Available online at www.pelagiaresearchlibrary.com

Pelagia Research Library

Asian Journal of Plant Science and Research, 2013, 3(4):28-30

ISSN : 2249-7412
CODEN (USA): AJPSKY

Effect of sound on plant growth

Aditi Singh, Akanksha Jalan and Jhinuk Chatterjee*

Department of Biotechnology, PES Institute of Technology, Bangalore, India

---

ABSTRACT

This study is an attempt to understand the effect of noise on plant growth and behavior. The common bean plant (Phaseolus vulgaris) has been subjected to two different set of sound, first, rhythmic violin music, and second, non rhythmic traffic noise for one month. A control set of plants have been exposed to no particular noise. The music is being played using normal speakers for three hours, twice each day. The parameters such as difference in height of the plant and number of leaves are all monitored on a regular basis. The results show that the plants are not able to very clearly distinguish between rhythmic and non-rhythmic noise but are definitely showing positive effects on exposure to any kind of sound.

Key words: Bean plant, violin music, traffic noise, plant height

---

INTRODUCTION

The effect of influence of different ecological factors on physiological attributes of plants has been explored extensively [1]. Seed germination and seedling growth behavior influenced by different pretreatments has been studied for different plants [2]. Effect of heavy metals like Cd, Pb and Cu were also analyzed in different studies [8].It is a known fact that plants are sensitive to ionizing radiations. Seeds have been irradiated in order to analyze the effects of radiations. The radio sensitivities of different plants has shown considerable variations[6].Sound wave can accelerate growth of plants and the stimulation of sound wave has an obvious effect on the growth and development of plants [4][9][10]. Music, noise and healing energy has certain effect on germination of seeds. Musical sound shows better germination percentage as compared to untreated control. Sound vibrations directly affect the living systems and also the effects caused by various applied energetic conditions can be detected by seed germination bioassay [5]. There are certain melodies that help the plants to grow [3].The effect of sound has been studied on the isothermal germination of seeds. A mathematical model was proposed based on several trials to describe quantitatively the germination process [7].Little work has been done in this field wherein the plants have been subjected to different types of sound and the effects being monitored and analyzed. So, our attempt is to expose plants to violin music and traffic noise and see the effects. We chose the common bean plant, *Phaseolus vulgaris* because it is easily available and is a fast growing plant and grow to a decent height till the completion of the project. The objectives include to study the effect of noise on plants and determine if plants respond to external sound and to determine if plants can distinguish between rhythmic music and non rhythmic noise.

MATERIALS AND METHODS

Seeds of *Phaseolus vulgaris* were procured from Lalbagh Horticulture Society, Bangalore and potted at equal depth of 3/4th inch inside the soil. The pots were divided into different sets and labeled as control, music and traffic noise.

Each set was kept in the same environmental conditions and were receiving the same external sound. The sound exposure was given for three hours both morning and evening as soon the seeds germinated. The pots were kept at a distance of 35cms from the speakers and rhythmic violin music was played to the set labeled music using normal laptop with speakers. Non-rhythmic traffic noise was being played to the set labeled traffic. The control was given no external sound exposure. The volume of the selected sound pieces and the piece of music played was constant throughout the exposure period (32 days). The height of the plants was recorded every 2 days using a thread which went along with the stem of the plant. Numbers of leaves were counted every 4 days.

RESULTS AND DISCUSSION

Height recorded for a period of 32 days. The difference in height was maximum for the plants exposed to violin music, followed by the plants exposed to traffic noise (Fig1). The control set showed the minimum difference in height. This means that music has definitely helped in better growth of the plant. Therefore, the plants with no external sound being played showed slower growth.

