IPM Decisions

Deliverable 6.7 - First country list with demonstration activities, number of visitors reached

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1   Public summary

IPM Decisions project has created an online platform, allowing farmers and advisors across Europe to access Decision Support Systems (DSS) for integrated pest management. The platform uses a large range of DSS which can be adjusted for regional conditions, giving farmers and advisors indicators for risk. The first edition of www.ipmdecisions.net was launched in September 2023, which was also the starting point for platform promotion. In March 2023 the platform was updated and now has 26 DSS fully integrated in the platform and 19 more DSS linked to the platform. This document provides a summary of the promotion activities up to the end of April 2023.

2   Prepare for platform demonstration
2.1   Select farm location

Platform promotion and demonstration activities started in September 2022, after the initial launch of the platform. At this point there was a limited number of example DSS available on the platform, and as the launch was at the end of the growing season, only a limited number of DSS were active. For platform demonstrations it was possible to use historic data from the 2022 growing season, so DSS output and risk information could be demonstrated to the public. After the platform update in March 2023 many more DSS are available, and platform demonstrations can be done with actual data under real field conditions for a chosen location in Europe. The exact farm location is important as most DSS need input of weather data for accurate predictions of risk information (**Figure 2**). After selecting the farm location the platform will start collecting weather data. The first time this might take up to 2 hours, but once the location is connected to the weather service updates will continuously take place in the background (**Figure 2**).
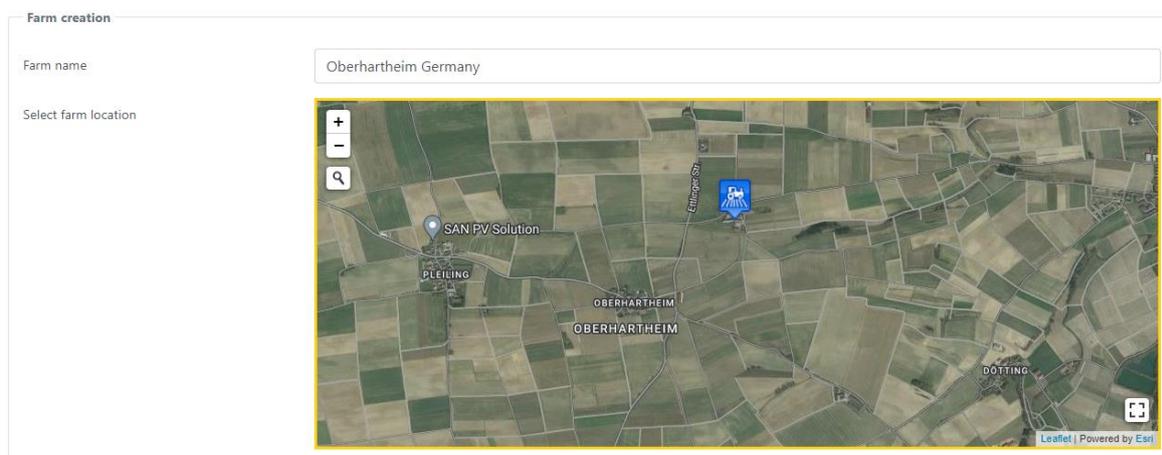

Figure 1: Platform screenshot, March 2023: Farm location can be select by clicking on the map provided, in this example for a farm in Oberhartheim, Germany

