



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

Vanessa Gabel, Robert Home

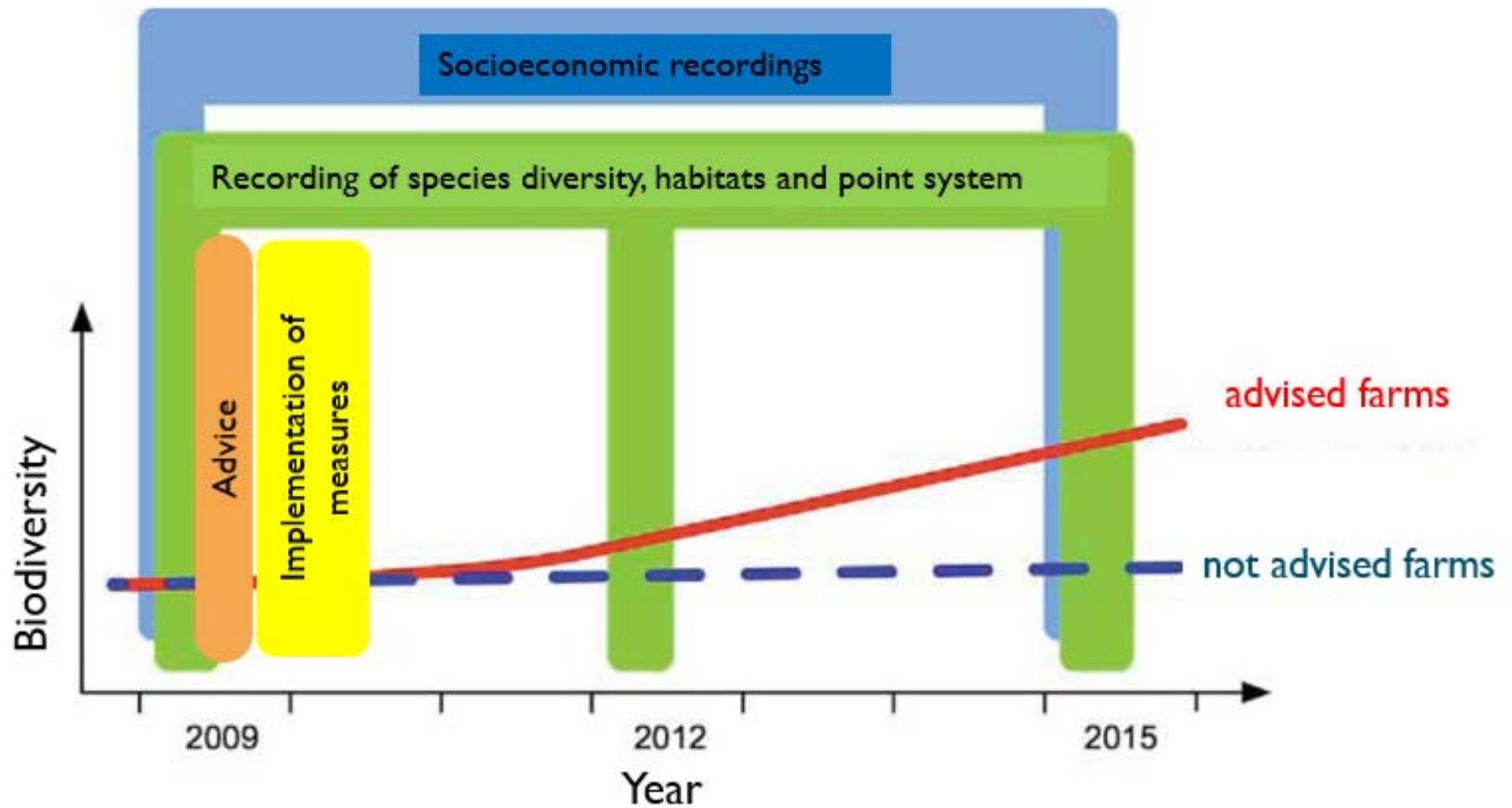
13th European IFSA Symposium

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

Vanessa Gabel

