

11	Session Summary	Duration
	Introduction to course and objectives	1.5 hours

Aim: To introduce the course, the people involved and to check the match between trainer objectives and trainee expectations. Also to establish levels of trainees' experience and knowledge at the start of the course.

Objectives: Workshop norms, trainee representatives and expectations will be established. Trainees will also know each other a little and trainers will have a rough measure of their technical knowledge relating to Desert Locust survey and control.

Equipment:

- PS, pens, eraser
- Sheet of A4 paper and flipchart/whiteboard pen (one each per trainee)
- Survey and Control multiple choice assessment papers
- Course programme
- Other course stationery such as ring binders, paper, pens etc

Preparation:

- Collate expectations from the Trainee Personal Profile and Registration forms which should have been filled in by all trainees during registration (see Appendices for personal profile form) and write them on an OHT.
- Photocopy the Survey and Control multiple choice assessment papers (one for each trainee) and the course programme

Guidelines page references: none

12	Session Summary	Duration
	Participants' experience in locust operations and constraints	1 hour

Aim: To establish that trainees' needs are in line with the training course and get to know each other.

Objectives: The trainees will state their own experience in locust survey, control and training and briefly explain what constraints are faced in survey and control.

Equipment:

- PS, pens, eraser
- Flipchart with paper

Preparation:

- Chairs in a circle (for Fruit Salad – see Appendices)

Guidelines page references: none

I3	Session Summary	Duration
	What are Desert Locust management, survey and control?	1.5 hours

Aim: To justify the course and the approaches adopted in order to help motivate the trainees and stimulate positive attitudes.

Objectives: The trainees will summarise the economic and social importance of DL and the types of management strategies possible (preventive, curative) in the context of the DL plague cycle. They will also be able to give reasons why survey and control are important (three reasons for each).

Equipment:

- PS, pens, eraser
- OHTs (I3 set)

Preparation: None

Guidelines page reference: B2-4, B36-41

S1	Session Summary	Duration
	Introduction to locust surveys	20 minutes

Aim: To introduce the survey portion of the course so that trainees have a concept of the section and its component sessions and to raise their interest and motivation in the subject.

Objectives: The trainee will discuss practical problems they face in their country during survey and recognize the need for finding reasonable solutions.

Key survey points

- Must make surveys
- Problems: resources, security, access, detection

Equipment:

- A card for each group with a different survey problem

Preparation:

- Prepare four cards (or pieces of paper) each with a different problem that could realistically be faced in a locust affected country. The problem should be expressed in a single sentence, followed by “What do you do?”. See examples below.

Guidelines page references: none

<h1>S2</h1>	Session Summary	Duration
	Is it possible to find all locust infestations in the field?	3.5 hours

Aim: To demonstrate that it is impossible to find all of the locust infestations in the field using current survey techniques, so that trainees appreciate that judgements have to be made on incomplete information.

Objectives: The trainee will explain why surveys cannot detect all locust infestations and estimate what proportion of the infestations are likely to be found in different environmental and locust circumstances.

Key survey points

- Find and treat 90% to reduce locust populations
- Difficult to find 90%
- Cannot find all locust populations

Equipment:

- PS, pens, eraser
- Enough dark coloured gravel (up to 1.5 tonnes) to make about 100 one m² patches
- 100 small blocks of wood
- Several shovels, buckets
- Two pickup trucks with laborers
- Two separate areas of about 1 km² each
- Enough GPS for two groups
- Extra batteries

Preparation:

- Find two areas of typical Desert Locust habitat, each about 1 km² in size with distinct boundaries if possible. They should be at least 0.5 km away from each other.
- Make small 1 m² sized hopper patches from dark gravel using the shovels and buckets. Be careful not to drive to each path as trainees can easily follow the vehicle's tire tracks to find the patches. Place a small wooded block as a marker in each patch. Patches should be placed at the base of vegetation and in depressions, in clumps and in isolation.
- One area should have a low-density distribution of patches, say about 20, while the other should have a higher density, say about 80. Keep track of the total number of patches placed in each area.
- Make one example patch at each location or at a central meeting point.
- This can be done several days in advance and takes about 2-3 hours to prepare.

Guidelines page references: none

S3	Session Summary	Duration
	Are surveys really necessary?	20 minutes

Aim: To explain the importance of making surveys, so that trainees will carry out surveys as part of locust monitoring in order to reduce the frequency of locust outbreaks and plagues.

Objectives: The trainee will state the reasons for making surveys.

Key survey points

- If no surveys, cannot know what the situation is
- Basis of early warning and current plague prevention strategy

Equipment:

- PS, pens, eraser
- OHT (S3 set)

Preparation: none

Guidelines page references: S4-5

S4	Session Summary	Duration
	What is the survey process?	30 minutes

Aim: To introduce a logical step-by-step framework for carrying out Desert Locust surveys so that trainees can apply these in making locust surveys.

Objectives: The trainee will identify and prioritize the necessary steps in surveying for Desert Locusts and explain how different locust situations and habitat conditions affect this process.

Key survey points

- Planning, preparation, implement (collect data), follow-up
- Maximum amount of information in shortest time with least resources

Equipment:

- PS, pens, eraser
- OHTs (S4 set)
- XS4 exercise sheets and separate phrases

Preparation:

- Make photocopies of XS4a exercise sheet, one per group
- Make photocopies of XS4b and cut all the same size to fit boxes on XS4, one set per group
- Place the appropriate phrase over each item on OHT S4b, secured with a piece of tape

Guidelines page references: S2-3

S5	Session Summary	Duration
	Planning and making surveys: who, where, when?	60 minutes

Aim: To teach how to plan and make surveys so that trainees realize that well planned and effective surveys make it easier to determine the current locust situation and habitat conditions.

