

INFLUENCE OF SOME BIO-STIMULATORS ON OBTAINING OF SEEDLINGS AT LAVANDULA ANGUSTIFOLIA

INFLUENȚA UNOR BIOSTIMULATORI ASUPRA PRODUCERII RĂSADURILOR LA LAVANDULA ANGUSTIFOLIA

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Abstract. In the current paper are presented the results regarding influence of treatments with gibberellins GA3 and Razormin on germination of seeds at species *Lavandula angustifolia*. Research took place in glasshouse conditions in year 2018. Were made observations regarding dynamics of rising and were determined germination velocity and germination rate. The obtained results prove the fact that *Lavandula angustifolia* seeds have a favourable response to treatment with bio-stimulators.

Key words: *Lavandula angustifolia*, seedlings, bio-stimulators

Rezumat. În această lucrare sunt prezentate rezultatele privind influența tratamentelor cu giberelină GA3 și Razormin asupra germinației semințelor la specia *Lavandula angustifolia*. Cercetările s-au făcut în condiții de seră în anul 2018. S-au făcut observații asupra dinamicii răsării și s-a determinat viteza germinației și procentul de germinație. Rezultatele obținute demonstrează faptul că semințele de *Lavandula angustifolia* răspund favorabil la tratamentul cu biostimulatori.

Cuvinte cheie: *Lavandula angustifolia*, răsaduri, biostimulatori

INTRODUCTION

Lavandula angustifolia is a perennial ornamental species, sempervirens with a sub-shrub aspect, belonging to Lamiaceae family (Cantor, 2009; Draghia and Chelariu, 2015; Butnăraș, 2016; Lelescu, 2013). Lavender present a thin and woody stem, with a height of around 50 cm, leave are small having a grey-green colour, flowers could be white, blue with various nuances till dark-violet. Lavender plants, the “mauve gold” of agriculture, but especially flowers, have a specific, floral, pleasant pungent smell, with a fresh nuance of mint and lemon. Lavender’s aroma is considered to be the fragrance of remembrance, the fragrance of romantics (Butnăraș, 2016; Lelescu, 2013).

Lavender’s seeds germinate hardly because have a tough tegument and weak permeable. Even if germinate in conditions of a temperature of 12-15⁰C and constant moisture, germination rate is low (Șerban, 2011).

Due to the fact that in the last years, in Romania, the interest for utilization

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of lavender increase constantly, as ornamental plant (in landscape designs, as cut flower in fresh state or dried) (Cantor, 2009; Buta and Cantor, 2015; Draghia and Chelariu, 2015), but especially for the obtained oils (Butnăraș, 2016; Lelescu, 2013), we aimed to study the influence of some bio-stimulators on germination of seeds.

MATERIAL AND METHOD

Research was carried out at Farm Neagu Cristina-Florina I.I. from Țifești commune, Vrancea County, Romania, in year 2018.

Research material was represented by *Lavandula angustifolia* 'Sevtopolis' sort (fig. 1). This sort is well known for its adaptation capacity at Romanian climate and for its productive characteristics regarding flowers and essential oil.



Fig. 1 *Lavandula angustifolia* 'Sevtopolis' (original photo)

Were organised three experimental variants: untreated control (V1), seeds treated with gibberellins GA3 0.75g/L (V2) and seeds treated with bio-stimulator Razormin 2mL/L (V3). For each variant were used 100 seeds. At treated variants, before sowing, seeds were kept for 24 hours into a solution of GA3 0.75g/L or in Razormin 2mL/L. Sowing was realised in solarium, into a substrate formed by peat and garden soil, in equal rates.

During research were made observations regarding germination dynamics, germination rate and on seedlings morphology. Determinations were realised from 7 to 7 days, from sowing till the moment in which seeds ceased to germinate, after around 28-30 days. The obtained results were synthesised in tables and graphs and were statistically interpreted, using limit differences.

