 4 groups the farms based on factor analysis of the reasons they gave for their opt-out decision and then lists selected average per-farm structural characteristics for each group.

The four farmers whose reasons for opting out of organic farming could be summarized under *organic regulations* farm an average of just over 7 hectares on a part-time basis. The three farmers who cited *management*-related reasons farm an average of just under 7 hectares, and two of them run full-time dairy enterprises. *Value-added* reasons were an issue for those two individuals farming an average of 16 hectares full-time. The reasons cited by those full-time farmers with an average of 25 hectares were more diverse than those cited by farmers with less agricultural land.

The reasons given for leaving organic farming appear to be closely related to particular structural characteristics of the farms concerned. Farmers with small enterprises opt-out due to reasons associated with the factors *organic regulations* and *management*. *Value-added* concerns or a combination of factors were decisive in causing larger farms to take a similar step.

Research issue 3

Did the actual reasons for abandoning organic farming match those given in 1999?

Table 4. Reasons for abandoning organic farming methods based on factor analysis, and selected farm structural characteristics (average per farm).

		Agricultural land (ha)		Number of farms with		Farming status	
Reason(s) given	**Number of farms**	**Total**	**Of which grassland**	**Dairy cows**	**Other livestock**	**Full-time**	**Part-time**
Organic regulations	4	7.3	7.3	1	3	0	4
Management	3	6.9	5.6	2	1	2	1
Value added	2	15.6	15.6	1	1	2	0
Multiple factors	4	25.1	21.7	3	1	4	0

Source: 1999 and 2004 surveys.

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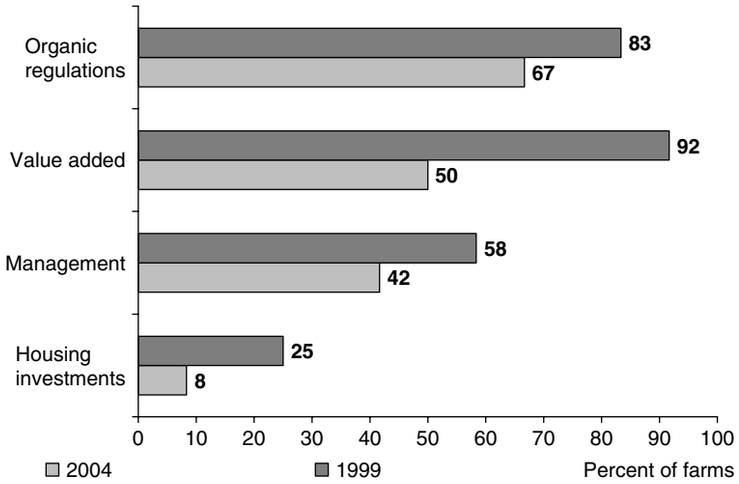

Figure 3. A comparison of *ex ante* and *ex post* reasons for abandoning organic farming methods. Source: 1999 and 2004 surveys, 12 farms.

To address this issue, a comparison was made at the factor level (*organic regulations*, *value added*, *management* and *housing investments*) between the reasons given in the 1999 survey by each farmer and those given in the 2004 telephone interviews (Fig. 3). Regarding the former, only those reasons that had been rated 'very relevant' or 'relevant' were used for the comparison. Where the reasons cited on the telephone differed from those given in 1999, the interviewee was asked to explain why. Since one of the telephone interviewees did not rate reasons in the 1999 survey, the comparison covered 12 farms.

The comparison shows that fewer factors were responsible for the actual decision to leave organic farming. In particular, the *value added* factor was mentioned far less often. In 1999, 11 of the 12 farmers cited reasons related to the factor *value added* as relevant or very relevant, while only half did so in 2004. Reasons related to the other factors were also cited less often in 2004 than in 1999, but the absolute drops in numbers were lower.

The *ex ante* reasons given in 1999 and the actual reasons cited in the 2004 telephone survey are compared in the following results at the factor level.

