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ECOBEE: Bee colony monitoring in agrosystems

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Traditional apicultural practices have been replaced by intensive ones in order to compensate colony losses and yield decreases. The choice of the best locations to set up beehives in farming plains for honey production is largely empiric today. ECOBEE is a monitoring design allowing to an ecological approach to honeybee biology which focus on three topics of interest: i) the impact of land use on colonies development; ii) the impact of farming practices on colonies development; iii) landscape structures effect analyse on colonies behaviour. The design contains data acquisition concerning environmental variables in land use, floral resources or agricultural features in one hand, and colony responses variables concerning colony parameters, life history and collection in the other hand.

In an intensive cereal cropping system, our study concluded to a food shortage for the honeybees in the end of spring, between the rapeseed and sunflower blooming. We described the kinetic cycle for several honeybee parameters, and a general pattern over several years can now be used to test different environments all along a landscape gradient. We showed a gradient of foraged diversity of pollen within a short distance during a period where floral diversity is expected to play a role.

The couple land use - colony monitoring data on a large scale is a reference to test different environmental factors of food resources as well as some aggressors like diseases, predators or anthropic constraints.

keywords: honeybee monitoring; floral resources; colony dynamic; agrosystem landscape; agricultural practices;