Spraying pesticides by drones in the EU ? – ongoing research and regulatory works

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Content of the presentation

1. Setting the scene - political context
2. Pesticides Application Equipment in EU
3. EU Regulatory Framework for Pesticides : requirements, risk assessment/management, protection goals.
4. Roles of digital and precision farming in plant protection
5. Place of drones in the EU regulatory context: need for data, modelisation, standards, operating conditions…
6. 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

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2. Pesticides Application Equipments (PAE) in use in EU (source SPISE 8, May 2023)

>1.000.000

1,5 Millions
(reported only by 3 countries)

45.000

>500.000

30.000

60
(reported only by 2 countries)

15.000

120

40.000

2.600

30.000

80

1.300

23.000

105

2. PAE in use in the EU…

- Mainly boom sprayer for arable crops
- Mainly air-assisted for vertical crops
- Mainly lance sprayer in green- and glass-houses



..technically evolving…

…from this kind of „machines“… …to digital and precision farming



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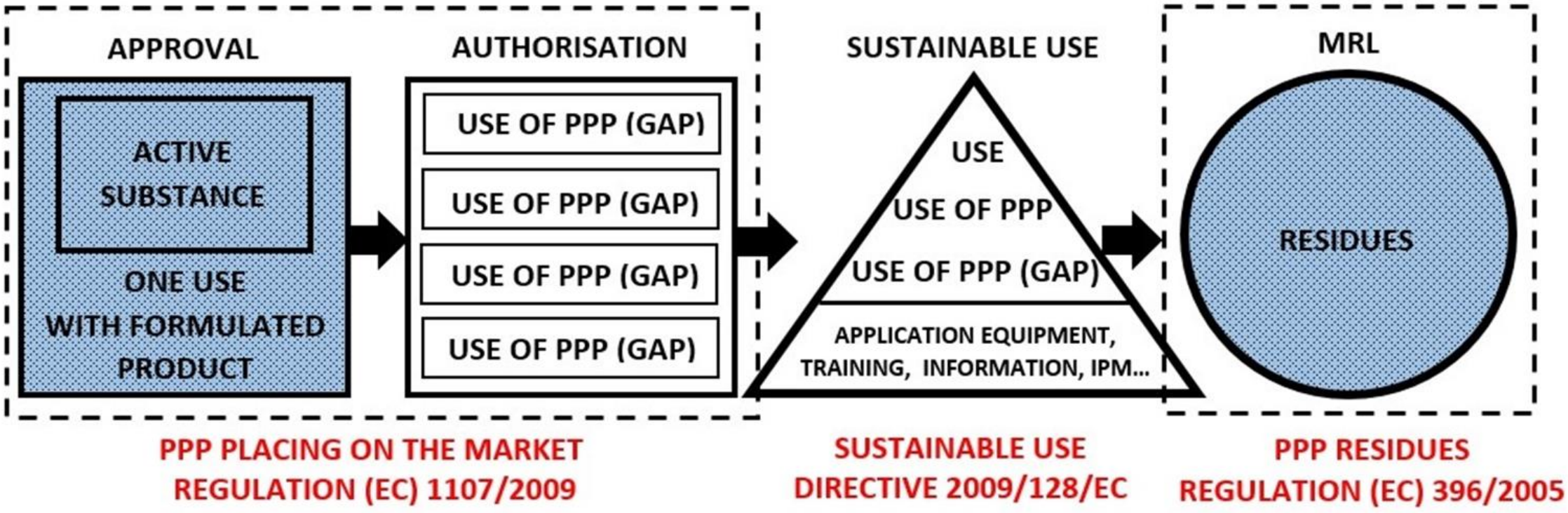
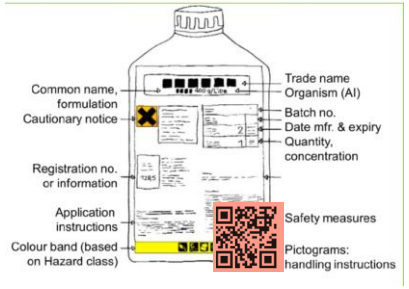
3. EU Regulatory framework for pesticides



