

How farmers' apply Biocontrol Technologies

Wouter van den Bosch
23 January 2020
Brussel





van den **Bosch**
KWEKERIJ



COMPANY PRESENTATION KWEKERIJ VAN DEN BOSCH

*Door Jaco en wouter van den
Bosch*

Family business

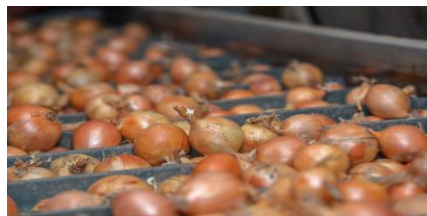
Bleiswijk
The Netherlands

Long family tradition

- Farm
- Crisis during the 30's
- Wim van den Bosch
 - Orchard
 - First greenhouse
- Jaco van den Bosch
 - Substrate
 - Eggplant
 - Sweet pepper
- Wouter and Jaco van den Bosch
 - Algae
 - Black berries in greenhouse
 - Year-round Black berries with artificial light



Welcome at the Dutch F&V sector!



The Netherlands: global player



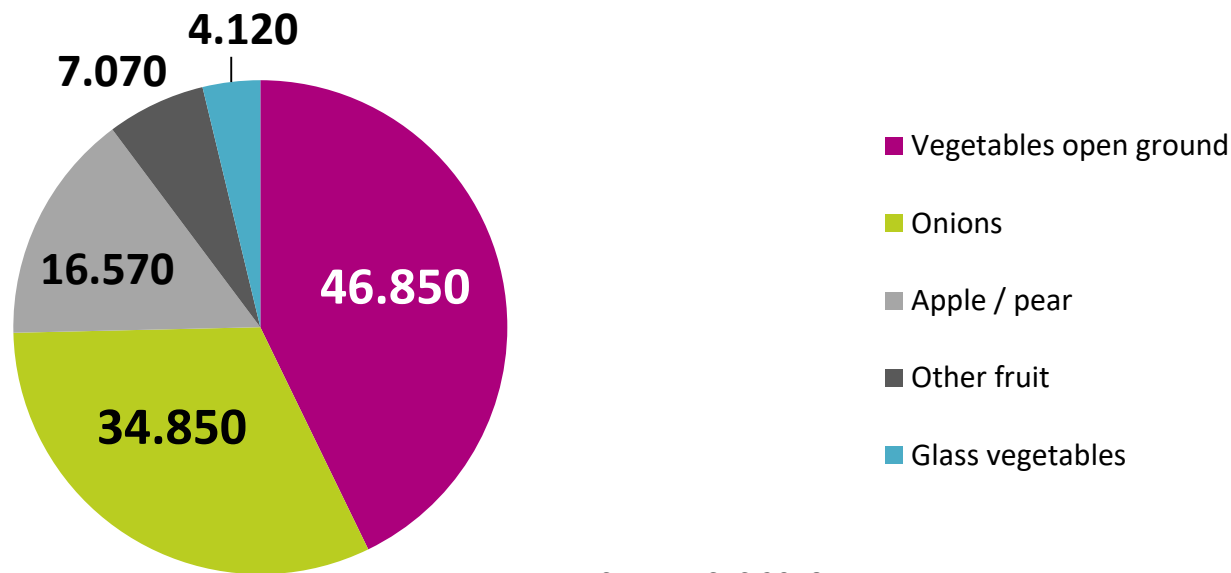
Dutch Growers



Growing of fruit and vegetables in NL In hectares

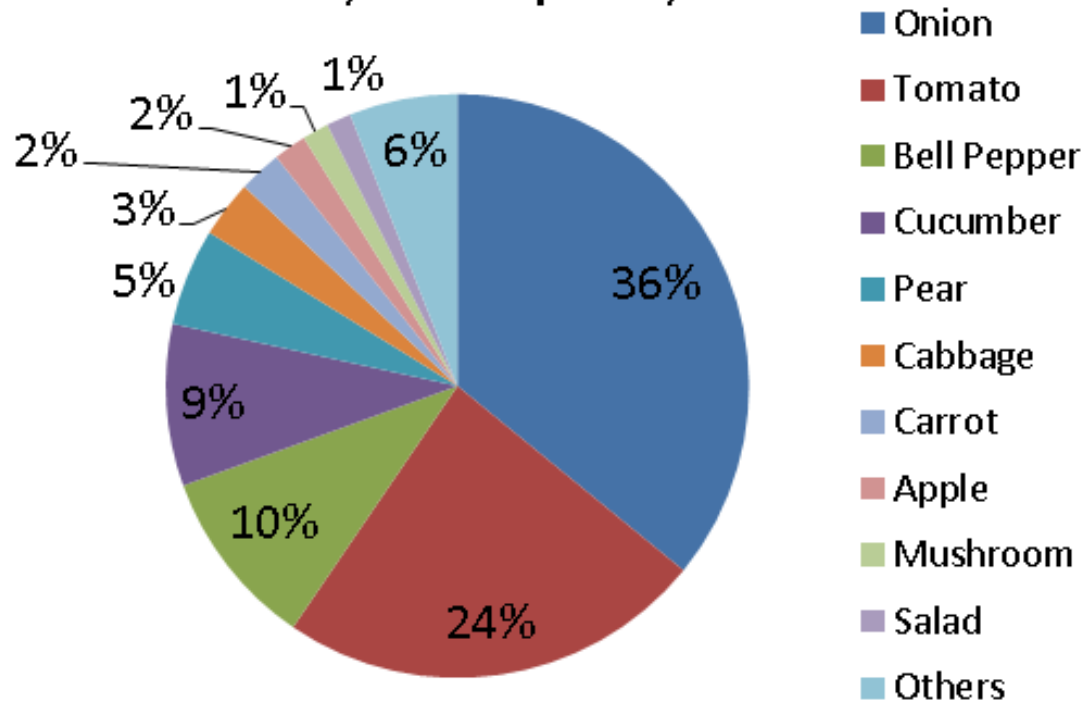


Total +/- 110.000 ha



Source: CBS 2018

Export fruit & vegetables Dutch origine in 2017; total export 3,2 billion kilo



IPM Control



Systems in greenhouse cultures

Integrated Pest Management IPM

- Directive 2009/128/EC
- Use as much as possible non-chemical methods and keep the pesticide-input for pest management as low as possible
- Goal: lowering the environmental impact
- General principles of integrated pest management → 8 steps



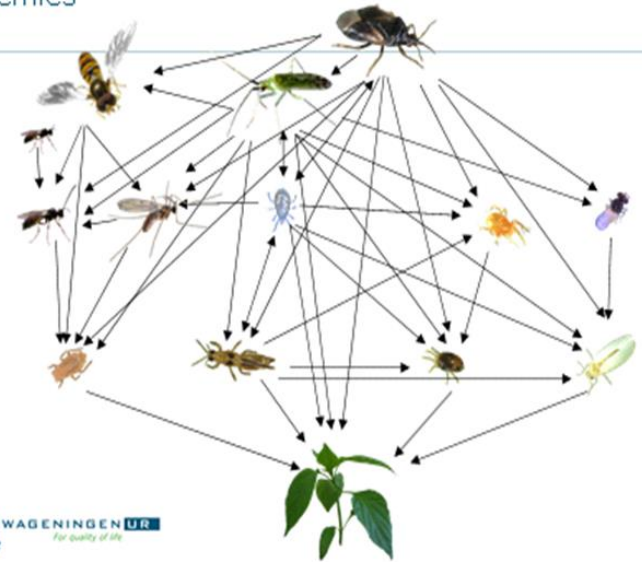
Integrated Pest Management in 8 basic steps



