

CHAPTER 7



GENERAL AGRICULTURAL INSECT-PESTS

DESERT LOCUST



Taxonomy

- *T.N:* *Schistocera gregaria*
 Locusta migratoria
- *Family:* Acrididae
- *Order:* Orthoptera



Introduction

- Desert locust is **polymorphic species** show morphological color and behavior variation in different phases e.g.
- Color of body
- Length of wings
- Shape of pronotum
- Existence is either a **solitary** or **gregarious**



Differences between destructive gregarious and harmless solitary phases are:

Gregarious

(Schistocera gregaria)

1. Occur in swarm and move from place to place
2. On emergence body color is pink, then grey and ultimately to yellow. Small spots on elytra



Solitary

(Locusta migratoria)

1. Occur singly and don't move from place to place
2. Greenish white to yellow grey. No spots on the body



Gregarious
(Schistocera gregaria)

Solitary
(Locusta migratoria)

3. Pronotum concave shortly
and surface almost smooth

4. Prosternal spine smaller

5. Hind femur shorter, tegmina
longer.

6. Body size smaller

7. Move in bands

3. Stripes on pronotum and a pale
stripe along its middle

4. Prosternal spine prominent

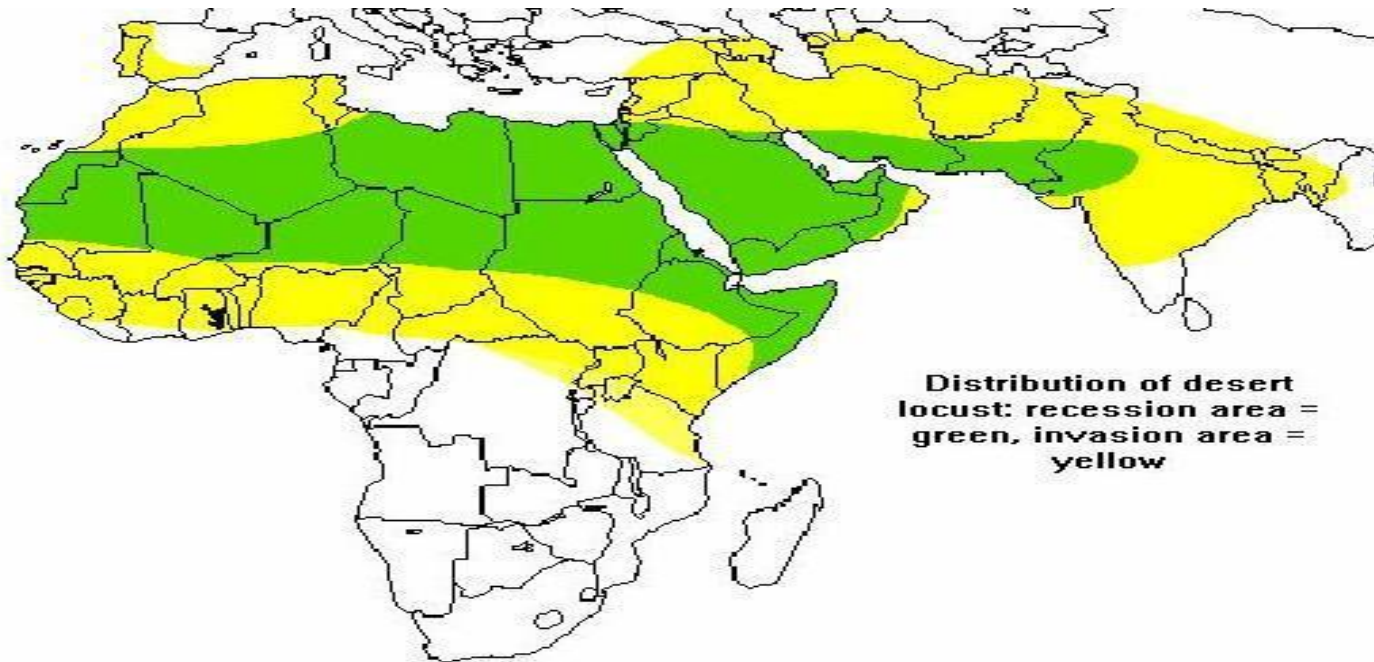
5. Hind femur longer, tegmina
shorter

6. Body size robust (Healthy)

7. Solitary life

Distribution

- Africa, Portugal, Spain, North Siberia, Sudan, Arabia, Syria, Iran, Afghanistan, West Pakistan and India.
- It is connected with **dry desert** and **semi-desert regions**



Host Plants

- Feeds on about all kind of vegetation
- Eye lashes of children
- On moist wool of sheep.
- Also show cannibalism (feed on their fellows)



