

ZEA MAIS EVERTA FUNDULEA 625 – HEALTH - INCOME

Olimpia PANDIA¹, Ion SĂRĂCIN², Ștefania Eliza TĂNASIE³

¹University of Agricultural Sciences and Veterinary Medicine, Bucharest, Romania, Faculty of Management, Economic Engineering in Agriculture and Rural Development, Slatina Branch, 150, Strehareti Street, Postal Code 0500, Slatina City, Olt County, Romania,
E-mail:olimpia_pandia@yahoo.com

²University of Craiova, Faculty of Agriculture / Romania, E-mail:ion_saracin@yahoo.com

³University of Medicine and Pharmacy of Craiova, E-mail:elyzuk_elly@yahoo.com

Corresponding author: olimpia_pandia@yahoo.com

Abstract

After the wheat culture, the corn is on the second place as the most important cereal plant, having the benefits resulted from grains consumption and being a medicinal remedy for certain diseases or for the completion of the necessary essential amino-acids for our organism. The paper presents the crop technology of the pop corn crop on the sandy soil from the western part of Oltenia, its importance as a food crop, determination on expansion degree at different moistures and temperatures for the wide consumption capitalization.

Key words: consumption, capitalization, expansion, popcorn

INTRODUCTION

The popcorn was discovered by Amerindians in the pre-Columbian era. The year 1948 marks the discovery of the popcorn, with an existence of 5600 years. In 1885, the first commercial machine for producing popcorn is created [7,10].

By their content in some active principles like phytosterols, mineral salts, saponins, vitamins C, E, K and volatile oil, the corn grains has a pharmacological action, being a good diuretic, energetic and bland, consumed in the form of various products, accessible for humans [6,9]. Proteins are essential constituents of the body in their turn being formed of the essential amino acids, cannot be produced by the organism and must be brought by food in various combinations and non-essential amino acids a body which can be produced, and caloric needs can be filled from vegetable or animal food with complete and incomplete biological values [4, 5].

Lysine, is an essential amino acid that is found in almost all proteins in the body, having a major role in increasing the molecular weight and calcium absorption, hindering the elimination of urine, so, lysine prevents osteoporosis, positively influence the

central nervous system, helps collagen production and participating in the production of enzymes, antibodies and proteins [3].

By eating foods of plant and animal origin, those amino acids can be found naturally on corn seeds which are rich in lysine and can cover the daily requirement of lysine for the body [1].

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 two 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 tryptophan and motioning [2, 8].

MATERIALS AND METHODS

The results presented in this work are acquired by research effectuated within **country Dolj**, Dobrotești village, where the evert co variety Fundulea 625 of crop was studied.

Within this co variety the beans are yellow-orange, shining, little, and have the bean's apex rounded. The endosperm has corneous texture (glassy), excepting a small region around the embryo, and MMB is of 70-81 grams.

50,000 plants/ha were sowed on a sandy soil, using a non-irrigated system, resulting a production of 820 kg beans/ ha.

Studied parameters:

Parameter A: sowed plant;

1 – Fundulea 625 popcorn

Parameter B: fertilizer dose;

1 – Using the reserve that exists in the soil

Parameter C: irrigation system;

1 – Non-irrigated system

RESULTS AND DISCUSSIONS

Before establishing the corn culture, soil analyses were made for each variant.

Because of the unfavorable conditions during the studied year, an 820kg/ha production was obtained, without using chemical fertilizers and within a non-irrigated system.

Table 1. Characteristics of the soils where the experiments took place

Soil type	pH	Ah Me/100g/soil	Sb Me/100g/soil	H %	N ₂ %	P ₂ O ₅ Mg/100g/soil	K ₂ O Mg/100g/soil
V1.sandy	6.72	0.56	16.20	2.19	0.054	3.7	13.6
V2.sandy	6.65	0.48	2.7	1.95	0.055	3.4	14.8
V3.sandy	6.70	1.03	16.11	3.15	0.051	5.8	14.3

Source: authors

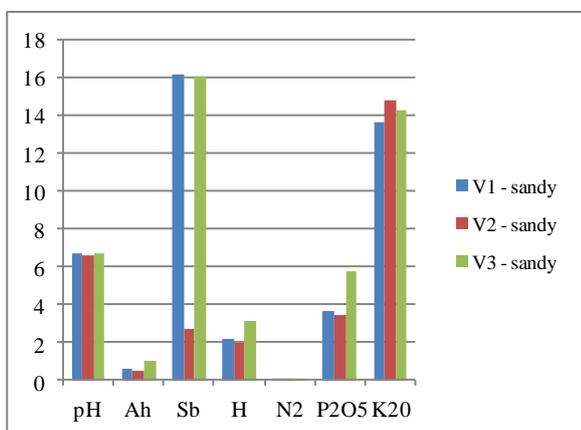


Fig. 1. Characteristics of the soils where the experiments took place

Analysis of expansion within the laboratory

After the maize beans were ingathered (100 beans), they were subjected to determinations of expandability at 60°C and 23% humidity. In this way it is performed the first determination, using gas flame, and, after a period of 3 minutes, it results: 33 very well expanded beans, 31 medium expanded beans and 36 unexpanded beans. If the exposure time increases the beans are burnt.