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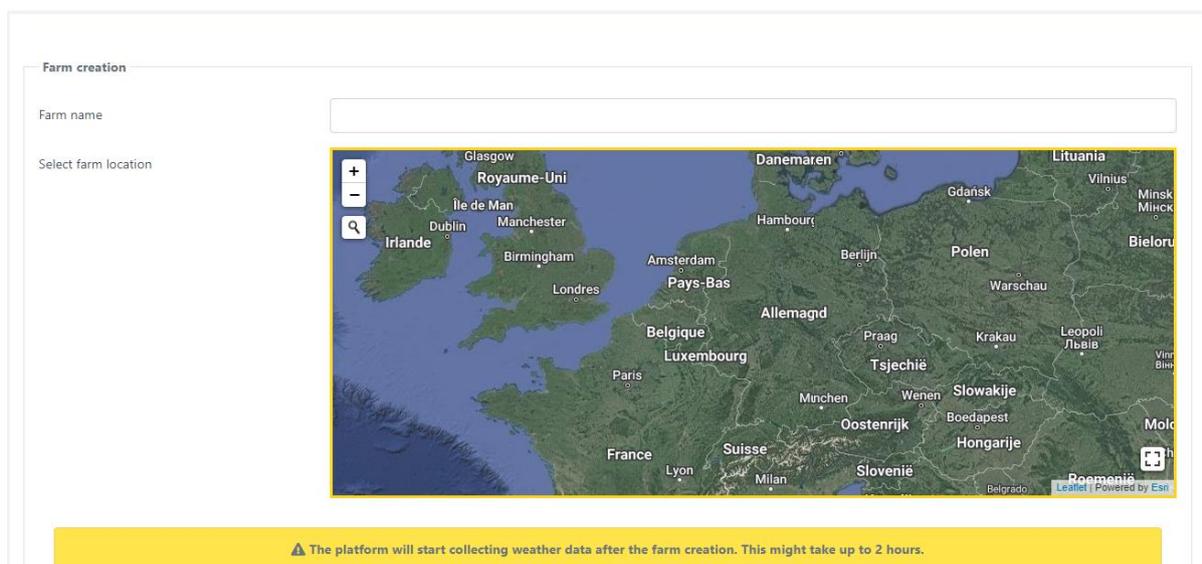number of visitors reached
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Figure 2: Platform screenshot, March 2023: Farm locations can be selected anywhere in Europe. A warning message alerts users that after selecting a location, it may take up to 2 hours for the necessary weather data to be available to run selected DSS.

2.2   Select DSS

Once the farm location is selected, the next step is to select the relevant DSS for the farm (**Figure 3**). For some DSS it is necessary to first select the specific relevant crop, as the pest can occur in more than one crop (e.g. Cutworm model). For other DSS the specific relevant pest may need to be selected, as the DSS covers more than one pest (e.g. Septoria Humidity Model).

The country flags under 'Source' highlight countries in which the DSS has been validated and or which the model developers consider it valid for use (**Figure 4**). From the list is becomes clear that for many DSS the list of countries where DSS is expected to work well is limited. It is also clear that for countries in the South of Europe the availability of valid DSS is small. Although most of the DSS are relevant for the countries in Southern Europe, testing or validation in these countries is necessary before the can be fully used in practice. This situation has limited the options for demonstrations to farmers in these countries. Specific dashboards on the Platform make it quicker and more efficient to test and adapt DSS to regional conditions.

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DSS selection

CROP	PEST	DSS	SOURCE	
Beets ▾	Cutworm	Cutworm Model ⓘ	🇬🇧🇧🇪🇱🇺🇳🇱🇫🇷🇩🇪🇩🇰	Select
Winter Wheat ▾	Orange blossom midge	Orange Wheat Blossom Midge Emergence Model ⓘ	🇬🇧🇧🇪🇱🇺🇳🇱🇫🇷🇩🇪🇩🇰	Select
Oilseed rape	Pollen Beetle	Pollen Beetle Migration Model (simplified) ⓘ	🇬🇧🇧🇪🇱🇺🇳🇱🇫🇷🇩🇪🇩🇰	Select
Winter barley ▾	Saddle gall midge	Saddle Gall Midge Model ⓘ	🇬🇧🇧🇪🇱🇺🇳🇱🇫🇷🇩🇪🇩🇰	Select
Apple ▾	Codling moth	Codling moth flight model ⓘ	🇦🇱🇧🇦🇭🇷🇬🇷🇮🇹🇲🇹🇲🇪🇲🇰🇵🇹🇷🇸🇸🇮🇪🇸	Select
Winter barley ▾	Barley Yellow Dwarf Virus	BYDV TSUM model ⓘ	🇬🇧🇧🇪🇱🇺🇳🇱🇫🇷🇩🇪🇩🇰🇮🇪	Select
Potato	Potato late blight	Hutton Criteria Late Blight Model ⓘ	🇬🇧	Select
Winter Cereals	Grey Field Slug	Grey Field Slug (Cereals) ⓘ	🇬🇧	Select
Oilseed rape	Grey Field Slug	Grey Field Slug (Oilseed Rape) ⓘ	🇬🇧	Select
Carrot	Carrot rust fly	Carrot fly flight model ⓘ	🇳🇴	Select
Potato	Potato early blight	Alternaria TOMCAST ⓘ	🇳🇴🇩🇰	Select
Potato	Potato late blight	Negative prognosis ⓘ	🇳🇴🇩🇪🇵🇱	Select
Winter Wheat	Tan spot ▾	Septoria Humidity Model ⓘ	🇳🇴🇩🇰🇸🇪🇫🇮🇱🇹	Select

