

First experience in extension service working with the new catalogue of measures for nature conservation integrated in the orchard management

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Abstract

In the frame of a project funded by the German federal programme “Biologische Vielfalt” a catalogue of measures to enhance the biodiversity in organic orchards was developed. The first experiences using the catalogue in extension service are reported. The experience show also that it is important to integrate the consultancy for such measures in the consultancy for cultivation and not to address both topics separately.

Keywords: measures for enhancement of biodiversity, nature conservation, catalogue

Introduction

Counteracting the decline of species richness in agricultural landscapes finds increasing attention also in organic fruit growing. To enhance successfully the biodiversity in the agroecosystem it is crucial to enhance biodiversity in production area and in the surroundings. Within the scope of a project in the German federal programme “Biologische Vielfalt” several measures to enhance biodiversity in the orchard were evaluated in a participatory process for 5 years (Krismann et al. 2020, 2022). At the end of the project in 2022, a catalogue with evaluated measures, which can be integrated into the organic fruit growing system to enhance biodiversity, was published. In 2023, this catalogue was used in extension service in practice and the first experience is explained.

Material and Methods

The catalogue is based on the results of the evaluation, on experiences gained with different measures in more than 120 organic fruit growing farms that participated in the project and on a literature review on measures to enhance biodiversity in and at the borders of the orchard. The 44 single measures (table 1) are linked to 21 key species groups. The potential of the measures to provide food, shelter or resources needed for reproduction and/or overwintering for those species groups was estimated by a value-benefit analysis based on the data elaborated in the project, the literature review and the practical experience in the fruit farms. This is plotted in a special graphic overview that allows the farmer to estimate fast which species benefit from which measures.

Structure of the catalogue

The catalogue is available online at www.biodiv-oekoobstbau.de that is regularly updated by FOEKO. A handout with a short summary of each measure is available as brochure and can be used during the first consultancy. Detailed explanations how to implement and manage the different measures can be downloaded at the homepage of the catalogue. The catalogue was also used as base for the standards for biodiversity services of the Bioland association and the guidelines of Naturland and is congruent with them.

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Table 1: List of measures

Nr	Measure
1	Sowing of a perennial flower strip with autochthonous plants in the middle of the alley
2	Implementation of a perennial weed strip in the middle of the alleys by transfer of meadow cuttings
3	Extensive mowing of the existing vegetation in the middle of the alley
4	Sowing of annual weed strips with autochthonous plants in the middle of the alley
5	Sowing of annual weed strips with flowering cultivated plants in the middle of the alley
6	Mulching of each second alley alternately
7	Sowing flowering strips with tall forbs (without mowing during the vegetation period)
8	Strips with natural vegetation without mowing during the vegetation period (old grass strips)
9	Strips with natural vegetation with reduced mowing during the vegetation period
10	Sowing of an annual weed strip with autochthonous plants at the border of the orchard
11	Sowing of an annual weed strip with flowering cultivated plants
12	Establishment/maintenance of strips with typical vegetation at the edge of water bodies
13	Establishment of clusters of specific plant species (e.g. important for oligolectic wild bees)
14	Planting of early flowering bulbous plants in clusters (e.g. <i>Crocus spec.</i>)
15	First tillage of the tree row shortly before tree blossom (availability of early flowering plants in the tree row)
16	Before plantation of trees one or more years cultivation of a green manure mixture with flowering plants
17	Establishment/maintenance of slopes with sparse vegetation
18	Artificial nest boxes for wild bees
19	Nesting facilities for insects that need vertical, pithy stems
20	Establishment of places with bare soil patches with low humus content as nesting sites for wild bees
21	Keeping bare soil patches originated by farm operations to offer nesting sites to certain wild bee species
22	Nest boxes for cave nesting birds
23	Nest boxes for kestrels
24	Nest box for little owls
25	Summer accommodations and nest boxes for bats
26	Hibernation sites for bats
27	Nest boxes for hoopoes
28	Nest boxes for wrynecks (<i>Jynx torquilla</i>)
29	Anchor plants (little shrubs at the top and end of the tree rows)
30	Hedges of native shrubs and trees (a list of woody plants with their specific characteristics is available)
31	Hedges of wild fruit-bearing shrubs and trees (can be harvested)
32	Agroforest strips
33	Small groups of woody plants under 10 m length
34	Single trees or tree rows
35	Climbing plants at the fences
36	Clusters of subshrubs with flowering aspects (e.g. <i>Origanum vulgare</i> , lavender) in places difficult to mow or till
37	Perches for birds of prey
38	Stone piles
39	Small hideaways for weasels
40	Habitat log piles
41	Brushwood piles
42	Establishment/maintenance of dry stonewalls
43	Establishment of small ponds
44	Establishment and maintenance of irrigation ponds with respect for nature conservation

