A sustainable approach for replacing winter honey bee colony losses using locally produced nucleus bee hives overwintered in polystyrene boxes

Final Report for FNC08-700

Project Type: Farmer/Rancher
Funds awarded in 2008: $1,606.23
Projected End Date: 12/31/2011
Region: North Central
State: Ohio
Project Coordinator:
Joseph Latshaw

Project Information

Summary:

I am the owner of Latshaw Apiaries, a beekeeping operation located in central Ohio. My operation consists of approximately 200 production hives that are operated in the surrounding area. The primary focus of Latshaw Apiaries is the development and production of honey bee breeding stock for the commercial beekeeping industry in the US. I also design and manufacture instrumental (artificial) insemination equipment to be sold to institutions and private individuals around the world for use in their own breeding programs. The third aspect of my operation is honey production. I produce, bottle and market all of my honey for local consumers. Additionally, I work in the beekeeping industry as a consultant, and I often contribute articles to industry-related journals and newsletters.

I attempted to produce my own replacement colonies using traditional wooden nucleus colonies, but experienced very little success over the last 4 years.

The objective of this proposal is to develop a sustainable and self-sufficient method to replace production honey bee colonies that die during the winter by using small polystyrene nucleus colonies established during the prior season as replacements.

Small nucleus honey bee colonies were established using a polystyrene nucleus, 1 frame of sealed brood and bees, 1 queen cell and 4 new frames in late June. The reasoning behind this method was to establish young colonies using minimal resources, after the primary honey flow, and to grow the colonies so that they would be large enough to survive the winter. The polystyrene nucleus provided added insulation over the traditional wood box for both the young developing colony during the summer months and the overwintering colony. The young colonies required feeding with sugar water throughout the summer.

Successfully overwintered nucleus colonies were then used to replace any production colonies that died over the winter.

40 polystyrene nucleus colonies were initially established in June of 2009.

36 polystyrene nucleus colonies developed successfully during the summer of 2009.

33 polystyrene nucleus colonies survived the 2009/2010 winter successfully.

The polystyrene nucleus colonies achieved a 91.67% survival rate compared with approximately 25% survival rate using traditional wooden boxes in prior years.

The initial goal for this project was to develop a sustainable method for raising replacement colonies rather than relying on purchased packages of bees each spring. When time and all materials are factored in, the actual cost of producing each polystyrene nucleus colony is roughly equal to the cost of purchasing a package of bees with the average cost of $75 per package. However the primary cost in establishing the polystyrene nucleus colonies is purchasing the equipment and supplies. Subsequent years of usage will greatly reduce the cost of production. An added benefit of locally produced sustainable methods will also reduce the risk of transporting honey bee diseases and Africanized Honey Bees. In addition previous use has demonstrated that nucleus colonies build up faster in the spring when compared with package bees.

The results were better than I expected!

I learned that polystyrene nucleus colonies provide a great alternative to purchasing packages of bees. Learning to utilize this new resource enables greater self sufficiency and sustainability. In addition, it provides an additional market to produce nucleus colonies to sell to other beekeepers.

One key piece of information I learned during the course of this project is how to properly manage the polystyrene nucleus colonies. While polystyrene provides great insulation in the winter, it provides unwanted insulation during the summer months. The polystyrene nucleus colonies were developed in Canada which does not experience the same summer conditions that we experience in Ohio. Therefore, the polystyrene nucleus colonies required greater ventilation in my climate to ensure proper development and to prevent overheating. This is also the component I would stress when sharing this project with other ranchers or farmers who wish to raise their own replacement colonies.

I shared the progress of this project with the Central Ohio Beekeepers Association in the summer of 2009. I was invited to speak at their "Evenings in the Bee Yard" at the Ohio State University Waterman Farm where the nucleus colonies are kept. We spent the time going over the setup of the nucleus colonies, discussed the equipment involved and the management techniques involved. There were approximately 40-50 beekeepers in attendance.

I have also discussed this project with the two local bee suppliers where I purchased the equipment and one had expressed interest in establishing overwintered nucleus colonies to sell. He will be accompanying me to the apiary in the spring to gain hands on knowledge and experience managing the polystyrene nucleus colonies.

In addition, information and photos regarding this project are available on my website at http://latshawapiaries.com/wintering_nucs.htm. The information on the website generates email questions from beekeepers all over the US who are interested in overwintering nucleus colonies.

Once I have more complete information about the success and survivability of the nucleus colonies in the spring, I will update the website and begin presenting the project more detail to bee organizations where I am invited to speak.

I am currently working on an article for submission to a trade journal. This will share the results of this grant project with beekeepers across the US and around the world.

Research

Participation Summary

US Department of Agriculture

This site is maintained by SARE Outreach for the SARE program and is based upon work supported by the National Institute of Food and Agriculture, U.S. Department of Agriculture, under award No. 2019-38640-29881. SARE Outreach operates under cooperative agreements with the University of Maryland to develop and disseminate information about sustainable agriculture. USDA is an equal opportunity provider and employer.
