

TECHNOLOGY ELEMENTS WITH IMPLICATIONS UPON SEED PRODUCTION OF THE „ARIESAN” AUTUMN WHEAT VARIETY

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Abstract. *The seed production potential can be improved a lot by applying an optimal technology of growing, starting by locating the seed lot after a good, and well-balanced forerunner fertilization, disease control, weed control, pest, harvesting the ripe, a right storage.*

Keywords: Nitrogen fertilization, sowing times, planting density, quality indicators, protein, wet gluten.

INTRODUCTION

Wheat is the most important cereal food in the world. Grains have a high nutrient content, necessary for human body, as well as in industry to starch, glucose, dextrin and alcohol manufacturing. One of the main characteristics of a wheat variety is yield stability, that is, the most complete capacity to produce under limiting environmental conditions.

MATERIAL AND METHOD

Considering nitrogen among other nutrients, it has a complex action as it undergoes the largest fluctuations within soil. Doses have to be well set because plants need this element easy leachate during the whole vegetation period. The gradual use of this factor was N₆₀ and N₁₂₀. Three data were used for the sowing times: 25IX, 10X, 10XI, and five data for the planting density: 100, 200, 400, 500, 700 germinable seeds/sqm. The used biological link was the basic (B) of the Ariesan autumn wheat.

RESULTS AND DISCUSSION

The unilateral study of factor (A), fertilization level, points to a significant increased production by using the 120kg/ha dose.

Table 1
**The unilateral comparison of the A factor- fertilization dose - on the seed yield of the
“Ariesan” winter wheat cultivar, Cluj-Napoca (2001-2004)**

No	A factor Fertilization dose	Average yield (q/ha)	Relative yield (%)	Difference to the control (q/ha)	Significance
1	a ₁ =N ₆₀	47.8	100.0	mt	-
2	a ₂ =N ₁₂₀	53.7	112.3	5.9	xxx
	DL 5%=2.34 q/ha	DL 1%=3.71 q/ha		DL 0.1%=5.03 q/ha	

Table 2

The influence of the nitrogen fertilizers on the protein content of the wheat grains in the “Ariesan” cultivar, Cluj-Napoca (2001-2004)

Variant	2001-2002		2002-2003		2003-2004		Media 2001-2004	
	Proteins	%	Proteins	%	Proteins	%	Proteins	%
N ₆₀	14.2	100.0	13.8	100.0	14.8	100.0	14.3	100.0
N ₁₂₀	15.1	106.3 ^x	14.7	106.5 ^x	15.3	103.4	15.0	104.9
DL 5%		5.3		6.2		6.7		

By applying nitrogen fertilizers one can bring about efficiency upon the protein percent of the wheat grains. This efficiency depends on one side on the application results and on the climate conditions during that year.

Gluten quality is mainly influenced by genetic factors. There is a statistically certified percentage increase during each experimental year by doubling the nitrogen quantity.

Table 3

The influence of the nitrogen fertilizers on the wet gluten content of the wheat grains in the “Ariesan” cultivar, Cluj-Napoca (2001-2004)

Variant	2001-2002		2002-2003		2003-2004		2001-2004	
	Wet gluten	%	Wet gluten	%	Wet gluten	%	Wet gluten	%
N ₆₀	30.1	100.0	29.2	100.0	31.3	100.0	30.2	100.0
N ₁₂₀	33.4	110.9 ^x	32.8	108.8 ^x	34.3	109.6 ^x	33.5	109.8
DL 5%		7.9		8.3		8.7		

Table 4

The unilateral comparison of the B factor- the sowing period - on the seed yield of the “Ariesan” winter wheat cultivar, Cluj-Napoca (2001-2004)

No	The B factor Sowing period	Average yield (q/ha)	Relative yield (%)	Difference to the control (q/ha)	Significance
1	b ₁ = 25 IX (mt)	50.12	100.0	-	-
2	b ₂ = 10 X	59.33	118.3	9.21	xxx
3	b ₃ = 10 XI	54.41	108.6	4.29	x
	DL 5%=3.88 q/ha		DL 1%=5.33 q/ha		DL 0.1%=8.66 q/ha

The best production results are obtained when sowing time is about the date 10X. Early or late sowing lead to significant production loss.

The above mentioned data point to the fact that sowing time doesn't have a determined influence upon the wheat grain quality.

