

RESEARCHES REGARDING THE OPTIMIZING RECIPES OF NUTRIENT MEDIUM AT *MIMOSA PUDICA*

Ionela Rusea^{1,*}, Florina Uleanu¹

¹ University of Pitești, Str. Târgu din Vale, No. 1, Pitești, Argeș

Abstract

Due to its sensitive leaves, as well as special shape and color of flowers, *Mimosa pudica* always has been a major horticultural curiosity, both in the tropics and cultivated in greenhouses, in temperate zones. The experimental research was carried out to develop technological links in culture of mimosa by optimizing nutrient medium recipes. For this it was established the influence of the substrate type upon growing and development of *Mimosa pudica*. To achieve experiences were carried out 5 variants of different types of nutrient mixture in 10 repetitions. Thus, the performed researches have shown a considerable growth rate of 42 cm high, in case of V1 variant, due to the use of culture substrate with high content of nutrient composition having garden soil and Biolan peat. The lowest values were recorded in case of V5 variant, containing medium composed by forest soil, growth rate being of 35 cm.

Keywords: development, *Mimosa pudica*, substrate.

1. INTRODUCTION

Mimosa pudica L. is a perennial plant that grow spontaneous in tropical regions of the world but are often cultivated as an annual plant in temperate areas (Holm et al., 1977). "It has been widely introduced and cultivated as a curiosity due to its highly touch sensitive leaves (Davis and Johnson, n.d., Dave's Garden, 2014), now considered a pan-tropical species (Holm et al., 1977)".

Mimosa pudica is a seismonastic plant at which the leaves close in response to wind breezes, vibration and touch as a mechanism of defense against animals and insects (Bose, 1928). Many years ago Bose (1918) mentioned in his famous book about the sensitive plant *M. pudica*, „the phenomenon of movements in plants under the action of external stimuli presents innumerable difficulties and complications” (Volkov et al., 2009). All vegetative organs of plant (leaves, flowers, stems, roots and fruits) are used as medicines in the traditional healthcare systems (Joseph et al., 2013).

1. MATERIALS AND METHODS

For the experiment, as research material was used different types of nutritive substrate in mixture or individual (Figure 1).

To achieve experiences were carried out 5 variants of different types of nutrient mixture in 10 repetitions (Table 1).



Figure 1. Experimental variant

Table 1. Experimental variants

No. variants	Variant type
V1	Garden soil + Biolan peat + Forest soil + Sand (2:2:1:2)
V2	Forest soil + Uncultivated soil + Perlite+ Garden soil (2:2:2:1)
V3	Forest soil + Biolan peat + Perlite (3:2:1)
V4	Biolan peat
V5	Forest soil

In order to achieve the experience it was used a total of 100 seeds of *Mimosa pudica* species, of which only 63 seeds germinated.

Before sowing, the seeds have been subjected to heat treatment for 24 hours in the first decade of April (Figure 2).



Figure 2. Mimosa seeds

3. RESULTS AND DISCUSSIONS

The elements of research studied consisted in measuring the height of plants, leaf lengths, number of leaves and stems, the distance between leaves to highlight the influence of the nutrient substrate component used (Figures 3 – 7).

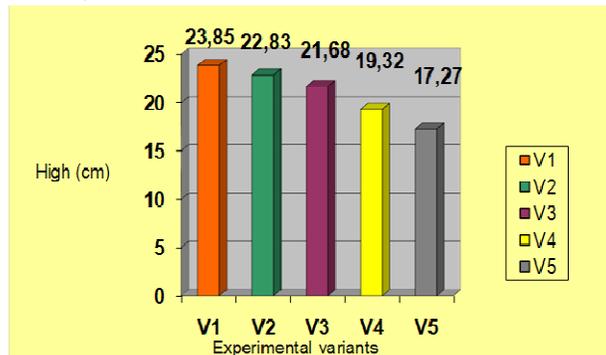


Figure 3. Average growth rate

According to the Figure 3 it is observed that in the V1 variant the highest growth rate was 23.85 cm and the lowest for the variant V5, 17.27 cm.

