Stakeholder Workshop on
The Procurement and Supply of Pesticides for Locust Control

2-3 September 2015

1. PROCUREMENT REQUIREMENTS
2. SUPPLY CHAIN ISSUES
3. EQUIPMENT & FORMULATION COMPATIBILITY
4. PRODUCT ISSUES

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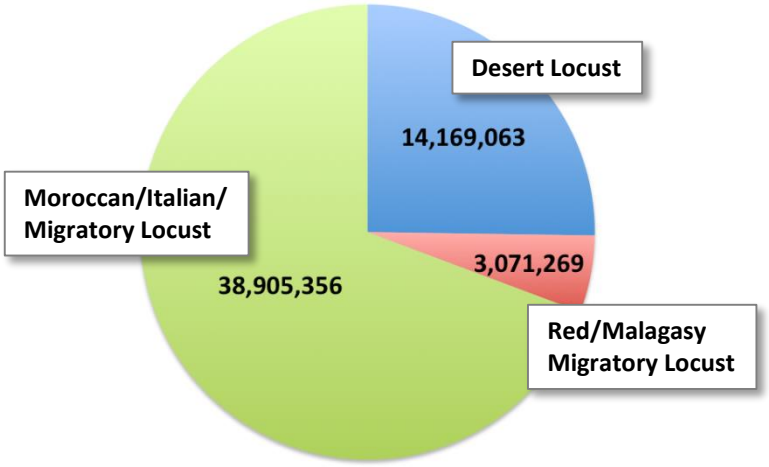

