INFLUENCE OF DIFFERENT PACKAGES OF PRACTICES ON GROUNDNUT YIELD IN SANDY REGOSOL OF EASTERN REGION IN SRI LANKA

PERMANENT REFERENCE

By

MAHESU RAJKUMAR

A research report Submitted in partial fulfillment of the Requirements for the advanced course

In

CROP SCIENCE

For the Award of the Degree of

BACHELOR OF SCIENCE IN AGRICULTURE





Library - EUSL

Date:

Faculty of Agriculture Eastern University of Sri Lanka. December 2002

Approved By:

Mr.K.Thedchanamoorthi Supervisor Senior Lecturer, Division of Crop Science, Faculty Of Agriculture, Eastern University, Sri Lanka

50655

Dr. (Mrs.). T.Mahendran Head / Dept. of Agronomy Faculty Of Agriculture Eastern University Chenkalady Sri Lanka. Date: 31/12/2002

Dr. (Mrs) T. Mahendran

CABH Dept. of Agrontmy Faculty of Agricultura Eastern University, S. i Lanka.

CONTENTS

2. Filled on Yield and Yield emopation.	Page
Abstract	i
Acknowledgement	ii
Content	iii
List of table	vii
List of figure	viii
List of plate	ix
CHAPTER 01 INTRODUCTION	
1,0 Introduction	19
1.1 Description	19
1.2 Health and Nutritional value.	1
1.3 Important oil crop.	2
1.4 Groundnut statistics	2
1.5 High yield achievement of China.	3
1.6 Situation in Sri Lanka.	
1.7 Reason and objective of the study	4
CHAPTER 02 REVIEW OF LITERATURE	
2.1 Achieving high yield of groundnut in china.	5
2.2 Situation of Sri Lanka.	5
2.3 Improved technology in India.	6
2.4 Effect of application of gypsum.	7
2.4.1Effect of Calcium.	8

3.4.4 Net plot determination		28
3.4.5 Agronomic practices.		28
3.4.5.1 Land preparation		28
3.4.5.2 Seed treatment		28
3.4.5.3 Planting		28
3.4.6 Cultural practices		
3.4.6.1 Fertilizer application		29
3.4.6.1.1 Application of Zinc Sulphate		29
3.4.6.1.2 Application of gypsum		29
3.4.6.2 REFAS		30
3.4.6.3 Earthing - up		30
3.4.6.4 Watering		30
3.4.6.5 Weed control		30
3.4.6.6 Pest and disease control		31
3.5 Growth measurements		31
3.5.1 Total biomass		31
3.5.2 First inter-node elongation	.1-	31
3.5.3 Yield components	Ŋ	
3.5.3.1 Number of pods per plant		31
3.5.3.2 Pod yield	1	32
3.5.3.3 Weight of pod per plant		32
3.5.4 Estimation of quality characters		
3.5.4.1 Shelling percentage		32
3.5.4.2 Hundred kernel weight		32
3.5.4.3 Oil content		33

3.6 Statistical analysi	is LIST OF THE R		34
CHAPTER 04	RESULTS AND DISCUSS	ION	
4.1 Days to emergene	ce and sexplot area		35
4.2 Days to first and	50 percent flowering		35
4.3 Growth measurer	ments		
4.3.1 Effect on	plant biomass		36
4.3.2 Haulm he	ight		. 37
4.3.3 First inter-	-node elongation	ulmeter of	37
4.3.4 Size of the	e pod and kernel		38
4.4 Yield and yield co	omp <mark>one</mark> nts		*
4.4.1 Total yield	d of pods		41
4.4.2 Number o	f pods per plants		42
4.4.3 Weight of	pod per plant		44
4.5 Estimation of qua	lity characters		
4.5.1 Shelling p	ercentage		. 44
4.5.2 Hundred k	ternel weight		45
4.5.3 Oil conten	t of the kernel		46
4.6 Days to maturity		/	47
CHAPTER 05	CONCLUSION		
5.0 Conclusion			48
5.1 Suggestions			49
BIBLIOGRAPHY			51
APPENDIX			

ABSTRACT

A study was conducted to test the influence of two groundnut production technologies namely recommendations of the Department of Agriculture (DOA) and Improved Groundnut Production technology of India and China (IGP) in sandy regosols at the Eastern University farm Chenkalady, Eastern province, during the period of June to September 2002. Six treatments, including two packages of practices, were arranged in a Randomised Complete Block Design (RCBD) with four replicates. Groundnut variety-Indi, recommended by the Department of Agriculture, was used in this study.

The packages of Improved Groundnut Production technologies in India and China consisted of application of Gypsum, application of ZnSO₄, seed treatment with Thiram and Removal of Earth from Around the Seedling (REFAS).

The influence of Improved Groundnut Production technologies (IGP) was found to be superior over the DOA package of practices in sandy regosols. The IGP produced higher biomass, pod yield, pod size, 100-kernel weight, oil-content and shelling percentage compared to the DOA package. At the same time DAO package show low values to most of the parameters. The yield of IGP was 57% higher when compared to DOA package of practices.

The study concludes that by the applications of Gypsum at the rate of 450 Kg / ha, seed treatment with 3 g / Kg of Thiram and an agronomic practice called REFAS (Removal of Earth from Around the Seedling) as adopted in china can increase yield of ground nut production than the technology recommended by the Department of Agriculture in the sandy regosol of the Eastern province.

2.4.2 Effect of sulphur	9
2.4.3 Effect on Yield and Yield component.	11
2.4.4 Effect on oil content	13
2.4.5 Effect of shelling percentage	13
2.5 REFAS	14
2.5.1 Reason for yield increase	14
2.5.2 REFAS timing	15
2.5.3 REFAS techniques	16
2.6 Effect of Zinc sulphate in groundnut.	16
2.6.1 Response to Zinc	18
2.6.2 Deficiency	19
2.6.3 Toxicity	19
2.7 Seed treatment	19
2.8 About ICRISAT	21
2.9 Effect of improved production Technology used in India	21
2.10 Influence of different packages of practices.	23
	31
CHAPTETR 03 MATERIALS AND METHODS	1
3.1 Location and soil	24
3.2 Climate	24
3.3 Variety of groundnut	24
3.4 Experiment	24
3.4.1 Statistical design	25
3.4.2 Plot size	25
3.4.3 Crop spacing	25