

Hulless barley variety 'Kornelija' - Development of Grain Production Technologies and Testing Results under ORGANIC Farming Conditions in 2019

In order to facilitate the commercialisation of the registered variety and to recommend the variety as a high-quality raw material for the production of functional foods, it is important to clarify its cultivation technology and processing capabilities and to evaluate the stability of its characteristics in a practical production environment.

Industrial research GOAL: To acquire new knowledge and to implement technological development for biological cultivation by specifying the agro technical measures of the Kornelija barley variety for optimal yield, higher grain quality and reduction of cultivation risks by balancing the production costs.

METHODOLOGY

Field trial in the ORGANIC FARMING SYSTEM set up in organically certified field at the Stende Research Centre Institute of Agricultural Resources and Economics

- ✓ Prot area 38 m², 4 replications,
- ✓ 3 sowing rates: 400, 450 and 500 germinate grains per m².
- ✓ Weed control is ensured in accordance with the principles of organic farming by harrowing.
- ✓ Soil agrochemical characteristics: total nitrogen 0.12%; pH (KCl) 5.93; P₂O₅ mg kg⁻¹; 189.3 mg kg⁻¹; K₂O 183.2 mg kg⁻¹; Organic matter content -1.45%.
- ✓ Sowing time 4/17/2019; Harvesting: 27.07.2019



RESULTS

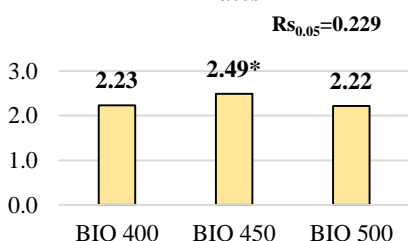
Sowing rate, germinated seed m ²	Number of plants/m ²	Field germination, %
400	392	98
450	438	97
500	485	96



Canopy and morphological traits, disease and lodging resistance characteristics for hulless barley variety 'Kornelija' at different sowing rates

Sowing rate, germinated seed m ²	Crop coverage%, GS 25-29	Crop coverage %, AE 29-31	Wee coverage %, AE 31-39	Weed coverage %, AE 59-65	Weed coverage %, AE 87-92	Canopy height, cm AE 31-39	Canopy height, cm AE47- 51	Canopy height (Plant height), AE90-92	Ear lenght, cm	Number of grains/ear	Powdery Mildew (0-9)	Spots (0-9)	Loose smut, plants /m ²	Lodging , 1-9 scores
400	75.5	85.7	20.5	45.3	35.4	24.8	42.2	61.3	7.5	21.3	2.5	4.5	0	9.0
450	76.7	87.9	23.5	44.2	32.5	25.1	44.8	64.4	7.0	22.0	2.0	4.5	0	9.0
500	77.1	89.3	25.0	43.6	30.5	24.5	43.5	62.5	6.8	20.0	2.5	4.0	0	9.0

Grain yield, t ha⁻¹ at different sowing rates



Grain quality at different sowing rates

Sowing rate/m ²	1000 Grain weight, g	Test weight, g L ⁻¹	Protein, %	beta-glucans, %	Starch, %
400	39.1	794.1	13.16	4.55	63.3
450	38.9	791.5	12.94	4.56	63.9
500	37.6	792.8	12.69	4.65	64.2
Vidēji	38.5	792.8	12.9	4.59	63.8

CONCLUSIONS

- ✓ Hulless barley variety 'Kornelija' under organic farming conditions has a high field germination (96 to 98%) in all applied variants of sowing rate.
- ✓ Sowing of variety 'Kornelija' has shown relatively good competition with weeds, high resistance to lodging, no any infection with loose smut.
- ✓ In organic farming conditions, the variety 'Kornelija' has medium grain yield, protein and β-glucan content in the grain.
- ✓ Substantially higher grain yield is obtained with a seed rate of 450 germinating seeds per m², while the physical and biochemical quality of grain yield has not been affected by sowing rate.



harrowing of hulless barley 'Kornelija' grain multiplication field under organic farming conditions, Stendes Research Centre