On two farms, the two sets of reasons for leaving organic farming were identical. These concerned the factors *organic regulations* and *value added* on one of those farms, and all four factors on the other.

On a further eight farms, the two sets of reasons were broadly similar. All of the actual reasons cited for the eventual decision had also been cited in 1999. On six farms, some of the reasons given in 1999 were no longer relevant by the time of the actual decision, because of a change in circumstances or perspective. One farmer had in the meantime modified his livestock housing conform to requirements. On two farms, the economics of the situation were a good reason for opting out of organic farming in 1999, but this was no longer the case by the time the actual decision was made, as these quotes demonstrate: '*I would have accepted the financial disadvantages, were it not for the permanent inspections* . . .'; '. . . *the economics of it all are a minor issue for me* . . .'. The remaining three farmers could no longer explain why they mentioned more reasons in 1999 than were relevant come decision time.

In two cases, fewer factors were cited in the earlier survey regarding intended behavior than were cited during the telephone survey with respect to the actual final decision. One of the farmers had a problem with the organic regulations just before the decision on opting out had to be made and—from his perspective—received too little support from his organic association: '. . . *with more support from the association I might have thought again about leaving organic farming* . . .'. The other farmer could not explain why he had given fewer reasons in 1999 than he subsequently cited as important for the decision in 2004.

No adequate evaluation of the degree of correspondence between the reasons given in 1999 and those given in 2004 was possible on 2 of the 12 farms, because significant changes in the post-1999 lives of the farmers had caused them to abandon organic farming. The high age of the farmer on one enterprise meant that the cattle could no longer be allowed out on range, which in turn meant the legal requirements for organic animal production could no longer be met. In the other case, poor health led to the farmer renting out the land to his children, who did not retain the livestock and chose to farm conventionally.

In summary, there were fewer reasons actually responsible for the eventual decision to leave organic farming than originally given in the 1999 survey. Many reasons were no longer relevant. Those reasons associated with the *value added* factor were no longer in the majority when it came to the final decision. The reasons for opting out cited most frequently by farmers in 2004 were those associated with the *organic regulations* factor. Strict inspections (or inspections perceived to be too frequent) played some role in the final decision in 60% of cases. For 30% of the farmers, inspection issues were even the main reason for leaving organic agriculture.

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Research issue 4

What was the decision-making process that led to abandonment and what is the attitude to converting back to organic farming?

In the telephone interviews conducted in 2004, those 13 farmers who had reverted to conventional farming were also asked about the decision-making process itself. The interviewer also explored their attitudes toward a possible return to organic farming methods.

Nine of the 13 farmers reached their decision quickly and easily. The following statement is characteristic for this group: '*... I'd been waiting ever since 1999 for the opportunity to stop farming organically*.' The decision-making process was a longer one for four of the farmers, i.e. they took longer to weigh up the advantages and disadvantages of staying in organic farming. One of the farmers had already converted his cattle housing to one suited to organic animal husbandry before reaching a final decision. A change in inspector delayed the decision for another farmer. The two other farmers gave no clear reason for the longer decision-making process.

Three of the 13 farmers would consider a return to organic farming given the right conditions. The prerequisite for one farmer was, '*... that there aren't so many extra inspections and farm records required*.' Another farmer wanted more price security and formal guidelines and requirements to cover reconversion to organic methods. The third farmer could imagine returning to organic farming, but not without first getting detailed information on the current requirements associated with this form of agriculture.

In summary, for most of the farmers the decision to abandon organic farming was an easy one. The statements made by the farmers also reveal that with hindsight they regard the decision they took to have been the correct one. As a consequence, the possibility of returning to organic farming methods is only something a small minority would consider.

Research issue 5

What explanations are there for the behavior of those farmers who continued to farm organically despite declaring in 1999 their intent to return to conventional agriculture?

Telephone interviews with five farmers were carried out in 2004 in order to explore the discrepancy between their declared intention (in 1999) to revert to conventional farming and their decision to continue with organic farming as revealed in the 2002 survey (Table 3). The interviews were analyzed on an individual basis. The insights gained, together with the written answers and notes given on the 1999 and 2002 questionnaires, underpinned proposed explanations for the differences between actual and intended behavior.

