

Advantages and Prospects for the Cultivation of Einkorn and Spelt in Bulgaria

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Over the past 10–15 years, in connection with the significant changes that have occurred in Bulgarian agriculture, the interest of a number of private landowners and farmers from various regions of the country in einkorn – an ancient cereal crop – has increased. In addition to specialized agricultural publications, it has also been discussed in programmes on Bulgarian radio and television, where the question is often raised as to what the advantages of einkorn and spelt in our country are and what the prospects are for their cultivation. Part II – Spelt

The interest in einkorn and spelt is growing along with the increasing demand for healthy and organically grown products, as well as the strengthening anti-smoking movement. Most likely, the

decreasing tobacco areas in Bulgaria could be occupied by these wheats.

Spelt wheat – *Triticum aestivum* subsp. *spelta* is a species of cultivated wheat grown until the mid-20th century, after which it was completely displaced by bread wheat. Today it is perceived as a health food, as it has a higher percentage of protein than wheat, as well as a large amount of fibre, minerals and vitamins. It contains almost twice as much vitamin A and B-group vitamins, fats, phosphorus and proteins, while the amounts of gluten are minimal.

It has a very well-developed root system. The stem is strong and not prone to lodging. The ear is long, with a quadrangular shape and a loose structure. The spikelets are separated from one another, but the grains are completely enclosed by the glumes.

The unanimous opinion of most researchers is that spelt tolerates cold well and is a winter-hardy plant. Given sufficient moisture, it germinates at 1–2 °C, and at 2–4 °C it is capable of development. The emerged young plants overwinter easily even at minus 15–20 °C. Spelt is susceptible to powdery mildew, as well as to brown and yellow rust.

Compared to common winter wheat *Tr. aestivum*, it is more demanding with respect to precipitation and is less tolerant to drought. With abundant rainfall and strong sunshine it develops rapidly and becomes tillered. Compared with other wheat species, before the start of vegetation it tolerates standing under water for a longer period, as it has better tolerance to waterlogging. In this regard, spelt wheat is particularly suitable for those regions of the country where waterlogging and the formation of water surfaces, in which the plants perish, are observed every year.

Spelt is not particularly demanding with regard to different soil types. It is capable of adapting to poor mountain soils and produces yields even on acidic and saline soils.

During the fertilization period, spelt responds actively to the presence of copper (Cu) in the soil, respectively to its insufficient quantity, since it has a positive effect in this developmental cycle on the course of biochemical processes. The cause of the bleached ears that are observed annually in cereal crops should be sought in the lack of Cu. If the soil contains 2–4 ppm copper, this amount is insufficient. The copper content in the soil should be at least 6–10 ppm.

For two years, Eco-farm “Dunav” Ltd. – Vidin cultivated about 2,000 decare of spelt wheat with the assistance of a German company. A yield of about 100–150 kg/decare was achieved without the application of any fertilization. Herbicides, fungicides and insecticides were also not used.

Our opinion is that spelt wheat has higher productive potential than one-grain and two-grain einkorn.

Given the current state of wheat breeding in the world and in our country, it is simply unthinkable for our agriculture to return to the cultivation of einkorn and spelt on a large production scale.

In addition to common and durum wheat varieties, there are other cereal crops such as triticale, rye, barley and oats, which have proven advantages over einkorn and spelt, which are crops of bygone extensive agriculture. Nevertheless, guided by the results obtained in recent years and the great interest of a number of private farmers and tenants in einkorn and spelt, we consider that these crops may be sown on limited areas, but this is not the prospect for Bulgarian agriculture. The domestic market for them is limited, but if international markets are developed and demand increases, there is no reason why the areas should not be expanded to 25–50 thousand decares and more in the country.

It is, however, wrong to assume that the problems of increasing production and improving the quality of bread and feed grain will be solved by einkorn and spelt.

This is why we consider that priority should reasonably be given to the cultivation of winter common and durum wheat, triticale, rye, barley, oats and other crops, while providing opportunities for those farmers who show a particular interest in einkorn and spelt to switch to their cultivation, depending on their economic interests and the need to use their grain in the country's food balance. In addition, with the inclusion of these crops in production, conditions are created for expanding the range of products from organic farming.

The position expressed by us regarding the cultivation of one-grain and two-grain einkorn, as well as of spelt wheat, in the country's grain production should not be perceived by our grain producers as a mandatory practice of last resort. The final decision should be taken by individual farmers in the different regions of the country, depending on their economic interests.