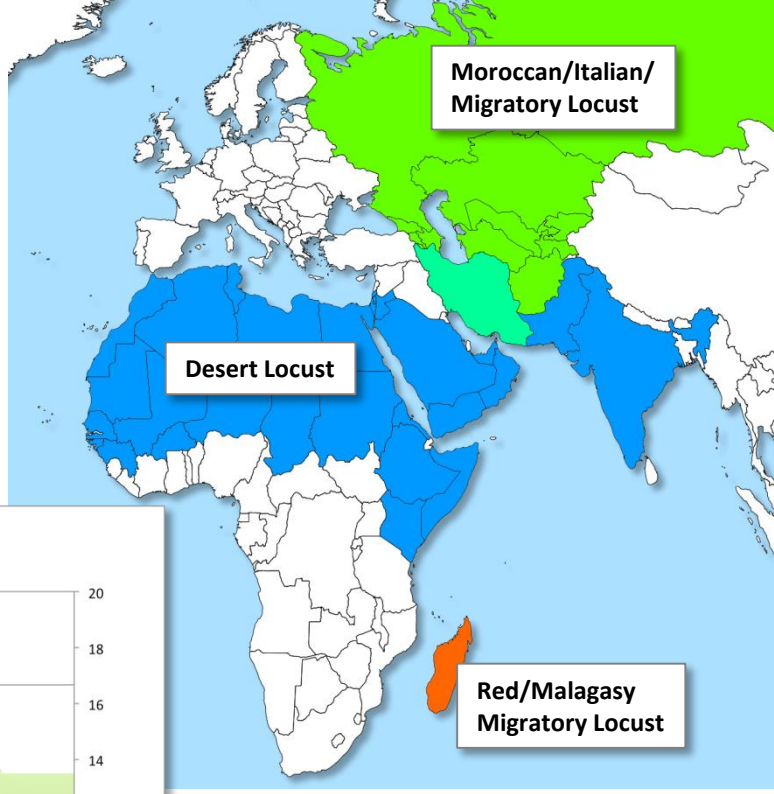

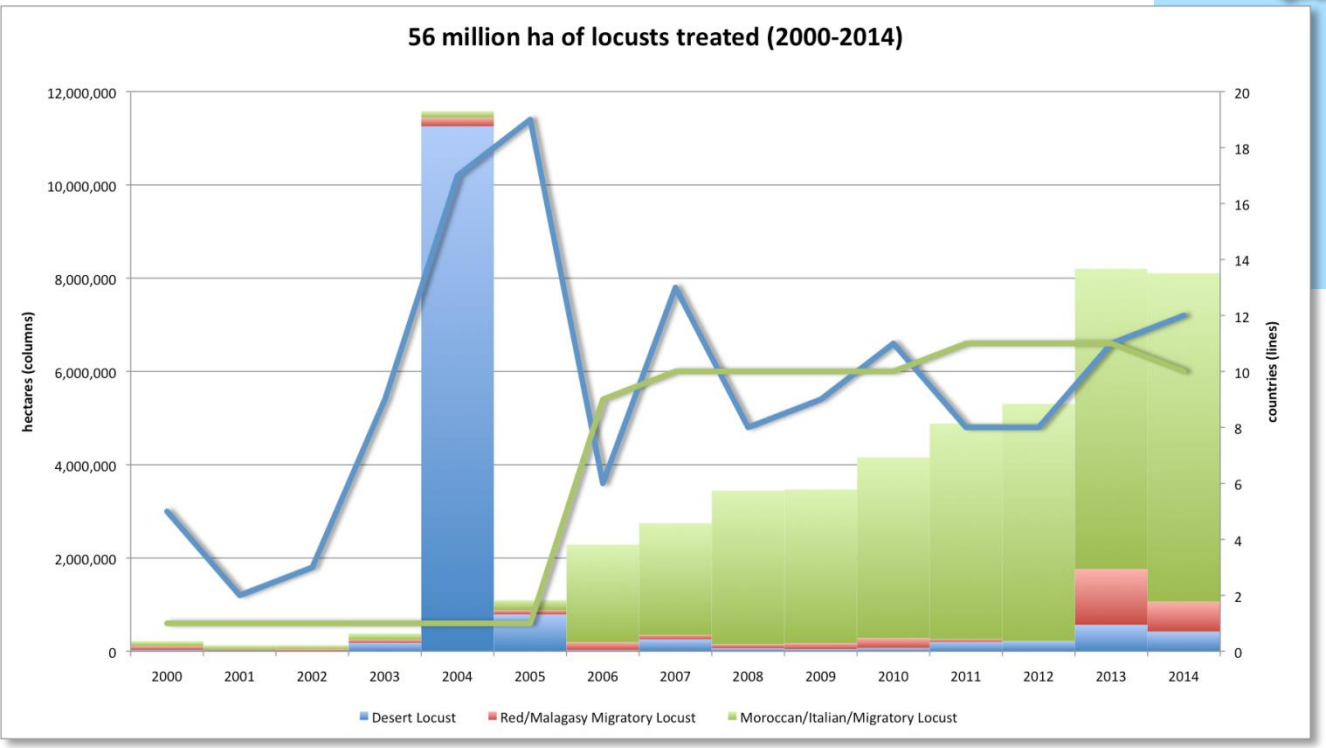

2000-2014

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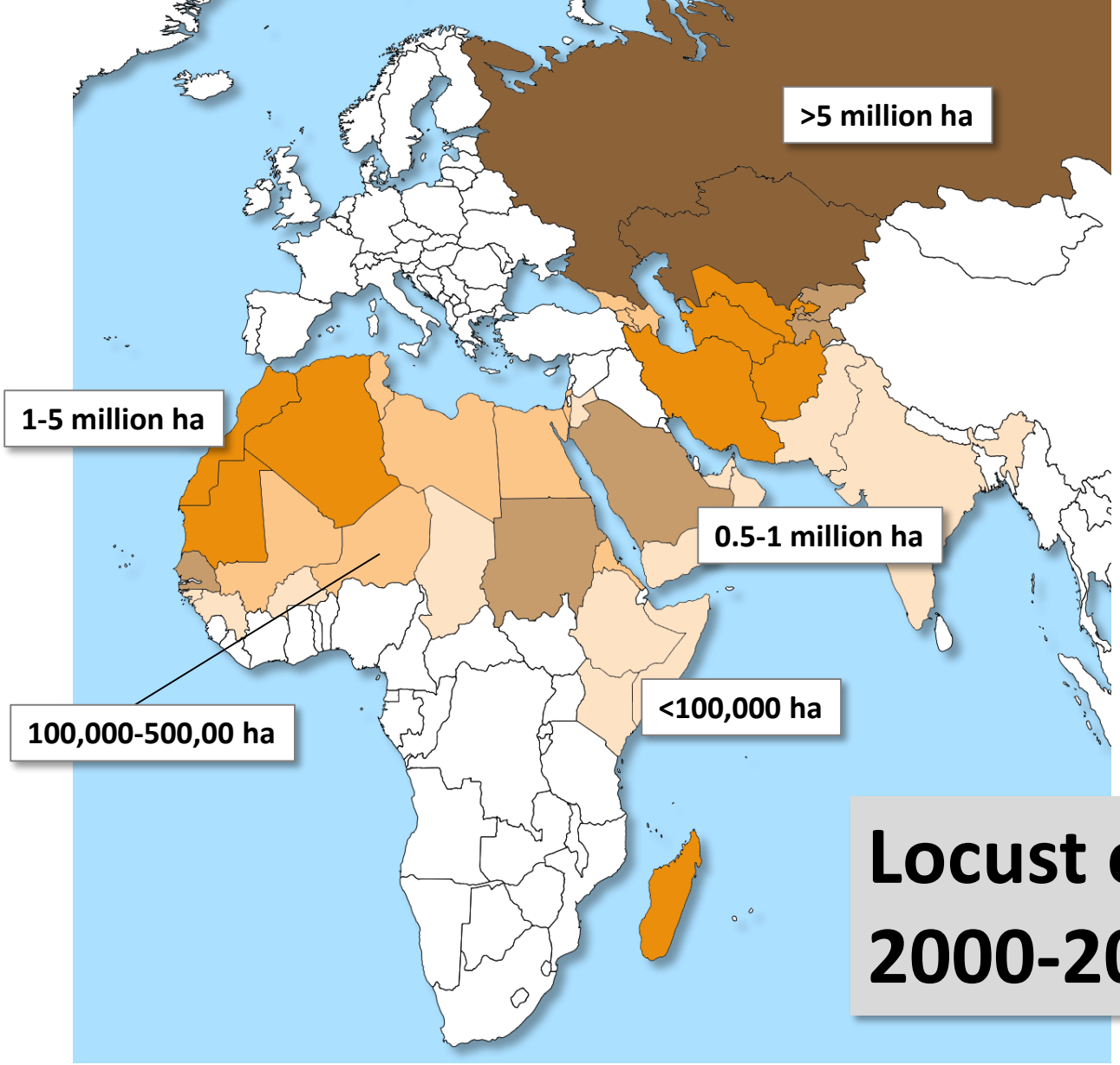

