The key roles of PAE, precision and digital technologies for safer uses of plant protection products

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Content of the presentation

1. Setting the scene - political context
2. Initiatives amending or supporting the implementation of legal framework (Reg 1107/2009)
3. Risk management of PPP
4. Roles of digital and precision farming?
5. Conclusions

1. The EU political context

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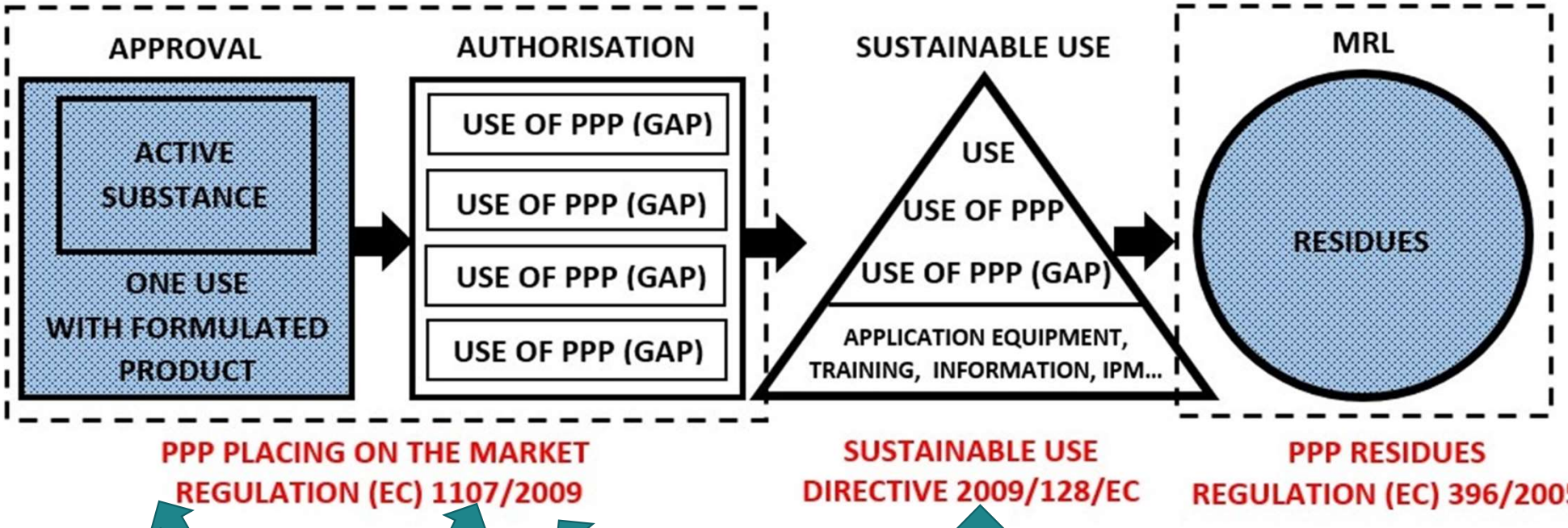
1. Farm to Fork:
Pesticide reduction targets by 2030

- Reduce by 50% the overall use and risk of chemical pesticides

- Reduce use by 50% of more hazardous pesticides

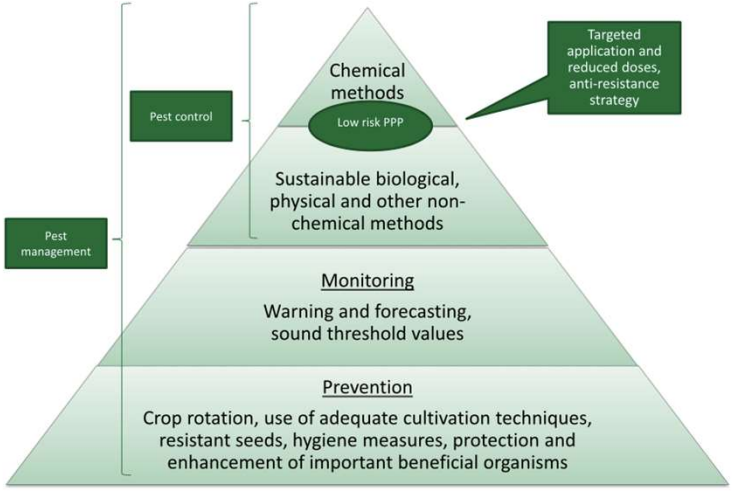
2. Legal framework for pesticides



« Enrich » the products' portfolio with more low-risk actives and PPPs.

