



## **Motivations for Swiss lowland farmers to conserve biodiversity: Can individual beliefs be influenced by on-farm advice?**

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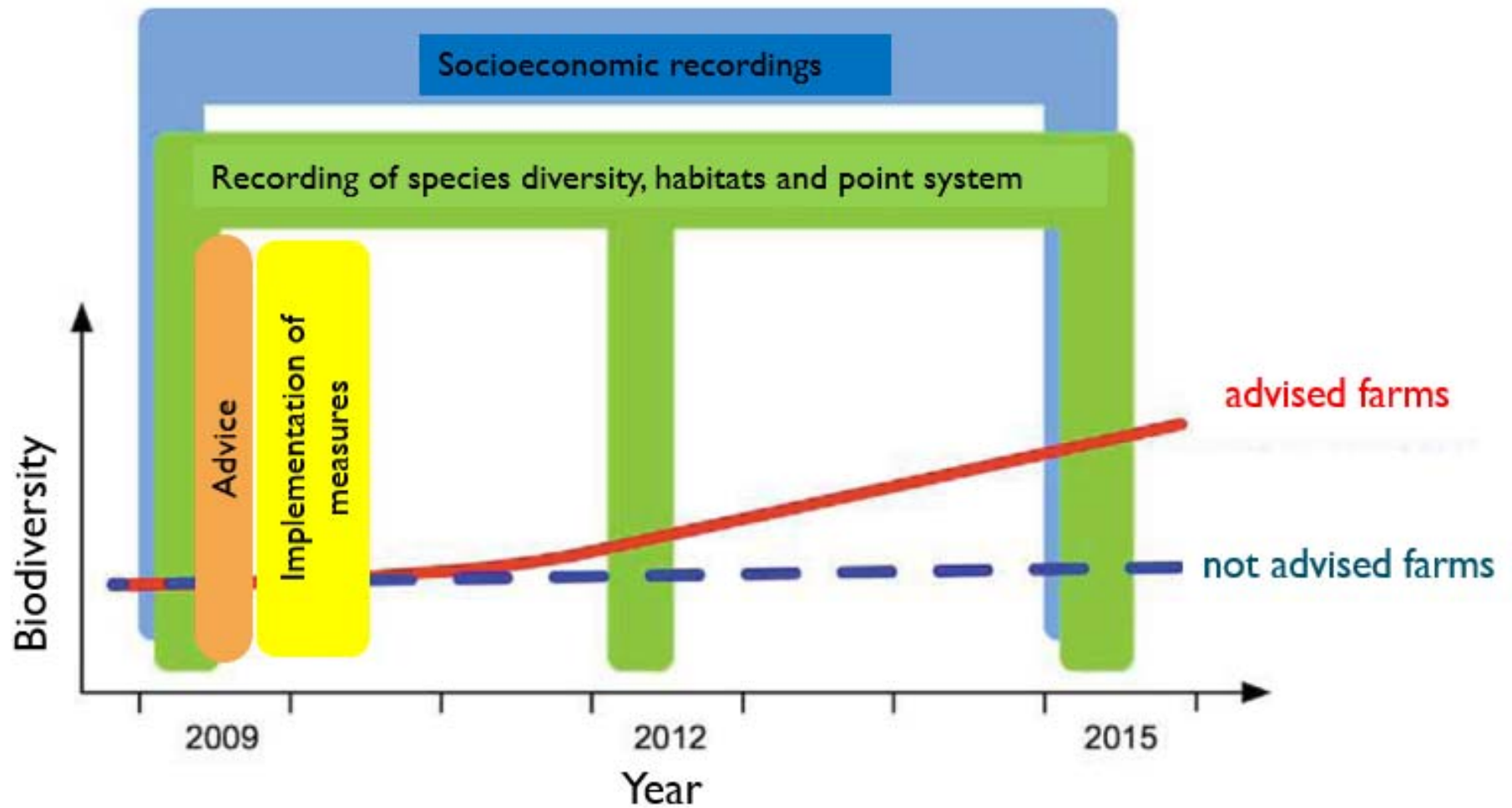
13th European IFSA Symposium

Chania, July 2<sup>nd</sup>, 2018

## **Project: Scoring for biodiversity (2009-2016)**

- **Joint project with the Swiss Ornithological Institute**
  - Development of a credit point system for the assessment of measures that favour biodiversity.
  - Whole-farm advisory support for targeted knowledge exchange.
  - A field manual for biodiversity management on farms.
  - **The relationships between socio-economic factors and participation in agri-environmental schemes.**

# Project: Scoring for biodiversity (2009-2016)



# Aims

- Identify what motivates or hinders farmers to promote biodiversity on their farms.
- What role can advice play in relation to farmers' behavior?

