



Guidelines for cultivation of hulless barley variety *Kornelija* in organic farming conditions

Cultivation stage	Description of cultivation technology	
	<u>For production of food grains</u>	<u>For seed production</u>
Choice of field	<ul style="list-style-type: none"> - Soil type: sod carbonate soils; sod lightly podzolized or loamy soils; sod glacial soils or humus-rich, cultivated sandy soils. - Soil reaction: optimally pH_{KCl} 6.0–7.0. Acidic soils are a limiting factor in grain yield and quality; soil liming is recommended. 	
	Fields with consequences of plants where there may be admixture of other cereals, especially hulled types, and accumulation of barley diseases, should be avoided.	For seed production, the field shall be selected in accordance with the Cereals Seed Growing and Seed Trade Regulations No. 632, observing the requirements specified for seed cultivation
Pre-crop	Root and tuber species, legumes, winter cereals, oats, buckwheat, oilseed rape.	
Soil preparation	<p>It is necessary to ensure optimal conditions for seed germination: good contact of the seed with the soil, and optimal depth, 2-3 cm, depending on the soil structure and moisture conditions.</p> <p>! The basic rule for cultivating the soil is that the seed must lie on a hard bed and be covered with a loose layer of soil.</p>	
Seed selection, preparation and quality	<ul style="list-style-type: none"> - For sowing it is necessary to use certified seed, which ensures the purity of the sowing, guarantees optimal germination, free of diseases, pests and impurities. - When sowing self-grown seed, it is mandatory to determine the germination capacity of the seed (seed with undamaged germ must have a root and a shoot) and the weight of 1000 seeds. <p>Additional sowing machine calibration: hulless barley grains flow faster through the seed tubes of the sowing machine than hulless barley.</p>	
Sowing	<ul style="list-style-type: none"> - Sowing time depends on the readiness of the soil for sowing; the soil must be warmed up to + 5°C; which in the climate temperate zone is in the 2nd and 3rd decades of April. - Sowing rate from 450 germinating seeds/m²; this quantity shall be adjusted depending on the sowing time, quality of the seed and sowing, level of the planned yield. <p>! Each day of delayed optimal sowing time has a negative effect on crop productivity. Too deep sowing and lack of moisture during germination can reduce field germination.</p>	
Weed control	Harrowing (more suitable long-finger harrows) 1-2 times: 1) blind harrowing 3-7 days after sowing in the white thread stage of weeds; 2) during gestation (3-4 leaf phase), when the weeds have germinated.	

<p>Harvesting</p>	<p>Quality hullless barley grains must be as pure as possible from hull (<5%), with a minimum percentage of broken grains (<5%), mature, not germinated and disease-free, with grain moisture < 14.0%. "Kornelija" hullless barley is characterized by high threshing values, on average 95-97%, however, the proportion of hull in the bunker harvest depends on the moisture content of the grain during harvesting and the adjustments of the harvester combine. As the harvest approaches, the ripeness of the hulled barley must be checked regularly with control samples. The hulls separate more easily during threshing if the grains are sufficiently dry, with an optimal moisture content of 14.5-15% on average. It is necessary to adjust the threshing drum speed of the harvester combine, to reduce the width of the front threshing slit, which will reduce the crop feed speed, so the combine must run slower; the fans and screens must be adjusted appropriately. During threshing, the grain tank must be inspected regularly to assess the proportion of unthreshed and broken kernels in the crop, and adjustments to the harvester combine settings must be made during the day. However, if the harvesting conditions are not favourable for sufficient separation of the hull, they must be separated by friction during the pre-treatment of the grain.</p>	<p>During harvesting, it is necessary to comply with the requirements set for seed cultivation, ensuring the cleanliness of the harvesting equipment. The optimal conditions for harvesting seed crops are in conditions when the relative humidity of the air does not exceed 75% and the grain humidity is 14-18%. If the moisture content of the grain is lower than 14% and higher than 18%, the risk of injury to the grain and grain germ increases, which reduces the germination capacity of the grain. Hullless barley intended for the production of certified seed must be threshed gently in order to prevent injury to the seed germ. The harvester combine's drum must be operated at full power but at a slower speed (not faster than 900 rpm). A high-quality batch of hullless barley seeds is characterized by a relatively high proportion of grains not threshed free from the hull.</p>
	<p>! Harvest at maturity to prevent sprouting and premature sprouting/germinating of grain, and lodging.</p>	
<p>Grain pre-processing</p>	<p>During the grain drying process, the heating temperature of the grain (<60°C for food grains) should be monitored so as not to reduce the protein quality and the bulk density of the grain. The optimal grain storage moisture is 14%.</p>	<p>In the grain drying process, it is necessary to comply with the requirements specified for seed cultivation, ensuring the purity of the seed; the heating temperature of the grains must be monitored so as not to reduce the germination of the seeds (for seed grain <48°C). The optimal grain storage moisture is 14%.</p>