Research Institute of Organic Agriculture FiBL

Ackerstrasse 113 / Postfach 219

5070 Frick

Switzerland

Phone +41 62 8650414

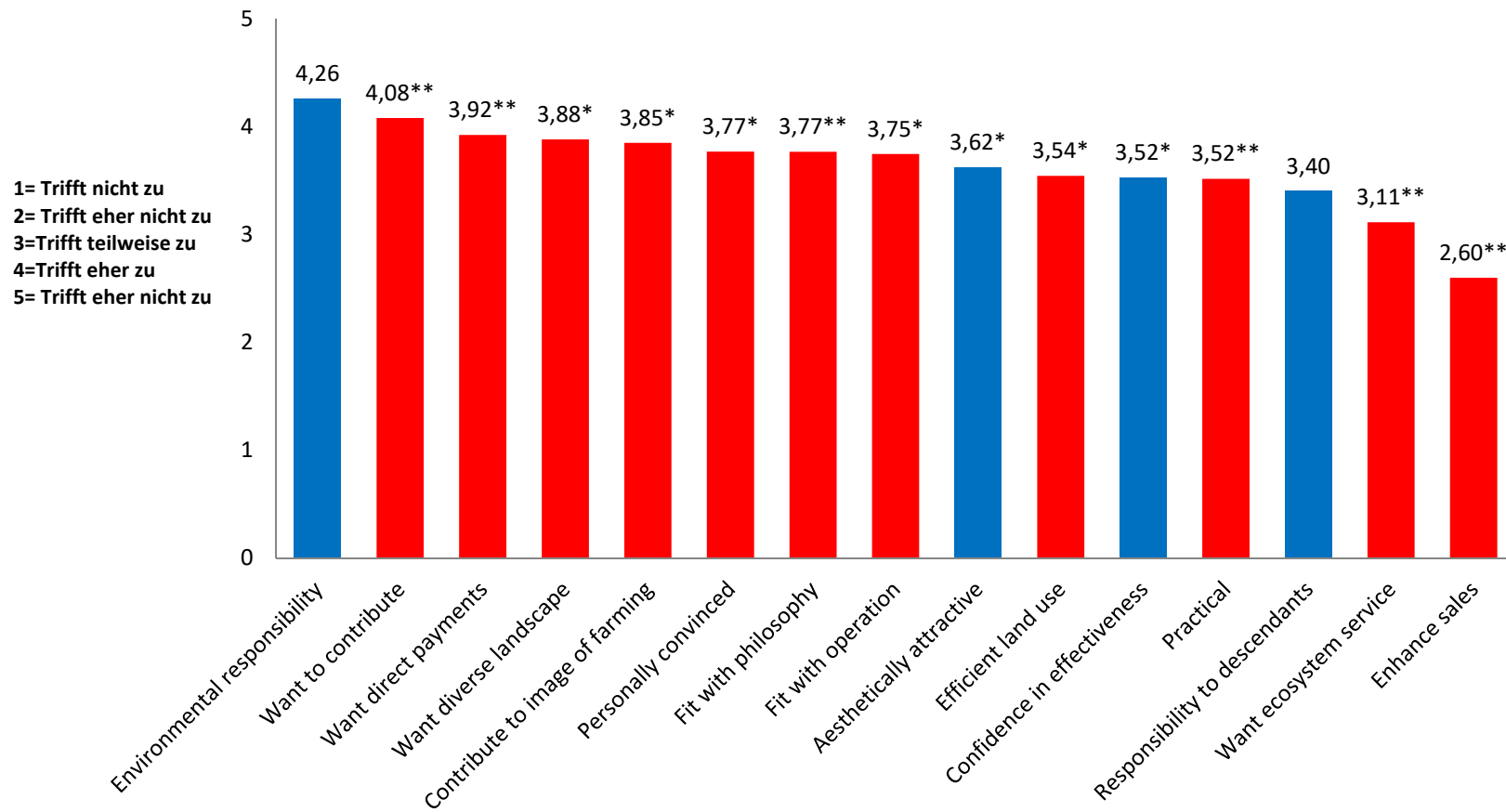
Fax +41 62 8657-273

[Vanessa.gabel@fibl.org](mailto:Vanessa.gabel@fibl.org)

