

ECONOMIC EFFECTIVENESS OF WINTER WHEAT CROPS

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Abstract. *Multiplication in the phases of seed production process and economic response. The economic indicators were calculated for two biological stages of seed (Base and Certified I), used for initiating commercial crops. A comparison between the economic effectiveness indicators of the two seed categories reveals an increase of the profit rate/ha in the case of Base seed (B), with values going from 34.27% for the unfertilized variant to 50.79% for the $N_{100}P_{100}$ variant. The data presented here emphasizes on the fact that production costs decrease proportionally with the increase in the quantity of fertilizer, and also that profitability is positive for any kind of fertilizer.*

Keywords: seed production, biological stages, economic indicators.

INTRODUCTION

According to their nature, production factors can be natural and economic. Both of them can influence, through structure and usage, the production costs per unit. However, it is important to note the fact that natural factors do not bear total costs, they can be only modelled by means of production functions, unlike economic factors that can be modelled both through economic and production functions (Merce and Ivan, 2005).

MATERIAL AND METHOD

The economic effectiveness indicators for sustainable wheat seed crops were established considering the estimated average yields, the different fertilization agrofonds, as they were obtained in several certified seed production units.

The fertilization variants correspond to the different quantities of simple and complex fertilizers that were applied: N_0P_0 – the unfertilized variant; $N_{50}P_0$ – the variant fertilized with 150 kg/ha ammonium nitrate; $N_{50}P_{50}$ – the variant fertilized with 250 kg/ha ammonium nitrate; $N_{100}P_{100}$ – the variant fertilized with 500 kg/ha ammonium nitrate.

RESULTS AND DISCUSSION

The economic indicators were calculated for two biological stages of seed (Base and Certified I), used for initiating commercial crops. The results concerning the estimated expenses list for different fertilization variants, as well as the resulted income are presented for the Base seed (B) and for the Certified I seed (SC I) (Tables 1-9). The model of the estimated expenses list can be found in Table 1 and the costs of the fertilized variants were calculated according to it.

The data presented in the table show the fact that, as far as the economic indicators for the Base seed are concerned, there is a relation of direct

proportionality between the profit rate/ha, the yield levels and the expenses corresponding to each fertilization variant, with values ranging between 43.80%, for the unfertilized variant, and 116.48% for the N₁₀₀P₁₀₀ variant.

A comparison between the economic effectiveness indicators of the two seed categories reveals an increase of the profit rate/ha in the case of Base seed (B), with values going from 34.27% for the unfertilized variant to 50.79% for the N₁₀₀P₁₀₀ variant.

As for the profit rate per kilogram of product, the values obtained for the Base seed (B) are superior to those obtained for the certified seed (SC I), ranging between 33.87% for the unfertilized seed and 50.23% for the N₁₀₀P₁₀₀ variant.

Table 1

Expenses bill for the N₀P₀ variant and base seed

a. Mechanical work		Total value (RON)	% of total expenses			
1	Tilling	120				
2	Discing+ harrowing+ leveling	80				
3	Lucrare cu combinatorul	45				
4	Application of chemical fertilizers (2x)	26				
5	Sowing	50				
6	Application of herbicides (MET)	30				
7	Disease and pest treatment (2x)	40				
8	Harvesting	120				
9	Transport	24				
Total mechanical work		535	38%			
b. Manual work		Total value (RON)	% of total expenses			
1	Sowing machine attendance	6				
2	MA attendance	3				
3	MET attendance	3				
4	Helicopter attendance	2				
Total manual work		14	1%			
c. Seed conditioning work		Total value (RON)	% of total expenses			
1	Seed conditioning + treatment	276				
2	Field certification + laboratory tests	60				
Total conditioning work		336	24%			
d. Material expenses		U.M.	Norm/ha	Unitary price	Total value (RON)	% of total expenses
1	Seed	kg	260	0,7	175	
2	Chemical fertilizers (N ₀ P ₀) - V 1, 2, 3, 4	-	-	-	-	
3	Disease and pest treatment					
	▪ Diseases - Tango super	1	0,8	0,09	72	
	- Carbendazin	1	0,6	0,03	18	
	▪ Pests - Alfametrin 10EC	1	0,1	0,04	4	
- Decis 25 EC	1	0,3	0,075	22		
▪ Herbicide - Mustang	1	0,5	0,05	25		
Total material expenses					316	23%
Total direct expenses					1201	87%
e. Indirect expenses (15%)					180	13%
TOTAL EXPENSES					1381	100%

Table 2

Income from the N₀P₀ variant and base seed

	Variant	Specification	Average yield kg/ha	Unitary price (RON)	Total value (RON)
1	N ₀ P ₀	Seed	2982	0,65	1938,3
		Sub product	238	0,2	47,6
		Total income			1985,9
		Profit			604,9
		Profit rate (%)			0.30%

Note: The income has been calculated with a seed efficiency of 92%, to which the value of the secondary yield has been added (sub product - 8%).

