

## ASPECTS CONCERNING PEANUTS CROPS ON SANDY SOILS IN SOUTHERN OLTENIA

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### ABSTRACT

For the capitalization of the climate and soil conditions for the sandy soil region in Southern Oltenia by cultivating peanuts it is necessary to use varieties with large production abilities and proper technology for the crops.

In view of its cultivation on south Oltenia sandy soils, there were carried out in the period 2004-2006, at the Plants Crops Research and Development Station on Sandy Soils Dabuleni, experiments have been set regarding aspects such as: the optimal seeding period, the recommendation varieties with high yield potential and balanced composition.

The research was conducted under irrigation conditions, in a three-year rotation of wheat, peanut, maize.

Along with erect growth type varieties, known for their short vegetation period, rising and creeping growth type varieties can also be used; these varieties have a great production potential in our country's conditions.

Establishing the proper time for seeding is espe since sandy soils are heating quickly but are also cooling quickly, the best seeding time is between the end of April- the beginning of May, depending on the date when the seeding depth has a steady temperature, minimal required for the seed to germinate.

**Keywords:** *genotype, sowing time, climate, productivity*

### INTRODUCTION

Peanuts contribute to the superior valorisation of sandy soils in our country, due to reduced requirements for soil fertility, low fertilizer and water consumption, soil enrichment in symbiotically fixed nitrogen. [9].

Peanut seeds have a high protein and fat content [1], [6], [11] and can be used in food and in the food industry.

The limiting factor of peanut production is heat, which restricts the area of spreading culture in the temperate continental climate in certain areas, where the



temperature conditions are improved either due to the sandy soil or due to local climatic influences of the Mediterranean type. [9].

In the area of sandy soils in southern Oltenia, peanuts find favourable ecopedological conditions for growth and fructification, conditions that allow for the good cultivation of this species [7], occupying, within agricultural crops on sandy soils, the place of improving legumes.

In this paper are presented the results obtained at the Plants Crops Research and Development Station on Sandy Soils Dabuleni in experiences regarding recommendations for soils with high production potential and balanced composition, the optimal sowing age.

## **MATERIAL AND METHOD**

The experiments were arranged in the field by randomized blocks method on sandy soil with a humus content of between 0.2-0.4%.

The research was conducted under irrigation conditions, in a three year rotation of wheat, peanut, maize.

In the time of the experience was respected the technology of growing peanuts on sandy soils.

The interpretation of research results was performed by variance analysis.

## **RESULTS**

[8] have highlighted both the role of variety and cultivation technology in peanut production in the US, concluding that for the production of high yields it is necessary to use productive varieties under the conditions of applying an appropriate cultivation technology.

The International Board for Plant Genetic Resources classifies peanut varieties after plant habitus into three main groups: erect, decumbent, procumbent.[3],[4]. The characteristic of these three groups is the correlation between the type of growth and the length of the vegetation period that grows from erect to deciduous and procumbent [1], [2].

That is why the first varieties that have been tested under the conditions of our country belonged to the group with erect port, starting from the reason that they, having a shorter vegetation period, are best able to achieve at the northern limit of the peanut cultivation area, satisfactory yields due to the maturity of a larger number of pods. The results obtained with these varieties were not satisfactory [5], [9] which led to the necessity of the creation of native varieties, materialized by the approval of two varieties: Dăbuleni, Viorica with erect port. Considering the high adaptability of peanuts, including in areas with less favourable climatic conditions, as well as the fact that the varieties in the dwelling and the procumbent groups are more productive, those in the procumbent group, with no positive correlation between the number of mature pastures and production [10], within varieties of

varieties studied at the Plants Crops Research and Development Station on Sandy Soils Dabuleni were also included varieties belonging to these two groups (table 1).