Objectives: The trainee will explain what decisions have to be made when planning and making locust surveys including who, where and when.

Key survey points

- Who (qualified, reliable)
- Where (most likely to find locusts)
- When (during the year, during the day)

Equipment:

- PS, pens, eraser
- OHTs (S4b, S5 set)

Preparation: none

Guidelines page references: S4-9, 48-53

S6	Session Summary	Duration
	What are assessment and search surveys?	1 hour

Aim: To teach the two types of surveys that can be made so that the trainee can choose the most appropriate type for estimating the locust situation in the field.

Objectives: The trainee will explain the differences between assessment and search and identify when each should be used.

Key survey points

- Assessment – overview of situation
- Search – detailed to find control targets

Equipment:

- PS, pens, eraser
- OHTs (S4b, S6 set)
- XS6a, XS6b exercise sheets
- A4 map with invisible bands and two different magic pen colours for each pair of trainees

Preparation:

- Make photocopies of XS6a exercise sheets, one per trainee
- Make photocopies of XS6b exercise sheets, one per two trainees
- Prepare each map the night before from a master map transparency. Place the master map transparency on the overhead projector, turn it on, and place a blank A4 map on top of the transparency. Use the invisible pen to draw the bands on the A4 map. Repeat this enough times so that there is one map per two trainees. Label the maps (A, B, C, D).

Guidelines page references: S10-11

S7	Session Summary	Duration
	What are assessment and search surveys? [simulation]	30 minutes

Aim: To teach the two types of surveys that can be made so that the trainee can chose the most appropriate type for estimating the locust situation in the field.

Objectives: The trainee will explain the differences between assessment and search and identify when each should be used.

Key survey points

- Assessment – overview of situation
- Search – detailed to find control targets

Equipment:

- PS, pens, eraser
- OHTs (S6 set)
- Computer model
- Computers – one per group or, at the very least, one per two groups

Preparation:

- Set up computers and at least one day in advance.
- Install the simulation software on each computer
- Test each computer and software programme

Guidelines page references: S10-11

S8	Session Summary	Duration
	What are the different survey methods?	20 minutes

Aim: To explain what information should be collected during a survey and the different ways to collect this, so that the trainee can decide the best survey method to use for evaluating the locust and habitat conditions.

Objectives: The trainee will list what information should be collected and identify which methods could be used to do this.

Key survey points

- Information: location, habitat, locust, control
- Methods: foot, vehicle, aerial

Equipment:

- PS, pens, eraser
- OHTs (S4b, S8 set)

Preparation: none

Guidelines page references: S12-13, 26-27

S9	Session Summary	Duration
	How are foot transects made?	30 minutes

Aim: To teach how to make a foot transect so that trainees can estimate the presence of locusts and the state of the habitat.

Objectives: The trainee will be able to correctly name, describe and put in order the steps that are carried out at a survey stop during a foot transect.

Key survey points

- Take coordinates (GPS)
- Check habitat (vegetation, soil)
- Count locusts (wind)
- Record data (form, eLocust)

Equipment:

- PS, pens, eraser
- OHTs (S8a, b, S9 set)

Preparation: none

Guidelines page references: S14-15

S10	Session Summary	Duration
	What rainfall information should be collected?	20 minutes

Aim: To teach what rainfall data should be collected during a survey so that trainees appreciate its relationship to habitat conditions for locusts.

Objectives: The trainee will explain which rainfall data should be collected, how to do this and why it is important by giving several examples.

Key survey points

- Location, date, quantity
- Rain station coverage

Equipment:

- PS, pens, eraser
- OHTs (S8a, S10 set)

Preparation: none

Guidelines page references: S28-29

S11	Session Summary	Duration
	How is ecological data collected?	30 minutes

Aim: To teach what vegetation and soil data should be collected and how to do this, so that trainees know how to estimate the habitat conditions for locust breeding and survival.

Objectives: The trainee will correctly estimate the density and state of vegetation as well as soil moisture at a survey stop using several examples.

Key survey points

- Vegetation density, condition, type
- Soil moisture
- Related to locust biology

Equipment:

- PS, pens, eraser
- OHTs (S8a, S11 set)

Preparation: none

Guidelines page references: S28-31, B18-21

S12	Session Summary	Duration
	What locust data should be collected?	60 minutes

Aim: To teach what locust data should be collected at a survey stop so that trainees realize which data is required in order to assess the current situation.

Objectives: The trainee will recall which locust data should be collected at the survey site and explain the importance of each item.

Key survey points

- Presence/absence
- Appearance (phases)
- Behaviour (link to phase)
- Maturity (stages)
- Density (methods)
- Size (methods)
- Sex

Equipment:

- PS, pens, eraser
- OHTs (S8a, S12 set)

Preparation: none

Guidelines page references: S32-45, B2-31

S13	Session Summary	Duration
	How are vehicle transects made?	40 minutes

Aim: To teach how to make a vehicle transect as a method of estimating the presence of locusts and the state of the habitat.

Objectives: The trainee will explain how to make a vehicle transect, when it can be used and state what information can be collected.