# Methods

## Two phases

- **Qualitative Interviews (2009)**

- 15 MVP farmers

- **Quantitative Survey (2016)**

- 24 MVP farmers with advice
- 24 MVP farmers without advice
- 88 farmers without participation in MVP (Control Group)

→ No differences found between control and non-advised farmers

→ Two groups formed: advised and not advised farmers

# All farmers feel as producers (qualitative Interviews)

- Biodiversity conservation is perceived as "non-productivity"
- Strong social component
- The task of the advisory service is to show that the "production of nature" is also a form of production.



## Differences between the two groups (quantitative survey)

### Advised farmers believe nature conservation is compatible with production and rather agree:

- that there is no contradiction between production and biodiversity.
- that there are measures that make sense in terms of operational structure.\*
- that, in this way, they can use the land that is less suitable for production.\*



**\*correlate with the proportion of ecological compensation area (ECA). The more the farmer agrees with these statements the greater is the share of ECA on the farm**



## Differences between the two groups (quantitative survey)

**Advised farmers believe nature conservation is compatible with production and rather agree that conservation measures:**

- provide them with ecological benefits (e.g. pest control).\*
- are practicable and do not disrupt production.\*
- have a positive impact on product sales.\*



**\*correlates with the proportion of ecological compensation area (ECA).**



# Farmers feel a responsibility to act effectively (qualitative Interviews)

- If farmers provide public services, such as biodiversity conservation, this should be rewarded financially.
- Farmers are obliged to act effectively when they receive payments.



## Differences between the two groups (quantitative survey)

- Advised farmers tend to agree that agriculture has an ecological responsibility.
- Advised farmers are more likely to agree that they want to contribute to the conservation and promotion of biodiversity.\*



**\*correlates with proportion of ECA**

# Farmers miss consumer appreciation (qualitative Interviews)

## Perception of farmers

- The implementation of ecological compensation areas is a societal service and causes costs.
- Products with ecological requirements are more expensive in the retailer.
- The implementation is expected by consumers but not supported by their purchasing decisions: They are buying cheaper products from abroad.



## Differences between the two groups (quantitative survey)

**Advised farmers feel more valued in their work and rather agree:**

- that the public values their work.\*
- that they want to contribute to a good image of agriculture\*
- that the provision and maintenance of recreational areas is a task of Swiss agriculture.



\* correlates with proportion of ECA



# Recognition of the benefits of ecosystem services (qualitative Interviews)

- Many farmers do not recognize the benefits of ecosystem services that they could use for production on their farms.
- Greater knowledge about operational advantages leads to a higher motivation to implement measures.



## Differences between the two groups (quantitative survey)

**Advised farmers recognize the advantages and are more likely to agree:**

- that biodiversity improves ecosystem services that benefit them ecologically (e.g. pest control).\*
- that there is no contradiction between production and biodiversity.\*



\* correlates with proportion of ECA



## Differences between the two groups (quantitative survey)

### Potential for improvement: No difference between the groups to the statement:

- I establish (voluntarily) ecological compensation areas because I have confidence that the measures make sense and are effective.

### But advised farmers are more likely to agree:

- that the measures are in line with the production philosophy of their farms\*.
- on the importance of promoting biodiversity\*.



\* correlates with proportion of ECA

## Role of direct payments?

- third-largest agreement of all items
- the 'direct payments' item correlated most strongly with implemented ECAs
- A further correlation analysis revealed no significant correlation between the 'direct payments' item and the key belief variables
- The results from a principal component analysis (PCA) combined with the results of the correlation analysis of the direct payments item and the key belief items, suggest that direct payments belong to a different type of motivation

## Take home messages

- In future, advisors should focus on communicating the meaning and effectiveness of the measures and thus build trust.
- For all other influencing factors, the on–farm advice appears to be working
- Particularly pronounced in factors correlating with the proportion of ecological compensation area.

