

Grain quality characteristics in oats under conditions of the Czech Republic and the Slovak Republic

Lenka Nedomova^{1,2}, Peter Hozlar³, Daniela Dvoncova³, Ivana Polisenka^{1,2}

¹ Agricultural Research Institute Kromeriz, Ltd., Havlickova 2782/121, CZ-767 01 Kromeriz, Czech Republic

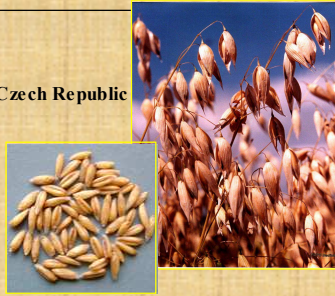
² Agrotest Fyto, Ltd., Havlickova 2782/121, CZ-767 01 Kromeriz, Czech Republic

³ Slovak Agricultural Research Centre, Research and Breeding Station Viglas – Pstrusa, 962 02 Viglas - Pstrusa, Slovak Republic

* Corresponding Author: tel. +420 573 317 166, e-mail:nedomova.lenka@vukrom.cz

Recently, the role of oats in the human diet has gained importance. The most important reason for growing consumption is the recommendation by health specialists for the change in diet composition since poor diet is one of the leading causes of diseases in modern civilizations. Oats belong to the group of so-called functional foodstuffs, which provide not only nutrients, but also improve human health. Contents of protein, starch, fibre, β -glucans and fat are important characteristics for food use.

The objective of the work was to evaluate a set of cultivars for the quality characteristics in different conditions and different years. These included starch, protein, fat, fibre and β -glucans content, and 1000-grain weight, volume weight as well as average yield.



Traits		df	MS	F	p-value
Yield	location	1	2.654	28.13	0.000*
	cultivar	27	1.173	12.43	0.000*
	year	3	1.166	12.35	0.000*
1000-grain weight	location	1	3.5	0.99	0.321
	cultivar	27	133.4	37.82	0.000*
	year	3	103.2	29.26	0.000*
Volume weight	location	1	236.6	28.9	0.000*
	cultivar	27	232.9	28.45	0.000*
	year	3	228.9	27.96	0.000*
Protein content	location	1	8.79	3.922	0.050
	cultivar	27	13.69	6.105	0.000*
	year	3	13.96	6.225	0.001*
Starch content	location	1	0.6	0.044	0.835
	cultivar	27	116.8	8.565	0.000*
	year	3	44.1	3.231	0.026*
Fat content	location	1	15.42	49.44	0.000*
	cultivar	27	6.11	19.58	0.000*
	year	3	4.79	15.36	0.000*
Fiber content	location	1	6.18	3.93	0.051
	cultivar	27	55.34	35.23	0.000*
	year	3	70.07	44.61	0.000*
β -glucans content	location	1	2.442	8.87	0.004*
	cultivar	27	0.541	1.97	0.011*
	year	3	2.809	10.2	0.000*

Significant effects of both environment and genotype were confirmed for all the evaluated characteristics. The smallest differences in the characteristics between years were determined for starch, fibre and fat contents. It should be possible to develop genotypes with elevated levels of these characteristics. In 2005, higher average values were obtained for most characteristics, with the exception of lower starch content.

The results confirm that hulled oat yields are higher than those of naked oats, which corresponds to the weight percentage of hulls in hulled oats. The higher yield parameters were found for the registered cvs. Izak, Detvan, Avenida and Abel. High volume weights were in cvs. Bullion and Platek. In correspondence to hull content, 1000-grain weight was higher in the group of hulled cultivars.

Starch contents were highest in cvs. OT 258, Salomon, Avenida, Abel, Izak and Detvan. There were highest protein values in cvs. Nue Rennes, Nuprime and Nagi Pulawski. The highest fat contents from the surveyed naked oats were determined for cvs. Bandicoot, VIR K 2468 Local and Neon. Fibre content was highest in cvs. Nagi Pulawski and AC Hill in the group of naked oats; the mean value of the group of hulled oats was significantly higher.

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