Faculty of women
For Art, Science and Education

ECOLOGICAL AND PHYTOCHEMICAL STUDIES ON THE ARABLE WEED *MALVA PARVIFLORA* L.

THESIS

Submitted In Partial Fulfillment

For Requirements of Doctorate Degree in Botany (Plant Ecology)

Presented By

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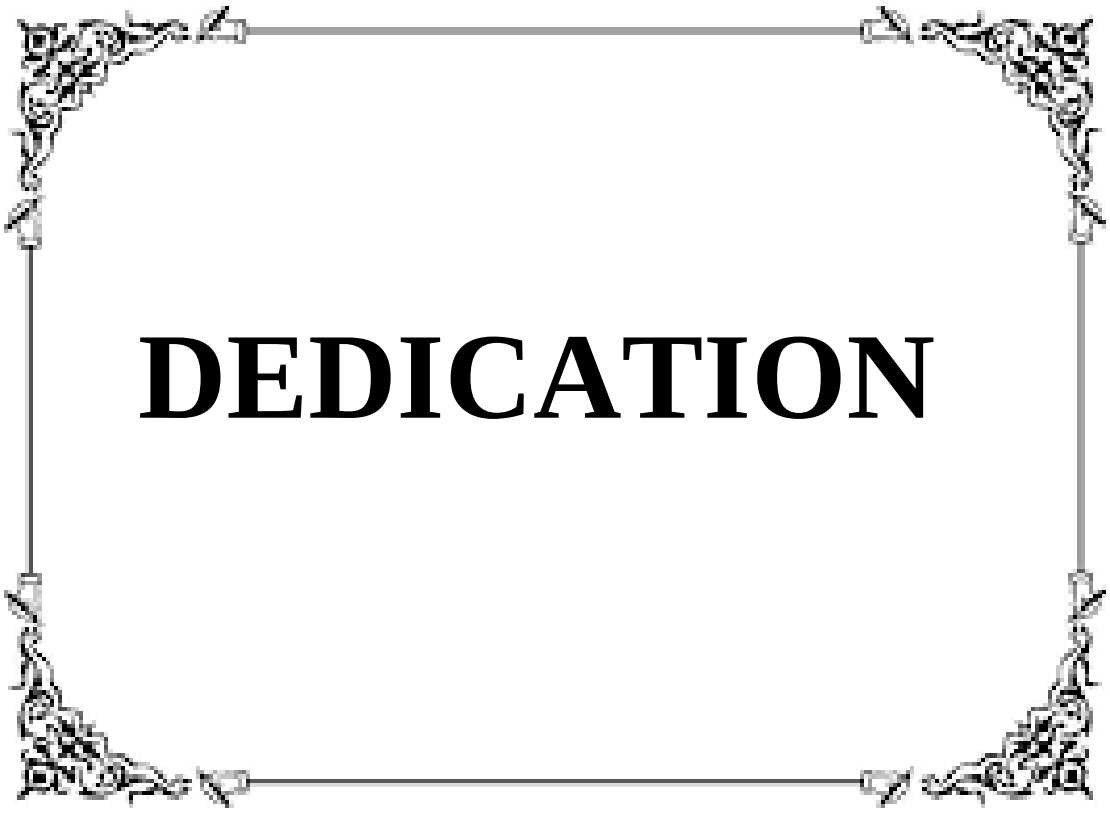

DEDICATION

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To my dear father

To the spirit of my beloved mother

To my dear brothers

To my loved

Mohammed -Sufian –Zakaria

Aisha

ACKNOLEDGEMENT

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*First I wish to express my deepest gratitude and thanks to **ALLAH** whose magnificent help is the first factor for everything we can do.*

*I am highly grateful and feel proud privilege to take an evince opportunity of expressing my deep, heartiest and profound sense of veneration and gratitude to **Prof. Dr. Soad Abdel Galiel Sheteiwi** Professor of Plant Physiology, Botany Department, Faculty Of Women, Ain Shams University for her supervision, scholarly advice, expert and peerless guidance and following up throughout the whole work.*

*I would like to express my deep gratefulness and appreciation to **Prof. Dr. Tarek Mohamed Galal,** Professor of Plant Ecology, Botany Department, Faculty of Science, Helwan University and **Dr. Ahmed Ahmed Khalafallah** Assistant Professor of Plant Ecology, Botany Department, Faculty Of Women, Ain Shams University .for their suggestion of this work, supervision, guidance during the field, statistical analysis, patience when reading my drafts and correcting the language, constructive criticism, persistent encouragement, preparation of the manuscript and revision of the whole thesis.*

Special thanks, ***Dr. Amal Ahmed Ibrahim Mekawey,*** *Professor of Microbiology, Institute of Fungi,Al-Azhar University and* ***Dr. Zainab Ahmed Adbel Gawad,*** *Assistant Professor of Plant Physiology, Botany Department, Faculty Of Women, Ain Shams University. for their supervising this study, her helpful suggestions during the field ,*
Special thanks , ***Dr. Eman Twfik,*** *Lecturer of genatic, Botany Department, Faculty Of Science, Helwan Universit.for the help.*

Special thanks, grateful acknowledgement and appreciation are to all members of Botany Department, Faculty of women, Ain Shams University, for continuous encouragement and support.

At the end I will be proud to express my unlimited thankfulness, gratitude and appreciation to my ***dear father*** *and* ***Dr. Fawzia Abd alati Alzletni ,*** *Lecturer of Sociology, Faculty of ART, Benghazi University, and my family for continuous support, help and patience.*

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ABSTRACT

The present study aimed to identify the common communities associated with *Malva parviflora* (common mallow), their distribution, diversity and environmental factors affected them. It aimed also at investigating the population dynamics, phytochemical, molecular and biological characteristics of the study species. Twelve habitats were selected for collecting plant data, sampling and analysis of the study plant. One hundred and forty-one species were recorded associated with *M. parviflora*; therophytes were the dominant life form, and Pluri-regional elements were the dominant chorological elements. The application of TWINSPAN led to the recognition of 14 vegetation groups; VG (B) had the highest species richness. Cultivated mallow had the highest plant density, while that from the desert roadsides had the longest root, drain bank plants had the highest shoot, and agricultural roadside plants had the longest petiole. The highest chlorophyll a and total chlorophyll were recorded in agricultural roadsides, while the highest chlorophyll b was in cultivated plants. The highest contents of root N, P and K were recorded in cultivated mallow, agricultural roadsides and canal banks, respectively, in shoot they were recorded in cultivated mallow, agricultural roadsides and cultivated crop. The highest concentration of Fe^{2+} was recorded in orchards plants, while the highest Cr^{3+} and Mn^{2+} were recorded in salt marshes, Cu^{2+} in the desert land, and Co^{2+} and Ni^{2+} in canal bank plants. The BF of heavy metals in *M. parviflora* fell in the order: $Zn^{2+} > Mn^{2+} > Fe^{+2} > Ni^{2+} > Pb^{2+} > Cr^{3+} > Co^{2+} > Cd^{2+}$, while the TF was in the order: $Fe^{2+} > Mn^{2+} > Pb^{2+} > Co^{2+} > Cd^{2+} > Ni^{2+} > Cr^{3+} > Zn^{2+}$. The health risk index (HRI) for most investigated heavy metals, except Cd