Key survey points

- Large areas of green vegetation
- Conditions: wind speed < 6m/s, temperature > 20C
- Method: low vehicle speed, count locusts in front

Equipment:

- PS, pens, eraser
- OHTs (S8b, S13 set)
- 4WD vehicle used for survey and driver

Preparation:

- Have the vehicle and driver at the site

Guidelines page references: S16-17, A38-39

S14	Session Summary	Duration
	How are ground surveys organized?	20 minutes

Aim: To teach how to organize extra field officers and vehicles so that trainees can efficiently use additional resources when making ground surveys.

Objectives: The trainee will demonstrate the ways covered in the session of organizing extra people and vehicles when making a survey.

Key survey points

- 1+ survey officer: transects in different directions
- 1+ vehicle: leap-frog
- Maximum 15-20 min/stop
- Too much time = too few stops
- About 6 stops in morning, 6 in afternoon

Equipment:

- PS, pens, eraser
- OHTs (S14 set)

Preparation: none

Guidelines page references: S14-15, 24-25

S15	Session Summary	Duration
	How are aircraft used for surveys?	30 minutes

Aim: To teach how to use helicopters and fixed-wing aircraft in surveying as a method of estimating the presence of locusts and the state of the habitat.

Objectives: The trainee will explain how a survey is made using a helicopter and a fixed-wing aircraft, when it is appropriate and what data can be collected.

Key survey points

- Aerial survey of vegetation, adults, bands, swarms
- Helicopter advantages: can see adults and can land
- Veg survey: 300m height, 50 km track space
- Adults: 5m height, swivel tail & look backwards (helicopter)
- Bands: 50m height, 10 km track space, early AM and late PM
- Swarms: 50m height, 50 km track space, 10 AM – 5 PM

Equipment:

- PS, pens, eraser
- OHTs (S8b, S15 set)

Preparation: none

Guidelines page references: S18-21

S16	Session Summary	Duration
	What equipment should be taken on a survey?	30 minutes

Aim: To introduce the different types of equipment that should be taken on a survey in order to estimate the current locust situation and habitat conditions so that trainees take only that equipment which is most essential.

Objectives: The trainee will identify the different types of equipment and explain the importance of each.

Key survey points

- Basic equipment is essential and required
- Compass, hand lens, tally counter, map, GPS, form (eLocust)

Equipment:

- PS, pens, eraser
- OHT (S16 set)
- Compass, hand lens, hand tally counter, maps, notebook/pen/pencil, GPS, survey form, dissecting kit, sweep net, sample boxes
- Additional equipment (suggested): anemometer, hygrometer, binoculars, MicroUlva+, ruler, cap, notepad, palmtop, cage, shovel, towel, road counter, clipboard with paper & form, sunglasses, Kleenex, calculator, FAO guidelines, marker pen, tools, flashlight, pocket knife (or other items that might be available)
- One large table placed in front of the classroom

Preparation:

- Lay out the above equipment on a table in front of the classroom before the session starts

Guidelines page references: S22-23

S17	Session Summary	Duration
	How are maps used?	1.25 hours

Aim: To teach the basic concepts of latitude, longitude and map reading in navigating and visualizing areas where locusts may be present so that trainees appreciate that good orientation skills are needed for effective survey and control operations.

Objectives: The trainee will correctly identify different items on map and use it for navigation by completing an indoor exercise.

Key survey points

- Latitude (N-S) / longitude (W-E)
- $1^{\circ}=110$ km, $1'=1.8$ km, $1''=30$ m
- Parts of a map: legend, scale, lat/long, colours
- Use ruler to determine position coordinates

Equipment:

- PS, pens, eraser
- OHTs (S17 set)
- Inflatable globe
- Large wall map
- 4 sets of 1:500,000 or less scale maps
- 6 rulers, tape
- XS17 exercise sheet

Preparation: none

- Make photocopies of XS17 exercise sheets, one per group
- Inflate the globe
- Hang up a large map on the wall next to the PS
- Position 2 rules near the wall map

Guidelines page references: A2-5

S18	Session Summary	Duration
	How is a compass used?	1 hour

Aim: To teach the use of a compass and how it can be used during locust surveys.

Objectives: The trainee will demonstrate the different ways in which a compass can be used in the field.

Key survey points

- Bearing = direction
- Used for navigation, directions, wind direction
- Away from metal (vehicle)
- Find a bearing and follow a bearing

Equipment:

- PS, pens, eraser
- OHTs (S18 set)
- Compass (one per group)
- Poles and flags (one per group)
- XS18 exercise sheets

Preparation:

- Make photocopies of XS18 exercise sheets, one per group
- In a nearby open space, layout the bearings (see the compass exercise), one for each group
- Indicate the starting point with a pole or flag showing the group number, one flag per group
- Preparation should be done well before the session starts.

Guidelines page references: A6-7

S19	Session Summary	Duration
	How is a GPS used?	1.5 hours

Aim: To teach the basic concepts of a Global Positioning System (GPS) and how to use it in order to navigate more accurately in the field.

Objectives: The trainee will correctly demonstrate the use of a GPS and use it for navigation in the field.

