METABOLISM OF PEPPER FRUIT DURING GROWTH, MATURATION AND SENESCENCE

By

P. Venkata Raju

A thesis submitted to Sri Venkateswara University for the degree of Doctor of Philosophy.

JULY, 1965
ACKNOWLEDGMENTS

I wish to express my deep felt gratitude to Dr. V.S.R. Das, M.Sc., D.Phil. (Oxon.), Reader in Botany for suggesting the problem, for his unfailing supervision throughout the period of this investigation and for his guidance in the preparation of the thesis. I would like to thank Prof. I.M. Rao, Head of the Department of Botany for providing me the facilities for this work. My thanks are also due to Dr. A.S. Rao and Dr. M.V. Nayudu, Readers in Botany for their encouragement. My thanks are due also to Mr. M. Prasada Rao a senior colleague of mine for his helpful suggestions.
I. INTRODUCTION

II. MATERIALS AND METHODS

A. Plant Material

B. Experimental Methods

1. Respiration
   (a) Manometric Methods
   (b) Effect of DNP
   (c) Esterification of inorganic phosphorus
      (i) Measurement of radioactivity
      (ii) Separation of organic phosphorus from inorganic phosphorus

2. Pigments

3. Photosynthesis
   a. Experimental details
   b. Chromatography and autoradiography

4. Gibberellin-like substances
   (i) Cucumber hypocotyl bioassay
   (ii) Rice leaf sheath bioassay

5. Nucleic acids

6. Pectins

7. Cell wall polysaccharides
III. EXPERIMENTAL RESULTS

A. Respiratory metabolism

1. Rate of respiration 34
2. Effect of 2,4-Dinitrophenol on the rate of respiration 34
3. Esterification of inorganic phosphorus 37

B. Pigments 39

C. Photosynthesis 43

D. Gibberellin-like substances 49

1. Results based on cucumber hypocotyl bioassay 53
2. Results based on rice leaf sheath bioassay 53

Effect of GA on the endogenous gibberellin content 65

E. Nucleic acids 72

F. Pectins 77

G. Cell wall polysaccharides 77

IV. DISCUSSION AND CONCLUSIONS 85

V. SUMMARY 107

VI. REFERENCES 112