In the 2002 survey, three of the respondents cited their personal concern for environmentally friendly production methods as the main reason for their decision to stay in organic farming. In one of these three cases, the behavioral discrepancy was explained by the fact that the farm was taken over by the farmer's son in the period between the two surveys. The farm now rents rooms out to vacationers under the motto 'Organic farm vacations' thus giving organic farming an additional function in the business. The new farmer also converted to suckler cow production and modified the animal housing to conform to organic requirements. He is relatively environmentally aware: '*Organic farming should be supported ... you have to do something for the environment and not just talk about it*.'

Another farmer revealed in the 2004 telephone survey that she had ticked the box 'Abandon organic agriculture' by accident in 1999. Her attitude is clear from the following quotes: '*... only organic farming methods—I wouldn't even consider anything else. We farm organically out of conviction and not just for the money. I don't want to use pesticides*.' '*My successor should have the opportunity to take over an organic enterprise*.'

In the third interview, the farmer emphasized his dedication to organic farming: '*I'm an organic farmer with all my heart, but it's getting harder and harder. I'm against pesticides, but when it's not financially viable, a big heart doesn't help. ... We're in an isolated valley so they won't collect the organic milk, which I can understand. I'm selling the organic milk on the conventional market, I've never sold an animal as organic and last year there was the drought. But the animal feed has to be 100% organic—it just doesn't work out financially!*'

Another respondent revealed that a problem with his organic farming association in 1999 was the reason why he indicated an intention to return to conventional agriculture: '*But the issue has since been resolved, without any sanctions, and so there's no longer a reason to stop farming organically*.'

In the 2002 survey, one farmer gave a single reason for staying in the organic farming program, namely that environmentally friendly farm production was still an issue of personal interest and concern for him. In the telephone interview, the same farmer indicated that he was again thinking of abandoning organic farming come 2005: '*I'm going to give it a go until 2005, because it has its advantages. I've got a lot of ecologically-valuable land and there are big subsidies for that—that's the main reason. But I'm almost certain to abandon organic methods in 2005 ... keeping livestock is the problem, what with the new animal husbandry legislation, loose-housing systems, etc*.'

One common feature of all five interviews was that the main reasons why the farmers remained in organic farming were nothing to with some change in the relative weight attached to those reasons originally given in 1999 for planning to leave organic farming. Instead, two respondents were driven to remain organic because of a strong personal

motivation to act 'ecologically', in combination with plans and developments concerning a transfer of farm ownership. In the other three cases, it is suspected that the recommitment to organic farming was due to a positive inertia brought about through social integration within the wider organic farming movement and community.

Research issue 6

What insights into the role of environmental attitudes in the decision to remain in organic farming can be gained from the surveys?

The analysis of this issue took as its empirical basis seven farms belonging to the undecided group in 1999 who cited over 50% of the listed potential reasons for leaving organic agriculture as relevant, and whose ratings of these reasons produced a weighted average $\geqslant 2.5$ (Fig. 2). The actual answers to the question are drawn from the results of the 2002 survey and the telephone interviews conducted in 2004.

In the 2002 survey, five of the seven 'undecided' farmers in question indicated that their personal interest in, and concern for, environmentally friendly production methods was a factor in their eventual decision to remain in organic farming. Three of these farmers gave this reason as the main reason. In one case, this ecological motivation was closely tied to the transfer of farm ownership from one generation to the next, as this handwritten note on the questionnaire proves: '*I'm always going to farm organically on those few hectares that I own, so that I can pass on a healthy soil to my descendants . . . the production of healthy food is something I hold dear to me*.'

All seven farmers stated that the economic situation for organic farming is improving and that they are getting used to the organic inspections. However, only 2 of the 7 'undecided' farmers cited economic reasons alone for remaining in organic agriculture. For the majority of those farmers who were undecided, but tending toward abandoning organic methods, it can therefore be assumed that the motivation to remain organic came from a combination of their attitude to environmental issues and an improvement in the economic situation.