- « Make the use of PPP possible only as last resort » (via IPM)
- De-risk the « last-resort » use of pesticide (use conditions, machines, digital/precision = risk mitigation)

2. Green Deal + F2F strategy – political boost calling for more IPM and ….



….a more populated Farmers' toolbox with low-risk Solutions:

- **Micro-organisms,**
- **Pheromones,**
- **Peptides, antibodies,**
- **Beneficial insects/mites/nematods**

« Enrich » the products' portfolio with more low-risk actives and PPPs.

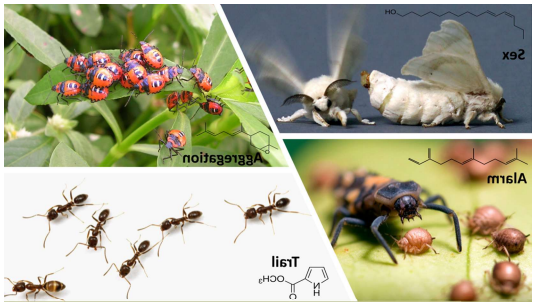
…. more targeted application, reduced doses,…precision and digital tools

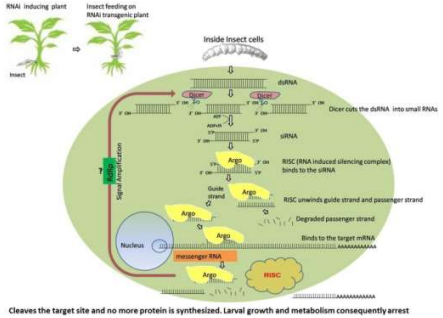
- « Make the use of PPP possible only as last resort » (via IPM)
- De-risk the « last-resort » use of pesticide (use conditions, machines, digital/precision = risk mitigation

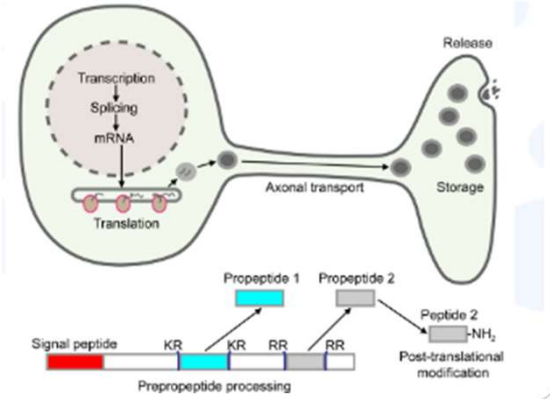
2. Need-to-know approach for low-risk PPP

« Enrich » the products' portfolio with more low-risk actives and PPPs.

- Data requirement (DR) & uniform principles (+ guidance, training for risk assessors)
  - Part B – microorganisms : **done** √
  - Part A - chemicals - applies also to pheromones/semiochemical, botanicals-plant extracts, peptides, antibodies, RNAi **- ongoing**







