

The bioecological characteristics of *Pieris brassicae* (Linnaeus, 1758)

Matnazar Sh Raximov, Dildora A Uralova

Department of Zoology, National University of Uzbekistan Named After Mirzo Ulugbek, Tashkent, Uzbekistan

Abstract

This scientific article provides information about the butterfly - *Pieris brassicae* (Linnaeus, 1758), which has different sizes and sizes at different stages of development. Larvae of *Pieris brassicae* (Linnaeus, 1758) are omnivorous pests, and it was found that the cabbage plant - *Brassica* L. has the highest nutritional value for them. It has been established that the development of this species, that is, the cabbage butterfly and its larvae, is influenced by various environmental factors: temperature and humidity, as well as food. Cabbage butterfly larvae grew very quickly when they were fed the green leaves of the cabbage plant. The duration of development was also longer than in larvae feeding on other plants.

Keywords: cabbage butterfly - *peris brassicae* (Linnaeus, 1758), egg, larva, pupae, adults, food, diapause, ecological factor

Introduction

Pieris brassicae (Linnaeus, 1758) - Type: Arthropod - (Arthropoda); Superclass: True insects - (Hexopoda/Insecta); Subclass: Higher or winged - (Pterygota); Section: Holometabola - (Holometabola); Order: Lepidoptera - (Lepidoptera); White butterflies belong to the family (Pieridae) [1, 2].

Pieris brassicae (Linnaeus, 1758) medium size (50 - 65 mm), white butterfly. In females, the upper edge of the first pair of forewings is black, and these wings have two round spots (on each). Men don't care. The cabbage moth is widespread [3, 5].

The female has two black spots. Mustachioed crested butterflies mate and start laying eggs. In total, female butterflies lay an average of 200-300 eggs. Lays eggs on the underside of the leaves of flowering plants. Most female butterflies only have one male at a time due to the monogamous mating system. The females use their front paws on the surface of the target leaves to test the plant's suitability for reproduction. If they find a suitable surface, female butterflies will lay their eggs within two to three days of copulation. They lay eggs about six to seven times in eight days [3].

Newly laid eggs are pale yellow. The cabbage moth lays its eggs in clusters. 5-50 eggs are collected in one ball. Developing eggs turn orange within twenty-four hours of being laid. Length 1.25 mm. the diameter reaches 0.6 mm at its widest point [6, 9].

Butterfly larvae go through five stages before pupation. The first stage begins after the larvae hatch from the eggs. The larvae hatch from the eggs in 3-6 days. The larvae live together up to 4-5 years, and then live alone [9]. The size of sexually mature worms reaches 4 cm [10].

The size of the cone is up to 25 mm, the color is yellow-green, the body is with black spots, angular. The fungus of this pest hibernates on various trees, fences. After 1.5-2 weeks, the cocoon shell bursts and a new butterfly emerges from it.

In April-May (May-June in the northern regions), butterflies wake up and fly out. If the mushroom stage occurs at the end of summer and the weather conditions are not favorable for further development, it remains in the mushroom form and spends a dormant period until spring [4].

Cabbage butterfly - *Pieris brassicae* (Linnaeus, 1758) in Western Europe, North Africa, Central Asia, the mountains of Central Asia, Chile, Belarus, Ukraine, Moldova, the Caucasus, Kazakhstan and Russia, distributed throughout Europe (except the southeast and northeast), in Southern Siberia, near Chita, in the Khabarovsk Territory, in Southern Primorye, in the south of Sakhalin [8, 9, 10].

Materials and methods

Scientific research was carried out in the districts of Jizzakh region (Karakuyli, 39°59'31.15" N 67°36'50.48" E; Kangli, 40°00'34.5" N 67°36'08.78" E; Bakhmal, 40°03'47.42" N 67°40'01.72" E) in the 2022 year.

The materials were collected from cabbage agrocenoses.

The cabbage butterfly larva occupies an important place among the pests of cabbage agrocenoses. This is due to the fact that it damages cabbage more than other pests. In 2022, the cabbage butterfly quantitatively makes up 30-35% among the pests found in the cabbage fields of the Gallaorol district of the Jizzakh region.

