ASPECTS REGARDING THE INFLUENCE OF STIMULATING SUBSTANCE S ON GERMINATION AND DEVELOPMENT AT *ALBIZZIA JULIBRISSIN*

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Over named the „happiness tree", Albizzia julibrissin reaches maximum 12 m height and has a great ornamental value due to its extremely beautiful flowers, with numerous long, silky stamens of varying colors (pink, yellow, white, violet) which make a great decor from July till August and due to its rich leaf charge, with the same touch sensibility as the rest of the Mimosa species. It is sensible to our country's strong frosts, though the studies proved the fact that, adequately acclimatized, the Albizzia julibrissin plants can cope, for a short time, to normal frost periods for the Moldavian area.

The paper is proposing to present some aspects regarding the possibilities of improving generative breeding technology for this specie, by using some stimulating substances for germination and root formation (Radistim - powder and ASFAC – 4), in the research conditions from the flower greenhouse of U. Ş. A. M. V. Iasi.

The observations were made during February - June 2008, using four variants:V_1 – untreated control, V_2 – Radistim powder, V_3 –ASFAC-4 20 ppm, V_4 – ASFAC-4 25 ppm, using the same substratum for all four variants variants.

Key words: *plant, germination, stimulating, develop*

Spontaneous plant from the United States' western temperate zone, *Albizzia julibrissin* comes from China, Persia, Korea and Japan. It is so-called by the Chinese like "happiness herb" or "collective happiness bark". They recommend it, for its tonic and calm inducing properties, as sedative in traditional oriental medicine.

The name of *Albizzia* comes from the name of the Florentine noble that discovered it, Federico de Albizzi, who brought the specie into Europe in XVIIIth century. Reaching 12 meters high, it has a relatively slow growing (25 cm/year) in less warmer zones, with shorter days than in its place of origin, supporting even the cold, down to -17° Celsius.

The leaves are falling type ones, 30 cm long and have a certain "sensibility", closing themselves in the evening on when touched/cut. The flowers have long, silky, pink stamens, grouped like pom-poms; they appear in July - August, being very decorative. The fruits that come out of these flowers are plate capsules, of 10 -

15 cm, containing 5 to 8 seeds that are spread when the capsule opens. It forms a wide treetop, with few ramifications with delicate, elegant foliage. It can be used as solitary tree or in combinations.

It prefers the direct sun and well drained soils but it can also adapt to partial shadow, on relatively poor soils, even alkaline. The seedlings need to be protected over winter a couple of years, until they are resistant enough.

MATERIAL AND METHOD

The paper presents partial results of a study developing during 4 years, reffering to the response of *Albizzia julibrissin rosea* to treatments with stimulating substances for germination and root development processes.

For this purpose, two stimulating substances were used: RADI-STIM - powder and ASFAC-4 - solution, the last one in two different concentrations: 20 ppm and 25 ppm.

The seeds were harvested in the autumn of 2007, adequately stored and seeded in lobed plates, in the U.Ş.A.M.V. Iaşi greenhouse. These seeds are from *Rosea* cultivar which is the most spread into our country, due to its beautiful intense-pink flowers, as well as to its rustic aspect. It supports even the normal frosts from the eastern part of Moldavia, in the cold winters; the young branches and the annual shoots frost but the plants recovers after cutting by natural regeneration.

For the seed treatment with RADI-STIM powder, the seeding was made on February 28th 2008, using 80 seeds for each variant: V_1 - treated with RADI-STIM powder and V_m – untreated control.

For the treatments with ASFAC-4, the seeding was made on April 14th 2008, using 50 seeds for each variant: V_1 - treated with ASFAC – 4 solution 20 ppm, V_2 – treated with ASFAC – 4 solution 25 ppm and V_m – untreated control. The seeds treated with ASFAC – 4 were soaked in the solutions for 4 hours and the seeds for the control variant were soaked for 1 hour into water.

RESULTS AND DISCUSSIONS

The observations regarding the rising and the development of *Albizzia julibrissin rosea* seedlings were conducted daily, the measurements being registered every week.

The first seedlings appeared after approximately 8 days from seeding, most of them coming from seeds treated with RADI-STIM powder.

A bigger number of seedlings appeared around March 12 2008, the results being clearly favorable to the variant treated with RADI-STIM powder compared to the control variant: 67.5% at the treated variant compared to 31.25% at the control variant. During the observations, clear differences were registered between the two variants, related to the speed and the germination percentage, the variant treated with RADI-STIM powder being superior to the control one with 5-25% (*fig. 2*).

In *table 1* there are presented the mean values for vegetative growth registered in experiment I (RADI-STIM powder), values registered between March 13 – May 16 2008. We mention that these results are partial, the observations

continuing, in order to establish some other correlations between treatments and the plants' growth and development (*fig. 1*).

