Project Update: November 2022

I. Introduction

Stingless beekeeping is an activity that has many problems, such as enviromental and social. To know the characteristics of stingless beekeeping elements we are applying interviews and vegetation collection. This activity was done from August to October 2022.

II. Fieldwork

We are visiting Redención del Campesino, Tenosique, Mexico. From August 19 2022, the work team travelled to the community and recorded the importance of vegetation for bees, problems in meliponiculture, use of vegetation in home gardens and its relationship with *Melipona beecheii*, and trees that bees use as nests.

We have interviewed meliponiculturists: The interview guide has four sections:

a) Problems about meliponiculture: How are your stingless bees? Have you had a problem with your stingless bees? What problems do you have in caring for your stingless bees? How to care for your stingless bees? What do you do when your hives have pests?
b) Vegetation: What flowers have you seen your bees visit? Can you differentiate the bee's type that reaches your flowers? What other use do your flowers have? Do you know other flowers that stingless bees visit?
c) Use honeybee: What do you use your honey for? If it is for medicinal use, how are the remedies prepared? What kind of flowers do you use with honey?
d) Three nests: If they have boxhive, what was the species of the nest tree?? What trees have you seen with stingless bee nests? If they have long hives, we recorded what tree species is.

If we don´t recognize the vegetation species, we collect it and it take to the UJAT herbarium. Also, we are planning a diagnostic workshop. It will begin in the second week of November 2022.

III. Previous results

The problems that meliponiculturists have are pests, few flowers, and actors who change their type of hives. This last point is important because the people lose their hives. They tell meliponiculturists what to do. But this situation has caused the hives to be lost and weakened.

Actually, the community have 15 meliponiculturists. Sadly, a person lost their hive because they divided the boxhive in the season without flowers.

The more common pests are flies. When a person leaves open pollen reservoirs, the flies attack. This insect increases in a few hours. If people don't control it, the hives fill with larvae and the stingless bees leave. This is common when hives are modified and have little vegetation available.

Hives that have few bees don´t survive infestations. Therefore, the division and change of type hive should be done when there are enough flowers to serve as food for the bees. It´s important to say that this process can only be done during the spring. Also, a meliponiculturist had three hives, but he changes into one type of hive, and the stingless bee left.

This information will be used to create the workshop. In December 2022 we organised a workshop when we talked about pest techniques, division and management, and floristic diversity for the maintenance of the hives.

Regarding vegetation, we find that the meliponines are pollinated by herbs and trees. *Trigona fulviventris, Tetragonisca angustula* and *Trigona* sp. are species that use the flowers of home gardens. The main resource is herbs. The main cultivated species, *Melipona beecheii*, pollinate *Mimosa pudica*.

In the interviews, the people tell us that they use flowers with honey to cure their diseases. Prepare remedies that are made with the vegetation with honey from meliponinos, making different types of infusions with parts of plants, which have multiple antibiotic and healing properties. 45 species used for medicinal purposes were recorded, of which seven are mixed with honey. These belong to four families, Rutaceae, Poaceae, Lamiaceae and Caricaeae.

In the next months, we will visit the meliponaries to get new information and the workshops.

Attachment I
Vegetation use by meliponiculturists

COMMON NOUN	**SCIENTIFIC NAME**
Sweet Orange	*Citrus × sinensis*
Lemon	*Citrus limon*
Bitter Orange	*Citrus aurantium*
Purple maguey	*Tradescantia spathacea*
Oregano	*Plectranthus amboinicus*
Guava	*Psidium guajava*
Lemongrass	*Cymbopogon citratus*
Agave	*Agave tequilana*
Garlic	*Allium sativum*
Onion	*Allium cepa*
Cinnamon	*Cinnamomum verum*
Chaya	*Cnidoscolus aconitifolius*
Prickly pear	*Opuntia ficus-indica*
Ginger	*Zingiber officinale*
Avocado	*Persea americana*
Gold rain	*Cassia fistula*
Basil	*Ocimum basilicum*

Cempoal	*Tagetes erecta*
King's sword	*Dracaena trifasciata*
Aloe vero	*Aloe vero*
Papaya	*Carica papaya*
Soursop	*Annona muricata*
Red tulip	*Hibiscus rosa-sinensis*
Capulín	*Muntingia calabura L*
Cocoite	*Gliricidia sepium*
Maculis	*Tabebuia chrysantha*
Pinzan	*Pithecellobium dulce*
Mahogany	*Swietenia macrophylla*
Cocoite	*Cocos nucifera L*
Cañafistole	*Cassia grandis*
Pepper	*Pimienta dioica*
Anona	*Annona muricata*
Tronadora	*Tecoma stans*
Neem	*Azaridachta indica*
Nance	*Byrsonima crassifolia*
Rue	*Ruda graveolens*
Buganvilia	*Bougainvillea spectabilis*
Melissa	*Melissa officinalis*
Peppermint	*Mentha spicata*
Nightshade	*Solanum nigrum*
Anise	*Pimpinella anisum*
Coralillo	*Hamelia patens*
Zorrillo	*Chenopodium glaucum*
Cuajilote	*Parmentiera aculeata*
Guácimo	*Parmentiera aculeata*
Chichibe	*Sida acuto Burm*

Attachment II
In this quarter, we participated in conferences and coordinated a symposium on bees. In this space we present some progress of the project. I attach the event certificates as proof of participation.

Attachment III
Figures

Figure 1. Meliponiculturist talks about the vegetation has in homegarden. Picture taken by Germain Lopez Santiago.

Figure 2 White Rose pollinated by *Trigona sp*. Picture taken by Jose Germain Lopez Santiago

Figure 3 *Melipona beecheii* pollinating *Mimosa pudica*. Picture taken by José Germain Lopez Santiago.

Figure 4 *Byrsonima crassifolia* pollinated by *Trigona fulviventris.* Picture taken by José Germain Lopez Santiago.

Figure 5 *Zinnia elegans* pollinated by *Trigona fulviventris*. Picture taken by José Germain Lopez Santiago.