Pavan A. & VENU K. S.
MVJ College of Engineering
Visvesvaraya Technological University

Project Title

Acoustics, Magnetics and Vibration Induced Smart Agriculture Methods and Devices.

Objective

Application of acoustics and magnetism in the agricultural field for improvement in yield and pest management to reduce chemical usage and encourage organic methods of farming.

Method

Analogous to how humans respond to the different forms of music-precisely the frequency of the music, the plants also respond to the different frequencies of sound and can resonate them self to that particular frequency.

Sound waves of different audible range including infrasonic and ultrasonic range are applied on different plants shows various results which include physiological growth, endogenous hormones, germination rate, photosynthesis mechanism, disease resistance and transcription of genes. Sound waves of different frequencies modify the growth and germination rates, which induce feedback changes at molecular level inducing release of important plant hormones such as Indole-3-acetic acid [IAA], induced intake of oxygen, induced protein synthesis in RNA and the most complicated gene expression. This undoubtedly evidences the decrease the usage of fertilizers in agriculture and creating a chemical free food and a cleaner environment towards organic world

It is acknowledged that magnetic energy was also accountable for the existence of life on earth. Magnetic field engendered by earth is called Geo-Magnetic field, which defends and keeps earth's interior out from solar winds. Similar to gravitational force- magnetic force is also important to keep Earth blooming. As a part of adaptive behavior possessed by plants similar to sound, magneto tropism can also be utilized to bring up more eminent way of nurturing them.

Exposure of plants at different Magnetic field at different changes can induce- biological effects like: Increased germination rate, increased flowering time, biomass accumulation, activation of crypto chromes and shoot growth.

Outcome

Increased plant germination and growth rate, Decreased dormancy of seeds, Increased plant harmonal level and defensive capability, Zero chemical usage.

Implementation

Application of our device Echo-Germinator at germination phase, Echo-Rakshak at growth and yield phase and Vayu-Rakshak for pest management and crop monitoring