



AUTONOMOUS REARING of MONARCH BUTTERFLIES in a BioTent

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Initially, Monarch Research provided eggs, caterpillars or butterflies to each Monarch Zone for rearing. However, the future of this pilot is to create an autonomous or self-supported Monarch butterfly rearing movement, first in Linn County, Iowa, then across North America.

Below are guidelines for our Monarch Zone participants on how to rear monarchs in your BioTent.

How to Accomplish Self-Supported Objectives

- Purchase a 6x6 or 9x9 BioTent from MonarchResearch.org
- Find an existing plot of milkweed with 20-50 stems to place your BioTent over
- Once you pick a site, mow a protective barrier around the perimeter

Preparing Interior of BioTent

- When using a natural field site, leave existing plant material (remove invasives)
- If using a prepared site, cover soil with a 2-inch layer of shredded mulch (non-colored)
- Install and fill butterfly nectar feeders, just before adding Monarch butterflies

Stocking BioTent with Monarch Butterflies

- Learn how to identify a male and female Monarch butterfly
- Hunt for Monarch butterflies in gardens or fields abundant with flowers
- Mid-morning, or 4:00-5:00PM are good times to locate Monarch butterflies
- You will need a butterfly net and capture cage to hold your catch
- To begin egg laying, you will need:
 - 6x6 BioTent - 3 females & 5 males
 - 9x9 BioTent - 5 females & 8 males
 - Most females will be gravid (carrying egg that can be fertilized)

Managing Monarchs in a BioTent

- Mist the outside of your BioTent twice a day (we recommend morning and early afternoon)
- Keep nectar feeders fresh by cleaning and refilling every third day
- Gatorade works well as nectar



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Egg Laying in a BioTent

- ❑ Check your BioTent, near sundown, for pairing of males and females
- ❑ Watch for females posturing their lower abdomen under milkweed leaves to lay eggs
- ❑ Carefully inspect milkweed for monarch eggs every other day
- ❑ Quantity and quality of milkweed is vital for rearing healthy Monarch butterflies
 - milkweed 2 feet tall can support one caterpillar per stem
 - milkweed 3 feet tall can support two caterpillars per stem
 - milkweed 4-5 feet tall can support four caterpillars per stem

Importance of Egg Counts

- ❑ Accurate egg counts impact the overall health of your adult Monarch butterflies
- ❑ It is better to end up with too few, than too many eggs
- ❑ If the density of your caterpillars is higher than your milkweed can support, move the excess caterpillars out onto other milkweed, away from your BioTent
- ❑ Proper BioTent management is critical to avoid food meltdowns (complete loss of milkweed prior to pupation)
- ❑ Using milkweed cuttings for food is NOT recommended

Pupation - Eclosure - Release

- ❑ It takes approximately 20 days for the caterpillar to grow from egg to 5th Instar
- ❑ After crawling to a higher point within the BioTent, the caterpillar will hang in a J-position
- ❑ Within 24 hours, the J'd caterpillar will transform into a green pupa, its chrysalis state
- ❑ 8 - 12 days later, the chrysalis will eclose (open), revealing an adult Monarch butterfly
- ❑ 24 hours after eclosure, the Monarch butterfly's wings will have safely hardened and they are now ready to be released

Next steps

- ❑ After all of your Monarch butterflies have been released, remove your BioTent from the site, then follow proper cleaning/bleaching/rinsing protocols
- ❑ Trim remaining milkweed to 6"-8" above ground
- ❑ ONE and DONE
- ❑ To rear a second generation of Monarch butterflies, with eclosure by September 15, you will need a second plot of healthy milkweed
- ❑ It's important to understand and be prepared to encounter an increase in predators and parasitoids during the rearing process

Safety Warning: Because we rely on Milkweed and reference it frequently, we are providing the following safety warning: The milkweed plant is highly toxic and should be handled carefully. Always wash your hands thoroughly after handling milkweed. Avoid any contact with your eyes, ears, nose and mouth. More information can be found at: poison.org