PLOMYK HYBRID CURED IN IRRIGATED AND NON IRIGATED SYSTEM - POP CORN CONSUMPTION AND THE IMPORTANCE OF AMINO ACIDS EXISTING

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ABSTRACT

This paper describes the importance of protein knowledge used by the body, many researchers, scientists, geneticists, physiologists, ameliorators have made numerous studies on completing the necessary of amino acids taken from vegetable products in order to maintain the balance of amino acids, vital for the harmonious and healthy development of the body.The importance of capitalization of corn grains Pop Corn PLOMYK and their commercialization, led to detailed research of the content of amino acids at corn hybrid Plomyk. Taking into account the genetic dowry of that hybrid, in the two systems irrigated and not irrigated the quantity and quality of amino acids and essential amino acids and their connection in the two systems.

As in proteins can be found 23 different amino acids which plays important role in obtaining qualitative production at corn grains, it will be imposed getting more significant results, to improve their quality: protein substances.

The content in amino acids presents values that are superior depending on the culture system in favor of the irrigated one, being observed low levels of the amino acids in the hybrid Plomyk. The main protein of the corn grain will be characterized by an increased content of glutaic acid obtained in both systems, on second place being leucine. It is also recommended the cultivation of this hybrid with a shorter period of vegetation because are richer in protein substances than late hybrids.

INTRODUCTION

Protean substances from corn grain belong to globulins, prolamin and glutein. Methionine was also observed, an essential amino acid together with lysine and tryptophan increase the alimentary quality of this one, expecting from corn, the increase of the protein content at 12-15%.

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 (*Pandia Olimpia, Sărăcin Ion, 2009*).

The modification of phisyological processes at the partizan crop hybrid depending on the doses of nitrogen and phosphorus applied to the irrigated and un-irrigated system (*Pandia Olimpia, Sărăcin Ion, 2013*), studies and researches on acquiring physiological traits and the content of amino- acids in Opal hybrid maize cultivated by S.C. Mirila-Olt (*Pandia Olimpia, Sărăcin Ion, 2010*). Culture plants react differently to

fertilizer application. Thus, wheat has harvested nitrogen and phosphorus fertilizers better than corn in both the first and subsequent years of application (*Coculescu et al., 1968*).

Thus, in this paper, we study some basic 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 tryptophan and methionine (*Pandia Olimpia, 2013*).

Due to its high contents in fiber, corn regulates bowel movement, prevents constipation, leading to occurrence of colorectal cancer. Rich in polyunsaturated fatty acids, corn oil stops the growth of blood cholesterol, being a good diuretic and permanent consumption can prevent water retention in the body.

The percentage of protein in corn grain can range from 10.8% to 20% and fat percentage from 4.7% to 15%, this is an important factor for studying all amino acids present in the grain, but mainly corn caryopses are followed containing more lysine and tryptophan by diversifying more hybrids. The feeding a growing world population is a major global challenge, which consists to increase agricultural productivity, guarantee access to food for all individuals, and at the same time ensure food security for consumers. The modern processing technologies are based on al amino ac certain biotechnological principles that aim at obtaining safe food for consumption by removing pathogens from processed food in a socially and economically sustainable manner (*Bonciu E, 2017*).

With this paper, the author attempts to emphasis the economic importance of corn for pop corn but also the nutrient value for human, for zoo technical sector, in the industry of bio fuels, etc

MATERIAL AND METHOD

Plomyk hybrid was studied, which due to the high value of protein existing in corn grains, led to determining the existing essential and nonessential amino acids particularly in studying tryptophan and methionine as essential amino acid required for supplementing the protein deficiency in the human body. Hybrids were planted in Oltenia area, Dobroteşti village in two years of study: 2015-2016, at a density of 50,000 plants / ha, after the wheat crop in two systems: irrigated and non-irrigated in order to observe the amount of existing amino acids existing in grains especially tryptophan and methionine.

Soil analyzes were performed. Year 2015 can be characterized in terms of climate as a year of two distinct parts: the first half, from January to June (with inadequate water supply), followed by the second half with excess rainfall. This led to obtaining satisfactory yields. In 2016, the water demand is not satisfied, having a lower deficit, being a poor year in terms of water.

The chemical analyses of corn grains emphasized differential quantities of amino acids on corn grains that were cultivated in the two systems: irrigated and not irrigated.

ANALYSIS OF EXPANSION WITHIN THE LABORATORY

At hybrid *Plomyk*, depending on the production of grains was calculated the content in amino acids in kg/ ha. The determination of analyses was realized through the method of spectrophotometry and chromatography, after preliminary the tests that were analyzed have been dried in the kiln.

