



Flowering Ceremony of Jar-Ptitsa Variety Belonging to *Monarda Didyma* L in the Conditions of Tashkent City

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Annotation: In the article, the dynamics of daily and seasonal flowering and seed productivity of the species of *Monarda* L., genus *M. didyma* L., variety Jar-ptitsa, belonging to the Lamiaceae family, were observed under the conditions of introduction. As a result of the conducted experiments, it was shown that the species of the *Monarda* family can be introduced in the climatic conditions of Uzbekistan, and they are recommended for beautification of city streets and recreation areas.

Keywords: Lamiaceae, *Monarda* L., *Monarda didyma* L., Jar-ptitsa, daily flowering, seasonal flowering, number of seeds, air temperature, relative humidity.

Introduction. Today, it is confirmed that many drugs used in the world of medicine have both curative and harmful effects. The existence of harmful effects of the drugs obtained by chemical means on some part of the body indicates the need to use natural drugs. For this reason, the use of natural plant remedies and the development of medicine are one of the important issues.

In Uzbekistan, more than 100 types of medicinal plants have been officially licensed for use in medicine. More than 80% of them are species found in our natural flora (Khozhimatov, 2021).

On the basis of these plants, many drugs are currently being produced in the pharmaceutical industry. In addition to plants found in our natural flora, medicinal and essential oil plants belonging to foreign flora are also used in the pharmaceutical industry, so the acclimatization of these species is also important, because the cultivation of natural raw material reserves of all plants in our country is economically feasible. One of such promising plants is the species belonging to the *Monarda* L genus belonging to the Lamiaceae family. Plants belonging to this category are not found in the flora of our Republic. For this reason, we aimed to acclimatize the plants belonging to this category in the conditions of the city of Tashkent.

Currently, there are about 20 species of *Monarda* L, and about 50 varieties have been created based on these species. All representatives of this category are essential oil medicinal plants. It is distinguished from other families of the Lamiaceae family by its wealth of beautiful flowering species (Myadelets, 2014; Tsibina, Kurkin, 2019).

Since the essential oils contained in *monarda* are antiseptic, bactericidal, and fungicidal, they purify the blood, improve liver and spleen function, and treat diseases such as respiratory diseases, chronic bronchitis, mycoplasma pneumonia, tuberculosis, colds, anemia, hypoxia, psoriasis, and cystitis. used in treatment. Essential oils contain substances that increase immunity and fight against fungi (Oparin, 2000; Fedotov, 2015).

This species originates from America and is distributed in the northern and southern regions. These plants were the first to be brought to Spain after H. Columbus discovered America. After that, it spread to all of Europe, and then to Russia (Gladysheva, 2016).

By the 19th century, *Monarda* was acclimatized in Europe and Asia, including France, England, Portugal under the name "Wild Bergamot". The Oswego tribe consumed this plant as a tea and called it Oswego tea, bee balm, American lemon balm, and used it as a peppermint and citrus flavoring plant. Today, monarda leaves are equated with the famous Earl Gray tea (Anishchenko, 2009; Ovcharenko, 2016).

The purpose of the research: to study the acclimatization and bioecological characteristics of the Jar-ptitsa variety belonging to the *Monarda didyma* L. species in the conditions of Tashkent city.

Research object: *Monarda* L. genus is a species of *Monarda didyma*-Jar-ptitsa (Fig. 1).



a)

b)

1-a,b figure. *Flowering process of M. didyma- Jar-ptitsa*

Results: Experiments for the introduction of this species in the conditions of the city of Tashkent were carried out in the botanical garden of the National University of Uzbekistan. During the growth and development, the daily and seasonal flowering of plants was studied. Observations were carried out in the second year (2023) on plants developed from rhizomes.

The beginning of flowering coincided with the end of May. The first flowering was observed on May 29, one flower opened at 8 am in the morning when the air temperature was +25°C and the relative humidity was 22%. At 10:00-12:00, three flowers opened in each inflorescence, and at this time the temperature was +28+35°C, relative air humidity was 18-19%. In the second part of the day, two flowers opened at 2 pm when the air temperature was +36°C and the relative humidity was 13%. From 4 to 6 pm, the air temperature reached +34+37°C, the relative humidity reached 11-13%, and one flower opened. At the beginning of flowering in this variety, a total of 11 flowers opened during the day (Fig. 2a).

