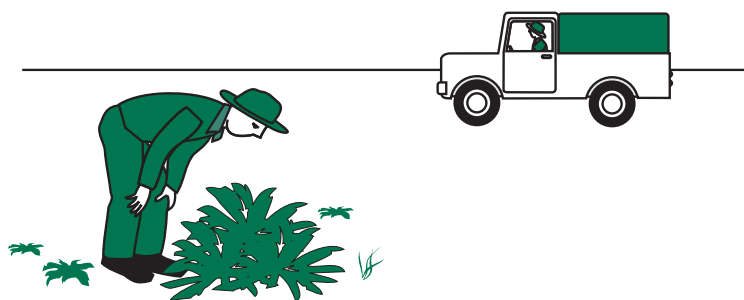


Standard Operating Procedures (SOP) for Desert Locust Ground Survey

version 3



Food and Agriculture Organization of the United Nations

Standard Operating Procedures (SOP) for Desert Locust Ground Survey

Objective

The objective of the Standard Operating Procedures (SOP) for Desert Locust Survey is to give concise instructions for effective and safe ground survey operations against the Desert Locust. These instructions are intended for use by the field staff who are involved in Desert Locust monitoring to help them avoid dangerous, ineffective or wasteful operations. They are based on the **FAO Desert Locust Guidelines** where more detailed information and references are available.

The instructions focus on:

- survey equipment
- survey types and methods
- data collection and reporting
- using eLocust3 and GPS

1

Desert Locust Ground Survey SOP

1. Survey process

A series of steps need to be followed before, during and after locust surveys.

PREPARATIONS (three months before survey operations)

- Determine what type and number of vehicles are required for survey operations
- Select competent, energetic survey teams and provide them with training or refresher training
- Check and service the vehicles
- Check that the commonly needed spare parts and spare tires are available, and vehicles are equipped with a HF radio whenever possible
- Make sure that operational funds are allocated for the proposed survey period in the field to cover field allowances, fuel, etc.
- Make sure that sufficient equipment (GPS, eLocust3, radios, compass, maps) are available for each survey team
- Ensure that enough copies of the *FAO Desert Locust Standard Survey/Control Form* are available

2

Desert Locust Ground Survey SOP

1. Survey process (cont.)

BEFORE survey operations

- Step 1.** Determine what areas need to be surveyed and when based on information from all possible sources (nomads, locals, villagers, travellers) and combined with rainfall and habitat data. The Locust Information Officer should provide this information
- Step 2.** Use maps to help determine the planned survey route
- Step 3.** Prepare the vehicles and make sure that all field and communication equipment are working, including eLocust3. If GPS is to be used, set the coordinates to degrees, minutes and seconds
- Step 4.** Ensure that survey officers know how to make surveys and use the equipment
- Step 5.** Decide what type of survey to do. If you do not know if locusts are present or not, make a rapid **assessment** survey. If significant locust populations are already present, then make a **search** survey to estimate the total infested area and delimit the areas that require control

1. Survey process (cont.)

DURING survey operations

- Step 6.** Go to an area where locusts are likely or already known to be present and make either a foot or a vehicle transect
 - FOOT TRANSECT**
 - VEHICLE TRANSECT**
- Step 7.** Get out of the vehicle and collect data about locusts, vegetation and soil
- Step 8.** Return to the vehicle; if you are using eLocust3, the driver should turn the engine on just before you return
- Step 9.** Record your observations in eLocust3 and press the **SAVE/SEND** key. You may also wish to record the data on the *FAO Desert Locust Standard Survey/Control Form* as a backup
- Step 10.** Drive to the next survey area (while the eLocust3 data are being sent)

If you find significant locust populations, it is better to continue surveying over the planned route. You or another team can come back later to intensively search the infested areas

1. Survey process (cont.)

AFTER survey operations

- Step 11.** Check that all eLocust3 reports have been transmitted and no reports remain in the queue
- Step 12.** Submit any completed *FAO Desert Locust Standard Survey/Control Forms* to the National Locust Unit HQ (by radio or fax)
- Step 13.** Check and, if necessary, repair the equipment so it is ready for the next survey

2. Survey team and field equipment

Survey Team: one locust officer, one driver and vehicle. Use two vehicles in remote areas.

Equipment: to be available for each team:

REQUIRED

- eLocust3
- hand-held GPS ⁽¹⁾
- maps (1:200-500,000)
- FAO forms ⁽²⁾
- paper and pen
- first aid kit

OPTIONAL

- sweep net
- dissecting kit
- sample boxes
- tool kit & shovel
- tally counter
- hand lens (x10)
- compass
- HF radio in the vehicle
- HF or UHF walkie-talkies for communication between vehicles

(1) extra batteries, cigarette lighter adapter, remote antenna

(2) FAO Desert Locust Standard Survey/Control Form

3. Where and when to make surveys

Where

- In sandy areas where the natural vegetation is green
- Desert areas that have received recent rainfall
- Areas where locals report that locusts are present
- Areas previously infested by locusts or where control was carried out
- Areas that could receive locusts from neighbouring countries

When

During the year

- About two weeks after rain has fallen (to allow sufficient time for the vegetation to become green)
- If there is no information from a certain area about rainfall, ecological conditions or locusts
- Regularly during the rainy season

During the day

- When temperature is 20-38°C
- From shortly after sunrise to about midday
- In the afternoon for a few hours just before sunset

4. Survey types

Assessment

- The first type of survey carried out in the field to determine if locusts or green vegetation are present
- Undertaken in areas that have a history of locusts or breeding, where rain has recently fallen, or where nomads, locals, scouts, farmers or agricultural extension agents have reported locusts
- Purpose is to monitor the locust and habitat situation and to determine whether significant populations are present that may require control