Locust control 2000-2014

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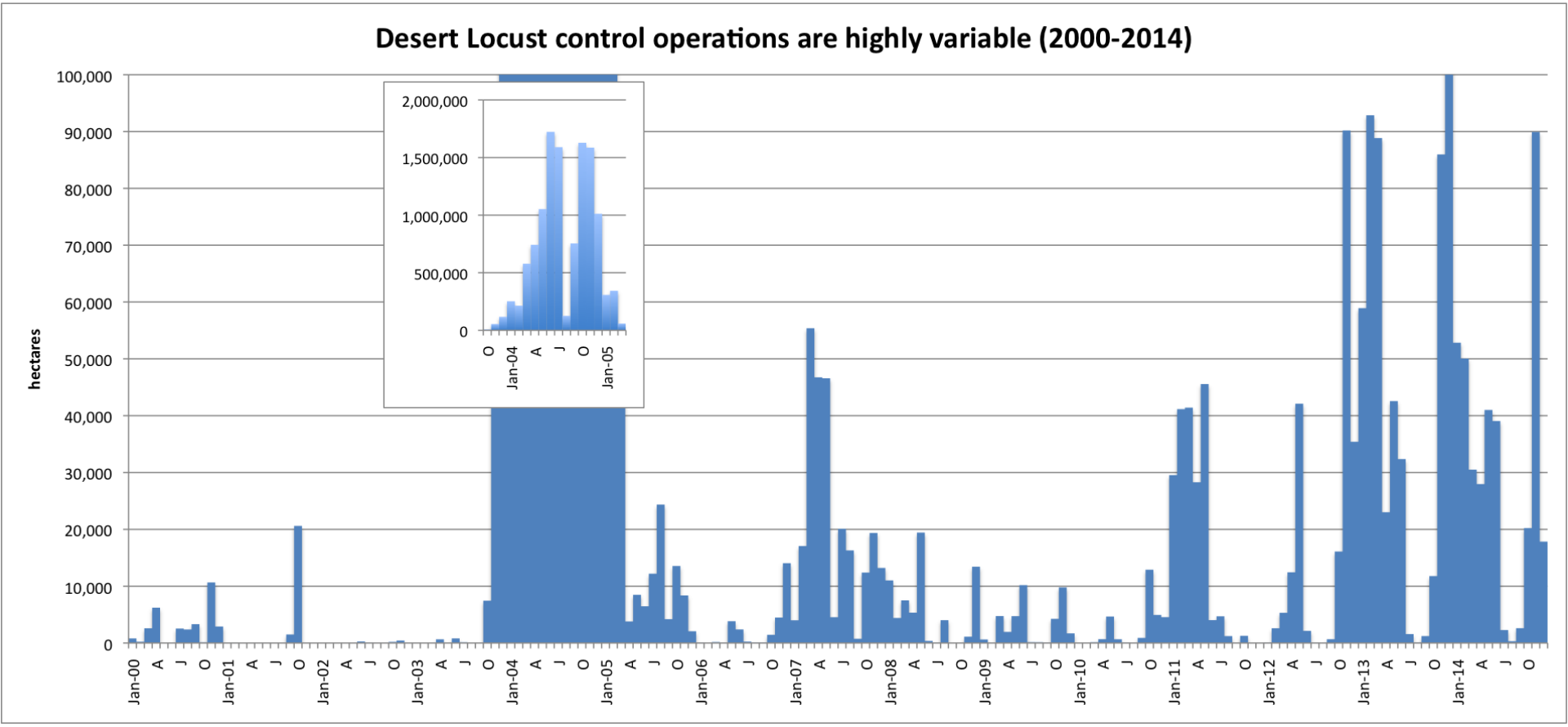

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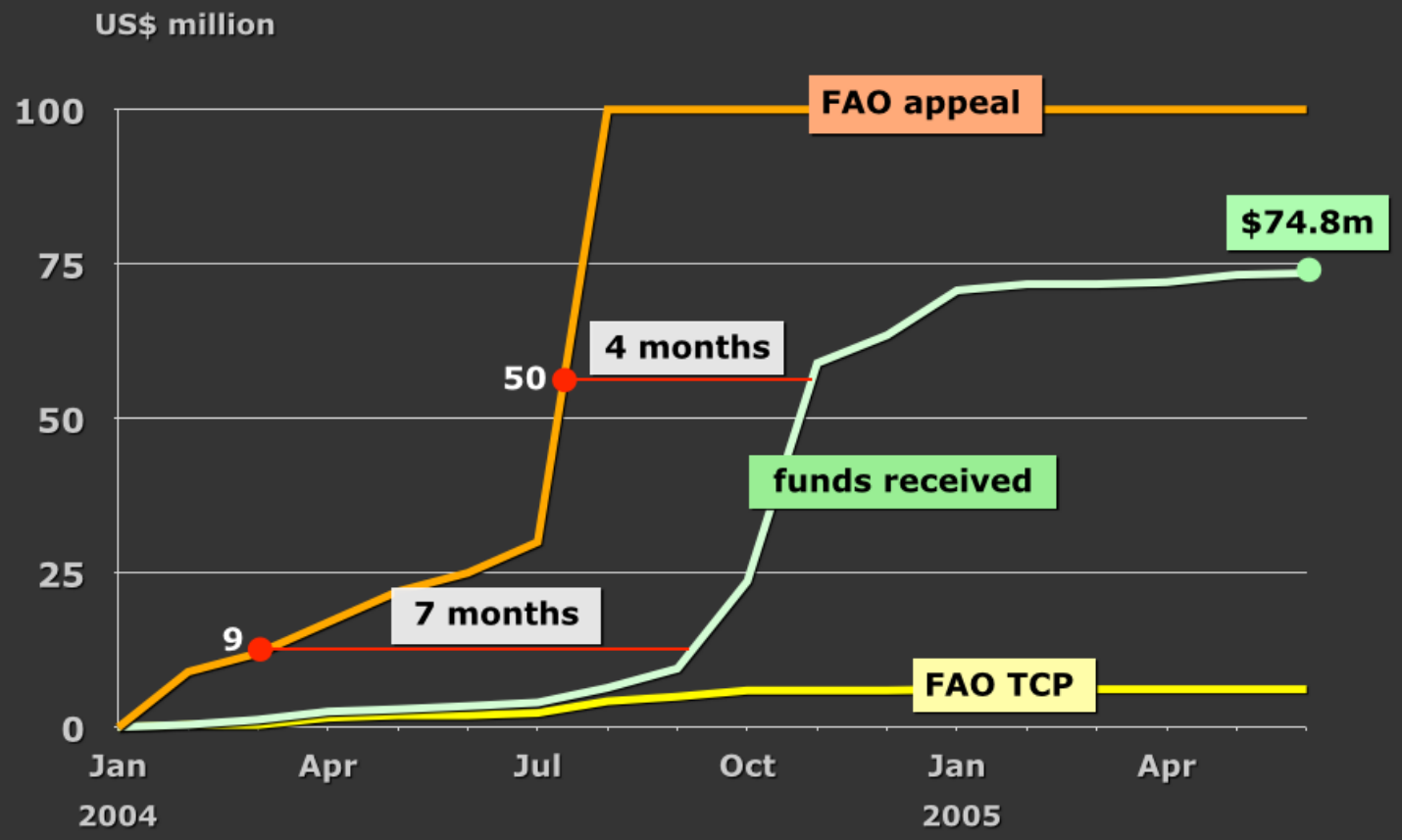
Emergency funding delay



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How can we deliver the right pesticide in the right quantities at the right time ?

