THE INFLUENCE OF TECHNOLOGY MEASURES ON THE REDUCING EFFECT OF DROUGHT AT WINTER WHEAT CROP

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Abstract

Romania's agriculture, like many other countries in the world, facing droughts, severely affecting crop production, animal life, people and, ultimately, the economy. Accelerating droughts, desertification and desertification were caused and continues to worsen due to neglect negative effects of technological progress and intensive industrialization had on the environment, particularly climate. The present work aims to determine the influence of soil and variety on the diminishing effect of drought by winter wheat crop with the intention of finding the best option to work. Influence of soil and associated works on the production of wheat variety yields the highest yields by making fall plowing as basic work, regardless of the variety used. Replacement the plowing with combiner or direct seeding, determined to obtain lower production up to 1400 kg / ha for Glosa and up to 1900 kg / ha for Izvor. Use in culture a variety Izvor to achieve a production of 5200 kg/ha compared to the control variant Boema, who achieved a production of 4900 kg/ha. Using the Izvor variety determined to obtain a significant production increase of 300 kg/ha. In similar climatic conditions of agriculture in 2012, which although precipitation surplus (at certain times), their poor distribution of the April and May, accompanied by a high temperature control throughout the growing season will mark the achievement of normal production the wheat crop, between 4000 - 6000 kg/ha. The experimental results obtained regarding the influence the basic work of soil and variety on wheat production highlight the significant role of these factors.

Key words: wheat, variety, tillage, fertilization

To establish sustainable farming conservation tillage is necessary especially in the arid areas of the world. Otherwise, increasing the cost of fuel in tillage operations are reducing the time are getting the main factor for changing the conventional farm techniques. The minimum tillage and direct seeding are some of the methods that farmers apply recently for a long-term farming with minimum fuel cost (Kosutic S. et al, 2005). The other experimental results showed that yield performance between conventional method and reduced tillage were not significant (Akbarnia A. et al, 2010; Khosrovani A. et al, 2003) by evaluation and comparison of minimum tillage and conventional tillage and the effects of these two systems on wheat, reached to the fact that the ratio of seed performance in shallow tillage to conventional tillage is approximately 92%. Liebig M.A. et al., 2004, made a research in which they examined interactive effects of tillage, crop sequence, and cropping intensity on soil quality indicators for two long term cropping system experiments. Hemmat A. and Asadi A., 1998, proved the effect of direct cultivation and conventional tillage on performance of wheat seed which was cultivated in fall under the irrigated condition. Results have shown that conventional tillage and no-till had the most and the least performance. Replacing the soil plowing with discing tillage to base depth of 10-12 cm over 1-2 years did not significantly affect the production.

MATERIAL AND METHOD

The experiments were designed to determine the influence of tillage and variety on wheat production in the soil and climate of the south. To determine the optimal technology for the cultivation of wheat to see how different wheat varieties react to different tillage methods and the interaction of these factors. It was also observed how behaved the varieties in terms of quality indicators. Observations and measurements were performed in 2012, with the following factors and degrees:

- soil tillage: a1 - plowing + disk + combinator, a2 - Combinator, a3 - Direct sowing
- variety of wheat: b1 - Boema, b2 - Glosa, b3 - Izvor

The experiment was located on a uniform in terms of fertility and microrelief on a chernozem soil class. Module type was two-factor experiment and was arranged after the method subdivided parcels in three repetitions.

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RESULTS AND DISCUSSIONS

Variance analysis on the influence of tillage and variety on wheat production shows the significant differences at the two experimental factors and the interaction between soil tillage x variety (*table 1*).

The *figure 1* shows the influence of soil tillage on yield of wheat in the conditions of 2012. From the data that the highest yield of 5611 kg / ha was obtained in the variant with plowing + disc + combined. Replacement by tilling the combiner caused drop in production with 314 kg / ha, the difference is very significant.

Also, the work of direct seeding technology applied as a link instead of plowing + disk + combined, resulted in a decrease in production of 1641 kg / ha, this difference is very significant.

The influence of the variety on the production of wheat in the conditions 2012 is shown in *table 2*. Using a Izvor variety crop to achieve a production of 5202 kg/ha compared to the control variant Boema, who achieved a production of 4924 kg/ha. Using Izvor variety determined to obtain a very significant production increase of 278 kg/ha.

Table 1

Analysis of variance to experience regarding the influence of tillage and the variety on the production of wheat in 2012

Variant	SP	GL	S^2	F_C	Ft		Semnification
					5%	1%	
A	13649420	2	6824708	2588.65	6,94	18,00	**
E_A	10545	4	2636.389				
B	92053	2	462026.7	119.91	5,99	13,74	**
A X B	162936	4	40734.17	10.93	5,14	10,92	**
E_B	46237	12	3853.08				

