

realIPM

## Bridging the GAP with IPM

Louise Labuschagne The Real IPM Company (Kenya) Ltd



# Pesticides

Green Revolution

Increased food production - in pace with population growth

Competition - pesticide company mergers

Cheap generic chemical products

EUREP GAP - GLOBAL GAP - Natures Choice - Field to Fork -  
LEAF - BASIS etc = Accountability for pesticide use



# Pesticide Residues

## EU Pesticide Legislation

Maximum Residue Limits (MRL)

Limit of Determination (LOD)

Banned Pesticides List

Annex 1

## Retailers restrictions

M&S Red and Amber Lists

Fair Trade - banned pesticides List

Zero Residues - intense competition/pressure UK retailers



# Integrated Pest Management

IPM in EUREP GAP and Fair Trade - non prescriptive

*'where technically feasible'*

*'Establish balance between environmental protection and business results'*

*'ICM minimises the use of fertilisers and pesticides - partially and gradually replaces them with organic fertilisers and biological disease control'*

Few commercial examples - cost effective bio control in IPM

Protected salads, soft fruit ...

Remaining 'essential use' - pesticides

Soil sterliants, foliar diseases, nematicides etc



# Commercial IPM

Most growers use *Good Agricultural Practice (GAP)*  
implementation - wide range of achievement

'Real' IPM is more than *GAP*

Cost-effective replacement of chemicals with  
biological controls (with support from *GAP*)

Barriers to 'Real' IPM

High cost of biological control agents

Lack of experience - unable to measure risk

Lack of experienced technical support



# Commercial dilemma retailers

EUREP /GLOBAL GAP developed by retailers - reduce risk

Pesticide issues remain strong consumer issue

Limiting pesticide use - may affect yield and quality

BCAs major tool in protected salads - cost effective

Fewer examples BCAs on outdoor crops



# IPM – the next 12 months

IPM - immediate and intense commercial focus all crops

UK Retailers - demanding 50% reduction in pesticides in flower crops  
within 2 years

UK Retailers - positioning suppliers for 'branded' low pesticide inputs

Marks and Spencer's Policy - clear guidance

Amber and Red Lists - prohibited pesticides

Encourage increased use of BCAs

Pesticide Reduction Network

IPM - an issue growers can no longer avoid - not PR anymore

# The Real IPM Company (Kenya) Ltd

Training, Consultancy, mass production and supply BCAs

Based in Thika, Kenya - on Equator AYR growing conditions

Dr Henry Wainwright and Louise Labuschagne - sole proprietors

Phytoseiulus (predator of spider mite)

Trichoderma (beneficial fungus - soil and foliar diseases)

AND root knot nematode

Metarhizium, Amblyseius cucumeris, Thripline + physical controls

Orius

Encarsia + physical controls and trap plants

Aphidius (parasite of aphids)

Cryptoleamus (predator of mealybugs, scale and aphids)



# Consultancy

Employ 90 staff - 5 agronomists, international consultancy and training.

Kenya, Ethiopia, Tanzania, Uganda, Rwanda, Zambia, Zimbabwe, South Africa, Mozambique, Madagascar, Ghana

Ecuador and Brazil

India and Malaysia

United Kingdom

Lebanon, Afghanistan, .....Gaza



# Collaboration



Syngenta Bioline (UK)

Andermatt Biocontrol (Switzerland)

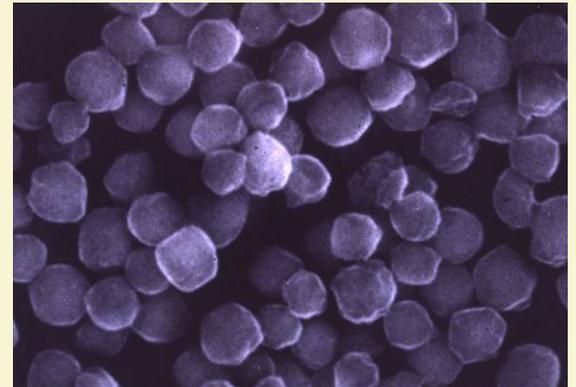
Central Science Laboratories (UK)

