

EFFECT OF WATER STRESS ON GROWTH AND
CHLOROPHYLL CONTENT OF *Zea mays*

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**EFFECT OF WATER STRESS ON GROWTH AND CHLOROPHYLL
CONTENT OF *Zea mays***

By:

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DECLARATION

I hereby declare that this thesis entitled **EFFECT OF WATER STRESS ON GROWTH AND CHLOROPHYLL CONTENT OF *Zea mays*** is the result of my own research except as cited in the references.

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ABSTRACT

Water stress condition has become a major problem for plant grown in the tropic region which received heavy rain per year. Under this condition formation and removal of oxygen (O_2) are unbalanced and excess reactive oxygen species (ROS) were formed. The objective of this study was to determine the effect of water stress on the growth and chlorophyll content of *Zea mays*. *Zea mays* were treated with different volumes of water (100 ml, 120 ml, 140 ml, 160 ml, 180 ml and 200 ml) for 7 days and 100 ml of water was used as control. The growth and chlorophyll content were analyzed at 0, 1, 2, 3, 5 and 7 days of treatment periods. Water stress did not significantly affect the stem height in treated and untreated at earlier stages of treatment. At later stages, the stem height of control plant increased and contrast results were observed in treated plants. Similar results were observed in the leaf length, leaf width, fresh weight and also dry weight of *Zea mays*. In general, the chlorophyll content increased up to 2 days of experiments and decreased afterwards. However, no significant difference was observed between treatments. Results indicated that different volumes of water did not significantly affect the growth and chlorophyll content of *Zea mays* at earlier stages of treatment but then, slowly decreased the growth and chlorophyll content of *Zea mays* for treated plants and reverse trend was observed for control plants.

KESAN TEGASAN AIR TERHADAP PERTUMBUHAN DAN KANDUNGAN KLOROFIL *Zea mays*

ABSTRAK

Tegasan air menjadi masalah utama tumbuhan yang hidup di kawasan tropika yang menerima taburan hujan yang lebat sepanjang tahun. Keadaan ini menyebabkan penghasilan dan penyingkiran oksigen (O_2) adalah tidak seimbang dan penghasilan spesis oksigen reaktif (ROS) adalah berlebihan. Objektif kajian ini adalah untuk menentukan kesan tegasan air terhadap pertumbuhan dan kandungan klorofil *Zea mays*. *Zea mays* dirawat dengan isipadu air yang berlainan (100 ml, 120 ml, 140 ml, 160 ml, 180 ml and 200 ml) untuk 7 hari dan 100 ml air digunakan sebagai kawalan. Pertumbuhan dan kandungan klorofil telah dianalisis pada 0, 1, 2, 3, 5 dan 7 hari rawatan. Tegasan air tidak memberi kesan yang bererti terhadap ketinggian batang untuk tumbuhan yang dirawat dan tidak dirawat pada peringkat awal rawatan. Pada peringkat akhir, ketinggian batang untuk tumbuhan kawalan meningkat dan keputusan yang bertentangan ditunjukkan untuk tumbuhan yang dirawat. Keputusan yang sama juga ditunjukkan untuk panjang daun, lebar daun, berat segar dan juga berat kering *Zea mays*. Secara amnya, kandungan klorofil meningkat sehingga 2 hari eksperimen dan kemudiannya menurun. Walau bagaimanapun, tiada perbezaan yang bererti ditunjukkan antara rawatan. Hasil menunjukkan isipadu air yang berbeza tidak memberikan kesan yang bererti terhadap pertumbuhan dan kandungan klorofil *Zea mays* pada peringkat awal rawatan, tetapi seterusnya, secara perlahan mengurangkan pertumbuhan dan kandungan klorofil *Zea mays* untuk tumbuhan rawatan dan arah yang bertentangan ditunjukkan untuk tumbuhan kawalan.