CORELATIONS BETWEEN PRODUCTION CHARACTERISTICS AND QUALITY ANALYSES RESULTS IN WINTER WHEAT VARIATIES AT THE CENTER FOR VARIETY TESTING (CVT) – DEJ

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Abstract. *In order for an examination as accurate as possible of the correlations in the case of winter wheat varieties between production parameters and quality bread making parameters an regression analysis has been carried out for some traits. In the case of production and quality parameters the regressions have been represented graphically for facilitating comparison operations of the existing relations between parameters.*

Keywords: correlations, hectolitric mass, the mass of a 1000 grain

INTRODUCTION

Besides their large production capacity, the winter wheat varieties cultivated must yield high protein content, superior technological as well as nutritious value of the berry, resistance to adverse environmental factors and tolerance to disease and pest.

The Center for Variety Testing– Dej carries out its activity in the area of deciduous forests, high hills crossed centrally by broad valleys, genuine depression couloirs, of the rivers Someşului Mare, Someşului Mic and Someş reunited after the confluence next to Dej town.

Geographically, the ecological area is bounded South by Transilvania plain. This area distinguishes itself clearly through the characteristics of the soil, climate and vegetation, elements which have been considered in the general delimitation of the area.

The multiannual values recorded at the Center for Variety Testing– Dej as made available by Dej meteorological station are as follows:

- Annual average temperature: +8,7° C
- Annual average pluviometry: 598,3 mm
- The coldest month of the year: January -32,2° C
- The warmest month of the year: July +37,6° C
- The most rainy month in vegetation season: July 99,2 mm
- The driest month in vegetation season: March 38,1 mm
- The period of frost on the ground: 20th of October – 20th of April
- The period of the first winter/autumn: 1st - 10th of October
- The period of the last spring frost: 20th - 30th of April

MATERIAL AND METHOD

The settlement method of the experiment was the Latin rectangle with 16 variants, in 5 repetitions with a harvesting area of the lot of 10 m2.

The biological material employed in the experiment consisted of zonal wheat varieties in the region as well a Romanian and foreign wheat varieties part of the testing process within the framework of the **State Institute for Variety Testing and Registration Bucharest**

Table 1

Agricultural works performed in during 2009- 2010 at CVT Dej

Works performed	2009- 2010
Seeding	02-10-2009
Seeding depth	4-5 cm
Seeding distance	12,5 cm
Ploughing	10-08-2009
Disk works	30-09-2009
Combinator works	01-10-2009
Clod crusher works	02-10-2009
Fertilization	Complex Fertilizer 20:20:00 400 kg. / ha on 18-02-2010
Herbicide	ICEDIN FORTE l L/ ha on 30-04-2010
Harvesting	14-07-2010

RESULTS AND DISCUSSION

The relation between the hectolitric mass and the mass of a 1000 grain is statistically relevant having a 0,35645 value which means that the hectolitric mass influences positively the value of the mass of a 1000 grain in the wheat varieties studied. Normally, the relation between the hectolitric mass and the mass of a 1000 grain should be negative, however in our case a positive and significant values has been identified. In figure 1 is to be noted that there are wheat varieties that have values of the mass of a 1000 grain of 50 grams and hectolitric mass of 79 kg/hl. This means that the wheat berries are well filled and have a shape that permits the filling of the spaces among them.

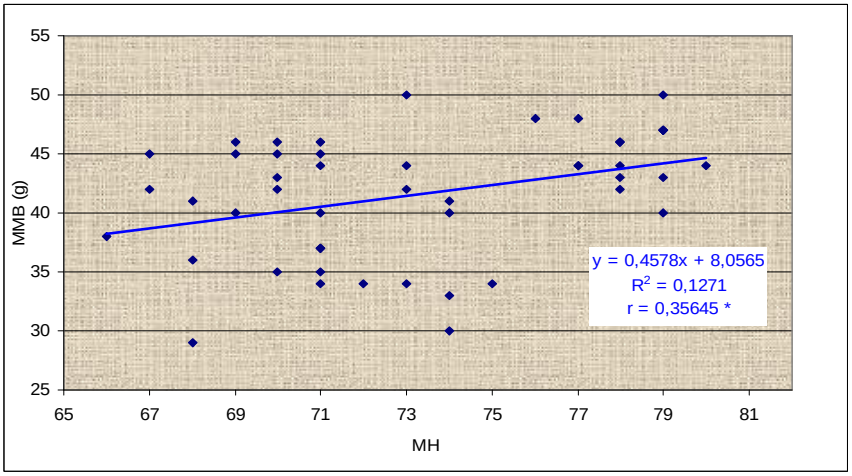

Fig.1. The relation between the hectolitric mass and the mass of a 1000 grain CVT Dej, 2008-2010