International Institute of Tropical Agriculture - Uganda, Benin

Kenyan Agricultural Research Institute

Kenya Biologics - baculoviruses for caterpillars

COMMERCIAL GROWERS



# The Real IPM - Training

BASIS and FACTS

IPM Field Skills

Safe use of Pesticides

EUREP / GLOBAL GAP

Health and Safety

Post Harvest Management

Training of Trainers

Training in Real IPM Product use - integral to Product



# Reduction of pesticides in roses



Ornamentals perceived as 'impossible' - pesticide free

50 - 60% of all chemical applications to roses for..

spider mite

Real IPM and World Flowers - active replacement policy

Oserian Development Company - 200 ha roses & carnations

WILL eliminate all pesticide use for mites, by end 2008

Real IPM customer base Kenya - 400 ha (20%)

Reduced costs/yr, increased yield and quality



# Spider mite damage



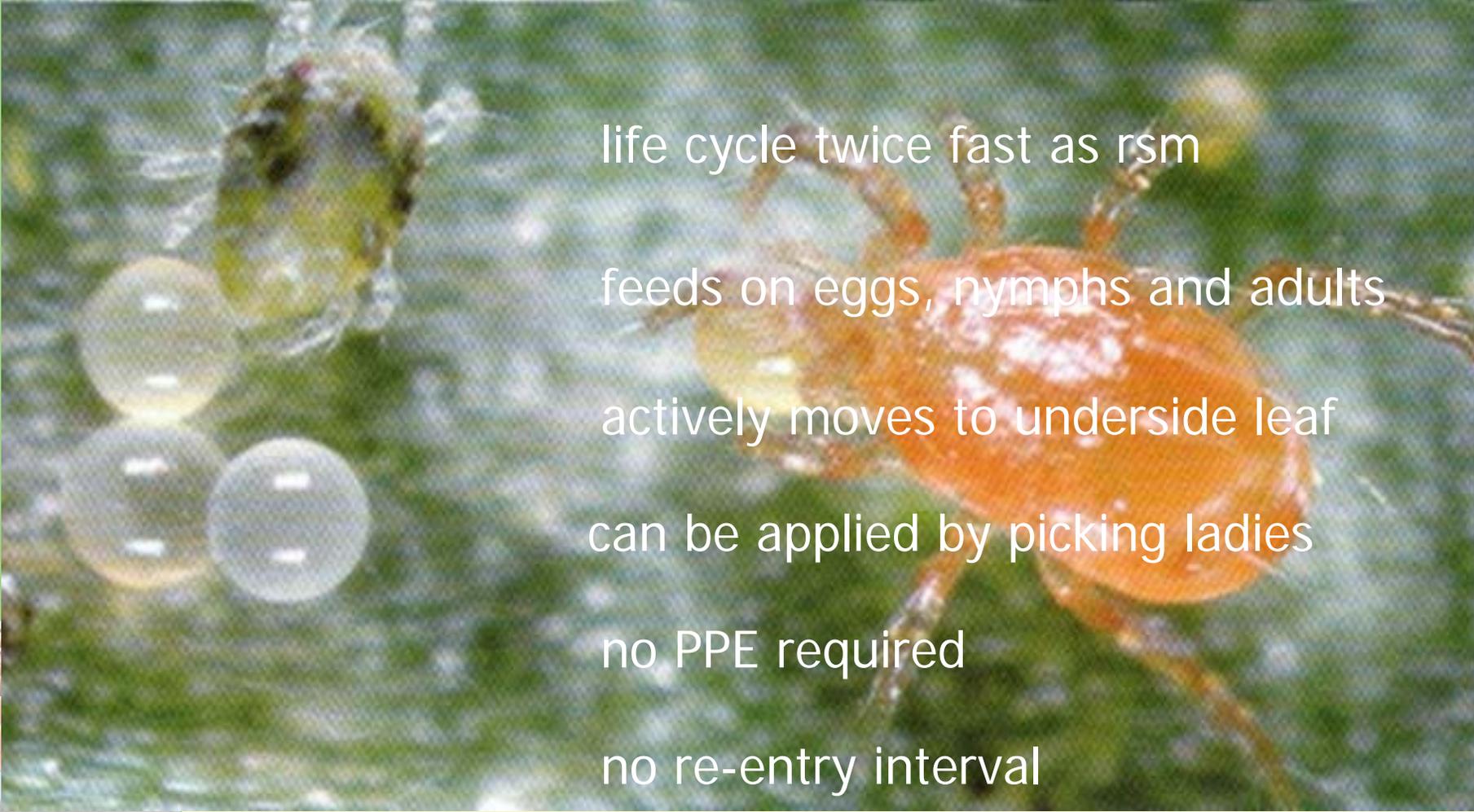
speckled feeding damage on leaves and sepals of flowers



