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### **DESERT LOCUSTS MANAGEMENT IN INDIA**

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DESERT LOCUSTS MANAGEMENT IN INDIA

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esert Locust plagues can be an important contributing factor to famines and a threat to food security in many regions of the world. The Desert Locust plague of 1986–1989 and subsequent upsurges during the past two decades demonstrate the continuing capacity of this historic pest to threaten agriculture and livelihoods over large parts of Africa, the Near East and South- West Asia. In 2004-2005, a major upsurge caused significant crop losses in West Africa, with a negative impact on food security in the region. These events emphasize the need to strengthen and maintain a permanent system of well organized surveys in areas that have recently received rains or been flooded, supported by a control capability to treat Desert Locust hopper bands and adult swarms efficiently in an environmentally safe and cost-effective manner.

#### **DESERT LOCUSTS:**

members of Locusts are the grasshopper family Acrididae, which includes most short-horned grasshoppers. Locusts differ from grasshoppers because they have the ability to change their behaviour and physiology, in particular their morphology (colour and shape), in response to changes in density, when meteorological conditions are favourable. Adult locusts can form swarms that may contain millions or billions of individuals that behave as a coherent unit. The non-flying hopper (or nymphal) stage can form cohesive masses that are called hopper bands.

Desert Locusts (Schistocerca gregaria) are always present somewhere in the deserts between Mauritania and India. When numbers are low, they behave as individuals (Solitarious phase); when high, they behave as a single mass (gregarious phase). Colour and shape are an indication of how they been behaving but may not be a reliable guide as to how they will behave in the future.When plentiful rain falls and annual green vegetation develops, Desert Locusts can increase rapidly in number and, within a month or two, start to concentrate and become gregarious. Unless checked, this can lead to the formation of small groups or bands of wingless hoppers and small groups or swarms of winged adults. This is called an outbreak and usually occurs within an area of about 5000 km2 (100 km by 50 km).

#### LIFE CYCLE OF DESERT LOCUST:

A Desert Locust lives about three to five months, although this is extremely variable and depends mostly on weather and ecological conditions. The life cycle comprises three stages: egg, hopper (Nymph) and adult (Figure 2).





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## WEATHER AND LOCUST CONTROL OPERATIONS:

For locust control, as well as swarm movement, it is important to know the weather conditions and wind fields because these affect the concentration of potential control targets and the suitability of conditions to carry out effective spraying. In planning Desert Locust surveys, the following principles should be borne in mind (WMO, 1991):

- 1. Locust populations move downwind.
- 2. The hotter the wind, the greater the distance travelled per day.
- 3. Highly turbulent (correspondingly hot) winds disperse populations (reduce their area density).

#### LOCUST MANAGEMENT STRATEGIES-

## 1. Traditional desert locust control methods:

- a. Beating or trampling on the hoppers.
- b. Digging up egg pods or plowing fields infested with egg pods.
- c. Scattering straw over roosting sitesand then burning it.
- d. Lighting fires or making noise to prevent swarms from settling in crops.
- e. Driving hoppers into trenches and burning, drowning, or crushing them.
- f. Use of fame throwers.



Figure 1. Desert Locust (a) hopper, (b) hopper band, (c) adult and (d) swarm. Hoppers are the wingless juvenile stage, while adults can fly and reproduce. Under optimal conditions, hoppers can form bands and adults can form swarms.

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#### 2. Biocontrol / Biopesticides:

The biopesticide developed from entomopathogenic fungus Metarhizium acridum, the microsporidian Paranosema locustae (Nosema locustae). Beauveria bassiana (Bals.) and Sorosporella sp. are found effective and their powder formulations are available in India.

#### 3. Chemical control measures:

#### a. Organophosphates:

Include the two most widely used insecticides. fenitrothion locust and malathion. They are moderately fast-acting (2-8 hrs), relatively non-persistent, but nonselective compounds. Malathion has the advantage of very low mammalian toxicity. Malathion 96% ULV is used in Desert Locust control in India.

#### b. Synthetic pyrethroids:

Deltamethrin and lambdacyhalothrin, which are fast-acting ("knock-down" within minutes), varying levels of persistence and broad-spectrum.

#### **CONCLUSION:**

It is expected that the desert locust will also adapt to new environment as it has done in past to survive in adverse conditions.

methode, Grow More The preventive control encompassing early intervention for desert locust bands and swarms' control is best suited to maximize agricultural production. This has been made possible by the use of latest technological developments in the form of ULV spraying technique, GPS and GIS and e-locust. Support includes tools procuring pesticides and equipment, contracting aircraft, providing logistics services, establishing operational bases,

intensive training on the safe administration of chemical pesticides, and raising community awareness on issues related to desert locust upsurge and suitable control measures need to be adopted.

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