VII SUMMARY

1. The present investigation has been undertaken to obtain some information about the disease development in leaf of P. betle plants caused by Fusarium scirpi.

2. Necessary available literature in this connection has been reviewed and presented in a Chapter.

3. The different analytical methods and experimental procedures used during this investigation are given in detail in 'Materials and Methods' Chapter.

4. The data on the electrolytic leakage reveal that it gradually increases up to 24 hrs after inoculation and the maximum leakage is found in cv. Dhal and the minimum in cv. Mitha Bangla.

5. The pectic substances increase considerably in leaf tissues of all the five cultivars of P. betle due to infection by P. scirpi. The maximum increase is found in a Mitha-Bangla (8.85 mg/g dry wt.) and minimum in c.v. Mitha (6.60 mg/g dry wt.).

6. The calcium content of all the cultivars of P. betle is also found to increase up to 7 days after inoculation and then it starts declining. The calcium content is maximum in cv. Mitha-Bangla (4.48 mg/g dry wt.) in healthy leaves tissues and it increases to 5.58 mg/g dry wt. and is minimum in cv. Kali (3.84 mg/g dry wt.) and it increases to 4.54 (mg/g dry wt.).
7. The PME activity of the pathogen is found to increase up to 7 days of incubation in culture filtrate containing sodium polypectate and cell walls of different cultivars of *P. betle*. But in all the cultivars of *P. betle* the PME activity increases up to 5 days after inoculation and then decline. Similar trend is found increase of Endo-PG activities of the pathogen in all the cases.

8. The protein content of the leaves of all the five cultivars of *P. betle* decreases gradually up to 15 days due to infection of *P. scirpi*. The decrease is maximum in cv. Sanchi (138.99 mg/g dry wt.) and minimum in cv. Mitha (173.53 mg/g dry wt.).

9. The total phenolic substances is found to be high in the infected tissues of all the cultivars of *P. betle* than the healthy one. Similarly the concentrations of free phenols, free phenolic acids and bound phenolic substances are also found to be in higher amount in the infected tissues than in healthy ones in all cases. However the amount of increase in Mitha-Bangla cultivar is much more in comparison to other four cultivars.

10. The polyphenol oxidase and peroxidase activities of the mycelial extract reveal that the activities increase in medium supplemented with both glucose and casein. However, the activities about four times more with Casein than with glucose. The enzymatic activities in infected tissues are more than the healthy one in all the cultivars.
11. It is found during the investigation period that there is a definite decrease in protein synthesis in the infected leaf tissue of Mitha-Bangla cultivar of *P. betle* than the healthy ones. It is further observed that out of the three amino acids tested Lysine is more effectively incorporated in protein in both the healthy and infected leaf tissues of the cultivar.

12. It is found that the phenolic contents increase appreciably in the Mitha-Bangla cultivar when inoculated with two non-pathogenic forms of *Fusarium* than the pathogenic one. It is further observed that the crude protein and phenolic substances of healthy leaf tissues of the Mitha-Bangla cultivar inhibit the PME & PG activities of the pathogen *Fusarium scirpi*. But the inhibition is more pronounced when the leaf tissues are pre-inoculated with two non-pathogenic forms of *Fusarium*.

13. It is found that some of the saprophytes isolated from the leaf surface of Mitha-Bangla cultivar have inhibitory action on the pathogen. It is further observed that inhibition is due to the production of some metabolites in culture filtrate. It is evident from experimental result that inoculation of Mitha-Bangla cultivar with conidia of *Fusarium scirpi* & *Cladosporium oxysporum* (Saprophytic antagonist) simultaneously cause 64% decrease in disease severity. In other experimental set-up the role of saprophytic antagonist on the decrease of disease severity is also noticed.
14. All the findings of the above mentioned experiments obtained during the investigation period are discussed on the basis of the available data and relevant reports of the previous investigators.