And from cabbage agrocenoses, they were mainly harvested by hand during the day. At first, insect larvae from plant leaves were collected by hand and placed in stains. Pest eggs were collected in test tubes. Infected plant parts were collected in a separate container.

Butterflies were collected in a special container (morelka) with pieces of cotton wool soaked in 70% chloroform solution and folded zigzag filter paper. In this case, the butterflies are steamed in a container and anesthetized with chloroform. The purpose of placing the filter paper in the container is to absorb the moisture in the container and not damage the wings of the butterflies. Anesthetized butterflies are placed in envelopes with wings aligned up and labelled. The transformed materials are delivered to the laboratory and softened in a desiccator for two days. Soft butterflies are flattened and straightened with a special straightener (straightener). In this case, the lower part of the front wing should be at an angle of 90 degrees to the body. After that, the rear wing is aligned close to the front wing. Butterflies are left in a special dryer for 48 hours. After a certain period of time, butterflies are placed in entomological boxes and labeled [12, 13, 14].

Butterfly species were identified according to their morphological characteristics.

Results

The nutritional levels of the cabbage moth *Pieris* were determined brassicae (Linnaeus, 1758) on cabbage plants at different stages of development. According to him, the cabbage butterfly - *Pieris brassicae* (Linnaeus, 1758) feeds on 0-5% of the leaves of cabbage plants at the first and second stages of development, and infects up to 50-90% of the plants at the third and fourth stages of development. Damage to the vegetative organs Table 1.

Table 1: Infection of cabbage by cabbage moth larvae dynamics (%).

Age of the larva	Cabbage damage by larvae (%)
1 year	0%
2 years	5%
3 years	50%
4 years	80%
5 years	90%

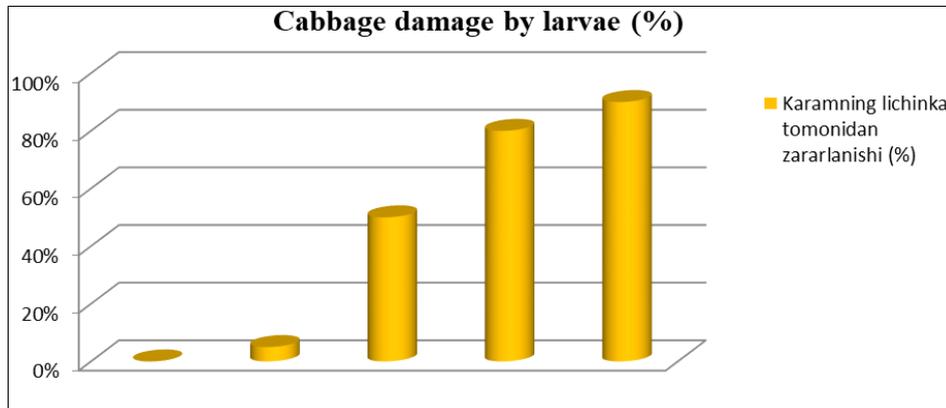


Fig 1: Dynamics of cabbage damage by cabbage butterfly larvae (%). Chart.

Meteorological data for the development period (2022) showed that both temperature and humidity were within normal limits for the location and time of year. The average daily temperature ranged from 20.5 °C to 26.3 °C, the daily temperature of research works ranged from 8.4 to 15.8 °C, the relative humidity of the air fluctuated daily from about 40 to 100%. In addition, it was found that temperature affects the time of hatching of larvae from eggs. According to it, it was noted that at a temperature of 26 °C, 3-4 days are required, at 28 °C - 5-6 days, at 12.5 °C - 15-17 days, at 10.5 °C - 20 days. Storing eggs at 3.5° C for more than ten days will result in their death. A relative humidity of 50 percent is considered an alternative humidity for egg development.