mites create webs and in high pest populations this can be serious

leaf drop will occur if not controlled

# Advantages of Phytoseiulus



life cycle twice fast as rsm

feeds on eggs, nymphs and adults

actively moves to underside leaf

can be applied by picking ladies

no PPE required

no re-entry interval

# BASIS Project results

## Chemical Plot

		Week							
		1	2	3	4	5	6	7	Diff wk1-7
Stems		200	270	172	86	59	189	107	1083
Length	cm	69.2	68.9	72.2	70.3	70.7	62	63.8	-7.8%
Weight	g	30.8	30.9	28.2	28.2	27.7	26.9	27.4	-11.0%
Bud Ht	mm	37.2	36.9	40.3	36.6	36.5	35.6	33.5	-9.9%

Ref: Sean Finlayson - Rose Production Manager

# BASIS Project results

		1	2	3	4	5	6	7	
Stems		157	65	180	132	114	173	188	1009
Av. Length	cm	67.8	67.7	67.9	67.5	73	67.9	69	1.8%
Av. Weight	g	29.6	29.5	28.9	28.3	29.7	30.2	32.6	10.1%
Av. Bud Ht	mm	36.5	35.8	38	37.5	36.6	38.2	37.6	3.0%



# Bridge the cost GAP

Real IPM (Kenya) Ltd and Kenyan Rose growers

Use of Phytoseiulus to replace acaricides

TRAINING - Real IPM strategy - SCOUTING

Innundative release eliminate mites in 6 - 8 weeks

1 - 2 million Phytoseiulus /ha in one application

Half the cost of acaricides

Subsequent maintenance programme very low cost

50 - 70% reduction in overall pesticide use

Meets audit /customer requirements < pesticide

20% increase in yield

10 cm increase stem length

FUTURE: no market for acaricides in flower crops



# Whitefly and Leafminer in melons

UK supermarkets put AgriFamosa and Real IPM together

Leafminer - extensive damage - not controlled by pesticides

Reduced yield and quality (<sugar levels)

