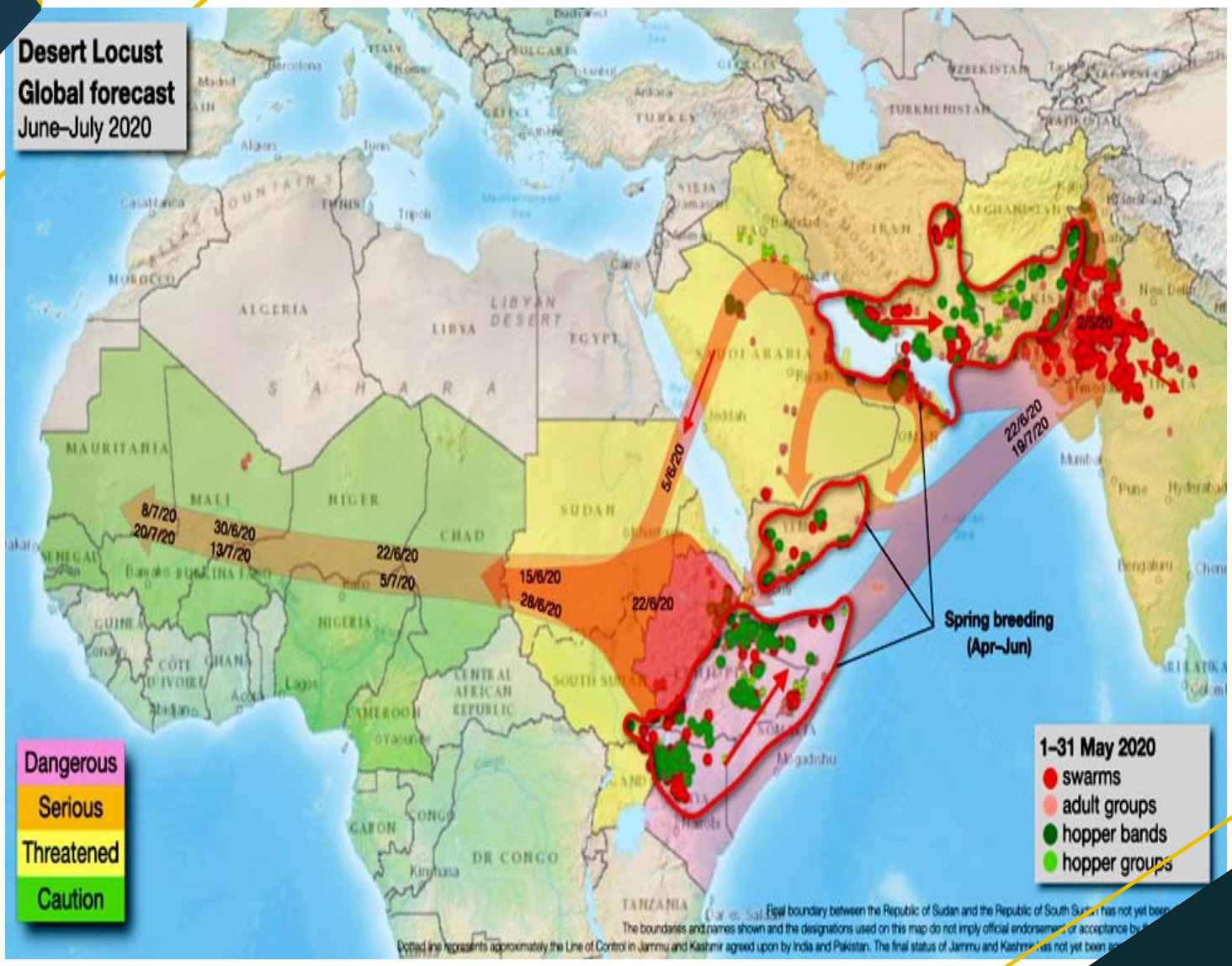
CropLife India

Advisory on Locust Control



CropLife INDIA

An Overview: Locust and Management

Locusts are members of the grasshopper family Acrididae, which are polyphagous in nature. Locusts are large herbivorous insects that can be serious pests of agriculture due to their ability to form dense and highly mobile swarms. They are species of short-horned grasshoppers that periodically form large populations in dense migrating groups (Swarm).Adult locusts can form swarms which may contain thousands to millions of individuals and behave as a single unit. The non-flying nymphal or hopper stage can form bands. A band is a cohesive mass of hoppers that persists and moves as a unit.