Discussion and Conclusions

The intention of this explorative study was to contribute to the discussion about factors that influence farmers' decision processes toward or against organic farming. It drew its insights from several different surveys and does not intend to inform about statistical distributions within all Austrian organic farmers. The following discussion tries to unfold the matching patterns of values and preferences that underly the decision-making process.

Intended and actual behavior

A comparison was made between the intended and actual behavior of farmers belonging to three categories, as

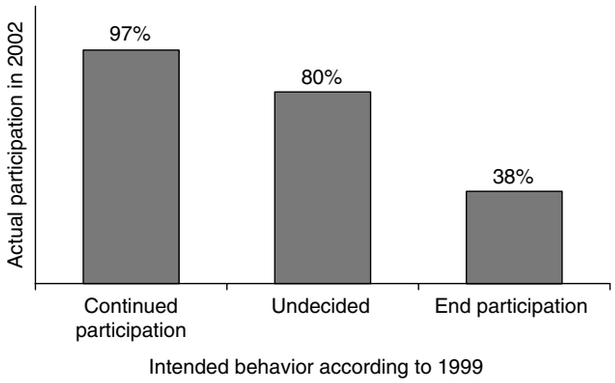

Figure 4. Actual participation in the organic farming measure within ÖPUL in 2002, in relation to intended participation according to the 1999 survey.

defined by their intended behavior in 1999 with regard to continued participation in organic farming within ÖPUL: *plan to continue participation*, *plan to end participation*, and *undecided*. There is a clear connection between the intentions expressed in the 1999 survey and the actual decisions taken later. A far greater proportion of those farmers who planned in 1999 to eventually leave organic farming did so than did farmers who were either undecided or who had planned to remain in organic farming (Fig. 4).

However, the subjective rating of possible reasons for wishing to abandon organic agriculture was not an adequate indicator of the later behavior of each individual farm. This may be partly explained by weaknesses in the research method. In aggregating results, each potential reason is weighted equally when calculating averages. The farmer may regard any one reason as relevant, yet its actual importance in the final decision may be low. This suggests that a survey should not only ask whether each listed reason is relevant, but also ask whether, and to what extent, it is important to the actual decision-making process, if more detailed conclusions are to be drawn from the results.

It would seem that the first time many farmers addressed the issue of whether they would continue in organic farming was when they were asked the relevant question in the 1999 survey. The survey was also an opportunity to articulate disappointment or frustration. Accordingly, farmers who had not yet made a concrete decision may have tended to describe themselves as undecided or planning to cease participating in organic farming. Since environmental attitudes were not addressed directly within the 1999 questionnaire, the respondents may not have taken enough account of their own environmental views when describing their intentions.

The earliest time at which farmers had to take a final decision regarding their continuing participation in the organic farming measure of ÖPUL was the end of 1999, 6 months after the survey was conducted. The option to extend participation in ÖPUL 1995 by a further year gave

https://doi.org/10.1079/RAF2005132 Published online by Cambridge University Press

farmers the opportunity to gain another year's experience with organic inspections and observe new developments in the market for organic products. There were also improvements within ÖPUL 2000 in terms of both subsidies for grassland enterprises and administrative requirements. Telephone interviews also identified changes in personal situations and the social environment. As a consequence, the final decision taken by farmers on their participation was based on more comprehensive information and—in most cases—a longer period of thought and consideration.

Reasons for abandoning organic farming methods

Far fewer reasons played a role in the actual decision to discontinue organic farming practices than were cited in regard to the intended decision to do so. This was especially true of those reasons that could be categorized under the factor *value added*. This may have been due to changes within the operating environment, but also to farm management decisions (e.g. reduction in the use of purchased feed).

