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EXCELLENCE FOR SUSTAINABILITY

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An innovative approach to enhance biodiversity on farmland: the credit point system

Background and objectives

> Agri-environment schemes (AES) aim to reverse the decrease in farmland biodiversity.

> The implemented AES did not result in a general increase in farmland biodiversity.

> There is a need of innovative tools to motivate farmers to enhance biodiversity on their farms.

> Objectives: (1) Develop a simple tool with which farmers can assess individual efforts for biodiversity on their farms. (2) Evaluate the effect of advisory support to optimize ecological and economical aspects for individual farms.

Material and methods

> Development of a credit point system (CPS) based on expert knowledge: credit points for 32 options: AES as well as arable and grassland options.

> Assessment of the CPS score and of plants, grasshoppers, butterflies and birds on 133 farms.

> Validation of the CPS by generalized linear models.

> Testing the effect of farm-scale advisory support on biodiversity on a sub-sample of 2 x 24 farms.

> Development a set of target species representative of AES for assistance in advisory support.

Results

> The new tools were successfully developed and implemented in advisory support (Fig. 1).

> The percentage of ecological compensation areas increased to 152% of that before advisory support (Fig. 2).

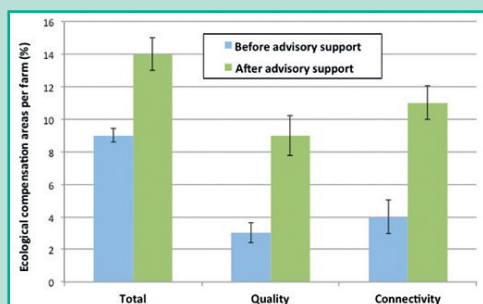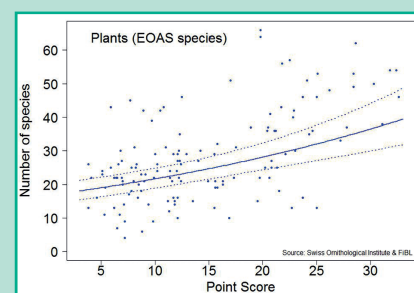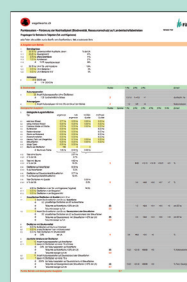> The CPS score represents well farm biodiversity (Fig. 3).

Fig. 1. Two innovative tools to motivate farmers to enhance biodiversity on their farms: (i) the CPS and (ii) the set of target species representative of AES.

Fig. 2. Average (±SE) percentage of ecological compensation areas per farm before and after advisory support (Chevillat et al. 2012).

Fig. 3. Relationship between the CPS score and plant species richness assessed in the field (EOAS: Environmental Objective of the Agricultural Sector). Shown are regression lines including 95% Credibility Intervals (dotted lines) of the models including environmental variables. The raw data are plotted in dots (Birrer et al. 2014, Jenny et al. 2013).

Outcomes and impacts

> Validated new options aiming to improve biodiversity.

> Useful tools for the efficient assessment of biodiversity (validated CPS) and for advisory support (set of 115 target species).

> Raised farmers' awareness for biodiversity (Home et al. 2014, Jahrl et al. 2012).

> The CPS has been successfully implemented in practice in collaboration with two Swiss label producers.

> Development of result-oriented AES (cross-compliance) in Swiss agricultural policy.

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