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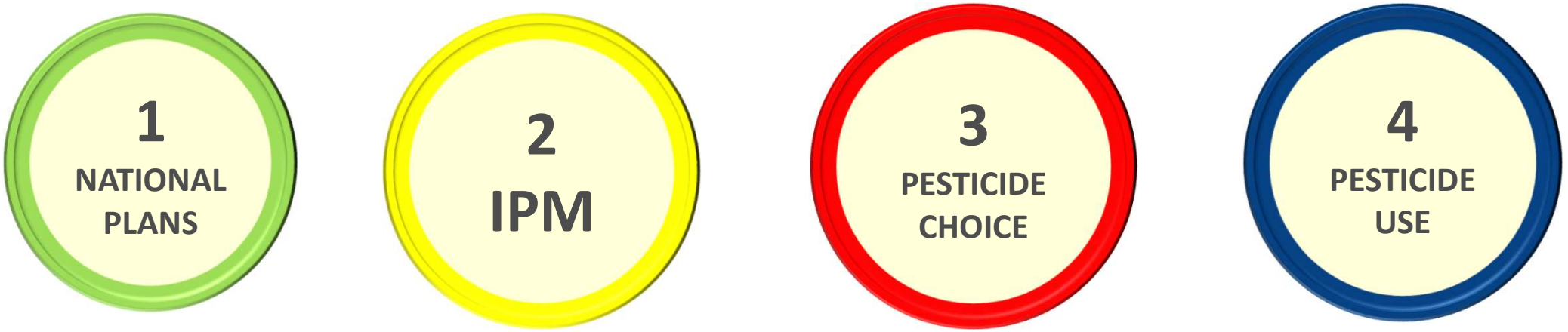
2. Sustainable Use of Pesticides – Key elements

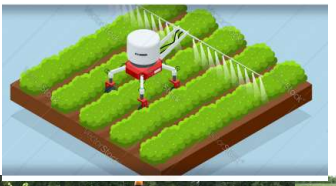
- « Make the use of PPP possible only as last resort » (via IPM)
- De-risk the « last-resort » use of pesticide (use conditions, machines, digital/precision = risk mitigation



F2F strategy calls for innovation at every “floor” of the IPM pyramid

- « Make the use of PPP possible only as last resort » (via IPM)
- De-risk the « last-resort » use of pesticide (use conditions, machines, digital/precision = risk mitigation

Precision techniques



Mechanics

New Polymers

Pest management

Pest control

Chemical methods

Low risk PPP

Targeted application and reduced doses, anti-resistance strategy

Sustainable biological, physical and other non-chemical methods

Monitoring

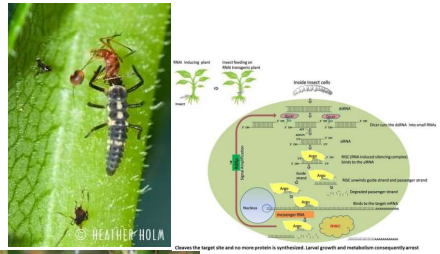
Warning and forecasting, sound threshold values

Digitalisation

Prevention

Crop rotation, use of adequate cultivation techniques, resistant seeds, hygiene measures, protection and enhancement of important beneficial organisms

New biologicals



Plant Genetics

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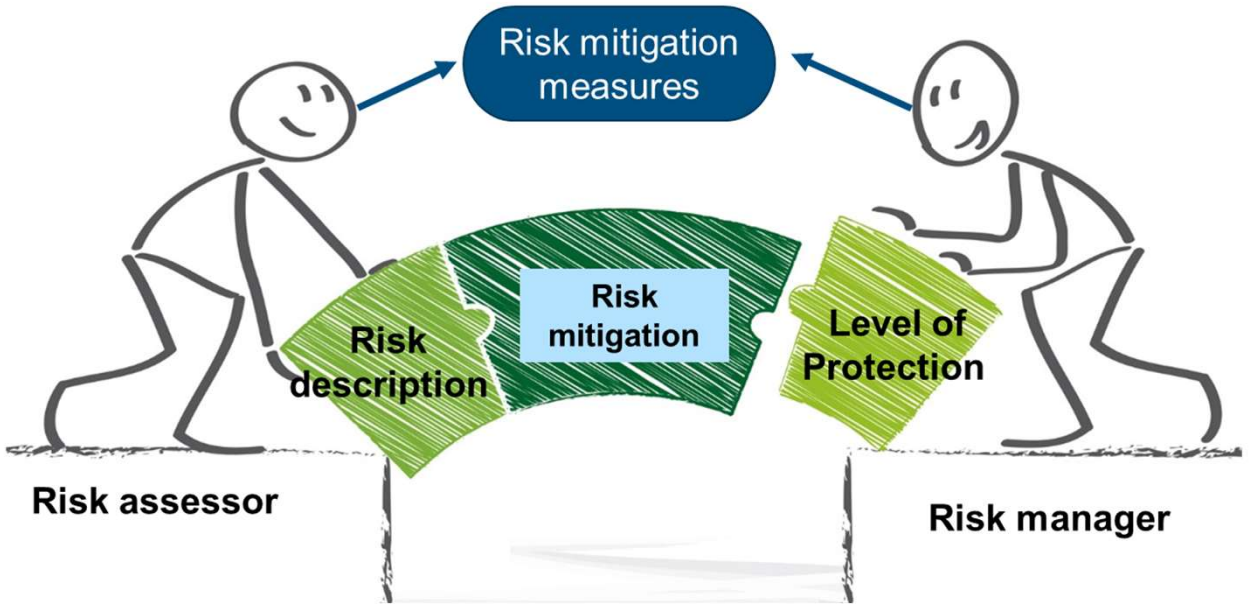
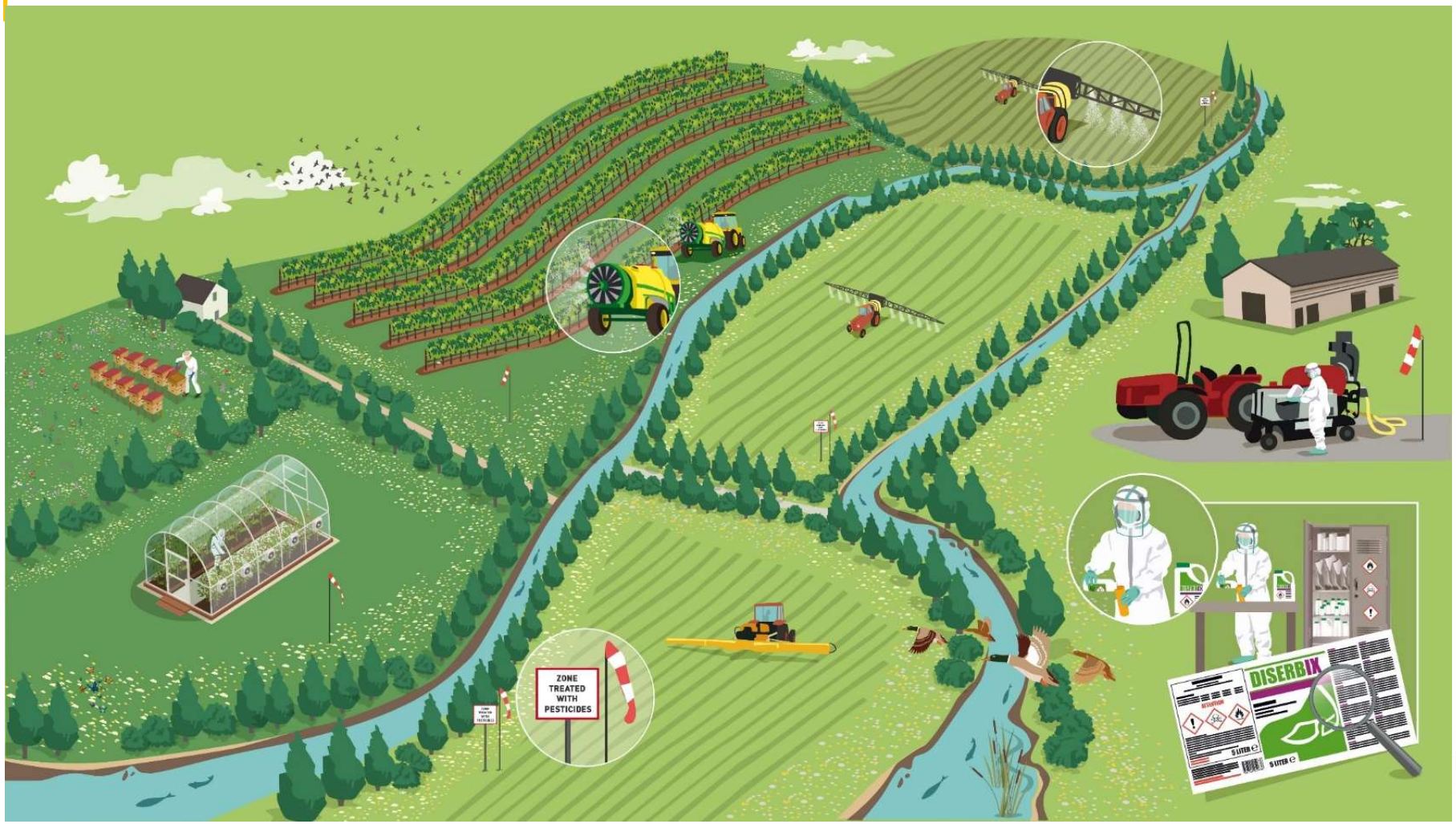
3. Risk Mitigation Measures are a key regulatory element to ensure a safe use of pesticides



By 2030, the Commission needs to take actions to reduce:

- **By 50%** the use and **risk of chemical pesticides**
- By 50% the use of more hazardous pesticides

3. Pesticides Risk Mitigation Measures



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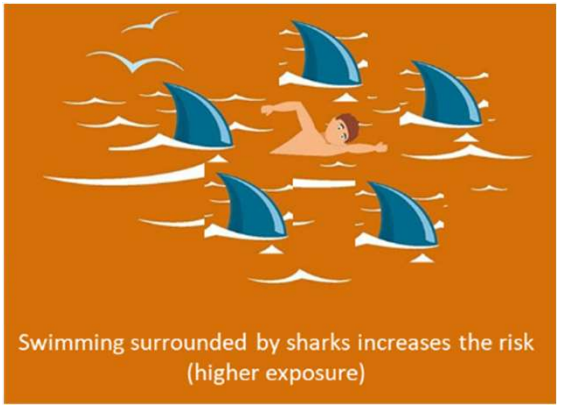
3. Mitigating risks associated with the use of pesticides

- Reg 1107/2009 defines protection goals for various groups of human beings/non-target organisms/compartments to be protected
- Risks mitigation means exposure reduction
- Different (level of) risks triggers different types of mitigation measures with different exposure reduction potential

Negligible Exposure?

Risk !



High Risk !

RMM
Negligible Exposure?

3. Drafting of a “list” of technical use and application conditions for plant protection products (ongoing)

- Risk mitigation applies to the whole life cycle approach but the list will focus on recommendable tools/practices to lower exposure

- Many risks can be addressed by:
  - Good practices implemented by various actors including the farmer
  - Generic risk mitigation or conditions of use (SUD)
  - Specific risk mitigation measures: (1) techniques or (2) application conditions (1107/2009)

3. Different types of Risk Mitigation Measures can be proposed at different assessment steps and regulatory levels

- TechnoChanges in the chemistry and physics of the active substance + PPP
- Personal protective equipment
- **Technical tools – Nozzles**
- **Technical tools – type of application/ machinery**
- **Technical tools – Field management** (including good agricultural practices?)
- Regulatory tools Restrictions of use

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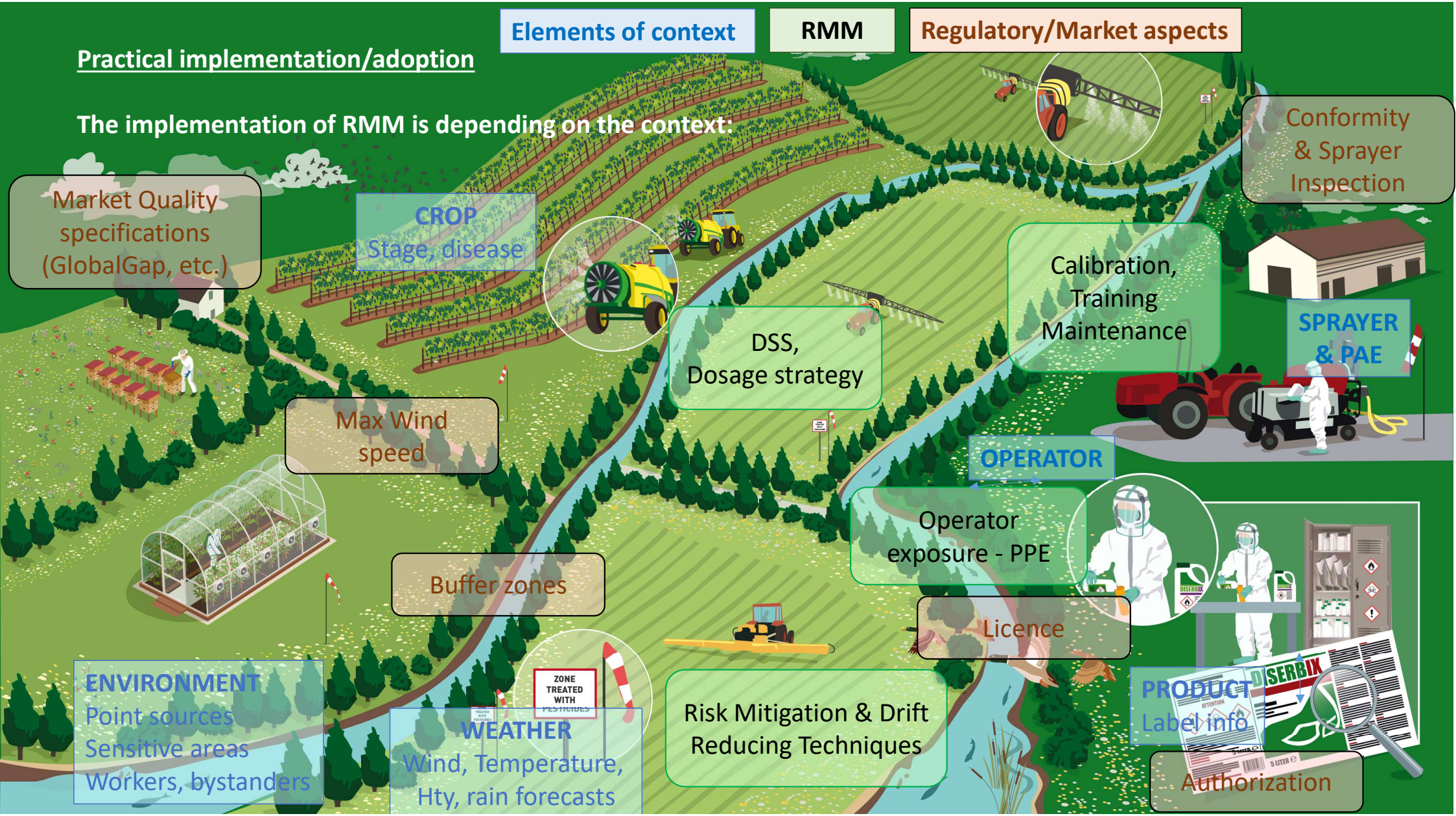
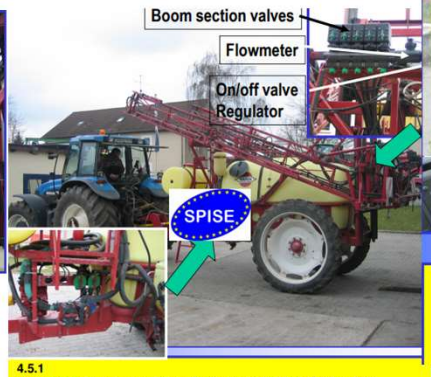

Elements of context
RMM
Regulatory/Market aspects
Practical implementation/adoption
The implementation of RMM is depending on the context:
Market Quality specifications (GlobalGap, etc.)
CROP
Stage, disease
Conformity & Sprayer Inspection
Calibration, Training Maintenance
SPRAYER & PAE
DSS, Dosage strategy
Max Wind speed
OPERATOR
Operator exposure - PPE
Buffer zones
Licence
ENVIRONMENT
Point sources
Sensitive areas
Workers, bystanders
WEATHER
Wind, Temperature, Hty, rain forecasts
ZONE TREATED WITH PESTICIDES
Risk Mitigation & Drift Reducing Techniques
PRODUCT
Label info
Authorization

3. When Risk Mitigation Measures become mandatory…the role of accurate inspection of PAE is crucial !

- Check the conformity of the machinery/tools/devices in use – some of the functionalities being key for risk mitigation!



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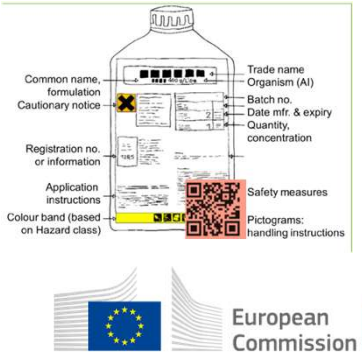
Before Using PPP

4. Which role Digital Tools can play for the PPP users?

- Get more (easily) **general information** about plant protection, farming practices via on-line training, machines/devices, on-line tutorials, sharing knowledge and networking
- Get more **specific information** about IPM schemes (ex. IPM-toolbox) for a given crop
- Make use of **decision-making** tools
- Find **specific information about products** to be used – electronic label : conditions of use, risks, risks mitigation….



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4. Which role Digital Tools can play for the PPP users?

When Using PPP

- During use: Connectivity of the pesticides application equipment with:
  - Forecast systems (wheather, pest intensity, crop stage)
  - Geolocalisation, field mapping, canopy scanning, etc…
  - Precision application software
- After use: reporting (record-keeping) :
  - Data transfer to ‘log-book’, available to authorities
  - Performance assessment (application rate, economics,…)

4. Which role Digital Tools can play for the PPP users? Summing up

Digital Farming:

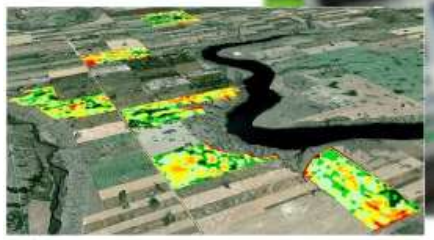
Seamless integration of product information, agronomic & environmental data, weather forecasts and mitigation options provides agronomic and environmental benefits

Product information & mitigation measures

Weather forecast

Farm planning software: Full integration of data for optimized solutions

Characteristics of field and crop space and time



Optimized, targeted application, full compliance & documentation

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4. What are the recent initiatives „linking“ PPP and digital/precision farming?
A. Regulatory initiatives

- Implementing Regulation regarding content and format of the records of plant protection products kept by professional users (“**Art. 67 – record keeping**”):
  - Records for uses to be available in electronic format within 30 days of the use

Type of use	Plant protection product used	Time of use	Dose of application	Location or identification of treated area or unit	Size or amount of treated area or unit	Crop or situation/land use

  - Identification number of agricultural parcel within the integrated administration and control system (IACS)
  - Maximum flexibility for MS further specification…

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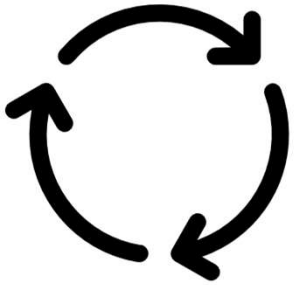
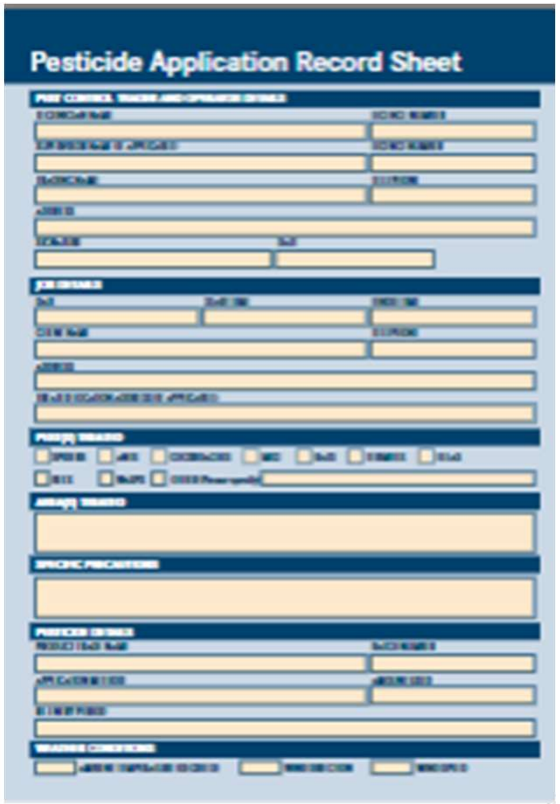
Art. 67 – record keeping

- Maximum flexibility for MS further specification…but **digital tools** would obviously be useful





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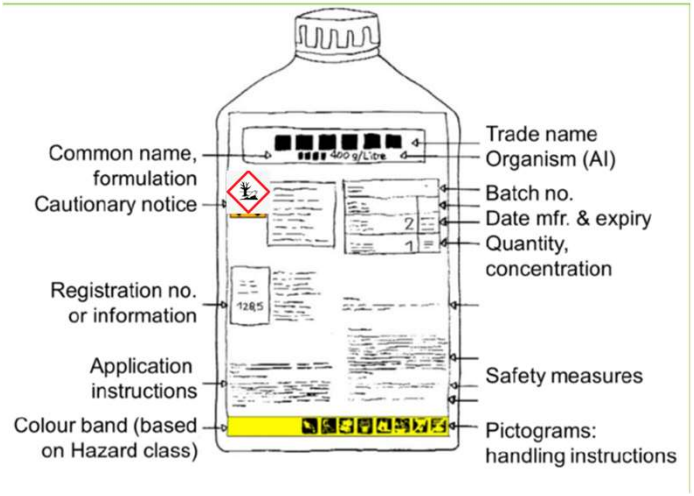
4. What are the recent initiatives „linking“ PPP and digital/precision farming?
B. Regulatory initiatives

- Draft Implementing Regulation regarding **labelling requirements** of plant protection products should provide for the content of the label:

1	**Plant Protection Product Identity**
2	**Conditions of use**
3	**Standard phrases for hazard communication**
4	**Specific standard phrases for restrictions of use and risk mitigation measures**
5	**Standard phrases for safe disposal of the plant protection products**



With a possibility for:

- **Encoded electronically machine-readable information**

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4. Digital Technologies – ex. : sensor-piloted spraying

Sense & Decide: Blue River's deep learning process identifies subtle differences between crops (green) and weeds (red)

Act: Only weeds are sprayed and not the crop

How to consider such innovative techniques in the regulatory risk assessment and decision making?

- Strengths
  - Reduced chemical usage
    - 50-90% reduction
  - Differentiation of target
  - Utilization of non selective herbicide in non gmo crop
  - No preliminary work required

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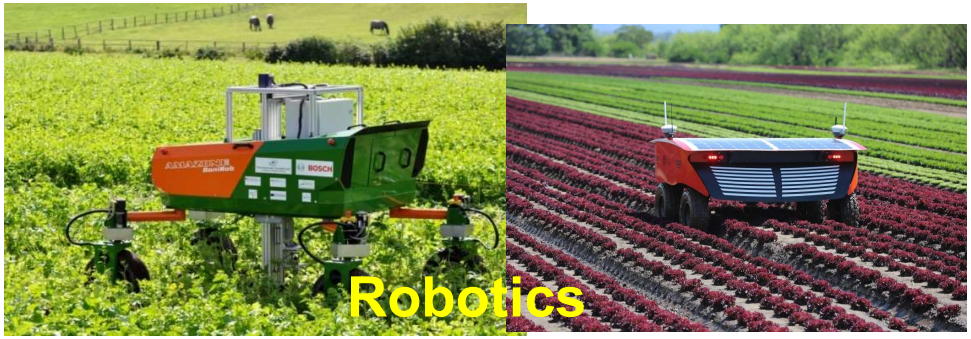
Other promising precision techniques



SPISE, are you ready?

Special machines

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The Sea of Offerings in Digital Farming...

5. To conclude

- **Machinery will radically change the use pattern of plant protection products:**
  - Facilitate exchange of information on good practices
  - Smart tools to prevent use of PPP
  - Precision techniques to apply where/when/how needed, hence potential for reduction of use and risks
- But uptake of new techniques requires (besides Investment/training/protection of data for farmers):

SPISE, are you ready?

  - Evidence for effectiveness to be integrated in regulatory process of PPP authorization
  - Validation of the performance in use/risk reduction
  - Control of this performance at regular interval
- Calling for inspection to be more comprehensive than the current ones?

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