

Simulated Outbreak Campaign

A Guide for Practical Field Exercises

Prepared by P.Symmons, modified by C.Pantenius and M.Butrous



Background

This guide was derived from a Contingency Planning Workshop conducted by EMPRES/CR in February 2002. The exercises were modified to allow also during periods of recession simulated operations in order to practice outbreak campaigns with the staff of the Locust Control Unites. These exercises are meant as a supplement to regular staff training, to refresh the ability of the survey and control teams to detect and to control Desert Locust outbreak populations, and to better plan for the probability on an Outbreak. The time factor, the difficulty to detect outbreak populations and to control suitable targets are crucial for proper contingency planning by the locust management.

The aim of the field exercises is to make Locust Control Officers and Plant Protection Officers aware of the **actual** difficulties they face in an outbreak or early upsurges situation. The exercise should stimulate the self-reflection process so that the participants arrive at conclusions themselves by finding out the limitations and possible solutions. The participants may come to the conclusion that it is indeed more difficult to find and control “**all** hopper infestations” than it is often assumed, and that they may have to adjust their operations to the reality of a locust outbreak situation more efficiently in order to prevent an outbreak to develop into an upsurge or even plague.

The guide comprises a set of problems that the participants have to try to solve. These problems lie at the basis of Desert Locust control. They are outlined in a realistic and value free manner. The participants (Locust Control and Plant Protection Officers) should work as group and will develop conclusions based on their experience in trying to solve a problem. Each exercise should be followed by general discussions.

It is important, that the Organizer should have to work through each exercise with an Assistant carefully in advance.

The Organizer will explain the purpose of the field exercises. The participants should be divided into groups of 5 persons each. Each Group should be guided by an Assistant. His task is to explain each exercise to the participants, to sort out difficulties and to provide what might be required.

The following example will make the process clear:

- *The Organizer makes the case for the exercise. The case is that we rely on finding and treating gregarious hopper patches to control an outbreak. We need to know how long it takes to search an area and treat the patches, and whether we missed any patches.*
- *The Assistant explains how the exercise is laid out and what an artificial hopper patch looks like. It is then up to the Group to decide how it sets about the task.*

- *The Assistant supplies sprayers and flags as requested by the Group.*
- *The Group then carries out the exercise in the field.*
- *After the Group finished, the Assistant explains to the Group how successful they have been in finding the patches.*
- *The Group discusses whether it could have done better with a better system or more time.*

If it takes 2 hours for a team of 5 persons to search and treat one square kilometer, but still the team finds only one third of the patches, this has obviously implications in reality for the success of controlling an outbreak.

Participants need to have some basic knowledge of Desert Locust dynamics and behaviour, and of **Ultra Low Volume** (ULV) pesticide application. The form and length of the exercise and to some extent also the content will depend on what the participants **think** they know. The FAO Desert Locust Guideline on Biology and Behaviour might serve as a suitable reference.

Basic requirements, methods and checks, etc:

| | |
|--------------------------|--|
| Basic Facilities: | 1 large room for general discussion, large enough for 2 groups to operate: 2 large tables with chairs as appropriate. 2 small and 1 large white board with marker pens and eraser. 1 dark rooms. 1 preparation room, where the material is kept. An area of 1 km ² suitable to conduct the field simulation. 3 tons “20 mm” gravel. 2 MicroULVA sprayers. 12 flags for demarcation. 2 buckets. 2 showles. 24 samplers. |
| Transportation: | 2 mini buses, 2 pick-ups. |
| Method: | All spraying is of UV dyed vegetable oil. The droplet samplers are stored in a box, containing a red and a blue tray. The trays can be used to transport samplers to and from the field. All samplers should be checked first under UV light and re-sprayed with color spray if necessary. The teams are divided into a red team and a blue team, and the samplers are sprayed in the appropriate colour. |
| Consumable items: | Batteries for UV lamps, paper, pens, folders, toilet paper (<i>for marking detected patches</i>). 5 ml of UV dye is enough for 1 litre of oil. But carry out a preliminary check to make sure. |

Exercise 1: Finding and Treating Hopper Patches

Introduction:

“Patches” or very small bands are the targets for outbreak and perhaps early upsurge control. This is the basis of the current strategy of plague prevention. If we are to assess what resources might be needed for an outbreak/early upsurge campaign we need to know how long it takes to search an area and spray the patches. With artificial infestations we shall **know exactly** how many patches there are in the field and consequently we shall also **know exactly** whether any of the infestations **have not been sprayed**.

The aim of this exercise is to find out:

- Whether there was any standard system in common used for survey or not?
- How long a “thorough” search would take?
- Whether a “thorough” search was in fact thorough?
- Whether spraying was effective or not?

