



# Agricultural High School

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## Verification of the influence of the biological additive PGE Flora Forte on the production of lettuce. Closing dissertation in the year 2012

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**Conducted under the supervision of Ing.T.Kostka, Ph.D**

### THE ANNOTATION:

The aim of this research was a verification of PGE Flora Forte on the production of lettuce.

#### **The dimensions of the parcel and the number of plants:**

The field was divided them into parcels of the same dimensions (parcel K1, parcel K2, parcel V1 and parcel V2).

The parcels K1 and V1 were the basic test and parcels K2 and V2 represented first revision test. Parcels with indication K are the control parcels without spraying. Parcels indication V are once sprayed tested biological additive PGE Flora Forte.

**The parcels were 3,2 m wide and 3 m long. Each parcel was 9,6 m<sup>2</sup>.**

#### **It was followed by lettuce:**

**Variant K** - Control sample without PGE Flora Forte.

**Variant V** - Using PGE Flora Forte and was discovered by the effect of the biological additive PGE Flora Forte on production of lettuce **Smaragd**.

**The test was conducted twice.**

**It was found a positive effect of PGE Flora Forte on the yield of lettuce.**

#### **The observed object and the reference values:**

The object Locika Garden (*Lactuca sativa* Linnaeus, 1753) (also garden salad)

Locika garden creates a large, bubbling malformed, often densely squeezed ground leafs. Plants of the same or the next year creates a direct up to 1 m high, bald dense broad leaved stalk which is the top branches in small tuft panicles of the yellow flowers. .

The inflorescence is developing in July and August. The lower leaves are ovate, sessile and along the outskirts of finely toothed and hugging stem by heart-shaped the bottom parts. The above are the leaves on the stem are smaller and the inflorescences are small bracts.

Locika garden is grown as a garden salad – rich in vitamins.

#### **The Variety SMARAGD - characteristic:**

The variety SMARAGD is a proven variety for doesn't heat speeding-up and cold in the unheated hotbed with humus soil structure. It is not recommended for early field cultivation. Vegetation time is 97 days from sowing, 47-55 days after planting. Cones are of medium size, the leaves yellow, bubble packages.

#### **Sowing:**

We have to put their hand in a time of 13.02.2012 to the sowing plastic boxes by method of pinching to the lines. For the planting season, was used the subtle compost soil. Boxes were then overlapped non-woven fabrics and treated against mould spores germinate dressing product of name Previcur about concentration 2.25%. They were subsequently transferred to a hotbed of boxes, where they were up to 27. 02.2012.

**Transferring:**

The lettuce was transferring dated 27.02.2012 in the phenological phase 2 genuine batches to beforehand prepared plant protection equipments. The equipments were again transferred to the hotbeds where there were up to 27. 03.2012.

**Planting:**

The lettuce was manually planted in term 27.03.2012 in phenological phase 6 true leaf to the plastic greenhouse. The line spacing from each other was 25 cm and distance between plants on the row from each was 20 cm. On one parcel of land has been planted 192 plants lettuce.

**Method of application PGE Flora Forte:**

For the treatment of trees with an area of 1 ha is recommended to use 3 gallons of biological additive PGE Flora Forte, which can be mixed with water in any suitable employment. This dose (3 lt.ha<sup>-1</sup>), we therefore meet.

The substance was applied by spraying on the worksheet using a manual sprayer in the above concentration in this term:

The parcel K1- without biological additive PGE Flora Forte

The parcel K2- without biological additive PGE Flora Forte

The parcel V1- 1 x application biological additive PGE Flora Forte (18. 04.2012)

The parcel V2- 1 x application biological additive PGE Flora Forte (18. 04.2012)

At the time of application PGE Flora Forte the plants of lettuce in the phenological stage developed rose of leaf without head.

On parcel V1 and V2 are the same calculated quantity PGE Flora Forte 2,88 ml. This quantity was measured out using laboratory pipette into the sprayer, which added water to the uppermost was subsequently mixed and uniformly squirted the plot of land.

**Followed values:**

The mass in grams, number of cones yield per hectare cones lettuce in (t.ha<sup>-1</sup>) and the number of sheets in the heads.

**The timing test:**

Testing of biological additive PGE Flora Forte on the lettuce was conducted from 13.02.2012 to 18. 05.2012. This period includes: sowing, growth and harvest of lettuce. Substrate for sowing the seeds was ready in the autumn of 2011.

**The climatic conditions during vegetation growth:**

**Table. 1**

Parameter	February	March	April	May
<b>T</b>	- 5,9	4,8	8,7	14,5
<b>N</b>	- 1,4	2,4	7,5	12,5
<b>O</b>	- 4,5	2,4	1,2	2,0

**Legends:**

**T** - The air temperature [°C]

**N** - The long-term normal of air temperature 1961 – 1990 [°C]

**O** - The deviation from the normal [°C]

Territorial deductions were not detected because the trial was held in stool bed, which cover plants from the top. The greenhouse had opened the heads.

