Scientific Papers Series Management, Economic Engineering in Agriculture and Rural Development
Vol. 14, Issue 2, 2014
PRINT ISSN 2284-7995, E-ISSN 2285-3952

VALINE - ISOLEUCINE AND LEUCINE THREE AMINO ACIDS ESSENTIAL FOR BODIES IN THE CORN CARYOPSIS

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Abstract

In this paper, were analyzed three essential amino acids for our body that are found and take the corn kernels in different proportions depending on the quality of the harvest. Since maize occupies large areas in our country and it is important to protein production per hectare and destabilization hybrids because of the sensitivity to various pathogens or smaller ecological plasticity in the study were hybrids Start and Olt where they were pursued concentrations of the three essential amino acids, the laboratory performed not only to kernels ground but taking into account the influence of culture technology applied three.

Key words*: respiration, transpiration, photosynthesis, assimilation, carotene*

INTRODUCTION

Because most essential amino acids are in different quantities in the food composition of a group where some nutrient factors are in large quantities, while others are in small quantity or missing, therefore in order to have a balanced diet it is necessary to eat food from different groups. Thus, in this paper, we study three of these essential amino acids taken from corn grains, besides other existing therein and required for the daily ratio supplement of amino acids useful to humans, such as valine - isoleucine and leucine. [4]
Proteins are strictly necessary for human nutrition, but amino acids are the bases of proteins and the lack of one essential amino acid or its presence in smaller quantities than required leads to more reduce effectiveness of others.
The amounts of protein needed by the body vary from one individual to another, depending on the health, weight and age and the daily dose of protein for adults is 0.75 to 0.8 grams per kilogram of body weight. [1, 3].

Amino acids are divided into two categories namely essential amino acids and non-essential amino acids. Because all amino acids are necessary, and the non-essential ones are not without importance, having their role in the body, but the essential amino acids cannot be entirely produced by the body in sufficient quantities to ensure protein synthesis, thus these must be supplemented daily by food where essential amino acids are found in different proportions. [5]
For the body to be able to synthesize and effectively utilize all proteins, all amino acids must be present in adequate proportions.

MATERIALS AND METHODS

In order to determine amino acids, which have an important role in terms of quality of production of grain, in the study were taken two hybrids Olt and Start, which according to the culture technology and obtained grains production were determined the most important amino acids.
The technology used, respectively non irrigated system as well application of chemical fertilizers on the two hybrid under

study (Olt on Start) definitely influence the total of amino acid, so the content of amino acids is expressed in kg / ha, in function of corn production.

The two hybrids were sown in non irrigated system, under differentiated dosage of NP fertilizers, on chernozem soil in the village Dobreşti, in a familial association in 2013, after a preceding wheat, where in addition to other essential and nonessential amino acids, were studied three essential amino acids valine - isoleucine and leucine, important for organism, which can't be synthesized and must be taken from aliments. Before corn crop establishment were made soil analysis.

RESULTS AND DISCUSSIONS

For determining soil reaction in the years of experimentation chemical soi analyzes were performed determining soil pH in aqueous suspension of the ground , these soils fall into the category of soil weak acid and neutral with pH values from 6.3 to 6.42 , These soils are preferred by maize plants.

Table 1. Agrochemical determinations the ground before sowing

Nr. par	pH	Nt %	P_2O_5 mg/100g	K_2O mg/100g	Ah m.e./100g	SB m.e./100g	Humus %	Depth (cm)
	2013	2013	2013	2013	2014	2013	2015	2013
1	6,8	0,074	7,6	5,7	1,55	15,4	0,67	0-20
2	6,3	0,067	7,4	4,9	1,49	14,8	0,69	0-20
3	6,9	0,069	6,7	4,9	1,51	14,9	0,67	0-20
4	6,04	0,065	7,3	5,4	1,43	14,6	0,65	0-20
5	6,4	0,062	7,1	4,8	1,52	14,9	0,66	0-20
6	6,42	0,081	7,3	6,6	1,94	17,8	0,72	0-20

Table 2. Influence of the employed non irrigated system and of the applied fertilizers on the production

Variant	Absolute Production (kg/ha)	Relative Production (%)	Difference to light	The significance
N_0P_0	5940	Warning	-	Warning
$N_{60}P_{40}$	6320	106,3	380	-
$N_{80}P_{60}$	6835	115,0	895	*
$N_{100}P_{80}$	7080	118,0	1140	**
$N_{120}P_{100}$	7230	121,7	1290	***

Table.3.The contents in amino acids expressed as kg/ha (a function of the crop grains production) and Olt hybrid, in 2013

Amino acids	non irrigated system g/100g s.u.	The content of amino acids (kg/ha)
aspartic	0,671	2,021
threonina	0,412	1,241
serina	0,482	1,452
glutamina	1,29	3,885
prolina	0,64	1,928
cysteina	0,378	1,139
glicozina	0,41	1,235
alanina	0,793	2,389
valina	0,491	1,479
metionina	0,142	0,428
izoleucina	0,329	0,991
leucina	0,928	2,795
tirozina	0,611	1,840
phenilalanina	0,631	1,901
histidina	0,394	1,187
lyzina	0,415	1,250
arginina	0,634	1,910
Total aa	9,651	29,069
Total aae	4,402	13,259