Preparations:

You will need 1 km² of a habitat that looks similar to one for the Desert Locust in a recession (semi desert with clumps of vegetation and bare soil) for each group. The area does not have to be a square. The boundaries may be formed by roads and ridges or marked by large flags.

Artificial “Hopper Patches” need to be created in two areas of 1 km², one for each group. The task of the group is to find and destroy this “infestation”. It is vital that the patches are realistic. Try to find someone who has seen real hopper patches in the field to supervise a realistic patch creation.

Patches can be simulated with large “20 mm” gravel. Gravel is better than fertilizer granules; it is more permanent, more realistic and cheaper. Half a bucket of gravel is enough to create one patch. You will need around 3 tons of gravel (equal to 3 m³). If the gravel is not black, it should be coated with black spray paint after the patch has been created.

There is no information to indicate a plausible patch density. However, making more than 100 patches would be difficult. If two teams are deployed, the first half of the “infested” area of 1 km² should contain between 60 and 70 patches and the other around 30. You will need to note how many patches you created. Each patch will have within it a coloured marker.

You need flags to mark the four corners of the block and MicroULVA hand-held sprayers charged with UV dyed vegetable oil.

Exercise:

At the beginning of this exercise you should discuss with the participants how to proceed. In particular, how long you should devote to it. **About 2 hours is advisable**.

However, each team is free to search as long as it wants, using any system of foot search. Each patch found will be treated using a MicroULVA. The block (marker) should be collected after spraying,

- to show that a patch has been found and
- to check that the spray cover was adequate.

The blocks will be looked at under UV-light to check the droplet sizes and spray coverage.

If the participants decide to treat single patches they should then collect the marker after the spray. But if the participants decide to treat a block containing many patches, they will have to mark the block corners with flags.

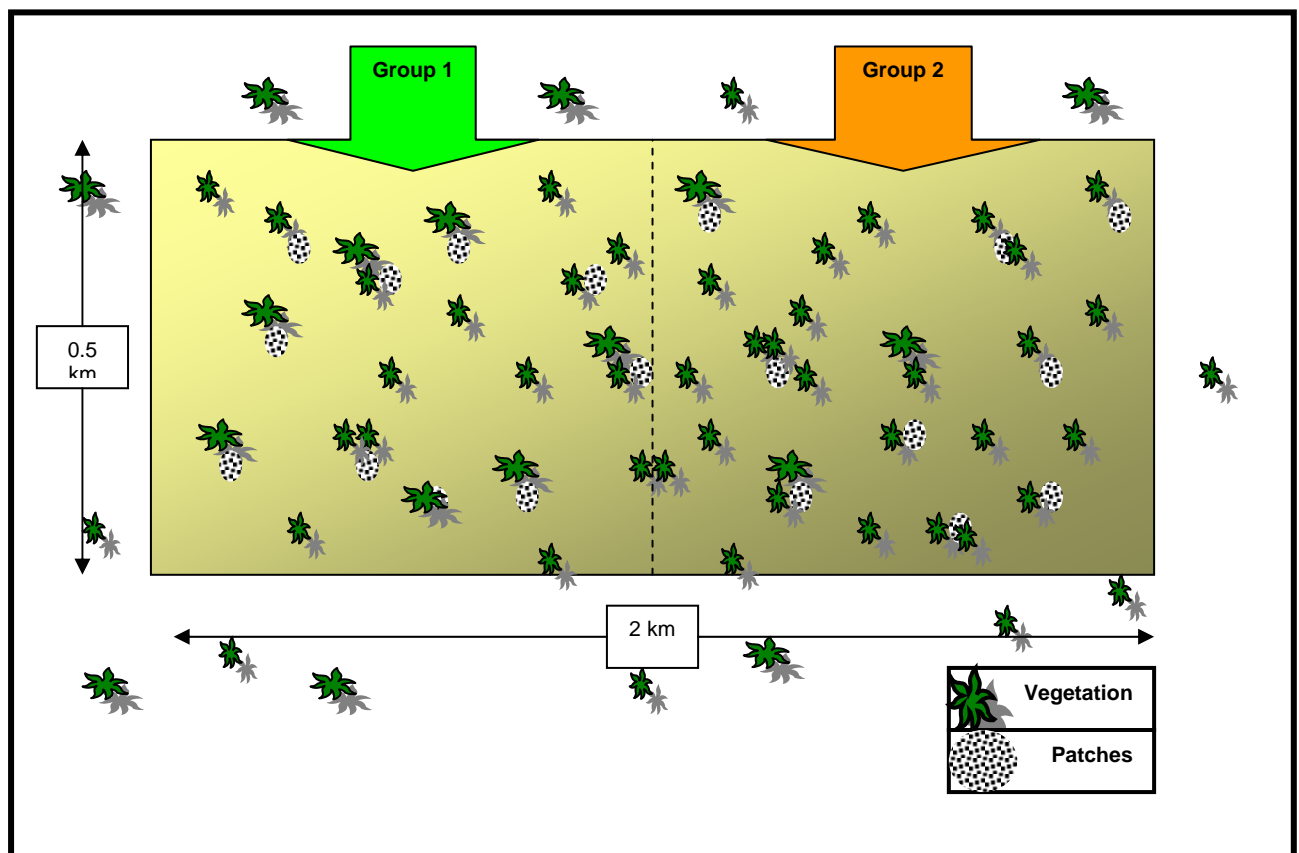
In the following there will be group discussions and analysis.