**Table 1.** *The influence of the type of growth on the production of some peanut varieties*

Group	Genotype	Average production (kg/ha)	The difference (kg/ha)	Semnification	Average kg/ha
Witness	Dabuleni	2434	Mt.		2434
Erect	Viorica	3220	+786	*	3112
	Sadovo	3005	+571		
Decumbent	Shulamith	3326	+892	*	3363
	Province China I	3400	+966	**	
Procumbent	Province Turcia	4123	+1689	***	3565
	B28	3008	+574	*	

LSD 5%= 545 kg/ha

LSD 1%= 915 kg/ha

LSD 0.1%= 1005 kg/ha

The yields obtained, compared to the Dabuleni witness variety, in two varieties of each gup, show that even under the conditions of our country varieties with a type of growth and a procumbent growth show a higher production potential than those with erect growth type. The production increase was significant in the Shulamith variety and distinctly significant in the Province China I variety of the dominant group and very significant, respectively significant in the Province Turcia and B28 varieties from the procumbent group.

Analyzing the main elements of productivity (table 2) it is observed that the number of mature plants on the plant decreases to the dominant and procumbent types of the erect type, the production increase in the varieties of these groups based on the size of the pods, the weight of 1000 pods growing distinctly significantly to the witness. For varieties with a procumbent growth type, the number of grains in the pod was distinctly significantly smaller than the witness, but the much larger beans, the weight of 1000 grains growing significantly distinct from the control. For varieties in the erect group and in the procumbent group, the yield on peeling was significantly lower than the witness, in the first group due to smaller grains, to the other due to the achievement of a smaller number of grains in the pod.

**Table 2.** *The influence of the type of growth on the productivity elements of some peanut varieties*

Group	Number of mature pods on the plan	Weight a 1000 pods(g)	Number of grains in the pod	Weight a 1000 grains(g)	Yield on peeling (%)
Witness	26	1658	2.3	552	75
Erect	31.5***	1871	2.5	513	67 o
Decumbent	29.3*	2044**	2.3	660	70
Procumbent	28.5*	2111**	1.8 oo	761 **	65 o
LSD 5%=	2.5	251	0.38	121	6.8
LSD 1%=	3.4	352	0.5	168	11.6
LSD 0.1%=	5.2	497	0.72	241	18.2

The chemical composition of peanut beans is characterized by various authors [1], [6], [11] with a content of 20-30% protein and 45-60% fat. Among the analyzed varieties (table 3), those in the procumbent group are characterized by a high protein content (26.2%), and those in the decumbent group with a higher fat content (47.9%).

**Table 3.** *The influence of the type of growth on the chemical composition of the grain in some peanut varieties*

Group	Protein (%)	Fats (%)	Cellulose (%)	Ash (%)
Witness	23.6	45.1	2.8	3.5
Erect	22.5	46.0	2.71	3.32
Decumbent	22.9	47.9	2.85	3.45
Procumbent	26.2	45.9	2.75	3.3

Under our country's conditions, the optimum sowing time is determined by achieving a minimum seed germination temperature of 12°C [9] in the soil at the sowing depth. Setting the sowing moment is important because the sandy soils heat up and cool down quickly, with the risk of going through periods when soil temperature falls below the minimum germination, affecting plant emergence and growth. The yields obtained at different epoch of sowing (table 4) highlight that sowing should be placed about 3 weeks after the soil temperature at 12°C is recorded in the soil, production increase, in this case, being very significant. The sowing time for peanuts must be set according to the climatic conditions of each year, beginning with the date when the minimum germination temperature of seeds is stabilized in the soil at the seed depth and the growing tendency to grow it (the end of April - beginning of May).

**Table 4.** *The influence of sowing epoch on the production of peanuts*

The sowing epoch	Production (kg/ha)	Difference (kg/ha)	Semnification
120C	1320	Mt.	
120C + 7 days	1280	-40	
120C + 14 days	1575	+255	*
120C + 21 days	2237	+917	***
120C + days	1645	+325	**

LSD 5%= 185

LSD 1%= 273

LSD 0.1%= 405

## CONCLUSIONS

Climate and soil conditions in the the area of sandy soils of southern Oltenia are favourable to peanut culture.

The peanuts varieties with a type of decumbent and a procumbent growth show also in our country a higher production potential than those with erect growth, those in the decumbent group also being noted for higher fat content, and those in the procumbent group with higher protein content.

The sowing epoch is determined by achieving a stable temperature of 12°C in the soil at the sowing depth, with a certain growth trend (end of April - beginning of May).

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