

**INDUCING WATERLOGGING TOLERANCE OF TOMATO  
(*Lycopersicon esculentum* Mill) USING PACLOBUTRAZOL  
AND POTASSIUM NITRATE**

**MARIE BIE SANTOS NATIVIDAD**

An undergraduate thesis manuscript submitted to the Faculty of the  
Department of Crop Science, College of Agriculture,  
Central Luzon State University in partial  
fulfillment of the requirements  
for the degree

**BACHELOR OF SCIENCE IN AGRICULTURE  
(Crop Science –Horticulture)**

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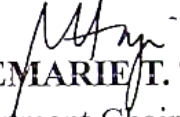
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## **BIOGRAPHICAL SKETCH**

Marie Bie Santos Natividad began life in December 16, 1996 in Sto. Domingo, Nueva Ecija. She's the daughter of Mr. Ben-Hur E. Natividad, teacher and Mrs. Mary Ann S. Natividad, government employee. She has three siblings named Maximino, Niña Ann and Mer-Ben S. Natividad.

She finished her elementary education in Pulong Buli Elementary School, throughout this journey she was a consistent honor students. She completed her secondary education at Julia Ortiz Luis National High School (JOLHNS) as Class Salutatorian. She was a consistent honor student in her first to third year high school and also an officer of Citizenship Advancement Training (CAT) in her fourth year high school.

She took Bachelor of Science in Agriculture major in Crop Science, specialization in horticulture in Central Luzon State University which is a top performing university in the Philippines. She was not joined in any society because her parents were not allowed her and she received a certificate in Agricultural Science in 2015 and continued to study to complete a bachelor's degree.

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This piece of work is wholeheartedly and lovingly dedicated to all of them. May God continuously bless us.

**MARIE BIE SANTOS NATIVIDAD**

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**ABSTRACT**

This study aimed to evaluate the effect of waterlogging in survival and growth response of tomato, to determine the effect of PBZ and KNO<sub>3</sub> foliar application and to compare the timing of application in survival and growth response of tomato subjected to waterlogged condition. The experiment was laid out using split-split-plot design in RCBD with waterlogging treatment (0 hr and 24 hr) as main plot, timing of application (before and after waterlogging) as sub-plot, and PBZ and KNO<sub>3</sub> concentration (0 PBZ + 0 KNO<sub>3</sub>, 0 PBZ + 4% KNO<sub>3</sub>, 0 PBZ + 8% KNO<sub>3</sub>, 10 PBZ + 0 KNO<sub>3</sub>, 10 PBZ + 4% KNO<sub>3</sub>, 10 PBZ + 8% KNO<sub>3</sub>, 20 PBZ + 0 KNO<sub>3</sub>, 20 PBZ + 4% KNO<sub>3</sub>, 20 PBZ + 8% KNO<sub>3</sub>) as sub-sub plot.

Results of the study showed that 24-hr waterlogging significantly reduced plant dry weight, survival, height, number of leaflets, and leaf chlorophyll content but had similar number of adventitious roots with 0 hour or control. For chemical application, PBZ application showed no changes in growth response; however, it improved root partitioning coefficient especially when subjected to 24-hr waterlogging. KNO<sub>3</sub>, on the other hand, improved the growth response but decreases survival at high concentration

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<sup>1/</sup>Undergraduate thesis manuscript presented as partial fulfillment of the requirement for graduation with the degree of Bachelor of Science in Agriculture, Major in Crop Science to be conducted at the Department of Crop Science area, Central Luzon State University, Science City of Muñoz, Nueva Ecija, under the supervision of Acc Mugssy L. Agustin with Research Contribution No. CA – 04 – 18 – 0004

Plants applied with 0 ppm PBZ + 4% KNO<sub>3</sub> consistently produced taller plants, highest number of leaflets, percent survival, and plant dry weight across water regime and timing of application. This treatment can be applied regardless of the timing as indicated by insignificant difference between before and after waterlogging. Hence, it can be concluded that application of low amount (4%) of KNO<sub>3</sub> at vegetative phase of tomato after short term waterlogging (as it is more practical) can improve plant performance.

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