

THE INFULENCE OF FOLIAR AND CHEMICAL FERTLIZERS ON THE GROWING AND DEVELOPMENT OF PEASE IN THE AREA OF BOTHANICAL GARDEN, CRAIOVA

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Abstract

*Origin from Asia Minor and Central Asia, the pea (*Pisum sativum L.*) was cultivated in antiquity by Greek and Romans in the south of Europe, where afterwards was spread on the entire continent, and in our country was brought in the XVIIth century.*

The pea is cultivated on large surfaces for its seeds rich in protein (23-28%), carbon hydrates (46-50%), lecithin, vitamins and mineral salts of calcium, phosphor, potassium etc. These are used as food for human and as concentrate forage for animals.

The pea helps to establish the level of sugar in the blood, it is situated among the aliments richest in B1 vitamin, and the pea consumption helps to reduce the risk of apparition of heart diseases.

MATERIAL AND METHODS

The main goal of this study was the investigation of the behavior of Garden Pease species, Kelvedon Wonder (Italy) soil, towards knowing its adaptability on natural conditions from the study area.

For this purpose, during vegetation period, there have been made observations concerning: moment of sprouting, emerging of first real leaves, first internodes, date of flowering period, medium number of grains in the hull, medium length of the hull, length of the plants.

The experience was positioned at the Botanical Garden of the University of Craiova, in 5 variants, according to the randomised blocks, positioned in 3 repetitions.

Variants:

1. Witness;
2. Variant 2 - fertilized with Amofos (Russia), N12%, P₂O₅ 52%;
3. Variant 3 - fertilized with Azomures NPK 15%, 15%, 15%;
4. Variant 4 - fertilized with Bionat (foliar fertilization);

5. Variant 5 - fertilized with Kelpak (foliar fertilization).

The planting was realized at 14.03.2008, in a soil with pH 6.08, after in autumn was prepared by deep tillage (20 cm) and levelled for maintenance, and during spring was minced before plantation, and the soil temperature was of 3.4⁰C.

The plantation depth was of 7 cm, and the distance between rows is of 12 cm.

The chemical fertilization was realized in two stages, before dissemination and after springing. The foliar fertilization was made in 2 stages (the 5 cm stage and three weeks after it).

RESULTS AND DISCUSSION

After the determination of the chemical characteristics in the soil from the area of study have been obtained the following information (figure 1).

Table 1

Chemical characteristics of the experimented soil from the Botanical Garden, Craiova

Var.	N (%)	P ₂ O ₅	K ₂ O	H (%)	Ah	SB	pH
1	0.195	16.32	6.5	3.48	0.52	34	6.08
2	0.259	24.96	9.0	4.2	0.87	30	6.04
3	0.266	30.4	8.0	4.68	0.87	32	6.02
4	0.252	31.36	6.5	4.59	0.52	24	6.01
5	0.250	31.30	6.3	4.56	0.51	22	6.01

Morphological and phenological observations

The sprouting of pease took place on 29.03.2008. The first real leaves have appeared after 6 days (V3), after 7 days (V2), after 8 days (V4 and V5) and after 10 days (V1) from sprouting. The first internodes were formed between 8 and 12 days after sprouting. The least internodes have been recorded at variant I unfertilized. Regarding the average length of the hull, this has varied from 5.68 cm (V1) to 6.32 cm (V4). The number of grains in the hull was comprised between 4.1 (V2) and 5.0 (V5). The height of plants was registered between 65-70 cm (V1) and 90-95 cm (V4).

During April month, took place the formation of the stem, of the vegetative mass and of the root that starts to be pivoting, with numerous lateral ramifications on which will be found nodes.

It is observed that the complex fertilizers give better results, in the first stages of vegetation, towards the foliar ones.

Table 2**The main phonologic information depending on used fertilizers**

No.	Seeding	Raising moment	Fertilized	Moment of apparition of first leaves	First intercallus	Total intercallus	Date of the blossom period	Average length of the hull	Height of the plant
Var. 1	14.03.	29.03	Control	07.04	10.04	13	17.04	4 cm	65/70 cm
Var. 2	14.03.	29.03	Amofos	05.04	07.04	16	15.04	5 cm	80 cm
Var. 3	14.03.	29.03	Azomureş	04.04	06.04	16	14.04	6 cm	80/85 cm
Var. 4	14.03.	29.03	Bionat	06.04	08.04	17	13.04	6 cm	90 cm
Var. 5	14.03.	29.03	KelpaK	06.04	08.04	16	13.04	5-6 cm	85/90 cm

Number of beans on the hull: 4, 5, 6, 6, 5-6.



Fig. 1. The first phenofase observations once with the administration of the fertilization dressing



Fig. 2. Variants of peas fertilized with Azomures and Amofos

Under the aspect of dynamics of increasing in height, we can observe that this assessed slowly at the beginning of the vegetation, especially at the foliar fertilised variants (15-30 April), and at 7th May, date that corresponds to a number of 38 days from planting, the plants reached a height of 40 cm.

During the second intense growth that is developed during a period of 32 days, it was necessary the administration of a herbicide Pivot 0.7 l/ha, being prevent the Môn dicotyledonous and dicotyledonous.

The stems from variants 4 and 5 reached the height of 90 cm, and variant 2-3 at 80 cm. The leaves are green and of ovoid form, the flower is white, their opening starting at the basis of the plant, the pollen was released from the opening of the flowers.



Fig. 3. Variants of peas fertilized with Bionat and Kelpak

At this type, the flowers opened between hours 9 and 18, remaining open for a period of 3 days. The blooming period is of 10 - 22 days, and the hull are a little curved, with lumpish edge of 6 and respective 5 cm, that contain 4-5 beans, that are small, round, even and of green colour.

A special particularity is that of the roots, for all variants, that developed up to a depth of 45 cm and the lateral roots exceeded 50-60 cm, being covered with nodosities. These nodosities have been spread more on the lateral roots of first order and towards the basis of the root.



Fig. 4. Pea plants reached in the period of inflorescence at all variants



Fig. 5. Root when the plant was in the period of formation of blossom

When 75% of the hulls reached full maturity (10th June), pea plants have been harvested.

CONCLUSIONS

1. In the study zone it is recommended early pease culture, because it gives good results before the arrival of high temperatures.
2. The Kelvedon Wonder (Italy) soil, untimely soil has adapted to the existing
3. climatic and soil conditions, being indicated for cultivation extension in this area.
4. The application of foliar fertilizers Bionat and Kelpak, has lead to a growth
5. of the average length of hulls, of the number of grains in the hull, and of the height of plants.
6. The replacement of chemical fertilizers with foliar ones, represents one of the concerns of lasting agriculture, towards achieving ecological products. In case of pease this thing is possible.

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