**RESULTS AND STATISTICAL EVALUATION:**

The main aim of the test was the acquisition of new results concerning the effects of bio-additives PGE Flora Forte on the yield of lettuce.

The results of the tests are listed in Table 2 and depicted in the Graph 1

**Table.2 The yield of lettuce from individual plots**

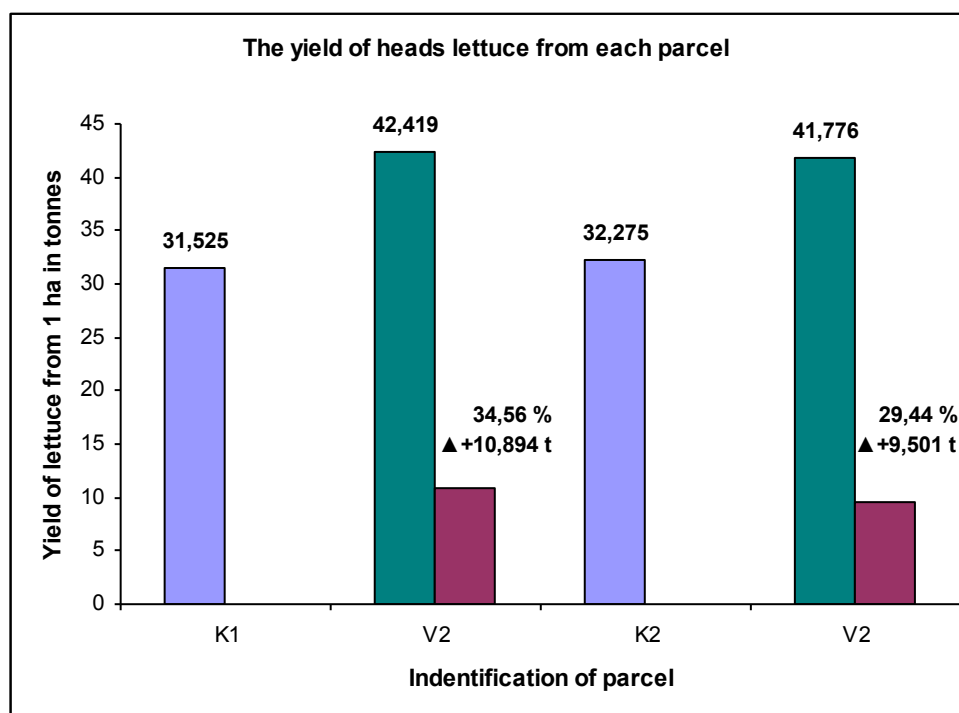
Followed values	Test No. 1		Test No. 2	
	Parcel K 1 without spraying PGE Flora Forte	Parcel V 1 1x spraying with PGE Flora Forte	Parcel K 2 without spraying PGE Flora Forte	Parcel V 2 1x spraying with PGE Flora Forte
The yield from each of the parcels [g]	30 264	40 722	30 984	40 105
The yield from each of the parcels [kg]	30,264	40,722	30,984	40,105
The yield from each of the parcels [t]	0,030264	0,040722	0,030984	0,040105
Yield per hectare, calculated from individual plots [t.ha <sup>-1</sup> ]	31,525	42,419	32,275	41,776
The difference in passenger yields per hectare referred from individual plots [t.ha <sup>-1</sup> ]		▲ + 10,894		▲ + 9,501
The average weight of one cones [g]	157,63	212,09	161,38	208,88
The difference in average weight of single cones [g]		▲ + 54,46		▲ + 47,50

From Table 2 and Graph 1 is a noticeable positive effect of PGE Flora Forte on the yield of heads of lettuce Smaragd. The second attempt was confirmed by the results of the 1.

**After application of the PGE Flora Forte the yield increased from per hectare of heads lettuce Smaragd:**

- 1. Attempt about +10,894 t, which makes the increase about 34,56 %**
- 2. Attempt about + 9,510 t, which makes the increase about 29,44 %**

Differences in measured values for Tests 1 and 2 are caused by reading entity which have no effect on the quality of the processing of the measured values do not exceed the permitted and statistical differences



**Conclusion:**

Tests were made as little parcels using the standard method. Both tests demonstrated the positive effect of the PGE Flora Forte on the yield of lettuce of the variety SMARAGD. Treated plants did not accelerate its development on growing the top but weight gain cones was caused by the greater bulk up.. PGE Flora Forte did not produce earlier the onset of flowering lettuce ("bolting" of lettuce). Manual harvest technology accounted for her lossless.

**Dissertation readers:**

Ing.F.Marianek, Ph.D – Director of the Regional Agricultural Chamber of Ostrava

Prof.A.Novak, CSc - Expert for biotechnology with utilization biological additives