Key survey points

- Needs at least 3 of 24 satellites, open sky day or night, rain or shine
- Accuracy of 10m or less
- On/off, take coordinates, mark, name, store, recall, delete, GOTO
- Should always be used for survey and control operations

Equipment:

- PS, pens, eraser
- OHTs (S19 set)
- GPS, map, compass (one each)
- GPS (one per two trainees)
- Compass (one per two trainees)
- Extra batteries
- XS19 exercise sheets
- Quick reference card for the GPS model being used

Preparation:

- Make photocopies of the XS19 exercise sheets, one per two trainees
- Insure that there is an large open area available near the classroom.
- Check to make sure each GPS is functioning and that there are enough spare batteries for each.
- If a GPS other than the Garmin 12XL is being used, prepare a quick reference card for that particular GPS model being used in the country (based on the Garmin 12XL card included here)
- Take the coordinates of one location that can be used in the GOTO function

Note: this session may take longer than the above-indicated time if trainees have no previous experience using a GPS.

Guidelines page references: A8-9

S20	Session Summary	Duration
	How can a map, compass and GPS be used together?	30 minutes

Aim: To teach how a map, compass and GPS can be used together so that trainees can navigate better in the field.

Objectives: The trainee will correctly demonstrate the use of a map, compass and GPS for navigation in the field during locust operations.

Key survey points

- Line up map with N on a compass
- Bearing = direction (GPS GOTO, waypoints)
- Use for finding locust infestations, control targets, airstrips, navigation

Equipment:

- PS, pens, eraser
- OHTs (S20 set)
- GPS, compass
- Large wall map, stickers

Preparation:

- Layout a map, compass and GPS on a table in front of the classroom.

Guidelines page references: A2-9

S21	Session Summary	Duration
	How are field data recorded?	1 hour

Aim: To teach the use of the *FAO Desert Locust Survey and Control Form* in order to improve data collection in the field.

Objectives: The trainee will correctly complete the form as taught using field data.

Key survey points

- Use form so information is complete and can be shared and analyzed
- Fill out the form at survey or control location not in office
- Mostly circle or tick, very little writing is required
- Add comments and your own interpretation
- Transmit via radio using row and column numbers

Equipment:

- PS, pens, eraser
- OHTs (S8a, S21 set)
- *FAO Desert Locust Survey and Control Form*
- XS21 exercise sheets

Preparation:

- Make photocopies of the XS21 exercise sheets and the *FAO Desert Locust Survey and Control Form*, one per group

Guidelines page references: S46-47, A46-53, 88-89

S22	Session Summary	Duration
	What is eLocust and how can it be used?	1 hour

Aim: To introduce the concept of using a handheld computer to record data and teach how to use eLocust so that trainees appreciate that there are new technologies that can be used during surveys.

Objectives: The trainee will be able to demonstrate the use of eLocust and use it for recording data in the field.

Key survey points

- Touch screen, immediate on, 40h batteries, connect anything
- eLocust = electronic version of FAO Survey & Control form
- eLocust = PsiDat + RealMaps
- transmit data via HF radio modem

Equipment:

- PS, pens, eraser
- OHTs (S22 set)
- Psion 5mx handheld computer with latest version of eLocust
- Extra batteries
- XS22 exercise sheets

Preparation: none

- Make sure that each Psion is working and has a good battery charge
- Install the latest version of eLocust on the Psion
- Make photocopies of the XS22 exercise sheets, one per group

Guidelines page references: none

S23	Session Summary	Duration
	Practicing survey techniques in the field	half day

Aim: To practice survey methodology and the use of survey equipment under field conditions as a review of what has been taught in the previous days and to improve the trainees' skills in locust and habitat monitoring.

Objectives: The trainee will undertake a field survey to assess locust and habitat conditions in a locust breeding area.

Key survey points

- Time taken for planning
- Time taken for survey (assessment/search used?)
- Was information correctly recorded?
- Not easy to organize survey and find all locusts

Equipment:

- PS, pens, eraser
- OHT (4c, 16a)
- Dark coloured gravel, fertilizer or sawdust to make fake hopper bands
- Two separate areas of typical Desert Locust habitat, about 10x10 km each
- 4+1 vehicles (to make the bands in advance, to transport the trainees)
- Radios in vehicles (or two mobile phones)
- 3-4+ laborers for making the bands
- Shovels and buckets for each laborer
- GPS, compass, map, forms, water, extra batteries (per vehicle)
- 1 flag on a pole
- Binoculars
- Whistle
- Signal mirror
- Wooden blocks, enough for one per band

Preparation:

- Identify an area of about 25x25 km of typical Desert Locust habitat
- Write numbers on the wooden blocks
- Each area should have two separate infestations, several km apart, of about 3-5 bands that are about 50-100 m² each at varying densities.
- Use the gravel, sawdust or fertilizer to outline the bands, hiding them near vegetation or in depressions. Identify each band with a numbered block (keep track of the numbers you use in each area). Take the GPS coordinates of each band.
- This can be done one or more days before the session and takes several hours.

Guidelines page references: S10-17

S24	Session Summary	Duration
	How are survey results transmitted?	30 minutes

Aim: To teach how and why survey results should be sent from the field so that trainees appreciate the need to send complete and accurate data on time.

Objectives: The trainee will recall the importance of transmitting data in a timely manner and identify the different means of doing this.

Key survey points

- Survey results must be sent to National Locust Unit HQ
- HF radio, telephone, fax, email, handcarry
- Results are needed quickly for planning and forecasting
- Data value decreases over time

Equipment:

- PS, pens, eraser
- OHTs (S4b, S24 set)

Preparation: none

Guidelines page references: S46-47, I10-11, 26-27, A54-55

S25	Session Summary	Duration
	Summary of survey sessions	30 minutes

Aim: To review the main points that were covered in the survey sessions.

