

Title of Presentation: Comparison of different pollen substitutes for the feeding of artificially reared bumble bee (*Bombus terrestris*) colonies

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Abstract:

In bumble bee colonies pollen is the only protein source for larval feeding and adults consume it to develop their glands and ovaries. Pollen deprivation leads to a poor development of the bumble bee colonies, due to the death of larvae and the reduction of longevity and reproduction in adults.

In bumble bee artificial rearing, fresh frozen pollen is the most used protein source, giving the best results in terms of colony development and queen size and reproduction. Dried pollen is also used in artificial mass-rearing.

We tried different natural protein sources, as possible alternatives for the nutrition of artificially reared *Bombus terrestris* colonies. Colonies were fed on fresh frozen pollen until the emergence of the first brood, then the feeding was shifted to the pollen substitutes. We tested four different commercial pollen substitutes used for honey bees colonies during periods of pollen shortages (Calcalar®, Melissokomiki®, Candipolline® and Feed Bee®) and two natural protein sources (yeast and chestnut flour) mixed with sugar solution, in comparison with fresh frozen pollen administered in two different ways: honey bee pollen pellets alone or mixed with sugar solution.

None of the tested pollen substitutes allowed the development of bumble bee colonies, the best results being obtained with yeast and Feed Bee®. No differences were found between the two kind of fresh frozen pollen, in terms of colony development. Further experiments will be conducted with a mixed diet, composed by these two substitutes and fresh pollen in different percentage.