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Aromatic Rice

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Asian Scenario

National Scenario

Aromatic (scented) Rice varieties in India and their distribution

North-East India Scenario

Aromatic Rice Germplasm

Biochemistry of Aroma

Markers of Aroma Genes

About the Experimental Plant

Agronomy

Plant Growth Substances

Accelerate aging

Principle of accelerate aging test

Accelerated aging as seed vigour test

Benefits of accelerating ageing test

Chemicals Used In This Investigation

NaDK (Sodium dikegulac)

ASA (Ascorbic Acid)

SADH (Succinic acid 2,2-dimethylhydrazide)

## **Chapter III**

### **3. MATERIALS AND METHODS**

**30-51**

Plant Materials

Systematic Position

Details of seed morphology, external features of 14 varieties of aromatic rice

The phenological stages of aromatic rice plant

- Methods of Seed Analysis
  - Rice grain quality
  - Grain size and shape
- Grain size classification
- Grain shape classification
  - Grain appearance
  - Cooking and eating characteristics
- Gelatinization temperature
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  - Evaluation of Aroma
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  - Experimental condition and seed treatments
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Analysis of macromolecules like insoluble and soluble carbohydrates from leaves

Analysis of some scavenging enzymes like catalase from leaves

Analysis of some scavenging enzymes like superoxide dismutase from leaves

Determination of the level of some catabolic enzymes like IAA-oxidase from leaves

Determination of the level of some catabolic enzymes like RNase from leaves

Determination of the level of some catabolic enzymes protease from leaves

## 3.8 Analysis of yield attributes

## Chapter IV

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#### PHASE I

**Analysis of rice grain quality of 14 different aromatic rice seed varieties**

#### PHASE II

Effect of long-term accelerated ageing (0-, 90-, 180-, 270- and 360-days) of seeds of aromatic rice types, Mohanbhog, Khemti, MasinoBasmati, Musli and Kalonunia, pretreated with Ascorbic Acid (ASA, 250 and 500 $\mu$ g/ml), Succinic Acid Dehydroxide (SADH, 150 and 300 $\mu$ g/ml) and Sodium Dikegulak (NaDK, 1000 and 2000 $\mu$ g/ml) on biochemical changes and TTC (2,3,5-triphenyl tetrazolium chloride) stainability of seeds.

Effect of long-term accelerated ageing on seed metabolism  
Effect on percentage TTC-stained seeds  
Effect on total dehydrogenase activity  
Effect on percentage germination  
Effect on protein content  
Effect on free amino acid content  
Effect on soluble carbohydrate content  
Effect on insoluble carbohydrate content  
Effect on RNA and DNA content  
Effect on catalase enzyme  
Effect on protease enzyme  
Effect on IAA Oxidase  
Effect on amylase enzyme  
Effect on superoxide dismutase

### **PHASE III**

Effect of accelerated ageing after 360 days of seeds of aromatic rice types Mohanbhog, Khemti, MasinoBasmati, Musli and Kalonunia, pretreated with Ascorbic Acid (ASA, 250 and 500 $\mu$ g/ml), Succinic Acid Dehydroxide (SADH, 150 and 300 $\mu$ g/ml) and Sodium Dikegulak (NaDK 1000 and 2000 $\mu$ g/ml) on changes in growth and metabolism of plants at five developmental stages [pre flowering (P), flowering (F), seed formation (S), seed mature (M) and pre harvesting (H)] and their impact on crop yield.

Effect on RNA level  
Effect on DNA level  
Effect on Soluble Carbohydrate levels  
Effect on Insoluble Carbohydrate levels  
Effect on Catalase levels  
Effect on activities of Protease enzyme  
Effect on the activities of IAA-oxidase enzyme  
Effect on the activities of RNase enzyme  
Effect on the activities of superoxide dismutase enzyme

Effect on yield attributes

Effect on plant height

Effect on stem circumference and inter-nodal elongation.

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