Discussion

Cabbage butterfly - *Pieris brassicae* (Linnaeus, 1758) - agricultural pest. Cabbage butterfly larvae are omnivorous pests that cause great damage mainly to cabbage agrocenoses. In addition, it causes damage during the growing season to many crops and vegetables and has a negative impact on plant productivity and growth. To date, sufficient measures have been taken to combat this pest butterfly.

Research work on the cabbage butterfly in Uzbekistan is mentioned in the scientific literature of Kimsanboev XX *et al.* on countermeasures. But the biology and ecology of these butterflies on the scale of the Jizzakh region have not been studied.

Conclusion

In our research work, the cabbage butterfly spread in the cabbage agrocenoses of the Gallaorsky district of the Jizzakh region. it is determined that 4-5 generations will be born during the year.

The female cabbage moth has been found to lay between 150 and 300 eggs. Eggs develop from 4 to 16 days. Distribution of the cabbage moth in the studied cabbage

agrocenoses of the Gallaorsky district of the Jizzakh region hatched larvae developed in five stages. The length of the one-year-old larvae of the cabbage moth is 0.8 - 0.9 cm and it was determined that it will pass into the second instar in 3 days.

The length of a two-year-old larva is 1.8 cm. It was. One- and two-year-old larvae are externally similar. With increasing age, their morphological features also change. After five days, the larvae are three years old. The length of a three-year-old larva is 2.5 cm. It is from the age of three that the larvae begin to cause great harm to the cabbage plant. After a week, the larvae pass into the fourth instar. A four-year-old larva is similar to a three-year-old larva. It differs in that its body length is 3.49 cm, and the black dots are more numerous and larger in size. after six days, the larvae reached the fifth instar, their diameter is 4 - 4.2 cm. Organized Larvae molt four times during their life. The pupal phase lasts from 8 to 30 days.

References

1. Gasanov BA. Diseases of agricultural crops and measures to combat them. Tashkent, 2011, 207.
2. Hasanov BA, Ochilov RA, Gulmuradov RA. Vegetables, potatoes And policy harvest disease And them against wrestling _ Tashkent, 2009, 244.
3. Kimsanboev XX and others. General and agricultural entomology. Tashkent, 2002, 287.
4. Kimsanboev Kh Kh., Olmasboeva R.Sh., Ergashev S.F., Sulaimanov B.A. "Entomology" Tashkent,2006, 288.
5. Sulaimanov BA, Boltaev BS. others. Laboratory classes in agricultural entomology and the basics of quarantine. Tashkent, 2014, 20.
6. Sulaimanov BA, Kimsanboev XX, Anorboev AR. Entomology and phytopathology Tashkent, 2017, 287.

7. Sulaimanov BA, Boltaev BS, Ochilov RO. others. Laboratory classes in agricultural entomology and the basics of quarantine. Tashkent, 2014, 128.
8. Sulaimanov BA, Boltaev BS, Ochilov RO. others. Organization and planning of plant protection system in farms. Tashkent, 2014, 127.
9. Metspalu L, Hiesaar K, Youdu J. Kuusik Influence of food on the growth, development and hibernation of the great white butterfly (*Pieris brassicae* L.). Agronomic Research, 2003, 92.
10. Pedigo P, Rice E. Entomology and pest control USA, 2015, 784.
11. Chandra J. Lal OP. Development and survival of caterpillars of the white-headed butterfly, *Pieris brassicae* Lynn. About some varieties cabbage. India, 1976, 188.
12. Sh Rahimov M, Sh Omonov N. Bioecological peculiarity of the Privet hawk moth (*Sphinx ligustri*, Linnaeus, 1758). International jurnal of Entomology Research,2023:(3):17-19.
13. Sh Rahimov M, Sh Omonov N. Zarafshonning o'rta oqimi hududlarida *Laothoe populi* (Linnaeus, 1758)-arvohkapalagining bioekologik xususiyatlari. GOLDEN BRAIN,2023:(2):240-246.
14. Sh N Omonov. O'zbekistonda arvohkapalaklarning o'rganilganlik darajasi. Talqin va tadqiqotlar ilmiy-uslubiy jurnali.2022:(1):89-91.