SUMMARY

According to season and kind of leaves the microbial population showed variation except aphids infested and diseased leaves. Irrespective of the season, pesticides distinctly reduced all kind of microflora. The microbial diversity of groundnut pests and predators reveals that the bacterial and yeast population were high in pests than predators. Among the pests and predators highest bacterial population was observed in *S. litura* followed by *H. armigera*, *R. marginatus* and *P. viridiana*. 185 and 75 isolates of bacteria and yeast respectively which representing different microflora species isolated from the gut and whole body homogenate. The bacterial isolates belonging to pests exhibited higher hydrolytic activity than the bacterial isolates of predators. Surface microflora of predators revealed that unsterilized, dead predators of *C. septempunctata* and *R. fuscipes* showed *Mucor* sp. and *Aspergillus* sp. from *M. sexmaculatus* were recorded.

The pathogenicity test revealed that the indigenous isolates of *B. bassiana* has been found to be highly effective against all the instars of *S. litura* followed by *P. fumosoroseus*. In general, LT<sub>50</sub> and LC<sub>50</sub> increased as the pest grew older. Irrespective of conidial concentration, *V. lecanii* causes 100% mortality in *A. craccivora* in pot culture. The adjuvant neem oil recorded highest mortality to *A. craccivora* followed by caster oil. Even though *V. lecanii* recorded 100% mortality the adjuvants reduced the days to reach the same. All the higher concentrations of the fungal pathogens increased both the larval and pupal periods, reduced adult emergence as well as adult longevity.
Irrespective of the temperature tested both the wheat and rice were found to be support the maximum spore and biomass production of *B. bassiana*. *Sorghums* sp. recorded highest spore and biomass production in the case of *P. fumosoroseus* and *V. lecanii*. But the temperature influence the spore and biomass production of *P. fumosoroseus*.

All the plant based products are well tolerated by fungal pathogens except methanol extract of *Annona squomosa*. But the fungicide carbendazin highly inhibit the fungal growth. Among the predators tested, *C. septeonpunctata* and *M. sexmaculatus* and *R. fuscipes* were susceptible to *B. bassiana*. *R. marginatus* recorded only 5% mortality at the spore concentration of $1.0 \times 10^8$ and $1.0 \times 10^7$ spore/ml. But *P. fumosoroseus* and *V. lecanii* at any spore concentration does not caused mortality. *P. viridiana* was found to be susceptible to *B. bassiana* and *P. fumosoroseus*. However, *V. lecanii* at any spore concentration did not cause any mortality.

The nymphal developmental time and weight of the *R. marginatus* and *P. viridiana* were distinctly reduced when they fed with fungal infected *S. litura*. But there was no distinct impact on survival period of these predators. The field study revealed that all the pest population and their infestation were reduced in *B. bassiana* followed by *P. fumosoroseus* and *V. lecanii* treated plot. Similarly the cost benefit ratio and production of groundnut was found to be higher in *B. bassiana* treatment than the other. The occurrence of all the entomopathogenic fungal population was higher in soil then phyllosphere.
Future Area of Research
FUTURE AREA OF RESEARCH

1. Culture independent methods such as 16sr RNA analysis for phyllosphere microflora of groundnut and gut microflora of pests and predators will help to study more microbial population.

2. Genetic transformation of entomopathogenic fungi such as fungicide and pesticide resistance can be studied in future.

3. Isolation and purification of fungal toxins and enzymes and identify them and characterize using molecular analysis such as RAPD - PCR.