Table of contents

List of Abbreviations....ii
List of Figures....iii
List of Tables....iv
I- Introduction and literature review....1
1.1-Background and objectives....1
1.2- Evolution and genetic diversity of cultivated rice....4
1.2.1- Evolution of cultivated rice....4
1.2.2- Rice production in West Africa....7
1.2.3- Breeding Methods in rice....8
II- Investigation of *in vitro* methods to produce double haploids plants from *O. sativa* and *O. glaberrima* for a rapid development of new breeding material....11
2.1- Introduction....11
2.2- Material and Methods....12
2.3- Results and Discussion....13
2.4- Summary....17
III- Genetic variation for nitrogen efficiency of irrigated rice in Senegal....19
3.1- Introduction....19
3.2- Material and Methods....20
3.3- Results and Discussion....22
3.4- Summary....32
IV- Variation in nitrogen efficiency among segregating F3 lines....33
4.1- Introduction....33
4.2- Material and Methods....33
4.3- Results and Discussion....35
4.4- Summary....50
V- Summary/Zusammenfassung/Résumé....51
VI- Literature....59
Appendix....69
Acknowledgements....75
Curriculum vitae....77