The general flowering period lasted until June 11-12. At 8 am in the morning, four flowers opened, at this time the air temperature was +28°C, and the relative humidity of the air was 36%. At 10 am, when the air temperature was +32°C, relative humidity was 30%, 10 flowers opened. When the time of the day came to +12, 6 flowers opened, and at this time the air temperature was +38.5°C, and the relative humidity of the air was 23%. In the afternoon at 2 pm, the air temperature was +41°C, the relative humidity was 19%, and three flowers opened. At 4 pm, the air temperature was +42°C, the

relative air humidity was 16%, and there were two blooms. At 6 am in the evening, one flower opened, and at this time the temperature was +41°C, and the relative humidity of the air was equal to 14%. On average, 25 flowers opened in one inflorescence during the day when the jar-ptitsa was in full bloom (Fig. 2b).

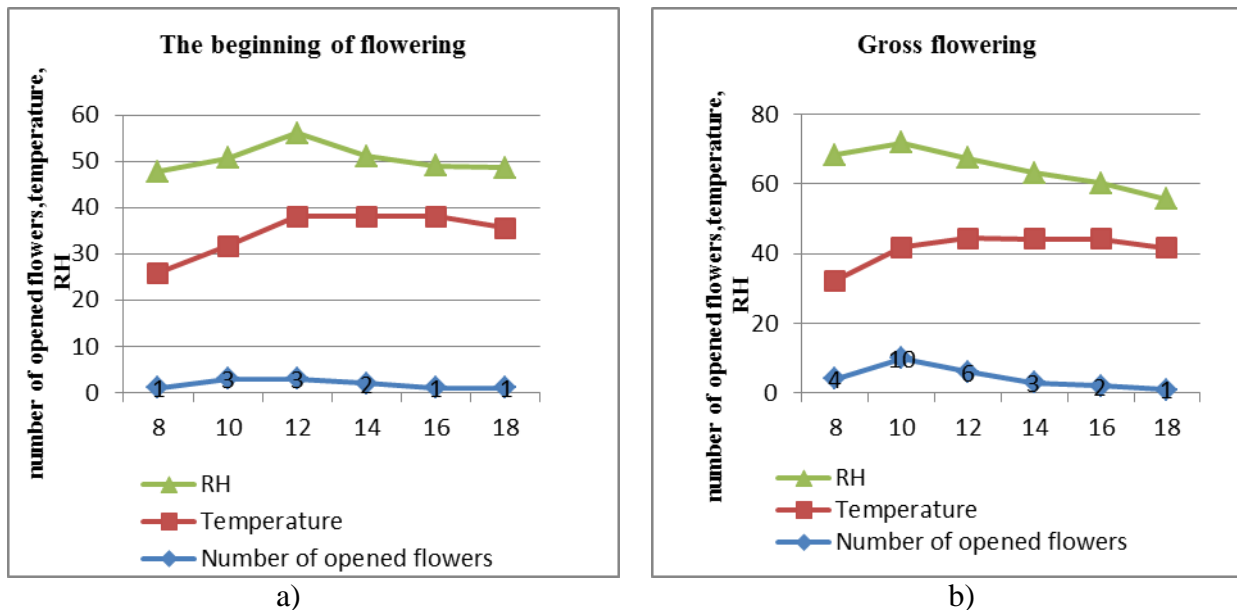


Figure 2. a) The beginning of flowering in Jar-ptitsa variety, b) Gross flowering of Jar-ptitsa

In early July, the plants finished flowering and by this time very few flowers had opened. Two flowers opened at 8am in the morning, at this time the air temperature was +29°C, and the relative air humidity was 22%. Opening of three flowers was observed at 10am, air temperature was +32°C, relative humidity was 22%. The time of the day is 12-18 pm, the air temperature is +37+39°C, and the relative humidity of the air is 14-15%. At the end of the flowering season, a total of 8 flowers opened in one inflorescence (Fig. 3a).

