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Effect of Sound on the Growth of Plant: Plants Pick Up the Vibrations

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ABSTRACT

Just like humans, plants react to the attitude they are been exposed to. They are also sensitive to heat, cold, light and noise, as like humans. This project is intended to prove the hypothesis that Plants pick up the vibrations and does affect the plant growth.

Hypothesis

Plants pick up the vibrations and helps plants grow accordingly, and playing Ancient Indian Tradition chants helps grow plants better and faster.

Method

Seeds of plant Vigna radiata were been selected due to their relative fast growth. Seeds were then potted and housed in an ambient condition which were regulated in three different environmental chambers, completely covered by glass and made sound proof.

One chamber was used as a control for the plant kept in silence, the second plant was provided with the Sanskrit sholkas (Indian traditional ancient chants) and the third plant was provided with discouraging words.

Each chamber was provided with equal amount of water and light energy 111,000 lux to 120,000 lux. And the recording was being played for 2 h on the daily bases for each chamber.

The elongation of the shoot and the axis length of leaves were being recorded.

Results

Variable growth of the shoots and leaves were being observed with the highest length of the plant's shoot measured were from the plants provided with the Sanskrit sholkas with the measure of 13 cm in length.

Conclusion

It was seen that the plant exposed to the vedic chants showed the maximum elongation of the shoot which clearly states that subjecting plant to the vedic chants helps the growth of the plant in the significant manner.

Keywords: Vigna radiate, Sound proof environmental chambers, Sanskrit shloakas

INTRODUCTION

In the event that plants react to the ways it is nurtured and have a sensory recognition, then how would they react to sound waves and the vibrations made by musical sounds?

In consideration with the hypothesis, plants do not hear the music, they feel it. Sound is nothing but a wave traveling through a medium (air or water). The particles in the medium are at a mean to vibrate due to these waves. For an instance, turning on the radio, the sound waves in the medium, i.e., air creates vibrations, which causes your ear drum

to vibrate. This energy is converted in to electrical energy, which helps understand brain that it's a musical sound. Similarly, is the phenomenon in which plants picks up the sound waves through protoplasm and helps increase the proficiency of the plant growth [1].

There have been several studies conducted on the effect of music on the growth of the plant [2]. Past studies demonstrate that musical sound significantly affects the quantity of seeds sprouted contrasted with untreated control and sound vibrations straightforwardly influencing living biological system [3]. Also laying proper tunes have been found to animate the plant's synthesis of its fitting protein [4].

There are articles identified with studies on the impacts of subjecting seeds and plants to sound waves or magnetic fields field [5-13]. Most by far of these papers manage ultrasonic (above 20000 Hz) or subsonic (beneath 20 Hz) frequencies concentrating on impacts at the cellular and genetic levels. Little has been finished with audible frequencies (20–20000 Hz) on seeds or entire plants [2,14-18].

Late studies have uncovered that audible sound stimulation has an extraordinary potential to enhance plant development and the quality of the product. Nonetheless, till now, the correct mechanism of sound effects on plant is obscure; it is important to develop the mechanism and to create models for use of this potential innovation [19].

Vigna radiata (Mung bean), is a widely consumed legume in the South Asian cuisine, and the developmental cycle of mung bean is short, which empowers us to lead more monotonous examinations. Investigating another approach to develop *Vigna radiata* can enhance *Vigna radiata* and fulfill consumer's prerequisites. Along these lines, the target of this work was to locate the biological effect of capable of being audible sound on the germination and development of *Vigna Radiata*.

MATERIALS AND METHODS

Seed material

Vigna radiata (Mung Beans), Production- Mumbai, India.

Number of seed each setting

20 seeds.

Growth media

Biostar Organic Fertilizers, Manufacturers-sikko brands, at Vejalpur, Ahmedabad, India.

Cabinetry

3 glass based noise isolating environmental cabinets were used.

Cabinetry setting

3 (VR1, VR2, VR3) noise isolating cabinets, with the *Vigna radiata* seeded pots (organic fertilizer) in each cabinet. And were placed on the desk which received equal sunshine.

Audio supply

Pre-recorded audio-boxes were used, in which the VR1 consist of an audio recording with Sanskrit sholkas (Vedic Chants) 528 Hz [15], VR2 consists of audio recording of discouraging words and VR3 kept in silence as to be observed as a control.

Each recording was played for 2 h every day, until 20 days (20th day-concluding day).

Water and light supply

Water was supplied once a day, i.e., 250 ml to each cabinetry setting. Field capacity was 27%. And regular sunlight with 111,000 lux to 120,000 lux was provided (Table 1 and Figure 1).

Table 1: Observation

	Shoot Length	**Leaf Axis**
VR1	11-13 cm	1 cm (partially open leaves)
VR2	5-7 cm (almost decayed)	1 cm (closed leaves)
VR3 (control)	9-10 cm	1 cm (partially open leaves)

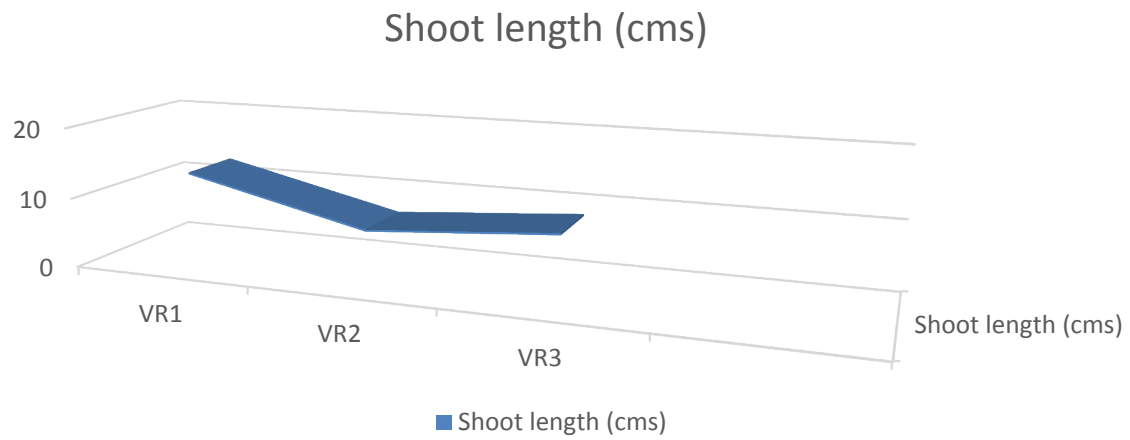

Figure 1: Observation graph.

RESULTS

Shoots of VR1 were been observed having the longest shoot length in comparison with VR2 and VR3 with on a range from 11-13 cm for VR1. Also the shoots of VR3 (control) were observed with the range of 9-10 cm and VR2 with shoot length from 5-7 cm. These results help explain and conclude the hypothesis correct.

CONCLUSION AND DISCUSSION

The hypothesis holds true- Playing Ancient Traditional Indian chants besides the plants helps intake the vibrations and helps them grow faster and much better qualitatively.

Since, the plants pick up the sound waves through protoplasm, [1] the frequency and the intensity of the sound waves does matters, as seen in the experiment that the Ancient Traditional Indian chants (high frequency) makes a remarkable change in the growth of plant, helping plant grow better and also helps in speeding up the germination process [20].

Also, to be considered that these kind of music can be used in plant nurseries to speed up the germination and also in the production of healthier plants.

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CONFLICT OF INTEREST

The author(s) declare no conflict of interest.

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