

## Mezquite Orchard Report Last Half of 2025

In the last six months of the year, we learned a lot from our orchard. More than a report, this is a reflection, and three words inspired us: **POSSIBILITIES**, **HOPE** and **SERVICE**.

We live in Aguascalientes, a small state in central Mexico with a semi-desert climate and a landscape of thorny scrubland, where mesquite and huizache trees abound. The climate is temperate, with an average temperature of 25°C, with lows as low as -5°C and highs of 38°C. These ranges allow us to obtain up to four crops per bed, with good management of ripening times, averaging a maximum of 120 days. This management gives us a wide range of **POSSIBILITIES** in the orchard.

Summer rains begin in June and end in late September. An example of managing planting times is popcorn, which we transplant in March and harvest in June because it requires less water, while bread corn is grown during the rainy season because it requires more water.

We can have a great variety and diversity of crops because of the climate. In the summer, we harvest popcorn, plant corn for tortillas, harvest spring amaranth, and plant sunflowers. This way, we create our best and most productive crop associations.

We cultivate Tuxpan blue corn, intercropped with black beans and chilacayote squash (The Three Sisters). We also grow sunflowers with warm-climate broad beans and cucumbers. 2025 was a good year because the rains started at the end of 2024.

But just when everything seems to be going well, problems arise. Once again, a plague of mice wiped out 30% of our corn harvest. In terms of

calories, corn tortillas provide 3,800 calories per kilogram, sunflower seeds 5,400 calories per kilogram, and amaranth 2,100. Our chances of obtaining enough calories this year have decreased by 30% for "mousy reasons." We attribute the proliferation of these creatures to climate change, as they are becoming increasingly common. What can we do to recover those calories? Mouse tacos? Mouse sausages?

We lost calories, but not biomass. We experimented with oyster mushrooms (*Pleurotus djamor*) and found that for every kilo of dry corn biomass, we obtained 3 kilos of fresh mushrooms in 3 harvests. Biomass yields in popcorn were 12 kilos and up to 30 kilos in flour corn (Tuxpeño Azul variety) in 10 m<sup>2</sup>.





The mushrooms that we produce.

If we "invest" 10 kilos of corn biomass, we obtain 30 kilos of mushrooms. One kilo of mushrooms has approximately 350 calories, so we recover 10,500 calories, and we can make a delicious mushroom pozole. It's an alternative to wasting corn and less complicated than trapping mice to make tacos or sausages.

Of the 10 kilos of biomass we use to produce the mushrooms, we recover 8 kilos, which we return predigested to the soil after using them as a substrate. This season is when we obtain the largest quantity of both mature and immature biomass for compost. This year, we produced over 100 kilos of dry material and up to 300 kilos of green material. We made three 1 m<sup>3</sup> compost piles, with an approximate yield of 1.2 m<sup>3</sup> of cured and screened compost. Our star crops for biomass are corn, sunflower, amaranth, sorghum, and Quinoa



Sunflowers, Tuxpan corn in the background, and amaranth.

One environmental **SERVICE** provided by the garden is the capture of carbon, transferring it from the atmosphere to biomass. In the context of a biointensive garden, as a semi-closed agricultural system, the inputs and outputs must be equal in physical and chemical terms, as John Jeavons teaches.

Marisol and I are careful to invest as little as possible in purchasing supplies. We have chickens, but we don't buy feed for them; the goal is to produce it in the garden. However, sometimes it's not enough to supplement our diet, so we arranged with some friends who own a sourdough bakery to take charge of the waste generated in the bread-making process. We sort it, and we use some of it in compost and some as chicken feed, thus preventing it from becoming garbage—another environmental service.

This is how the Biointensive Garden provides not only environmental but also community and economic **services**, generating community and a circular economy with no more investment than creating virtuous cycles: Friendships-communities-services.

This summer we harvested the three sisters plus mushrooms, tomatoes, chili peppers, chard, spinach, quinoa, amaranth, sunflowers, black beans, warm-climate broad beans, paprika, zucchini, cucumbers, and we even indulged ourselves by planting strawberries. In the fall and winter season, starting in October, we cultivate garlic, onions, barley for brewing, winter vetch, broad beans, kamut wheat, kale, milk thistle, and other crops, with the **HOPE** of a bountiful harvest. While agriculture is often frustrating due to uncontrollable factors—some natural, others social, economic, or political, including climate change and pests—hope should never be lost, both for good harvests and for strength and life itself. This year has taught us that the dry material we produce in the garden, this 60%, is not only biomass and calories, but also the **hope** of producing other foods, even when we harvest grains



Barley, garlic, and kale ready for winter.

A biointensive garden offers a wide range of **POSSIBILITIES**, generating social, environmental, economic, community **SERVICES** and circular services, giving **HOPE** to many families and communities around the world.