Apian House and Data Sustainability Project

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Description and Importance to Alabama

Apian Colony Collapse Disorder (CCD) is a global challenge that threatens the world's food supply.[1] In 2009 the USDA Animal Plant Health Inspection Service launched a national network of honeybee monitoring efforts, in which Alabama has participated from the inception. The importance of this problem to Alabama is in direct proportion to the importance of sustaining the agriculture economy in the state.

Outcomes and Plan of Work

This challenge also represents a threefold opportunity for UAB and collaborating entities to integrate environmental and economic sustainability by: 1) developing new IoT monitoring devices and systems to collect data to increase scientific understanding of bees and bee activities; 2) promoting wide-scale homeowner adoption of innovative "beehouses"[2] that automatically harvest and bottle honey and can be fitted with data monitoring devices for a nationwide apian monitoring system; and 3) creating new, local jobs in light manufacturing of IoT monitoring devices and beehouses, the marketing and sales of such innovations, and the organizing of amateur bee enthusiasts throughout the nation to help collect scientific data for apian research purposes.

The Apian House and Data Sustainability Project must be demand-driven by both scientific need and market opportunity for economic sustainability. Our approach to this project is first to identify one or more scientific authorities on bees and CCD who would join the project and provide scientifically authoritative guidance. This effort is underway.

Second, we will undertake market research on relevant monitoring devices and systems and sources of existing beehouse units. From this research, and guided by authoritative needs for scientific data, we will determine opportunities to create innovations, preferably involving protectable intellectual property in IoT monitoring

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[1] See https://www.aphis.usda.gov/aphis/ourfocus/planthealth/plant-pest-and-disease-programs/pests-and-diseases/non-regulated/honey-bees/ct_survey/!ut/p/z1/04_iUlDg4tKPAFJABpSA0fpReYllmemJJZn5eYk5-hH6kVFm8X6Gzu4GFiaGPu6uLoYGGjh6Wnt4e5mYGwa6m-l5gjQj9IBPw64iA6oAqh1P6kUZFvs6-6fpRBYklGbqZeWn5-hHJJfHFpUVlqZX6BdlRkQCTzqDo/, cited 30 April 2018.

[2] A beehouse, as used here, means a single unit to accommodate honey production by a limited number of bees, at a size slightly larger than a typical birdhouse, facilitating adoption by homeowners who are not willing to tend to traditional beehives. Additionally, the beehouse is engineered to automatically collect and bottle honey produced by the resident bees. Such beehouses are already in the market and are protected by patent, which must be studied further to determine a collaborative or independent approach.

devices, software for data management, and beehouse design. We will estimate the potential size of the U.S. market for beehouses (as distinct from traditional beehives) and determine how to drive beehouse demand through marketing and promotional innovations that will educate the public about bees and apian CCD.

Generalizability

The innovations created through this project will be scalable initially in Alabama and the United States and subsequently throughout the world, subject to national approval. Considering the global impact of apian CCD, we believe there will be substantial interest in the innovations we envision.

Team

In order to create innovations in beehouses and data monitoring systems, we need to assemble an interdisciplinary team composed of such specialties as materials science, mechanical engineering, electrical engineering, computer science and software engineering, entomology, biology, educational development, and business development.

Mr. Steven Thompson of the Office of the Dean of Engineering at UAB, will lead the beehouse and data systems development initiative within UAB.

John R. Whitman, Ph.D. will collaborate with Thompson and lead the educational and business development initiative, either through an independent, privately held company established for this purpose or a nonprofit organization that can contribute substantive talent and resources for the project. Dr. Whitman has founded several startup companies in software, consumer products, survey research, and video production, and has taught entrepreneurship, social entrepreneurship, new product development, and management consulting at graduate business schools in Boston, Washington, DC, and Huntsville, Alabama.