**Bees and organic farming**

Bees have been declining at an alarming rate in recent years. The reasons for the decline in bee numbers are complex, and not yet fully understood. One major problem the issue of intensive agricultural practices in general. For example, monoculture (where the same crop is grown year after year) and the use of a range of pesticides, including herbicides which kill off plants which bees forage on, can have negative impacts on bee populations.

In contrast, organic farming is based on a system which works with nature, rather than against it. Organic farmers aim to produce good food from a balanced living soil. For example, organic farmers use clover to harness the sun’s solar power to transform nitrogen in the air into soil nutrients, and they place strong emphasis on protecting the environment. Genetically modified crops are banned, and pesticides are avoided.

Biodiversity, in terms of a wide range of plants, insects and animals, is key to organic farming. Each plant or animal has a specific role in the life of the farm, and this is especially true of the bee. Bees play a crucial role in pollination, so that we can grow fruits and vegetables, one in every three mouthfuls of our food is thanks to bee-pollination. Without the bees we would not be able to support the wide range of crops and plants on the farm – the two go hand in hand.

Intensive agricultural techniques are causing such concern that new research is being carried out at the laboratory of Apiculture and Social Insects at the University of Sussex. Professor Francis Ratnieks, who heads the laboratory stated: "The use of herbicides and intensive forms of agriculture means that fields of wheat and barley now have few weeds. Fields of grass now have few wild flowers, clover is less used and much of the heather moors have been ploughed up." As a result of this concern, one of the laboratory’s research areas will be to investigate how changes in land use can affect bees.

**A home fit for a bee**

Getting the habitat right for the bee is a pretty exacting task; a bee's habitat must consist of both flowering plants and suitable nesting sites, all within flight range of each other (with nothing harmful en route). In addition, not all bees like the same plants, so the suitability of the plant species must be compatible with the species of bee. With over 250 species of native bee in Britain it’s no wonder that the majority of these are threatened with extinction due to loss of habitat. Some, especially the so-called solitary bees, will visit only one particular type of flower – so as the bees get scarcer, so do their favoured flower. The other factor is the flowering season of the plant must match the foraging, (or feeding), season of the bee. So within flight foraging distance of the bee, (typically a few miles), there must be a range of its preferred flowers, within bloom at varying times from Spring until Autumn.

Not all bees live in hives, there are the ‘solitary bees’, such as the Leafcutter and the Red Mason Bee, that live in tunnels in the ground, or in hollow reeds or twigs, or they make nests in holes in wood. These bees are very important because they are ‘oligoleges’- which means that they only gather pollen from a very few species of plants, indeed our most precious and rare wild flowers. Homes for ‘solitary bees’ are thus provided in wooded areas, or log piles, and in purposefully ‘neglected’ corners of the farm.

The focus on natural ecosystems and native species, as well as the lack of pesticides used in organic farming, make it a haven for the bee. Organic farms also provide the wild spaces at field margins and in hedgerows, providing a diversity of flowers and habitats for bees to nest and shelter. Thus, by supporting their place in the delicate natural balance of plants and insects that are all mutually dependent on one another, Organic farming is both supporting biodiversity and the bee.

In particular, red and white clover are mainstays of organic farming systems. Red clover (*Trifolium pratense L*.) is used extensively as part of the rotational farming systems that maintain soil fertility without the use of chemical fertilisers. In addition it is one of the bumble bees favourite foods. Its traditional name ‘Bee Bread’ says it all. White clover (*Trifolium repens*) is also found in abundance on organic farms. Honeybees are particularly drawn to this plant, as White clover is better suited to their shorter tongues.