Field Consultancy - development of IPM strategy

Implemented compatible spray programme

Developed quantitative scouting

Re-cycled and re-distributed local parasitoid wasp

Technology Transfer - mass rear Diglyphus and Encarsia



# Whitefly and Leafminer in melons

## Field Nursery crops - Real IPM Strategy



Millions of pest can breed in crops by end of harvest

No sprays permitted during harvest

Millions move to adjacent small crops when crop uprooted

## CONVERT 'problem' to an Advantage

Breed Diglyphus and Encarsia in the crop during harvest period

Crop without melons = host plant for parasitoids

Harvest parasitoids - or allow to migrate to new crops



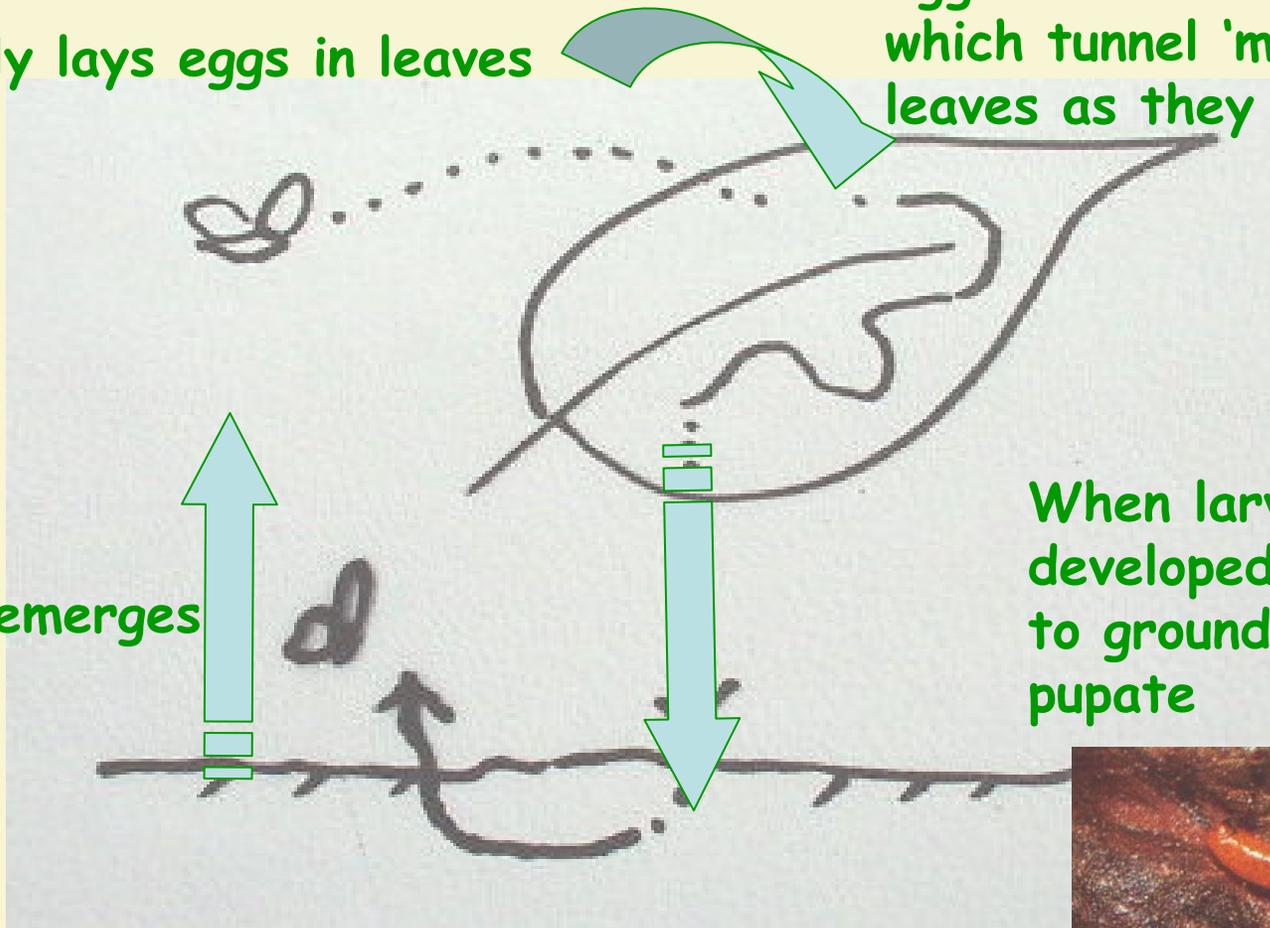
# Life cycle - leafminer

Adult fly lays eggs in leaves

Eggs hatch into larvae which tunnel 'mines' in leaves as they feed

Adult fly emerges from soil

When larvae fully developed it drops to ground to pupate



# Biological control of leafminer



*Diglyphus isaea*

Indigenous parasitic wasp

Mass reared internationally

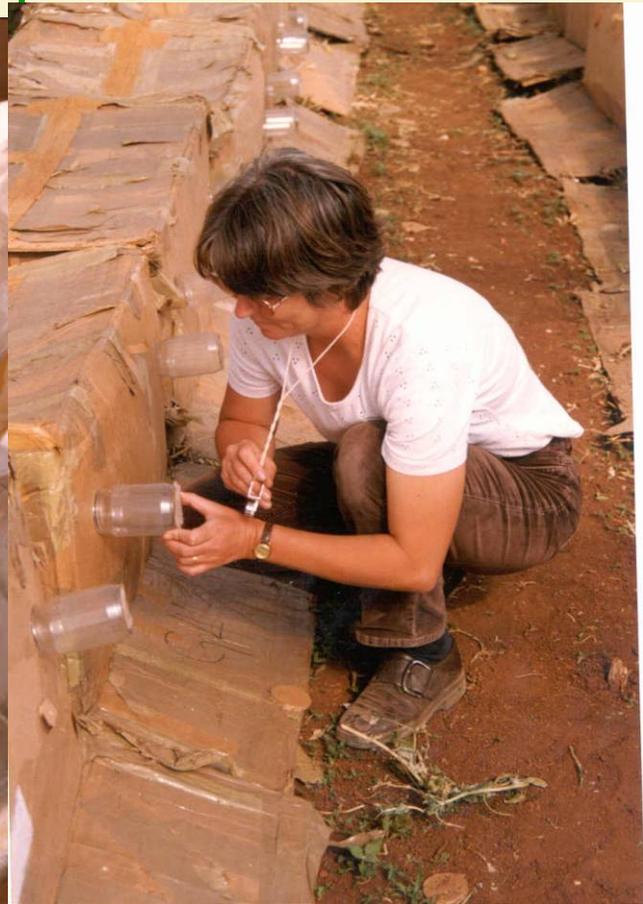


Lays eggs in leaf miner  
'mines' (on top of leafminer  
larvae)