Table 5

The influence of the sowing period on the protein content of the wheat grains in the “Ariesan” cultivar, Cluj-Napoca (2001-2004)

Variant	2001-2002		2002-2003		2003-2004		2001-2004	
	Protein	%	Protein	%	Protein	%	Protein	%
25 IX (mt)	14.3	100.0	13.6	100.0	14.4	100.0	14.1	100.0
10 X	14.7	102.7	14.0	102.9	14.5	100.7	14.4	102.1
10 XI	14.5	101.4	14.0	102.9	14.6	101.6	14.4	102.1
DL 5%	5.1		5.7		5.8			

Table 6

The influence of the sowing period on the wet gluten content of the wheat grains in the “Ariesan” cultivar, Cluj-Napoca (2001-2004)

Variant	2001-2002		2002-2003		2003-2004		2001-2004	
	Wet gluten	%	Wet gluten	%	Wet gluten	%	Wet gluten	%
25 IX (mt)	28.0	100.0	26.0	100.0	28.4	100.0	27.5	100.0
10 X	28.4	101.4	26.8	103.0	28.6	100.7	27.9	101.5
10 XI	28.1	100.4	27.0	103.9	28.4	100.0	27.2	99.0
DL 5%	6.8		7.4		7.9			

Table 7

The unilateral comparison of the C factor- the sowing density - on the seed yield of the “Ariesan” winter wheat cultivar, Cluj-Napoca (2001-2004)

No	The C factor Sowing density	Average yield (q/ha)	Relative yield (%)	Difference to the ctrl (q/ha)	Significance
1	C ₁ = 100 germinative grains/sq m	35.60	75.2	11.67	000
2	C ₂ = 200 germinative grains/sq m	38.80	82.5	8.73	000
3	C ₃ = 400 germinative grains/sq m	45.22	95.5	2.11	0
4	C ₄ = 500 germinative grains/sq m	47.33	100.0	-	-
5	C ₅ = 700 germinative grains/sq m	45.11	95.3	2.22	0
		DL 5%=2.08 q/ha	DL 1%=5.35 q/ha	DL 0.1%=6.33 q/ha	

Out of the unilateral study of factor C, sowing density and one can notice that all other densities lead to production loss as compared to the 500 germinable seeds/sqm densities.

Table 8

The influence of the sowing density on the protein content of the wheat grains in the “Ariesan” cultivar, Cluj-Napoca (2001-2004)

Variant	2001-2002		2002-2003		2003-2004		2001-2004	
	Protein	%	Protein	%	Protein	%	Protein	%
C ₁ 100 germin.grains/sqm	14.7	97.5	14.5	97.3	15.8	100.0	15.0	99.3
C ₂ 200 germin.grains/sqm	14.7	97.5	14.3	95.3	15.8	100.0	14.9	97.6
C ₃ 400 germin.grains/sqm	14.8	98.0	14.5	97.3	15.4	97.5	14.9	97.6
C ₄ 500 germin.grains/sqm	15.1	100.0	14.9	100.0	15.8	100.0	15.3	100.0
C ₅ 700 germin.grains/sqm	14.0	92.7 ⁰	14.0	94.0 ⁰	14.3	90.5 ⁰	14.0	92.7
DL 5%	5.1		6.0		7.3			

Table 9

**The influence of the sowing density on the wet gluten content of the wheat grains in the
“Ariesan” cultivar, Cluj-Napoca (2001-2004)**

Variant	2001-2002		2002-2003		2003-2004		2001-2004	
	Wet gluten	%	Wet gluten	%	Wet gluten	%	Wet gluten	%
C ₁ 100 germin.grains/sqm	28.0	98.9	28.0	100.7	28.1	99.3	28.0	99.6
C ₂ 200 germin.grains/sqm	27.9	98.6	27.9	100.0	28.0	98.9	27.9	99.2
C ₃ 400 germin.grains/sqm	27.8	98.2	26.8	94.8	28.0	98.9	27.5	97.3
C ₄ 500 germin.grains/sqm	28.3	100.0	27.9	100.0	29.3	100.0	28.2	100.0
C ₅ 700 germin.grains/sqm	27.1	95.8	26.9	95.1	27.2	96.1	27.1	95.7
DL 5%		6.8		6.3		7.4		

Qualitative aspect of wheat grain is not influenced if there are optimal conditions for the assimilation space.

CONCLUSIONS

Productive and qualitative potential within the seed producing process can be well improved by applying an optimal culture technology. By using a 120kg/ha nitrogen dose, efficient from an economic point of view, optimal sowing times and a corresponding density of 500 germinable grains/sqm one provide a steady equilibrium between genetic factors and physiological show of the biologic material under the influence of medium and technological factors and that does assure a balanced productive component reflected in the production quality as well.

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