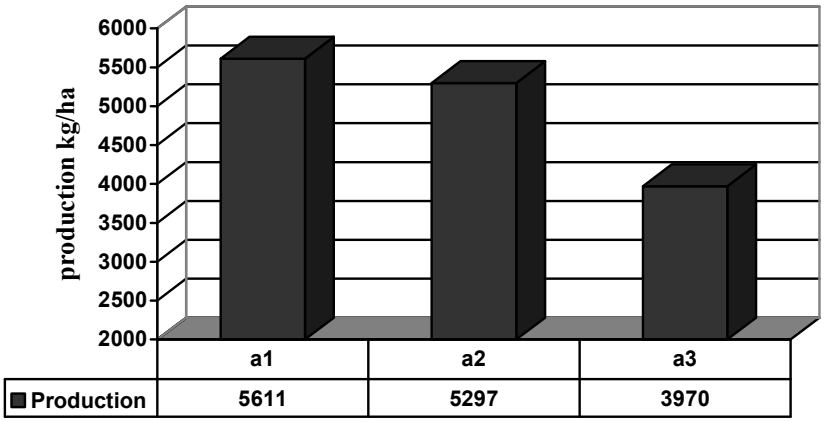

Figure 1 **The influence of soil tillage on the production of wheat in 2012**

Tabelul 2

The influence of fertilization on wheat production (kg/ha) in 2012

Variant	Production	%	Diferences	Semnification
B_1- Boema	4924	100	Mt	-
B_2- Glosa	4753	97	-171	***
B3- Izvor	5202	106	278	***
	DL5%=63	DL1%=89	DL0.1%=126	

The influence associated of soil tillage and variety on the production of wheat in terms of 2012 is shown in *figure 2*. The data presented shows that the highest yields were obtained by carrying out the work of plowing + disk + combined regardless of the variety used. Replacing plowing + disk + combiner with combiner or direct seeding, resulted in lower yields obtained with 236-1423 kg / ha for Glosa and 404-1882 kg/ha for Izvor.

If you make multiple comparisons between the variants of soil tillage and variety used resulting the superiority same options.

The agricultural year 2012, although recorded a surplus of precipitation (in some periods), their poor distribution of the April and

May, accompanied by a high thermal conditions throughout the growing season marked the achievement of normal production contained wheat crop between 3970 - 5964 kg / ha (*table 3*).

Experimental data regarding the influence of the basic tillage of soil and variety on wheat production highlight the significant role of these factors.

From the analysis of the interaction of these factors can notice a reduction in production of all varieties used (Boema, Glosa and Izvor) in variants directly seeded and work with combiner, compared to the control variant (plowing + disk + combinator) with values as distinct and highly statistically significant range of 236-1882 kg/ha.

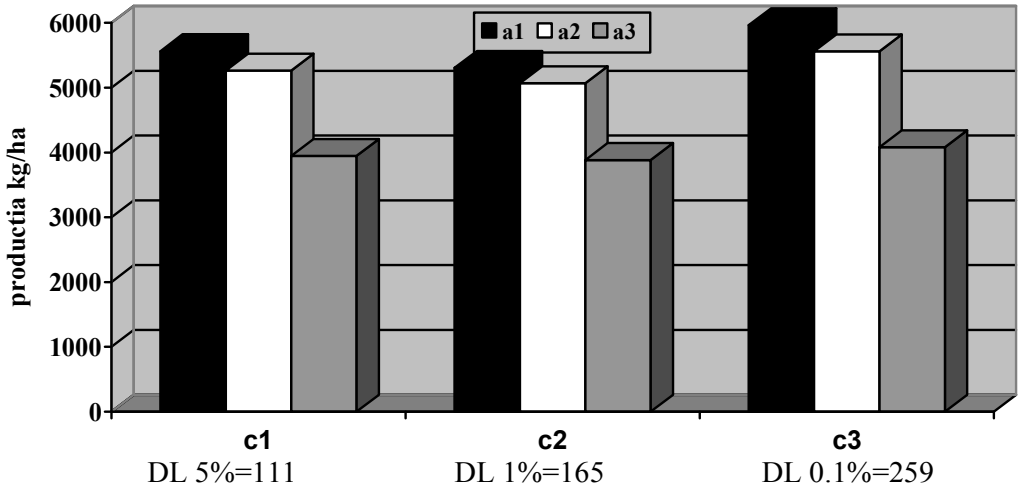

Figure 2 **The influence of soil tillage on the production of wheat depending on the variety**

Tabel 3

Summary data regarding the influence of soil tillages and the variety on the production of wheat in 2012 (kg/ha)

Variant	B1	B2	B3	Production average
A_1	5562	5306	5964	5610
A_2	5263	5070	5560	5297
A_3	3946	3883	4082	3970
Production average	4923	4753	5202	**4949**

Interaction of factors	Value DL		
	5%	1%	0.10%
For comparisons between variants of soil tillage	67	111	208
For comparisons between variants of the variety	64	89	126
For comparisons between tillage variants on the same version of the variety	111	165	259

CONCLUSION

In terms of a relatively dry year, the wheat crop technology in terms of variants studied consists of seedbed preparation after plowing the basic work + disk + combinator and use the Izvor variety.

In case of wheat crop, sowing directly lead to a decrease in production regardless of the genetic variety used.

The reaction of varieties to interaction of studied factors, we find an approximately linear behavior of the three varieties.

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