

PRODUCTION AND PROTEIN CONTENT IN SOME WINTER WHEAT VARIETIES IN THE SOMES EVERGLADE IN THE 2009-2010 CROP YEAR

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Abstract. *The present paper presents the experimental results obtained in the case of 16 varieties of winter wheat during the 2009-2010 crop year concerning the production of wheat berry, morphological characteristics, the date of the main phenological phases and laboratory analyses precisely protein content of the wheat berry and the description of the area where the experiments have been carried out.*

Keywords: winter wheat, production, protein

INTRODUCTION

The wheat is one of the oldest cultivated plants and the most important food plant, the bread made of wheat flour is a staple for the large part of the population all around the globe. The wheat is cultivated in over a hundred countries and represents a primary commercial source. The importance of the wheat lies in: the chemical composition of the berry and the proportion between carbohydrates and proteins in relation to the demands of the human organism; high ecological plasticity, being cultivated in areas with different climates (subtropical, Mediterranean, steppe continental) on different types of soil concerning the level fertility; the possibility of fully mechanized crop and thus obtaining low-cost production; the possibility of conservation, transportation and storage without alteration.

MATERIAL AND METHOD

The main objectives of the research that has been carried out concern the testing of production potential and the identification of some winter wheat varieties which in the ecological and crop conditions in the Somes everglade give productions as high as possible while the corresponding quality index for these wheat varieties are at optimal parameters.

The experiments have been carried out at the **Center for Variety Testing (CVT) - Dej** part of the **State Institute for Variety Testing and Registration Bucharest**.

The geographical coordinates of Dej town are as follows: 47° 09' North latitude and 23° 52' East longitude. The absolute altitude of the Somes valley is 235 m.

In the area served by CVT Dej the soil is typical for the region. It is located on slopes with an inclination of over 3 meters. These varieties of soil are poor in phosphorus and moderate stocked with potassium. The large majority of regional soil varieties pertain to luvisols. This category forms the absolute majority of the agricultural land in the area (75- 80 %). (www.istis.ro)

The multiannual values recorded at CVT Dej according to the data made available by the meteorological station Dej are as follows:

- The annual average temperature : +8,7° C

- The annual average pluviometric value: 598,3 mm

In the crop year 2009-2010, during the seeding month, October, and also in the following four winter months, the recorded temperature exceeded with approximately one degree Celsius the ten year average value recorded at Dej meteorological station. From March until harvest time the temperature was with approximately 1 up to 1, 5 Celsius degree below the ten year average value recorded.

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**

RESULTS AND DISCUSSION

The phenological data of the varieties of winter wheat at **Center for Variety Testing Dej** in the 2009-2010 crop year are presented in the table 1.

Table 1.

Phenological data of the varieties of winter wheat at the **Center for Variety Testing Dej** in the 2009-2010 crop year

Nr. crt.	Variety name	PHENOLOGICAL DATA		
		Emergence	Earing	Technical maturity
1.Mt.	Apullum	31.10.09	22.05.10	06.07.10
2.	Dropia	30.10.09	16.05.10	08.07.10
3.	Ardeal 1	31.10.09	22.05.10	08.07.10
4.	Liman	31.10.09	23.05.10	04.07.10
5.	Loial	01.11.09	18.05.10	07.07.10
6.	Litera	01.11.09	20.05.10	07.07.10
7.	Miranda	01.11.09	19.05.10	06.07.10
8.	Mirela	31.10.09	23.05.10	08.07.10
9.	Monada	30.10.09	17.05.10	02.07.10
10.	Mioara	01.11.09	25.05.10	06.07.10
11.	GKA Bani	31.10.09	28.05.10	10.07.10
12.	MV Kolo	29.10.09	22.05.10	03.07.10
13.	Nikifor	01.11.09	18.05.10	02.07.10
14.	Noroc	31.10.09	17.05.10	02.07.10
15.	Noian	01.11.09	20.05.10	07.07.10
16.	Livada	30.10.09	21.05.10	04.07.10

The emergence was recorded when 75% of the plants have sprang and it can be observed that the varieties studied emerged during the interval 29th of October -1st of November 2009 at approximately 29, 30 days since the planting date, with a day earlier than the variety control Apullum, but also in the same day with it. MV Kolo variety sprang first on the 29th of October followed by Dropia, Monada and Livda varieties a day later.

The earing was recorded when the ear was formed in case of 75% of the plants during the interval 16th -28th May 2010. The variety control Apullum eared on the 22nd of May 2010. Dropia variety eared first, six days before the control variety and the last variety that eared was GKA Ban, six days after the variety control.