Objectives: The trainee will recall the key important points of planning and conducting Desert Locust surveys, collecting information and transmitting data that were presented during the previous days.

Key survey points

- One thing learned?
- Hardest, most difficult session?
- Most confusing, least clear concept?
- Best and worse session? Improvements?

Equipment:

- PS, pens, eraser
- OHTs (S4 set)

Preparation: none

Guidelines page references: S2-3

C1	Session Summary	Duration
	What is the process of control and is control always necessary?	1 hour

Aim: To provide a framework for more detailed discussion of the specifics of control in order that trainees have a reassuring 'route map' for the learning they will do. Also to transmit the message that control should be a logical process which is only initiated when necessary and comprises a number of clearly defined steps. This is to help them break down a rather complicated process into smaller components which are more easily understood.

Objectives: The trainees will put the different steps involved in the control process in the right sequence and explain them in general terms. They will also explain what factors might influence the decision on whether to control or not.

Key control points

- Training should be a logical process
- Control is not always necessary – several factors affect the decision
- The specifics of the process will differ depending on country and situation

Equipment:

- PS, pens, eraser
- OHTs (C1 set)
- XC1a, b and c – Control process jigsaw (control process sheet with no text, together with sets of separate text captions) – one for each group
- Sticky tack
- Sellotape

Preparation:

- Print out and cut out jigsaw captions and put in envelopes – one for each group.
- Print out top half and bottom half of blank process sheet and sellotape together to make the whole blank process sheet - one for each group

Guidelines page reference: C2-5

C2	Session Summary	Duration
	Which are the different locust targets and control options?	2.5 hrs

Aim: To review targets and control technologies including detail on the most commonly used type – ULV sprays. This better appreciation of the options and better understanding of how they work will help trainees to choose and use these technologies more safely and more efficiently.

Objectives: The trainees will be able to describe the different control targets and their implications for control, explain and make appropriate choices of control technologies, sprayer platforms, sprayer types and methods of atomisation.

Key control points

- Locust targets take many forms – some easy, some difficult
- Several control technologies are available
- ULV spraying is the only practical option
- Different sprayer platforms – pros and cons
- Atomization is critical to efficacy – rotary are best for ULV

Equipment:

- PS, pens, eraser
- OHTs (C2 set)
- 4 atomizer types – bucket and brush, hydraulic (e.g lever operated knapsack with cone or fan nozzle), air shear (e.g. flit gun or motorized knapsack mistblower), rotary (e.g battery operated spinning disc sprayer)
- Water sensitive paper.
- Hand lenses
- XC2 exercise sheet
- NRI swarm video, television and VCR
- Blank OHT (2) and pens

Exercise preparation:

- Photocopy XC2 exercise sheet – one per trainee
- Fill all sprayers with water
- ensure that the battery operated sprayer has batteries and a suitable nozzle (orange)
- Television and VCR for the swarm video

Guidelines page reference: C5-19

C3	Session Summary	Duration
	Choosing and using locust insecticides safely	1.5 hrs

Aim: To provide an overview of pesticide types available for locust control and guidance on which criteria should be used in choosing them. Also the basics of safe use and First Aid

Objectives: The trainees will be able to state 5 important criteria for pesticide choice and will be able to judge all of the major insecticide groups against these criteria, as well as be able to describe First Aid procedures for pesticides and demonstrate the recovery position.

Key control points

- locust staff need familiarity with insecticide naming conventions
- lots of different constituents of a formulation, in addition to the active ingredient
- Key features to consider in choosing locust pesticides
- Mammalian toxicity of formulations is different from that of active ingredient and can be worked out, with the help of a reference document (IPCS/WHO)
- Role of pictograms and their meaning

Equipment:

- PS, pens, eraser
- OHTs (C3 set)
- WHO Classification of pesticides by hazard
- Personal Protective Equipment
- XC3 exercise sheets
- calculators

Preparation: Photocopy XC3 exercise sheet – one per trainee

Guidelines page reference: C26-33, A77-85

C3ii	Session Summary	Duration
	Safe pesticide handling and basic First Aid	1 hour

Aim: To explain how to handle pesticides in a safe way and to demonstrate the necessary first aid steps to be undertaken in case of poisoning.

Objectives: The trainees will explain why handling pesticides safely is important. They will also explain the necessary precautions to be undertaken. The trainees will demonstrate first aid measures to be undertaken in case of poisoning.

Key control points

- three main routes of entry for pesticides
- acute and chronic poisoning
- which staff and tasks are highest risk
- First Aid procedures

Equipment:

- PS, pens, eraser
- OHTs (C3ii set)
- Full set of Personal Protective Equipment

Preparation: none.

Guidelines page reference: E5-7, 26-27, 44-63; A85.

C4	Session Summary	Duration
	How to use field equipment relating to control?	45 minutes

Aim: To explain the purpose of field equipment relating to control and to help the trainees learn how to use it so they can carry out more accurate application operations under the most appropriate conditions.

Objectives: The trainee will be able to state the reasons why field equipment is important for field staff and will be able to use whirling hygrometers, pith ball anemometers, compasses and vibrating tachometers.