Sweet peppers

- Pests: aphids, thrips, spider mite and white fly
- Successful IPM system, based on parasitic wasps, predatory mites and predatory bugs
- Specific Plant Protection Product required in IPM

A food web with 4 pest species and their natural enemies



IPM: step 1

Prevention

- Hygiene
- Pest free starting material
- Resistant / tolerant crops
- Adequate cultivation techniques;
 - » Irrigation, fertilization, climate
- Basic: clean, healthy, strong crop
- Prevention better then cure
- Pests and diseases
- Creating a standing army



IPM: step 2

Monitoring

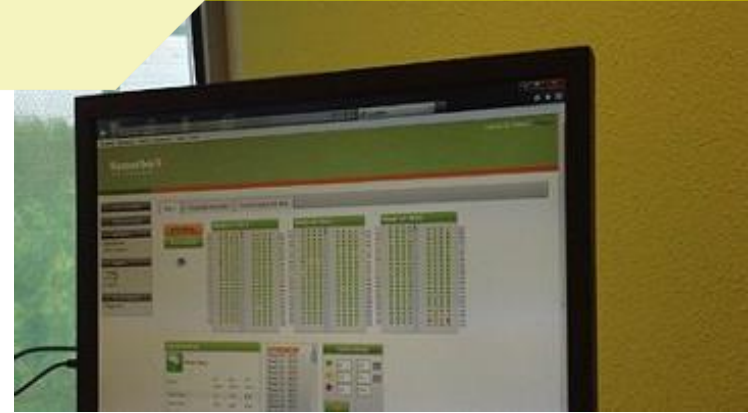
- Signal plates
- Observations in the field
- Early diagnosis system
- Pests and diseases
- Biological / natural enemies



IPM: step 3

Decision

- Based on the results of the monitoring
- Monitoring 'the sooner the better'



IPM: step 4

Sustainable biological, physical and other non-chemical methods



IPM: step 5 & 6

Use pesticides as specific as possible & limit to the necessary level

Neveneffecten		ADMIRAL pyriproxyfen		ADMIRE imidacloprid		CALYPSO thiacloprid		CLOSER SC sulfoxaflor (=isoclast)	GAZELLE acetamiprid	
		SP	SP	AG	SP	AG	SP	SP	AG	
Bombus terrestris NATUROL	kolonie	△	X	X					○	○
	populatie				1	1				
	nawerking	0 d	30 d	30 d	0 d	0 d			0 d	0 d
Encarsia formosa	populatie		4	4					4	4
	adult	1			3	3				
	larve				1	1				
	pop	4								
	nawerking	0 w	> 12 w	> 12 w					8 - 12 w	8 - 12 w
Eretmocerus eremicus	adult	2			3	1			3	
	larve				1	1			3	
	pop	3								
	nawerking					0 w				
Macrolophus pygmaeus	populatie							3		
	adult	1	1	3	4	1			3	3
	nimf	1	2	2	2	1			3	3
	nawerking	0 w		4 - 6 w					2 w	

side effects



IPM: step 7

Anti-resistance strategies



IPM: step 8

Learn and optimize



IPM = Green Challenge



Pest control in balance
No environmental impact
Excellent quality fruit & vegetables

IPM can only exist and be successful with a sufficient toolbox:

1. Bio toolbox

- More robust system
- New biological products (microbials)
- New predators
- Low risk products, basic substances
- Speed up the process of legislation

But: some occurring diseases cannot be dealt in IPM yet
e.g. stinkbug in bell pepper



IPM can only exist and be successful with a sufficient toolbox:

2. Chemical toolbox

- Plant Protection Products (PPP) for correction in the IPM system
- Legislation of biocides for cleaning the greenhouse and tools
- Reduction of active substances and PPP's reduces successful IPM

Support the Minor Uses Facility and a sustainable Integrated Pest Management => combination of biological, chemical and technology !





THANK YOU

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