The factors you will need to consider in the discussion are:

- The time taken,
- The proportion of “patches” found and sprayed,
- The deposit on the markers. Meaning: “Were the patches adequately sprayed?”

Equipment needed:

- “20 mm” gravel (3 tons or m³)
- Matt black spray paint (6 cans)
- Pick up car for transportation of the gravel
- Buckets (2)
- Shovels (2)
- Labourers (2)
- Marking blocks
- UV lamps (2)
- Micro ULVAs (2)
- UV dye
- Vegetable oil (4 l)
- Flags (at least 12)
- Mallets (2)
- Trays (2)



Exercise 2: Spraying a single band

Introduction:

The method of individual band control is well known. What is not well known is how long **marking** and **treatment** will take, and whether the **spray deposit is adequately distributed** over the whole band or not.

The aim of this exercise is to find out:

- How much time you need for marking the “hopper band” and for treatment,
- Whether the whole “hopper band” has been adequately sprayed or not.

Preparations:

The difficulty lies in creating an artificial band. A line of black stones should be spread/scattered over a band of at least 1 m wide and follow an irregular line and with varying density of stones. Black spray paint on the ground and on bushes might be a supplement or an alternative.

Spray samplers need to be prepared and distributed along the artificial “hopper band”. They are a dowel rod that fits into a wooden base plate. A top standard section of the dowel (say 5 cm) should be painted in different colour or wrapped with tape. Gaffer tape or Duck tape is best but parcel tape will serve. Place samplers across the band in 2 directions at right angles. You should also measure – by pacing – the sides of the block containing the band. After spraying has been completed, the samplers should be collected.

Exercise:

The participants should mark out the edges of a “band” covering about 1 ha. The task is to place flags to outline a block containing the band and to spray it. This will be done with a hand-held ULVA sprayer since it is easier to organize than a vehicle mounted sprayer. Use a 10 m track interval as recommended in the FAO Guideline.

You take note of the time the participants needed for marking and spraying. You need also to note the length of the sides- by pacing- to calculate the area of the block containing the band.

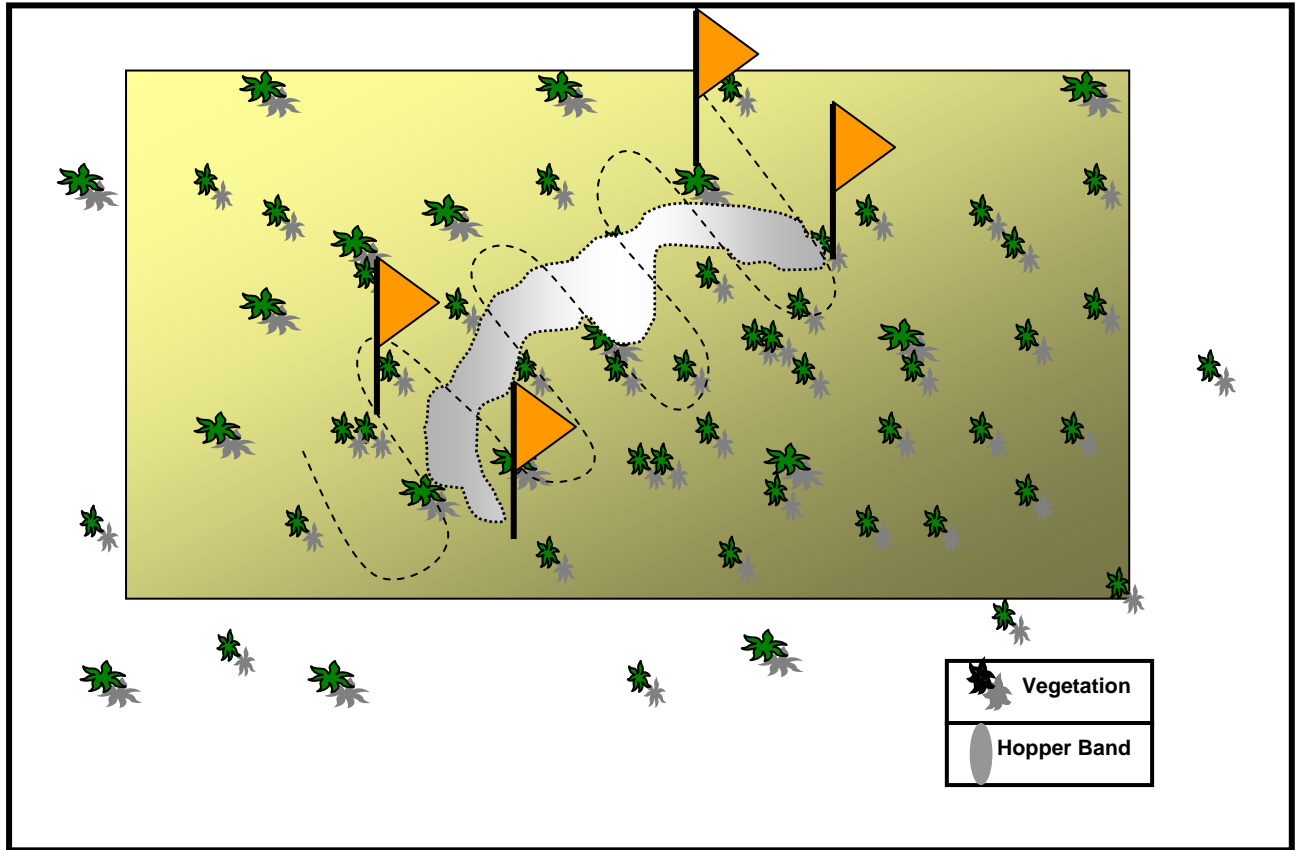
In the laboratory the deposit is studied. The results should be entered on a diagram. There will not be time to count the droplets. Try placing the deposit on each sampler in one of three categories:

- ⇒ Well covered,
- ⇒ Adequately covered,
- ⇒ Poorly covered.

The results will be discussed in the group.

Equipment:

- MicroULVA (2)
- Vegetable oil (2 L)
- UV dye
- Flags (16)
- Samplers (24)
- Gaffer tape / Duck tape / parcel tape.



Exercise 3: Defining a Block Target

Introduction:

This is a key exercise. Million litres of pesticide have been used (wasted) on the assumption that the correct targets for control have been detected.

The aim of this exercise is:

- To find and demarcate suitable targets,
- To find out whether the target has been correctly delimited,
- To find out whether all “locusts” have been adequately covered with pesticides.

Preparations:

The minimum size of a patch block treated with a hand-held sprayer (MicroULVA) is 0.5 ha. As in the previous patch simulation, “patches” will be created within an area of 1 km². The density to justify treatment is set at 20 patches/ha.

You can use the more densely “infested” area of the km² from the “patch search exercise” (**Exercise no. 1**).

We suggest to create 2 possible targets:

- one of 0.5 – 0.8 ha with about 15 patches,
- and the other of 1 - 1.5 ha with approximately 30 patches.

You should add a few extra patches and several clusters (of 5 – 10 patches each) near to the possible targets.

It is not necessary to record the total number of patches. There should probably be 150 patches in total with 45 (30%) inside the targets (but 60% would be more realistic). But you should of course know exactly the distribution of the patches, in order to assess with the participants in the following discussion whether the blocks have adequately demarcated the correct targets.

To have patches **only** in the target blocks would make the job of demarcation for the participants too easy and unrealistic. But to create **too many patches outside** the target area would make it too difficult. Block demarcation might not be possible with any plausible distribution, but it is clearly more difficult with a dispersed patch (or band) distribution than with a very clumpy one.

Make sure you get the dimensions of any block determined (to estimate its area) and that the target blocks are searched thoroughly to find all the patches in it.

The exercise is easy to practice, since more search is allowed and you know beforehand that the area does contain patches.

Exercise:

The task of the participants is to search the area, and to mark any block within it that the participants think will justify treatment. After marking the blocks, the participants will estimate the area (size) of the block and do a thorough search to find out how many patches were in any of the blocks that have been outlined.

There should be enough time to search of about 0.5km² (although in practice you would not have enough time to carry out such intensive search). All participants will work as a single group. For 10 participants you estimate about 20 minutes for search, and additional 10 minutes to mark any believed targets. The participants will not spray the blocks.

In the following there will be group discussions and analysis.

The factors you will need to consider in the discussion are:

- The time taken for demarcation,
- Were you able to find the targets,
- Were the targets you identified adequately blocked?

Equipment:

“20mm” gravel – may need extra

Matt black spray paint (6 cans)

Pick up for transport of gravel.

Buckets (2)

Shovels (2)

Labourers (2)

Flags (at least 12)

Mallets (2)