Key control points

- Field equipment helps to make control safer and more efficient
- Correct way to use anemometer, whirling hygrometer, tachometer, compass

Equipment:

- PS, pens, eraser
- OHTs (C4 set)
- whirling hygrometer + water for wick – one per group
- pith ball anemometer – one per group
- compass – one per group
- vibrating tachometer – one per group
- Micron Ulva + with six batteries
- Screwdriver
- XC4 exercise sheet
- Cross head screwdriver

Exercise preparation:

- Find an open area of around 150 m x 150 m near to the training room
- Photocopy XC4a and b exercise sheets – one each per trainee

Guidelines page reference: A6-7, A14-19

Comment: Add case studies with 4 scenarios – choose one product from FAO list for each: Expand current exercise to be the case studies based on:

- Barrier spraying in ecologically sensitive zone
- Urgent crop protection required
- Portable equipment and recently trained spray personnel
- Full coverage aerial spraying of swarms in remote arid areas

C5	Session Summary	Duration
	How can swath width be measured for ULV sprayers	4 hours

Aim: To demonstrate the method for measuring swath width and to help the trainees discover the variability of downwind deposit from a ULV sprayer.

Objectives: The trainees will be able to carry out swath width assessments for ULV sprayers and will understand the concept of overlapping swaths to achieve a more uniform cumulative deposit.

Key control points

- Cannot see where ULV spray droplets are going (more than a few seconds after emission)
- Control staff need to understand the field behaviour of droplets and swath width measurement helps this understanding
- Concept of overlapping swaths by making track spacing less than swath width

Equipment:

- PS, pens, eraser
- OHTs (C5 set)
- Micron Ulva + sprayers (2) + 10 'D size' batteries
- Vibratak (4), Anemometer (4), Whirling hygrometer (4)
- Stop watch (4)
- Compass (4)
- 70 cm stakes (15)
- Flags (4)
- Buckets (2)
- tissue paper
- Oil-sensitive paper strips 1 cm x 10 cm (50)
- Blu tak or sticky tak for attaching papers
- Sunflower or other light oil
- Fluorescent tracer
- Hand lenses (4)
- Counting templates (4)
- Data recording forms
- Full PPE (4 sets)
- Graph paper
- XC5 exercise sheet

Exercise preparation:

- Photocopy XC5a and XC5b exercise sheets – one per trainee
- Find an outdoor area around 100 m x 100 m which is not sheltered from the wind by buildings or trees.
- Check that the type of oil used makes a good dark mark on the oil-sensitive paper, and that the mark stays dark for 2 hours afterwards. Some oils do not make a good mark, and others fade away very quickly on the oil sensitive paper.

Guidelines page reference: A60 - 63

C6	Session Summary	Duration
	How does the size of droplets affect their number and behaviour?	45 minutes

Aim: To explain the importance and implications of droplet size and also one way in which droplet spectra are described. Also to guide trainees to conclusions on which droplet sizes and spectra are most suitable for ULV locust control.

Objectives: The trainees will be able to explain the effect of droplet size on their number and behaviour and be able to explain the concept of VMD and NMD and the ratio between them. They will also understand which spectra are most suitable for ULV locust control.

Key control points

- Effect of droplet size on number
- Effect of droplet size on terminal velocity
- Effect of droplet size on impaction/sedimentation
- Parameters used to describe droplet spectra (VMD, NMD, R ration, Span)

Equipment:

- PS, pens, eraser
- OHTs (C6 set)
- Polystyrene droplets
- Plasticine
- Rulers

Preparation: None

Guidelines page reference: C10-15

C7	Session Summary	Duration
	What is sprayer calibration and how are calculations made?	2 hours

Aim: To teach why calibration is important and how to calculate sprayer settings so that trainees have a positive attitude to calibration and can confidently carry it out.

Objectives: The trainees will state why calibration is important and will explain the factors which need to be measured and set. They will also make calibration calculations (individually) for a variety of real calibration scenarios.

Key control points

- Importance of calibration to get right dose and efficient operations
- Factors: droplet size; emission height; dose
- How to adjust droplet size and emission height
- Juggling track spacing, forward speed and flow rate to achieve recommended dose
- Competency with calibration calculations

Equipment:

- PS, pens, eraser
- OHTs (C7 set)
- XC7 desk exercise

Preparation: None

Guidelines page reference: C34-41, A79 and 113

C8	Session Summary	Duration
	How can we make correct sprayer settings?	2 hours

Aim: To teach how to set sprayers up in accordance with previously determined settings so that trainees can set sprayers up for efficient control operations.

Objectives: Trainees will explain how to alter droplet size, emission height and dose on 4 different types of sprayer. They will also measure their pace length and their forward speed.

Key control points

- practicing adjusting spraying parameters
- methods vary with different sprayers – but principles the same
- Sprayer manufacturers handbook is important

Equipment:

- PS, pens, eraser
- OHTs (C8 set)
- XC8a, XC8b and XC8c exercise sheets
- stop watch or watch with a second hand,
- measuring cylinder,
- bucket,
- protective clothing,
- soap and water,
- sprayer,
- pesticide,
- basic tools
- 8 flags

Preparation: None

Guidelines page reference: C42-45, A56-59, A65

C9	Session Summary	Duration
	What are good and bad ULV spraying conditions?	1.5 hours

Aim: To go through the weather conditions which affect ULV spraying so that trainees know how to choose spray timings which maximise control efficiency.

Objectives: The trainees will name and explain the importance of the main weather factors affecting ULV spraying.