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Stakeholder workshop on the procurement and supply of pesticides for locust control

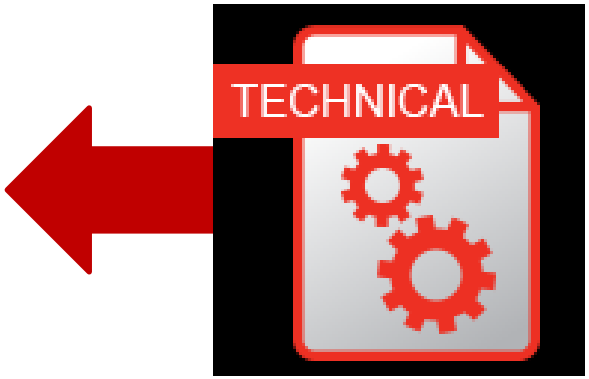
Procurement requirements

Insecticides for locust control

- FAO has been, and will be, procuring insecticides for locust control
- Both the insecticide and its packaging should be of high quality, given the difficult conditions of use
  - Rough terrain
  - Temporary storage under sometimes sub-optimal conditions
- Strict efficacy & toxicological standards need to be adhered to

FAO requirements for bids for pesticides

- General terms and conditions for goods (revised April 2015)
- General bid requirements & special requirements and conditions *(commercial)*
  - Annex 1 – Technical specifications and compliance format for pesticides (under review)



Specifications and certification – requirements likely to be stepped-up

Present requirements

- If a JMPS specification exists: Bidders should certify that the product is in compliance with FAO/WHO published specification of *product X.*
- If a JMPS specification does not exist: The manufacturer/bidder must provide specifications that cover the requirements for the product specified in the *Manual on development and use of FAO and WHO specifications for pesticides.*
- Compliance must be shown by laboratory analysis.

Specifications and certification

Updated requirements:

- The commercial pesticide product should have a specification approved and published by the FAO/WHO Joint Meeting of Pesticide Specifications (JMPS)
- Alternatively, a specification by a reputable national or regional authority, which follows the methodology described in the *Manual on development and use of FAO and WHO specifications for pesticides,* may be acceptable.
- Compliance with the specification must be shown by analysis by a GLP certified laboratory.

Specifications and certification

Procedures

1) JMPS specification exists AND bidding company is "holder" of specification
   - Bidder shows compliance through analysis by GLP certified laboratory

2) JMPS specification exists AND bidding company is not the "holder" of specification BUT insecticide technical material (TC) is sourced from specification holder
   - Bidder submits physico-chemical specifications of formulation only
   - Bidder shows compliance of TC through analysis by GLP certified laboratory
   - FAO requests JMPS to review equivalence of the formulation (time line: ~1 month)

Specifications and certification

3. Bidder claims equivalence with published specification of other specification holder
    - Bidder submits dossier for equivalence determination for TC & formulation
    - FAO requests JMPS to establish equivalence (if dossier complete: time line = ~6-12 months)

4. Bidder wishes to establish JMPS specification
    - Bidder submits dossier for establishment of a full JMPS specification
    - FAO requests JMPS to establish a specification (if dossier complete: time line = ~1-2 years

Specifications and certification

5. A relevant national specification is available
   - Bidder submits relevant national specification
   - FAO requests JMPS to review the national specification (expected time line: ~1 month)
   - Bidder shows compliance through analysis by GLP certified laboratory

Transition period and process will need to be defined

Registration – requirements slightly modified

Present requirements

- The product must be registered in the country of delivery, OR
- An application for temporary registration should be sought

Updated requirements

- The product must be registered for locust control in the country of delivery,

  OR

- An emergency authorization of the product for use in locust control should have been issued by the national responsible authority

Packing – requirements slightly modified

Present requirements

- UN certified metal drums
- *Hannells* technical specifications or equivalent

Updated requirements

- UN certified metal drums
- Technical specifications spelled out

OR

- UN certified plastic containers
- Technical specifications spelled out *(to be finalized)*

Labelling – requirements slightly modified

Present requirements

- Label in language of country of delivery
- Labelling according to International Code of Conduct on Pesticide Management
- Specific marking of containers

Updated requirements

- Label in language of country of delivery
- Labelling according to FAO/WHO Guidelines on good labelling practice for pesticides *(2015 update)*
- Specific marking of containers

Safety Data Sheet – new requirement

- Copy of most recent SDS to be provided as part of bidding document
- XX copies of most recent SDS to be provided to consignee

Empty containers – optional requirement

A requirements for the take-back and recycling/disposal of empty containers may be included

How can we deliver the right product in the right quantities at the right time ?

