

# Using biodiversity to stimulate wild bees in the orchard

## Problem

Good pollination is essential in fruit growing. With changing climatic conditions, adverse weather conditions are more common during flowering. A mix of different pollinators is important.

## Solution

The wild bees *Osmia cornuta* (European orchard bee) and *Osmia bicornis* (Red mason bee) are pollinators in fruit production. Their presence can be stimulated by offering nest boxes and biodiversity in the orchard.

## Benefits

Utilising different types of pollinators in the orchard can improve fruit yield and quality.

## Practical recommendations

- Mason bees fly at lower temperatures and in worse weather conditions than honey bees
- When you have your own mason bees, place nest boxes and cocoons in the orchard two weeks before fruit blossom.<sup>1</sup>
- Provide an orchard with flowering trees and shrubs, and perennial or annual flowers during the whole season
- For mason bees especially early flowering is important, before and after the blossom period
- Mason bees' males hatch earlier than females. Make sure there are flowers in the orchard for the males' flight.
- Early flowering trees and shrubs are: hazelnut, willow, yellow dogwood and Prunus
- Early flowering bulbs that are attractive for mason bees are grape hyacinth and siberian squill.
- Early spontaneous flowers that are frequently visited by mason bees are dandelion, lungwort, lesser celandine, ground ivy, coltsfoot and common field-speedwell

## Applicability box

### Theme

Crop production, Temperate fruits, Climate

### Keywords

Climate change, Pollinators, Pit fruit, Stone fruit

### Application time

Two weeks before bloom

### Equipment

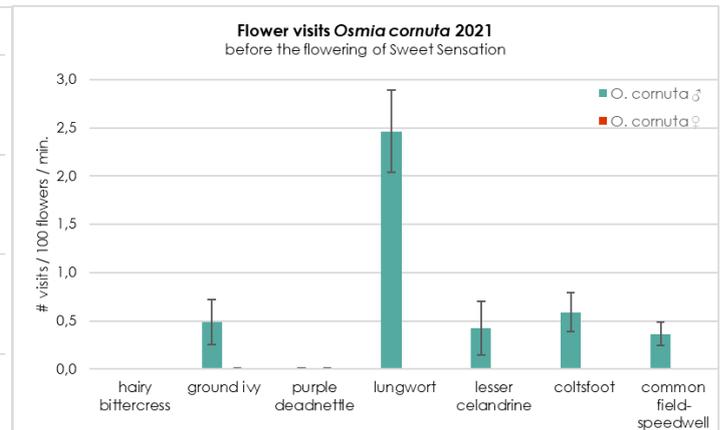
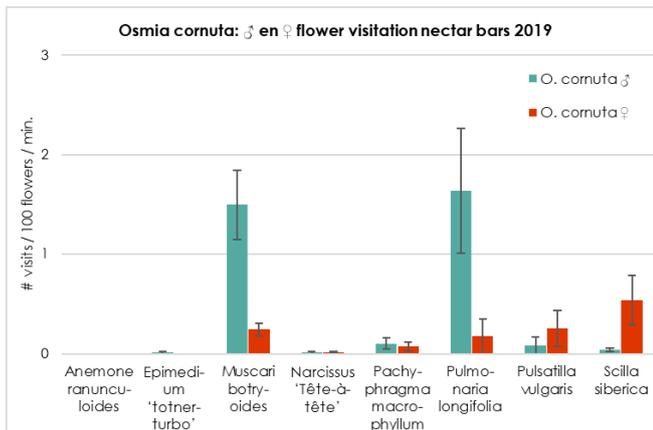
Nest boxes, material to remove and clean cocoons and nest boxes, cocoons of mason bees

### Best in

Biodiversity-rich orchards



European orchard bee on grape hyacinth (1). Lungwort (2). Spontaneous flowers in the orchard: common field-speedwell (3) and ground ivy (4). Photo 1, 3. G. Brouwer, Delphy. Photo 2, 4. W. Cuijpers, Louis Bolk Instituut.



Research on the suitability of flowers as nectar and pollen suppliers in early spring (2019 and 2021). Flower visits of *Osmia cornuta* were recorded. In 2019 various bulbs were planted, favourite were grape hyacinth and siberian squill. In 2021 visits on wildflower species were recorded, prior to the flowering of Sweet Sensation. Favourite species were lungwort (*Pulmonaria officinalis*), lesser celandine (*Ranunculus ficaria*), ground ivy (*Glechoma hederacea*), coltsfoot (*Tussilago farfara*) and common field-speedwell (*Veronica persica*). Dandelions were not tested because they are known to be well visited by mason bees. Hairy bittercress (*Cardamine hirsute*) and purple deadnettle (*Lamium purpureum*) were not visited by mason bees. W. Cuijpers, Louis Bolk Instituut.

## Further information

### Videos

- BIOFRUITNET video: [Mason bees for successful pollination in closed cherry orchards](#) (English)
- Delphy: [Uitzetten van metselbijen](#) (Dutch)
- Delphy: [Oogsten van metselbijen](#) (Dutch)

### Further reading

- van Breugel, P. 2019. [Gasten van bijenhotels](#). EIS Kenniscentrum Insecten en andere ongewervelden & Naturalis Biodiversity Center. pp. 486. 222. (Dutch)
- Boutry, C. 2022. Use of mason bees for pollination in covered orchards. Practice Abstract, BIOFRUITNET
- Brouwer, G., Cuijpers, W. 2022. [Metselbijen inzetten in de fruitteelt](#). pp. 1-79. (Dutch)
- Brouwer, G. 2021. Bestuivingsmix en biodiversiteit in de boomgaard. (Dutch)

### Weblinks

- Check the [Organic Farm Knowledge](#) platform for more practical recommendations
- Adolphi, C., Oeser, N. 2022. [Practice abstract Insect boxes in organic orchards: Caution on ready-to-use solutions!](#) FÖKO. BIOFRUITNET
- 1. Jacquot, M., Parveaud, C.-E. 2022. [Practice abstract Nesting boxes: Improve tree pollination with wild bees](#). GRAB. BIOFRUITNET.

## About this practice abstract

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