



## Locusts; Problem and Management in Indian Condition Specially in Central Region in the Middle of the Covid-19 Pandemic

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### ABSTRACT

The word "locust" comes from the Latin genus *Locusta*, which means grasshopper. Locusts are a unit a group of bound species of short-horned grasshoppers within the family Acrididae that have a swarming section. These insects are usually solitary, but under certain circumstances they become gregarious. In India, LC&R scheme is responsible for control of Desert Locust. LWO is responsible to monitor and control the locust situation in SDA. They are voracious feeders. This study is based on attack and management of locusts in two districts during COVID-19 pandemics. In one district they cause negligible damage on the otherhand in second district they cause 100 % damage to moong bean, urd bean and mentha crops. Both chemical and biological measures were proved affective against the locusts attack. There are probabilities of some more attack of locusts in different areas so vigilance will remain continued towards expected invasion of locust in coming days.

**Keywords:** LC&R- Locust Control and Research, LWO- Locust Warning organization, SDA- Scheduled Desert Area, SWAC- South-West Asia commission, FAO- Food and Agriculture Organization, COVID-19-Corona Virus 19

### INTRODUCTION

Locusts square measure sometimes solitary, however underneath bound circumstances they become additional exuberant and alter their behaviour and habits, changing into gregarious. No assortment distinction is formed between locust and grasshopper species; the premise for the definition is whether or not a species forms swarms underneath intermittently appropriate conditions. Additional recently, changes in agricultural practices and higher police work of locations wherever swarms tend to

originate, have meant that management measures will be used at associate early stage. These grasshoppers square measure usually innocuous, their numbers square measure low, and that they don't cause a significant economic threat to agriculture. However, underneath appropriate conditions of drought followed by fast vegetation growth, 5-hydroxytryptamine in their brains triggers a dramatic set of changes: they begin to breed profusely, changing into gregarious and mobile, once their populations become dense enough.

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They type bands of apteral nymphs that later become swarms of winged adults. Each the bands and therefore the swarms move around and apace strip fields and cause harm to crops. The adults square measure powerful fliers; they'll travel nice distances, overwhelming most of the inexperienced vegetation where the swarm settles, (Antesy et al., 2009). Swarming behaviour ablated within the twentieth century, however despite trendy police work and management strategies, the potential for swarms to make remains gift, and once appropriate weather conditions occur and vigilance lapses, plagues will still occur, (Stone & ahmed et al., 2020). Locusts square measure massive insects and convenient to be used in analysis and therefore the study of biology within the schoolroom. Additionally edible insects; they need been devoured throughout history and are thought of a delicacy in several countries, (Harper Douglas). Desert Locust square measure well custom-made to their dynamical setting and square measure extremely mobile, flying several lots of or perhaps thousands of kilometres between their summer, winter and spring breeding areas.

**Distribution-** It is international pest affecting about 60 countries, mainly India, Pakistan, Afghanistan, Arabia, Persia, Iraq and Africa. There are nine well-recognized species. The following species occur in India.

1. The Bombay locust : - *Patanga succincta*
  2. The migratory locust : - *Locusta migratorin*
  3. The desert locust : - *Schistocerca gregaria*;
- Very common and most destructive.

**Locust control organisations in the world and in India** - In India, the theme Locust management and analysis (LC&R) is to blame for management of Desert Locust and is being enforced through Organisation referred to as "Locust Warning Organisation (LWO)" established in 1939 and later amalgamated with the board of directors of Plant Protection Quarantine and Storage in 1946. Locust Warning organization (LWO) is accountable to watch and management the locust scenario in scheduled Desert space (SDA) principally within the States of Rajasthan and Gujarat

whereas part within the States of geographical area and Haryana by manner of intensive survey, police work, watching and management operations wherever needed. However, the most objective of Locust Warning Organisation (LWO) is protection of standing crops and alternative inexperienced vegetation from the ravages of Desert locust that is one amongst the foremost dangerous pests occurring in desert areas throughout the globe.

**In the world-** United Nations Special Fund Desert Locust Project, that was sponsored by the F.A.O. in 1960. This is often being signed by many countries together with Republic of India. It's purpose is to develop simpler and fewer costly management of the desert locust.

**Breeding Season-** In all, there are 3 breeding seasons for locusts (i) Winter breeding (November to December), (ii) Spring breeding (January to June) and (iii) Summer breeding (July to October). Bharat has just one locust breeding season which is Summer breeding. The neighboring country West Pakistan has each spring and summer breeding.