Processes that determine emergency pesticide needs

1. MONITORING

FIELD

2. ANALYSIS

COUNTRY

3. ANALYSIS+FORECAST

FAO HQ

Current resources

FUNDING

CLCPRO/CRC TF
TCP
UN CERF
UN SFERA
donors

PROCUREMENT

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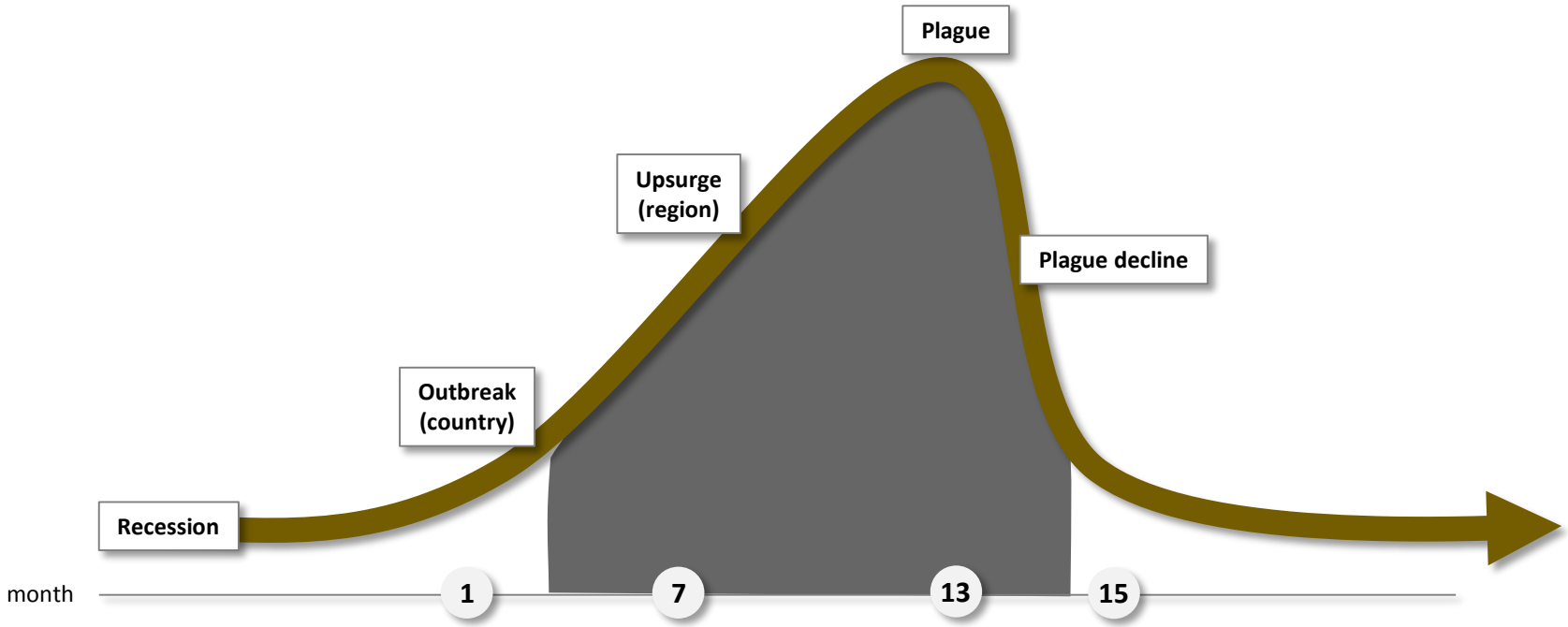
CSAP

Plagues do not develop overnight



Lead time:	<1 mos	3 mos	6 mos
Reliability:	low-med	low	med-high
Scale:	<50,000 ha	1m ha	10+m ha

2003–2005 Desert Locust campaign in West and North Africa

- 12.9 million ha's sprayed, using over 13 million litres of insecticides
- Total cost of the control operations was at least US$ 280 million
- Total cost of the locust upsurge, including food assistance and rehabilitation was approx. US$ 400 million

Source: Multilateral evaluation, 2006

2003–2005 Desert Locust campaign in West and North Africa

- Over 6.3 million litres of insecticides were left at the end of the campaign
- Leftover stocks have been:
  - Locally used for locust & grasshopper control
  - Moved to other locust-affect countries ("triangulation")
  - Kept in stock: either as obsolete or still usable product

2003–2005 Desert Locust campaign in West and North Africa

Present situation (estimate, including previous stocks) – 10 countries

- Triangulated: 546 000 litres
- Obsolete: 2 370 000 litres
- Usable: 2 850 000 litres

  however, some is likely to become obsolete soon!

Costs of management of left-over pesticide stocks

- Storage, monitoring cost: ??
- Collection, repackaging, disposal, project management

  Approx. US$ 5000/ton

- Costs of disposal of possible obsolete stocks from 2003-2005 campaign (~ 4000 tons)

  ↘ approx. 7% of total control costs of the campaign!

Food and Agriculture Organization of the United Nations (FAO)

Procurement of ULV pesticides for Locust Control:

Process and key data Overview 2013-15

FAO Procurement Objectives

- FAO procurement is based on the fundamental principles of **Best Value for Money**, fairness, transparency, economy and effectiveness.
- **Promote use of Framework Agreements**.

FAO and Vendors

- Formal contract award procedure following a competitive process.
- Participation to the solicitation process based on invitation to registered, pre-identified Vendors.
- FAO intends to build sustainable relationships with Vendors and relies on input from Vendors to improve its procurement activities.

FAO relies on its Vendors to meet its mandate

Vendor Registration

- Carefully identify the products or services your firm supplies and accurately indicate them during the registration process.
- Submission of a completed application through the UNGM does not guarantee invitation to tender.
- Details of the Vendor registration can be found on the FAO Procurement Internet: www.fao.org/unfao/procurement/general-information/en/.

Solicitation Process

Submit by secure facsimile, courier or electronic tendering (In-tend).

Submission Deadlines*:

- **2 weeks - ITBs for goods**
- **4 weeks - ITBs for services**
- **6 weeks – RFPs**

Validity of bids: minimum 2 months

IMPORTANT: Follow the instructions when submitting offer as non compliance may result in an invalid offer.

*** For emergencies these deadlines may be significantly reduced.**

Incoterms

FAO requests Vendors to provide for delivery to final destination.

DAP (final destination – incoterms 2010)

DAT (final destination incoterms 2010)

On exceptional basis, for some destinations FAO organizes the transport (FCA incoterms 2010).

Payment Terms

FAO is a reliable payer – 30 days from receipt of required documentation

Purchase Orders:

- No advance payment or letters of credit accepted

Contracts:

- Payment is determined by the type of services provided with possibility of 20% advance payment upon receipt of bank guarantee

Inspection: loading/unloading

- Inspection is contracted by FAO with 3rd party independent superintendency companies
- Inspections are carried out at loading to verify the quality, quantity, bagging, marking, etc. and at unloading to identify damage/loss during transport.
- Due meet tight deadlines and avoid delays FAO instructs Vendors to dispatch goods without waiting for inspections results.
- Vendors should inform if they choose not to accept this condition.

