CONTENTS

DECLARATION .... .... .... ii

SUPERVISOR'S CERTIFICATE ... .... iii

ACKNOWLEDGEMENTS .... .... iv

CHAPTER: I GENERAL INTRODUCTION AND REVIEW OF LITERATURE 1-14

1.1 Structure and composition of tree vegetation .... 6

1.2 Floristic composition of forest ground flora .... 11

1.3 Litter production .... 12

1.4 Soil characteristics .... 13

CHAPTER: II MATERIALS AND METHODS .... .... 15-22

2.1 Phytosociological analysis of tree vegetation and ground flora .... 15

2.2 Community relationships .... 17

2.21 Degree of homogeneity .... 17

2.22 Community Co-efficients for similarity 18

(a) Community Co-efficient of similarity
(on the basis of presence/absence relationship of various species). 18

(b) Community Co-efficient of similarity
(on the basis of IVI values of various species). .... 19
### Chapter III: Study Area

#### Site A: Bijagar (Chhatarpur)

- **3.11 Location**
- **3.12 Geology and Rocks**
- **3.13 Soils**
- **3.14 Climate**

#### Site B: Mandla (Kalpi and Nainpur Project area)

- **3.21 Location**
- **3.22 Geology and Rocks**
- **3.23 Soils**
- **3.24 Climate**

#### Site C: North Raipur

- **3.31 Location**
- **3.32 Geology and Rocks**
- **3.33 Soils**
- **3.34 Climate**

### Chapter IV: Phytosociological Analysis of Tree Vegetation of Plantations and Natural Forests

- **4.1 Introduction and review of literature**
- **Results and discussion**
<table>
<thead>
<tr>
<th>SITE A</th>
<th>BIJAWAR (CHHATARPUR)</th>
<th>History of natural vegetation</th>
<th>39</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.20</td>
<td>6-7 year old teak plantation and adjoining natural forest</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td>4.21</td>
<td>16 year old teak plantation and adjoining natural forest</td>
<td>44</td>
<td></td>
</tr>
<tr>
<td>4.22</td>
<td>20-23 year old teak plantation and adjoining natural forest</td>
<td>47</td>
<td></td>
</tr>
<tr>
<td>SITE B : KALPI (MANDLA)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.30</td>
<td>History of natural vegetation</td>
<td>51</td>
<td></td>
</tr>
<tr>
<td>4.31</td>
<td>15-17 year old teak plantation and adjoining natural forest</td>
<td>52</td>
<td></td>
</tr>
<tr>
<td>4.32</td>
<td>20-23 year old teak plantation and adjoining natural forest</td>
<td>56</td>
<td></td>
</tr>
<tr>
<td>SITE C : NAIPUR PROJECT (MANDLA)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.40</td>
<td>History of natural vegetation</td>
<td>59</td>
<td></td>
</tr>
<tr>
<td>4.41</td>
<td>4-6 year old teak plantation and adjoining natural forest</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td>4.42</td>
<td>16-17 year old teak plantation and adjoining natural forest</td>
<td>64</td>
<td></td>
</tr>
<tr>
<td>SITE D : LAON RANGE (N. RAIPUR DIVISION)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.50</td>
<td>History of natural forest</td>
<td>68</td>
<td></td>
</tr>
<tr>
<td>4.51</td>
<td>29-35 year old teak plantation and adjoining natural forest</td>
<td>68</td>
<td></td>
</tr>
<tr>
<td>4.52</td>
<td>56 year old teak plantation and adjoining natural forest</td>
<td>73</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Discussion</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.61</td>
<td>Trends in plantations</td>
<td>78</td>
<td></td>
</tr>
<tr>
<td>4.62</td>
<td>Plantations and natural forests</td>
<td>84</td>
<td></td>
</tr>
</tbody>
</table>
CHAPTER : V  FLORISTIC COMPOSITION OF GROUND FLORA
UNDER PLANTATIONS OF DIFFERENT AGES AND
ADJOINING NATURAL FORESTS .... 89-139

5.1 Introduction and review of literature 89
Results and discussion

SITE : BIJAWAR(CHHATARPUR)

5.21 Ground flora of 2-3 year old teak
plantation and adjoining natural forest 96

5.22 Ground flora of 20-23 year old teak
plantation and adjoining natural forest 104

SITE MAINPUR PROJECT AREA(PANDLA)

5.31 Ground flora of 1-2 year old teak
plantation and adjoining natural forest 111

5.32 Ground flora of 4-6 year old teak
plantation and adjoining natural forest 118

5.33 Ground flora of 16-17 year old teak
plantation and adjoining natural forest 125
Discussion 133

CHAPTER : VI LITTER PRODUCTIVITY OF TEAK PLANTATIONS
AND ADJOINING NATURAL FORESTS .... 140-151

6.1 Introduction and review of literature 140
Results and discussion

SITE BIJAWAR(CHHATARPUR)

6.20 Leaf litter output of 20-23 year old teak
plantation and adjoining natural forest 144

6.21 Cor-relation between various analytical
attributes .... 144
(a)Leaf litter frequency and tree density144
(b)Tree density and leaf litter output 146
(c) Basal area and leaf litter output

SITE KALPI (MANDLA)

6.3  Leaf litter output of 20-25 year old teak plantation and adjoining natural forest

6.31 Cor-relation between various analytical attributes

(a) Tree density and leaf litter frequency

(b) Tree density and leaf litter output

(c) Leaf litter output and basal area of trees

Discussion

CHAPTER: VII SOIL CHARACTERISTICS OF TEAK PLANTATIONS AND NATURAL FORESTS

7.1  Introduction and review of literature

Results and discussion

7.11 pH

7.12 Electrical conductivity

7.13 Organic carbon

7.14 Available nitrogen

7.15 Available phosphorus

7.16 Available potassium

Discussion

CHAPTER: VIII GENERAL DISCUSSION, SUMMARY AND CONCLUSION

8.1 Phytosociology of tree vegetation

8.2 Floristic composition of ground flora

8.3 Leaf litter production

8.4 Soil properties

8.5 Summary and conclusions
APPENDICES

Appendix A  Tree species
Appendix B  Ground flora species