Search

- If significant populations are found during an *assessment* survey, then a *search* survey should be undertaken
- An intensive survey to estimate the total infested areas and to delimit the areas that require control
- From the results of search surveys, the scale of the risk and level of required control can be estimated

If only low numbers of locusts are found during an *assessment* survey, there is no need to make a *search* survey. Instead, another *assessment* survey should be conducted at a later date, depending on habitat conditions and rainfall

5. Survey methods

Foot transect (Maximum time: 20 minutes)

- Walk about 300 m into the wind or crosswind
- Observe the vegetation greenness and density
- Stop several times to check the soil moisture
- Count any locust adults that fly up, note their colour, behaviour and maturity (estimate the width of the strip in which adults are being disturbed, usually about 1-4 m on either side of you). Temperature must be above 20°C
- Stop occasionally and closely inspect the ground and vegetation for hoppers, noting what instar stage, colour, behaviour and number per bush or square metre. Repeat this up to 10 times
- Record your observations in eLocust3 and/or on the *FAO Desert Locust Standard Survey/Control Form*
- Drive to the next survey stop

Vehicle transect (Maximum time: 10 minutes)

- Drive upwind or crosswind for at least 1 km
- Drive at a walking pace in low (4WD) gear
- Count adults that fly up in front of the vehicle
- Keep track of the distance using the odometer
- Count only when temperature is above 20°C and wind speed is less than 6 m/s
- Stop and record your observations in eLocust2 and/or on the survey form
- Drive to the next survey stop

6. What information to collect

Location

- Location name
- Date
- GPS latitude and longitude (*DDMMSS.S*)
- Survey area, habitat and soil type

Rainfall

- Approximate date and amount of last rain

Vegetation

- Greenness and density

Soil

- Wet or dry

Locust

- Presence / absence
- Appearance (*solitary, transiens, gregarious*)
- Behaviour (*isolated, scattered, groups*)
- Maturity (*instar, fledgling, immature, mature*)
- Breeding (*copulating, laying, hatching, fledging*)
- Density (*locusts/transect (l x w) or /m²*)
- Size (*no. of m² or ha*)

Control

- Insecticide, application rate, quantity used, area treated

7. How to record data

Survey data and observations can be entered into a custom handheld datalogger called eLocust3 (see page 12) or they can be written down on the *FAO Desert Locust Standard Survey/Control Form* (or similar form).

eLocust3

- Information from an unlimited number of survey stops can be entered
- Send the data from the survey stop before moving to the next location
- A copy of the data is saved in eLocust3

Survey form

- Data from three survey stops can be entered on one *FAO Desert Locust Standard Survey/Control Form*
- If you make more than three stops, use additional forms
- Enter the data from the survey stop and check it before moving to the next location

eLocust3 immediately sends the survey results to the Locust Unit HQ. If you do not use eLocust3, then you should get the completed forms to HQ as soon as possible by radio, fax or in person

8. Using eLocust3

- Step 1.** Turn on the tablet when leaving the office or camp; make sure the date & time are correct
- Step 2.** Mount the antenna on the roof or on the front dashboard in the vehicle and connect the cable to the antenna and the cigarette lighter socket
- Step 3.** When you arrive at the survey location, turn off the engine, take eLocust3 with you
- Step 4.** Press **NEW REPORT** and make sure the GPS coordinates are correct. These will now be fixed for your location while the GPS coordinates at the bottom will change as you move
- Step 5.** Make the foot transect and enter the data
- Step 6.** After all data have been entered, press the **SAVE/SEND** key
- Step 7.** When the driver sees that you are returning to the vehicle, he should start the engine
- Step 8.** eLocust3 will start to send the data when you are close to or inside the vehicle. It is now safe to continue to the next survey stop but **do not turn off the engine** during data transmission
- Step 9.** Follow the progress of data transmission at the bottom of the tablet (Connection: Idle – Connecting to BT – Connecting to SAT –Sending – Sent) and the Queue will be 0

Always keep eLocust3 turned on during the survey throughout the entire day to make sure you have the correct GPS coordinates

9. Using a GPS

Setup

- Step 1.** Initialize the GPS if it is new, after moving more than 500 km since last use, or if the batteries have gone flat and position data was lost
- Step 2.** Make sure that the time is correct (usually indicated by number of hours from GMT in the options)
- Step 3.** Make sure that latitude and longitude is in degrees, minutes, seconds (in setup options as DDMMSS.S)

Normal use

A GPS must have a clear view of the sky so it can connect to the satellites. It can be used when it is cloudy or rainy. Use it outside or with an external antenna.

- Step 1.** Switch the GPS on and wait several seconds until it finds the necessary satellites and calculates your position. This will appear in the display
- Step 2.** The position can be saved as a waypoint with a given name

Other functions

- **GOTO** You can use the GOTO function to navigate to any waypoint
- **SUN** The GPS can indicate the time of sunrise and sunset at any waypoint

10. How to report survey results

eLocust3

If you used eLocust3 for recording and transmitting your survey data and observations, then the data will be immediately available on the GeoFlex platform and it will be sent by email to the Locust Unit HQ during the evening. A copy of the data will also be saved in the eLocust3 tablet.

Survey forms

If you recorded survey data and observations on the *FAO Desert Locust Standard Survey/Control Form* (or another form), then completed forms should be returned to the Locust Information Officer at the Locust Unit HQ. This can be done by HF radio, mobile or satellite phone, fax, email, or in person. The forms should reach the Information Officer as quickly as possible during control operations, and no later than 1–2 days after the end of surveys during calm periods.

Make sure that all eLocust3 data are sent (Queue: 0) before the end of the day. Any data that remains in the Queue will not be received by email in the Locust Unit HQ