Experience with the catalogue in advice for nature conservation measures in organic fruit growing

In 2023, the catalogue has been tested by two extension services in South and Northern Germany as an advisory tool to enhance biodiversity on organic fruit farms. Two kinds of consulting, solely consulting for the integration of measures to enhance biodiversity in the farm and cultivation consulting integrated with the advice for measures to enhance biodiversity were carried out while testing the catalogue's applicability. Usually, the printed brochure is brought by the consultants to the farms in preparation of the advisory sessions. The session concerning the biodiversity part starts with detecting existing conditions, e. g. structural elements or already implemented measures. Depending on whether further enhancements are wanted or needed, the consultant makes specific proposals concerning measures that have not been implemented so far. Very often such proposals are made by the farmers themselves. In these cases, it's the first task of the consultant, to determine if the fruit farm and local conditions are suited for the respective measure. If the measure seems applicable to both, farmer and consultant, the overview table in the printed brochure provides first indications of the benefits for the different key species groups. The short summaries of the selected measure on the following sides proved repeatedly to be very useful during the on-site visit. Next to the description of the measure, the use for enhancing biodiversity and for the farmers themselves (e. g. by functional biodiversity) is given, as well as a short overview of costs, effort and needed tools. Usually, the respective sides in the brochure are marked with post-its during the consultation, so that the chosen measures can be easily found later on.

Next to the different advantages of the measures, the possible consequences of the measures for the farms, such as increasing vole damage to the trees by establishing flower strips in the orchard, is always an important subject of the on-site sessions. This occurs in both regions, irrespective of whether the consulting is solely about enhancing biodiversity or is integrated in general fruit-growing advisory. There is also always high interest in positive effects as the enhancement of functional biodiversity.

The brochure gives hints, what is to be observed or how an appropriate implementation of the measures is possible on the farms. More detailed information for each measure and also special advice and experience e.g. for the vole management is not integrated in the brochure but ready for download on the homepage. Thus, it can be regularly updated with new results and experience and there is no overload of information in the printed brochure but the farmer can download the information for the measures he is interested in.

A further advantage of the catalogue is the fact, that all measures already have been tested on organic fruit farms in practice. This circumstance clearly contributed to the acceptance of the catalogue. From consultancy's perspective, the catalogue helps significantly to facilitate the counselling process and thereby, to enhance biodiversity on the organic fruit farms.

Discussion

The catalogue has proved itself as an important and applicable advisory tool and reference for farmers as well as for advisors. It helps to illustrate the measures and shows the effects. The selection of applicable measures should be found within a joint process, together with farmers and consultants.

The experiences gained during the testing period also show the necessity to integrate the advice for measures for biodiversity enhancement and nature conservation in the general cultivation consulting. Due to the various interactions between biological diversity and the requirements of fruit production, consultants are needed, who are very well informed with both, fruit growing and measures for enhancement of biodiversity in the orchards. Reservation regarding some measures of part of the farmers only can be dispelled by

consultants, who are accepted by the farmers. The financial risks of some measures must be recognized and clearly explained by the consultant as well, this requires extensive expertise with the production system and responsibility as well.

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