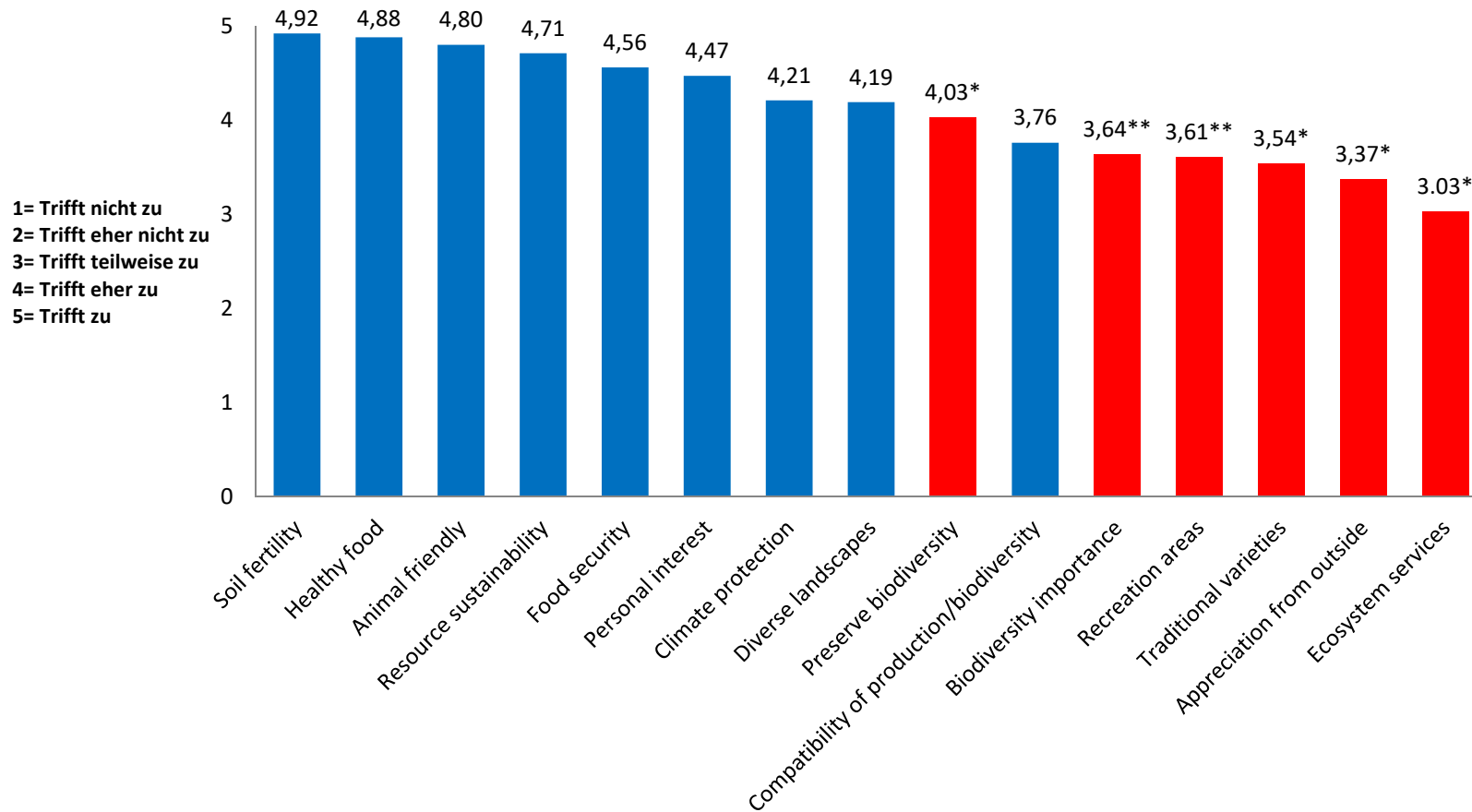
[www.fibl.org](http://www.fibl.org)



# 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)