RESULTS AND DISCUSSIONS

Analysing germination dynamics could be observed that treatments with GA3 and Razormin triggered seeds germination with about two weeks earlier that at control variant, so at the first observations, after 7 days from sowing, germination rate was of 15 % at V2 and 8% at V3, and after 21 days, germination rate was between 54 and 66% at treated variants face to 29% at control variant. After 30 days from sowing, germination rate was 82% at variant with GA3 (V2),

76% at variant with Razormin (V3), and at control variant was 57% (tab. 1).

Table 1

Dynamics of emergence (%)

| Variant | After ... days | | | |
|---------|----------------|---------|---------|---------|
| | 7 days | 14 days | 21 days | 30 days |
| V1 | - | - | 29 | 57 |
| V2 | 15 | 24 | 54 | 82 |
| V3 | 8 | 31 | 66 | 76 |

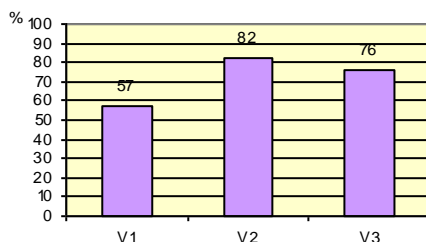


Fig. 2 Germination rate

Analysing from statistically point of view seeds germination rate was observed that treatments with bio-stimulators determined very significant positive differences face to untreated control (tab. 2).

Table 2

Influence of treatments with bio-stimulators on seeds germination

| Variants | Nr. of emergent plants -pieces- | % face to mean | Difference | Signification |
|--|---------------------------------|----------------|------------|---------------|
| V1 | 57 | 100.0 | 0.0 | control |
| V2 | 82 | 143.86 | 6.0 | *** |
| V3 | 76 | 133.33 | 19.0 | *** |
| LD 5%=5.7 pieces; LD 1%= 8.2 pieces; LD 0.1%=14.0 pieces | | | | |

Table 3

Growing dynamics of seedlings

| Variant | After....days from emergence | | | | | |
|---------|------------------------------|-----------------------|-------------|-----------------------|-------------|-----------------------|
| | 14 days | | 21 days | | 30 days | |
| | Height -cm- | Nr. of leave -pieces- | Height -cm- | Nr. of leave -pieces- | Height -cm- | Nr. of leave -pieces- |
| V1 | - | - | 1.0 | 2.0 | 1.64 | 3.20 |
| V2 | 1.8 | 2.60 | 3.26 | 5,07 | 6.17 | 6.7 |
| V3 | 1.79 | 2.83 | 3.33 | 5.24 | 6.52 | 7.05 |

After 30 days from sowing seedlings were characterized by a height between 6.7 cm and 7.05 cm at treated variants, face to 3.20 cm at control variant (tab. 3).

From statistical analysis of the results regarding plants' height, as well as the number of leave/seedling was observed that differences face to control are very significant positive at variants with treated seeds (tab. 4, tab. 5).

Table 4

Results regarding height of seedlings

| Variants | Height -cm- | % face to control | Difference | Signification |
|--|----------------|----------------------|------------|---------------|
| V1 | 1.64 | 100.0 | 0.0 | control |
| V2 | 6.17 | 387.5 | 4.6 | *** |
| V3 | 6.52 | 406.25 | 4.9 | *** |
| LD 5%=0.1 cm; LD 1%=0.2 cm; LD 0.1%=0.3 cm | | | | |

Table 5

Results regarding number of leave at obtained seedlings

| Variants | Nr. of leave -pieces- | % face to control | Difference | Signification |
|--|--------------------------|----------------------|------------|---------------|
| V1 | 3.20 | 100.0 | 0.0 | control |
| V2 | 6.17 | 193.75 | 3.0 | *** |
| V3 | 7.05 | 221.88 | 3.9 | *** |
| LD 5%=0.1 pieces; LD 1%=0.2 pieces; LD 0.1%=0.4 pieces | | | | |

CONCLUSIONS

Treatments with GA3 and with Razormin, applied to seeds before sowing, determined the shortage of period till germination started.

Germination rate was 82% at seeds treated with GA3, 76 % at the ones treated with Razormin, face to 57% at control variant.

At variants with treated seeds were obtained net qualitative seedlings, face to control variant (well developed sprouts and rich foliage).

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