ASPECTS OF BIOLOGICAL CHARACTERS AND THE BENEFITS OF SOME VARIETIES OF GROUNDNUT (*Arachis hypogaea* L.) CULTIVATED IN ROMANIA

ASPECTE PRIVIND CARACTERELE BIOLOGICE ŞI BENEFICIILE UNOR VARIETĂȚI DE ARAHIDE (*ARACHIS HYPOGAEA* L.) CULTIVATE ÎN ROMÂNIA

SPÂNU Oana[1], LEONTE C[1]., CREȚU L[1]., LAZĂR (NECHITA) Adriana[1], POMOHACI T.I[1].
e-mail: spanuoana@yahoo.com

Abstract. *Arachis hypogaea L. is an annual herb belongs to the Fabaceae family, native to South America origine and has 2n = 40 chromosomes genom. Seeds and groundnut butter are high in protein, fat, vitamins and minerals (Marin, 2011). Unsaturated fats contained are mainly beneficial for the human body by reducing the blood cholesterol levels and also the risk of cardiovascular disease. Unrefined groundnut oil and the refined one can be used in culinary techniques that require high temperatures of cooking (Pîrşan, 1998). In this study are exposed the general aspects on the biological characters of groundnut varieties grown in Romania, namely: Arachis hypogaea L. ssp fastigiata var. fastigiata, Valencia type and Arachis hypogaea L. ssp fastigiata var. vulgaris, Spanish type.*
Key words: varieties, oil content, biological characters

Rezumat. *Arachis hypogaea L. este o plantă anuală, din familia Fabaceae, originară din America de Sud (2n=40). Semințele şi untul de arahide au un conținut ridicat de proteine, grăsimi, vitamine şi minerale (Marin, 2011). Grăsimile conținute sunt în principal nesaturate, benefice pentru organism prin efectul de reducere a nivelului de colesterol din sânge şi reducerea riscului de boli cardiovasculare. Uleiul nerafinat de arahide şi cel rafinat poate fi folosit în tehnici culinare care necesită temperaturi înalte de preparare (Pîrşan., 1998). În lucrarea de față se expun aspecte generale privind caracterele biologice ale unor varietăți de arahide cultivate în România şi anume: Arachis hypogaea L. ssp. fastigiata var. fastigiata, tipul Valencia şi Arachis hypogaea L. ssp fastigiata var. vulgaris, tipul Spaniol.*
Cuvinte cheie: varietăți de arahide, conținutul de ulei, caractere biologice

INTRODUCTION

Peanuts are particularly important because of high seed protein content (25-34%) and fat (45-60%) (Marin, 2011). The oil world production, peanuts ranked third (over 3 million tons annually), being as soybean, sunflower and before cotton (Marin, 2011). Oil (good quality with a high content of vitamin B1) is used in food, canning industry, margarine and butter, and fresh and whole grains are consumed fried or different dishes to get bread, biscuits and chocolate. Shells

[1] University of Agricultural Sciences and Veterinary Medicine of Iasi, Romania

resulting from peeling peanut pods and after grinding are used in the preparation of feed fodder, and the leaves and stems can be valuable for animal feed, but can be used as green manure (Marin, 2011).

Besides these uses, culture of peanuts are important because these require a low consumption of fertilizers, gives the possibility of a high sandy soil and plant is a very good run for other cultures (Marin, 2011). The oil from peanutsseeds can be extracted from cold or hot, the cold extraction being of high quality. Debris remaining after cold oil extraction contains 8% oil, 47.6% protein, 23% not nitrogen extractive substances, 48% minerals (Muntean et al., 2008).

In Romania, two varieties of peanuts are grown, namely: *Arachis hypogaea* L. ssp. *fastigiata* var. *fastigiata*, *Valencia* type and *Arachis hypogaea* L. ssp. *fastigiata* var. *vulgaris*, *Spanish* type. *Spanish* type has small seeds, covered with a brown shell, grouped two seeds in pods, and *Valencia* type has large seeds, covered with a red shell, grouped four seeds in pods.

MATERIAL AND METHOD

The study was conducted based on analysis of existing information in the literature. Were analyzed two peanut varieties grown in our country. As a method has been used the comparative analysis.

RESULTS AND DISCUSSIONS

Peanuts are annual plants with root systems of type II amounting to 150 cm depth, after 15-20 days from emergence appear nodule due fixing nitrogen-bacteria (Pîrşan, 1998). The stem is erect, the leaves have two pairs of sessile leaflets, hairy on the underside and leatherback on the top skin (Fig. 1). Flowers appear at 25-30 days after emergence, are small, yellow or orange, solitary or grouped in 2-4 inflorescences. The plant has two types of flowers: some open, with the visible corolla to pollination, these are located to the top of the stem, usually sterile and others do not open, located at the base of the stem and the underground portion, where the pollination is made with a closed flower, also called cleistogame flowers (fig. 2).

Fertilization is pollinating. After fecundation the ovary has a rapid increase (5-20 cm), forming an extension called ginophor. It bears the ovary and enters the ground (about 10 cm), which grows fruits (Fig. 3). The flowers from the top of the stem, which ginofor not reach the ovary to the ground, the fruit does not develop. The fruit formed in soil cover with a mycorrhizal ecototrof, which protects it from dryness (Fig. 4).

The fruit is an indehiscent pod, the shape of silkworm cocoons, with 1-6 seeds (representing 65-75% of the fruit). A plant form, in conditions of our country 250 flowers and 25-30 fruits (representing 5-15% of flowers).

Variety *fastigiata*, *Valencia* type are sweet peanuts, with three to six seeds in a pod covered with a bright red shell (Fig. 5 and 6). Mature plants reach up to 50 cm high, with most pods grouped based on strain. Entire growing season ranges from 95-110 days. The peanut is eaten roasted or boiled.

