**Enhancing Beekeeping Knowledge: A Strategic Approach to Educate Beginner Beekeepers and the Next Generation of Apiculturists.**

Rodríguez, L.1, and Bosques, J.2

UF/IFAS Extension Polk County, lrodriguezrosado@ufl.edu;1 UF/IFAS Extension Hardee County, jonael@ufl.edu;2

**Abstract**

**Situation:** Florida is home to over 5,000 registered beekeepers managing 700,000 colonies, producing 10-20 million pounds of honey annually. This industry contributes over $1 billion to agriculture through pollination services. As interest in beekeeping grows, many individuals are eager to get involved but often lack the knowledge to properly manage honey bees. UF/IFAS Extension aims to bridge this gap by offering educational materials and promoting best management practices through interactive workshops and events, including bilingual content to serve Florida’s diverse population, with 30% of residents speaking Spanish. **Methods:** In Polk and Hardee Counties, agricultural agents organized and evaluated beginner beekeeping workshops and youth camps to enhance beekeeping knowledge. These workshops incorporated interactive lectures, hands-on hive inspections, and observation hives to teach bee biology and management practices. Additionally, bilingual outreach efforts, including social media content like videos, blog posts, and podcasts, helped reach a wider audience. Beekeeping topics were also integrated into grassroots events to raise awareness of honey bees' critical role in agriculture. **Results:** Workshop surveyed participants (n = **159** out of **190**) reported, a **66%** increase in knowledge about Florida’s beekeeping laws, **54%** in honey bee biology, **63%** in pests and diseases, and **63%** in starting as a beekeeper. Furthermore, **68%** of surveyed participants adopted best practices, including proper bee nutrition, hive management, and pest management, while registering their bees with FDACS. Between 2022 and 2024, **6,923** fourth graders participated in grassroots events, and **90%** of teachers reported an increase in students' awareness of honey bee importance. Youth camp participants also demonstrated a **32%** increase in bee biology knowledge and a **36%** improvement in understanding beekeeping tools. The blog posts and videos, which garnered **4,896** views, helped participants make informed decisions about beekeeping. **Conclusion:** Overall, the program has increased knowledge and led to better beekeeping practices in Florida, which may ultimately improve productivity and the economic value of beekeeping operations. It has also raised awareness of honey bees’ role in agriculture, fostering support for the industry and encouraging future generations to engage with beekeeping.

**Educational Objectives:**

* Deliver science-based education on beekeeping management in Florida including laws and regulations, bee biology, pests and diseases, apiculture tools, and recommended practices for colony management. This was offered to youth and beginner beekeepers through interactive workshops, seminars, and presentations.
* Develop bilingual social media resources, including videos, blogs, and podcasts for beekeepers, to be used as teaching tools in workshops.
* Enhance youth awareness of the critical role of the Western Honey Bee and other pollinators in supporting agricultural systems.

**Program Activities:**

The agents in this program developed, organized, and evaluated a beginner beekeeping program based on workshops (**7**-adults, **3**-youth), seminars, youth camps, presentations, and bilingual media outreach to increase Florida beekeeping knowledge and promote the adoption of recommended beekeeping practices. Participants gain essential skills in hive management, bee health, and beekeeping equipment through interactive hands-on activities. Youth camps provide interactive learning experiences for the next generation of beekeepers, while bilingual social media outreach ensures that the program reaches diverse audiences, including Spanish-speaking communities, with informative content on beekeeping management in Florida.

**Teaching Methods:**

Teaching methods included interactive lectures on the Honey Bee biology, management, and beekeeping equipment. Workshops featured hands-on live hive inspections and apiculture tools were used during demonstrations to increase the confidence of class participants. Observation hives and Langstroth hives in small apiaries served as hands-on or visual tools to enhance understanding of honey bee biology and behavior. Podcasts, blog posts, and videos were created to support new beekeepers and encourage practice adoption.