Key control points

- ULV spraying is more sensitive to weather than higher volume spraying
- Wind, sun and rain are important
- Methods to judge whether conditions are suitable

Equipment:

- PS, pens, eraser
- OHTs (C9 set)

Preparation: None

Guidelines page reference: C52-53

C10	Session Summary	Duration
	What are the principles and techniques of ULV spraying?	1.5 hours

Aim: To teach the basics of ULV spraying so that trainees can carry it out confidently, safely and effectively.

Objectives: The trainees will be able to describe and carry out the essential steps in ULV spraying

Key control points

- Demarcating targets – methods and major problems
- Contrast barrier and full-cover spraying
- Orientation and direction of movement with respect to wind direction
- Track marking is essential – various methods

Equipment:

- PS, pens, eraser
- OHTs (C1a, C10 set)
- ULVA + sprayer filled with water
- 6 flags

Preparation: None

Guidelines page reference: C48-51, C58-69

C11	Session Summary	Duration
	How can control efficacy be checked (locust mortality)?	1.5 hours

Aim: To teach how and when to carry out control efficacy checks so that trainees are able to monitor performance of control operations

Objectives: The trainees will explain the different methods of mortality assessment and state which are best suited to which control situation. They will also carry out a simulation of field and cage assessments and calculate mortality in each case.

Key control points

- Feedback required on efficacy
- Different methods – field/cage – strengths, weaknesses
- What accuracy/frequency required during real control operations?

Equipment:

- PS, pens, eraser
- OHTs (C11 set)
- XC11 exercise sheet
- Equipment on XC11

Preparation: See XC11

Guidelines page reference: C72-79

C12	Session Summary	Duration
	How can control operations and their efficacy be recorded?	1.5 hours

Aim: To provide justification and techniques for recording spraying operations and their effects so that trainees are more motivated and capable of doing it.

Objectives: Trainees will complete a standard Spray Monitoring Form using information from one of four detailed reports of operations.

Key control points

- Systematic recording and reporting of control operations is crucial
- Most important aspects are included in the Spray Monitoring Form
- Understanding interaction with the Survey Form

Equipment:

- PS, pens, eraser
- OHTs (C12 set)
- Spray monitoring form
- XC12 and XC12 crib sheet

Preparation: Make photocopies of the FAO Spray Monitoring Form – one per trainee. Also make photocopies of XC12 – one per person

Guidelines page reference: C70-71, A90-91

C13	Session Summary	Duration
	Practicing control techniques in the field	3 hours

Aim: To allow trainees to practice the knowledge and skills they have learnt relating to control operations

Objectives: Trainees will find and spray two fake locust hopper bands in a safe and effective way (including calibrating their sprayers), and will monitor and record all aspects of the operations (except locust mortality) using the Spray Monitoring Form.

Key control points

- Bringing together knowledge, skills and equipment relating to control
- Practice is often different from theory – real control is more so!

Equipment:

- PS, pens, eraser
- OHTs (C1a)
- 4 Micron Ulva + sprayers
- 24 D size batteries
- 24 flags
- 4 vibrataks
- 4 GPS
- 4 compasses
- dark colour gravel to make fake hopper band
- spray monitoring forms
- radios
- shovels and buckets for making bands
- 2 vehicles for making the bands in advance
- XC13 exercise sheets

Exercise preparation

- 4 bands should be prepared using the gravel or other fake band-making material, preferably out of sight of one another.
- Each band should be around 100m² but can be odd shapes
- Record the coordinates of each band using a GPS
- Photocopy XC13 exercise sheet – one per trainee

Guidelines page reference: All pages.

C14	Session Summary	Duration
	What are the tasks of different locust field personnel?	1.5 hours

Aim: To help trainees identify the tasks of different locust field personnel

Objectives: Trainees will list the main tasks of survey staff, control staff, drivers, ground spray labourers, airstrip labourers, pilots, aircraft technicians, others?

Key control points

- Efficient operations require clear allocation of tasks
- Staff are not always in agreement with the tasks they should do, or are not allowed to do!
- Each locust organization will have different solutions

Equipment:

- PS, pens, eraser
- OHTs (C14 set)

Preparation: None

Guidelines page reference: A74

C15	Session Summary	Duration
	Summarising the control sessions	1.5 hours

Aim: To go through the control process, review key points and to allow opportunity for questions on any specific control aspect.

Objectives: Trainees will answer questions on the key points from all control sessions. They will also broaden their knowledge through questioning and sharing information on control subjects.

Key control points

- All previous topics mentioned briefly
- Any topic(s) not well understood?
- Feedback on content, methods, styles, materials
- Suggestions for improvement?

Equipment:

- PS, pens, eraser
- OHTs (All sets – for quick reference)

Preparation: None

Guidelines page reference: All

T1	Session Summary	Duration
	Introduction to the training process	30 minutes

Aim: To introduce a simple model of the training process so that the trainees can use this as a map to build their training skills within a logical structure

Objective: The trainee will state the main steps in the training process and give a brief description of the purpose of each one

Equipment:

- PS, pens, eraser
- OHTs (T1 set)
- XT1a and XT1b – one per trainee

Preparation:

- Copy and give out XT1 a and b **before** Session T1 so that participants can give it in at the beginning of Session T1 for the trainer to assess group experience and expectations
- Copy XT2a and XT2b to give out at end of session in preparation for next session

Key training points:

- Who
- Need
- Content
- Planning
- Training Method
- Evaluation
- The 5 “Ps”

Guidelines page references:

T2	Session Summary	Duration
	Introduction to individual Learning Styles	30 minutes

Aim: To introduce the concepts of learning style and the learning cycle so that participants can apply these to their own learning and to the design and delivery of training sessions that recognizes personal styles and the individual learner's experience and needs.

