

Brassica Butterfly (cabbage white)

Carolina™ CareSheet

Brassica butterflies (*Pieris rapae*) are available as larvae in self-contained cultures with food or as eggs. You should place eggs on radish or Fast Plants® seedlings to hatch. See the appropriate section below for starting with self-contained cultures or with eggs.

Larvae in self-contained cultures with food (item #144102)

This is the easiest way to raise brassica butterflies. When your order arrives, remove the cup(s) from the shipping container and ensure that they are undamaged. Each cup contains larvae with enough food to grow them to pupation. Place the cup in indirect light or room light. **Note:** *Do not place cups in direct sunlight, which can overheat the cups and kill the larvae.* Kept at room temperature, larvae in cups mature in about 12 to 16 days after you receive them. As they grow, the larvae molt. When mature, larvae climb onto the side of the cup and spin a silk thread that attaches them to the cup. Then they undergo a final molt and emerge as a pupa (chrysalis). For further instructions, see "Chrysalis to adult butterfly" below.

Brassica butterfly eggs (item #144100)

Sow radish seeds (such as our item #159000) or item #158804 Fast Plants® seeds about a week before your eggs arrive. You will need at least 10 seedlings for each unit of eggs. It is essential that the tiny larvae feed immediately upon hatching; otherwise, they rapidly dehydrate and die. If you have never raised butterfly larvae from eggs, we recommend our item #144140 Brassica Butterfly Rearing System for your first experience.

One unit of item #144100 Brassica Butterfly Eggs consists of eggs on a strip of waxed paper where female butterflies attached them. Upon arrival of the eggs, cut the strip into 4 to 6 smaller sections and place each section, eggs down, on a separate seedling leaf. A unit of eggs should hatch at least 5 or 6 larvae in 48 to 72 hours after you receive them. The larvae are transparent and about 1 mm or less in body length when they hatch. Expect 5 or 6 days to elapse before they are large and dark enough for you to see. You can usually find them on the undersurface of a leaf. Check leaves for signs of chewing. Also look for fine, black granules that are the larvae's dried excrement (frass).

Larvae pass through 5 growth stages or instars, each ending with a molt. The first 3 instars usually occur during the first week after hatching. The larvae reach the 4th instar and are about 3/4" (2 cm) in body length at about day 9. At this point they have eaten most of the seedlings and are ready for transfer onto broccoli, Brussels sprouts, or cabbage to mature.

Prepare plastic cups with lids before the transfer. An 8- to 12-oz deli food container, of the type used at grocery stores for cottage cheese and similar items, is a good option. After cleaning, rinse the cups and lids well, and use a pushpin to make 5 to 8 small holes in the lids. Cut paper towel to fit in the bottom of each cup. Dampen the paper towel with springwater or tap water. **Note:** *Many city water systems now treat tap water with chloramines. These compounds do not dissipate by aging the water, so removing them requires a dechlorinator (such as our item #671939 ACE® Aquarium Treatment). For details about conditioning water, see our "General Guidelines on Living Materials from Carolina Biological Supply Company Care Sheet" at www.carolina.com/caresheets.*

If using broccoli, rinse thoroughly and pat dry with a towel. Remove the florets (set aside for another use) and cut the stalks into sections 2" (5 cm) long. For cabbage, break off and discard the outer leaves, remove inner leaves, and break or cut them into pieces about 2" square. To use

Brussels sprouts, remove a sprout from its stalk and cut it in half lengthwise. Place a section of broccoli stem, Brussels sprout half (cut surface exposed), or cabbage leaf on the damp paper towel. Transfer 2 to 4 larvae, depending on size, onto the plant material and close the lid. Examine the cup each day and replace the plant material as needed. When mature, larvae climb onto the side of the cup and spin a silk thread that attaches them to the cup. Then they undergo a final molt and emerge as a pupa (chrysalis). This occurs about 18 to 20 days after you receive your eggs. For further instructions, see below under "Chrysalis to adult butterfly."

Chrysalis to adult butterfly

"Chrysalis" is the name of the pupa stage of the butterfly life cycle. The chrysalis is soft when it first forms following the last larval molt and must not be disturbed for several hours until it hardens. On the day after all the larvae in a cup have molted into the chrysalis stage, transfer them into a flight cage (such as our item #144092 Amazing Bugs™ Habitat that is suitable for 4 to 10 butterflies or our item #674291 Carolina™ Butterfly Sanctuary that accommodates up to 30 butterflies). If you are growing Fast Plants® to study the relationship of the brassica butterfly to plants, butterflies can emerge in item #158994 Plant Light House™ used to grow the Fast Plants®.