**Results:**

* Survey participants (**n=159 of 190**) reported increased knowledge in key topics following workshops and seminars: **66%** in Florida apiculture laws and regulations, **54%** in honey bee biology, **63%** in pests and diseases, **54%** in apiary tools, and **63%** in starting as a beekeeper in Florida. Furthermore, 68% indicated practice adoption including proper bee nutrition, hive management, correct use of PPE, Integrated Pest Management, and registering their bees with the State Department of Agriculture.
* Between 2022 and 2024, approximately **6,923** 4th graders visited grassroots events, intending to increase their awareness of honey bees' role in agriculture. Teacher surveys (**n=49**) showed an average enhanced student awareness of **90%** post-event.
* Youth camp attendees (**n=53**) gain a **32%** average increase in honey bee biology knowledge and a **36%** average increase in understanding beekeeping tools.
* Blog posts related to beekeeping gained **1,629** totalviews (1,103 English, 526 Spanish) between 2023-2024, with participants noting their helpfulness in making decisions about honey bees.
* Beekeeping videos totaled **3,267** views (2,122 English, 1,145 Spanish) and were positively received as teaching tools during workshops and events.
* Spanish Podcast totaled **235** views and where positively received among listeners.

**Impact Statement:**

***Situation:*** Floridians are increasingly curious about where their food comes from and their pollinators. Floridians want to learn more about ways they can connect to nature and help their environment and agricultural systems. Beekeeping can be a lucrative business if sound decisions are made including proper bee nutrition, pest control, and appropriate hive management. The diverse population in Florida creates a need for developing bilingual educational materials especially when taking into consideration that Spanish speakers comprise 30% of the population. UF/IFAS Extension is strategically positioned to share research-based practices with communities to improve their success and promote the accessibility of information to its audience.

***What has been done:*** Between 2022 and 2024, agricultural agents from Polk and Hardee Counties designed, organized, and evaluated **10** beginner beekeeping workshops, **2** seminars, and **8** presentations to increase science-based apiculture knowledge and promote practice adoption as well as **three** 4-H/youth camps to improve honey bee knowledge and awareness of the important of these insects in agriculture. Furthermore, beekeeping components in grassroots events in Polk and Hardee Counties were implemented for the same purpose. Agents also developed bilingual outreach through social media, producing **6** beekeeping videos (2-Spanish, 4-English), **10** blog posts (5 in each language), and **9** Spanish podcasts.

***Impact:***

* **Economic impacts:** Florida beekeepers, managing 1-40 colonies worth $150 each, face annual losses of 25%-30%. Educational beekeeping workshops teach pest control and hive management, potentially saving over $1,800 per beekeeper by reducing losses. With 190 workshop participants and 5,131 social interactions, the combined economic impact could have reached $255,408,000.
* **Social Impacts:** Raising awareness about the vital role honey bees play in agriculture can drive greater support for pollinator protection, benefiting Florida's agricultural sector. As beekeepers apply best practices, they can reduce exposure to pests and diseases, boosting agricultural yields across the state. As youth learn of the importance of honey bees at a young age, they can become more proactive in choosing a career path that supports the agriculture industry benefiting apiculturists.

***Evaluation:*** Follow-up evaluation revealed (Based on past events surveys):

* Increase knowledge gained in both adults and youth about the role of the Western Honey Bee in Florida’s agriculture.
* Practice adoption of beekeeping-recommended management practices such as proper bee nutrition, hive management, and pest control.
* Increase in apiary size.