Seasonal Flowering: Plants begin to flower in late May, with more flowers opening by June and up to 15-23 flowers per day until mid-June. Full flowering continued until the middle of June, and the number of opened flowers decreased from the following days. The end of flowering was observed by the beginning of July. Towards the end of flowering, the first opened flowers began to produce seeds, and seed formation was observed simultaneously with flowering. One inflorescence of Jar-ptitsa cultivar contained 350-400 flowers, and seasonal flowering lasted 5-6 weeks (Fig. 3b).

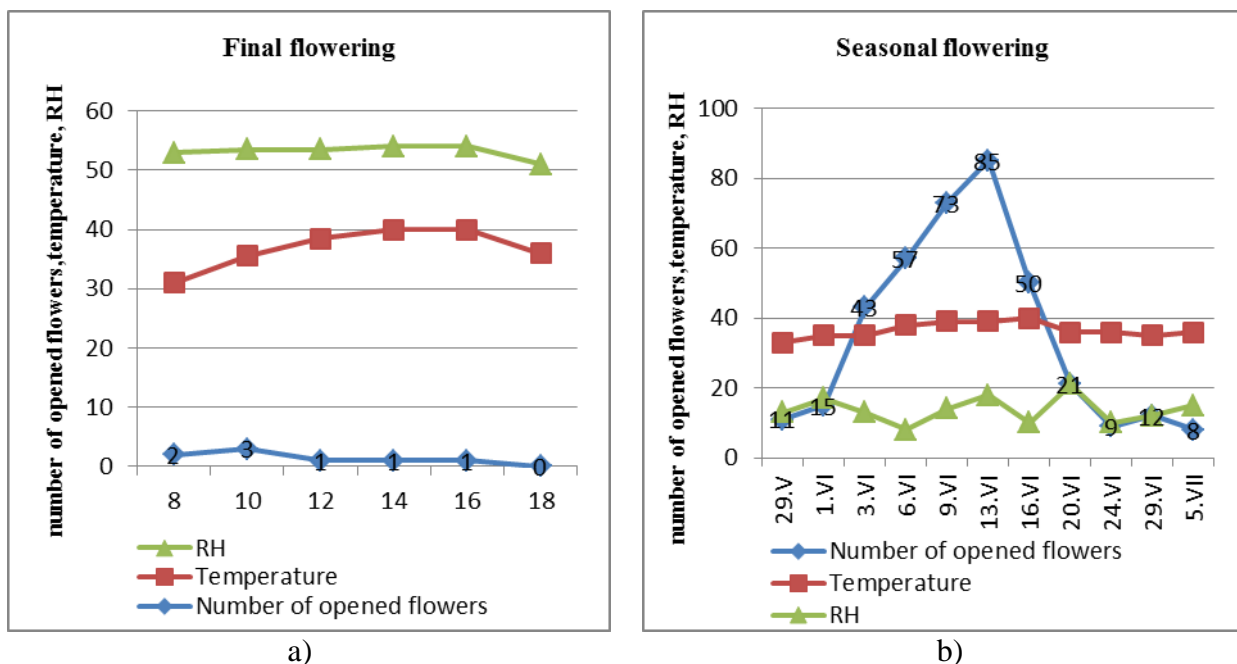


Figure 1-a. The final flowering of the Jar-ptitsa. **2-b.** Jar-ptitsa seasonal flowering.

The seeds of *Monarda didyma* L. Jar-ptitsa studied in our experiments are small, gray or brown, black in color. The length of the seeds from the second year's vegetation is 1.5-1.6 mm, the width is 0.7-0.8 mm, and the weight of 1000 seeds is 0.39-0.46 g. equal to Up to 250-300 flowers opened in one inflorescence, and up to 200 seeds were formed when fully ripe.

Conclusion. As a result of the conducted research, the plants bloomed and set seeds in 100% of the second year of vegetation. *Monarda didyma* L. Good growth development, good flowering and seed setting show that this plant is well adapted to the climatic conditions of Tashkent city. This indicates that it is possible to introduce medicinal plants belonging to the family. The fact that the flowers are fragrant and decorative indicates that they can also be used to beautify city streets and recreation areas.

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