THE INFLUENCE OF ORGANIC AND MINERAL FERTILIZATION UPON THE CONTENT OF NITROGEN, PHOSPHORUS AND POTASSIUM FROM MAIZE LEAF

INFLUENȚA ÎNGRĂȘĂMINTELOR ORGANICE ŞI MINERALE ASUPRA CONȚINUTULUI DE AZOT FOSFOR SI POTASIU DIN FRUNZELE DE PORUMB

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Abstract: In this paper we studied the effect of nitrogen fertilization in different dozes (N50,N100, N150 and N200) on a background of phosphorus and potassium (PK50, PK100, PK150) under the quantity of nitrogen , phosphorus and potassium (dry matter) from maize leaf.

***Rezumat*:** *În această lucrare am studiat efectul îngrăşămintelor cu azot în doze diferite (N50,N100, N150 si N200) pe agrofonduri de fosfor si potasiu (PK50, PK100, PK150) asupra cantitatii de azot fosfor si potasiu (substanță uscată) din frunzele de porum.*

***Key words*:** *maize, mineral fertilizers*, nitrogen, phosphorus, potassium, dry matter
Cuvinte cheie: *porumb, îngrăşăminte minerale,azot, fosfor , potasiu, substanta uscata*

INTRODUCTION

We know that the nitrogen quantity from the dry matter of plants is between 0,1- 0,4 % and it is considerated an important element of plants growth. The increase of cells dimensions and plants,can`t be conceive without the biosinthesis of proteic substances,which can`t take place without nitrogen.

Phosphorus is the element which stimulates the growth of radicular system and otherwise of the whole plant growth. Also, particularly in the first stage of vegetation,where the radicular system growth very intensely , the phosphorus reguirement of plant are very high.

The potassium is necessary to all live organism. The potassium is not in the structure of fix organic compound from plant, but as ion configuration, which are able to occupy the ionisation items of vital system.

MATERIALS AND METHOD

The nitrogen from plants was determinated with Kjeldahl Method which is based on the fact that the organic substances by boiling with concentrated sulfuric acid, in presence of catalytic agent are decompoused releasing their compound elements.

Total phosphorus from leaf was determinated with calorimetric dosing. The anions of the orthophosphorum acid from the solution of analise react with molybdenum thryoxide and the result is an phosphomolibdenum heteropoliacid.

The total potassium from leaf was determinated with the emissive spectrometry method which is based on the measure of the emission, intensity of the potassium atoms excited over of an acetylene atmosphere.

RESULTS AND DISCUSSION

The content in total nitrogen of maize leaf, in 2004-2007 years is between 1,20 % in mark variant and 1,70 % , when is applied 200 kg N/ha on a background of 50 Kg and 100 Kg

$P_2 0_5$ and $K_2 0$/ha. The highest values are obtained when is applied maximum doses of N , indifferently of the background of P and K.

Table1.

The influence of chemical fertilizers upon the total nitrogen (Nt) from the maize leaf , LOVRIN 400 hybrid , average of the years 2004-2007

VARIANT		N(%)d.m.	%	Difference	Meaning
Mark		1,200	100	0	0
N50	PK50	1,263	105,25	0,063	**
N100		1,487	123,92	0,287	***
N150		1,603	133,58	0,403	***
N200		1,707	142,25	0,507	***
N50	PK100	1,487	123,92	0,287	***
N100		1,577	131,42	0,377	***
N150		1,593	132,75	0,393	***
N200		1,707	142,25	0,507	***
N50	PK150	1,377	114,75	0,177	***
N100		1,547	128,92	0,347	***
N150		1,630	135,83	0,430	***
N200		1,667	138,92	0,467	***
				DL 5%=0,041	
				DL 1%=0,055	
				DL 0,1%=0,074	

Table 2

The influence of chemical fertilizers upon the total phosphorus P_2O_5 from the maize leaf ,LOVRIN 400 hybrid , average of the years 2004-2007

