

**CHARACTERISTICS OF MONARDA DIDYMA AND ITS INTRODUCTION IN
THE CONDITIONS OF THE SOUTHERN STEPPE OF UKRAINE
(ОСОБЛИВОСТІ МОНАРДИ ДВІЙЧАСТОЇ ТА ЇЇ ІНТРОДУКЦІЯ В УМОВИ
ПІВДЕННОГО СТЕПУ УКРАЇНИ)**

У статті розглядаються особливості ефіроолійної культури монарди двійчастої та умови її вирощування. Виокремлено основні напрями застосування ефірної олії цієї культури у різних видах промисловості. Розглянуто питання інтродукції даного виду в умовах Південного Степу України та можлива продуктивність рослини за межами свого природного ареалу.

Ключові слова: ефіроолійні культури, інтродукція, монарда двійчаста, продуктивність, Південний Степ України.

The article considers the peculiarities of the essential oil culture monarda didyma and the conditions of its cultivation. The main areas of the essential oil of this culture application in various types of industry are highlighted. The issue of the introduction of this species in the conditions of the Southern Steppe of Ukraine and the possible productivity of the plant outside its natural area are considered.

Key words: essential oil crops, introduction, monarda didyma, productivity, Southern Steppe of Ukraine.

Despite the expansion of medicinal and essential oil plant cultivation in the conditions of the Southern Steppe of Ukraine, this segment is still quite narrow in our region. In recent decades, the areas of these crops cultivation have decreased significantly, which has led to a decrease in the production of essential oils, as well as to problems in the field of special food products production. Therefore, Ukrainian manufacturers have to import most of the raw materials for the production of this type of products. Imported raw materials account for more than 60% [4].

The problem described above presents us with new questions and problems regarding the study and cultivation of new highly productive and highly profitable essential oil crops. *Monarda didyma L.* is one of the promising crops in this direction. The main area of this culture cultivation is the eastern part of North America, some Eurasian regions. Also, this plant is naturalized in the western part of North America conditions. However, modern agriculture technologies make it possible to expand the area of crop cultivation, because it is capable of adapting to new soil and climatic conditions. The range of use of the plant in the West is also wide. It is used in the food industry (for the production of tea, as well as in the production of flour confectionery), as a medicinal plant (immune-strengthening and antiseptic agent), as an essential oil crop and in landscape design.

The composition of the monarda didyma leaves includes a large number of useful chemicals, which make this culture particularly valuable and attractive. This includes a large number of aromatic compounds (with the smell of mushrooms, bergamot, oregano, menthol) - they contain bactericidal, insecticidal, immunostimulating and antioxidant properties. Also includes a number of fatty acids, flavonoid compounds, etc., which can be used as natural preservatives in the confectionery industry [5].

In addition, this culture was studied for its use in animal husbandry as an alternative to synthetic antibiotics used in animal feed [2]. Some studies of foreign scientists show that the essential oil of *Monarda didyma L.* has the potential to be used as a component of bioherbicide formulations. In the future, it is planned to test these properties of the essential oil in field conditions for a better understanding of the real effect [1].

In Ukraine, there are recommendations for the cultivation of *monarda didyma* in the conditions of Polissia and Forest-Steppe. Only a small number of resources and studies highlight the issue of crop cultivation in the conditions of the Southern Steppe of Ukraine. This is what determines the relevance of the topic and the need for further research.

The researches of various scientists make it possible to conclude that *monarda didyma* has a high adaptive capacity and is a plastic culture that can be grown under different natural and soil-climatic conditions. However, the choice of variety is of great importance for growing a plant. Different varieties of essential oil culture give different yield of essential oil, as well as their different quality. By using plants of some varieties, it can be obtained about 5 g from 1 m², and by growing others - up to 12 g from 1 m². Under the conditions of *monarda* growing in the Ukrainian Southern Steppe, most of the essential oil is concentrated in the inflorescences, and this percentage is somewhat lower in the leaves [6].

Monarda didyma is an allelopathically active plant, but the study of the effect of mulching as one of the agrotechnical elements of its cultivation was carried out by many scientists. Studies of foreign researchers on the soil mulching effect during the cultivation of *M. didyma L.* on the content of essential oil in the leaves and inflorescences of the plant, as well as on its biological activity, indicate that this factor does not have a significant effect on these indicators, and under some conditions it can generally reduce the growth and development of inflorescences. However, the use of synthetic mulch itself may have had a positive effect on the antibacterial and antihistaminic effects of *monarda* essential oil [3].

Based on all of the above, we can conclude that *Monarda didyma L.* is a promising plant for its cultivation in the conditions of the Southern Steppe of Ukraine. The peculiarities of the introduction and cultivation of the essential oil culture in the conditions of the Southern Steppe of Ukraine should be studied in the future. Particular attention should be paid to the effect of mulching, the use of fertilizers and microfertilizers on the productivity of the essential oil in the leaves and inflorescences of the plant, as well as on its quality indicators.

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