

# CHARACTERIZATION OF SOUND SPECTRUM BASED ON NATURAL ANIMALS AS AN ALTERNATIVE SOURCE OF AUDIO BIO HARMONIC SYSTEM STIMULATORS FOR INCREASING THE PRODUCTIVITY OF FOOD CROPS

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## ABSTRACT

Natural Animal Sound Spectrum Characterization based on Fourier analysis is a fundamental scientific study of the spectrum of natural animal sounds that can be used as a stimulator of growth and productivity in food intensification. The results of characterization are very useful for adding scientific treasures in the field of biophysics, especially to support the use of natural animal sounds as stimulators of growth and productivity of food crops through spectrum analysis based on Fourier analysis so that it has a strong theoretical basis to be developed into an applied industry in the field of food intensification.

Natural animal sound spectrum is obtained by recording animal sounds naturally in nature by using a voice recorder. Furthermore, the sound of these natural animals analyzed their spectrum characteristics using Adobe Audition to determine the peak frequency produced. Sound spectrum characterization which has peak frequency sonic bloom between 3000Hz - 5000 Hz is made as an audio stimulator for growth and productivity of food crops. From various 27 sources of animal sounds recorded and analyzed, there are 17 types of animals that have frequency peaks in range sonic blooms (3000-5000 Hz) and can be produced into stimulators and 1 combined stimulator. While the results of the sound timbre analysis of each animal has a frequency range including: 1-1000 Hz a number of 6 animals, 1000-2000 Hz of 8 animals, 2000-3000 Hz a number of 14 animals, 3000-4000 Hz a number of 12 animals, 4000-5000 Hz is 2 animals, and 5000-6000 Hz is 4 animals.

As for the type of animal and frequency range value on the stimulator of each sound source, namely, bird Anis Merah (3000Hz-3500Hz), bird Cendet (3000Hz-4000Hz), bird Ciblek (3000Hz-3500Hz), bird Cucak Ijo 3000Hz, bird Jalak Pecalang 3000Hz, Surfer Starfish (3000Hz-5000Hz), 4500Hz Cricket, Sumatran Kacer Bird 3000Hz-3500Hz, Canary Bird 3500Hz-4000Hz, 5000Hz cryptic bird, 3000Hz-3500Hz finches, Lovebird 4000Hz-5000Hz bird, Mozambic bird 3000Hz-4000Hz, Murai bird Stone 3000Hz-4000Hz, orong-orong 3000Hz, bird Pentet 3000Hz-4000Hz, and Pleci bird 3000Hz-4000Hz. Combined stimulators are produced from various sounds with various frequency peaks of several sound sources, namely the sound of Ciblek 3000Hz birds, Pentet 3500Hz birds, Lovebird 4000Hz birds, 4500Hz crickets, and 5000Hz Lovebird birds.

Kata Kunci: *animal sound spectrum, characterization, stimulator of growth and productivity*