

**The Pesticide Referee  
Group of FAO  
and its contribution to  
Locust Control**

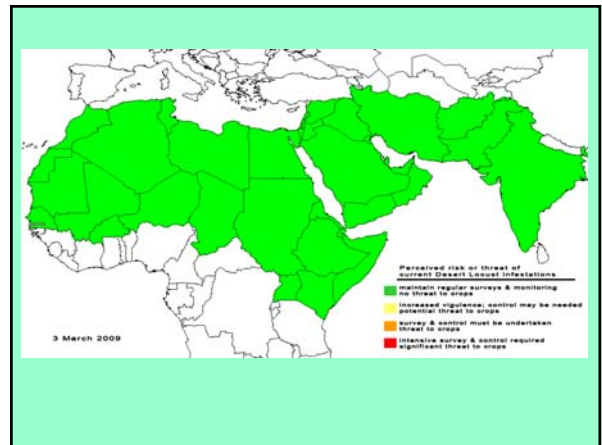


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A Desert Locust adult can consume roughly its own weight in fresh food per day, that is about two grams every day.

A very small part of an average swarm (or about one tonne of locusts) eats the same amount of food in one day as about 10 elephants or 25 camels or 2,500 people.



R. D. MacCuaig (1966)

*The index included full details of insecticides used or of potential use in Locust control*



Dieldrin was recommended as the insecticide of choice for locust control, but once its use was banned, obsolete stocks became highly dangerous in many parts of Africa.

## Pesticide Referee Group

Established in 1989

A group of independent scientists to advise FAO

**Rapid control in emergency situations**

(including spraying swarms in the air)

**Protection of crops at risk**

**Prevention of population development,** for example in recession areas.

**Barrier spraying**

to intercept marching hopper bands in breeding areas.

**A combination of the above strategies.**

## PRG considers

- a) trials reported by the agrochemical industry or supported by industry,
- b) independent data, data from trials established by FAO and
- c) published data in peer-reviewed journals

**High levels of efficacy are needed but**

**mortality can occur over a period of days, recognising that some products which can be more acceptable from an environmental aspect may take longer to attain acceptable levels of mortality**

Recommended insecticides as indicated in most recent PRG Report.

Insecticide	Type	Dose		Barrier treatment In Overall barrier	Speed of Action
		Cover spray			
Bendiocarb	C	100			F
Chlorpyrifos	OP	240			M
Deltamethrin	PY	12.5 /17.5			F
Diflubenzuron	IGR	30*	100	14.3	S
Fenitrothion	OP	400			M
Fipronil	P	not rec	4.2	0.6	M
Lambda cyhalothrin	PY	20			F
Malathion	OP	925			M
<i>Metarhizium anisopliae</i> var <i>acridum</i>	Bio	50			S
Teflubenzuron	IGR	30*	not det		S
Trflumuron	IGR	25*	75	10.7	S

\* Against hoppers only

## Organophosphates

**Older products - larger amount of chemical**

**Less persistence - Is a re-treatment needed?**

**Effects on non-target organisms**

**Health monitoring of those mixing and loading insecticides**

## Pyrethroids

Is there recovery after knockdown?

Which instar?

12.5 versus 17.5 g ai/ha

## Insect Growth Regulators

Slower acting

Only against hoppers (Can they affect adults?)

Less harmful to non-target species  
(except crustacea)

## Phenylpyrazoles

Persistent

Relatively slow action against adults at low dose

Very effective as barrier treatment at low dose

Adversely affects other species eg termites

## Bio pesticides

Slow action

Highly specific

Environmentally very acceptable

Active against hoppers and adults



## External Costs

- To environment
- To spray operators

Criteria applied for the environmental risk classification  
Laboratory toxicity data

Group	Parameter	Risk class			Reference
		low (L)	medium (M)	high (H)	
Fish	risk ratio (PEC/LC <sub>50</sub> )	<1	1-10	>10	FAO/ Locustox
Aquatic Arthropods	risk ratio (PEC/LC <sub>50</sub> )	<1	1-10	>10	FAO/ Locustox
Reptiles, Birds, Mammals	risk ratio (PEC/LD <sub>50</sub> )	<0.01	0.01-0.1	0.1	EPPO
Bees	risk ratio (recommended dose rate/LD <sub>50</sub> )	<50	50-500	>500	PRG/EPPO
Other terrestrial Arthropods	acute toxicity (%) at recommended dose rate	<50%	50-99%	>99%	IOBC

## Pesticide Referee Group [PRG]

Insecticide trials database



## Database access

- **PRG:** full access
  - editing, reading
  - data summaries & all original reports
- **External parties:** limited access
  - read only
  - data summaries & published original reports



Recommended insecticides as indicated in most recent PRG Report.

Insecticide	Type	Dose		Speed of Action	
		Cover spray	Barrier treatment		
<b>So THERE IS A CHOICE</b>					
Bendiocarb	C	100		F	
Chlorpyrifos	OP	240		M	
Deltamethrin	PY	12.5 /17.5		F	
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**Guidelines in 7 volumes provide clear well-illustrated advice on Desert Locust surveillance and control.**

*Available in English, French and Arabic*

## ULV Spraying – Rotary atomisers



Recommended volume rate is 1 litre per hectare although some spraying is at 0.5l/ha.

## Key factors of Formulation

**Volatility**

**Viscosity**

**Important to obtain  
'Feed-back' of  
operational use of insecticides**

Current members of the **Locust Pesticide Referee Group**  
Are:--

C Coste (France)  
G. Matthews (UK) [Chairman]  
P. Oomen (Netherlands)  
R. Peveling (Switzerland) [Secretary]  
R Sanderson (USA)  
Plus a representative from a locust affected country  
M J Hajjar (Syria) came in 2004