6. SUMMARY

- Effective microorganisms treated cuttings were found to have beneficial effect in sprouting of buds and survivability of saplings in nursery. Higher survivability of saplings was observed in T10, T7, T6 and T5 in the variety V-1 and MR-2 throughout the growth period at all the three stages of 60, 90 and 150 days after planting.

- Height of the sapling, number of leaves per plant, leaf weight and longest root length were found superior in the treatment T10 in both the varieties on 90 and 150 DAP. However, the shoot weight was higher in T9 on 90 and 150 days after planting.

- Significant increase in fresh and dry root weight of the saplings in nursery were found in T9 in variety V-1 and T5 in variety MR2 on 90 and 150 days after planting.

- Significant improvement in total fresh biomass was found in the treatment T9 (160.48 g), T5 (118.37 g) and T10 (115.90 g) in V-1. In variety MR2 maximum total fresh biomass (128.07 g) was observed in T5 and T10 (93.49 g). Higher total dry biomass was noticed in T10, T9 and T7 in V-1 and MR2.

- Significantly higher chlorophyll content (a, b and total), biochemical parameters like total carbohydrate, total soluble protein, total phenolic content, crude protein and NPK were recorded in the treatment T10 in both the varieties on 90 and 150 DAP.

- In variety V-1 the maximum root colonization was found in T9 on 90 DAP and T7 on 150 DAP. However, the lowest colonization percentage was recorded in the treatment T1 in both varieties studied. T11 recorded the maximum root colonization in variety MR2 on both 90 and 150 days after planting.

- In main field condition the growth parameters like plant height, longest shoot length, higher number of shoots per plant, number of leaves per shoot, number of leaves per plant, leaf area per plant and leaf area index were prominent in the treatment T10 as
against T1 receiving full dose of recommended chemical fertilizers in both the varieties during both years of study.

- Significantly higher TAGFB and TAGDB per plant was observed in T10 and T1 in variety V1 as well as MR2 during the first year and T10 in the second year in both the varieties.

- Significant improvement in leaf yield, stem yield and leaf moisture and moisture retention content and stem moisture content were achieved due to inoculation with *Azospirillum*+PSB+VAM + (75% N+25% P+ full dose of K /ha/yr) +EM (T10) in both the year of study.

- The highest chlorophyll a, chlorophyll b and total chlorophyll content in the variety V-1 was recorded in T10, while the lowest chlorophyll content was recorded in T0. Similar trend was observed in the variety MR-2 also during the first as well as second year of study.

- The carbohydrate and crude protein content in the varieties V-1 and MR-2 were highest in treatment T10 during both years studied.

- Significant improvement in leaf NPK content was observed due to the inoculation of biofertilizers and effective microorganisms. Higher N, P and K contents were recorded in the treatment T10 in both V-1 and MR-2 varieties.

- Significantly higher bacterial population (298.78 x 10⁶) and fungal colonies (32.95 x 10³) in rhizosphere were observed in the treatment T10 in variety V-1 and similar observations were noticed in MR2 variety too. In general the microbial population in the rhizosphere was found to be increased during the second year in all the treatments.

- In variety V-1 highest phylloplane bacterial population was observed in the treatment T6 followed by T11 while the least bacterial population was observed in the
treatment T0. Whereas in MR-2 the highest phylloplane bacterial population was found in T6 and the least bacterial population in T1 on both the years of study.

- Highest number of phylloplane fungal colonies in variety V-1 were observed in T11 followed by T7. In the variety MR2 maximum phylloplane fungal colonies were found in the treatment T7. The minimum fungal colonies were found in T1 and T0.

- In variety V-1, significantly highest root colonization was recorded in T5, T10 and T9. The lowest root colonization was found in T1 (38.87%) receiving full dose of chemical fertilizers. The data also revealed a significant decrease in VAM root colonization corresponding to the increase in amount of phosphatic fertilizer application. In general the variety MR2 responded better to VAM root colonization compared to the variety V1.

- The rearing performance with the variety V-1 exhibited highest matured larval weight in the treatment T10 and this was significantly superior over T1. Highest effective rate of rearing (ERR), higher cocoon and shell weight were recorded in the treatment T6, T10 and T2. The treatment T7 recorded the highest shell ratio (24.35%).

- The rearing performance with the variety MR-2 exhibited highest matured larval weight, effective rate of rearing by number and weight in the treatment T10. The single cocoon weight and single shell weight were found to be the highest in the treatment T6 followed by T10, whereas higher shell ratio was observed in the treatment T8.

- Significant improvement in various cocoon characters of mulberry silkworm was observed as a result of feeding leaf from effective microorganisms inoculated plots over the plot receiving full dose of inorganic fertilizers and no inoculation.

- As regards the effect of microbial inoculants on the management of root rot disease in mulberry maximum survivability of saplings on 60, 90 and 150 DAP was recorded.
in T5 and the least survival was observed in T0 under both the varieties tested on different days after planting under sick plot condition.

- On 90 and 150 DAP the population of bacterial and fungal rhizosphere colonies were significantly higher in T5 in sick plot.

- In sick plot of V-1 and MR-2 varieties the higher organic carbon content (0.32 %, 0.38%) was recorded in T5, while the lowest organic carbon content (0.15%, 0.17%) was observed in T0.

- Overall it could be concluded that co-inoculation of biofertilizers and EMs even at reduced doses of N and P fertilizers to an extent of 25-75% was equally effective in improving the yield and quality in mulberry as well as silkworm cocoon production. Similarly the combined applications of EM with other antifungal microorganisms were effective in reducing the incidence of root rot in mulberry. Further both the varieties V-1 and MR-2 responded well to the microbial treatments with higher quantitative values of yield and other parameters studied in variety V-1 compared to that of MR-2.