I. INTRODUCTION

Biological control involves the use of natural enemies to control pests. Since it is not possible to characterize a universally effective natural enemy for biological control (Huffaker *et al.,* 1977). In Egypt, as in the other countries, plant production for human and live stock consumption is threatened by a wide range of insects and arthropod species. Among the serious pests that cause big loss of plants are the cotton leafworm, *Spodoptera littoralis* (Boisd.) (that known to have more than 270 host plants allover the world), aphids, *Aphis craccivora* (Koch), *Aphis gossypii* (Glover) and the phytophagous mite, *Tetranychus urticae* (Koch).

The traditional unwise use of chemical pesticides for pest control and their consequence of toxic residues, environmental pollution and side effect on beneficial insects (bees, predator and parasites) necessitates : search for alternative control agents mainly of natural origin.

Regarding pest natural enemies, the spider is known as a potential factor for reducing insect population. It is characterized by its wide host range and can tolerate hard field conditions (Agnew *et al.,* 1985; Joone *et al.,* 1988 and El-Erksousy 2000).

In Egypt, Hussein (1999) studied the seasonal abundance and activity patterns of spider fauna in some vegetable field in Menoufyia, and Nile Delta. The peak activity (19 individuals/hr.) and the highest diversity (9 species) were recorded in summer, while the lowest value (0.08 ind./hr.) and 3 species were registered in winter.

This study will include:

1. **Ecological studies:**
    1.1. Occurrence of spider families collected from broad bean and cotton crops:

1.2. The percentage of spider families and occurrence of their species during two successive years.

1.3. Seasonal abundance of the three pests, the cotton leafworm, aphids and phytophagous mite and their associated predatory spiders.

1.4. Association between the three pests and spider families.

1.5. Average number of predator spider and their families from broad bean and cotton plants during two successive years.

2. Biological studies:

- Studies on the biology of the spider (*Thanatus albini)* (Audouins) (F.: Philodomidae) as a potential natural agent in biological control.

3. Toxicity of some alternative pesticides on adults (females and male):

- Effect of alternative pesticides, local petroleum oil (KZ oil 95% EC), microorganism product (*Streptomyces avermitilis*) (Vertimec 1.8% EC), and plant extract (*Piper nigrum*) on predatory spider.

4. Biochemical studies to investigate the effect of nutrition and alternative pesticide on total protein and protein bands in adult spiders.