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COMPARATIVE STUDY ON GROWTH, PRODUCTIVITY, DISEASE RESISTANCE AND PALATABILITY OF RED AND WHITE TUBER POTATO (Solanum tuberosum L.) GENOTYPES IN ESTIE WOREDA, SOUTH GONDAR, ETHIOPI

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COLLEGE OF SCIENCE

DEPARTMENT OF BIOLOGY

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By

Azash Tadesse Yigzaw

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By

Azash Tadesse Yigzaw

A Thesis Submitted to the Department of Biology for Partial Fulfillment of the Degree of Master of Science in Biology (Botanical Science)

Advisor: Prof. Berhanu Abraha

October, 2020

Bahir Dar, Ethiopia

BAHIR DAR UNIVERSITY

College of Science

Department of Biology

Biocontrol Potential of Microbial Antagonists against Mango Anthracnose Disease (*Colletotrichum gloeosporioides*)

By

Lamenew Fenta Tibebu

August, 2022

Bahir Dar

BAHIR DAR UNIVERSITY
College of Science
Department of Biology

Biocontrol Potential of Microbial Antagonists against Mango Anthracnose Disease (*Colletotrichum gloeosporioides*)

A PhD Dissertation Submitted to College of Science, Department of Biology, Bahir Dar University, in Partial Fulfillment of the Requirements for the Degree of Philosophy in Applied Microbiology

Lamenew Fenta Tibebu

Advisor: Mulugeta Kibret (Professor)

August, 2022

Bahir Dar, Ethiopia

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Declaration

This is to certify that the Dissertation entitled "Biocontrol Potential of Microbial Antagonists against Mango Anthracnose Disease Caused (Colletotrichum gloeosporioides)" submitted in partial fulfillment of the requirement for the degree of Doctor of Philosophy in Applied Microbiology of Department of Biology, Bahir Dar University, is a record of original work carried out by me and has never been submitted to this or any other institution to get any other degree or certificates. The assistance and help I received during the course of this investigation have been duly acknowledged.

Name of the candidate	Date	Signiture

Bahir Dar University

College of Science

Department of Biology

Approval of PhD Dissertation for defense

I hereby certify that I have supervised, read and evaluated this dissertation titled "Biocontrol Potential of Microbial Antagonists against Mango Anthracnose Disease (Colletotrichum gloeosporioides)" under my guidance. I recommend the dissertation to be submitted for oral defense (mock-viva and viva voce)

Mulugeta Kibret (Prof.) _____ _____

Signature Date

Biography of the Author

The author was born on 21 April 1988 in Dejen Woreda, East Gojjam Zone, and Amhara Regional State, Ethiopia. He completed his high school education in Gojjam Ber Secondary School, Dejen. He joined and completed his B.Sc. degree in Applied Biology from Haramaya University. Soon after graduation, the author was sponsored by Ministry of Education to attend his M.Sc. in 2010/2011 joined Addis Ababa University and completed his M.Sc. in Applied Microbiology in Nov. 2013. He was then assigned by Ministry of Education to Assosa University as lecturer of Applied Microbiology. He served as a lecturer at Assosa University for four years and he started his PhD in September, 2017 in Applied Microbiology at Bahir Dar University Ethiopia

Dedication

This thesis is dedicated to my father and mother, Kes Fenta Tibebu and Almaw Workie, without their endless pray, love, care and encouragement I would never have been able to complete my whole educational journey. I would also like to dedicate my thesis to my elder brother, Mezgeb Fenta, who lived (1961-2007EC) for his special love and memorial support while he was alive.

Acknowledgements

First and foremost, praises and thanks to the Almighty God, for His blessings and care throughout my research work.

I would like to express my deep and sincere gratitude to my Advisor, Prof. Mulugeta Kibret for his invaluable advice, continuous support, and patience during my PhD study. It was a great privilege and honor to work and study under his guidance. I am extremely grateful for what he has offered me.

I am grateful to Assosa University for giving me the chance to attain PhD degree program and for sponsoring my study. I am also thankful for Ministry of Education for financing my PhD work. I would also like to thank Bahir Dar University, Science College, for allowing me to do my PhD work.

I would also like to thank Ashenafi Abate (BDU, Statistics Department), who helped me in the analysis part of my dissertation. My thanks also go to Misganaw Liyew, who helped me both technically and materially by providing laboratory materials during my research stay. I would also like to thank my classmates Kindu Geta and Habtamu Mekonen, who made my research time easy and enjoyable. I also want to pass my special thanks to Dinkayehu Alamnie, who covered my publication cost. I am also thankful to Abebe Anagaw and Aderaw Ejigu for providing me fungicides for my research work.

I am extremely grateful to my parents for their love, prayers, caring and sacrifices and became by my side at all circumstances of my educational journey. I am very much thankful to my wife, Firehiwot Taye for her love, understanding, prayers and continuing support to complete this research work. I thank you for covering all my weaknesses both inside and outside of home. I also express my thanks to my sisters and brothers, for their support and valuable advice.

Finally, my thanks go to all the people who have supported me to complete the research work directly or indirectly.

Abbreviations and Acronyms

ANOVA	Analysis of Variance
BCAs	Biocontrol Agents
CDA	Czedox agar
CFU/cfu	Colony Forming Units
CRD	Completely Randomized Design
CSA	Central Statistical Agency
FAO	Food and Agriculture Organization of United Nations
FAOSTAT	Food and Agriculture Organization Corporate Statistical Datab
GAIN	Global Agriculture Information Network
GRAS	Generally Recognized as Safe
LAB	Lactic acid bacteria
MEA	Malt extract agar
MMT	Million Metric Tones
MRS	De Man, Rogosa and Sharpe
NA	Nutrient Agar
NMA	National Meteorology Agency
NB	Nutrient Broth
OECD	Organization for Economic Co-operation and Development
OD	Optical density
PDA	Potato Dextrose Agar
PPM	Parts Per Million
RH	Relative Humidity
Rpm	Rotation Per minute
UV	Ultra Violet
WA	Water Agar
WHO	World Health Organization
UCTAD	United Nations Conference on Trade and Development