

Basics of Fruit Flies: Culturing and Feeding to Frogs

By: Jason Juchems

An essential step in caring for poison dart frogs is culturing fruit flies. Dart frogs have small, narrow tongues and require live prey, which makes fruit flies a staple food source. By raising your own fruit flies, you can reduce the cost of food and ensure a steady supply. Cultures should be made weekly to maintain a sustainable population for culturing and feeding. **Your success with fruit fly culturing is crucial to your success in dart frog care.**

Where to Buy Fruit Flies:

Check with pet stores in your area to find out who carries fruit flies and how often they restock. Knowing the restocking schedule is important in case of a culture crash. Many big-box pet stores, such as Petco, PetSmart, and Pet Supplies Plus, sell freshly made fruit fly cultures, but these may not be ready for use for a few weeks. Online retailers often offer producing cultures that contain flies in various life cycle stages: egg, larva, pupa, and adult.

Finding a regional supplier can help keep shipping costs down and provide faster delivery when shopping online. The author has purchased from and recommends the following vendors:

- **East Coast:** frogdaddy.com blackjungle.com neherpetoculture.com
- **Midwest:** glassboxtropicals.com joshsfrogs.com saurian.net
- **West Coast:** Better Choice Bugs sold by llreptiles.com and petco.com (fresh cultures only)
- **South:** No recommendation at this time. Please check one of the vendors above to find the one nearest to you. Any vendors listed will work with you, though shipping may be more expensive.

Parts of the Fruit Fly Culture:

When you purchase or inspect fruit fly cultures, you'll find they consist of three parts: a container with fly-proof ventilation, a media that feeds the insects through all life stages, and a textured substrate.

Container and Lid: Many vendors listed above sell culturing cups and lids. Culture lids come in two varieties: fabric and plastic vented. Both types can be soaked in bleach water, rinsed, dried, and reused. You can also purchase culturing cups locally, such as 32oz deli cups from restaurant supply stores like Gordon Food Services (GFS).

Media: When new to dart frogs, commercially available fruit fly media is the easiest option. The author uses and recommends Repashy SuperFly, as it yields high production, is easy to mix, and is readily available. Many individuals also prefer to create their own fruit fly culture media recipe. We've included two of our recipes at the end of this article.

Substrate: The goal of the substrate is to provide additional surface area for flies to climb, mate, and lay eggs. The substrate needs to have texture so the eggs and pupae can attach. The most common substrate is excelsior (wood strands). You can purchase bulk, undyed excelsior at craft stores or shipping supply companies like Uline. Paper coffee filters can also be used—fold the filter into triangles, with the pointed end placed in the media. The downside is that the filter may collapse from moisture.

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Species and Types of Fruit Flies:

Drosophila melanogaster: This is the smallest species commonly available. *D. melanogaster* also has the shortest metamorphosis cycle, with larvae hatching in 4-6 days and the culture fully producing in 11-13 days when kept at 25°C (77°F).

- **D. melanogaster wingless:** This variety has no wings.
- **D. melanogaster vestigial wings:** This recessive trait produces short, crinkly wings that prevent the fly from flying. Wild fruit flies can sometimes breed with this culture and produce flying individuals.

Drosophila hydei: This species is larger but slower to produce, typically taking twice as long as *D. melanogaster*. Larvae will appear in 8-12 days, and the culture will fully produce in 14-21 days.

- **D. hydei vestigial wings:** This trait produces the same short, crinkly wings as *D. melanogaster* vestigial wings.
- **D. hydei "Golden" vestigial wings:** This recessive trait produces a lighter-colored, slightly larger fly that matures faster than the standard *D. hydei*. Golden *hydei* cultures typically become producing in 12-16 days.

Culturing Your Fruit Flies:

The process is relatively simple:

1. **Prepare the media:** Mix your media and scoop it into culturing cups. Aim for about 1-1¼ inches of media in each cup. Add your substrate of choice (e.g., excelsior). If you're using excelsior, fill the cup about ¾ full from the media top to the lid.
2. **Dusting the flies:** Prepare a dusting cup with Calcium and vitamin powder. Dusting fruit flies with a quality supplement is vital for their health. For this step, use a small amount of inexpensive calcium-only reptile dust. This dusting helps remove mites from your culture.
3. **Dust the flies:** Tap the culture cup to force the flies to fall to the bottom. Gently open one side of the culture (don't remove the entire lid), and transfer a dime-sized amount (3-4 dozen) of flies into the calcium dusting cup. Swirl the flies gently until they are coated with Calcium. Do not mix species or varieties.
4. **Flies to the new culture:** Tap the dusted flies back into the culture, being careful not to spill excess Calcium into the media. Tap the bottom of the culture on a table to encourage the flies to fall. Once the flies are in the culture, quickly replace the lid.
5. **Store the culture:** Keep the culture at room temperature, preferably around 75°F (24°C). Ensure the culture lids do not touch and place the cultures on mite paper to help prevent mite outbreaks. You can make your mite paper by spraying bird mite spray on paper towels (from a pet store or online) until damp, then air dry. The mite paper will last about 30 days.