There are 2 options for transferring the chrysalises into a flight cage. The simplest is to remove the lid from the cup and set the open cup into the cage. If you have raised the larvae on broccoli, Brussels sprouts, or cabbage, remove any remaining plant material and paper towel before putting the cup in the cage. The second option for making the transfer is to gently detach the chrysalis from its existing site and reattach it to a piece of tissue or paper towel using double-sided tape. Hang the paper inside your flight cage. We recommend this option if you have large numbers of chrysalises and your flight cage doesn't have enough floor space to accommodate all the cups. Expect butterflies to emerge approximately 6 to 7 days after chrysalis formation. Newly emerged butterflies hang quietly to allow their wings to expand and harden. They begin flying a day or 2 after emerging.

Adult butterfly care

Butterflies are best kept at room temperature, 22 to 24° C (72 to 76° F). If you want them to mate and lay eggs, provide light in or near their cage for 18 hours a day; otherwise, normal room lighting is sufficient.

Sugar and other nutrients found in floral nectar are the primary food source for adult cabbage white butterflies. Without these essential nutrients, adult butterflies die in a few days. If flowers are not available, you can make a nectar substitute by dissolving 2 teaspoons of sugar in ½ cup of water. Keep the solution refrigerated when not in use. Replace the sugar-water solution every other day. With proper nutrition, adult butterflies generally live for 1 to 2 weeks, sometimes as long as 3 weeks. **Note:** *Do not put an open container of liquid in your butterfly habitat. Butterflies will fall into it and drown.*

You can make a feeder from a small empty plastic bottle or vial with a lid.

1. Clean the container and lid with a mild solution of household bleach and water (1 part bleach in 9 parts water).
2. Rinse the bottle **thoroughly** with water, and fill it with sugar-water solution.
3. Roll up a piece of paper towel to make a wick. Punch a hole in the bottle's lid large enough to easily insert the wick
4. Dip the wick into the sugar-water solution and then squeeze out the excess.
5. Insert the wick into the hole in the lid, leaving approximately ¾" extending out the top of the lid. Place the lid on the bottle.

Important: Per US Department of Agriculture regulations, the cabbage white butterfly cannot be

released into the environment at any stage of its life cycle. Instead, use 1 of the following options:

- Maintain the butterflies in captivity until they die naturally. (Their life span is short, about 2 weeks.) Consider saving the dead butterflies in a plastic cup with holes punched in the lid. They are ideal specimens for microscopic examination.
- Humanely euthanize the eggs, larvae, and adults by placing them in a sealed container and freezing them for at least 48 hours.

FAQs

I didn't sow brassica seeds. The eggs have arrived and there are no seedlings to hatch them on. What should I do?

Prepare a cup as directed above under "Brassica butterfly eggs." Use the most tender broccoli, Brussels sprouts, or cabbage available because the young larvae cannot chew tough plant material. Cut your egg strip into smaller pieces and place each piece, eggs down, on broccoli stems, cut Brussels sprouts, or pieces of cabbage leaf in the cups. You may not be as successful when hatching eggs using this method, and larvae develop more slowly this way than they do on seedlings. Expect 5 or 6 days to elapse before larvae become visible.

What are brassica plants?

Brassicas are members of a large family of flowering plants that include many grown for food. Common examples include cabbage, Brussels sprouts, broccoli, radish, turnip, kale, mustard, collards, and cauliflower.

I see butterflies in my garden that look like the cabbage white butterfly. Is this possible?

Yes. Although the cabbage white butterfly is not native, it was introduced in the 1800s and is now found throughout much of North America. It belongs to a family of butterflies that are white, yellow, or orange in color.

The eggs hatched but the larvae died. What caused this?

They may have starved. Newly hatched larvae cannot chew through tough plant material as successfully as older larvae can. Try to start them on young, tender leaves. The humidity also may have been too low. Due to their small size, larvae can dehydrate quickly. If you think humidity is a problem, mist the larvae with a very fine spray of dechlorinated, room temperature water. These 2 problems can be related, since larvae get moisture from the food they eat. If they feed properly, humidity is seldom a problem.

Problems?

We hope not, but if so, contact us. We want you to have a good experience.

Orders and replacements: Call 800.334.5551, then select Customer Service.

Technical support and questions: E-mail caresheets@carolina.com.

