

**REKAYASA FREKUENSI SUARA JANGKRIK (*Gryllidae*) UNTUK
MEMPENGARUHI PERTUMBUHAN TANAMAN CABAI KERITING
(*Capsicum annum* L.)**

ABSTRAK

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Suara menghasilkan getaran dalam medium udara atau air yang kemudian dirasakan oleh tanaman sehingga getaran suara yang diterima akan mempengaruhi buka tutup stomata. Penelitian ini bertujuan untuk mengukur lebar bukaan stomata daun, menghitung laju pertumbuhan tinggi dan jumlah daun tanaman, serta mengetahui laju serapan CO₂ yang paling maksimum akibat pemaparan suara jangkrik. Pemaparan suara yang digunakan antara lain frekuensi 3.000 Hz, 4.000 Hz dan 5.000 Hz. Penelitian ini merupakan penelitian eksperimental dengan percobaan RAL (Rancangan Acak Lengkap). Pemaparan suara dilakukan 1 jam sehari pada 08.00 – 09.00 WIB didalam *chamber* selama 43 hari. Pertumbuhan yang diamati antara lain tinggi tanaman, jumlah daun, lebar pembukaan stomata, persentase stomata terbuka dan laju serapan CO₂. Analisis yang digunakan adalah analisis grafis dan persamaan matematik pemodelan pertumbuhan tanaman. Hasil penelitian menunjukkan bahwa lebar bukaan stomata pada perlakuan 3000 Hz 0,500 µm; 4000 Hz 0,546 µm; 5000 Hz 0.540 µm dan kontrol 0,480 µm. Pemberian variasi frekuensi suara jangkrik memberikan beda nyata terhadap lebar bukaan stomata. Laju pertumbuhan tinggi tanaman frekuensi 3000 Hz 0,020; 4000 Hz 0,020; 5000 Hz 0,024; kontrol 0,022. Laju pertumbuhan daun kumulatif tanaman frekuensi 3000 Hz 0,028; 4000 Hz 0,030; 5000 Hz 0,034; kontrol 0,025. Pemberian variasi frekuensi suara jangkrik tidak memberikan beda nyata terhadap tinggi tanaman, namun berbeda nyata terhadap pertumbuhan daun. Laju serapan CO₂ pada tanaman frekuensi 3000 Hz 0,002; 4000 Hz 0,002; 5000 Hz 0,002; kontrol 0,001. Laju serapan CO₂ pada semua perlakuan frekuensi memberikan nilai yang hampir sama, antara 0,002 ppm. Tanaman yang diberi rekayasa suara jangkrik pada berbagai frekuensi berpengaruh baik untuk pertumbuhan tanaman cabai keriting.

Kata kunci: *Capsicum annum* L, Frekuensi Suara Jangkrik, Pertumbuhan Tanaman

MANIPULATION OF CRICKET (*Gryllidae*) SOUNDS FREQUENCY TO IMPROVE PLANT GROWTH OF RED CHILI (*Capsicum annum* L.)

ABSTRACT

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The sound will produce vibrations in the air or water and then will felt by plant. The sound vibrations received will affect opening of the stomata. This study aimed to determine effect of cricket sound frequency on leaf stomata opening, to calculate the rate of plant growth, and to find out the maximum CO₂ absorption rate. This study modified frequency of cricket sound into 3,000 Hz; 4,000 Hz; and 5,000 Hz. An experimental study with Completely Randomized Design was applied to achieve the aims. Sound exposure was conducted 1 hour a day at 08.00 - 09.00 inside a chamber for 43 days. Parameter of plant growth were plant height, number of leaves, stomatal aperture, percentage of stomatal aperture and CO₂ absorption rate. Mathematical model was used to predict plant growth and CO₂ absorption. The results showed that the stomatal aperture on frequency of 3000 Hz, 4,000 Hz, 5,000 Hz and control was 0.500 μ m, 0.546 μ m, 0.540 μ m, 0.480 μ m, respectively. Different frequency of cricket sound gave a real difference in the width of the stomata opening. Frequency of cricket sound 3,000; 4,000 Hz; 5,000 Hz; and control was 0.020, 0.020, 0.024, 0.022, respectively on plant height. Number of leaves on 3,000 Hz; 4,000 Hz; 5,000 Hz; and control was 0.028, 0.030, 0.034, 0.025, respectively. The variation of cricket sound frequency did not give a real difference in plant height, but it was significantly different for leaf growth. CO₂ absorption rate on cricket sound frequency 3,000 Hz; 4,000 Hz; 5,000 Hz; and control was 0.002, 0.002, 0.002, 0.001, respectively. Different cricket sound frequency had a similar impact on CO₂ absorption rate, approximately 0.002 ppm. The result showed that *Capsicum annum* L chili plants were given cricket sound at various frequencies had a good response on the growth.

Keywords: *Capsicum annum* L, Cricket Sounds frequency, plant growth