**PROJECT SUMMARY**
*Stepping-up integrated pest management decision support for crop protection*
*'IPM Decisions'*
*2019 -2024*

Decision Support Systems (DSS) can assist on-farm decisions to implement Integrated Pest Management (IPM) against invertebrates, weeds and pathogens.

**Project Aim: Increase the impact of on-farm DSS for IPM**

**What is limiting the impact of DSS?**
There are a diverse range of DSS including pest monitoring, simple treatment thresholds, forecasts of prevalence and damage, and systems for comparing treatment options. A major focus is on ensuring that pesticides are used 'according to need', and accounting for the reduced need for treatment from integrating genetic, cultural and chemical control.

There are some excellent examples of crop protection DSS which are well tested and implemented, but the impact of DSS has been constrained by:

- Regional fragmentation of DSS development and user communities, limiting awareness and access to what is available
- Lack of quantification of the economic and environmental benefits of using DSS - often limited by access to sufficiently large datasets across a wide range of sites and seasons
- Inadequate testing of DSS for accuracy and predictive value (also data limited)
- Short-term funding curtailing long-term updating and user support
- DSS addressing single pests, whilst farmer decisions need to account for multiple pests
- DSS which are insufficiently risk-averse to meet farmer needs for protection against economic loss

**What will *IPM Decisions* deliver?**
The project will bring together expertise and resources to address these limitations. We will increase impact from IPM DSS by delivering DSS, data, tools and resources through a pan-European online Platform and an IPM Decisions Network. The latter forming a community of users and stakeholders. Users will be farmers and advisers, and applied research or industry organisations that deliver or develop DSS.

Each type of user will access the Platform via a tailored 'dashboard', specific to their requirements. The dashboard which will act as the user's control panel to collate information and manage DSS applications.

- *Farmer and adviser* end users of DSS will benefit from a simple 'click and go' platform to find and run decision systems which have been evaluated for use under their regional conditions, and giving access to relevant weather data. The extent of testing and economic benefits from use of each DSS will be transparent, to enable informed choices.
- *Applied research or advisory organisations* wishing to adopt DSS developed in other countries and test/compare them for their regional conditions, will benefit from access to decision systems, weather data, a data set of field pest observations from large numbers of sites and seasons, and a library of methods for evaluation and comparison of benefits.
- *Researchers* will be enabled to adapt decision models to their regional conditions (either by changing parameter values via a dashboard or making structural changes by having access to the code of open-source decision models) and rapidly evaluate the effect of the changes using the library of methods for evaluation and comparison of benefits described above.

- *Developers of farm DSS* will benefit by a 'shop window' to access more end users, and tools and resources to accelerate DSS innovation.

The IPM Decisions project will not develop new DSS, the focus will be on delivering existing and future DSS for key pests (invertebrates, weeds and diseases) of major outdoor crops. The Platform will support a wide range of DSS which are free to use or commercial pay to use. Platform software, scientific publications and research data will be open access.

**Why is a pan-European DSS platform needed?**

Developers of DSS put a large investment into producing systems which are provided to end users free or as a paid service. Developers undertake common activities, such as optimising DSS, testing performance, maximising uptake by users and ensuring reliable decisions in extreme seasons (to ensure continued use). Some DSS developers have already decided that these activities are better achieved by joining together into wider geographic collaborations and platforms. The proposed 'IPM Decisions' platform extends this concept across Europe.

**What organisations are running the project?**

The project has participants from applied research, crop protection industry, ICT, meteorological services, government policy, farming, advice and extension (see logos below).

**How to engage with the project if you are a farmer, adviser or DSS provider?**

We want to ensure that the project does useful work and maximises practical impact, by engaging with the European community of DSS providers, and farmer and agronomist users of DSS.

- In late 2019 and early 2020, workshops across Europe will describe the project and get feedback from DSS providers and end users, to guide priorities.
- The Annex (below) describes how the project will work with DSS developers and providers, to ensure mutual interests are protected.
- Small groups of users will have access to early versions of the Platform and Dashboards for testing.
- Workshops across Europe will raise awareness of IPM DSS and help users to get started, working with existing DSS.
- The IPM Decisions Platform and Dashboards will go live in 2022.
- Online webinars, videos and guides will 'walk users through'.
- On-farm demonstrations of DSS will be supported through the second phase of H2020 funding, to develop an IPM farm demonstration network.

Visit the project website www.IPMDecisions.com (web address to be confirmed) for information on upcoming workshops, updates, and links to social media and online information.

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**ANNEX**

## Frequently asked questions for DSS developers and providers

### Does the Platform require that DSS are free to use?

No. The owner of each DSS decides on the business model for their system. The platform will support systems which are:

1. Free to use
2. Free to use simplified version, pay to use for full functionality
3. Pay to use

### How will the Intellectual Property of DSS be protected?

The owner of each system will decide the extent of protection required. The levels of access by users we envisage are:

1. Full open access (e.g. publically funded DSS) – users can run the DSS and researchers have access to modify parameters within the DSS to improve or adapt the system.
2. Intermediate access– the user can run the DSS and has the ability to modify only those parameters made available by the owner
3. Use access – the user can run the DSS to guide decisions
4. Link – the user accesses the DSS through a link to the owners own website

An IP agreement will enable the owner to define the level of user access that is acceptable. For all DSS on the platform, branding of the DSS accessed through the platform will be guided by the DSS owner.

### How will DSS integrate with the online platform?

Depending on the extent to which IP of a DSS needs to be protected, and the level of user access to the DSS that is acceptable, integration can be achieved by:

1. Open and Intermediate Access using API or web service to allow remote running of the DSS (supply of data, return of results and modification DSS parameter values)
2. Use access, using an API or web service to allow remote running of the DSS and return of results (minimum) and, where appropriate, supply of input data from the platform.
3. A link from the platform to the DSS existing website. This would not utilise the functionality of the platform, but would increase visibility of the DSS.

### What commitment is needed from DSS developers/providers?

1. We do not expect owners of confidential or 'pay for use' DSS to make any binding commitment to integrate their DSS with the platform. An expression of interest would make DSS owners stakeholders of the project.
2. Where DSS are already in the public domain (through publication or open access) the assumption will be that either the DSS owners or the IPM Decisions Platform developers are free to integrate the DSS into the platform.

### The *IPM Decisions* project will:

1. Engage with stakeholders on the development of the platform and integration of DSS into the platform.
2. Ensure that DSS owners are consulted, acknowledged and that 'branding' is respected for any system used.
3. Work with DSS owner stakeholders to maximise the suite of DSS available through the platform.