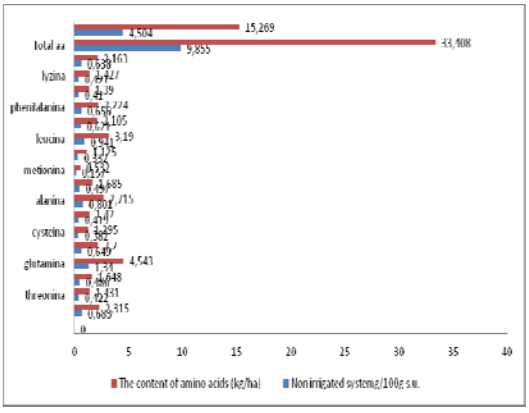

Fig.1.The contents in amino acids expressed as kg/ha (a function of the crop grains production) and Olt hybrid, in 2013

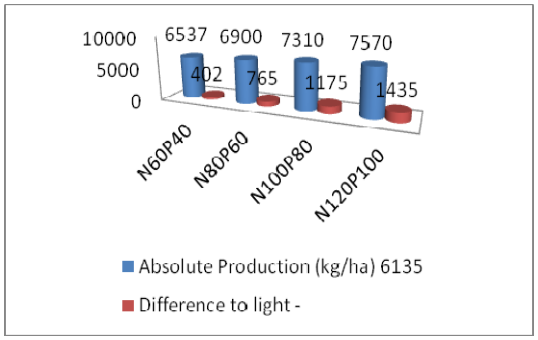

Fig.2. Influence of the employed non irrigated system and of the applied fertilizers on the production of crop frails at the Start hybrid, in 2013

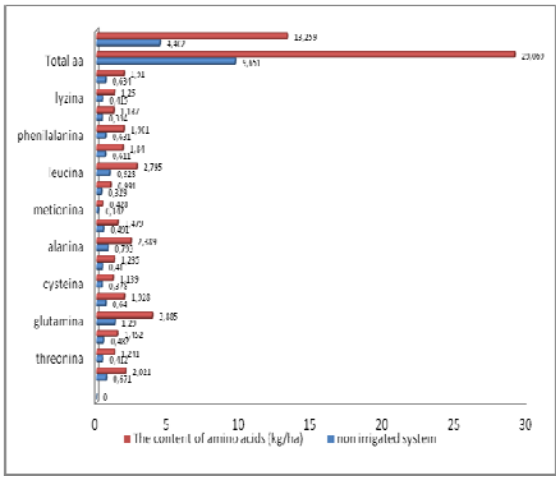

Fig.3. The contents in amino acids expressed as kg/ha (a function of the crop grains production) and Start hybrid, in 2013

At Olt hybrid, according of maize, was calculated the content of amino acids, expressed in kg/ha. Thus, in non irrigated culture system observe significant values of aspartic acid, proline, alanine, leucine, tyrosine, phenylalanine and arginine (g/100 g s.u.). This content reported at grains production, we get values (Table 4) expressed in Kg/ha, reached at 29.069 kg/ha total amino acids and the value of 13,259 kg/ha at essentials amino acids.

Table. 4. The content in amino acids expressed as kg/ha (a function of the crop grains production) and Start hybrid, in 2013

Amino acids	non irrigated system g/100g s.u.	The content of amino acids (kg/ha)
aspartic	0,683	2,315
threonina	0,422	1,431
serina	0,486	1,648
glutamina	1,34	4,543
prolina	0,649	2,200
cysteina	0,382	1,295
glicozina	0,419	1,420
alanina	0,801	2,715
valina	0,497	1,685
metionina	0,157	0,532
izoleucina	0,332	1,125
leucina	0,941	3,190
tirozina	0,621	2,105
phenilalanina	0,656	2,224
histidina	0,41	1,390
lyzina	0,421	1,427
arginina	0,638	2,163
Total aa	9,855	33,408
Total aae	4,504	15,269

At Start hybrid, observe an slightly significant increase as against Olt hybrid, regarding the studied amino acids, which usually presented an slightly significant increase, but also at the total value, this one been 204g/100 g s.u. Comparing this amount at production content /hectare, we obtain at essentials amino acids a difference of 2.01 kg/ha

CONCLUSIONS

Combined influence of culture and hybrids led to the obtaining of significant amounts at amino acids content in corn grain.
Differences in medium value of content in proteins are registers at the 2 hybrids in function of supply system with water and NP dozes applied.
As the report of essential amino acid is higher than the others in this study, the greater the value of corn studied is.
Content of amino acids between hybrids varies according the analyzed hybrid, with additional fertilization, in function of area, soil and water supply.
Knowing the hybrids with the highest protein content is important for their capitalization in agricultural products used as supplements, rich in amino acid which can't be sterilized by the organism.
Valine, isoleucine and leucine are three amino acid important for organism and represent two thirds from amino acid which form the proteins, can't be synthesized by the organism and must be taken from food.

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