Supporting Bee Health

Healthy bee populations are critical for functioning ecosystems and sustainable agriculture. In recent decades, beekeepers have experienced major honey bee colony losses, and wild bee populations have declined. Land-grant universities are working together on a multistate project to better understand problems affecting bees and develop tools and practices that help beekeepers, farmers, and communities protect bees and their habitats. For example, project members have:

- Created bee **monitoring technology and programs**, including the AI-based BeeMachine, a map of ground nesting bees, a network to track the status of capped brood, and tools to monitor bees using machine learning, sound, and electricity.
- Provided **genetic information** for bee breeding efforts.
- Shared tools and techniques for **queen breeding and rearing**.
- Developed new ways to screen honey bee colonies for **parasites, pathogens, and pests**; created vaccines, bee boxes, and supplements that improve bee immune systems; and tested new products and techniques for controlling ***Varroa*** mites.
- Studied how **environmental conditions** and **landscape features** affect bee health and developed decision-support tools like Beescape and BeeWinterWise.
- Showed how poor nutrition impairs bee health, identified plants that attract bees, and created **pollen libraries and databases** of the nutrition content of various pollen types.
- Measured **pesticide exposure** and its effects on bee health.
- Helped state agencies develop **pollinator protection plans** and train bee inspectors.
- Recruited and trained **commercial and backyard beekeepers** so they can improve bee health and pollination capacity while also expanding their businesses and/or saving money.
- Engaged with **communities** about the importance of pollinators through visits to schools, camps, and clubs as well as exhibits and events at local libraries, museums, and parks.
- Provided hands-on experience and mentorship for the **next generation of scientists**.

Multistate Research Fund IMPACTS

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