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)
- Cryptoleanus (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 of leaf
- Can be applied by picking ladies
- No PPE required
- No re-entry interval
# BASIS Project results

## Chemical Plot

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Ref: Sean Finlayson - Rose Production Manager
### BASIS Project results

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Bridge the cost GAP

Real IPM (Kenya) Ltd and Kenyan Rose growers

Use of Phytoseiulus to replace acaricides

TRAINING - Real IPM strategy - SCOUTING

Inundative 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

© 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

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