There are many reasons why farmers chose to abandon organic farming. The small number of farms examined disallows quantitative conclusions, but some trends can be drawn out nevertheless. All four farmers whose actual reasons for ceasing organic farming could be categorized under the factor *organic regulations* were part-time farmers. One explanation for their decision could be that the administrative demands of organic farming are disproportionately high on small part-time farms. In a study in the Austrian province of Tyrol, frequent inspections were identified as an important reason for small farms to abandon organic farming[14]. For such farmers, the meaning and necessity of guidelines and inspections need to be communicated convincingly. The design of such guidelines might also need to take better account of the needs of small farms.

Two of the four part-time farmers who originally switched to organic agriculture because of their environmental awareness saw no future for their farms in organic farming by the time of the telephone interviews. Their change in behavior is primarily due to deep dissatisfaction with the existing organic regulations. Farmers should receive comprehensive advice and information on the consequences of converting to organic agriculture. This should cover market opportunities, production restrictions and the consequences of organic regulations. The fact that 10 of 13 farms who left organic agriculture could not envisage ever returning to organic methods suggests that there are some deficits in this area.

Those enterprises whose reasons for leaving organic farming could be categorized under the factor *management* left the sector because of the age or health of the farmer. The farmers involved made their decision independent of the actual nature of the farming methods they were using. As such, they cannot be considered to have abandoned organic farming in the classical sense. It is therefore largely impossible to find measures that would keep such farms in organic farming.

On the larger farms, economic reasons—particularly too low product prices and high feed costs—were major contributors to the decision to revert to conventional farming methods. As a result, measures that lead to higher product prices or lower feed prices would prevent such farms from leaving the sector. However, these farmers also cited reasons to do with other factors, so complementary measures would also be needed to improve the acceptance of inspections and make farm management easier.

It is interesting to note that reasons to do with production and technology were mentioned by none of the farmers as being involved in the actual decision to stop farming organically. This reflects the 1999 survey, which also suggested that such reasons would not play a key role in the decision-making process.

The role of environmental attitudes

Environmental attitudes played a major role in the decision to remain in organic farming on those farms that were prepared to live with the fact that their organic farm has financial disadvantages when compared to the conventional equivalent. A substitution effect between inner (intrinsic) and outer (extrinsic) behavioral motivators can be recognized[15,16]. If the farmer has an intrinsic willingness to behave in an ecologically friendly way, then this motivation should be accounted for in the support given to organic agriculture. An appropriate means of doing so would be through problem-related consultations, with the joint development of solutions. These advisory measures must accompany financial support measures, in order to prevent the displacement of the internal motivation by the external motivation that a purely financial support effort would produce[17,18].

The role of the family tradition

The tradition of passing on the farm to the next generation was a strong motivator behind the decision to stay organic for both those who were undecided in 1999 and those who expressed an intention to leave organic farming. The passing of a farm from generation to generation encourages sustainable or organic farming methods. The combination of the motivations family tradition ('*The farm should stay in the family*') and ecologically sustainable management ('*organic methods are the only option for me*') can be described as a primarily ecological and traditional motivation in agriculture[19]. With this approach to organic farming, the so-called successor effect causes the current farmer to consolidate and protect these farming methods. This is different to the other kind of successor effect[20,21], where the consolidation of organic farming methods after the transfer of ownership is largely based on the actions and value system of the successor.

Social embedding

The analysis of those farms who intended in 1999 to eventually abandon organic farming, but did not do so, provides indications of the effect of social embedding on behavior[18,22–24]. If you have an established position within the family, neighborhood, clubs and associations as an organic farmer, then this social embedding can encourage constancy in behavior, even where there are several reasons for abandoning organic farming, which may even have been articulated in a survey at some point. If you feel a 'social' obligation to organic farming, then it is difficult to 'leave'. In addition to attitudes, knowledge and current behavioral intentions, Maloney and Ward[25] see environmental behavior to date as a key determinant of future behavior. The greater the proportion of organic farms in the relevant area, the further you get from the conversion period, and the greater the continuing importance of the role as pioneer, the stronger the effect of this social obligation.

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