Jacob Groth, Author – Swallowtail Farms, Inc.

There are several benefits to this system. First, it takes up very little space to emerge and store over 2,000 butterflies. Second, it keeps the butterflies very fresh until shipping day and requires very little time and effort. Third, it allows you to pack the butterflies indoors in an air-conditioned room to keep the butterflies calm and the employees happy! We can pack about 300 butterflies per hour in boxes with this method. So, a 1,000 butterfly shipping day only takes about 4 hours. I've been using this method for over 4 years and have not had to make any changes. We lose less than 1%, if any, and the butterflies look freshly emerged, yet well fed, upon shipping.

Prior to this, I used to store my butterflies in an outdoor flight cage with nectar plants and supplementary feeders. But, the casualty rate was much higher in addition to the quality and health of the butterflies upon shipping. It seemed that they were always tattered and skinny after just a few days in the flight cage due to the heat and lack of food source. Additionally, we'd have to start at 3 AM in order to pack the butterflies while they were calm. Now, all of these issues have been resolved and we no longer dread shipping day.

But, the climate in your area may be different than the climate in California, so you may need to make appropriate alterations for your particular situation. Yet, I still think an indoor system for emergence and storage will be much more effective than an outdoor system, regardless of your climate.

The only caution I would have to this method is that the butterflies MUST be healthy to begin with and that this method is only for monarchs. Another point to emphasize is that the butterflies need to be put into the cold-storage within 24 hours after emergence and prior to any feeding.

The black clips inside the cage are just your typical small binder clips from Office Depot. They hold the pupae strips (10 pupae per strip) to the wire shelf. One bar of wire on the shelf can hold two pupae strips side to side. There are about 48 wire bars, so each shelf can hold almost 1000 pupae.

As for the humidifier in the fridge, that may work well for some. But, there are a couple of reasons why I would not recommend that. First, it will take up about 1/3 of the space in the fridge, which means you'll have 1/3 less storage space for butterflies. Second, I completely soak the inside of the fridge once per day so that everything is dripping wet, which is very easy to do with a spray nozzle attached to a hose and only takes about 1-2 minutes. It dries out within 24 hours, so I've never had a mold problem. I've been using the same fridge for at least 4 years and have never had to clean it because of mold. Well, actually, I do give it a good wipe down with bleach water at the end of each season, but even that is not all that necessary.

As for the sugar water feeding time, this is where adjustments will need to be made based upon the situation. I am fortunate to live in a part of California where we don't have any nasty

insects. We do have the tiny sugar ants and they will find the cages on certain hot evenings. But, I simply spray a patch of non-toxic insecticide on the ground where I plan to do the feeding (about a 2' x 2' square). I built a couple of little stands made out of PVC pipe to hold the cages about 2 1/2 feet off the ground. So, I'll put that stand on the patch of ground that I sprayed, will stack the cages on top of that, and then apply the feeding. This allows me to keep them there safely overnight without fear of being attached by armies of ants.

As for the spraying methodology, I used to be very careful, then I found that it didn't really matter. As long as the sugar concentration is not too high, then the final 2-3 spays of pure water is enough to clean up the butterflies and remove any sticky residue. If the butterflies end up sticky, that means the concentration is too high and so you'll learn for next time to use a bit less sugar. But, yes, I am a bit careful with how I aim. I do try to cover the entire cage (or at least the portion where the butterflies are clustered - usually on the front away from the sleeve), but I'll do it at an angle so that the screen will get covered without too much hitting the butterflies. Depending on humidity in your area, you'll need to do this about 2-3 times in an hour. So, about every 20-30 minutes. I know this is a good system because for the first hour the butterflies vigorously feed. Then, after an hour or so, only a few are still feeding. So, it's a very fast and intense feed, but saves time and sends them off into the wild with a good boost of energy.

As for the spray pump, I use one very similar to this:

It's hand-held and easy to use. Just a few pumps and it will spray for a long time. I generally go through about 1 bottle per week when shipping 1500 butterflies. So, it only needs a weekly refill. I'll pour in a good amount of sugar (5-10% of the volume) and the fill the rest with hot water to help dilute the sugar.

This system has really changed the amount of labor involved in addition to the success and quality of product to my customers. I used to dread shipping day. Now, it's just another work day. Although I have a 'nightly' transfer which can be a bit annoying at the end of a long day, yet that's about all the work I have to do with the stock and it only takes about 20-30 minutes to transfer the newly emerged butterflies. That instead of the hours of labor maintaining a flight house and still getting less than desirable results due to lack of food and extreme heat. Of course, there are the joys of having a flight house, but that is for the purpose of visiting and walking through. I'd love to still have a flight house and keep it slightly stocked simply for the pleasure and enjoyment. But when it comes to the business of shipping efficiently and with the greatest quality, the refrigerator system is definitely the way to go.