There are 10 important species of locust in the world, out of four species were recorded in India *viz.*

Species of Locust

Immature stage of Desert Locust

Migratory Locust

Bombay Locust

Tree Locust

Phases of Locust

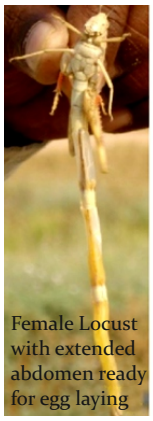
Desert Locusts Solitary

Gregarious

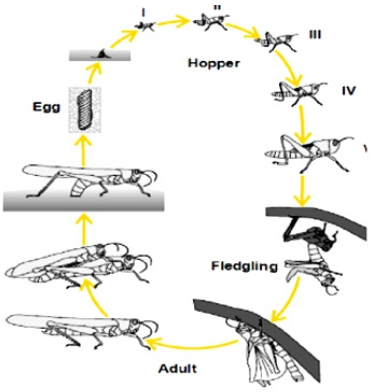
Life cycle of Locust

Life Cycle Parameters

Stages	Egg, Hopper, Adults	
Duration	Egg	10-65 days
	Hopper	24-95 days (Average 36 days)
	Adult	2.5-5 Months
	Laying Lodging	40-50 Days
	Adult maturation	3 Weeks to 9 months (2-4 Months ave.)
	Total	2-6 Months
Phases	Solitarious, Transiens, Gregarious	



Female Locust with extended abdomen ready for egg laying



Life cycle of Desert Locust

The stage between locusts becoming adults to eggs is called Hopper (minor), ranging from 20-25 days to 70-80 days. Adulthood depends on the temperature of the atmosphere. These hoppers are the most harmful and able to travel long distances. The lonely hoppers fly for only a few hours at night while the hoppers living in the herd fly in broad daylight. Adults can travel up to 150 -200 kilometers a day, depending on the wind's direction. A female living in a common flock lays an average of 60–80 eggs per 2-3 pods by locust. The female Locust keeps these eggs in pods in a moist sandy mat about 10–15 cm deep at intervals of 7–10 days. The development of these eggs depends on the temperature and soil moisture.

Keeping in mind the possibility of Locust attack, suggestions for the farmers& Drone Operators:

Currently, we have been able to see the invasion of the desert locust in our country. This team has entered the desert areas of India from Iran and Afghanistan through Pakistan.

The locust teams have entered the border of Madhya Pradesh and Uttar Pradesh at present, passing through Rajasthan, Gujarat, Haryana and Punjab.

Therefore, given their flocks flying (swatting) and the current atmospheric conditions, it is likely that it can also create havoc in the plains of the wind because the locusts completely destroy all kinds of crops, trees and plants in the herd.

Locust Facts:

- A major threat to Agriculture as well as indirectly human being.
- It is a highly polyphagous pest.
- An average small locust swarm eats as much food inone day, as about 10 elephants, 25 camels and 2500 people.
- Locust causes 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 in masses.

Locust crop attack

Be Alert, Be Aware:

In view of the current situation, it is essential for the farmers& drone operators to be prepared in advance and follow these recommendations for the management of the locust.

- Keep information about the locust team's attack in your area through radio, TV, newspapers and mobile etc.
- For the protection of the crop, spray Neemoil, 5 ml per liter of water in solution, when the Locust team's attack in other areas is reported.
- Make noise in the fields or produce loud noises in the form of vehicles, bells, tins, thali or other ways, which keeps the locust teams away.
- Spraying of recommended pesticides in such a way that no contamination of water either in ponds, river, water reservoirs etc.

