TREES FOR BEES

Seedlings of local tree species reared in the Casa Apis nursery and are delivered to cooperative members.

Casa Apis, a cooperative of over 700 small-scale beekeepers in Northeast Brazil, is investing in the sustainability of organic Brazilian honey production with key support from Costco. The cooperative members of Casa Apis make a living selling organic honey produced from the forests of Northeast Brazil. Casa Apis supports these beekeepers and has found solutions that help them combat many challenges.

The Northeast region of Brazil is an economically underdeveloped area, it has been deforested and suffers frequent and lengthy periods without rain, tough soils, and income inequality. These growing conditions mean there is an absence of big agriculture, which leaves beekeepers an opportunity to produce organic honey. The United States imports more organic honey from Brazil[1] than any other country.

[1] USDA National Honey Report

A blooming Moringa tree provides a source of food for bees in the dry season in Northeast Brazil. Moringa is just one of several blooming tree species being raised by Casa Apis.

When honey bees forage, they fly in a radius of up to two miles from their colony to collect the nectar that becomes honey. In the US, it is tough to find large enough swaths of organically managed or native lands to ensure that a honey crop meets organic standards. In addition to a clean foraging radius, beekeepers must use organic mite treatments, food, smoker fuel, and even hive equipment to meet the recommendations[2] of the National Organics Standards Board for organic honey. Beekeepers in the U.S. are having trouble finding enough forage to sustain their bees period, let alone organically, and this has been a factor in the shift among beekeepers towards pollination income over honey production. While Northeast Brazil is a good location to make organic honey, deforestation and drought periods often drive managed bees to leave their hives- which is the top factor in colony losses.

Beekeepers are rehabilitating the landscape by planting trees with nectar and pollen, to prevent these losses. The beekeeping co-op, Casa Apis, has been encouraging members to plant drought-tolerant trees that offer a continual source of food for honey bees during the dry season. This keeps the bees happy in their colony, and less likely to leave or starve.

[2] Formal Recommendations by the National Organic Standards Board (NOSB) to the National Organic Program (NOSP)

Cooperative members plant tree seedlings by hand. There is a short window where the weather is suitable for planting.

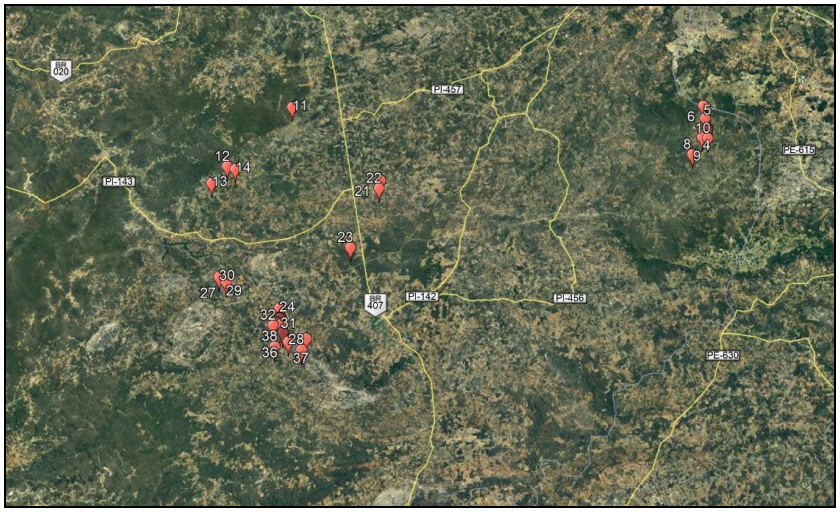
The beekeepers who have planted these trees are already experiencing drastic benefits. Francisco Natanael Oliveira, who began planting trees from Casa Apis in 2019 said, "I used to have 50% to 70% loss of colonies. Last year ...of the 70 colonies I lost only 3, but those 3 were already weak, so I would say I had no loss of colonies." The trees give the bees access to flowers during the dry period. That encourages the bees to stay put, and they are more productive for the beekeeper.

To the left, Francisco Natanael Oliveira's colonies located under his first stand of trees planted with Casa Apis. On the right, the landscape in Northeast Brazil in the rainy season (top) and dry season (bottom).

Cooperative member, Osiel Francisco dos Santos, said the apiary near his newly planted trees produced more honey, and he is encouraging other cooperative members to take advantage of Casa Apis's tree planting program. Of working with Casa Apis, he says, "I have been a member of Casa Apis since 2012. The importance of Casa Apis is so big that I don't have words to explain. I have been commenting among the other cooperative members that it is not just the knowledge we have acquired, but also the connection with the cooperative Casa Apis that brings us better prices, education, and many opportunities for improvement of our lives, our community, and our environment. Casa Apis for us regarding beekeeping today is everything."

A photo of Osiel Francisco dos Santos's first-year Moringa trees.

Casa Apis has four nurseries that raise local species of drought-tolerant trees for reforestation of the area. By planting these trees on a large scale, Casa Apis is securing its supply chain by ensuring the bees that produce honey have plenty to forage on. Casa Apis can produce about 30,000 saplings a year in their nursery, and their goal over the next five years is to plant over 200,000 seedlings across 300 hectares of land to support the entire beekeeping population in the area.



Young trees in the Casa Apis nursery (left), and A map of the areas in Northeast Brazil that will receive trees (right).

Managing the difficult terrain, planting in a tight weather window, and getting a reliable source of water to the newly planted trees are logistics that Casa Apis is helping beekeepers overcome to get more trees into the ground.

In 2020, Project *Apis m.,* the largest honey bee research non-profit in the U.S.*,* granted Casa Apis US$100,000 from Costco, which donates a portion of their Kirkland Signature honey sales to support honey bee research and bee health every year.

The funds are being used to buy a tractor, and expandable, moveable, irrigation systems and water tanks, that can support trees with water for their early years**.** Pandemic-related supply-chain issues complicated the procurement of a tractor in time for the short weather window for planting in 2020, but Casa Apis rallied their resources to rise to the occasion and are ahead of schedule in combating severe deforestation.

New irrigation kits are delivered to Casa Apis. By installing moveable irrigation lines, and water-storage tanks, young trees can have consistent water until they are well- established and require less water.

Drip lines in action on newly planted trees. Drip lines are an efficient way to get water, a scarce commodity in the dry season, to each tree efficiently, and with less waste and man-power than sprinklers or hand-watering.

Casa Apis, with its emphasis on an equitable, sustainable, supply chain that supports the local economy could be a reproducible model for other cooperatives. *Trabalho bem feito! Muitas felicidades para o future! (Job well done! Best wishes for the future!)*