Objectives: The trainee will plot their own learning style profile and describe how they can expand their own and their trainees learning process

Key Training points

- Complete XT2a and XT2b forms
- Transfer to XT2c and XT2d
- Plot graphs
- Learning cycle
- Cycle / styles link
- Improving learning profiles

Equipment:

- PS, pens, eraser
- XT2a, XT2b, XT2c and XT2d – one per trainee
- OHTs (T2 set)
- Blank OHTs and OHT pens

Preparation:

- Copy XT2c and XT2d for distribution during the session
- Issue learning styles questionnaire and the recording sheet (XT2a and XT2b) **at end of previous day's programme** and instruct trainees to complete them for beginning of T2 session

Guidelines page references:

T3	Session Summary	Duration
	Target Groups. Who are they?	40 minutes

Aim: To introduce the concept of Target Groups so that trainers can prepare training, presentations and learning sessions that more accurately match the trainee needs and are sensitive to the personal, technical and environmental conditions of the trainee.

Objectives: The trainee will

1. State the main headings that can be used to construct a target group profile.
2. Complete a profile for a specified target group.
3. Use the profile to explain how the technical content, training methods and learning environment of a specified session would be influenced by the information available.

Key Training Points

- Exercise on the importance of people
- Target group Headings
- Sources of information
- Headings in detail
- Profile sheet exercise

Equipment:

- PS, pens, eraser
- OHTs (T3 set)
- XT3 – one per trainee

Preparation:

- Copy XT3 – one per trainee

Guidelines page references:

T4	Session Summary	Duration
	Training needs analysis	60 minutes

Aim: To introduce practical methods of training needs analysis so that Trainees can use these to make sure their training courses are relevant to the needs of their trainees and the work they are doing

Objectives:

The trainees will:

- State what criteria can be used to judge the quality and efficiency of a job or task
- Explain the concept of the Training Gap
- Complete a training needs analysis exercise using the form provided
- Explain why the emphasis is on doing rather than subject matter in training needs analysis.

Key training points

- Work competence criteria
- Training gap
- Information
- Job Description
- Training Needs Analysis (TNA)
- Link to objectives

Equipment:

- PS, pens, eraser
- XT4 – one per trainee
- OHTs (T4 set)

Preparation:

- Copy XT4 – one per trainee

Guidelines page references:

T5	Session Summary	Duration
	Training objectives and selecting the content of training sessions	1.5 hours

Aim: To introduce the use and writing of Training Objectives and how they can be used to guide the selection of session content and training methods so that trainees can apply this in their own training work.

Objectives: The trainee will:

- Write appropriate objective(s) for a practice training session,
- Explain and apply the process of linking Target Group, Objectives and Training content and methods to their practice training session at the end of the course.

Key training Points

- Destination / Objective
- Objectives in Training
- Training Gap – Training Needs Analysis - Objective link
- Exercise
- Objectives – Knowledge, Skills and Attitudes
- Exercise
- Simple to complex
- Must, should, could

Equipment:

- PS, pens, eraser
- OHTs (T5 set)

Preparation: none

Guidelines page references:

T6	Session Summary	Duration
	The adult learning process and training methods	1.5 hours

Aim:

- Highlight the main training approaches to be used with the Adult learner:
- Describe and demonstrate key participatory methods and consider the basic rules of perception and use of visual aids in Training so that the trainees can adopt and develop these approaches in their role as master trainers.

Objectives: The trainee will:

- Select and use appropriate participatory methods and learning aids in their Practice lesson on the final day of the effective training module.

Key training Points

- Adult Learner
- Participatory approaches
- Participation
- Learning cycle progression
- Teaching methods
- Participatory techniques matches with Learning Styles
- Perception and visual presentations
- Rules and standards
- Non Verbal communications

Equipment:

- PS, pens, eraser

Preparation:

- Selected examples of OHTs, charts and real materials and equipment from survey and control practical sessions to illustrate the range of possible learning aids.

Guidelines page references:

T7	Session Summary	Duration
	Planning the Training Session and Programme	1.5 hours

Aim: To teach the family tree structure used for programme planning and how to prepare a training session plan so that trainees can use the training plan guides provided in the manual to deliver their own training courses.

Objectives: The trainee will prepare a complete training plan for a practice training session that will be presented to peers.

Key Points

- Family tree structures
- Title, Aim, Objective Key points
- Intro Core and Summary / Conclusion
- Assessment sheet Instructions for practice training session delivery

Equipment:

- PS, pens, eraser

Preparation:

- Copy XT7a and XT7b – one of each per trainee

Guidelines page references:

T8	Session Summary	Duration
	Evaluating the impact of courses	1.5 hours

Aim: To teach methods of assessing impact of training so that trainees can measure their performance as trainers, identify areas for improvement, and make the necessary changes to their content, materials and techniques.

Objectives: The trainees will develop their own impact assessment scheme for a specified target group.

Key Points

- Indicators of success
- Pre and post-course tests – strengths weaknesses
- Continuous assessment
- Model assessment scheme
- Addressing impact on knowledge, skills and attitudes

Equipment:

- PS, pens, eraser
- OHTs (T8 set)

Preparation:

- Copy XT8a – one per trainee

Guidelines page references: