

# Technology Tips For Beekeepers

Malcolm T. Sanford

## THE 4TH INTERNATIONAL BEE & HIVE MONITORING CONFERENCE: INTRODUCTION AND OVERVIEW



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The 4th International Bee & Hive Monitoring Conference, hosted by the University of Montana, provided attendees worldwide with a virtual collection of the latest colony monitoring developments, ranging from products on the market today to research that may result in future innovations. The technologies presented take advantage of low-cost sensors, powerful batteries, communications technology, cloud storage, information processing algorithms, interactive visualizations and other concepts. The event included 50 presentations from 14 countries with more than 400 registrants. Edited abstracts and links to full video presentations are presented here, published by Bee Culture Magazine. 12 minutes: <https://tinyurl.com/fourth-linton>

## TECHNICAL INNOVATIONS IN BEEKEEPING

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Beekeeping can be considered both an art and science; therefore, it benefits from technology, as technology applies science to solve problems and extend our abilities. Historically, the evolution of beekeeping technology has been characterized by long periods of steady state, punctuated by significant developments that dramatically changed the craft's nature. The late 1800s heralded the dawn of honey production on a commercial scale thanks to three key technological innovations; the movable frame, smoker, and centrifugal honey extractor. Today beekeeping technology is experiencing another sharp disruption as electronics and information technology help our understanding and abilities as beekeepers.

Over the last few years, the market has seen a surge in gadgets that offer a myriad of services. Beekeepers that benefit from these innovations tend to fall into three distinct groups; while there is an overlap in application, the value extracted from the information is tailored to each. Hobby beekeepers can track nectar flows, compare colony development and receive automated alerts for broodless colonies, the need to add/remove a honey super, when to feed, even when the queen goes on her mating flight. Technology has enabled commercial beekeepers to increase efficiency within their operation, improve management practices, and increase production. Growers can now better track the pollination of their crops. Scientists can collect unprecedented volumes of highly granular bee and environmental data simultaneously and precisely coupled with reliable data management. The question is not if but when will these technologies become the mainstay of modern apiculture. 15 minutes: <https://tinyurl.com/fourth-evans>.

## PRACTICAL HIVE MONITORING FOR THE SERIOUS BEEKEEPER

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One challenge that new beekeepers have is learning and understanding that all beekeeping is local. Most beekeeping is done in locations where some knowledge or history is already in place through Beekeeping Association/Groups or an established network of experienced, knowledgeable beekeepers. In my talk, I will describe what a serious beekeeper/club can do where there is no prior knowledge/experience or critical gaps exist. In the next 15 minutes, I will describe the approach I took to fill some of these gaps quickly. Hive monitoring is most effective if multiple data points are captured simultaneously.

My approach has been to capture critical internal hive metrics (temperatures, weight), local weather data, forage, and environmental information, disease and pest trends (microscopy, mite counts), and most importantly, colony progression observations collected through routine inspections.



[https://beekeep.info/vita\\_details/](https://beekeep.info/vita_details/)



The information can be collected individually or as part of a club/group activity over a couple of years. The information collected can then be used to improve/test hive management approaches, including feeding and hive configuration, to understand critical environmental queues (seasonal changes, nectar flows/dearths), to understand critical bee stressors (i.e., nutritional gaps, weather impacts, forage types, diseases & pests), concerning bee biological processes, brood-rearing cycles, and queen health. 17 minutes: <https://tinyurl.com/fourth-tardif>