The acids: monoaminomonocarboxylic - were studied: alanine, valine, leucine, isoleucine and oxydrilats and sulfurhydrate of acids from the group of monoaminomonocarboxylic have been studied: serine, treonine, cysteine, methionine.

From monoaminomonodicarboxylic acids have been studied: aspartic, glutamine. From diaminomonocarboxylic acids: arginine and lysine. An important aromatic amino acid that was studied was thyeozin and from heterocyclic amino acids has been studied: tryptophan, proline and histidine.

RESULTS AND DISCUSSIONS

So, in the not irrigated system of culture can be observed significant values of the aspartic acid, proline, alanine, leucine, thyrozin, phenilanin and arginine (g/100 g S.U .In the irrigated system of production, the content at 100 g s.u., presents significant values at the same amino acids, existing a significant difference at the amount of amino acids, as well as essential amino acids of almost 300g, and at hectare the difference is of about 7,8 kg/ ha at essential amino acids.

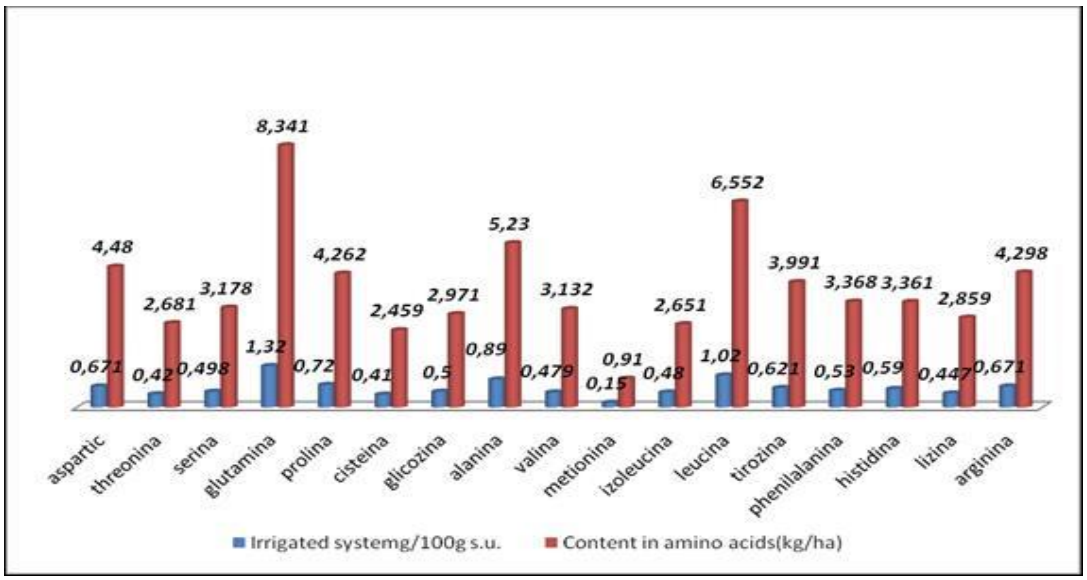

Figure.1. The contents in aminoacids expressed as kg/ha (a function of the crop grains production) and Plomyk hybrid irrigated system

