FUTURE DEVELOPMENT PERSPECTIVES OF THE PRECISION APICULTURE (PRECISION BEEKEEPING)

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Abstract. *Precision Beekeeping (or Precision Apiculture, PB) is considered as a sub-branch of Precision Agriculture. Precision Beekeeping is defined as an apiary management strategy based on the monitoring of individual bee colonies to minimise resource consumption and maximise the productivity of bees. There are different tasks for PB at the bee colony and apiary scales both in passive and active periods of honey bee colony development. It is important to remotely detect different states of the bee colonies, like developmental states, several events, that may require beekeeper's actions, including swarming, extreme nectar flow, queenless states etc.*

Although there are sufficient technical means (different sensors, specific measurement systems, monitoring systems) and industrial products for the practical execution of PB, the implementation process is slow due to the differing states of development of three implementation phases: data collection, which is the most developed and advances phase to this moment, data analysis and application. Currently available PB systems are not widely used because of several reasons: technical systems are complicated for beekeepers; benefits of usage of systems are not clear and there are additional operational costs of systems.

The development and practical implementation of decision support systems (DSS), which is usually a stumbling block in Precision Agriculture, is suggested to be an important task. In the long term perspective, specific DSS-controlled electronic devices should be developed to enable new functionalities for PB. Specific classes of actors are proposed to operate within future PB systems for the automatic execution of suggestions made by decision support systems, as well as for diagnostic purposes. PB systems should be optimised by searching for appropriate combinations of different sensors, and corresponding decision support systems must provide convenient, reliable and cost efficient solutions. The development and specification of PB systems should consider business interests, distance to the apiary, expected risks and other peculiarities.

The future implementation of the PB approach is determined by several factors: convenience of PB technology implementation by a beekeepers and clear economic benefits by which, the calculations of return on investment can be reliable. The second point requires scientific efforts to increase the reliability of data analysis and suggestions made by DSS.

Key words: *Precision Beekeeping, Precision Apiculture, bee colony monitoring, decision support systems.*

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REFERENCE

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