**Nature of damage-** Locusts ar voracious feeders, each adult, intense its own weight of vegetation daily. it's calculable that one sq. mile settled swarm contains concerning three hundred plenty of locusts. Biggest three hundred Sq.miles swarm is on record. equally hoppers eat 6-8 times over they're own weight. it's been assessed that in Asian country throughout 1926-31 plague, the injury caused to crops, fodder etc., was concerning ten crores of rupees and eventful loss because of premature death of kine and alternative placental was indeterminable. These insects ar typically solitary, however underneath sure circumstances become a lot of abounding and alter their behaviour and habits, changing into gregarious, (Simpson et al., 2008).

According to the Food and Agricultural Organization (FAO) of the UN, a swarm of locusts unfold across a vicinity of 1 sq. kilometer will eat the maximum amount food as thirty five,000 folks in in some unspecified time in the future. Their craving is voracious and one locust will consume food

adequate its own weight, concerning 2 grams, on a everyday. And since a sq. kilometer swarm would contain concerning forty million locusts, it will cause a major quantity of harm in an exceedingly short amount of your time. giant swarms of desert locusts have entered areas in Asian country wherever they'd not been seen since 1993 and have already caused injury to crops in Rajasthan, Gujarat, Madhya Pradesh, elements of Uttar Pradesh and geographic region. The migratory tormenter has created many incursions into Rajasthan within the last 20 years – as well as a major one last year. However this point, the swarms have unfold to elements of Madhya Pradesh, Uttar Pradesh and even geographic region.

Locusts last swarmed Madhya Pradesh and Uttar Pradesh in 1993 and haven't been seen since 1974 in geographic region. The real injury, however, is being caused and can be caused in rural Asian country wherever farmers already bearing the strength of the COVID-19 induced imprisonment and therefore the low costs they need fetched within the previous few years, stare at huge crop injury that the locust swarms are capable of inflicting.

During the first period of time of could 2020, immature adult groups/swarms were ascertained at Jaisalmer, Barmer, Jodhpur, Phalodi, Bikaner, Nagaur and and Ganganagar. Out of 342 nos. of spots control function were undertaken at 213 spots covering 21675 area unit space. Whereas regular desert desert space of Asian country is a pair of,05,785.45 sq km.

Small scale localized locust breeding have additionally been reportable and controlled throughout the amount 1998, 2002, 2005 , 2007 and 2010. Since 2010 until 2012-13, scenario remained calm and no giant scale breeding and swarms are reportable. However, solitary part of Desert locust has been reportable from time to time at some locations within the State of Rajasthan and Gujarat (GOI, board of Plant Protection Quarantine and Storage).

**FAO Update** (13 May) : The current state of affairs remains very dreadful in geographical

area. At now, there's a risk that swarms can migrate to the summer breeding areas on either side of the Indo-Pakistan border furthermore on Sudan and maybe West Africa.

**SWAC:** Hopper bands square measure maturing on the southwestern coastal plains of Persia. In Asian country, adult teams square measure migrating to the Republic of India border from breeding areas in Baluchistan and also the Indus depression. In India, additional adult cluster will cause the damages.

## MATERIALS AND METHODS

In our study we have covered two districts of Madhya Pradesh in the year 2020 namely Chhindwara and Chhatarpur in the summer. Locust cause only 2-3 % damage in the area of Chhindwara district but the mode of damage was just opposite in district Chhatarpur. In district Chhatarpur locusts came from district Jhansi (Uttarpradesh) and covered village-Achhatt of block- Chhatarpur while moving during district Panna (Madhyapradesh), and cause 100% damage just in one day on 23.05.2020 in 06.30 AM. In Chhindwara locust attack has occurred in two blocks namely Sauser and Pandhurna. Locusts came from district Amaravati (Maharashtra) in the 07.30 AM on 27.05.2020 in village Umarikala, Block Pandhurna. They were dangerously high in numbers and covered total 14 villages of both the block. In Souser they attacked in Borgaon, Doda borgaon, Semara, and Lodhikheda. In Pandhurna block the attacked Kondher, Hiwarasenadwar, Badhchicholi, Langha, Rajana, Rajorakala, Temanisahani, Umarikala, Hiwaraprathwiram and Khaperkheda. Due to frequent awareness campaigning locusts least damage the plants and field crops in both the blocks. Farmers of both the blocks were very aware and they make noise of bell, DJ, dhol etc as biological measures to control the locusts. The traditional means of control are based on the use of insecticides from the ground or the air, but other methods using biological control are proving effective in the region of Chhindwara district but situation was just opposite in

chhatarpur district. Farmers of chhatarpur district were used chemical control measures with tractor operated power sprayers in the evening time of same day. But even they failed to control at the time just after attack in the morning, they were very late. Upto night locusts caused 100% damage in the field of moong bean and urd bean and caused 10%

damage in mentha due to astringent taste in leaves. farmer Shree Kripal Sahu, Shree Bachchi bunkar, Shree Ramesh Sahu are reported 100 % damage in the field of moong bean and urd bean. only stems are remaining, locusts feed on all vegetation around the crop fields.



