Grassland Biodiversity

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EFFECT technical info-pack

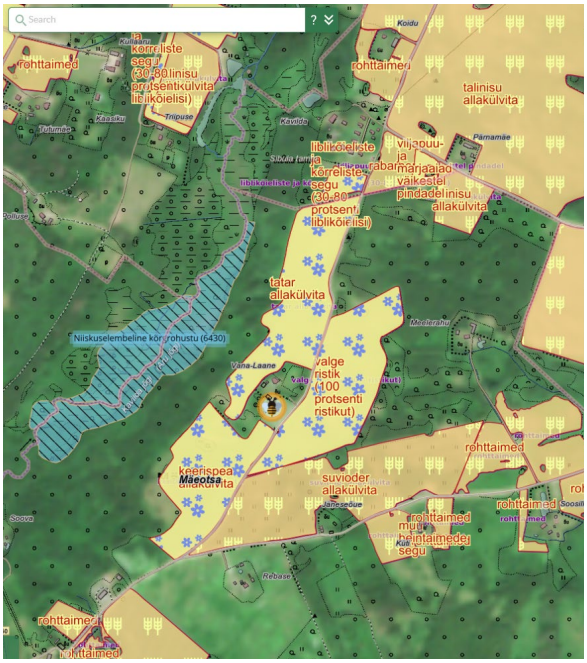
Case Study#9

FLOWER-FIELDS FOR HONEYBEES

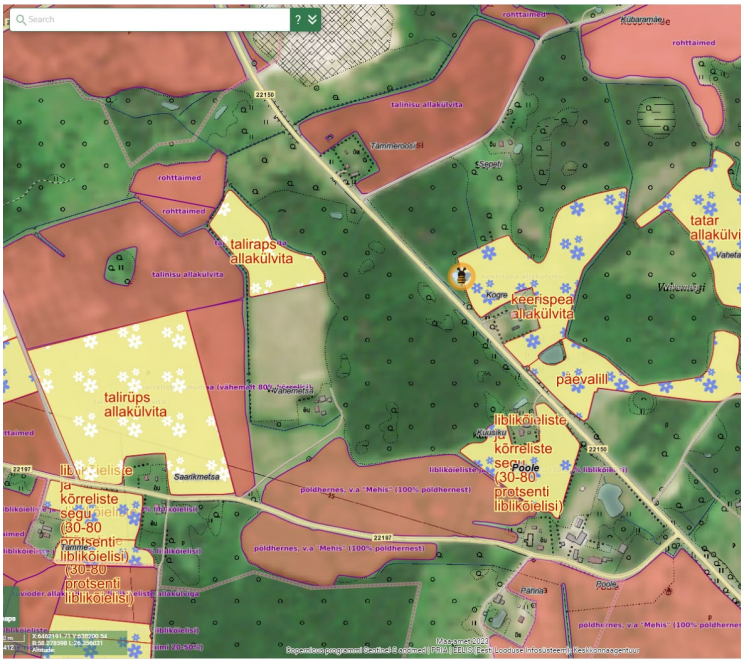
Agricultural support contract to provide flower-fields for pollinators

low-diversity mixture grown for the honeybees

The Environmentally Friendly Farming Scheme in Estonia has included an optional contract for the farmer growing special flowering species to support honeybee foraging since 2015. Since then, it has generated a low uptake. The requirements were quite restrictive and complex. Farmers had to sow at least three monoculture flower-crop species in adjacent fields and very close to bee hives, which is registered in the state managed agricultural data base. In practice, farmers and beekeepers perceived the artificial forage areas and contracts are too complicated to organise. The revision of the criteria and the targeted group of farmers was needed, and the prescribed species list of flowers had to be refined. Also, the ecological theory emphasizes the positive correlation between the ecosystem service provision and species diversity on site. However, the parameters for determining how attractive the plant diversity is to forage for bees have not been established.