Table 1

Observation results for the RADI-STIM powder experiment

Variant	Observation date / Mean height values (cm)								
	13.03	20.03	27.03	3.04	16.04	25.04	5.05	16.05	26.05
Vm	3.30	3.89	4.08	5.35	6.21	6.40	7.32	8.52	12.05
Vt	4.43	4.58	5.37	6.23	6.52	7.06	7.50	8.87	11.33

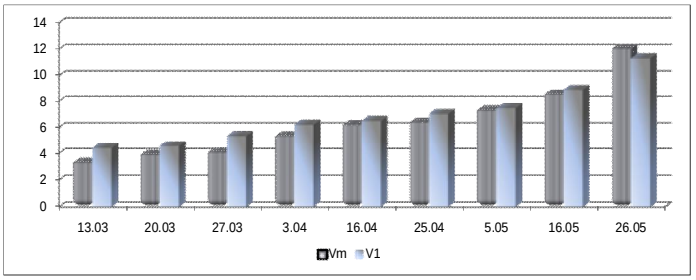

Figure 1 **Observations on RADI-STIM treated variant's plants compared to the control**

Figure 2 **Lobed plate with Albizzia julibrissin plants (Vt)**

Plants' separation took place on April 7 and 8 2008, for RADI-STIM powder treated variant registering a germination percentage of 100%.

On April 14 2008, a second experiment was settled in order to compare the behavior related to a germination stimulator from another active substances class. For this purpose, ASFAC – 4 was used, a growth stimulator with phenoxy acetic

nucleus substituted with sulfonamidic groups, which was previously tested on *Rosa* species.

We set three variants: a control Vm, with seeds soaked in water for 1 hour and two variants treated with ASFAC – 4 in different doses, V1 – 20 ppm şi V2 – 25 ppm, by seeds' immersion into the treatment solution for 4 hours.

This experiment's first risen seedlings were registered on April 29 2008, especially in the ASFAC – 4 treated variants, but still with approximately 7 days delayed compared to the first experiment, result explained by the fact that during 16-19 of April, the temperature in the greenhouse was lower, especially during night. The already risen plants from the first experiment resisted well, reacting by an obvious red shade of the leaves.

The partial results emphasize the fact that the seeding processes for all three variants were directly influenced by the climate conditions and also by the late seeding period. The observations conducted during May 5– May 26 2008 underlined the following aspects: the germination power was more reduced compared to the first experiment, varying between 50 şi 78 %, while the RADI-STIM treated variant had a percentage of 100%; the registered risen seedlings' growth increases had a slower rhythm - after approx. 3 weeks, the plants had mean height values between 5 – 5.5 cm, while in the first experiment, in the same period of time, the measured increases were of 5.5 – 6.5 cm (*table 2* and *fig. 3*).

Table 2

The observation results for the ASFAC – 4 experiment

Variant	Observation date / Mean height values (cm)			
	5. 05. 2008	16. 05. 2008	26. 05. 2008	6. 06. 2008
Vm	1.10	3.13	4.05	4.58
V1	1.02	1.74	4.43	5.46
V2	1.90	3.47	4.30	5.25

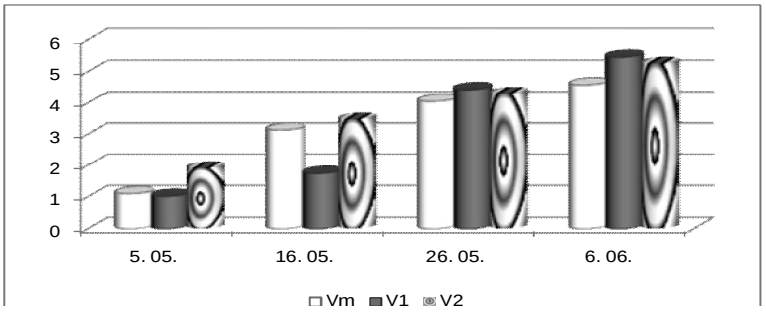

Figure 3 **Observations on ASFAC - 4 treated variant's plants compared to the control**

The data emphasize the fact that from the variants used in experiment II, the most effective is variant V1 – treated with ASFAC-4 - 20 ppm (*fig. 4*).

Figure 4 **Lobed plate with Albizzia julibrissin plants (V1)**

During the greenhouse observations, *Trialeurodes vaporariorum* attacks were signalized, therefore two treatments with Actara 25 WG – 0.02% were made. Also, the seedling's falling, produced by the *Phytium debaryanum* fungus, was treated with Previcur 607 SL – 0.15%.

Observations were also made on the root system of *Albizzia julibrissin rosea* seedlings, registering significant differences between the treated variants and the control ones (*figures 5* and *6*).

Figure 5 **Untreated seedlings**

Figure 6 **Seedling treated with RADI-STIM**

CONCLUSIONS

1. This paper proposed to present two experiments conducted on *Albizzia julibrissin var. rosea* seeds, the first one using RADI-STIM powder and the second one, solutions of ASFAC – 4, in different concentrations (V1 20 ppm şi V2 25 ppm).

2. The seedlings' rising took place earlier (after app. 8 days from seeding) in the case of RADI-STIM powder treatment, the germination percentage being initially of 67.5%, reaching later to 100%.

3. The clear positive influence of RADI-STIM was noticed only on germination percentage, the increases registered in the observation period (March 13 – May 26) being more representative for the control.

4. The most evident differences are noticed on the root system level, where RADI-STIM treated plants present clearly bigger and richer ramified roots.

5. The second experiment, with seeds soaked in solutions of ASFAC- 4, underlined the fact that the germination power was more reduced than in the case of RADI-STIM treated seeds, fact influenced also by the less favorable climate conditions during April 16-19.

6. From all three variants of the second experiment (Vm, V1 and V2), the best results for seedlings' growth were registered at variant V1, treated with ASFAC – 4 - 20 ppm.

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