

## Mandate:

✓ To monitor, forewarn and control the Locust in Indian Scheduled Desert Area (SDA) mainly in the States of Rajasthan & Gujarat and partly in the States of Punjab and Haryana.

✓ To conduct research on locusts and grasshoppers on the bio-efficacy of new pesticides molecules and effectiveness of bio-logical control agents at “Field Station for Investigations on Locusts” (FSIL), Bikaner

✓ To fulfil the International obligation and commitments to Control Desert Locust under the agreement of Desert Locust Control Committee (DLCC) of the Food and Agriculture Organization (FAO) of the United Nations.

✓ To Participate and Organise South-West Asia Commission meeting for Desert Locust control (SWAC) Conferences at regular time intervals.

## Activities of LWO/LCO's/FSIL:

✓ Locust surveillance and monitoring through 10 Circle Offices, field Headquarter Jodhpur and FSIL Bikaner.

✓ Organizing control operations against build up of locust population and invading locust swarms.

✓ Dissemination of locust information through fortnightly locust situation bulletins and their circulation to all locust affected Countries throughout the world.

✓ To conduct research on locusts and grasshoppers.

✓ To organize trainings for the farmers, LWO staff, State officers and Defence/BSF personnel about locust intelligence, identification and control operation

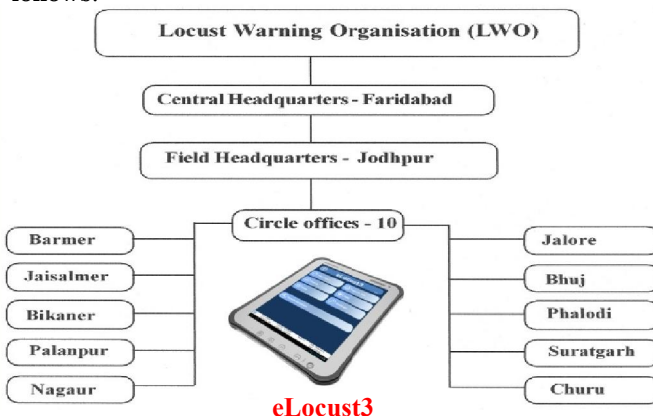
✓ Organizing Indo-Pak Border Meetings to exchange information on any locust development on both side and maintaining wireless contact between Jodhpur and Karachi during June to November every year.

✓ Participation in International and Regional Commission's meetings on Desert Locust.

✓ Conducting FFSs programme through LWO/ LCO's in Rabi/ Kharif season every year

## Brief about Locust Scheme:

The “Locust Control and Research” is one of the scheme of the DPPQ&S being implemented through Locust Warning Organization (LWO) established in 1939, later merged with DPPQ&S in 1946. Locust division was established to monitor the locust situation/activities, forewarn and control of Desert Locust (an International pest) over an area of about 2 lakh sq km of the Scheduled Desert Area (SDA) mainly in the States of Rajasthan, Gujarat and partly in the States of Punjab and Haryana. It has 10 Circle Offices & Field & Central Headquarter as follows:



LWO maintains its own wireless network for exchange of information on locust surveys and control between different Locust Circle Offices, Field Headquarter Jodhpur and Central Headquarters at Faridabad. A satisfactory locust control potential is being maintained in the form of ready to use pesticides, well trained / skilled manpower, a fleet of vehicles, spray equipments, Communication equipments (wireless

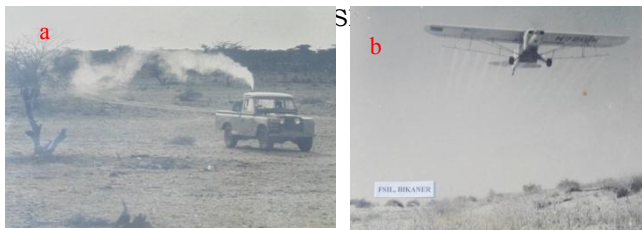


Fig.3: Locust control through a). Micronair ULVA, b). Aerial spray

## An Overview on Locust Control & Research



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## Introduction about Locust:

Historically, the Desert Locust has always been a major threat to man's well-being. The Desert Locust is mentioned as curse to mankind in ancient writings viz. Old Testament-Bible and the Holy Koran. The magnitude of the damage and loss caused by the locusts is very gigantic beyond imagination as they can cause starvation its being a polyphagous feeder. An average small locust swarm eats as much food in one day as about 10 elephants, 25 camels or 2500 people. A swarm the size of Delhi will consume the same amount of food in one day as every inhabitant in Rajasthan or Madhya Pradesh in one day. Locusts cause damage by devouring the leaves, flowers, fruits, seeds, bark and growing points and also by breaking down trees because of their weight when they settle down in masses.