Countryside land board of Vahemagi, Estonia
Source: Estonian Land Board (Countryside GIS)



Countryside land board of Maeotsa, Estonia
Source: Estonian Land Board (Countryside GIS)
RGB image with Estonian Basic map symbols

Crop symbols:
White - Spring flowering
Blue - Summer flowering
Background: Sentinel-2

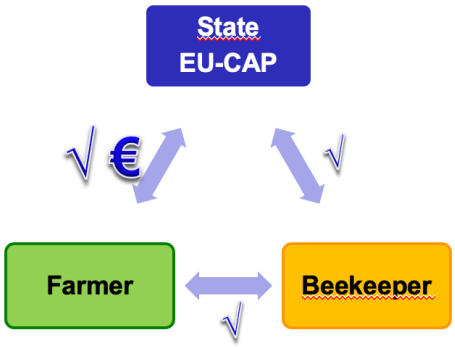
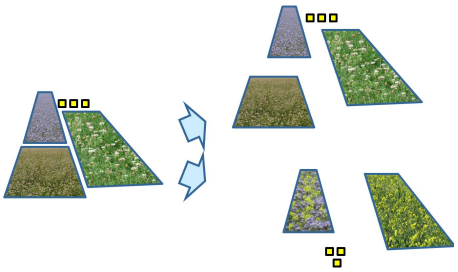
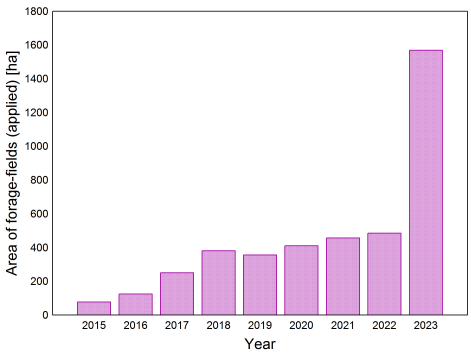


Table explaining thebusiness and economical relationships of the bee forage fields



A scheme that resumes changes in the contract criteria of 2023



Forage fields area throughout the years
Data source: Estonian ARIB

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Outcomes

From interviews and questionnaires it became clear that better criteria and information environments are needed. During the preparation of new package of CAP support measures for the next period, some adjustments in the contract criteria were made. From the 2023, more farmers can apply for the flower-field contract scheme, as now conventional farmers can also apply, as part of the annual eco-schemes. In the technical details of the contract, the maximum distances between fields and hives are more flexible, the list of supported plant species is longer, and the mixture of species is also encouraged. The neighbourhood of oil-seed rape will reduce the required flower species count from three to two. The payment rate has been increased from ca 200 eur/ha to 300 eur/ha (estimates varies between years depending on the field area applied).

The project, in collaboration with the Estonian Land Board, launched the special thematic public GIS-service, where the farmer and beekeeper can see each other's activities, and the beekeeper can adjust or nudge farmers to be more bee friendly. The thematic national service is called CountrysideGIS (https://xgis.maaamet.ee/xgis2/page/app/maaeluGIS).

We experimentally tested which combination of flower crops, either monoculture or plant species mixture, is the most effective for honeybees to forage (Liira & Jürjendal 2023; https://www.sciencedirect.com/science/article/pii/S1470160X23010695?via%3Dihub). We showed that monoculture and low-diversity mixture are more efficient than widely promoted high-diversity alternatives. The choice between monoculture or low-diversity mixture can depend on the maintenance method the farmer will or can use.

In the 2023, 1,570 ha was applied for the flower-field contract, which is three times more than in previous years, and the target estimate for the scheme has already been reached. (For comparison, for 2020, 2021 and 2022 the area of flower-field contracts were 410 ha, 457 ha and 485 ha, respectively. Data source: Estonian ARIB)

Problems still to be solved

Organic farmers cannot apply for the scheme as there is an unclear status of potential double-payment. The topic should be resolved, as the forage from these areas could be most valued by end users of honey.

The weed management of flower-fields is suppressed by the ban on the use of plant defence chemicals over the full calendar year, hampering the cultivation of crops after the flower-field intercrop summer.

Seed production and import of forage flower species needs to be encouraged, but as it is quite a specific and small-sized market, its natural succession can be very slow.