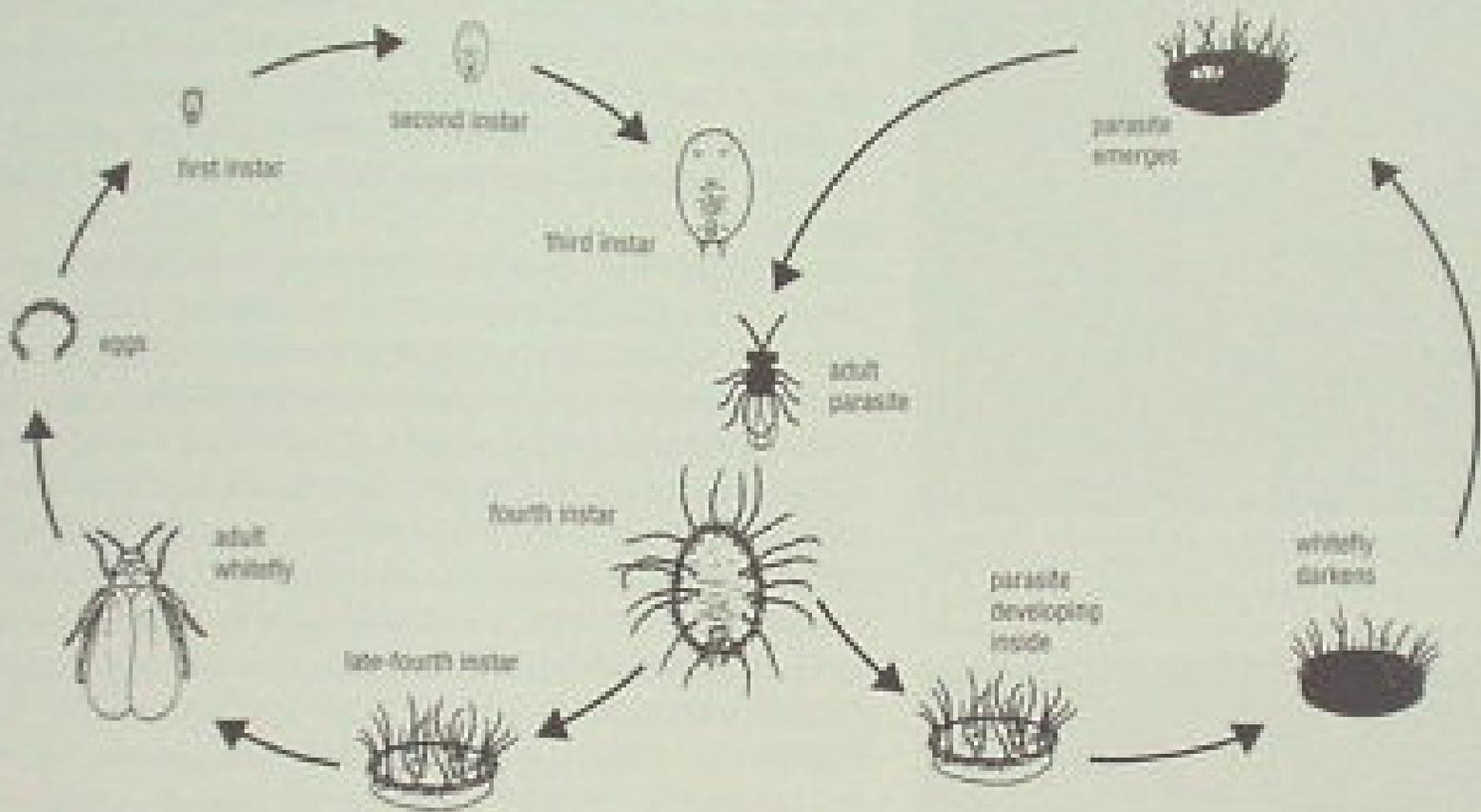
More effective than  
pesticides.

# Diglyphus isaea

Why is anyone in the world using pesticides for leafminer?



# Life cycle – whitefly and Encarsia



White fly

Encarsia

realIPM

© The Real IPM Company  
Thika, Kenya

# Encarsia adult and scales



# Whitefly and Leafminer in melons

Whitefly cannot fly when cold (at night)

If crop removed when cold - NO MIGRATION

Starch sprays prevent scales (larvae) from hatching

Can be integrated with Encarsia parasitic wasp

Innovator - Robert Pickford - ex Humber Growers



# Bridge the cost GAP



Real IPM (Kenya) Ltd and Agri Famosa (Brazil)

Environmental Awards from Customers in UK

Control of leafminer in outdoor melons (90 ha/wk)

Removed sticky traps - catch parasites too

Use only compatible pesticides

Recycle parasites from parasitised leaves

Re-apply to younger crops

Set up small scale mass rearing on-farm

Use older crops as 'Nursery' for rearing parasite

FUTURE: no market for pesticides for leafminer



# Biological Control

Large international bio control mass producers

BUT...expensive

BUT...primarily greenhouse crops

BUT...full impact on pesticide use not achieved

Smaller biocontrol producers on Equator potentially more impact

Lower production costs - labour, heat, light

KENYA: application rates roses 2 million predatory mites/ha - EU prices £8,000

KENYA: application rates legumes 12,000 Diglyphus/ha - EU prices £1,200



# Support for Real IPM

EU Pesticide Initiative Programme

DFID Crop Protection Programme

USAID - Kenyan Horticultural Development Programme

USAID - Agribusiness Trade Expansion Activity (Ethiopia)

Stockpiles Programme - WWF, UNDP, WHO

Kenyan Flower Industry

Kenyan Vegetable Industry

African Agricultural Capital

GROWERS



Make IPM Really Work

[www.realipm.com](http://www.realipm.com)