## Publications

Details about methods and scientific contexts, and a full presentation of the results can be found in the following publications:

- Home R, Balmer O, Jahrl I, Stolze, M. & Pfiffner, L. (2014) “Motivations for implementation of ecological compensation areas on Swiss lowland farms”, *Journal of Rural Studies*, vol. 34, pp. 26-36.
- Gabel V, Home R, Stolze M, Birrer S, Steinemann B & Köpke U (2018): “The influence of on-farm advice on beliefs and motivations for Swiss lowland farmers to implement ecological compensation areas on their farms”, *The Journal of Agricultural Education and Extension*.
- Gabel V, Home R, Stolze M, Pfiffner L, Birrer S, & Köpke, U. “Motivations for Swiss lowland farmers to conserve biodiversity: Can individual beliefs be influenced by on-farm advice?” (Submitted *Journal of Rural Studies*).

**Thank you.**



# Contact

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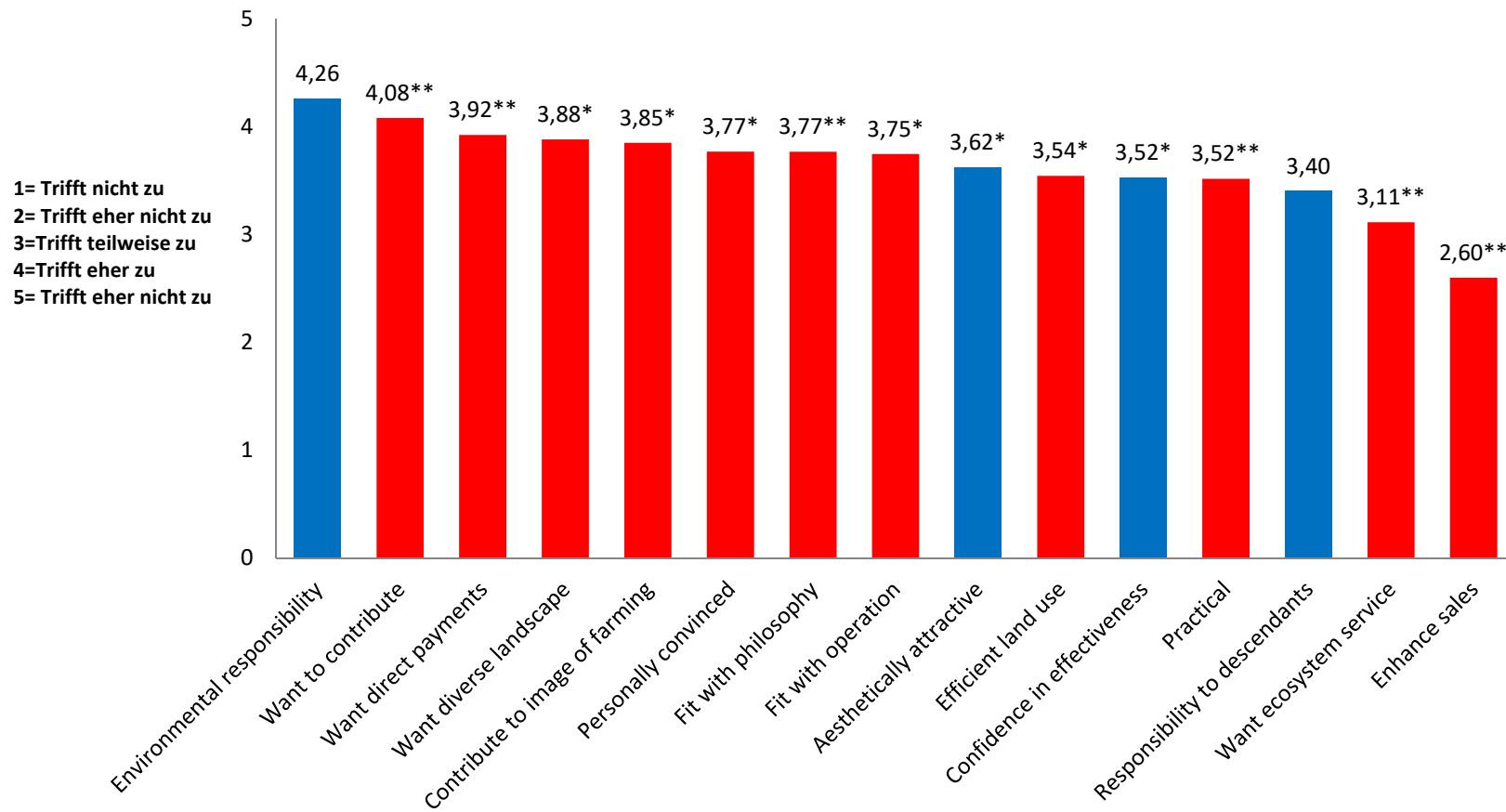
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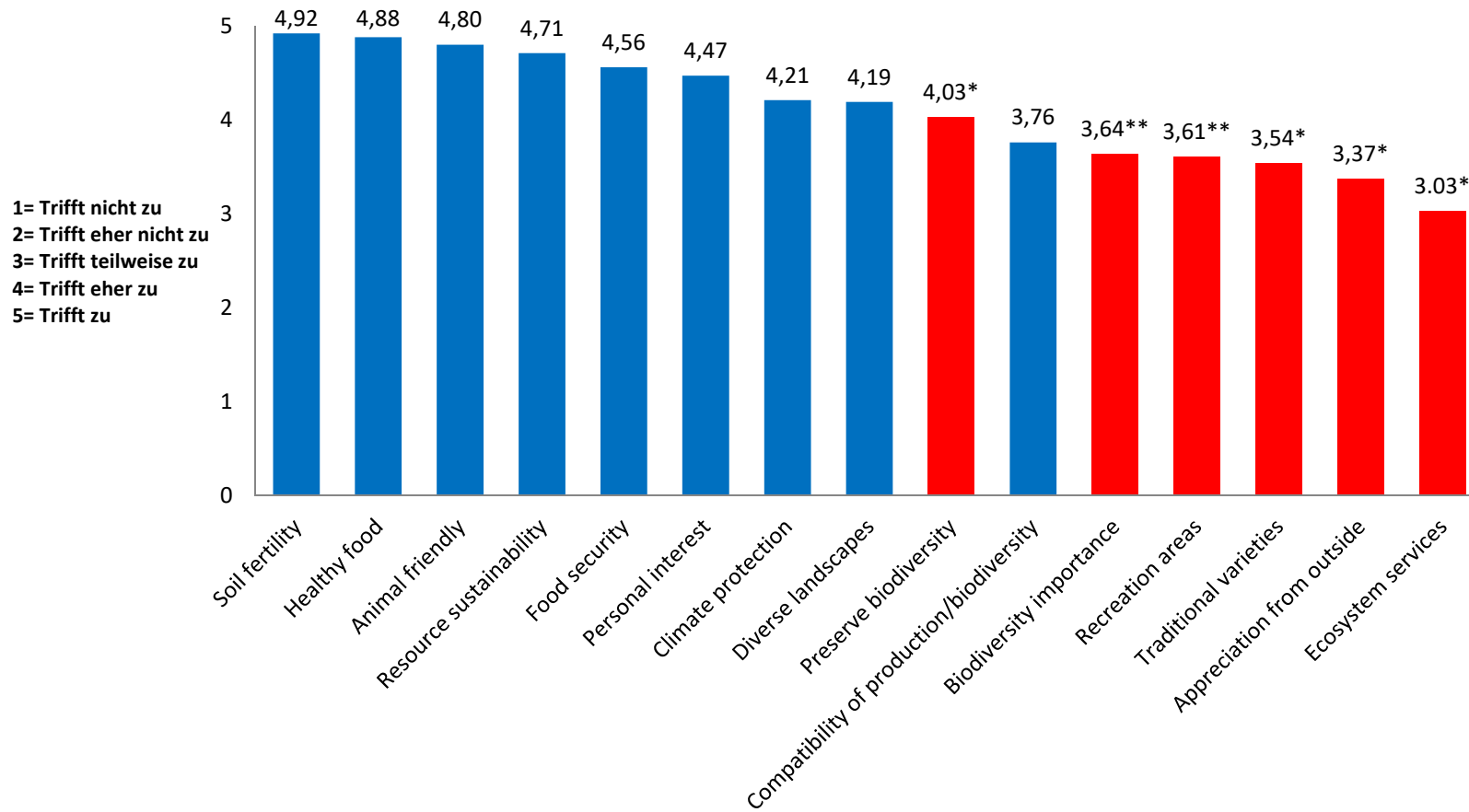
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# Results Motivations



