

**STUDY ON DIFFERENT FRUIT PEEL ON THE GROWTH
PERFORMANCE AND FLOWERING OF LOCAL ROSE
VARIETIES**



By

H. A. R. Madumali



FTC190

Project Report
Main Library, Eastern University, Sri Lanka

Department of Biosystems Technology, Faculty of Technology

Eastern University, Sri Lanka

2024

ABSTRACT

Rose is a popular cut flower in Sri Lanka and mainly cultivated for the export market. A pot experiment was carried out to evaluate the effect of application of banana, orange and pomegranate fruit peel powder on the growth and flowering of 'Local' rose variety. The experiment was carried out in a Completely Randomized Design with eight treatments having four replicates during March to June 2024 at the crop farm, Faculty of Agriculture, Eastern University, Sri Lanka. Treatments were, recommended fertilizer application at basal and topdressing (T1,Control), half dose of recommended fertilizer application at basal and topdressing times with 9g of pomegranate peel powder (T2), 9g of orange peel powder (T3), 9g of banana peel powder (T4), 4.5g each of pomegranate and banana peel powder (T5), 4.5g each of orange and banana peel powder (T6), 4.5g each of orange and pomegranate peel powder (T7) and 3g of each of orange, pomegranate and banana peel powder (T8) at both times. All parameters, except the plant biomass were measured in 2 weeks interval. Analysis of Variance was performed to determine significant difference among treatments ($p < 0.05$). The results reveal that application of fruit peel powder had significant differences on plant height, number of leaves per plant, number of branches per plant, average length of lateral shoots, leaf area and plant biomass and the highest value was obtained in half dose of recommended fertilizer application at basal and topdressing times with 3g of each of orange, pomegranate and banana peel powder (T8) and while the lowest performance was observed in plant application with half dose of recommended fertilizer application at basal and topdressing times with 9g of pomegranate peel powder (T2). Among the all tested treatments, half recommended fertilizer application at basal and topdressing times with 3g each of orange, pomegranate and banana peel powders at both times would be the most suitable fruit peel powders to get higher growth and flowering of Rose.

TABLE OF CONTENTS

DECLARATION	iii
ACKNOWLEDGEMENT	v
ABSTRACT	vi
TABLE OF CONTENTS	vii
LIST OF FIGURES	x
LIST OF TABLES	xi
LIST OF PLATES	xii
LIST OF ABBREVIATIONS	xiii
CHAPTER 1	1
INTRODUCTION	1
CHAPTER 2	5
LITERATURE REVIEW	5
2.1. Introduction of floriculture	5
2.1.1. World cut flower industry	5
2.1.2. Floriculture sector in Sri Lanka	6
2.1.3 Empowerment of women.....	8
2.2 Study Rose var. ‘Local’	9
2.2.1 Introduction of study plant.....	9
2.2.2. Morphology of Rose var. ‘Local’	10
2.2.1.1 Classification of study plant.....	11
2.2.3 Importance of Roses	11
2.2.4 Production of Roses in Sri Lanka	12
2.2.5 Production of Roses in World.....	13
2.2.6 Impact of nutrient deficiency on plant.....	13
2.3 Fruit peel.....	14
2.3.1 Effect of fruit peel on crop production	15
2.3.2 Fruit peel powder as a fertilizer	16
2.4 Banana (<i>Musa sapientum</i>)	18
2.4.2 Chemical properties of banana peel	20
2.4.3 Importance of banana peel	21
2.5 Orange (<i>Citrus sinensis</i>).....	21
2.5.1 Nutritional composition of orange.....	22

2.5.2 Chemical properties of orange peel	23
2.5.3 Importance of orange peel	24
2.6 Pomegranate (<i>Punica granatum</i>)	24
2.6.1 Nutritional composition of pomegranate	25
2.6.2 Chemical properties of pomegranate peel	26
2.6.3 Importance of pomegranate peel	26
2.7 Effect of fruit peel on plant growth parameter	28
2.8 Summary	28
CHAPTER 3	29
MATERIALS AND METHODS	29
3.1 Fruit peel	29
3.1.1 Collection of fruit peels	29
3.1.2 Preparation of fruit peel powder	29
3.2 Species and Variety	29
3.4 Experimental design	30
3.5 Agronomic practices	32
3.5.1 Preparation of polythene bags and potting media	32
3.5.2 Planting materials	33
3.5.3 Irrigation	33
3.5.4 Application of fertilizer	33
3.5.5 Weeding	33
3.5.6 Plant protection	33
3.6 Sampling method and sampling interval	33
3.7 Measurements	34
3.7.1 Leaf area per plant (cm ²)	34
3.7.2 Number of leaves	34
3.7.3 Plant height (cm)	34
3.7.4 Average of length first order lateral shoots	34
3.7.5 Plant biomass (g)	35
3.8 Statistical Analysis	35
CHAPTER 4	36
RESULTS AND DISCUSSION	36
4.1 Plant height (cm)	36
4.2 Number of leaves	37
4.3. Number of branches	38

4.4 Average length of lateral shoots	39
4.5 Leaf Area Index	40
4.6 Plant biomass	41
CHAPTER 5	43
5.1 CONCLUSIONS	43
5.2 RECOMMENDATIONS	43
REFERENCES	44