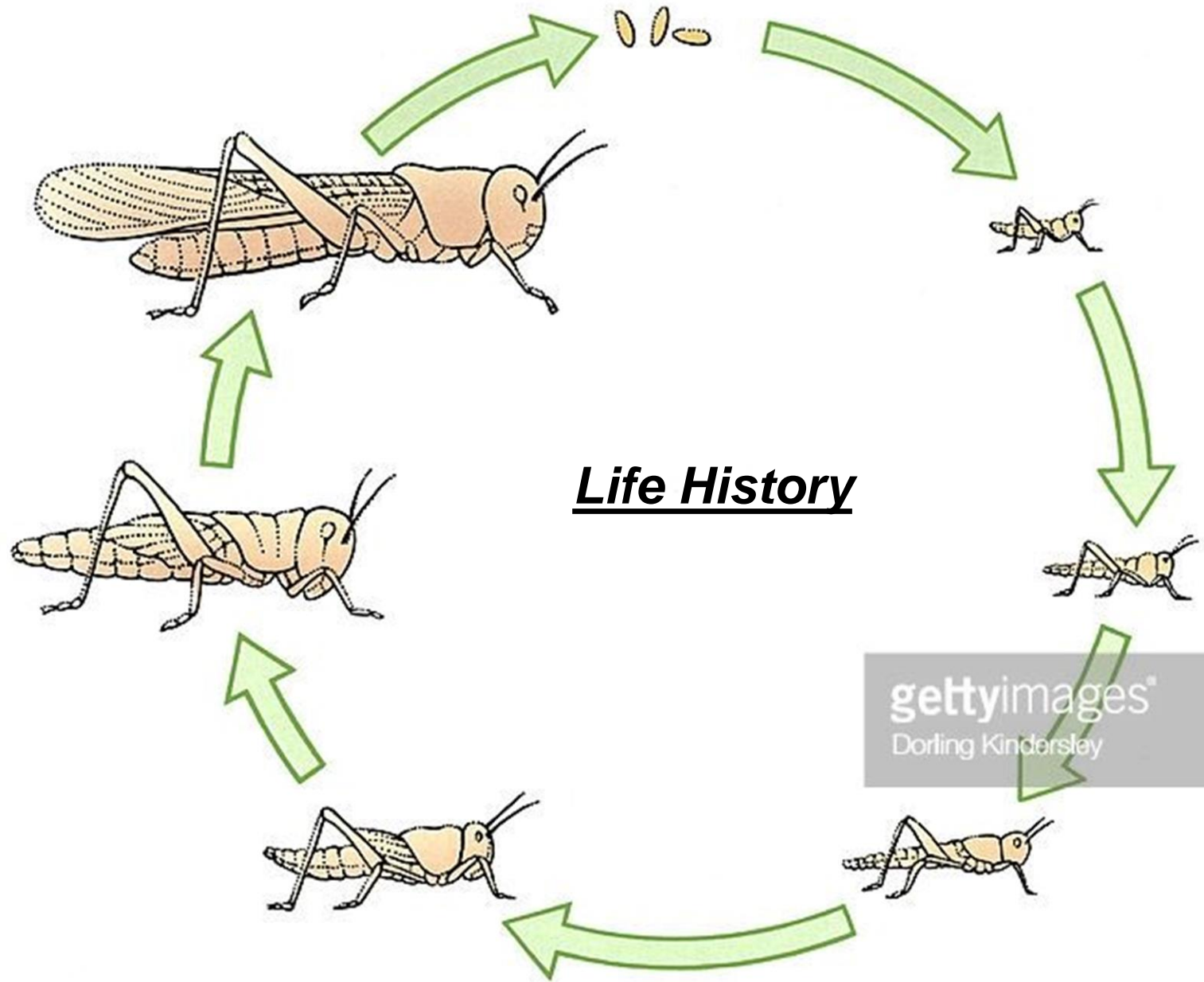
Cannibalism



Habits and Behavior

- Feeding habit is extremely **wasteful**
- Positively geotropic in the morning and afternoon
- Feed 24 hours
- Sluggish during **cold** and **cloudy weather**





Life History

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Dorling Kindersley

Life History

- Their **mating** on ground last for few minute to many hours
- Under field conditions, **immediately after mating they lay eggs**
- Eggs are laid in **clusters** in light soil in a hole drilled with ovipositor
- **Polygamy** and **polyandry** (a pattern of mating in which an animal has more than one mate) are common
- The area of egg laying can be recognized by holes
- Incubation period is **2-3 weeks**
- Hoppers undergo **5 moults** and there may **2-4 broods** in a year

Egg laying



Damage

- Severe damage is caused in **summer**
- Both **adult** and **nymphs** cause damage
- **Wheat** at ear forming stage, **oil seeds** and **cotton seedlings** are destroyed
- Hoppers may **enter house, beds, kitchens** etc. and cause a nuisance
- **Make roads slippery** when crushed under



Control

- It is an **international problem**
 - Anti locust organization supplies the information to our plant protection department to control this pest in deserts