➢ FAO recommended insecticides which have been also approved by RC, for the control of desert locust:

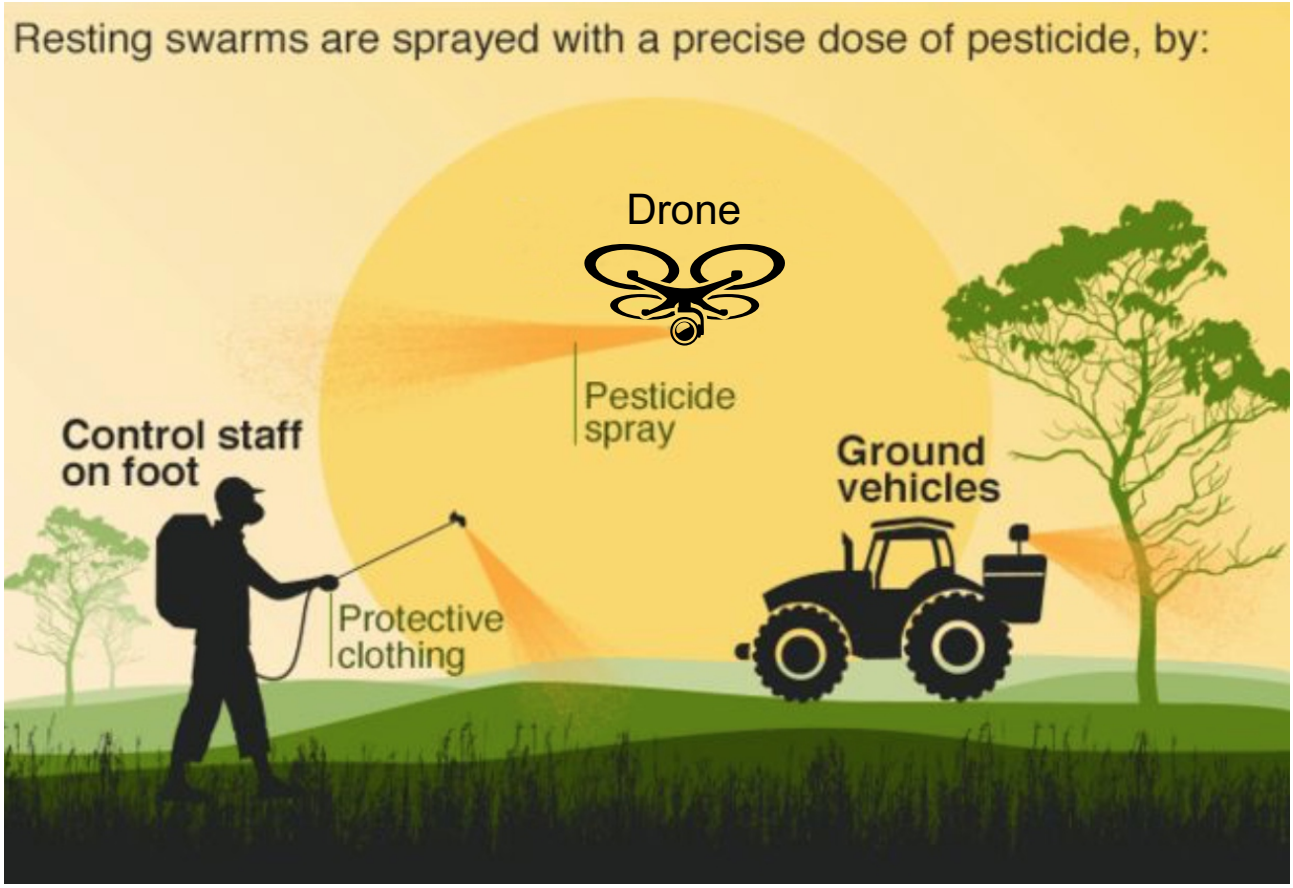
Recommended chemicals by FAO for Locust Control

Sr. No.	Chemical	Dose (gram active ingredient per ha.)	
		Hoppers	Adults
1.	Bendiocard 80% WP	100	100
2.	Chlorpyriphos 20% & 50% EC	240	240
3.	Deltamethirn 2.8% EC & 1.25% ULV	12.5	12.5
4.	Diflubenzuron 25% WP	60	NA
5.	Fipronil 5% SC & 2.92% EC	6.25	6.25
6.	Lambdeacyhalothin 5% EC & 10% WP	20	20
7.	Malathion 50% EC & 25% WP & 96% ULV	925	925
8	Fenitrothion is also recommended for the control of locust but only in scheduled desert area and public health but banned in agriculture. (refer copy of Gazette of India, S.O.706 (E) dated 03rd May, 2007)		

