
The attractiveness of alternative crops in agricultural landscapes on local hoverfly populations

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Abstract

For sustainable and insect-friendly agriculture, various measures such as the establishment of flower strips or reduction of pesticides are important to increase insect abundance. However, the selection and cultivation of the crops themselves and a higher diversification can also have a direct impact on the development of local insect populations. With flowering crops, farmers can provide important alternative food sources for flower visitors such as bees and hoverflies. Hoverflies, in particular, as important natural enemies in biological control, rely on nectar and pollen in the adult stage. In an experimental field trial, the attractiveness of different flowering crops was investigated. For this purpose, 22 different species of renewable energy, medicinal or dyeing plants were selected and grown in small plots. The plants selected were anise (*Pimpinella anisum*), buckwheat (*Fagopyrum esculentum*), camelina (*Camelina sativa*), caraway (*Carum carvi*), chamomile (*Matricaria chamomilla*), common chicory (*Cichorium intybus*), coriander (*Coriandrum sativum*), cup plant (*Silphium perfoliatum*), dyer's chamomile (*Anthemis tinctoria*), common poppy (*Papaver rhoeas*), dyer's weed (*Reseda luteola*), Ethiopian rapeseed (*Brassica carinata*), fennel (*Foeniculum vulgare*), flax (*Linum usitatissimum*), madder (*Rubia tinctorum*), mugwort (*Artemisia vulgaris*), phacelia (*Phacelia tanacetifolia*), rose madder (*Rubia tinctorum*), safflower (*Carthamus tinctorius*), sweet alyssum (*Lobularia maritima*), valerian (*Valeriana officinalis*) and woad (*Isatis tinctoria*). To determine if a plant was attractive, the flowers were observed twice daily (morning and noon) for eight minutes each on three days per week, and all perceived and detectable visitors on the flowers were noted. The results showed the attractiveness of the plants to hoverflies and other insects (Hymenoptera, Lepidoptera, Coleoptera, Heteroptera, and other Diptera). Buckwheat, coriander, and chamomile were particularly attractive to hoverflies, while flax and other tested plants were visited little or not at all. The objective of this research is to identify plants that could be of benefit to farmers while providing an expanded food supply for insects. This study is being conducted as part of the FInAL project (<https://www.final-project.de/en/>).

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