Ethics

- FAO has a strict “No-gifts, no-hospitality” policy which is applicable to all Vendors. Vendors wishing to do business with FAO may not offer gifts or hospitality to any FAO staff member.
- Vendors must adhere to the UN Supplier Code of Conduct.

Major constraints encountered with procurement of ULV pesticides over the past three years(2013-15)

- Low participation rate to tenders.
- Low responsive rate due to certifications/registration requirements and/or delivery requirements.
- Delayed delivery.
- Non-compliance with packaging requirements (quality of drums).
- Abnormal Corrosion of spraying equipment.

Most Frequently Procured ULV pesticides (2013-15)

Quantities (liters/kg)				
Country \ Pesticide	Chlorpyrifos	Teflubenzuron	Bio-pesticide (Green Muscle)	Fenitrothion
Madagascar	318,000	278,000	1,500	-
Eritrea	-	-	-	7,300
Malawi	-	-	320	3,500
Yemen	25,000	-	180	-
Kyrgyz Rep	8,900	-	-	-
Tajikistan	6,400	-	-	-
Mauritania	-	-	45	-
TOTAL	**358,300**	**278,000**	**2,045**	**10,800**
AVERAGE PER YEAR	**119,433**	**92,667**	**682**	**3,600**

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for a world without hunger

ULV pesticides triangulated by FAO (2013-15)

Quantities (liters/kg)				
From - to / Pesticide	Chlorpyrifos	Teflubenzuron	Bio-pesticide (Green Muscle)	Fenitrothion
From Morocco to Madagascar	321,600	-	-	-
From Algeria to Madagascar	30,000	-	-	-
From Algeria to Kenya	7,000	-	-	-
From Mauritania to Madagascar	30,000			
From Malawi to Yemen	-	-	180	-
TOTAL	**388,600**	**-**	**180**	**-**
AVERAGE PER YEAR	**129,533**	**-**	**60**	**-**

Procurement and Delivery Lead time (month) (2013-15)

Pesticide type	Average duration of procurement process (from PR to final award)	Average delivery time to final destination (from PO issuance to receipt of goods)*	Total Average lead time
Chlorpyrifos	2	3	5
Teflubenzuron	2	4	6
Bio-pesticide (Green Muscle)	1	7	8
Fenitrothion	2	5	7

* NB-This is not necessarily in line with FAO requested delivery time

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Pesticide Supply chain

What do countries want to buy?

- Security to avoid impacts of locusts
- Minimal environmental damage from spraying
- Minimal costs of storage and Q/C
- Minimal costs of disposal of obsolete pesticides
- Minimal environmental damage from obsolete

The Right pesticides at Right time, in the Right quantities

ALL at a fair cost

Issues with current procurement process

- Long lead time to supply
  - Ultimate quantities needed are greater
  - Damage from locusts is worse
  - Environmental damage is worse
- Left-over stock that needs to be managed
  - Eventually disposed of at a significant cost
- Irregularity and low value of tenders
  - Discourages manufacturers
    - Fewer suppliers

Exploring other supply chain mechanisms

1. Pesticide Bank (Framework Contract)
   a) AI or Formulated products stored by supplier and delivered within guaranteed short time
2. Product Purchase and return
   a) Supplier takes back unused stocks
3. Trust fund for removal and disposal of obsolete
4. Combinations of all 3
5. Other ideas?

Breakout Groups

- Identify other supply options
- Explore each option
  - Use the pros and cons and questions in the working paper
- Assess each against criteria

Potential criteria

- Encourages supplier to register products
- Shortness of Guaranteed delivery time
- Flexibility in quantity delivered
- Feasible for suppliers
- Confidence that the pesticides will be delivered on time
  - What happens if not delivered?
- Pesticide meets required specification
- Left-over stock minimised
- Empty containers managed
- Left-over stock managed, then disposed of
- Overall cost

Group 1 – Interpretation – German Room

Fac.: Richard Thompson, Mohamed Lemine Hamouny

- Luigi Avella
- M.A. Ould Babah
- Gerard Bod
- Eric Dam
- Qiyomiddin Ganiev
- Furkat Gapparov
- Virginia Gil-Albert
- Keith Jones
- Mohannad Al Majathoub
- Meray Saeed Qahtani
- Paul Roux
- Pedro Serrano
- AbdelRahman Al Shahrani
- Mohamed Al-Shomrani
- Suzanne Swanepoel
- Sergio Vasques
- YongZhen Yang

Group 2 – French – Cuba Room B224

Fac.: Marion Chiris, Harold van der Valk

- Frédéric Baur
- Davide Blancato
- Victor Emile Coly
- Fakaba Diakité
- Corinne Faivre
- Nicolas Gerard

Benoit Gossaert

Rudolf Guyer

Said Lagnaoui

Andrea Lazzari

Ahmed Mouhim

Khaled Moumene

Serge Sebahi

Group 3 – English – Nigeria Room C215

Fac.: Keith Cressman, Jan Breithaupt,

- Mamoon Al-Alawi
- Heruy Asgedom
- Yeneneh Belayneh
- Remco Bod
- Edwin Butler
- Mark Davis
- Hans Dobson
- Eva Erisgren
- Anne Fabiani
- Mehdi Ghaemian
- Greta Graviglia
- Zak Kateeb
- Christiaan Kooyman
- Graham Matthews
- Mahgoub Mousa
- Cristina Proietto
- Timothy Sander

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Stakeholder workshop on the procurement and supply of pesticides for locust control

Equipment & formulation issues

ULV pesticide application

Standards / technical requirements

- FAO minimum requirements & standards for pesticide application equipment
- Evaluations of application equipment for locust control

Any new equipment for ULV application, which meets standards?

