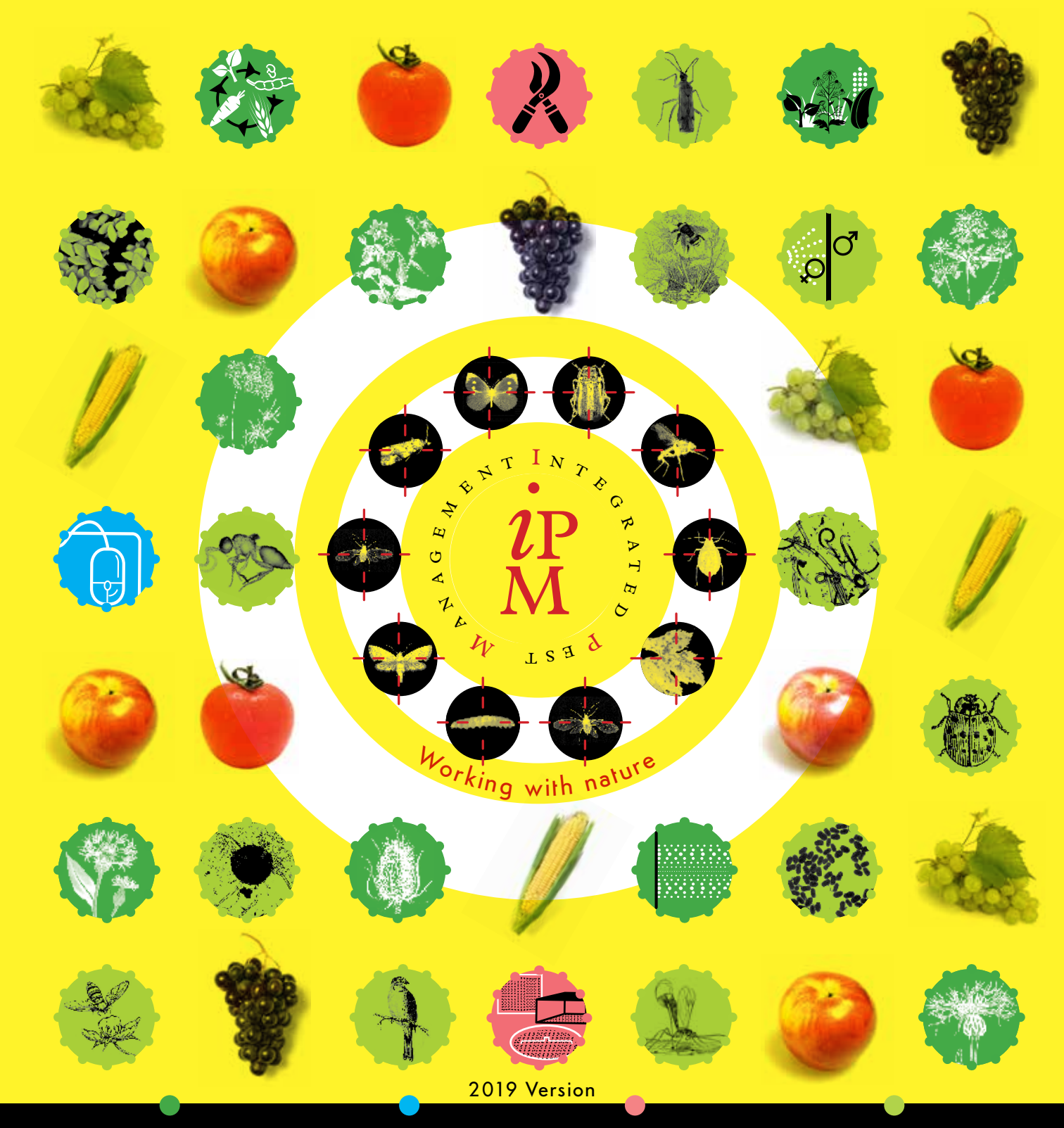


2019 Version

International Organisation for Biological Control

Reducing the dependence of agricultural production on synthetic pesticides and promoting the principles of IPM have long been central goals for the International Organisation for Biological and Integrated Control (IOBC-WPRS)

Although challenges remain, combined research efforts of scientists and innovative approaches of farmers and farm advisors have already produced inspiring success stories. New biocontrol solutions are becoming increasingly available and being strategically combined with other tools of plant health management. To help solve persistent constraints, the IOBC community is committed to address issues pertaining to research as well as providing expertise to farmers, the agricultural supply and value chains and policy makers.

WWW.IOBC-WPRS.ORG

International Biocontrol Manufacturers' Association

International Biocontrol Manufacturers Association (IBMA) and its members passionately believe in delivering innovative and effective biocontrol technologies having low impact on human health and the environment while allowing the farmers to grow healthy, productive and profitable crops. Biocontrol manufacturers develop these modern solutions to ensure more sustainable agriculture for future generations. These tools fit perfectly into the system-based approach proposed for modern agriculture under the SUD to be used as a first resource when intervention to manage pest populations is required. Examples of these technologies used in practice in an IPM system are shown in the exhibited posters and demonstrate that biocontrol is a reality both in horticulture and agriculture.

WWW.IBMA-GLOBAL.ORG

Pesticide Action Network Europe

Pesticide Action Network (PAN)'s mission is to replace hazardous pesticides with sustainable alternatives.

PAN EUROPE and its members have for decades been calling for the development of an EU legislation on the use of pesticides, and we were closely involved in the birth of the Sustainable Use Directive (Directive 2009/128/EC).

However, since this directive was adopted in 2009 little has been done to ensure proper implementation. We hope our joint work with IOBC and IBMA can help to ensure a better uptake of the many alternatives already on the market, particularly where there are huge differences in uptake between sectors, countries and farmers.

PAN Europe is with our European Citizen's Initiative on "save bees and farmers" calling for a pesticide free future by 2035.

WWW.PAN-EUROPE.INFO

With the exhibition

INTEGRATED PEST MANAGEMENT: WORKING WITH NATURE

International Organisation for Biological Control (IOBC-WPRS), International Biocontrol Manufacturers Association (IBMA) and Pesticide Action Network Europe (PAN Europe) wish to illustrate what Integrated Pest Management (IPM) means, and how the Sustainable Use Directive should be implemented.

These 11 plates form a touring exhibition of large-scale panels that have been shown in various locations.

The examples provided on the posters are used in practice on a large area in a variety of countries. They illustrate a small number of agronomic practices, methods and applications of biocontrol technologies available to European growers and farmers.

Biological solutions have been developed for various sectors, from greenhouse crops to orchards, vineyards, vegetables, ornamentals, and arable crops. The use of biocontrol technologies is rapidly growing worldwide and innovative research in institutes and companies, together with the provision of digital services, is continuously delivering new tools and methods. The future of IPM with these new tools, combined with good agronomic practice (including longer crop rotations, cover crops, buffers strips, hedges, trees..), can enhance ecosystem services and enable a sustainable agriculture, thus increasing biodiversity, delivering safe food for the growing human population, while ensuring a fair income for farmers.

PLATES

Agronomic practices · Monitoring · Physical control · Biological control

The EU Directive states clearly on sustainable use of pesticides (Directive 2009/128/EC):

Member States shall take all necessary measures to promote low pesticide-input pest management, giving wherever possible priority to non-chemical methods, so that professional users of pesticides switch to practices and products with the lowest risk to human health and the environment among those available for the same pest problem.

This Directive commits Member States to encourage the development and introduction of integrated pest management (IPM), specifying in Annex III what this means, illustrated on the opposite page.

Member States are obliged to decide which of these instruments they will ask farmers to apply as mandatory rules (so-called general principles of IPM), and which instruments they will ask farmers to apply on a voluntary basis (so-called crop specific principles of IPM).

The report on the implementation of the Directive 2009/128/EC on the Sustainable Use of Pesticides (SUD) dated 21st October 2009, which was prepared by the European Commission and sent to the European Parliament and the Council on the 10th October 2017 (COM(2017) 587 final), among other things concludes:

Integrated Pest Management is a cornerstone of the Directive, and it is therefore of particular concern that Member States have not yet set clear targets and ensured their implementation, including for the more widespread use of land management techniques such as crop rotation …. the Commission will support the Member States in the development of methodologies to assess compliance with the eight IPM principles, taking into account the diversity of EU agriculture and the principle of subsidiarity.

DIRECTIVE 2009/128/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL
ESTABLISHING A FRAMEWORK FOR COMMUNITY ACTION TO ACHIEVE THE SUSTAINABLE USE OF PESTICIDES

General principles of integrated pest management

1. The prevention and/or suppression of harmful organisms should be achieved or supported among other options especially by:
   - crop rotation,
   - use of adequate cultivation techniques (e.g. stale seedbed technique, sowing dates and densities, under-sowing, conservation tillage, pruning and direct sowing),
   - use, where appropriate, of resistant/tolerant cultivars and standard/certified seed and planting material,
   - use of balanced fertilisation, liming and irrigation/drainage practices,
   - preventing the spreading of harmful organisms by hygiene measures (e.g. by regular cleansing of machinery and equipment),
   - protection and enhancement of important beneficial organisms, e.g. by adequate plant protection measures or the utilisation of ecological infrastructures inside and outside production sites.
2. Harmful organisms must be monitored by adequate methods and tools, where available. Such adequate tools should include observations in the field as well as scientifically sound warning, forecasting and early diagnosis systems, where feasible, as well as the use of advice from professionally qualified advisors.
3. Based on the results of the monitoring the professional user has to decide whether and when to apply plant protection measures. Robust and scientifically sound threshold values are essential components for decision making. For harmful organisms threshold levels defined for the region, specific areas, crops and particular climatic conditions must be taken into account before treatments, where feasible.
4. Sustainable biological, physical and other non-chemical methods must be preferred to chemical methods if they provide satisfactory pest control.
5. The pesticides applied shall be as specific as possible for the target and shall have the least side effects on human health, non-target organisms and the environment.
6. The professional user should keep the use of pesticides and other forms of intervention to levels that are necessary, e.g. by reduced doses, reduced application frequency or partial applications, considering that the level of risk in vegetation is acceptable and they do not increase the risk for development of resistance in populations of harmful organisms.
7. Where the risk of resistance against a plant protection measure is known and where the level of harmful organisms requires repeated application of pesticides to the crops, available anti-resistance strategies should be applied to maintain the effectiveness of the products. This may include the use of multiple pesticides with different modes of action.
8. Based on the records on the use of pesticides and on the monitoring of harmful organisms the professional user should check the success of the applied plant protection measures.

21 October 2009

ANNEX III

Agronomic practices — Monitoring — Physical control — Biological control

Farmers around Europe have provided testimony to the many successful examples of IPM in horticulture, specialty and arable crops. These farmers have all been able to significantly reduce their pesticide dependency by introducing systems approaches to farming based on sound agronomy and enhancing the natural control methods while maintaining a fair income for the farmers in question.

Often a parish leader farmer may try a new approach which is then increasingly adopted by other farmers throughout the locality, using information shared at local meetings to learn best practice from each other.

These examples show that pest control using alternative techniques is both technically possible (see farmer statements from The Netherlands and Switzerland) and economically viable (see farmer statements from France).

The links to the videos below provide good examples of the IPM approaches and the farmers clearly state the benefits.

PAN Europe: www.low-impact-farming.info
IBMA: www.youtube.com/channel/UCzHjW-E5_-8gDl6IqZwQ7Lw

"...we ended up being invited to a couple of meetings at the Gorsem Agricultural Research Centre

that was around 1988... That was when my opinion changed completely. Over the past 30 years

"France Cereals and oilseed rape The financial results have been satisfactory"

our company has managed to voluntarily reduce pesticide use by 90%"

"The Netherlands Buffer strips In the past 10 years I have not used

sprays against aphids on potatoes, sugar beets or cereals"

"Switzerland Vineyards Grape moth attack in vineyards managed by confusion

are less than in vineyards under conventional programmes"

Agronomic practices | Monitoring | Physical control | Biological control

IPM Triangle

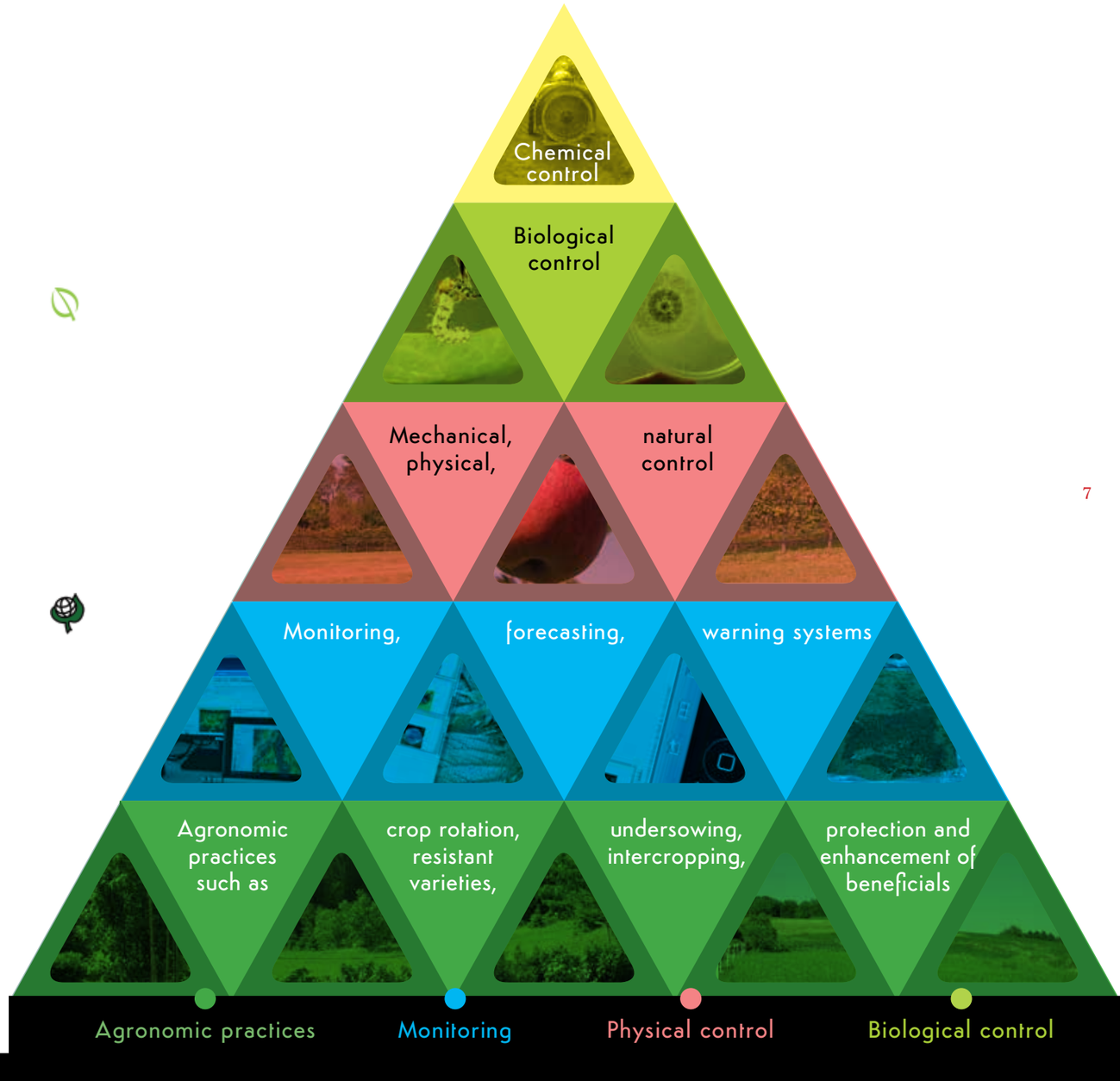
The general principle of IPM is that the prevention and/or suppression of harmful organisms should be achieved or supported especially by alternatives to synthetic chemical pesticides. Similarly to the "food pyramid", which represents the optimal number of servings to be eaten each day from each of the basic food groups to stay healthy, the IPM tools can be displayed as a triangle.

Annex III of the Directive 2009/128/EC which aims to achieve a sustainable use of pesticides explains Integrated Pest Management (IPM) by saying:

> *"The agronomic practices — crop rotation, use of adequate cultivation techniques, use of resistant/tolerant cultivars and standard/certified seed and planting material, use of balanced fertilisation, liming and irrigation/drainage practices, preventing the spread of harmful organisms by hygiene measures, protection and enhancement of important beneficial organisms, utilisation of ecological infrastructures inside and outside production sites — represent the fundamentals of a healthy crop.*
>
> *Warning, monitoring and forecasting systems and early diagnosis represent the second step to estimate the risk of crop damages or losses in order to optimise the use of the control measures.*
>
> *When an intervention is justified sustainable biological, physical and other non-chemical methods must be preferred to chemical methods.*
>
> *The synthetic chemical pesticides represent the last choice to be used by farmers. The choice of the best active ingredient to be used should be made trying to minimise the risk for the environment."*

There is a constant need for improvement and development of IPM and the development of tools in the IPM triangle and the examples in this booklet aim to provide inspiration and knowledge to improve and extend the use of IPM programmes.

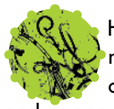
IPM is an integrated approach to be implemented in a stepwise manner, moving towards more and more agro-ecological based production methods, including longer terms crop rotations, cover crops, landscape elements such as buffer-strips, hedges and even trees to attract predators and pollinators, thus moving away from killing pests and towards a pest management approach.



Diabrotica Virgifera Virgifera

Diabrotica virgifera virgifera, known as the corn rootworm (WCR) is an important pest of maize, occurring in North America, whose soil-inhabiting larvae can seriously damage roots of maize and lead to yield losses. It was accidently introduced in the 1990s into Serbia. As an invasive quarantine pest in Europe it is slowly spreading to other parts of Europe. It poses a serious threat to maize farmers and control of this species is difficult and expensive, resistance to chemicals being one of the problems.

HETERORHABDITIS BACTERIOPHORA



Heterorhabditis bacteriophora is a parasitic nematode of various insects. It usually lives off soil-dwelling stages of insects like larvae and pupae. It can actively search its host insects and invade them through natural openings. Once inside the insect larvae it releases a symbiotic bacteria that causes the insect to become diseased and ultimately kills it. New nematodes are produced inside the insect larvae and once developed they leave the insect body in search for new hosts. They can be applied by drenching or spraying to soil and other areas where the pest lives. They are safe to other non-target animals and humans.

CROP ROTATION

WCR damage to maize in Europe is only a risk where continuous maize cropping is practiced, especially when maize cropping is prolonged for several years. However, economic damage only occurs in areas with high WCR populations. Where maize is rotated, WCR populations are usually held below the economically-important threshold and there is little risk of significant crop damage. Therefore, IPM for WCR should be based on systematic rotation of crops and supported by information on pest development and population levels as stated by the Directive 2009/128/EC and confirmed by the Recommendation 2014/63/EU (on measures to control Diabrotica virgifera virgifera Le Conte in Union areas where its presence is confirmed). Any crop apart from maize is suitable for breaking the WCR cycle. One year with a crop apart from maize means two years of WCR prevention in a field. In year 1 after continuous maize, the non-maize crop does not allow larvae development (larvae can significantly develop on maize roots only) so that no beetles emerge from the field; in year 2, again, very few beetles can emerge from the considered field since in year 1 female beetles (possibly coming from other fields) should not have laid eggs in a non-maize crop.

Agronomic practices | Monitoring | Physical control | Biological control

Cydia Pomonella

Cydia pomonella, known as codling moth is a pest of many tree fruits that lay eggs on fruits, and notably apples, and which, when hatched out, reveal larvae that feed on the fruit's flesh and seeds. Originated from Eurasia, it spread through the development of orchards in Europe and later in the Americas. However, Cydia pomonella has developed resistance to several insecticides. A combination of different techniques can ensure an efficient control of the population.

NON-CROP VEGETATION

Manipulating farm habitats make them less favourable for pests and increase the occurrence of beneficial insects. Techniques can be used in apple orchards to manage Cydia pomonella also known under the name of codling moth (as well as green apple aphid and rosy apple aphid). Non crop vegetation consists of growing two or more crops in the same location. Alongside the establishment of herbaceous strips in orchards this practice can affect insect behaviour and favour biological control by promoting natural enemies. This has been demonstrated by growing selected flower species in the inter-row, resulting in reduced damage by codling moth. Flowers attract natural enemies of codling moth providing them with nectar and pollen. Several years may be needed to build up an efficient population of natural enemies. Herbaceous strips with flowering plants can also favour biological control agents of other pests occurring in apple orchards, which use pollen as alternative food to their primary prey.

For further information see among others Cahenzli et al (2019) and Hertz et al (2019)

STEINERNEMA CARPOCAPSAE

Steinernema carpocapsae is a parasitic nematode of various insects. It usually lives off soil-dwelling larval and pupal stages of insects. It actively searches host insects and invades them through natural openings. Inside the insect larvae it releases a symbiotic bacteria causing insect necrosis and death. New nematodes produced inside the insect larvae develop and leave the insect body in search of new hosts. They can be applied by drenching or spraying the tree trunks and bases where codling larvae pupate and overwinter. The overwintering codling moth populations are reduced for the following year. They are safe to other non-target animals and humans.

MATING DISRUPTION

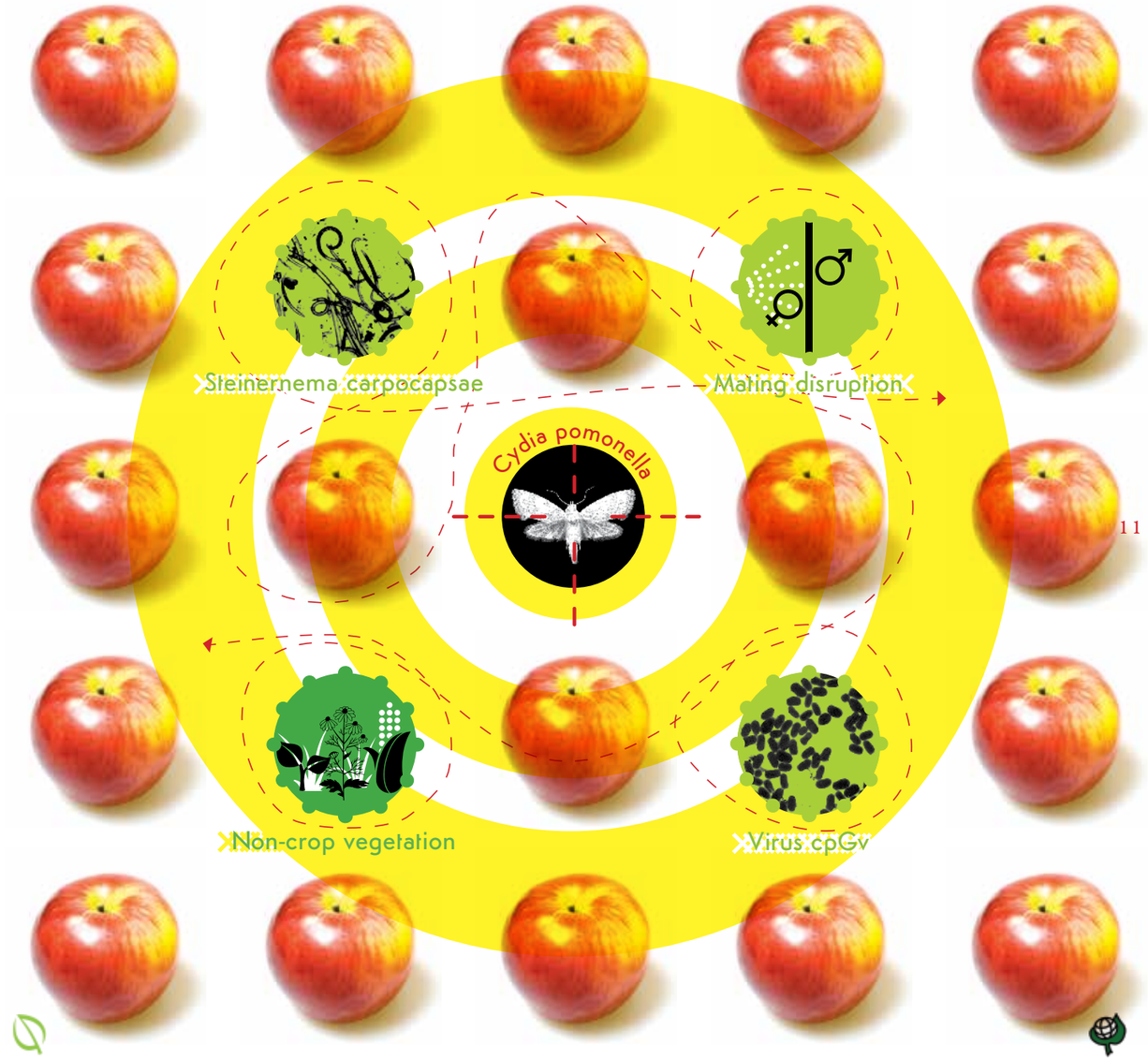
Insect sex pheromones are of interest to IPM where a female communicates to the male that she is present for the male to find her for copulation. Male confusion occurs as the male is unable to orient to a single pheromone source and follow the upwind trail to a mate.

Commercial formulations mimic natural chemical blends of female pheromones. Most insect sex pheromones are multicomponent with precise ratios of each component and often expensive to manufacture and/or prepare for regulatory studies needed in inappropriate regulations. Mating Disruption was first applied in the 1990s and is the basis for the control of this pest in apple orchards.

VIRUS CPGV

Granulosis viruses are Baculoviruses enclosed in a protein body for longer persistence. First isolated in Mexico in the 1960s they were developed in the 1980s in Europe. They are extremely specific and infect only larval stages, with no impact on vertebrates.

Activity starts only after ingestion when the protein body dissolves in the larvae mesenteron and the virus penetrates the cells, causing death within 24-48 hours. The virus is most efficient on small larvae, leaving no residues in the fruits, allowing use in orchards until harvest. In Europe, the application on Cydia pomonella is in the range of 100.000-150.000 ha every year.



Agronomic practices | Monitoring | Physical control | Biological control

Lobesia botrana, known as grape berry moth is a common pest of grapes throughout the European grape growing region. It has 2 or 3 generations per season. The larvae feed on flowers and fruit and economic damage is usually caused by the second and third generation that eat the fruit and cause additional secondary disease infection.

NON-CROP VEGETATION

Manipulating farm habitats can make them less favorable for pests while more attracting for beneficial insects. Non crop vegetation can be used in vineyards to manage berry moths Lobesia botrana and Eupoecilia ambiguella. Non crop vegetation consists of growing two or more crops in the same location and proved to be associated to lower pest population densities in various agricultural systems. At the same time establishing flower strips in vineyards can affect insect behaviour and favour biological control by promoting natural enemies. This has been demonstrated by growing selected flower species in the inter-row, resulting in reduced damage by berry moths. Flowers attract natural enemies of berry moths providing them with nectar and pollen. Several years may be needed to build up an efficient population of natural enemies. Herbaceous strips with flowering plants can also favour biological control agents of other pests occurring in vineyards (i.e. predatory mites), which use pollen as alternative food to their primary prey.

BACILLUS THURIGIENSIS

The ability of Bt (Bacillus thurigiensis) to control insect larvae was discovered more than 100 years ago, however, it was first commercially introduced in the 1940s. Bt is a naturally occurring, soil-dwelling, Gram-positive bacterium. During sporulation it produces a translucent crystal protein, the active ingredient of the formulated products. The crystal protein is a protoxin with insecticidal activity, which is activated in the alkaline midgut of certain insects thus Bt works as an insect gut toxin. Once the target pest larvae has ingested the crystal protein it stops feeding immediately and dies within two days.

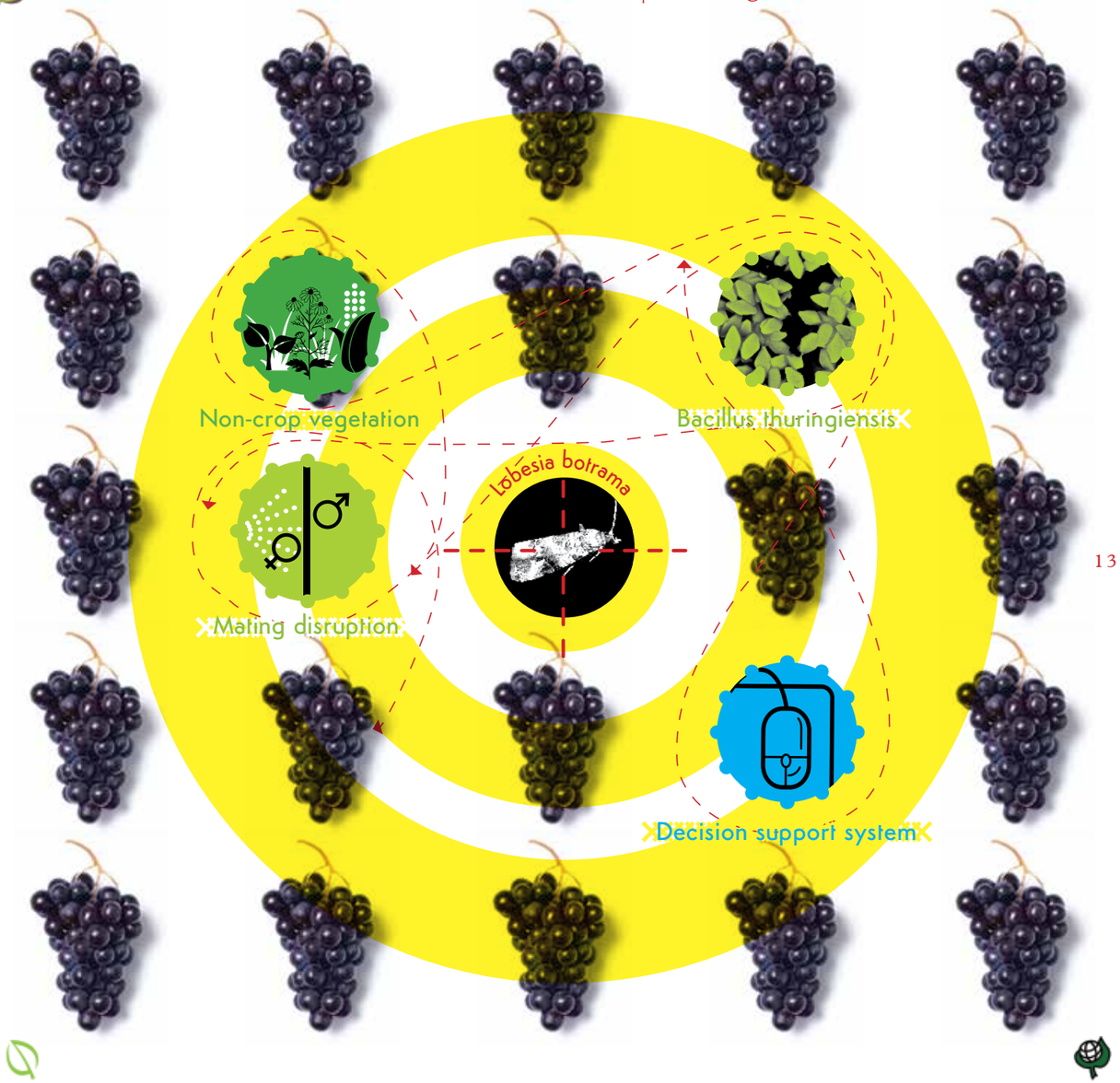
There are several formulations available on the market: either powder, granular or liquid, and Bt is nowadays the largest used biological insecticide on a wide variety of crops worldwide.

MATING DISRUPTION

Pheromones — communication tools — are released by one member of a species to cause a specific interaction with another member. Insects sex pheromones are of particular interest to IPM and are the communication from a female to the male that she is present, allowing the male to find her for the purpose of copulation. Male confusion is the result of ambient pheromone concentrations sufficient to hide the trails of calling females released from diffuse sources such as point source dispensers. When a receptor site is continually activated by diffused ambient concentrations, the resulting nervous signal diminishes. The net result of confusion is that the male is unable to upwind trail to a mate. Present commercial formulations of pheromones mimic the natural chemical blends of females. Mating Disruption for Lobesia botrana started in the mid-1980s in Europe and took a long time to develop; however, it is now applied on more than 200,000 ha of vineyards worldwide.

DECISION SUPPORT SYSTEMS

Forecasting models, based on the study of insect biology and the relevant correlation with environmental conditions, have reached a very high degree of accuracy and they are one of the most important decision tools to optimise the application of plant protection products to control pests in a sustainable way. For insects such as Lobesia botrana the combination of forecasting models with the use of pheromones baited traps can further insecticide application, particularly for the biological types which typically have low persistence and require better accuracy.

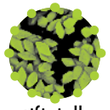


Agronomic practices | Monitoring | Physical control | Biological control

Tuta Absoluta

A leaf-mining small caterpillar that destroys the leaves of the tomato plant resulting in loss of leaves and tomato fruits and ultimately the death of the plant. This small moth, originated from South-America, has invaded Europe, North Africa and other parts of the world in recent years, and is causing huge damage in tomato crops in the field as well in the greenhouse.

BACILLUS THURIGIENSIS



This bacterium is a naturally occurring disease-causing bacteria for a small number of pest caterpillars. It can be produced artificially and formulated into a bio-insecticide. Sprayed on leaves caterpillars will digest it and become diseased, they stop eating, causing leaf damage, and ultimately die. This bacterium is safe to other animals and humans.

TRICHOGRAMMA ARCHAEA

This very tiny parasitic wasp is parasitizing the eggs of a small number of moths. In this case, eggs of the pest moth Tuta absoluta are deposited on tomato leaves, and before a small caterpillar emerges and starts eating leaves, the small wasp is able to find that egg and deposits its own egg in the moth egg. A small parasite will develop in the moth egg and a new wasp will emerge instead of a caterpillar.

NESIDIOCORUS TENUIS

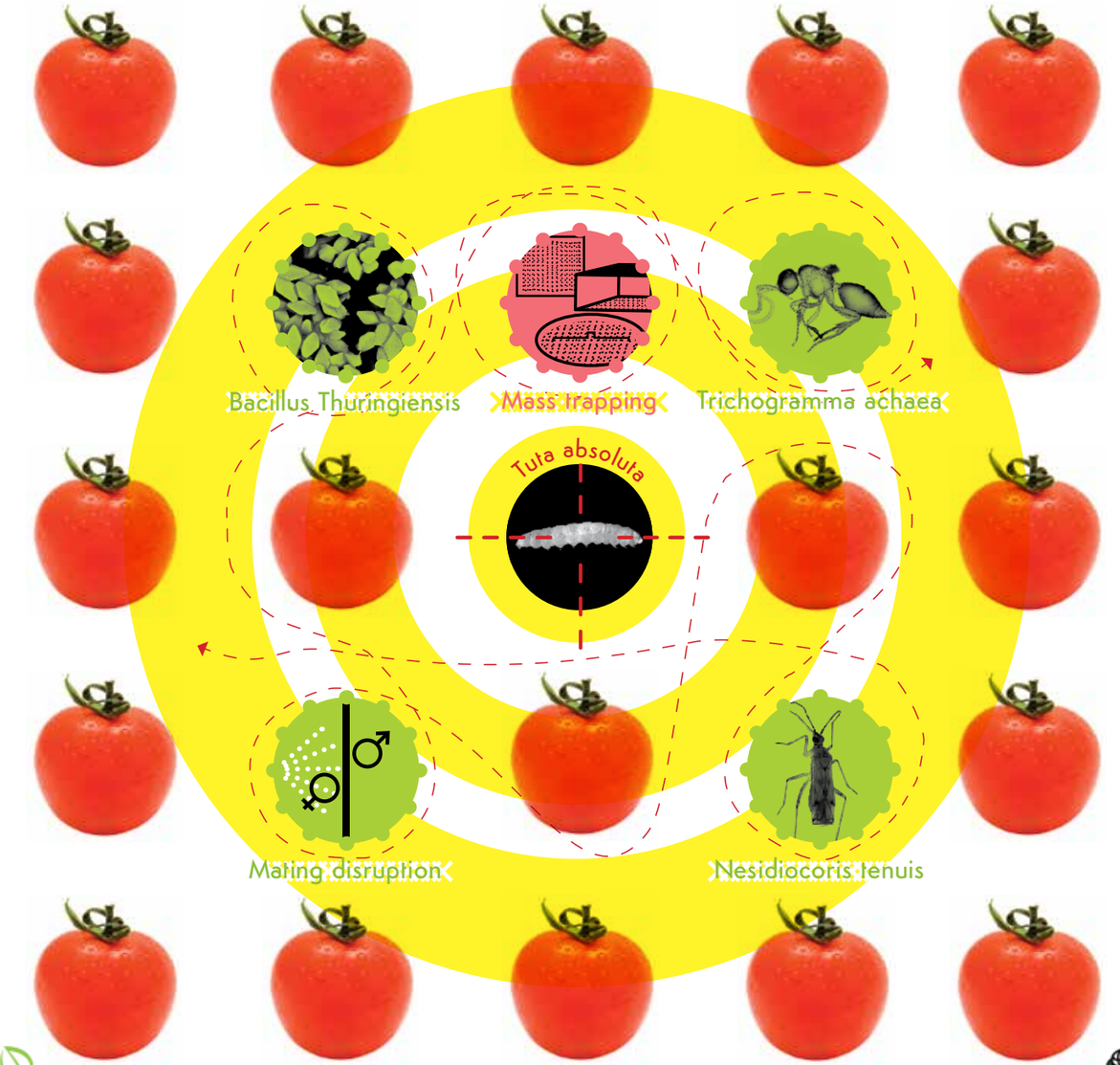
This predatory bug is indigenous in the Mediterranean area and naturally occurs on tomatoes. It preys on various small insects as well as on the plant itself without casing damage to the plant. It also preys on eggs of Tuta absoluta and young caterpillars that are inside the leaves. It is the basis of biological control of this pest and may occur spontaneously in tomato crops or can be introduced. This biocontrol agent is also an important predator of other serious pests in tomato such as whitefly and spider mite.

MASS TRAPPING

This method uses pheromones to lure the moths. Male moths are attracted to the sex pheromone and start looking for females. Dispensers releasing this pheromone are used with water traps where males landing on the water drown. Pheromone dispensers are also used on yellow or black sticky traps and male moths landing hereon are caught and die quickly. This physical technique of catching moths is used preventively to delay infestations or is used during peak infestation to reduce the moth population together with the other biocontrol methods.

MATING DISRUPTION

Mating disruption is also based on the use of sex pheromones. With this technique a high number of dispensers are suspended in the crop and release pheromones in the air. Usually male moths use a trail of this pheromone to find a female flying upwind following the attractive substance. With this technique the amount of released pheromone from many dispensers confuses the male moths in such a way that they cannot find the females anymore. Therefore it is also called confusion technique. Without mating, females cannot deposit fertile eggs, and reproduction is prevented.



Uncinula Necator

Uncinula Necator, known as powdery mildew is an important disease. Fungal spores are released from the overwintering black fruiting bodies (chasmothecia). These black velcro like balls persist in the winter in bark and leaf trash and release spores in the spring in warm humid conditions. The fungus grows and sporulates through the season causing a dusty leaf covering. Infected grapes will sour the wine and so the disease may cause rejection of the crop.

PRUNING

Removing leaves around the clusters is, in general, very beneficial. Exposing the clusters to sunlight early in the growing season by removing leaves causes the cuticle of the fruit to thicken, which helps to resist mildew infections. Exposed fruits also have a less humid microclimate, and sunlight is likely to hit the fruit for part of the day, reducing the possibility of mildew growth to contact the diseased tissue thus improving control. Experience has shown that specific and early leaf removal greatly influence the powdery mildew control. The amount of leaves to remove depends on local climate, trellis system and variety.

RESISTANT VARIETIES

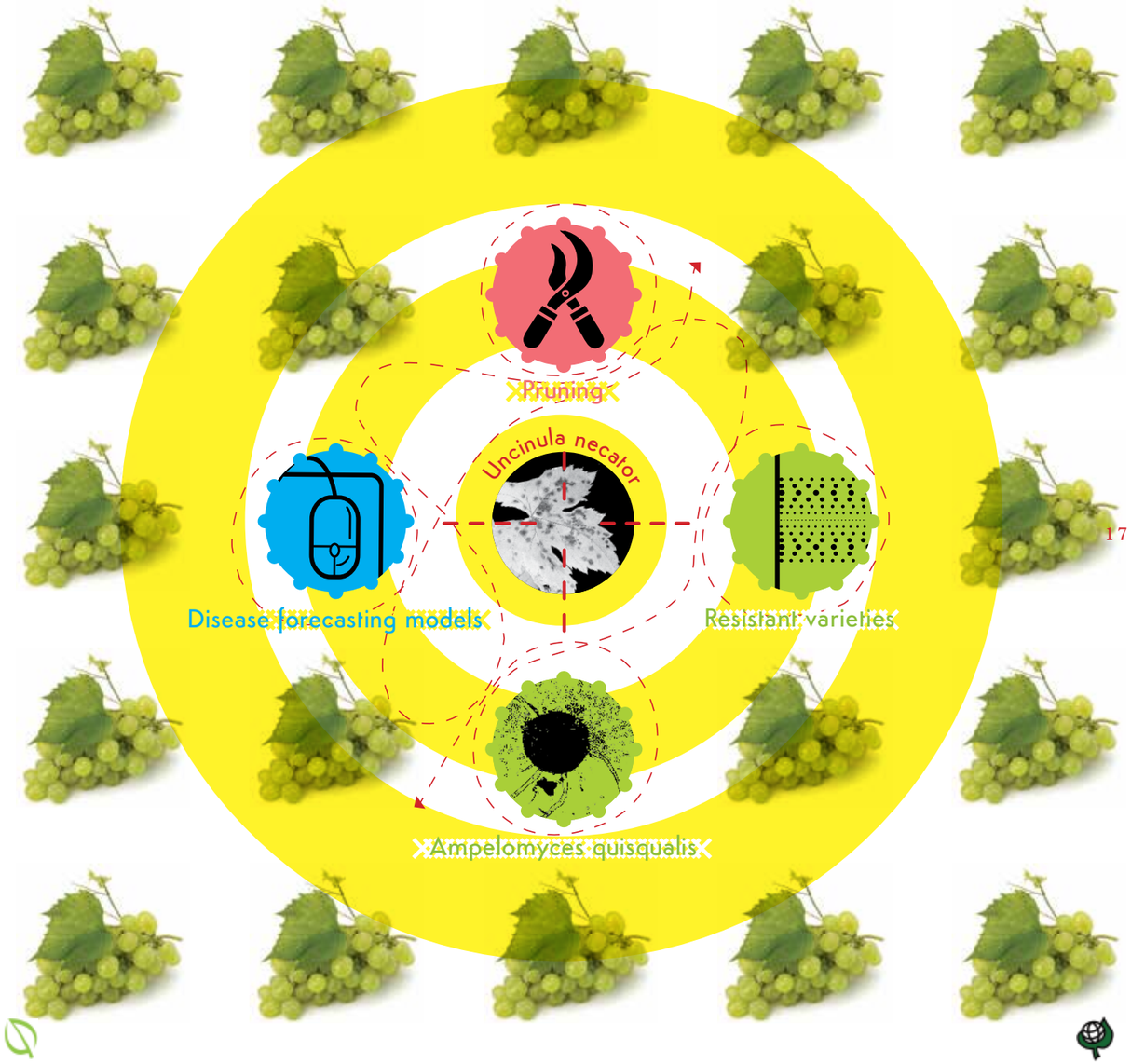
Breeding for grape varieties with higher tolerance or resistance to fungal disease attacks has a long history in Europe, though not a wide acceptance yet. However, in recent years more work has been done by some Institutes to develop more acceptable disease resistant varieties for the wine market and local regulations in each country of production are in the process of being adjusted for the legal acceptance of these varieties. Some successful implementation of resistant varieties both in table and wine grapes has already been demonstrated.

AMPELOMYCES QUISQUALIS

It is a Deuteromycete fungus that has been first described more than 140 years ago. It is a hyperparasitic fungus (mycoparasite) parasitising more than 500 species of fungi belonging to the Erysiphales (Powdery mildews) which attack more than 1500 species of plants. The parasite prevents the sporulation of powdery mildew mycelium and kills the host cells by causing a gradual degeneration of the cells without producing any toxin by necrothropic interaction. The best use of this biological agent in grape is in pre- and post-harvest to parasitise the overwintering chasmothecia. In an IPM strategy this mycoparasite supports the reduction of Powdery mildew inoculum and consequently the primary infections.

DISEASE FORECASTING MODELS

Forecasting models, based on the study of disease biology and the relevant correlation with environmental conditions, have reached a very high degree of accuracy and they are one of the most important decision tools for the best application of plant protection products to control diseases in a sustainable way. For fungal diseases such as Powdery mildew the combination of forecasting models with local information correlated to the specific vineyards environmental conditions to further increase the accuracy of fungicides application can greatly contribute to disease control in an IPM system.



Agronomic practices | Monitoring | Physical control | Biological control

Insect predators and parasitoids are important in controlling agricultural pests. However, these beneficial insects often need additional resources to survive in the agricultural landscape. In intensive farm management the numbers of these beneficial arthropod species is often seriously constrained by a lack of floral resources, additional prey, or suitable overwintering sites. While beneficial insects can be effectively supported by pesticide-free targeted field margins, they benefit differently from the three key resources; aphid prey, floral resources, and grassy overwintering sites.

Recent studies on commercial wheat farms show that floral resources have the greatest individual effect in increasing natural enemy abundance, both prior to and during periods of pest aphid infestation. Some predators benefited from higher abundance of non-pest aphids, particularly in combination with the availability of floral resources. Grassy overwintering habitat was shown to provide little added benefit.

In Europe, most non-crop habitats in agro-ecosystems are grass dominated elements. Few Stewardship schemes are designed to provide suitable floral resources targeting natural enemies of crop pests, or to provide suitable additional prey. Given the importance of floral resources to the majority of natural enemies, providing targeted nectar and pollen sources represents the greatest opportunity for enhancing natural pest control services.

For further details see Ramsden et al. (2014)
Agriculture, Ecosystems and Environm. 199:94 — 104

Agronomic practices | Monitoring | Physical control | Biological control

Pesticide free field margins as currently used in Agri-Environment Schemes often provide limited benefits to farmers. However, farmers have an alternative in using targeted flower mixes in their field margins that help deliver pollination and pest control services. Based on extensive research, these flower mixes have been composed of flower species that cater for the specific nutritional needs of pollinators and pest natural enemies. In commercial field trials in the Netherlands and the UK these targeted field margin mixes were shown to provide multiple benefits for growers:

Numbers of natural enemies in the flower margins were 2 to 6 fold higher, relative to control margins. The higher numbers of natural enemies clearly spilled-over into the crop, with elevated levels recorded up to 50m from the flower margin. Crop pests suffered more attacks from the larger contingent of insect predators and were effectively suppressed on the field side with the flower strip. 10-30% higher yields were achieved near flowering margins in two out of the three years and for three out of the four crops tested.

This shows that crop production and meeting key conservation objectives and policy requirements can go hand-in-hand. Adopting multi-functional seed mixes should ensure that farmers no longer need to forfeit combined pollination and pest control benefits.

For further details see www.ecostac.co.uk

Agronomic practices | Monitoring | Physical control | Biological control

The EU has not reserved a specific budget to help Member States implement the Directive 2009/128/EC. Instead, it has been decided that this Directive is best implemented by integration into other policies, including the Common Agricultural Policy (CAP).

As can be seen in the poster on the opposite page, there are several CAP tools which can help to ensure pesticide dependency reductions and as a result enable a serious implementation of the Directive 2009/128/EC: the leaves show CAP tools already available to allow pesticides dependency reductions while the trunk proposes CAP tools worth considering for the future.

However, during the CAP reform from 2013 two new elements were added:

1 Directive 2009/128/EC to become part of so-called cross compliance (direct payment) requirement one day:

The Council and the European Parliament invite the Commission to monitor the transposition and the implementation by the Member States of Directive 2000/60/EC of 23 October 2000 establishing a framework for Community action in the field of water policy and Directive 2009/128/EC of the European Parliament and of the Council of 21 October 2009 establishing a framework for Community action to achieve the sustainable use of pesticides and, where appropriate, to come forward, once these Directives have been implemented in all Member States and the obligations directly applicable to farmers have been identified, with a legislative proposal amending this regulation with a view to including the relevant parts of these Directives in the system of cross-compliance.

Addendum 2 to the CAP reform agreement of 25 June 2013

2 Member States are now obliged to inform farmers about Integrated Pest Management, giving all farmers across the EU the right to be informed about IPM as from 2015:

Member States as something new need to advise on implementing Article 55 of Regulation (EC) No 1107/2009 of the European Parliament and of the Council, in particular requirements concerning the compliance with the general principles of integrated pest management as referred to in Article 14 of Directive 2009/128/EC of the European Parliament and the Council.

Addendum 2 to the CAP reform agreement of 25 June 2013

The new Commissioners' Mission Statements highlight the importance of reducing dependency on pesticides and stimulating the take-up of low-risk and non-chemical alternatives as the way forward for the EU.

PAN Europe is working for the conditionality to become more restricted, for the SUDP to be fully included and for specific indicators to be developed to measure the success of the pesticide-free agricultural model.

While the CAP reform is being discussed, we underline that PAN Europe is calling for each CAP Strategic Plan having at least 50% reduction use targets of chemical pesticides.

Greening of Direct Payments

MUST CAN

MS must implement pesticide free ecological focus areas and crop diversification scheme.

Rural Development

CAN CAN

MS can encourage reductions of pesticide use e.g. by supporting voluntary integrated farming methods (incl. voluntary elements of Integrated Crop Management) through agri-environment-climate schemes.

Fruit & Vegetable Regulation

CAN CAN

MS can encourage reductions of pesticide usage, e.g. under the so-called Integrated Production as part of the environmental actions of the operational programmes.

CAP REFORM PROPOSAL: Conditionality to be reinforced through the replacement of greening by adding crop rotations, non productive ecological focus areas and cover crops into GAEC.

Establishment of eco-schemes with Member States having to offer annual support to farmers for uptake of environmental – and climate – friendly actions. Converting from compliance to performance model focused on nine specific objectives, measured by a number of impact, result and output indicators, of which an impact and a result indicator on pesticide use.

Farm Advisory Systems

CAN MUST

MS must offer farmers advises on rules under Cross Compliance but also on the SUDP and the WFD in particular aiming at reducing pesticide usage and informing about IPM.

Cross compliance

MUST MUST

MS must link the Regulation on Pesticides to CAP payments through Cross Compliance. The GAEC provide also a tool for a better use of pesticides (buffer strips, etc.). In the future certain aspects of the SUDP and WFD will become part of Cross Compliance after all MS have defined the obligations directly applicable to farmers.

Member States: MS Farmers

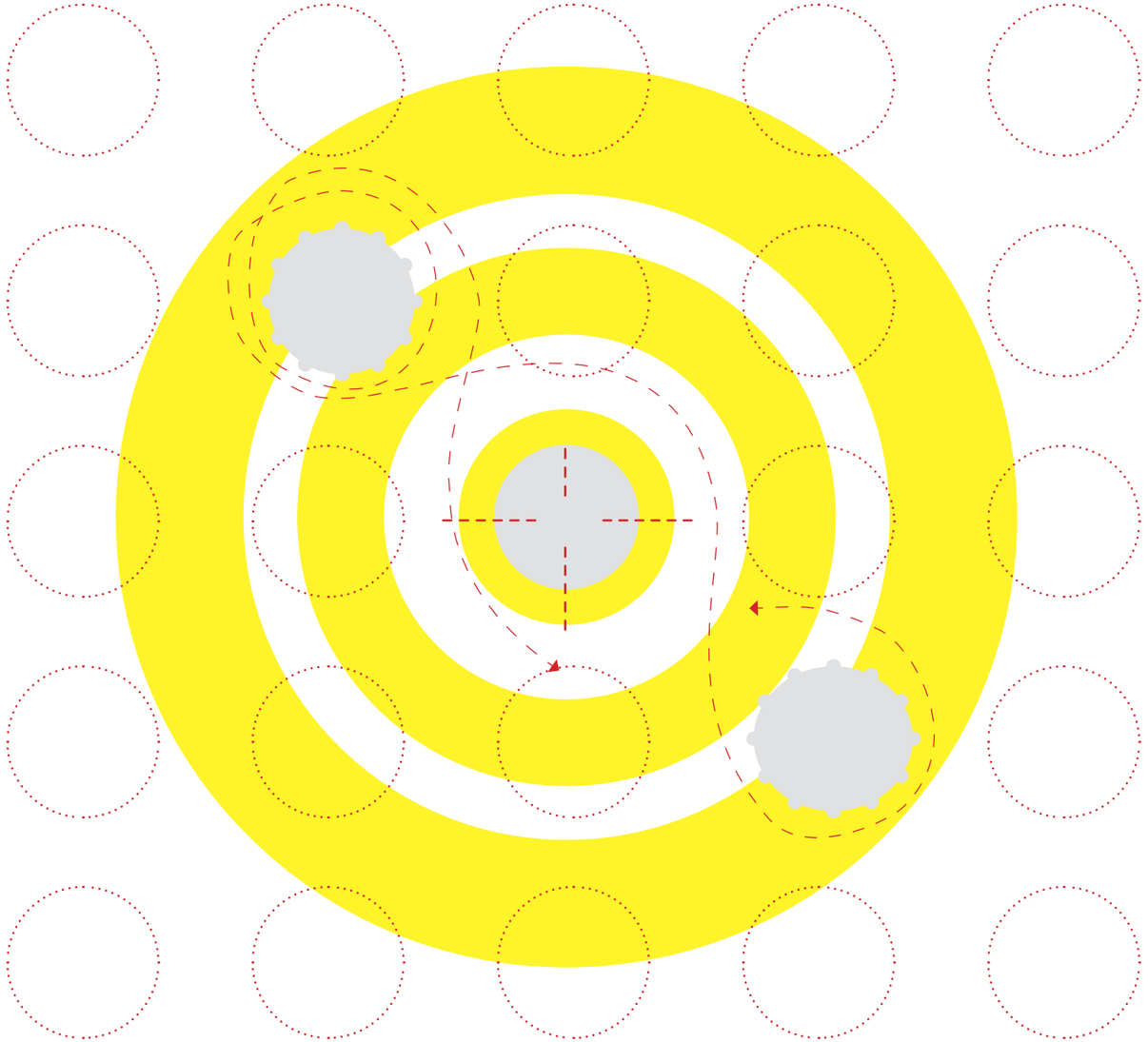
Pesticide Action Network

EFAs: Ecological Focus Areas
GAEC: Good Environmental and Agricultural Practice
ICM: Integrated Crop Management
IP: Integrated Production
IPM: Integrated Pest Management
SUDP: Directive on Sustainable Use of Pesticides
WFD: Water Framework Directive

For more information: www.low-impact-farming.info/sites/default/files/2019-05/cap-inspiration-3.pdf

Agronomic practices Monitoring Physical control Biological control

NOTES



The purpose of the exhibition INTEGRATED PEST MANAGEMENT: WORKING WITH NATURE is to show what integrated pest management means, and how the Sustainable Use Directive can be implemented and fully integrated into the Common Agricultural Policy.

With this exhibition we wish to highlight alternatives that exist and are used by mainstream farmers, often with big differences in uptake by farmers across different crop sectors and Member States.

IN 2019 THE EXHIBITION WILL BE CIRCULATING IN FRANCE AND TURKEY, AND HOPEFULLY OTHER MEMBER STATES

PREVIOUSLY EXHIBITED AT

European workshop C-IPM (Paris, France)
European Commission DG Health & Food safety
Health and food audits and analysis (Grange, Ireland)
Liege University (Gembloux, Belgium)
Annual Biocontrol Industry Meeting (Basel, Switzerland)
Future IPM in Europe (Riva del Garda, Italy)
COPA-COGECA
Mundo-B
The European Economic and Social Committee
Dutch Board for the Authorisation of Plant Protection Products and Biocides (CTGB)
European Commission DG Agriculture & Rural Development
European Commission DG Health & Food safety
Federal Belgium public service for Health, Food Chain Safety & the Environment
European Commission DG Environment

IOBC-WPRS

IBMA

Pesticide Action Network Europe

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