## Welcome!

I am Diana Obregon (She/Her/Ella), a Ph.D. candidate in Entomology in [Katja Poveda’s Lab](https://blogs.cornell.edu/katjapoveda/) at Cornell University.

My research interests include plant-insect interactions in agroecosystems, non-target pesticide exposure on pollinators, and land use effects on ecosystem services provided by insects. My field work is developed in Colombia studying stingless bees in fruit and cattle ranching farms and in the US studying squash crops and its pest and pollinators. I am also passionate about engaging with growers and beekeepers to discuss sustainable solutions in farming.

In my free time, I love hiking, dancing, and painting with watercolors.

**Research**

**Landscapes, bees, and pesticides:**

Land-use change and pesticides have been identified as two of the main causes behind pollinator decline (Goulson). Understanding how these factors affect crop pollinator communities is crucial to inform practices that generate optimal pollination and ensure sustainable food production.

Natural habitat partially mitigates negative pesticide effects on tropical pollinator communities

In this study, we investigated the effects of landscape composition and pesticide residues on bee communities and their pollination services in *Solanum quitoense* Lam. “lulo” crops in the Andean region of Colombia. We found that bee abundance and richness are reduced with the increased toxicity and concentration of pesticides found in flowers (Mainly imidacloprid) but these negative pesticide effects were less detrimental in farms with higher natural habitat proportions, suggesting a dilution effect.

Link to paper and to infographics

Landscape simplification effects on *Tetragonisca angustula* nutrition and pesticide exposure

Tetragonisca angustula is the most common stingless bee species in Latin America. In Colombia, it is distributed in all the natural regions below 2000m of altitude but is particularly abundant in the Andes. Deforestation to transform natural ecosystems into grazing land areas and simplified agricultural landscapes are rapidly increasing in the Andes but there is scant information showing how this is affecting stingless bees. In this study, we evaluated if landscape simplification is impacting bee nutrition, body size, and pesticide exposure. We found that the increment of pasture area in the landscape significantly reduces the amount of Asteraceae pollen collected by stingless bee colonies, which generates a cascade effect, leading to a decrease in trehalose concentration in the food, which is an important disaccharide in the insect’s hemolymph and the main energy source for flying, and consequently reducing bee body size. Also, more pasture area is correlated with higher concentrations of avermectins, which are insecticides used in the area to treat the cattle against parasites such as ticks and flies.

Non-target exposure of avermectins to bees in livestock dominated landscapes

Pastures for cattle ranching are currently the main cover type in the Andes, representing the biggest driver of biodiversity loss in this highly diverse region. Associated with these livestock systems, there is an extensive use of pesticides for the control of endo and ectoparasites in cattle. However, there is no information about the exposure routes and potential risks of pesticides for bees in cattle ranching systems. In previous work in Colombia, we found residues of abamectin (Molecule in the avermectin group) in 50% of pollen samples collected from *Tetragonisca angustula* colonies. We also found a positive correlation between pasture areas in the colonies’ surroundings and the concentration of abamectin in the bee food. For this follow-up project, we designed an experiment in which we found that the abamectin found in bee colonies can be a product of the collection of flowers contaminated with feces from treated cattle with avermectins (Ivermectin in particular).

**Pesticide exposure and effects on bees:**

The pest control and pollinator protection dilemma: The case of thiamethoxam applications in squash crops.

Interactive effects of chlorogenic acid and thiamethoxam on bumble bee microcolonies.