THE VARIATION OF QUAN TITATIVE PHYSIOLOGICAL INDEX IN THE TRANSGENIC SOYA CASE CULTIVATED IN DIFFERENTIALLY CONDITIONS

VARIAȚIA INDICATORILOR FIZIOLOGICI CANTITATIVI ÎN CAZUL SOIEI TRANSGENICE CULTIVATE ÎN CONDIȚII DIFERENȚIATE

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Abstract: *The mains physiological indexes which were followed through the present research were: the leaf area at the soya plants as well the determination of azote and phosphorus from the plant. In the conditions in which the plants are treated with differentially nutritional solutions, it is observed that both in the transgenic plants case and in the intransgenic one the leaf surface in higer at the variants with complete nutritional solution than with the solution without azote or without phosphorus, and the quantity of azote, in plants increases in the same conditions. The phosphory from the plants increases both at the plants treated with complete solution and incomplete thanks to the fact that the phosphorus is easily accessible to the plants in the both conditions.*

Rezumat: *Principalii indicatori fiziologici care au fost urmăriți prin prezenta cercetare sunt: suprafața foliară la plantele de soia precum şi determinarea de azot şi fosfor din plantă. În condițiile în care plantele sunt tratate cu soluții nutritive diferențiate se constată că atât în cazul plantelor transgenice cât şi cele netransgenice suprafața foliară este mai mare la variantele cu soluție nutritivă completă decât la cele cu soluție fără azot sau fără fosfor, iar cantitatea de azot în plante creşte în aceleaşi condiții. Fosforul din plante creşte atât la plantele tratate cu soluție completă cât şi incompletă datorită faptului că fosforul este uşor accesibil plantelor în ambele condiții.*

Key words*: physiological index, leaf surface, transgenic soy plants, nutritional solution.*
Cuvinte cheie*: indicatori fiziologici, suprafață foliară, plante de soia transgenice, soluție nutritivă.*

INTODUCTION

The physiological index studied in the present paper (the surface area), the azote and phosphorus at the soya plants, have an importance in the intensity characterization of metabolic processes growth, photosynthetesis, breath, etc. in time were elaborated many principles and methods for the physiological index determination.

MATERIAL AND METHOD

For the determination and pursueding of the physiological index we were used both transgenic soya plants (figure 1, 2), from the S2254RR (P5, P6, P7, P8) variety and intransgenic soya plants from the (P1, P2, P3, P4) Perla variety which were treated with different nutritional solutions.

Figure 1. Experiment installing

Figure 2. Analyzed soja plants

RESULTATES AND DISCUSSIONS

The leaf surface was calculated according the linear equation after Şumălan R. şi Dobrei C. (table 1).

Table 1

Foliar surface at the soya plants

Variant	Complete solution	Solution without azote	Solution without phosphorus
P1	135,77	126,55	72,98
P2	98,89	83,47	73,89
P3	125,51	94,68	83,66
P4	135,60	101,15	83,46
P5	91,65	84,06	75,14
P6	99,91	90,80	70,02
P7	96,40	90,86	76,54
P8	84,46	79,63	72,98

The leaf surface at the plants treated with complete nutritional solution is about 84,46 in the P8 variant case and 135,77 at the P1 variant. In the plants case treated with nutritional solution without azote, the leaf surface decreases the minimum of the P8 variant and the maximum in the case of P1 variant. At the plants which were treated with nutritional solution without phosphorus the total surface decreased significantly opposite the variant in which the plants ware treated with complete nutritional solution. At these the limits alternate between 70,02 at P6 variant and 83,66 at P3 variant (figure3).