Photo 1. Maize beans subjected to determinations at a 23% H to corn cobs ingathered at 15.1% humidity
 Source: authors

The determination is taken again but an electric stove is used this time. The expansion period is of 5 minutes and the results are the following: 64 expanded beans, 16 medium expanded beans and 20 unexpanded beans. For the ingathered beans in these humidity conditions which return to consumption, a slower and longer heating (5 minutes), but:

Table 2. The expansion results of popcorn beans depending on Humidity (H) and Temperature (T)

Quantity	H %	T°C	Time of exposure	Source of heating	Degree of expansion		
					Very well	Medium	Unexpanded
100 beans	23%	60°C	3 minutes	Gas flame	33	31	36
100 beans	23%	60°C	5 minutes	Electric stove	64	16	20

Source: authors

For acquiring better results, it is recommended that the corn cobs are

ingathered when they reach their physiological maturity and the humidity of beans is of 11.9%.

The same determinations are effectuated, using an electric stove and the following results are obtained: For a quantity of 100 beans at 11.9% humidity, using gas flame, after a period of 1 minute, the following results are obtained: 87 very well expanded beans, 11 medium expanded beans and 2 unexpanded beans. The determination is repeated, but this time an electric stove is used and the following type of beans are obtained: 78 very well expanded beans, 10 medium expanded beans and 12 unexpanded beans.



Photo 2. Maize beans subjected to determinations at a 23% H to corn cobs ingathered at 15.1% humidity
 Source: authors

The same determinations are effectuated, using an electric stove and the following results are obtained:

For a quantity of 100 beans at 11.9% humidity, using gas flame, after a period of 2 minute, the following results are obtained: 87 very well expanded beans, 11 medium expanded beans and 3 unexpanded beans.

The determination is repeated, but this time an electric stove is used and the following type of beans are obtained: 78 very well expanded beans, 10 medium expanded beans and 12 unexpanded beans.



Photo 3. Maize beans subjected to determinations at a 11.9% H

Source: authors

Table 3. The expansion results of popcorn beans depending on Humidity (H) and Temperature (T)

Quantity	H %	T°C	Time of exposure	Source of heating	Degree of expansion		
					Very well	Medium	Unexpanded
100 beans	11.9%	60°C	2 minutes	Gas flame	88	12	2
100 beans	11.9%	60°C	3 minutes	Electric stove	79	11	10

Source: authors



Photo 4. The process of Fundulea 625 beans expansion at different temperatures

Source: authors

CONCLUSIONS

Using the popcorn on a large scale in order to obtain financial advantages.

For acquiring better and more economical results, the maize ingathering and preserving until it reaches the value of 13% humidity within beans production.

The use of natural gas or other high caloric power sources as a source of expansion.

In order to obtain a better result, it is recommendable to use a certain dose of fertilizers and an irrigated crop system.

Determination of differentiated protein content and amino acids existing in corn grains, lead to establishing the biological value of the protein in the two hybrids that are recommended for planting being representative for the high protein content.

It is recommended for the popcorn to be consumed safely, without fat additions which can become harmful for the human body.

The home-made popcorn frequent consumption contributes to the improvement of the health status by preventing some heart and vascular diseases, because of the presence of an anti-oxidant in these grains.

REFERENCES

[1]Ailincăi, B., 2008, Influence of organo-Mineral fertilization on wheat and maize crops and the evolution of soil fertility under long-term experiments in the Moldovian Plain, Vol. XLI, No. 3

[2]Goian, M., Sala, F., Berbecea, A., Radulov, I., Gherban, C., 2000, The effect of mineral fertilizers upon the bean production of maize, on cambic chernozem within the Timisoara Didactic Research Station, between 1997 and 1999, Scientific research U.S.A.M.V. Timisoara, Agriculture Category, volume XXXII, part I, Agroprint Publishing House, Timisoara

[3]Hera, C., 1972, The influence of fertilizers upon certain maize hybrids sowed on different types of soils in Romania, An. ICCPT, Fundulea XXXVII.

[4] Manea, N.D., 2009, Effect of tillage on soil physical features, weed control and yielding winter wheat and maize. Research Journal Science, 41

[5]Pandia Olimpia, 2006, Research Regarding the Effect of Fertilizers upon Maize Production and Quality, Doctoral dissertation, Timisoara.

[6]Pîrșan, P., David, G., Imbrea, F., 2006, Phytotechny – cereals and legumes for grains, Eurobit Publishing, Timișoara.

[7]Pirvulescu, L., et al., 2008, Comparative statistic studies concerning the nutritious value of some groups of food, Bulletin UASVM, Agriculture 65(2)/2008.

[8]Rusu, M., Marghițaș, M., 2005, Agrochemical treaty, Ed. Ceres, Bucuresti

[9]Sima, E., 2002, Ecological Agriculture and Changing Perception in the Case of Quantity and Quality, The Information and Economic Reference Material Center, Bucharest

[10]Sărăcin Ion, 2008, Resesarch regarding the factors that influence the physico-chemical properties of the soil. Bulletin USAMV Cluj Napoca, Vol 65(1)