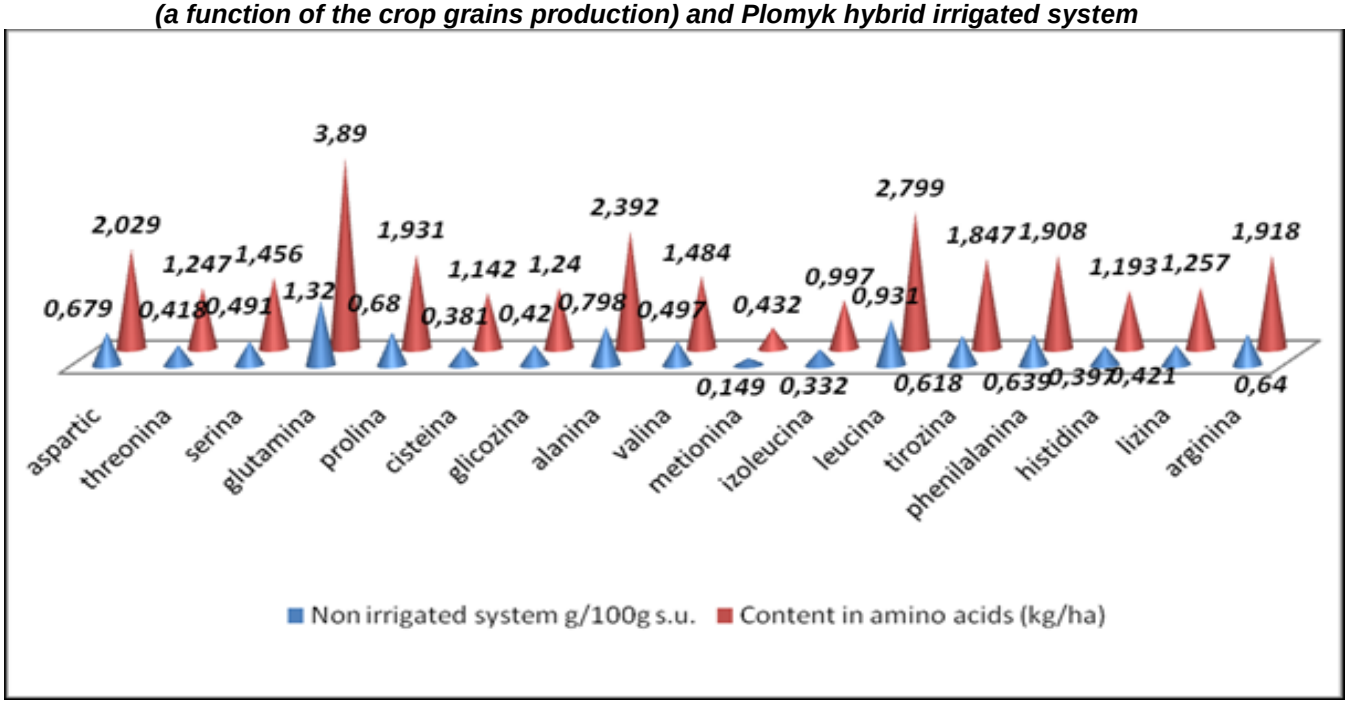

Figure.2. The contents in aminoacids expressed as kg/ha (a function of the crop grains production) and Plomyk hybrid non irrigated system

For quantitative determination of amino acids have been used the chromatographic method. Essential amino acids are those amino acids which can be synthesized only in the vegetable kingdom.
They are of a special importance because in their absence specific proteins that are necessary to the organism can not be synthesized. From the class of essential amino acids is a part: valine, leucine, isoleucine, phenilalanin, treonin, methionine, lysine, tryptophan, histidine.
It was observed the dose of tryptophan which was read at photocolormeter with red filter and will be compared with the standard curve made with casein.
Dosing the lysine was determined and read at spectrophotometer, and aromatic amino acids have been identified through xanto protein reaction.

CONCLUSIONS

The content in amino acids presents values that are superior depending on the culture system in favor of the irrigated one, being observed low levels of the amino acids in the hybrid *Plomyk*.
We recommend for production the hybrid *Plomyk* in irrigation conditions
The main protein of the corn grain will be characterized by an increased content of glutaic acid obtained in both systems, on second place being leucine.
It is also recommended the cultivation of this hybrid with a shorter period of vegetation because are richer in protein substances than late hybrids.

BIBLIOGRAPHY

1. Bonciu Elena, 2017- *Food processing, a necessity for the modern world in the context of food safety: A review*. Annals of the University of Craiova-Agriculture, Montanology, Cadastre Series, Vol. 47, No 1, pp. 391-398.
2. Coculescu, et al., 1968 - *Influence of mineral fertilizers on the assimilation of nutrients in the main crop plants.* Annals of I.C.C.P.T., 34, B.
3. Pandia Olimpia, **Ion Saracin,et al.,** 2013 - *Maize contains tryptophan and methionine – two acids essential for human health*. METALURGIA INTERNATIONAL VOL. XVIII, No 5, pp. 87-90.
4. Pandia Olimpia, **Ion Saracin.,** 2009 - *Amino acids content of Zea mays Everta Perlat 625 in irrigated and non irrigated system*. LUCRARI STIINTIFICE USAMV B TIMISOARA, Vol.41(1)1-523, pp. 80-84.
5. Pandia Olimpia, **Ion Saracin.,** 2013 - *The modification of phisyological processes at the partizan crop hybrid depending on the doses of nitrogen and phosphorus applied to the irrigated and un-irrigated system*. Agricultură – Montanologie – Cadastru (Annals of the University of Craiova - Agriculture, Montanology, Cadastre Series) VOL. XLIII, pp. 267-271.
6. Pandia Olimpia, **Ion Saracin,et al.,** 2010 - *Studies and researches on acquiring physiological traits and the content of amino- acids in Opal hybrid maize cultivated by S.C. Mirila-Olt*. INMATEH – Agricultural Enginering, Vol. 30, No.1, pp. 83-85.