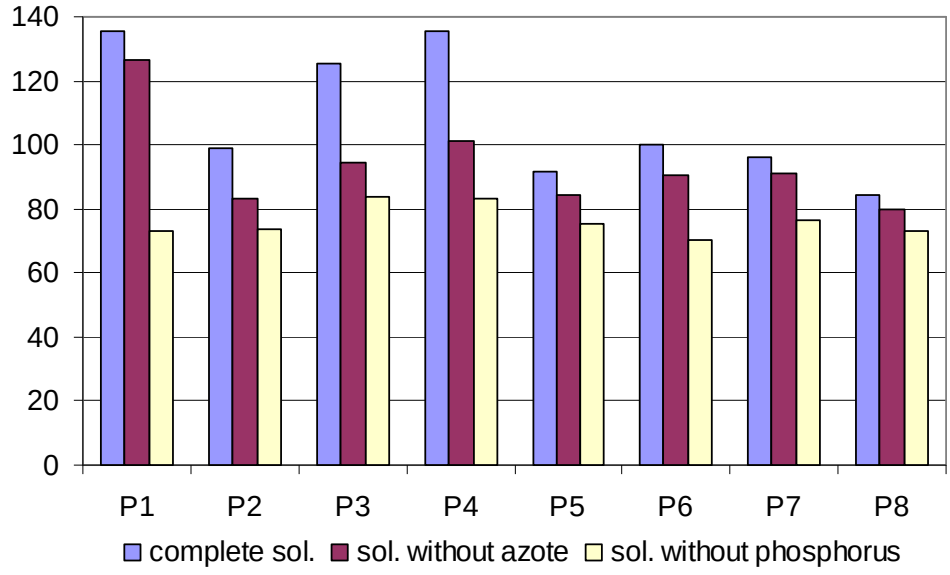

Figure 3. Foliar surface of soya leavers

For azote content determination from the plant was used the Kjeldahl method, and for phosphorus content determination was used the "Phosphorus measuring method in a calorimeter way".

Table 2.

The azote and phosphorus in the leaves treated with complete solution

Variant complete sol	.N plant %	P_2O_5 plant %
P1	4,53	2,1
P2	3,98	2,0
P3	4,22	2,4
P4	4,35	1,9
P5	3,98	2,0
P6	3,88	1,9
P7	4,20	2,6
P8	4,40	1,9

Table 3.

The azote and phosphorus in the leaves treated with solution without azote

Variant sol. without azote	N planta %	P_2O_5 plant %
P1	2,54	2,5
P2	1,22	2,6
P3	2,62	2,4
P4	2,43	2,1
P5	1,48	2,4
P6	2,13	1,7
P7	2,80	2,0
P8	3,48	2,0

Table 3.

The azote and phosphorus in the leaves treated with solution without phosphorus

Variant sol.. without phosphorus	N planta %	P_2O_5 planta %
P1	1,40	2,1
P2	1,78	2,0
P3	2,00	2,4
P4	2,40	2,1
P5	2,20	1,9
P6	2,10	1,8
P7	1,52	2,2
P8	2,44	2,5

In the case of plants which were treated with complete nutritional solution, the azote in the plant alternates between 3,88 in the P6 variant, utile 4,53 in the case of P1 variant, and the phosphorus alternates between 1,9 at the P6, P8 variants and 2,6 at P7 variant.

After the treatment of the plants with azote, the azote content from the plant decreases, between 1,40 at the P1variant and 2,44 at the P8 variant. In the case in which the plants are treated with phosphorus, the azote quantity decreases, the smallest value is found out at the P2 variant, and the maximum at the P8 variant.