VARIANT		P(%)d.um	%	Difference	Meaning
Mark		0,1607	100	0	0
N50	PK50	0,1627	101,24	0,002	*
N100		0,1670	103,94	0,006	***
N150		0,1657	103,11	0,005	***
N200		0,1630	101,45	0,002	*
N50	PK100	0,1680	104,56	0,007	***
N100		0,1697	105,60	0,009	***
N150		0,1663	103,53	0,006	***
N200		0,1653	102,90	0,005	***
N50	PK150	0,1627	101,24	0,002	*
N100		0,1687	104,98	0,008	***
N150		0,1633	101,66	0,003	**
N200		0,1667	103,73	0,006	***
				DL 5%=0,019	
				DL 1%=0,026	
				DL 0,1%=0,035	

Table 3.

The influence of chemical fertilizers upon the total potassium K_2O from the maize leaf of the LOVRIN 400 hybrid , average of the years 2004-2007

VARIANT		K(%)d.m.	%	Difference	Meaning
Mark		1,403	100	0	0
N50	PK50	1,420	101,21	0,017	-
N100		1,440	102,64	0,037	*
N150		1,410	100,50	0,007	-
N200		1,423	101,43	0,020	-
N50	PK100	1,460	104,06	0,057	***
N100		1,427	101,71	0,024	-
N150		1,447	103,14	0,044	**
N200		1,443	102,85	0,040	**
N50	PK150	1,467	104,56	0,064	***
N100		1,483	105,70	0,080	***
N150		1,433	102,14	0,030	*
N200		1,437	102,42	0,034	*
				DL 5%=0,029	
				DL 1%=0,040	
				DL 0,1%=0,054	

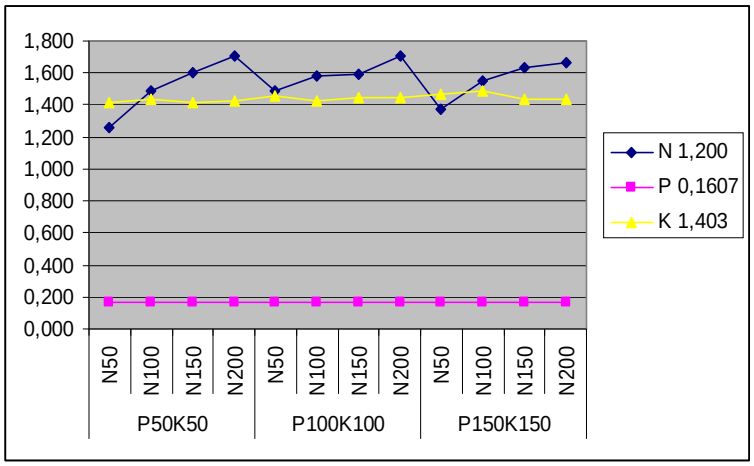

Figure 1.
The influence of chemical fertilizers upon the N.P.K. from the maize leaf of the LOVRIN 400 hybrid , average of the years 2004-2007

Appling increasing doses of P_20_5 and K_20 conducive to an increase of the P quantity from maize leaf, from 0,160 % d.m. , in mark up to 0,169 % in variant fertilized with 100 Kg N , on a background of 100 Kg/ha P_20_5 and K_20. The nitrogen fertilizers affect in small measure the P content , the highest values being induced when was applied small and moderate doses of nitrogen.

Regarding the K content from maize leaf , we observe an increase , by increasing the phosphate and potash doses. The highest value , 1,48 % K_20 , was obtained on a background of P_{150} K_{150} , when was applied moderate doses of nitrogen , 100 Kg/ha.

CONCLUSIONS

The nitrogen content increase with the increasing of the nitrogen doses of fertilizers .

Appling maximum doses of nitrogen fertilizers , the increasing of the phosphorus and potash doses of fertilizers , affect in a small measure the nitrogen content from leaf .

Like the phosphorus ,the potassium content in maize leaf is positive influenced by the increasing doses of phosphate and potash fertilizers

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