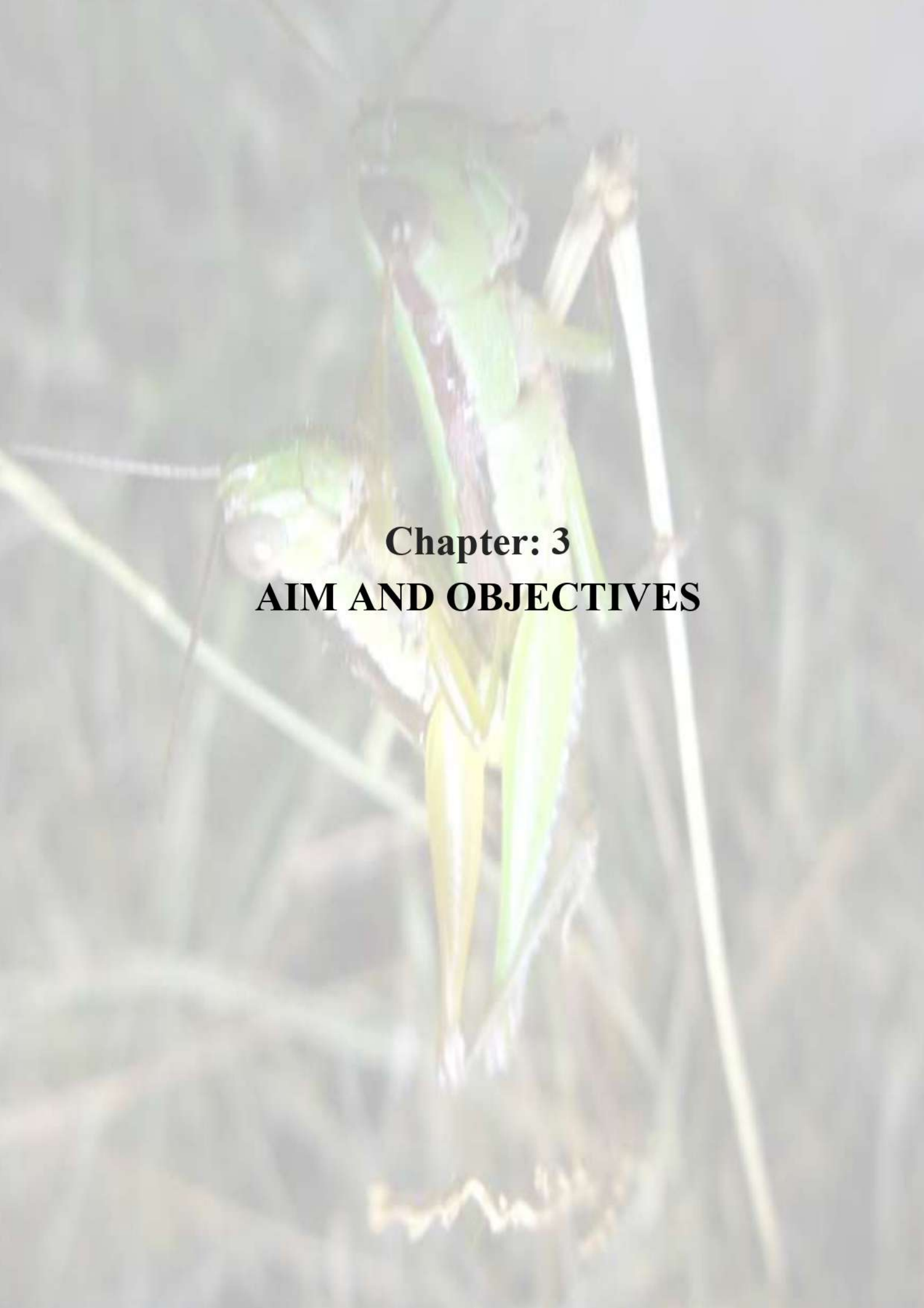

Chapter: 3
AIM AND OBJECTIVES

3. OBJECTIVES OF THE STUDY

Pesticides are used to control/eliminate insect-pests from agri-fields. These are the reason for enhanced crop protection in most of the developing countries throughout the world. But unfortunately, these pesticides derived from botanicals enter ecological food chain and affect beneficial/non-target animals too. Based on agricultural practices, azadirachtin (AZT) is considered as one of the major botanicals having regular practice.

Therefore, short-horned-grasshoppers get exposure to the pesticides through feeding on contaminated crops. Interestingly, the model insect, *Spathosternum prasiniferum prasiniferum* (Walker 1871) selected for this study is an insect pest and has been considered as a grasshopper with ecological, economical, nutritional and medicinal importance animal model in the field of toxicology which has a regular distribution in all agri-field where AZT is in wide use. The scope in the present work is to determine the toxicity profile of AZT in this model insect. This species selection is made depending on association with grass and occurrences throughout the year, that studies conducted throughout the year. Till date, no comprehensive toxicological studies on molecular basis have been made on the grasshopper fauna. Therefore, the toxicity efficacy studies of present investigation have been carried out to achieve the following objectives:

1. Pesticide screening through in-vitro toxicity study of commonly used pesticides on agri-field dwelling animals.
2. Selection of species from ecological study of insects (Orthoptera: Acridoidea) after thorough survey of the grasshopper fauna throughout the Midnapore (East and West) district.
3. Determination of mortality (%) value of selected insecticide (under laboratory conditions) in adult of selected insect.

4. Search for any alteration in morphology and physical activity of adult insects after exposure to selected insecticide.
5. Determination of nutritional-indices of adult insects in terms of consumption index (CI), approximate digestibility (AD), efficiency conversion of digested-food (ECD) and efficiency of conversion of ingested-food (ECI) under control and selected insecticide supplemented food.
6. Exploring affects of in-vivo and in-vitro selected insecticide exposure on endogenous oxidative stress (OS)-markers, nutrient-metabolizing-enzyme activities and others biochemical parameters of 'tissues of interest' and in different organs of selected insect.
7. Investigating relevant tissue-DNA-fragmentation (genotoxicity) in-vivo and in-vitro genotoxic impact of the selected insecticide if any on different organs of treated insects.
8. Investigating impact of in-vitro toxicity of selected insecticide on juvenile tissue of selected insect.
9. Search for protective potential of antioxidant enzymes against AZT-induced toxicity in selected insect.

Through the above work plan, it is expected that a clear idea on the toxic impacts of selected insecticide at molecular levels in selected insect could be achieved. Outcome of the present study would be helpful to extrapolate the finding to ultimate other insects belong to same family for selected insecticide (AZT) i.e., (Orthoptera: Acridoidea).