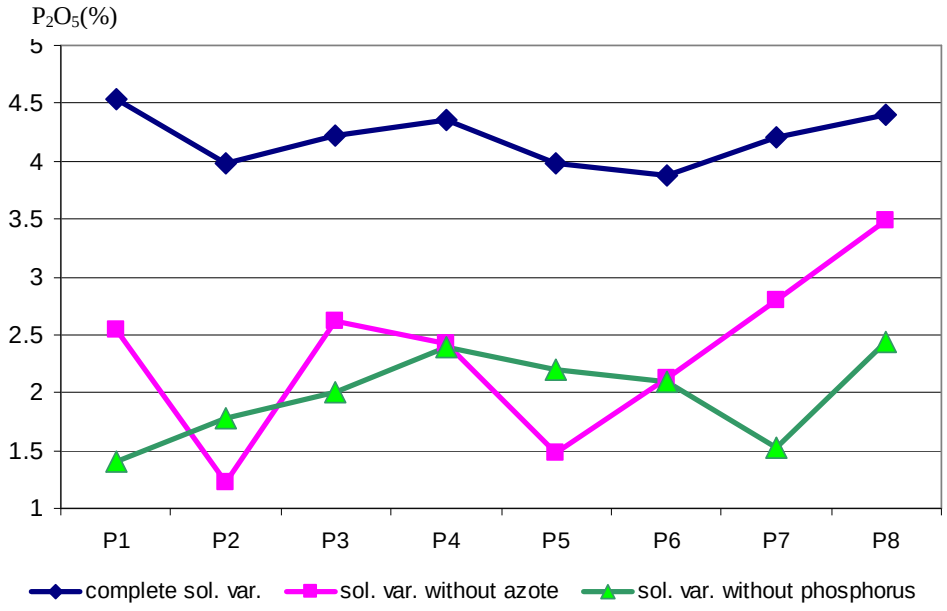

Figure 4. The azote in the plant

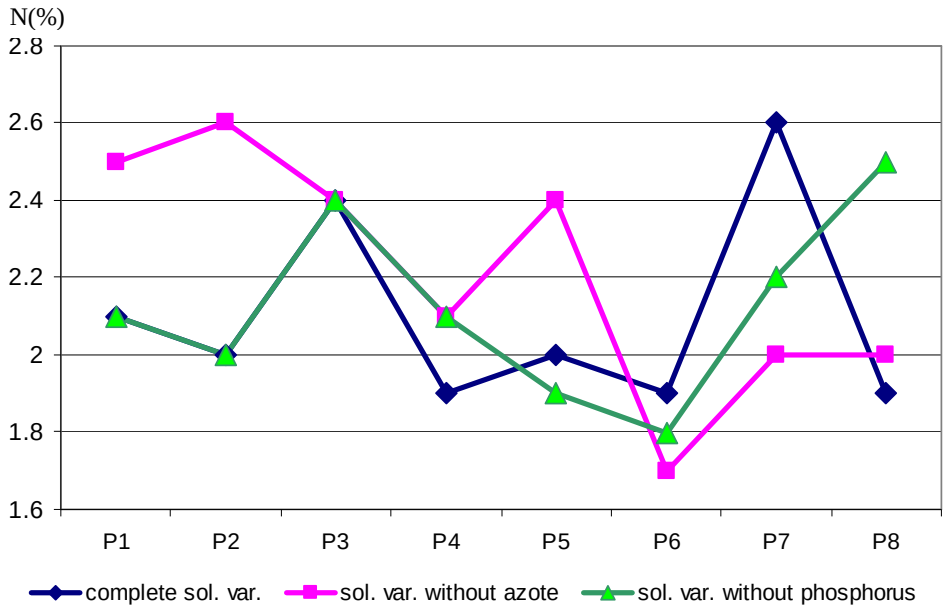

Figure 5. The phosphorus in the plant

In the case of plants which were treated with complete nutritional solution, the phosphorus in plant alternated between the limits of 1,9 at the P6 , P8 variants and 2,6 at the P7 variant.

Alter the treatment of the plants with azote, the plants content in this element is about 1,40 at the P1 variant and 2,44 at the P8 variant. In the variant in which the plants are treated with phosphorus, the azote quantity of the plant is lower, the minimum in the P2 variant and the maximum at the P8 variant.

The phosphorus content in plants alternates in the treatment case with complete nutritional solution of the plants between 1,9 at the P8, P6variants and 2,6 at the P7 variant. The variant in which the plants are treated with phosphorus, the smallest phosphorus quantity in the plant is observed at the P6 variant and the maximum at the P2 variant. In the case of the plants treated with nutritional solution with azote, the phosphorus alternates between the limits of 1,8 at the P6 variant and 2,5 at the P8 variant.

CONCLUSIONS

The leaf surface at the transgenic plants is smaller that at the intransgenic ones, both in the presence of complete nutritional solution and the nutritional solution without azote or phosphorus.

Thought the plants treatment with complete solution, the quantity of azote in the plants significantly increases, thanks to the fact that the plants use the azote from the nutritional solution no the atmospheric one.

The plants treatment both with complete nutritional solution and incomplete makes the phosphorus be easily accessible to the plants.

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