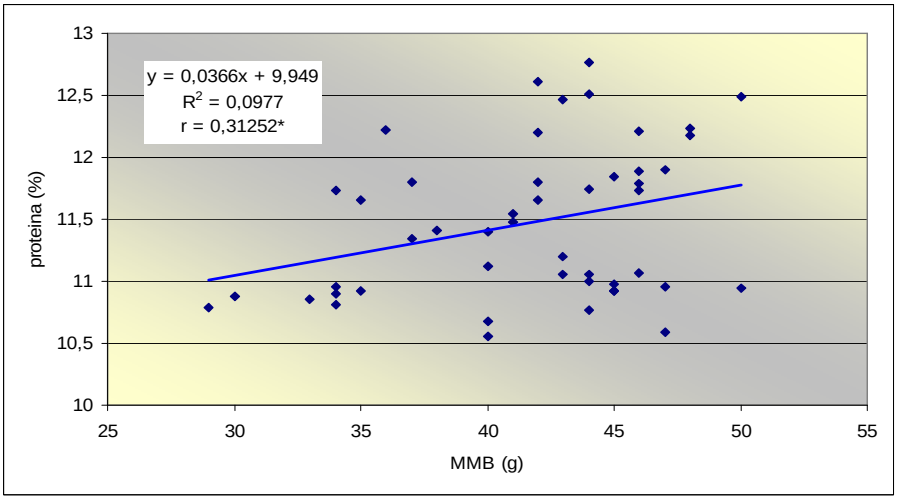

Fig. 2. The relation between the mass of 1000 grain and protein content at CVS Dej, 2008-2010

The relation between the mass of 1000 grain and protein content is statistically relevant with a regression value of 0,31252 which means that the value of the mass of 1000 grain influences positively the value of the protein content the latter increasing when the value of the mass of 1000 grain is higher.

It is a known fact that the wheat growers prefer wheat varieties which have a large and red berry. The data obtained during out experiments show that between these two traits there is a positive and significant relation. This relation can be explained by that fact that the wheat varieties that have a large berry have also a higher content of coat (bran) and as we know this coat is reach in protein which afterwards can be found only in whole-meal bread.

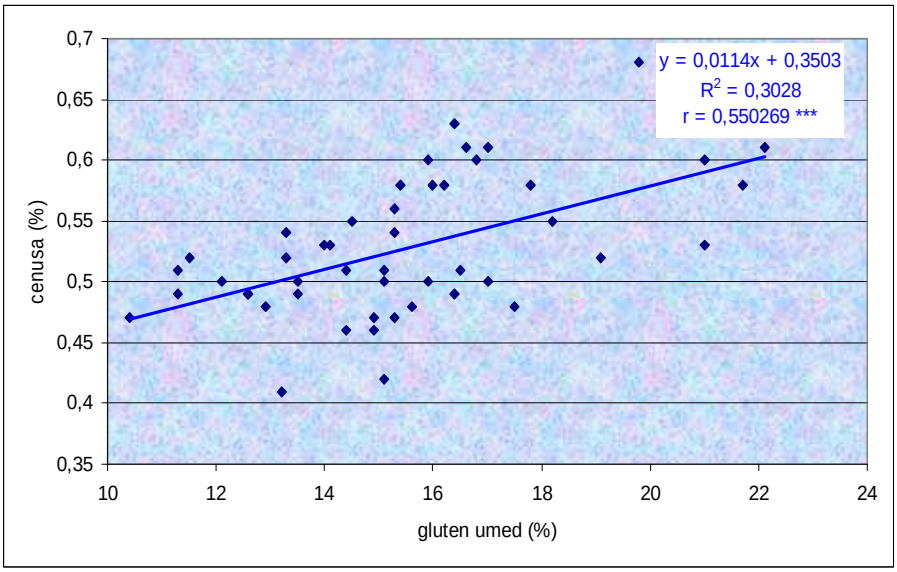

Fig.3. The relation between humid gluten and ash at CVT Dej, 2008-2010

The relation between humid gluten and ash is presented in figure 3 and is quite significant statistically because the regression value is 0,550269, the content of humid gluten influences positively the ash content in the wheat varieties studied. The existence of this relation can be understood by taking into account proteins, gluten respectively, which are more complex substances of which results by burning a much larger quantity of ash than by burning starch, for example. It is to be noted that all the winter wheat varieties studied have an ash content ranging from 0.47% to 0.68%, values that recommend them for bread-making.

CONCLUSIONS

Due to the important meteorological differences between the year during which the experiment has been carried out a great variability appears in the studied winter wheat varieties as well as in traits that has constituted the subject of the study. The data presented above reveals that fact that the ash is influenced greatly by the humid gluten content. The mass of 1000 grain influences greatly the protein content of the wheat berry and the hectrolitric mass influences positively the values of the mass of 1000 grain.

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