 - Control is a **collective effort** and carried out on emergency basis because hoppers cause damage in short time
1. **Prevent swarm** by beating the drums etc. exploiting crackers, firing guns and waving clothes
 2. **During mating** and egg laying adults are sluggish and should be killed by
 - Beating them with brooms
 - Running a sohaga (planker) over them
 - Burning

Control

3. **Destruction of eggs** by

- Ploughing
- Digging and feeding poultry
- Irrigation at time of hatching

4. **Burning** of resting hoppers and adults in the morning or night with the help of a flame thrower or by burning trash

Control

5. **Destruction of hoppers** by

- Trenching is efficient and cheapest method
- Isolation of eggs laid area and trapping of hatched hoppers
- Erection of barriers of metal sheets

6. **Natural enemies** (crow, peacocks, dogs, squirrels, pigs and foxes) should be encouraged in affected areas

7. **Insecticides** **Endosulfan, Chlorpyrifos, Carbaryl, Deltamethrin, Imidacloprid, Spinosad and Azadirachtin** should be sprayed

TERMITES

Microtermes obesi

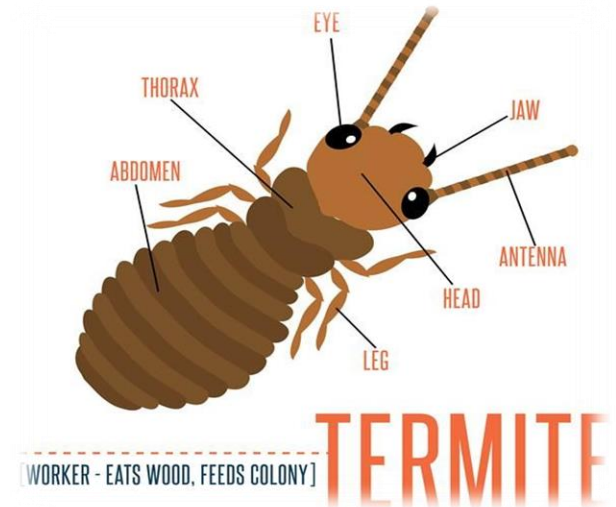


Odonototermes obesus



Taxonomy

- *T.N:* *Microtermes obesi*
 Odonototermes obesus
- *Family:* Termitidae
- *Order:* Isoptera