# Results Beliefs



# Beliefs

**How important are the following tasks for Swiss agriculture?**

- Maintaining soil fertility for the next generation
- Production of healthy food
- Animal-friendly husbandry of farm animals
- Sustainable use of soil, water and air as natural resources
- Provision and maintenance of recreation areas
- Secure food supply for the Swiss population
- Climate protection
- Preserving and promoting biodiversity
- Conservation of traditional varieties and breeds

## Beliefs

### Do you agree with the following statements?

- There is no contradiction between production and biodiversity
- Promoting biodiversity is extremely important
- The population values our work
- Ecosystem services are improved through biodiversity
- I have a personal interest in the flora and fauna

# Motivation questions

## I set up (voluntary) ecological compensation areas because.....

- I think that agriculture has an ecological responsibility
- I would like to contribute to the conservation and promotion of biodiversity
- I receive direct payments for it
- they contribute to a diverse agricultural landscape
- I would like to contribute to a good image of agriculture
- I am internally convinced of it
- they fit the philosophy of our company's production
- they make sense in terms of the company structure
- they are aesthetically pleasing to look at
- I can use land that is less suitable for production
- I have confidence that the measures make sense and are effective
- they are practicable and do not interfere with production
- I feel a moral obligation towards future generations
- they bring me an ecological benefit (e.g. pest control) they have a positive effect on my product sales

# Table 1: Correlation between belief variables and proportion of ecological compensation area

Variable name	Scale items (respondents' agreement with these statements)	Mean	SD	Spearman's rho	p-value	N
Soil fertility	Important task is maintaining the soil fertility for the next generation	4.92	0.29	0.00	0.982	120
Healthy food	Important task is production of healthy food	4.88	0.48	-0.15	0.104	119
Animal friendly	Important task is animal friendly livestock farming	4.80	0.45	0.03	0.745	120
Resource sustainability	Important task is sustainable use of natural resources soil, water and air	4.71	0.61	0.06	0.520	120
Food security	Important task is ensuring a secure supply of food for the Swiss population	4.56	0.80	-0.08	0.413	120
Personal interest	I have a personal stake in the animal and plant worlds on my farm	4.47	0.75	0.03	0.748	118
Climate protection	Important task is climate protection	4.21	0.87	0.06	0.511	118
Diverse landscapes	Important task is maintaining and promoting diverse cultural landscapes	4.19	0.87	0.11	0.233	118
Preserve biodiversity	Important task is preservation and promotion of biodiversity	4.03	0.97	<b>0.21</b>	0.025	120
Compatibility of production/biodiversity	For me, there is no contradiction between biodiversity conservation and production	3.76	1.19	0.14	0.123	118
Biodiversity importance	Promotion of biodiversity is important for my farm	3.64	1.06	<b>0.32</b>	<.001	119
Recreation areas	Important task is provision and maintenance recreation areas	3.61	1.09	<b>0.24</b>	0.010	118
Traditional varieties	Important task is conservation of traditional varieties and breeds	3.54	1.07	0.17	0.062	118
Appreciation from outside	I feel the general population appreciate our work with regard to biodiversity promotion	3.37	1.03	<b>0.19</b>	0.042	118
Ecosystem services	In my experience, ecosystem services, such as pest control or pollination have been improved by installing ecological compensation areas	3.03	1.08	<b>0.21</b>	0.031	107



