Moringa oleifera is a plant with innumerable useful properties. The PKM-1 variety developed by the Periakulam research station of Tamil Nadu Agricultural University is widely cultivated in Tamil Nadu and Kerala. This study analysed the effect of different fertilizers and flowering hormones on growth and yield of PKM-1 plants. A property attributed to M. oleifera seeds is the purification of polluted water, which was evaluated with PKM-I seeds using polluted natural waters and industrial effluents in the present study. Tests conducted with various parts of the plant proved that the seed powder alone has significant water purifying ability and defatted seed powder is more efficient than non-defatted seed powder in purification.

The work is an interdisciplinary investigation. The content of this thesis is distributed into eight chapters. The first step of this study was designed to evaluate the effect of various fertilizers, alone and in combinations on growth and yield of PKM-1 plants. The results obtained showed that the fertilizers enhanced the growth and yield of plants and the flowering hormones have no effect on the yield. Soil tests were revealed that there is the enhancement of soil quality in terms of pH and EC and the quantity of soil nutrients. Moreover, fast multiplication of Azospirillum in the soil by the addition of fertilizers also was confirmed.

Secondly, the water purifying study using defatted seed powder of PKM-1 variety-standard and treated seeds- in various solvents was conducted and it was compared with that of wild Moringa seed extracts. They were found effective in purifying polluted waters, but the fertilizer treatment in soil does not show any variation in water purifying quality of seeds. As a third section of this analysis, the antibacterial effect of the seed extracts was evaluated under in vitro and in vivo conditions. The antibacterial activity of the defatted seed powder of PKM-1 was found to be higher in comparison to that of wild variety. As the final step, a partial purification of the biochemical principle was done and its separation and molecular weight determination were conducted using SDS-PAGE and confirmed that it is protein/proteins. The present investigation proved the water purifying and antibacterial ability of M. oleifera PKM-1 variety seed powder.