**Table 1: Locust swarms attack information, Chhatarpur, MP**

Parameter	Details
Entry point of Locust swarms attack in district (entry from which district and name of Location/ entry point in your district along with date and time)	<b>From Jhansi, Dist. Jhansi, Uttarpradesh</b> Vill-Achhat, Block- Chhatarpur Date- 23-05-2020, 06:30 AM
Route followed by Locust swarms in district (name of Location date and time wise)	1. Vill-Achhat, Block- Chhatarpur Date- 23-05-2020, 06:30 AM to 04:00 AM in 24-05-2020
Exit of Locust swarms attack in district (name of Location/ exit point date and time & name of district when it entered now )	Vill-Bagota, Block- Rajnagar <b>Dist. Panna Madhyapradesh</b>
Damage done (Block/location wise area affected and % damage)	3.6 ha, 100% damage
Total area affected in District and % damage	8.92 ha, 100 % damage
Preventive measures	Dhol, Drum, Teen box, Thali beating
Control measures	Application of Chlorpyrphos 20% @ 1.25 L/ha, Melathion 50 EC 1850 ml/h and Lamdacylothrin 5 EC @ 400 ml/ha
Advisory measures taken	advisory provided to farmers via KMA and Whatsapp

**Table 2: Locust swarms attack information, Chhindwara, MP**

Parameter	Details
Entry point of Locust swarms attack in district (entry from which district and name of Location/ entry point in your district along with date and time)	<b>From Morshi, Dist. Amravati, Maharashtra</b> Vill-Umrikala, Block- Pandhurna Date- 27-05-2020, 07:30 AM
Route followed by Locust swarms in district (name of Location date and time wise)	1. Vill-Umrikala, Hivra Prithviram, Hivra Senadwar, Laangha, Rajna, Temni Sahni & Khaparkheda, Block- Pandhurna Date- 27-05-2020, 11:00 AM to 12:00 PM  1. Vill-, Borgaon, Semra, Doda Borgaon, Lodhikheda, Block- Sausar Date- 27-05-2020, 12:00 PM to 02:00 PM
Exit of Locust swarms attack in district (name of Location/ exit point date and time & name of district when it entered now )	Vill-, Doda Borgaon, Lodhikheda, Block- Sausar to Date- 27-05-2020, 06:00 PM Vill- Badchicholi and Kondhargaon , Block- Pandhurna to Date- 27-05-2020, 06:00 PM <b>Dist. Savner Maharashtra</b> <b>Dist., Katol, Maharashtra</b>
Damage done (Block/location wise area affected and % damage)	Negligible
Total area affected in District and % damage	Negligible
Preventive measures	Dhol, Drum, Teen box, Thali beating
Control measures	Application of Chlorpyrphos 20% @ 1.25 L
Advisory measures taken	advisory provided to farmers via KMA and Whatsapp

## RESULT AND DISCUSSION

Destroying vegetation by burning it or overgrazing and also the continuous use of pesticides can encourage locusts, because they kill the pest's natural enemies. The regions of Punjab, Uttar Pradesh, Haryana and Delhi bordering the Thar are suitable for locusts, but also allow reptiles natural enemies of the locusts to thrive all year, thereby preventing locust breeding. Scientists stress an integrated locust management system therefore must combine both chemical and biological methods to produce optimum results. If they are resting on bushes or hedges, they can be easily burnt with help of flame throwers. When flying locusts square measure on the brink of descend in giant swarms in cultivated areas, the simplest thanks to tackle them is to forestall then alighting by all doable strategies, like waving a white artefact, or making a cloud of smoke, by burning refuse, etc., spraying with nim tree kernel suspension as a deterrent

to the crop, has additionally been tried successfully. Recently with the introduction of aerial application of insecticide like Chlorpyrphos, Melathion, Lamdacylothrin, the control of locust swarms has become easier. Therefore, vigilance can stay continuing towards expected invasion of locust in coming back days. Because there are some more probability of further attack of locusts in many areas of India, actually at present locusts are moving in small groups, due to use of chemical as well as biological control measures the swarms are not in large numbers, they have made many small groups and moving from one place to another. So there are some more chances of attack of small swarms in this summer 2020.

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