CHAPTER - V

SUMMARY AND CONCLUSIONS
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Twenty different pesticide residue concentration falling under organochlorine (OCs), organophosphorus (OPs) and synthetic pyrethroids (SPs) groups were analyzed in 40 samples each of the eight different vegetables (i.e., beans, brinjal, cabbage, carrot, cauliflower, capsicum, lady's finger/okra and tomato) sampled from five districts of Karnataka namely, Bangalore rural, Bangalore urban, Chikkaballapura, Kolar and Ramanagara. Accordingly, the retention time varied from 11.6 to 34.5 mins depending upon the type of pesticide residue analyzed and type of vegetables used for analysis. Percentage recovery minimum varied from 73.2 to 83.3, 81.2 to 82.5 and 74.9 to 80.4 respectively at 1.0, 0.5 and 0.01mg/kg level of spiking while percentage recovery maximum ranged from 96.6 to 98.1, 81.2 to 82.5 and 74.9 to 80.4 at 1.0, 0.5 and 0.01mg/kg level of spiking respectively.

Bean samples that were found to be contaminated with pesticide residues are accounted by 37.5% acephate, 17.5% chlorpyriphos; 15% dichlorvos, 17.5% monocrotophos, 30% phorate and 5% deltamethrin. Similarly, brinjal samples contaminated with pesticide residues accounted for 37.5% acephate, 20% chlorpyriphos, 27.5% phorate, 5% cyfluthrin-β, 20% deltamethrin and 17.5% fenvalerate.

Cabbage samples that were found to be contaminated with pesticide residues accounted for 37.5% acephate, 12.5% chlorpyriphos, 7.5% dichlorvos, 10% monocrotophos, 20.0% phorate, 10% cyfluthrin-β and 12.5% fenvalerate. Contrast to this, capsicum samples contaminated with pesticide residues accounted for 35% acephate, 22.5% chlorpyriphos, 7.5% dichlorvos, 27.5% phorate, 17.5% delta-methrin and 12.5% fenvalerate.

Carrot samples that were found to be contaminated with pesticide residues accounted for 27.5% acephate, 15% chlorpyriphos, 10% dichlorvos, 32.5% phorate, 5% cyfluthrin-β and 20% fenvalerate. Similarly, cauliflower samples
found to be contaminated with pesticide residues accounted for 37.5% acephate, 10% chlorpyriphos, 12.5% dichlorvos, 35% phorate, 10% cyfluthrin-β, 22.5% cyhalothrin-λ and 12.5% fenvalerate.

Okra samples that were found to be contaminated with pesticide residues accounted by 35% acephate, 20% chlorpyriphos, 7.5% dichlorvos, 32.5% phorate, 17.5% cyfluthrin-β, 27.5% cypermethrin and 12.5% with fenvalerate. In contrast, tomato samples contaminated with pesticide residues accounted for 37.5% acephate, 22.5% dichlorvos, 15% monocrotophos, 30% phorate, 15% cyfluthrin-β, 12.5% cyhalothrin-λ, 20% deltamethrin and 12.5% fenvalerate.

Overall sample contamination accounted for 95, 57.5, 55, 22.5, 92.5, 37.5, 20, 17.5, 22.5 and 75% respectively for acephate, chlorpyriphos, dichlorvos, monocrotophos, phorate, cyfluthrin-β, cyhalothrin-λ, cypermethrin, deltamethrin, fenvalerate residues in different vegetable samples from five districts. Nonetheless, majority of the samples collected from five districts showed mean concentration of acephate, chlorpyriphos, cyfluthrin-β, cyhalothrin-λ, cypermethrin, deltamethrin, dichlorvos, fenvalerate, monocrotophos and phorate residues below their respective MRL values.

The results of present survey of farmgate and market vegetables revealed 49.5% contamination of which residues of OP exceeded the MRL value in 10% and SP in 1% samples. Thus, overall 11% samples contained residues above MRL. The contamination was mainly due to organophosphates followed by synthetic pyrethroids. Organochlorine residues were not detected because of the change / shift in usage pattern from OCs to OPs and SPs. The results of the survey indicated that vast majority of growers use pesticides non judiciously and indiscriminately ignoring pre harvest period. Regular consumption of contaminated vegetables could pose potential health hazards. This is a severe socio-political concern to be tackled holistically and the farmers should be made more alert of ill-effects of excess use of pesticides.