Variety *vulgaris*, *Spanish* type has two seeds in a pod, covered with a brown shell. Outer texture of the pod is woody than *Valencia* type (Fig. 7 and 8). Whole growing season lasts 120 days, slightly more delayed than *Valencia* type. This is used to obtain peanut oil and butter.

Fig. 1. Peanut leaf
(www.gerry0212.wordpress.com)

Fig. 2. Peanut flower
(www.bloominthyme.wordpress.com)

Fig.3. Peanut ginofor
(www.waynesword.palomar.edu)

Fig. 4. Mature pods
(www.blog.peaceworks.net)

Fig. 5. Red peanuts
(www.purcellmountainfarms.com)

Fig. 6. Valencia type
(www.informedfarmers.com)

Fig. 7. Brown peanuts
(www.bnrglobal.com)

Fig. 8. Spaniol type
(www.waynesword.palomar.edu)

Peanut seeds contain between 44-56% fat and 20-30% protein, which are also a rich source of minerals (phosphorus, calcium, magnesium and potassium) and vitamins (group E, K, and B) (Savage and Keenan, 1994).

Oleic and linoleic acids are 75-80% of total fatty acids in peanuts (Treadwell et al., 1983; Dwivendi et al., 1993). Nutritional quality and storage of peanuts depends on the proportion of saturated and unsaturated fatty acids. Is desirable a high percentage of polyunsaturated fatty acids because it decreases plasma cholesterol and low density lipoproteins to reduce the risk of cardiovascular disease (Jackson et al., 1978).

Iodine value, providing a measure of the degree of unsaturation of the oil and the ratio of oleic / linoleic acid was commonly used to predict the validity and stability of oil (Worthington et al., 1972, Young and Walter, 1972). Nutritional quality of peanut seeds is strongly influenced by location, variety and season, especially soil moisture and temperature during growth and maturation of seeds (Dwivedi et al., 1990).

Peanuts are an excellent source of resveratrol, a fitoalexin stilbene with a role in protection against cancer, heart disease, degenerative nerve disease and Alzheimer's disease (www.nutrition-and-you.com). Peanut butter not only awakens the taste for sweet, but also a considerable source of antioxidants. Resveratrol is an antioxidant found in peanut butter, in fact, found in black grapes.

Peanut butter also contains vitamin E, vitamin B3, copper, iron, calcium, potassium, etc. Thanks to fiber and healthy fats speeds up the feeling of fullness and regulates appetite. Remineralised body and is a beneficial food for those who neglect nutrition. Maintain strong bones and reduces hypertension, action is attributed to the presence of potassium. It is a nourishing food by the presence of protein, and a cure to prevent infections. In addition, all antioxidants reduce the risk of colorectal cancer, inflammation and specific signs of aging (www.bucataras.ro).

CONCLUSIONS

1. Spanish type has small seeds, covered with a brown shell, grouped two seeds in pods, and Valencia type has large seeds, covered with a red shell, grouped four seeds in pods.

2. Peanut oil reduces cholesterol, thus contributing to the prevention of cardiovascular diseases.

3. Peanuts are used frequently and with good results in cases of intellectual exhaustion, physical fatigue increased in facilitating the bowel.

4. Peanut butter contains many proteins and fiber, the latter having an important contribution to the smooth digestive process.

REFERENCES

1. **Dwivedi S. L., Jambunathan R., Nigam S. N., Raghunath K., Shankar K., Ravi and Nagabbushanam G.V.S., 1990 -** *Relationship of seed mass to oil and protein contents in peanut (Arachis hypogaea L.)*. Peanut Sci., 17, p. 48-52.
2. **Dwivedi S. L., Nigam S. N., Jambunathan R., Sahrawat K. L. Nagabbushanam G.V.S and Raghunath K., 1993** - *Effect of genotypes and environments on oil contend and oil quality parameters and their correlations in peanut (Arachis hypogaea L.),* Peanut Sci., 17, p. 84-89.
3. **Jackson R. L., Taunton O. D., Morrisett J. D. and Gotto Jr. A. M., 1978** - *The role of diatary polyunsaturated fat in lowering blood cholesterol in man*, Critical Res., 42, p. 447-453.
4. **Marin Ș., 2011** -*Fitotehnie*, Editura Universitaria, Craiova.
5. **Muntean L. S., 2008** – *Fitotehnie*, Editura Academic Pres, Cluj – Napoca.
6. **Pîrșan P., 1998** – *Leguminoase pentru boabe: repere biologice și tehnologice*, Editura Mirton, Timișoara.
7. **Savage G. P., and Keenan J. I., 1994** - *The composition and nutritive value of groundnut kernels*, In: J. Smart (Editor), The Groundnut Crop: A Scientific Basis for Improvement, Chapman and Hall, London.
8. **Treadwell K., Young C. T., and Wynne J. C., 1983** - *Evaluation of fatty acid contend of forty peanut cultivars*, Oleagineux, 38, p. 381-385.
9. **Worthington R. E., Hammons R. O. and Allison J.R., 1972** - *Varietal differences and seasonal effects on fatty acid composition and stability of oil from 82 peanut genotypes*, J. Agric, Food Chem., 20, p. 727-730.

10. Young C. T. and Walter G. R., 1972 - *Rapid oleic-linoleic microanalytical procedure for peanuts*, J. Agric., Food Chem., 20, p. 1116-1118.
11. www.blog.peaceworks.net
12. www.bloominthyme.wordpress.com
13. www.bnrglobal.com
14. www.bucataras.ro
15. www.gerry0212.wordpress.com
16. www.informedfarmers.com
17. www.nutrition-and-you.com
18. www.purcellmountainfarms.com
19. www.waynesword.palomar.edu