**Further information:**

Access to beekeeping Spanish podcasts: <https://blogs.ifas.ufl.edu/polkco/2023/09/14/agentes-agricolas-apoyan-la-apicultura-recursos-digitales-en-espanol-sobre-el-manejo-de-abejas/>

**Supporting Documents:**

Link to Beekeeping videos:

**English**

1. Florida Beekeeping: Inside the Hive: <https://www.youtube.com/watch?v=iifgNcqHVJI&list=PL2H6GdrW22sumg3ePrVQdGUavkbJB8ODV&index=2>
2. Florida Beekeeping: Alcohol Wash: <https://www.youtube.com/watch?v=g0-igXeNv4Y&list=PL2H6GdrW22sumg3ePrVQdGUavkbJB8ODV&index=4>
3. Florida Beekeeping: Beekeeping Tools: <https://www.youtube.com/watch?v=W2_6PcIyHLs&list=PL2H6GdrW22sumg3ePrVQdGUavkbJB8ODV&index=5>
4. Beekeeping in Florida - Tips for Splitting Hives: <https://www.youtube.com/watch?v=YR6nJgxx2Lg&list=PL2H6GdrW22sumg3ePrVQdGUavkbJB8ODV&index=7>

**Spanish**

1. Apicultura en Florida: Herramientas de Apicultura (*Florida Beekeeping: Beekeeping Tools*): <https://www.youtube.com/watch?v=qhOH5vk5EfU&list=PL2H6GdrW22sumg3ePrVQdGUavkbJB8ODV&index=6>
2. Apicultura en Florida: Consejos para Dividir Colmenas (*Beekeeping in Florida - Tips for Splitting Hives*): <https://www.youtube.com/watch?v=ZkV0in9jnfw&list=PL2H6GdrW22sumg3ePrVQdGUavkbJB8ODV&index=8>

Link for Blogpost:

**English**

1. Florida Farm Pests: Varroa Mites: <https://blogs.ifas.ufl.edu/polkco/2022/02/17/florida-farms-pests-varroa-mites/>
2. Minimizing Pesticide Exposure to Bees and Other Pollinators: <https://blogs.ifas.ufl.edu/polkco/2023/01/20/minimizing-pesticide-exposure-to-bees-and-other-pollinators/>
3. The Importance of Beekeeping and Polk County 4-H Beginner Beekeeping Workshop: <https://blogs.ifas.ufl.edu/polkco/2023/02/13/the-importance-of-beekeeping-and-polk-county-4-h-beginner-beekeeping-workshop/>
4. Florida Farm Pests: Small Hive Beetles: <https://blogs.ifas.ufl.edu/polkco/2023/08/11/florida-farm-pests-small-hive-beetles/>
5. Florida Beekeeping: Tips For Splitting Hives: <https://blogs.ifas.ufl.edu/polkco/2023/10/20/florida-beekeeping-tips-for-splitting-hives/>

**Spanish**

1. Plagas de las fincas de Florida: Ácaros Varroa (*Florida Farm Pests: Varroa Mites*): <https://blogs.ifas.ufl.edu/polkco/2022/02/17/plagas-de-las-fincas-de-florida-acaros-varroa/>
2. Minimizando la exposición a plaguicidas a las abejas y otros polinizadores (*Minimizing Pesticide Exposure to Bees and Other Pollinators*): <https://blogs.ifas.ufl.edu/polkco/2023/01/20/minimizando-la-exposicion-a-plaguicidas-a-las-abejas-y-otros-polinizadores/>
3. Plagas de las Fincas de Florida: Pequeños Escarabajos de Colmena (“Small Hive Beetles”)(*Florida Farm Pests: Small Hive Beetles*): <https://blogs.ifas.ufl.edu/polkco/2023/08/11/plagas-de-las-fincas-de-florida-pequenos-escarabajos-de-colmena-small-hive-beetles/>
4. Agentes Agrícolas Apoyan la Apicultura: Recursos Digitales en Español Sobre el Manejo de Abejas (*Agricultural Agents Support Beekeeping: Digital Resources in Spanish on Bee Management*): <https://blogs.ifas.ufl.edu/polkco/2023/09/14/agentes-agricolas-apoyan-la-apicultura-recursos-digitales-en-espanol-sobre-el-manejo-de-abejas/>
5. Apicultura en Florida: Consejos para Dividir las Colmenas (*Florida Beekeeping: Tips For Splitting Hives*): <https://blogs.ifas.ufl.edu/polkco/2023/10/20/apicultura-en-florida-consejos-para-dividir-las-colmenas/>