

UDC 633.88+635.03

**PROBLEMS OF PLANTATION GROWING OF ST. JOHN'S WORT
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Abstract. *St. John's wort (*Hypericum perforatum* L.) is a medicinal plant widely used in the world for the production of medicines and dietary supplements. This encourages pharmaceutical companies and agricultural enterprises to introduce St. John's wort into culture, to select new varieties with unique properties. Problems during the cultivation of St. John's wort are the unevenness of seedlings, weed control, damage by diseases, phytochemical uniformity of raw materials. The creation of plantations using seedling technology solves most of the indicated problems.*

Key words: *St. John's wort, *Hypericum perforatum* L., anthracnose, *Colletotrichum gloeosporioides*, growing St. John's wort seedlings, growing medicinal plants.*

Introduction.

St. John's wort (*Hypericum perforatum* L.) is a widely distributed medicinal plant in the world, which has been used for centuries in scientific and folk medicine in Ukraine and many countries around the world. Due to its antidepressant, anti-inflammatory, antispasmodic and antiviral effects, St. John's wort aerial mass serves as a raw material for the manufacture of medicines, dietary supplements, extracts, etc. [2]. Our country has quite large natural reserves of St. John's wort. However, the resource potential is not stable over the years and the quality of the raw material, so it becomes expedient to implement its cultivation [4,6].

Antidepressants are a huge market, which certainly gives impetus to the development of this direction. If 10-20 years ago, cultivated areas in Europe were limited, now it is several hundred hectares. Some varieties, such as Hypermed, Elixir, Topaz and others, are already commercially available. Probably, the Polish variety Topaz, registered in 1982, became the most widespread [3].

Main text.

An important problem that significantly restrains plantation cultivation of St. John's wort is damage to crops by diseases. In 1995, 20 hectares of crops were destroyed by an unknown disease in Switzerland. Because St. John's wort was grown organically, no fungicides were used and the plantation was lost. In the first stages of damage, the leaves of the plants turned red, later they dried up and fell off, the whole plant turned black, and later the above-ground part and the root system died.

According to the literature, the increase in St. John's wort production in the world was accompanied by outbreaks of the disease described above. During a detailed study, the causative agent was identified – the fungus *Colletotrichum gloeosporioides* (Penz), which causes anthracnose. The identification of the micropathogenic organism was carried out by independent laboratories in Europe [1,5].

This has become a challenge for companies producing formulations with St. John's wort. To create new varieties resistant to anthracnose, a new protocol was approved, according to which seeds of various populations were collected in European countries, seedlings were grown in greenhouse conditions, samples were grown for several years in conditions of three agro-climatic regions, their resistance to the disease was studied, productivity and phytochemistry were evaluated. At the same time, the standard was the Topaz variety. The researchers noted that among 21 samples, only one met the criteria of productivity and resistance to anthracnose. Other samples were affected by disease by 84-96%. It was established that the damage to plants by St. John's wort is related to the humidity of the area, the length of the growing season, and the height of the plants [2].

Due to the fact that the main amount of active substances is in the flowers, the architectonics of the plant and the duration of flowering are of great importance for the variety. According to European standards, the 15-centimeter top of a flowering plant is collected as raw material. Therefore, the evenness of plant height and compactness of flowering is an important agrotechnical indicator. For proper harvesting, the variety should have a strong shoot to avoid lying down, its height should not be higher than 80 cm, and the inflorescence (corymb) should be in one plane. It was noted that otherwise harvesting was inefficient, and there was a need for additional sorting of raw materials.

It was established that the yield of flowers depended on the susceptibility of the variety to anthracnose, as well as the type of soil, the altitude of the area above sea level and the morphology of the plants. Sand and sandy loam soils with irrigation were better compared to loam soils. This was especially noted for the Topaz variety. Along with this, the selected sample showed advantages when grown in mountain conditions, was less affected by anthracnose, contained more hypericin and flavonoids in raw materials. According to the authors, the created new variety is undergoing registration [2].

Our research shows that a promising technological solution can be the use of seedling technology for growing St. John's wort. We have found out that St. John's wort can be effectively grown by seedlings, and effective plantations can be formed. This solves the issue of sowing, obtaining friendly seedlings, caring for the crops of the first year, regulating the yield and quality of raw materials, etc., providing the pharmaceutical industry with raw materials. At the same time, the problem of anthracnose damage is quite acute. In three out of five seasons, our experimental plots were 40-85% destroyed by the disease.

Summary and conclusions.

Therefore, our experience and the experience of the researchers described by us above will be useful for solving current issues of St. John's wort cultivation.

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