Damage to application equipment by ULV insecticides

- Madagascar case – 2014 – use of a teflubenzuron formulation
- Damage to tanks/hoppers of spray aircraft
  - Ecureuil AS 350 helicopter: Simplex hopper in carbon fibreglass
  - Turbo Thrush aircraft: fibreglass/polyester resin hopper

Damage to application equipment by ULV insecticides

Parts of aircraft hoppers "dissolved"

Turbo Thrush aircraft

Ecureuil helicopter

Photos: S. Lagnaoui

Teflubenzuron formulation was analysed

- Found to be "within specifications" (i.e. of supplier)
- Specification concerned a.i., free acid, pH (aqueous dilution), viscosity, density, water
- Specification did not concern co-formulations (e.g. solvents)
  - Note: Also if JMPS specification

Composition of this teflubenzuron 5% UL formulation (SDS information)

- Benzamide, N-[[(3,5-dichloro-2,4-difluorophenyl)amino]carbonyl]-2,6- difluoro- [5.2% (w/w)] = **TEFLUBENZURON**
- N-methyl-2-pyrrolidone (NMP); 1-methyl-2-pyrrolidone [<45%]
- propan-2-ol; isopropyl alcohol; isopropanol [<10%]
- Rape oil [<50%]

- NMP is powerful solvent
- Commonly used in pesticide formulations
- Dissolves/affects e.g.: PVC, polyester, epoxy resins

LABEL:

Spray tanks/hoppers should be made out of polyethylene or polypropylene

UL formulations for locust control

- How to avoid UL formulations for locust control that are incompatible with widely used spray equipment?
- Options (not exhaustive):
  - Establishment of list of co-formulants (in particular solvents) that are incompatible with specific spray equipment
  - Bidder to list all co-formulants (above a critical concentration) as part of FAO bidding document (can be treated as CBI)
  - FAO to indicate, in bidding requirements, the equipment/materials with which the insecticide should be compatible
  - …other?

Drum corrosion with another teflubenzuron formulation

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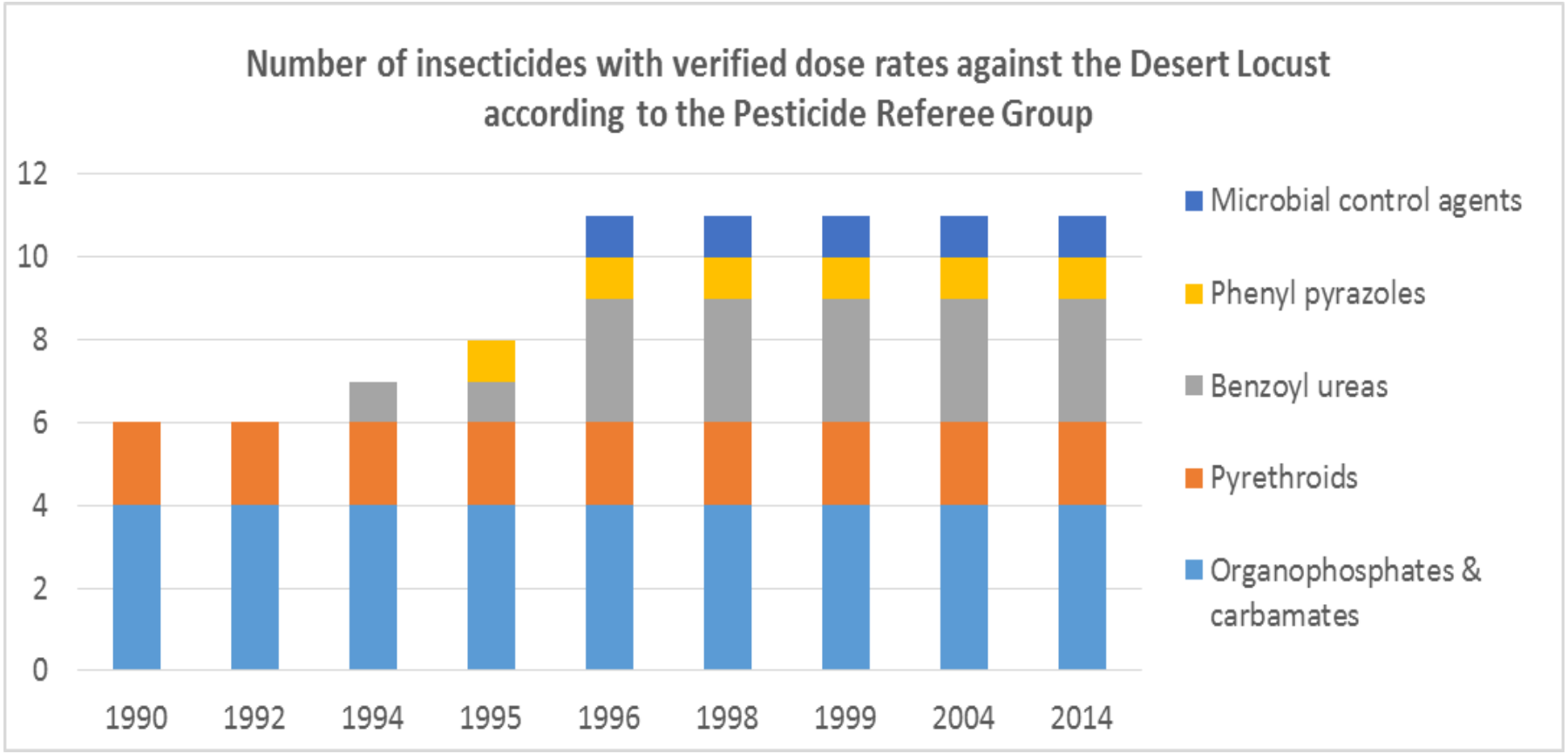
Insecticides for locust control

Introduction

No new insecticides for Desert Locust have been endorsed by the Pesticide Referee Group (PRG) over the last 20 years