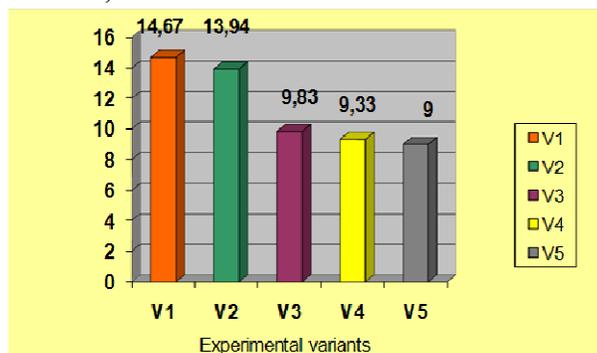


Figure 4. Average number of leaves

The average number of leaves indicates that V1 variant shows the best results and the lowest results for V5 variant (Figure 4). The number of leaves for each of the 5 variants decreased as the observations were made, at different time intervals, because of the physiological causes.

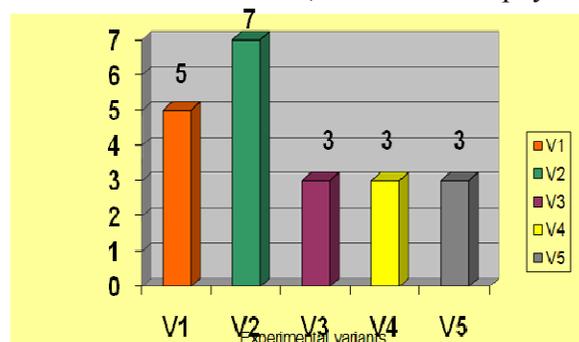


Figure 5. Number of shoots

The Figure 5 shows the number of shoots, the V1 variant recording a large number of growth shoots compared with the variants V2, V3, V4 and V5, where the results of this character are lowest.

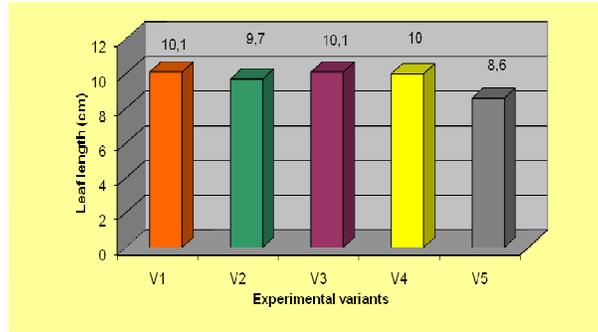


Figure 6. Average leaf length

According to Figure 6, the nutrient substrate did not influenced the average length of the leaves, the differences between the variants being insignificant, except for the V5 variant with the lowest value of 8.6 cm.

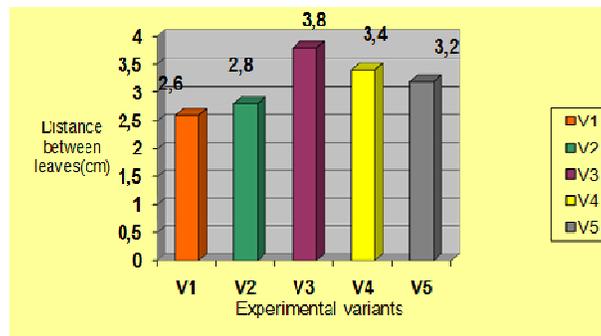


Figure 7. Average distance between leaves

Concerning the distance between leaves, it is observed that for the variant V3 this is the biggest and the lowest for the variant V1, which shows that these results indicate that the nutritive substrate mixed from Forest Soil + Biolan peat + Perlite (3:2:1) is favorable for the mimosa culture (Figure 7).



