Source of variability Fertilization	C_{ox}	N_t	Biomass of soil microorganisms (C_{mic})
Significant Level	0,2185	0,8863	0,0272+

The fertilization in which post-harvest and root residues along with the whole by-products of cultivated crops were ploughed in soil (treatment PZ) had a statistically significant effect (α = 0.05) on an amount of soil microorganism biomass (Table 2). The average C_{mic} value found in treatment PZ and treatment PH was 238.12 and 217.11 mg.kg^{-1} dry soil.
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EFFECT OF GROWING AREAS ON QUALITY OF SELECTED MALTING BARLEY VARIETIES

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Summary

Work concerns with evaluation of technological indicators of 5 selected malting barley varieties growing in the regions: suitable, mildly appropriate and inappropriate for malting barley. On the basis of obtained results from the crops in 1998 and 1999 we can say that between the experimental training stations (ETS) were marked differences in technological quality of observed varieties. The best chemical indicators of quality (starch content and content of crude protein) we observed in the inappropriate region for growing of malting barley in both years. The best mechanical indicators (grain size, thousand kernel weight) were in the mildly appropriate region in 1998 and in 1999 also in the inappropriate region.

Key words: barley, variety, quality, region

Introduction

The Slovak republic has a very different agroecological conditions which have very often decisive influence on malting barley growing in individual regions and producing areas. These conditions influence not only quality, but also quality of crop what is in much case decisive. Spring barley is growed in all producing areas, but the high malting value achieves only in specific soil and climatic conditions. Significant influence on the yield and grain malting quality has not only region but also year, forecrop and variety (Strnad, 1974; Očkay, 1978; Frančáková, Muchová, 1982). That is why the first step to success in the growing systems of malting barley is a choice of appropriate variety. A ratio of variety is estimated about 25 – 40% on achievement crops on dependence on growing conditions.

Material and methods

In the years 1998 – 1999 we determined a technological quality of 5 varieties of malting barley (Atribut, Jubilant, Kompakt, Progres, Sladko) that were growing in 3 different areas: Veľký Meder – mildly appropriate region, Veľké Ripňany – suitable region for the growing of malting barley, Jakubovany – inappropriate region.
After post – harvest maturation we observed: grain size, thousand kernel weight, starch content and content of crude protein.
After malting process in the micromalter "Seeger" we determined these technological parameters, which were evaluated in terms of the malting quality index: malt extract, relative extract at 45 °C, Kolbach index, diastatic power, apparent final attenuation and friability.

Results and discussion

In the tables 1 – 3 are results of grain barley analysis from the crops 1998 and 1999. In 1999 we measured in all 3 growing regions better parameters of quality. Proportion of grains retained on a 2,5 mm sieve did not fall under 85% not even in one growing region, in the ETS Jakubovany was ranged in near all varieties over 90%. In 1998 the part of grain the first class was marked lower. The requirement of the norm 90% and more were not fulfilled. Paradoxically in the ETS Jakubovany the average content was the lowest (67,3%). Between the thousand grain weight (TGW) were not marked differences between 2 years. From the chemical indicators of quality we evaluated the starch content and the content of crude protein. The starch content was in the both years the highest in the ETS Jakubovany. Under 62% fell the content in the ETS Veľké Ripňany and Veľký Meder in 1998. The content of crude protein over 11% (average 11,9%) was established only in the ETS Veľký Meder in 1999.
For security of production of high malts quality a limit for barley 11,5% should not be overslept (Kosař, 2000). In 1998 the crude protein content was over 11% in the ETS Jakubovany, over 12% in the ETS Veľké Ripňany and almost 13% in the ETS Veľký Meder. The crude protein content is the sign which is the fastest influence of outside environment. Climatic conditions (most of all a long drought) can be a reason of increasing a crude protein content in barley caryopses also through a big growers endeavour. If crude protein content is a generally higher in consequence of years influence will be needed to mind choice part with higher grain size, thousand kernel weight and content of starch (Kosař, 2000).
On the basis of obtaining results it is possible to state that a course of weather has a marked influence on barley grain quality. Rainfall deficit we recorded in the ETS Veľké Ripňany and Veľký Meder in 1998. They were very low mainly in the decisive months – May and June in comparison with a normal average month rainfall. The year 1999 was not so critical. Mainly months May and June were rich on rainfall. Average temperatures were in the norm in both years.

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Results of barley analyses:

Tab. 1: Experimental training station - Veľké Ripňany

Variety	I. class (%)		TGW (g)		Starch (%)		Crude protein (%)	
	1998	1999	1998	1999	1998	1999	1998	1999
Atribut	74,4	86,6	46,6	44,1	54,8	62,3	12,96	11,00
Jubilant	83,0	91,9	42,0	41,2	60,2	61,6	12,95	10,04
Kompakt	78,7	82,3	44,6	42,1	60,1	65,6	11,86	10,43
Sladko	58,8	88,7	42,8	41,5	60,3	63,0	12,95	11,07
Progres	65,5	80,7	45,9	44,3	56,9	64,3	11,55	10,15
Average	72,1	86,0	44,4	42,6	58,4	63,4	12,45	10,54

Tab. 2: Experimental training station - Veľký Meder

Variety	I. class (%)		TGW (g)		Starch (%)		Crude protein (%)	
	1998	1999	1998	1999	1998	1999	1998	1999
Atribut	83,2	91,3	43,8	46,3	57,9	62,2	13,05	12,63
Jubilant	89,0	88,0	40,4	41,2	61,6	64,5	12,96	10,75
Kompakt	87,5	90,9	41,0	44,3	61,8	66,4	12,97	11,25
Sladko	60,0	84,1	39,6	43,6	58,4	63,0	12,99	12,60
Progres	90,4	85,4	45,9	45,3	62,9	64,6	12,95	12,31
Average	82,0	87,9	42,1	44,2	60,52	64,1	12,98	11,91

Tab. 3: Experimental training station – Jakubovany

Variety	I. class (%)		TGW(g)		Starch (%)		Crude protein (%)	
	1998	1999	1998	1999	1998	1999	1998	1999
Atribut	65,4	93,5	50,2	46,7	58,9	65,2	12,2	10,4
Jubilant	58,0	92,3	40,6	41,6	61,6	65,8	12,2	9,9
Kompakt	61,3	91,5	44,2	44,4	65,1	65,7	11,1	9,7
Sladko	87,9	92,4	50,2	42,7	63,1	63,6	10,0	10,5