## Table 2: Correlation between motivation variables and proportion of ecological compensation area

Variable name	Scale items (respondents' agreement with these statements)	Mean	SD	Spearman's rho	p-value	N
Environmental responsibility	ECA because I believe agriculture has an environmental responsibility	4.26	0.91	0.07	0.468	116
Want to contribute	ECA, because I want to contribute to the conservation and promotion of biodiversity	4.08	1.09	<b>0.28**</b>	0.003	115
Want direct payments	ECA, because I receive direct payments for them	3.92	1.19	<b>0.30**</b>	0.001	116
Want diverse landscape	ECA, because they contribute to a diverse agricultural landscape	3.88	1.18	<b>0.19*</b>	0.045	115
Contribute to image of farming	ECA, because I want to contribute to the good image of agriculture	3.85	1.16	<b>0.19*</b>	0.046	115
Personally convinced	ECA, because I am internally convinced	3.77	1.15	<b>0.22*</b>	0.021	114
Fit with philosophy	ECA, because they fit with the philosophy of production on our farm	3.77	1.28	<b>0.28**</b>	0.003	113
Fit with operation	ECA, because they make sense from the operational structure of the farm	3.75	1.19	<b>0.26*</b>	0.006	115
Aesthetically attractive	ECA, because they are aesthetically beautiful to look at	3.62	1.18	0.11*	0.234	114
Efficient land use	ECA, because I can use land that is less suitable for production	3.54	1.28	<b>0.21*</b>	0.024	116
Confidence in effectiveness	ECA, because I have confidence that the measures make sense and are effective	3.52	1.23	0.15	0.103	115
Practical	ECA, because they are practical and do not interfere with production	3.52	1.27	<b>0.32**</b>	0.001	115
Responsibility to descendants	ECA, because I feel morally committed to future generations	3.40	1.22	0.09	0.367	116
Want ecosystem service	ECA, because they give me an ecological service (e.g., pest control)	3.11	1.22	<b>0.30**</b>	0.002	113
Enhance sales	ECA, because they have a positive effect on my product sales	2.60	1.27	<b>0.31**</b>	0.001	116

**Table 1: Differences in beliefs between not advised and advised farmer; and labelled and non- labelled (PEP) farmers.**

Nr.	Item	Label	Mean not advised	Mean advised.	P-value	Mean non-labelled (PEP)	Mean labelled	P-value
			N=110	N=23		N= 37	N=96	
B1	Important task is maintaining the soil fertility for the next generation	Soil fertility	4.91	4.96	0.575	4.86	4.95	0.053
B2	Important task is production of healthy food	Healthy food	4.90	5.00	0.156	4.86	4.88	-
B3	Important task is animal friendly livestock farming	Animal friendly	4.80	4.83	0.605	4.72	4.83	0.073
B4	Important task is sustainable use of natural resources soil, water and air	Resource sustainability	4.67	4.87	0.173	4.47	4.80	0.017
B5	Important task is ensuring a secure supply of food for the Swiss population	Food security	4.64	4.43	0.288	4.69	4.51	0.316
B6	I have a personal stake in the animal and plant worlds on my farm	Personal interest	4.43	4.65	0.245	4.11	4.61	0.003
B7	Important task is climate protection	Climate protection	4.25	3.95	0.146	4.00	4.28	-
B8	Important task is maintaining and promoting diverse cultural landscapes	Diverse landscapes	4.17	4.26	0.727	3.94	4.29	0.064
B9	Important task is preservation and promotion of biodiversity	Preserve biodiversity	3.98	4.30	0.177	3.72	4.15	0.082
B10	For me, there is no contradiction between biodiversity conservation and production	Compatibility of production and biodiversity	3.62	4.39	0.003	3.32	3.93	0.025
B11	Promotion of biodiversity is important for my farm	Biodiversity importance	3.53	4.05	0.054	3.08	3.85	0.001
B12	Important task is provision and maintenance recreation areas	Recreation areas	3.55	3.82	0.366	3.49	3.65	0.542
B13	Important task is conservation of traditional varieties and breeds	Traditional varieties	3.50	3.64	0.723	2.91	3.77	<0.001
B14	I feel the general population appreciate our work with regard to biodiversity promotion	Appreciation from outside	3.24	3.91	0.004	3.08	3.48	0.034
B15	In my experience, ecosystem services, such as pest control or pollination have been improved by installing ecological compensation areas	Ecosystem services	2.95	3.32	0.190	2.58	3.20	-

# Project: Scoring for biodiversity (2009-2015)