The technical maturity was noted when berry humidity reached 17 %, at this point the variety being apt for mechanized harvesting. The technical maturity was recorded during the interval 2nd -10th of July 2010. The variety control Apullum reached technical maturity of the 06th of July 2010. The first varieties that reached technical maturity were Monada, Nichifor și Noroc, four days earlier than the variety control. The last variety that reached technical maturity was GKA Ban four days after the variety control.

Wheat Berry Production

The data concerning the production of the winter wheat varieties testes at the **Center for Variety Testing Dej** in 2010 in relation to the variety control Apullum are presented in table 2

Table 2
Winter wheat berry production tested at the **Center for Variety Testing Dej** in 2010

Nr. crt.	Variant	Production kg/ha	%	Difference	Signification
1.Mt.	Apullum	4275	100	0,00	Mt.
2.	Dropia	3475	81,3	-800,00	000
3.	Ardeal	4050	94,7	-225,00	0
4.	Liman	4625	108,2	350,0	***
5.	Loial	3900	91,2	-375,00	000
6.	Litera	4225	98,8	-50,00	-
7.	Miranda	4375	102,3	100,00	-
8.	Mirela	4200	98,2	-75,00	-
9.	Monada	4025	94,2	-250,00	00
10.	Mioara	3925	91,8	-350,00	000
11.	GKA Bani	3450	80,7	-825,00	000
12.	MV Kolo	3900	91,2	-375,00	000
13.	Nikifor	3725	87,1	-550,00	000
14.	Noroc	4125	96,5	-150,00	-
15.	Noian	3850	90,1	-425,00	000
16.	Livada	4375	102,3	100,00	-

DL (P 5 %)	171,31
DL (P 1 %)	229,26
DL (P 0,1 %)	300,00

From the varieties part of the study (Table 2) Liman variety it was noted with a production of 4625 kg/ha significantly larger than that of the variety control Apullum. The

other varieties had smaller productions or approximate equal to the variety control production. Miranda și Livada varieties had larger production than the variety control but not in a significantly larger.

The data concerning the protein content in the winter wheat varieties tested at the **Center for Variety Testing Dej in 2010** are presented in figure 1.

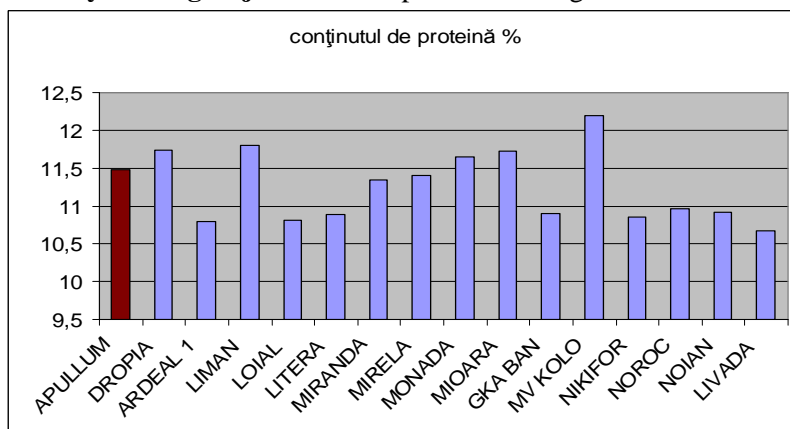


Fig. 1. Protein content in the winter wheat varieties tested at the Center for Variety Testing Dej in 2010

The row protein from dry substance has to be between 12-14 % in order for the variety to be of good quality. Only MV Kolo variety fits the range. Nevertheless the other varieties yield good protein values as well all of them being over 10,68 %. The variety control Apullum had a 11,48 % protein content.

CONCLUSIONS

The meteorological conditions of the crop year 2009-2010 have influenced greatly the wheat production and the content of protein in the varieties of winter wheat tested at CVT Dej, still the phenological data remain within the normal period. Because to prolonged draught in the spring winter wheat production had to suffer affecting in a negative manner the content of protein of the wheat berry in the case of the winter wheat varieties studied.

REFERENCES

1. Bîlteanu Gh., 2001, *Fitotehnie*, vol. II. Ed. Ceres București
2. Ceapoiu N. și colab., 1984, *Grâul*, Ed. Academiei București
3. Cernea S., 1997, *Fitotehnie*, Ed. Genesis, Cluj-Napoca
4. Muntean L.S., Borcean I., Axinte M., Roman Gh. V., 2003, *Fitotehnie*. Ed. Ion Ionescu de la Brad, Iași.
5. Muntean L. S., Cernea S., Morar G., Duda M. M., Vârban I. D., Muntean S., 2008, *Fitotehnie*, Editura AcademicPres, Cluj- Napoca.
6. Sin Gh. (colectiv), 2000, *Tehnologii moderne pentru cultura plantelor de câmp* Editura Ceres, București.
7. www.madr.ro
8. www.istis.ro
9. www.agrobussines.ro
10. www.gazetadeagricultura.ro