The studies reported in the present thesis concern several aspects of research work in the bacterial blight diseases of two millets viz., *Paspalum scrobiculatum* L. and *Panicum miliaceum* L.

Bacterial blight diseases of *Paspalum scrobiculatum* L. and *Panicum miliaceum* L. have been found to be incited by hitherto undescribed species of *Xanthomonas*, which have been named *X. campestris* f.sp. *paspali* and *X. campestris* f.sp. *panicī*, respectively. Both the diseases have been found to be widespread in the districts of Panchmahals, Kaira, Dangs, Surat and Bulsar of Gujarat State, causing considerable damage to the crops. The pathogens viz., *X. campestris* f.sp. *paspali* and *X. campestris* f.sp. *panicī* have been isolated, studied and described in detail. Their morphological, cultural and biochemical characteristics have been described. The bacterial blight of *Paspalum scrobiculatum* L. and that of *Panicum miliaceum* L. have been studied with reference to host symptoms, pathogenicity, etiology of the organism and the host range.

The survival studies have indicated that both the pathogens survived in the infected material stored at room temperature for more than a year and
in the stubbles and straw left over in the field on the soil surface for 6-7 months. Thus, the undecomposed infected plant material, stubbles and straw on the soil surface may carry over the pathogens from one season to another and become the primary source of inoculum.

Both the bacterial pathogens are found to be sensitive to five antibiotics viz., streptomycin, streptocycline, terramycin, erythromycin and ledermycin in in vitro study. Streptocycline and terramycin are found to be more effective than the three other antibiotics. This may be due to the synergistic effect of combination of different antibiotics in streptocycline and terramycin.

Three foliar sprays of streptocycline after the first appearance of the symptoms cured the disease, whereas four foliar sprays of streptocycline were applied as a protective measure to control the disease. The study provides us with two alternatives to control the diseases; to apply the sprays of antibiotic when the disease symptoms appear or to apply the sprays of antibiotic from the very beginning, of the two the former is more economical as it reduces
the number of sprays and eventually the cost of production.

VARIETAL RESISTANCE STUDIES ON SEVENTEEN VARIETIES OF Paspalum scrobiculatum L. and thirty varieties of Panicum miliaceum L. were carried out under field conditions. The conditions under which resistance to bacterial blight was tested were highly favourable to the pathogens. Two varieties viz., Local, IPS-19 (G.K. 1) of Paspalum scrobiculatum L. and three varieties viz., Gujarat vari-1, vari-10 and vari-62 of Panicum miliaceum L. are found to be moderately resistant to the blight disease. Although these varieties are not highly resistant they may prove to be of great value in the field for resisting the disease under normal conditions. Application of antibiotics to control bacterial blight is found to be expensive and could possibly give rise to medical and environmental problems. Therefore, resistant cultivars remain our best hope for a practical, long-range control of the bacterial diseases.

In the last chapter on discussion on phytopathogenic specialization emphasis has been
placed on the fact that the concept of phytopathogenic specialization in *Xanthomonas* should now be reconsidered in the light of recent reports on common antigen work by several investigators.