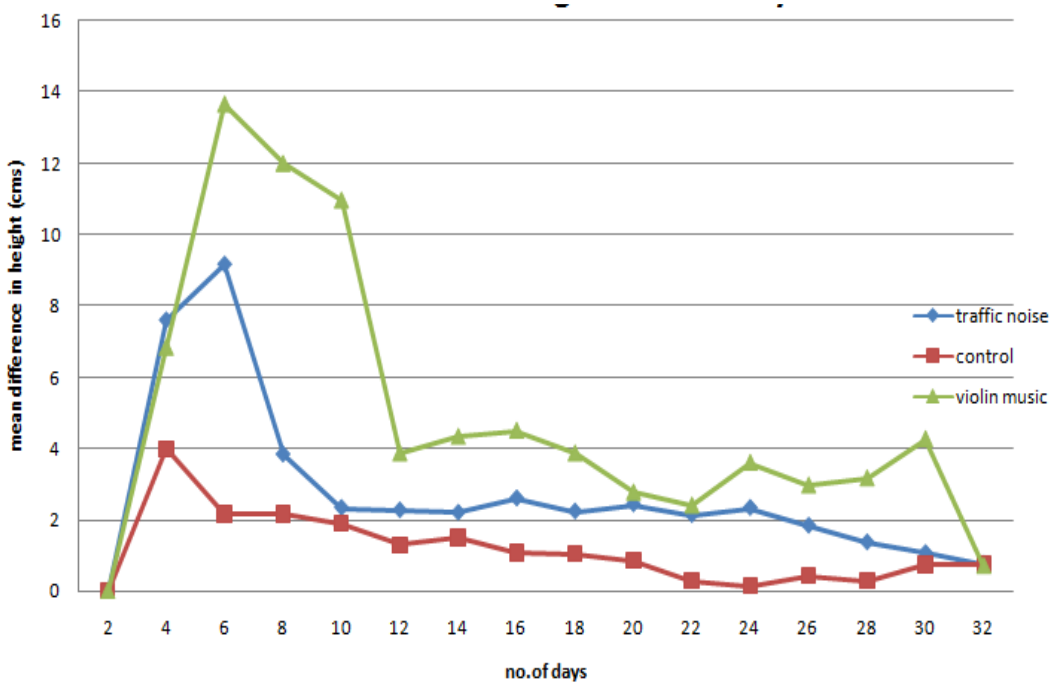

Fig1. Difference in plant height

There was not a very significant change in the number of leaves seen the three setups (Fig 2). However, a slight better result was obtained for violin music and traffic noise as compared to the control. Therefore it can be inferred that the plants may not able to distinguish between the types of sound played, be it rhythmic or non-rhythmic, but sound is definitely showing some effect on the plant.

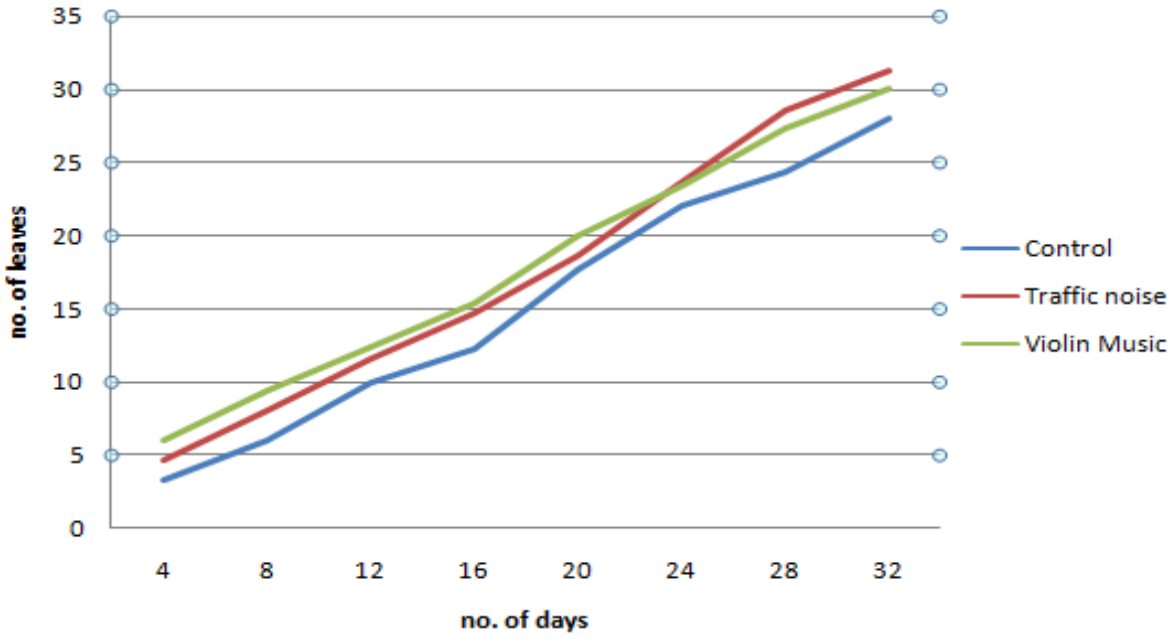

Fig 2. Number of leaves

CONCLUSION

The plots for difference in height clearly show that there is positive effect of sound on the growth of the plants. Both violin music and traffic noise have given better results than the control. Our preliminary studies clearly indicates that the plant is able to differentiate between “some sound” and “no sound” but not between “music “ and “ noise” in particular. For plants, both rhythmic violin music and non rhythmic traffic noise are proving to be beneficial. Rhythmic sound is showing better results at some places but the results are are very very close. Hence it can be concluded that the mechanical perturbation produced by sound in the physical environment of the plant, is what matters more than the type of sound which the plant encounters be it rhythmic violin music or non rhythmic traffic noise.

REFERENCES

[1] Abd El-Naby, Zeinab M., Sakr H O, *Asian Journal of Plant Science and Research*, **2012**, 2 (4), 388-395.
[2] Asha R , Pawan K ,*Asian Journal of Plant Science and Research*, **2012**, 2 (4), 409-413.
[3] Coglan A, *New Scientist*, **1994**,142, 10.
[4] Collin M., Foreman J, *Canadian Acoustics*, **2001**, 29.
[5] Creath K, Schwartz G, *The Journal of Alternative and Complementary Medicine*, **2004**, 10, 113-122.
[6] D. Pavan K, Anurag C, Sreedhar M, Aparna M, P. Venu-Babu, Singha R K, *Asian Journal of Plant Science and Research*, **2013**, 3(1):54-68.
[7] Hageseth G, *Plant Physiology*, **1974**, 53,641-643.
[8] K. Abraham, Sridevi R, Suresh B, Damodharam T, *Asian Journal of Plant Science and Research*, **2013**, 3(1):10-12.
[9] Weinberger P, Graefe U, *Canadian Journal of Botany*, **1973**, 51, 1851-1856.
[10] Xiujuan W, Bochu W, Yi J, Chuanren D, Sakanishi A, *Colloids And Surfaces B:Biointerfaces*, **2003**, 29, 99-102.