4. Which role Digital Tools can play in this regulatory context?

Before Using PPP

- 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? (2)

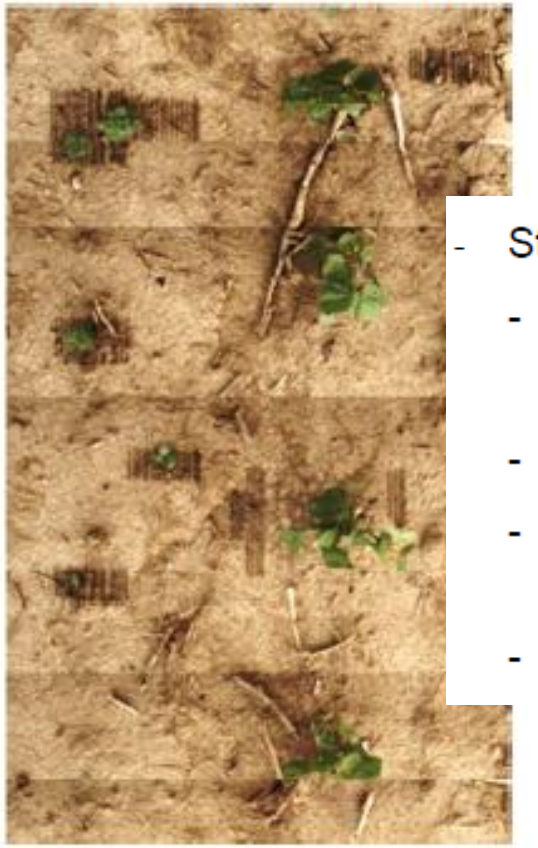
When Using PPP

- 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. Digital-Precision Technologies – ex. : sensor-piloted spraying (3)

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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And what about….

Robots ?

Drones ?

Capacity?
Efficiency? Precision?
Safety for the operators?
Safety for the environment?
Economics?

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5. Place of drones in the EU regulatory context

Sustainable Use Directive prohibits application of Pesticides by aerial spraying, so…

…with exemptions (derogation) : ex. slopy vineyards (here in CH)

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5. Place of drones in the EU regulatory context (2)

What the risk assessors-regulators would need?

Support from OECD – International Task Force on 'unmanned Aerial Pesticide Application System'

- **Focus on Spray Drift, Crop Residue, Operator Exposure:**
  - **Off-site movement GLP study protocol & trials (ongoing)**
  - **Validation of exposure models – drift, operators/workers/by-standers (not started)**
  - **Standardisation of drones (benchmark, typology,…)**
  - **Standard Operating Procedures for mixing/loading, piloting, cleaning,…(ongoing)**
  - **Best practices guidance (ongoing)**
  - **Field crop residue study (comparison with ground operated PAE applications) (ongoing)**

EU sponsored - research projects – ex. Phytodron

6. Conclusions

- EU regulatory framework for pesticides : strictest in the world
- Digital tools – new perspectives for prevention of use of pesticides, info exchange and record-keeping of PPP used.
- Precision techniques – new perspectives to apply where/when/how needed, hence potential for reduction of use and risks
- But uptake of new techniques such as application by drones would require first:
  - Adaptation of risk assessment methodologies (data, field tests, modelisation,…)
  - Evidence for effectiveness to be integrated in regulatory process of PPP authorisation
  - Investment for farmers (durability !)
  - Training of all actors (SOP)
  - Protection of data owned by users
  - ……

Time horizon for spraying pesticides with drones : ??

- Except for this purely insect killing drones…using mechanics only

Pats Indoor Drone Solutions

"A bat-like drone killing a moth in greenhouse"

Thank you

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