HOW TO CONCILIATE BEEKEEPING AND AGRICULTURAL ENVIRONMENT ?

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Introduction

The domesticated bee (*Apis mellifera*) plays a main role in the biodiversity of plant life by its pollination. Moreover, it is endowed with a fabulous food hoarding instinct which is the reason why man has domesticated, bred and made the most of its produce: honey, pollen… The continuously changing agricultural landscape doesn't disturb the insect as long as it provides it enough good quality nectars. Therefore, beekeeping is able to adapt as long as beekeepers are …

Biology

A bee is a perenial social insect. The queen lives up to 5 years, the laying period varies according to the climate. In France, it starts end of Winter and ends in October-November. During the busy period of the swarms (Spring, Summer) the workers live up to 6 weeks (3 weeks working inside the beehive, then 3 weeks pollen gathering) whereas those born in Autumn will survive through the Winter with the queen, forming the winter group. The pollen gathering workers bring back the raw materials needed by the swarm: nectar, pollen, water, propolis (vegetal resin). Water and propolis are used straight away. But honey and pollen will be processed before storage. Honey is but the one ingredient bees need during the cold season: is will provide them with thermogenetic energy. Man makes the most of all raw materials (pollen, propolis) and processed material (honey, royal jelly) that bees produce. But only the surplus of honey can be taken away, not to endanger the life of the swarm at winter-time.

The bee and changing landscapes

The bee mainly keeps to pollen and nectar gathering for food purposes: it hasn't got any other choice ! Due to its adaptability, it has been possible to introduce it within a wide variety of climates, and has resisted the changing in habitats.

Since deforestation, the landscape is constantly changing with agriculture, cattle breeding, urbanization, industrialization… But these changes have no doubt been more important since the start of the 20th century. In the beginning, the French agricultural landscape is of wooded bocage: mixed farming and cattle breeding spread all over the country. Later mechanization and transport allow specialization in local or regional cultures. Regrouping more or less induces the loss of bocage landscape. One of the consequences being the death of hedge and enbankment plants, as well as changes in farming habits and unusual rotation of crops. So, sainfoin and sown-in meadows needed to feed draught horses disappear, whereas sweet corn, sunflower, peas, sorghum, rapeseed tend to develop. And most of them are of very little interest for beekeeping. If its survival hasn't been altered by the modification in its food supplies, its productivity has undergone great changes in both qualitative and quantitative terms.

Because of the new crop rotations, and particularly in large-scale farming zones, non-productive periods can be observed, for example between the sunflower and rapeseed flowering times. The beekeeper has had to evolve by adapting his apiarian techniques to any new setting, specially by moving the beehives to productive locations after a precise study of the local flora's potential.

The bee, a sentinel for the environment.

On the whole, beekeeping has succeeded in adapting to complex modifications through the past centuries. However, the bee – same as all other useful insects – turns out to be an easy target for pesticides. Since the large-scale use of insecticides in the fifties, beekeeping faces a great loss of swarms, due to (chemical) poisoning. A set of rules has been established to protect the bee: using conditions and official approval of pesticides. But it suffers insolvency. For example the official approval of fertilizers and herbicides doesn't take into account the larva-killing or sublethal effects on bees… Sublethal effects as a consequence of new systemic insecticides used in seed-coating. The launching of chemicals such as Imidaclopride (Gaucho®) or Fipronil (Régent TS®) on the market, to coat the seeds just before sowing was a very attractive technique meant for environmental protection. But they quickly proved to be dangerous,not only by Summer toxicity on sunflower/ sweetcorn, but also by higher Winter death rate due to toxic food consuming (sweetcorn and sunflower honey or pollen), and by their remanence in soil.

Conclusion

This domesticated animal has always exhibited «wild», and can be considered a true sentinel for the environment. Its survival in agricultural zones has recently become more than critical. In the long-lasting beekeeping setting –as well as for the long-lasting agriculture setting- solutions are to be found and fitted. These solutions depend on new cultural practice, new crop rotations, new rules about official approval of fertilizers and herbicides. The bee has been able to survive through centuries, and has adapted to various situations.It's now for her to find the right sort of food, as far as quality and quantity are concerned .

Références

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