Social insect living in colonies with following individuals:

Queen Large, abdomen greatly stretched. Lay eggs

King Small, mates with queen

Soldier Head flat, long scissor like mandibles and shield shaped pronotum, defend colony

Worker Head small, blind. Take care of young ones, feed queen and collect food

Fungus comb Spongy, found cultivated in fungus garden. Young ones feed on these combs

Royal chamber King and queen live in this chamber

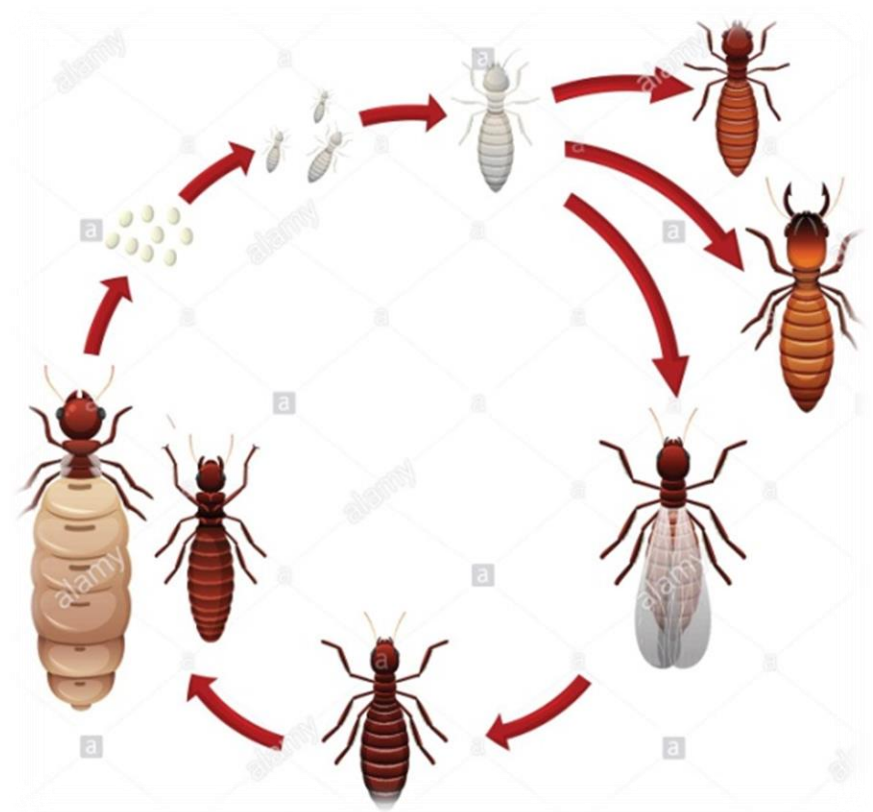
Biology

- Lives in **underground nests**
- Winged individuals **seen on light** during monsoon
- Colony headed by **king and queen**
- Live in **royal chamber** deeply hidden in termitarium
- Couple is **monogamous**
- **Brachypterous** and **Apterous** forms are present in the progeny of Macropterous Royalties
- These are reproductive and can replace royal couple when necessary

Biology

- They are **polygamous**
- Macropterous forms find new colonies

- Eggs stage 1 week
- Nymphal stage 6 months
- Queen 5-10 years



Damage

- They destroy the **wood works, fences, articles of household** and **wooden poles** that directly contact with soil
- Also damage **cotton, sugarcane, wheat, fruits, vegetables** and **shade trees**



Control

- Use of **farmyard manure** or **green manure** in the infested field should be avoided
- Wooden structure of buildings **should not directly touch the ground**
- Spray 0.5% **Chlorpyrifos**