There are 10 important species of locusts in the world, out of these four types of locust recorded in India viz., Desert locust (*Schistocerca gregaria* F.) is the most destructive of them, Migratory locust (*Locusta migratoria* L.) Bombay Locust (*Nomadacris succincta* L.) and Tree locust (*Anacridium rubrispinum* B.B.). The mature female drills hole at a depth of 8-10 cm in moist sandy soil, oviposit thrice at weekly interval about 1000 egg pods/sqmt area. Adults fly in swarms and migrate in millions from country to country or from place to place. The adult swarms at a speed of 12 to 16 kmph.



Fig.1: Immature stages of a. Desert locust, b. Migratory locust c. Bombay locust, d Tree locust

## Biology of Desert Locust:

### Life cycle parameters

Stages	Egg, hopper, adult	
Duration	Egg	10-65 days
	Hopper	24-95 days (36 days average)
	Adult	2.5-5 months
	Laying-fledging	40-50 days
	Adult maturation	3 weeks-9 months (2-4 months average)
Total	2-6 months	
Larval moults	5-6 (solitarious), 5 (gregarious)	
Phases	Solitarious, transiens, gregarious	

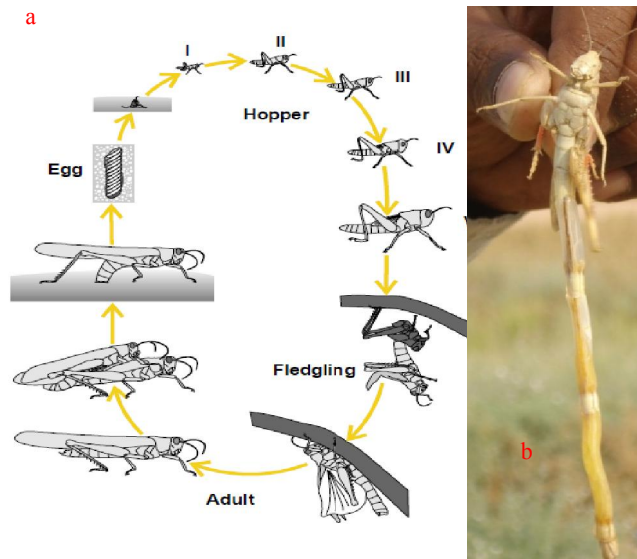


Fig.2: a) Life cycle of Desert locust, b) Female *D. locust* with extended abdomen ready for egg laying.

Ist Instar	Newly hatched are white but turns black in 1-2 hours.
IInd Instar	Head is larger and pale colour pattern is conspicuous.
IIIrd Instar	Two pairs of wing buds projects on each side of thorax
IVth Instar	Colour is conspicuously black and yellow.
Vth Instar	Colour is bright yellow with black pattern.

## Locust plagues, upsurges & incursions:

✓ The attack of the desert locust used to occur earlier in phases of plague cycles. India witnessed several locust plagues, upsurges and incursions in the past. About 12 locust plagues were observed in India till 1962. Since then no locust plagues occurred. Similarly, 13 locust upsurges were recorded since 1964 till 1997. Small scale localized locust breeding have also been reported and controlled during the period 1998, 2002, 2005, 2007 and 2010. Since 2010 till now, situation remained calm and no large scale breeding and swarms have been reported. However, solitary phase of Desert locust has been reported from time to time at some locations in the State of Rajasthan and Gujarat.

### Organizations of Locust Control Campaign:

With the onset of locust season an alert should be issued to the Agriculture authorities of Rajasthan, Gujarat, Haryana and Punjab States and other stake holders viz; Ministry of Home Affairs, Defence, Science and Technology, Civil Aviation, Communication, Aircraft Companies and Pesticides Manufacturing Firms etc. be sounded for providing needful assistance, if required, during locust emergency

### Daily Activity Chart during Locust incursion/upsurge:

- ✓ Report of swarm movement/ hopper bands
- ✓ Deployment of ground/ aerial control teams.
- ✓ Earmarking of infested area/ site on map.
- ✓ Positioning of control teams/ pesticides/ aircrafts/ POL at control sites.
- ✓ Issue of pesticides, control equipments, protective clothing, POL and other items for control operation.
- ✓ Reporting/ receiving of control data from field.
- ✓ Compilation of field data like area treated and mortality achieved.
- ✓ Compilation of control data, pesticides consumption and balance, position of additional requirement in respect of vehicles/ pesticides/ POL.
- ✓ Transmission of field data to LWO /LCO's/FSIL
- ✓ Preparation of daily locust situation report & appraising the locust situation to the competent authorities .
- ✓ Briefing to Pilot/ ground crew/ aerial parties/ ground control teams.
- ✓ Daily review of progress of campaign and planning for next day operation.