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Feeding Flies to Frogs:

1. **Prepare a dusting cup:** Dusting fruit flies with a quality calcium and vitamin mix at each feeding is essential. Dart frogs need these vitamins and nutrients to thrive in captivity.
 - o **Supplement Rotation:** Feed dart frogs 3-4 times a week. Use [Repashy Calcium Plus](#) for 2-3 feedings per week and [Dendrocare](#) once weekly. Replace one Calcium Plus feeding every three weeks with [Repashy Vitamin A Plus](#).
2. **Dust the flies:** Tap the fruit fly culture to make the flies fall to the bottom. Open the culture gently and transfer the desired number of flies into the dusting cup. Swirl the flies to coat them evenly with the supplement.
3. **Feed the frogs:** Tap the dusted flies into the terrarium, being careful not to spill excess supplements in the habitat. If any supplements fall into the terrarium, don't worry—supplements will blend into the substrate over time.
 - o **Bait stations:** To help attract flies and prevent them from escaping the terrarium, use bait stations. Place sliced bananas in condiment cups and hide them throughout the terrarium. The flies often reproduce in the bananas, and the frogs feed on the larvae.

Culturing and maintaining fruit flies is essential for keeping poison dart frogs. Before acquiring your first frogs and during the setting up phase of your terrarium, start culturing fruit flies to get a handle on what works best for you. Set aside dedicated time each week to culture flies. **Your success with fruit fly culturing is foundational to your success in dart frog keeping.**



HERPETOLOGICAL
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Fruit Fly Media Recipe #1

Simple Formula*

Drosophila melanogaster and *Drosophila hydei*

This formula has proven to be successful for several years. Products in this recipe can be purchased from a local grocer, health food store, or, for reduced cost, at a bulk food store. This recipe makes enough media for 4-6 cultures.

5-6 cups of instant potato flakes

1/2 cup of powdered sugar

1 teaspoon of baker's yeast

1/4 cup of brewer's yeast (from a health food store)

2 tablespoons of cinnamon

1 part vinegar to 2 parts water mixture (hot)

Stir all ingredients until a thinner consistency of mashed potatoes, or a pudding-like mixture, is achieved. Ingredients can be mixed by hand or using a mixer. If the mix is too dense, gradually add hot water to thin the media. If too much liquid has been used, add more potato flakes until the desired consistency is reached. You can freeze any leftover mixed media for future use.

Using a chemical mold inhibitor is optional. If you choose to use a mold inhibitor, pure methylparaben is recommended. You can find sources for this product online. If you use methylparaben, vinegar is no longer needed. Add 2 teaspoons of methylparaben for every 5 cups of potato flakes. Add water until the media reaches the desired consistency. Cinnamon is a natural mold inhibitor, and you can add more cinnamon if you prefer a natural method. Cinnamon is recommended over vinegar, as *Drosophila hydei* are sensitive to vinegar.

Fruit flies should not be added to a culturing cup until the media becomes room temperature.

*This recipe was originally published in *Poison Dart Frogs: A Guide to Care and Breeding* (2011) and has been updated.

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Fruit Fly Media Recipe #2

Dollar Store/General Store Formula

Drosophila melanogaster and *Drosophila hydei*

This formula was developed to help those who live in areas with limited resources. The goal is to use products in this recipe that can be purchased from a small grocery or general store. This recipe makes enough media for 4-6 cultures or more, depending on the media depth used in each culturing cup.

4 bags of 6.2oz/176g instant potato flakes

32 oz Jar of Apple sauce with Cinnamon

1 teaspoon of baker's yeast

2 tablespoons of cinnamon

Hot Water (as needed)

Stir all ingredients until a thinner consistency of mashed potatoes, or a pudding-like mixture, is achieved. Ingredients can be mixed by hand or using a mixer. If the mix is too dense, gradually add hot water to thin the media. If too much liquid has been used, add more potato flakes until the desired consistency is reached. You can freeze any leftover mixed media for future use.

If molding media becomes an issue, white vinegar can be added to the water mix at 1 part vinegar to 2 parts water. Cinnamon is a natural mold inhibitor, and more cinnamon can be added. Caution should be exercised regarding the amount of vinegar added to a media mix. *Drosophila* can be sensitive to vinegar.

Fruit flies should not be added to a culturing cup until the media becomes room temperature.