INDUCING WATERLOGGING TOLERANCE OF TOMATO (*Lycopersicum 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
fullfillment of the requirements
for the degree

BACHELOR OF SCIENCE IN AGRICULTURE
(Crop Science –Horticulture)

JANUARY 2018

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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.

ACKNOWLEDGEMENT

The author wants to thanks and reflect on people who supported and help her to complete this journey.

First and foremost, to the Almighty God, who gave the author hope, strength, wisdom and giving her the life and the people who are always there in inspiring and molding her to become a better person and for His immeasurable and unconditional love, guidance and support throughout this experiment.

The author wishes to express her sincerest and deepest gratitude to her beloved parents, Mr. Ben-Hur Natividad and Mrs. Mary Ann Natividad, and his beloved brother and sisters, Maximino Natividad, Nina Ann Natividad and Mer-Ben Natividad, for their unconditional love, prayers, caring, sacrifices, educating, guiding, motivating and boosting her confidents when she doubt herself. No words can explain how lucky and thankful the author was to have you.

Sincerest thanks are also given to Mr. Ace Mugssy L. Agustin, her adviser for providing invaluable guidance/assistance to improve her work and for believing and motivating her to accomplish this study.

Thanks are given to Prof. Pacifico T. Vizmonte Jr., her critic for helpful suggestions to improve her work.

Special thanks to Dr. Ernesto A. Martin, Dean of College of Agriculture, Dr. Ronaldo T. Alberto, College Research Coordinator and Dr. Rosemarie T. Tapic, Department chair.

Unfeigned thanks are given to her buddies, Akira Kate Cayanga, Jhonna Magno, Jvie Del Castillo, John Carlo Garcia, Mark Lyndon Baquirin, Gerold Laureta, Clarence Maniego and Jerome Vicencio, for staying at her side through thick and thin, for their encouragement and believing that she can finish the study. May their friendship grow strong and last forever. Remember that no matter what happens, the author will be always here for you.

Special thanks are given to Juvy Ann Villena, Mark Anthony Aliado, James Letche, Meliza Magtalas and Diane Criselle Pablo and Angeline Fronda, for their support throughout the experiment.

Immeasurable thanks are given to his C-12 family; Jayson Ej Abillion, Chistian Dave Alonzo, Hannah Caryl Balajadia, Raya Gail Cadiente, Jolina Dela Cruz, Edwin Elane, Katrine Joy Gallevo, Jake Oneal Garcia, John Ray Jara, Katrina Joyce Lacson and Ruth Maricar Mendoza, for being her family here in CLSU, for making her college life happier and meaningful, for motivating and helps her to express more of herself bringing the best in her and for being always there for her especially in her down moment. The author loves you to the moon and back. Remember that she is only one text/call/chat away.

Deepest gratitude to the relatives especially her aunts, Lizalyn Apolonio and to their workers, for helping her to accomplish this study.

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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INDUCING WATERLOGGING TOLERANCE OF TOMATO (*Lycopersicum esculentum* Mill) USING PACLOBUTRAZOL AND POTASSIUM NITRATE[1/]

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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_3 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_3 concentration (0 PBZ + 0 KNO_3, 0 PBZ + 4% KNO_3, 0 PBZ + 8% KNO_3, 10 PBZ + 0 KNO_3, 10 PBZ + 4% KNO_3, 10 PBZ + 8% KNO_3, 20 PBZ + 0 KNO_3, 20 PBZ + 4% KNO_3, 20 PBZ + 8% KNO_3) 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_3, on the other hand, improved the growth response but decreases survival at high concentration

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[1/]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_3 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_3 at vegetative phase of tomato after short term waterlogging (as it is more practical) can improve plant performance.

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