Table 3

Income from the N₅₀P₀ variant and base seed

	Variant	Specification	Average yield kg/ha	Unitary price (RON)	Total value (RON)
1	N ₅₀ P ₀	Seed	3403	0,65	2212
		Sub product	272	0,2	54,4
		Total income			2266,4
		Profit			802,4
		Profit rate (%)			0.35%

Note: The income has been calculated with a seed efficiency of 92%, to which the value of the secondary yield has been added (sub product - 8%).

Table 4

Income from the N₅₀P₅₀ variant and base seed

	Variant	Specification	Average yield kg/ha	Unitary price (RON)	Total value (RON)
1	N ₅₀ P ₅₀	Seed	4633	0,65	3011,5
		Sub product	370	0,037	74
		Total income			3085,5
		Profit			1434,5
		Profit rate (%)			0.46%

Note: The income has been calculated with a seed efficiency of 92%, to which the value of the secondary yield has been added (sub product - 8%).

Table 5

Income from the N₁₀₀P₁₀₀ variant and base seed

	Variant	Specification	Average yield kg/ha	Unitary price (RON)	Total value (RON)
1	N ₀ P ₀	Seed	5973	0,65	388,5
		Sub product	478	0,2	95,6
		Total income			3978,1
		Profit			2140,1
		Profit rate (%)			0.54%

Note: The income has been calculated with a seed efficiency of 92%, to which the value of the secondary yield has been added (sub product - 8%).

Table 6

Income from the N₀P₀ variant and certified seed I

	Variant	Specification	Average yield kg/ha	Unitary price (RON)	Total value (RON)
1	N ₀ P ₀	Seed	2660	0,55	1463
		Sub product	213	0,2	42,6
		Total income			1505,6
		Profit			131,6
		Profit rate (%)			0.87%

Note: The income has been calculated with a seed efficiency of 92%, to which the value of the secondary yield has been added (sub product - 8%).

Table 7

Income from the N₅₀P₀ variant and certified seed I

	Variant	Specification	Average yield kg/ha	Unitary price (RON)	Total value (RON)
1	N ₅₀ P ₀	Seed	3040	0,55	1672
		Sub product	243	0,2	48,6
		Total income			1720,6
		Profit			263,6
		Profit rate (%)			1,53%

Note: The income has been calculated with a seed efficiency of 92%, to which the value of the secondary yield has been added (sub product - 8%).

Table 8

Income from the N₅₀P₅₀ variant and certified seed I

	Variant	Specification	Average yield kg/ha	Unitary price (RON)	Total value (RON)
1	N ₅₀ P ₅₀	Seed	4150	0,55	2282,5
		Sub product	332	0,037	66,4
		Total income			2348,9
		Profit			704,9
		Profit rate (%)			3%

Note: The income has been calculated with a seed efficiency of 92%, to which the value of the secondary yield has been added (sub product - 8%).

Table 9

Income from the N₁₀₀P₁₀₀ variant and certified seed I

	Variant	Specification	Average yield kg/ha	Unitary price (RON)	Total value (RON)
1	N ₀ P ₀	Seed	5360	0,55	2948
		Sub product	429	0,2	858,4
		Total income			3033,8
		Profit			1202,8
		Profit rate (%)			3,96%

Note: The income has been calculated with a seed efficiency of 92%, to which the value of the secondary yield has been added (sub product - 8%).

CONCLUSIONS

The data presented here emphasizes on the fact that production costs decrease proportionally with the increase in the quantity of fertilizer, and also that profitability is positive for any kind of fertilizer.

As a conclusion, for superior biological categories (Base), with higher market prices, even under the conditions of lower levels of fertilization and, consequently, lower yields, the profit that can be obtained is still higher than in the case of an inferior category of seed, like the Certified I (SC I) type.

REFERENCES

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