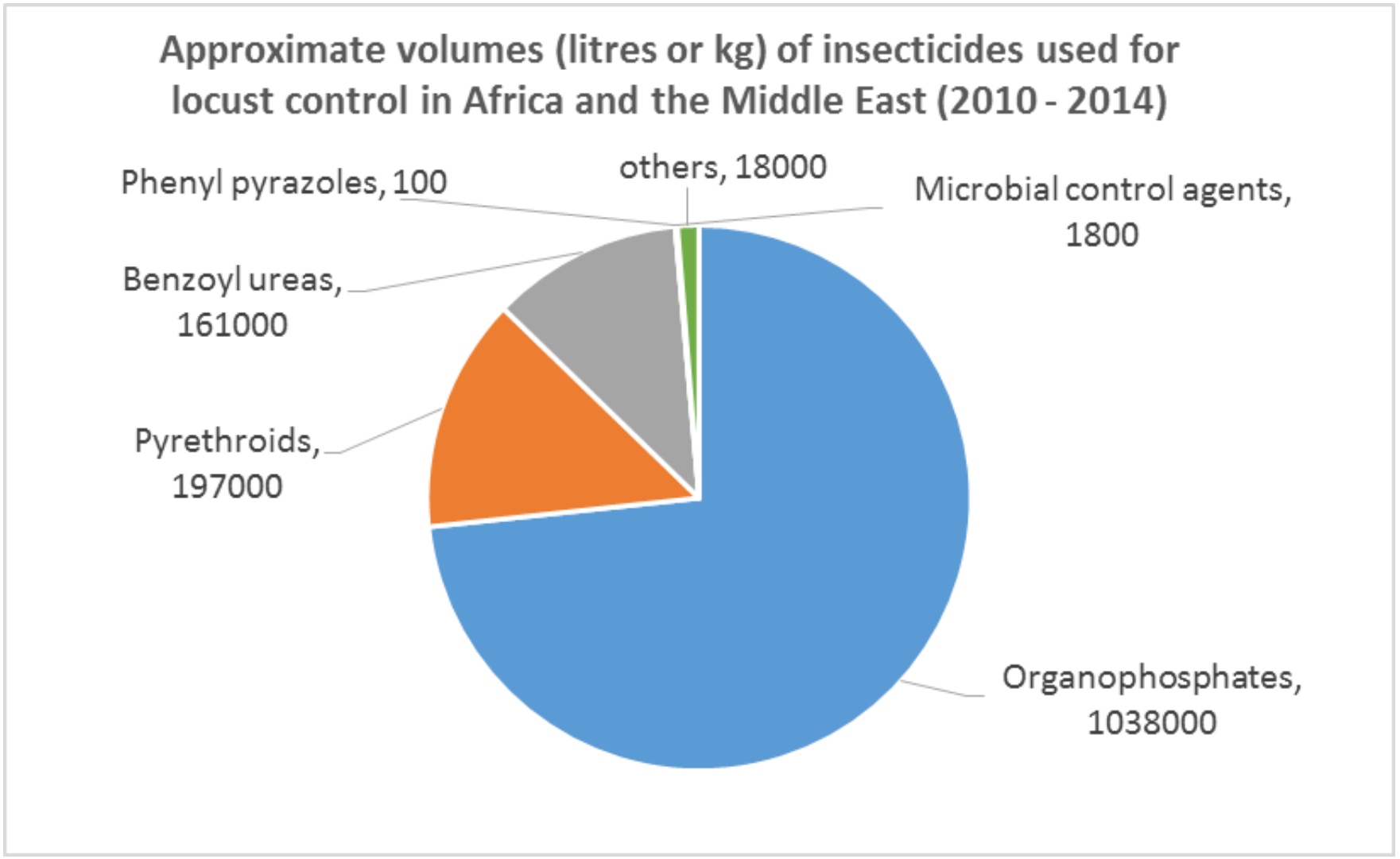


PRG verified insecticides (Desert Locust)

- Bendiocarb
- Chlorpyrifos, Fenitrothion, Malathion
- Deltamethrin, Lambda-cyhalothrin
- Fipronil (barrier)
- Diflubenzuron, Teflubenzuron, Triflumuron
- *Metarhizium acridum*

Some additional insecticides used in the Caucasus and Central Asia

Present use of insecticides



Need for new insecticides

Each of the groups of insecticides has certain constraints, e.g.:

- Organophosphate pesticides have come under increased scrutiny because of human health concerns
- Pyrethroids may result in recovery after knockdown
- Benzoyl-urea IGRs limited to hopper band (larval) control
- Fipronil not available for locust control in Africa
- *Metarhizium* is slow acting and its use is more technically demanding

➔ Need for low risk insecticides having rapid mode of action.

"Ideal" locust control insecticide

➔ Depends on locust target to be controlled

- *Control of recession/outbreak populations, genrally away from cultivated areas*
  - High oral and/or contact toxicity to locusts (to allow low volume application rates of approximately 1.0 L/ha)
  - Moderate persistence on vegetation
  - Low human health risk
  - Low environmental risk (particularly, but not limited to, birds, bees and aquatic organisms)

"Ideal" locust control insecticide

- *Control of swarms and hopper bands, close to or in cultivated areas*
  - High contact toxicity to locusts (to allow low volume application rates of approximately 1.0 L/ha)
  - Low human health risk
  - Low environmental risk (particularly, but not limited to, birds, bees and aquatic organisms)
  - Rapid toxic action, to avoid damage to crops (i.e. knockdown of the insects within 1-2 hours after treatment, without recovery) or swarm movements
  - Low to moderate persistence on vegetation

"Ideal" locust control insecticide

- *Control of hopper bands by barrier treatments, close to or away from cultivated areas*
  - High oral toxicity to locusts (to allow low volume application rates of approximately 1.0 L/ha)
  - Moderate to high persistence on vegetation, but low persistence in soil and water
  - Moderate to high persistence in the insect body, but low bioaccumulation potential in vertebrates
  - Low human health risk
  - Low environmental risk (particularly, but not limited to, birds, bees and aquatic organisms)

Need for new insecticides

Discussion points

- Are insecticides available, or in advanced stages of development, which respond to (part of) the characteristics listed above?
- Have entirely new insecticidal mechanisms been tested on locusts and shown promising results?
- What are constraints for pesticide industry to test the efficacy of new insecticides for locust control?
- What could be the role of FAO in testing new insecticides for locust control?
- What could be done to facilitate and increase the use of biological control agents such as *Metarhizium*?
- Could mixed formulation types (UL/EC ⇨ UF) be appropriate for locust control?