- Considering the recommendations of ADG (PP & B), ICAR, following pesticides in their powder formulations are approved for control of desert locust in Scheduled Desert Area:

1. Fenvalerate 0.4% DP,
2. Malathion 5% DP
3. Quinalphos 1.5 % DP.

Besides adopting the various ULVA sprayer technologies, Aerial spray eg. Drones can be used to spray recommended chemicals to control the locust attack.



The main benefits of drones – Drones or Flying robots; that can be remotely controlled – are increased efficiency and precision of agrochemical application that, in turn, leads to improved pest management and crop productivity as well as significant reduction in operator exposure during spray operations. The field capacity of drone-assisted spraying is about 20 times higher compared to that of manual spraying. Other benefits are lower water consumption (as the material is sprayed in concentrated formulation) and development of licensed applicators. These include community spraying professionals, providing application services similar to combine harvester operators; thereby creating new skilled employment and entrepreneurship potential in rural India.

Aerial Spray with the help of Drone

Recommendations – Responsible Use & COVID-19 Awareness Program

1. Wear appropriate PPE while spraying
2. Store Pesticides securely in their original containers
3. Triple rinse empty containers and properly dispose off
4. Ask three important questions while purchasing pesticides to ensure authentication of the product. These are:
   a) What proof do you have that the pesticide you are buying is authentic?
   b) Who manufactured this pesticide and how can a farmer contact the manufacturer?
   c) Is this pesticide legally registered/authorized with the Govt. and what proof do you have?
5. Maintain social distancing in the fields
6. Always cover the mouth with masks / Clean cloth.
7. Frequently wash your hands with soap & water
8. In case of accidental exposure, seek medical advice immediately
9. Immediate information on locust sightings must be given to the Agricultural Centers or other recommended KVKS, Govt. offices/centers.

CropLife India Role

CropLife do not carry out locust control operations. This is being done by Governments (often with support from FAO) or locust control organisations. Industry is often invited to tender for the products.

CropLife India member companies offer chemical / Biological control solutions for locust management and request Government to encourage exigency / relaxed data guidelines for the products which are not yet approved or if are approved but have no label claim on locust, but are effective; hence should be granted exigency and priority approval.

CropLife India can be of help

Inconclusion, CropLife would suggest Govt. to provide platform for industry whose role would be:

a) To provide efficient support on the use & management of pesticides through stewardship services.
b) To provide information on products which have less impact on the environment yet effective for locust control.
c) Promote use of Drone technology while spraying ULV formulated pesticides for maximum coverage

CropLife Pakistan Experience:

The Government of Pakistan recognizes CropLife being a knowledgeable International resource on crop protection and its usage, the Federal Secretary invited us in the consultation process after the country was invaded by locust from its western border / Iran (flew from Africa).

CropLife Pakistan, through the field force of some of our member companies, helped the government in identifying areas of infestation. The Federal Department of Plant Protection (DPP) holds the primary responsibility of locust control and works in collaborates with FAO. The Later conducted (in collaboration with DPP) trainings of the private sector and the Government Officials on surveillance methodology. DPP then employed control operations using its aeroplanes and ground vehicles mounted with ULV motorized sprayers. In desert areas, mostly Malathion ULV was preferred for aerial application, but also employed in the ground motorized operations. Although Pyrethroidswere also employed in the ground operations.

Against the forecast of locust population to decline, during winter, it has spread wide now in the vegetation fields of Sindh and Punjab. Provincial agriculture departments are using PyrethroidULV applications for killing locust in the vegetable areas.

University of Agriculture has undertaken research on the life cycle and to understand the unexpected survival with potential egg laying in the agricultural land.It is likely that as the temperature rises, locust shall become active in damaging agricultural crops. Central Government has declared emergency to control this menace During the season, few of CropLife members donated pesticides samples to help the government, in the emergency situation.