Figure 8. Aspects of the mimosa plants during the experiment

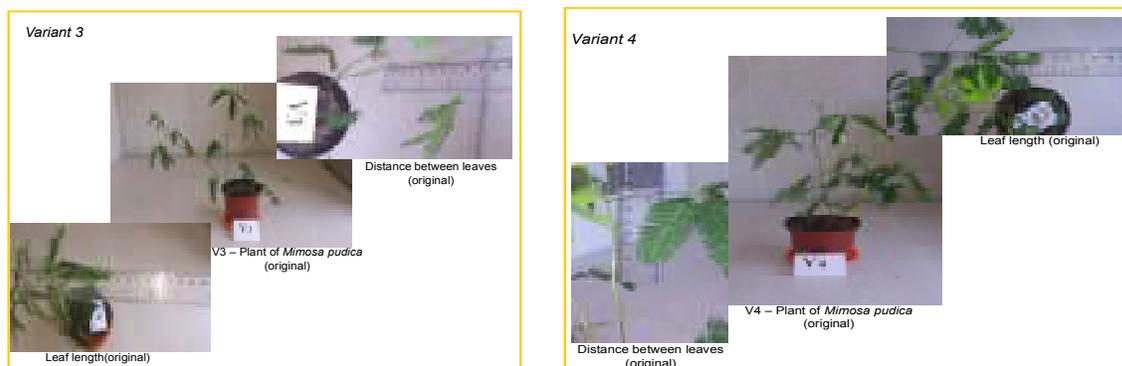


Figure 9. Aspects of the mimosa plants during the experiment

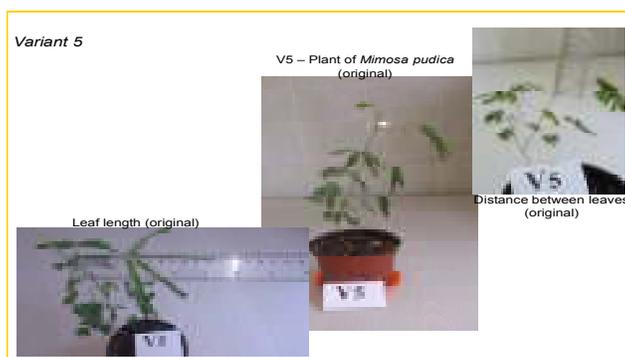


Figure 10. Aspects of the mimosa plants during the experiment

The images from the Figures 8, 9 and 10 shows the experimental observations for each variant.

4. CONCLUSIONS

The performed researches have shown a considerable growth rate of 42 cm high, in case of V1 variant, due to the use of culture substrate with high content of nutrient composition having garden soil and Biolan peat.

The lowest values were recorded in case of V5 variant, containing medium composed by forest soil, rate growth being of 35 cm.

The initial observation was that after sprouting all seedlings had the same growth rate, rhythm which was intensified and differentiated during the experiment.

Average number of leaves showed that the V1 variant had the best results with the highest number of leaves (14 leaves/plant) and V5 variant lowest results (9 leaves/plant).

In what concerning number of shoots the best results were obtained in case of V2 variant (7 shoots/plant) and the lowest in case of V3 variant followed by the V5 and V4 variants.

Regarding the distance between leaves, V1 variant was recorded significant results and lowest value in case of V1 variant.

5. REFERENCES

- Bose, J.C. (1918). *Life Movements in Plants*. B.R. Publishing Corp., Delhi, India
Bose, J.C. (1928). *The Motor Mechanism of Plants*. Longmans, London, UK

- Dave's garden. (2000 – 2014). *Plant Files: Touch-me-not, Tickleme Plant, Tickle Me Plant, Sensitive Plant, Humble Plant, Mimosa pudica*. Accessed November 18, 2017, <http://davesgarden.com/guides/pf/g/2573>
- Davis, S., Johnson, N. n.d. *Mimosa pudica* (sensitive plant). Royal Botanical Gardens, Kew. Accessed November 18, 2017, <http://www.kew.org/science-conservation/plants-fungi/mimosa-pudica-sensitive-plant>
- Holm, L. G., Plucknett D. L., Pancho J. V., Herberger, J. P. (1977). *The World's Worst Weeds: Distribution and Biology*. Krieger Publishing Company, Malabar, Florida, U.S.A. 69 pp.
- Joseph, B., Jency, G., Jeevitha, M. (2013). Pharmacology and Traditional Uses of *Mimosa pudica*, *International Journal of Pharmaceutical Sciences*, 5(2), 41–44.
- United States Department of Agriculture (2014). *Animal and Plant Health Inspection Service: Weed Risk Assessment for Mimosa pudica L. (Fabaceae) – Sensitive plant*, Version 1.
- Volkov, A.G., Foster, C.J., Ashby, A.T., Walker, K.R., Johnson, A.J., Markin, S.V. (2010). *Mimosa pudica*: Electrical and mechanical stimulation of plant movements, *Plant Cell Environ*, 33(2), 163–73.