Figure 3: Platform screenshot, March 2023: DSS are selected from a full list of available DSS. This screenshot captures the DSS available for selection in March 2023

GER

Crop selection

Winter Cereals
Winter Oats
Winter Rye
Winter Triticale
Winter Wheat

Use **CTRL + Click** to select multiple crops

Filters

☑ Filter by country in which DSS was developed and/or valid ⓘ

GREECE ▾

Show DSS

DSS selection

CROP	PEST	DSS	SOURCE	
Select Crop ▾	Codling moth	Codling moth flight model ⓘ	🇦🇱🇧🇦🇭🇷🇬🇷🇮🇹🇲🇹🇲🇪🇲🇰🇵🇹🇷🇸🇸🇮🇪🇸	Select
Select Crop				
Apple				
Pear				

Figure 4: Platform screenshot, March 2023: List with DSS validated for Greece

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2.3 Use DSS dashboard

The DSS Use Dashboard in the IPM Decisions platform gives actual risk information for the selected DSS-crop-pest combinations for the farm location (**Figure 5**). This provides very relevant information for farmers and advisors for taking decisions about pest management. Clicking on the DSS icons gives more details for the specific pest (**Figure 6**).
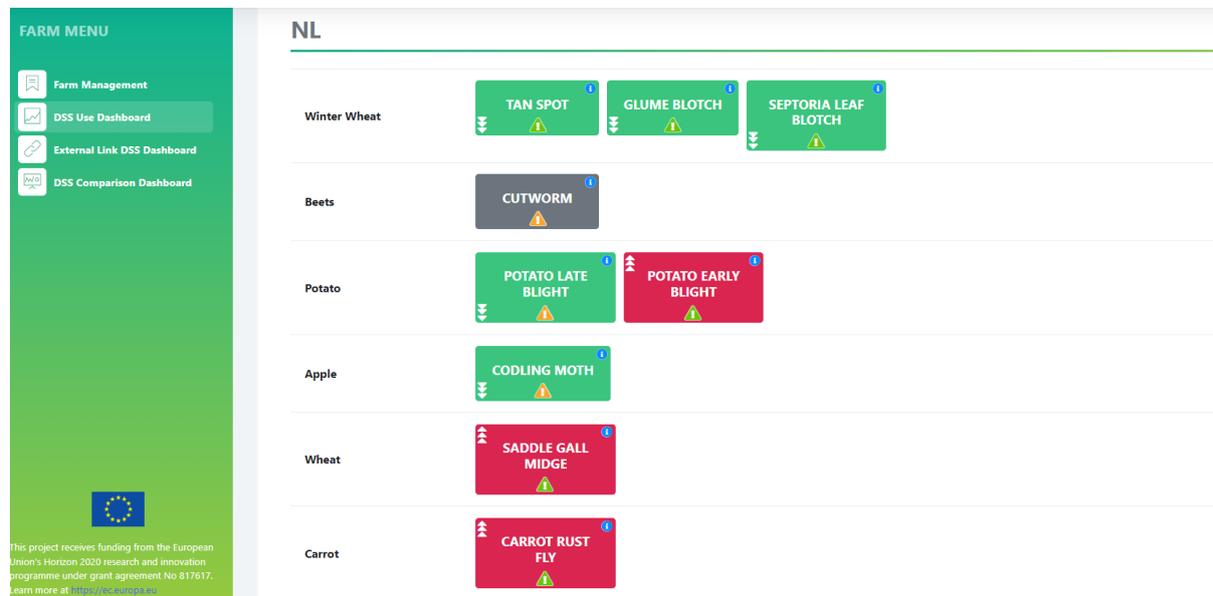

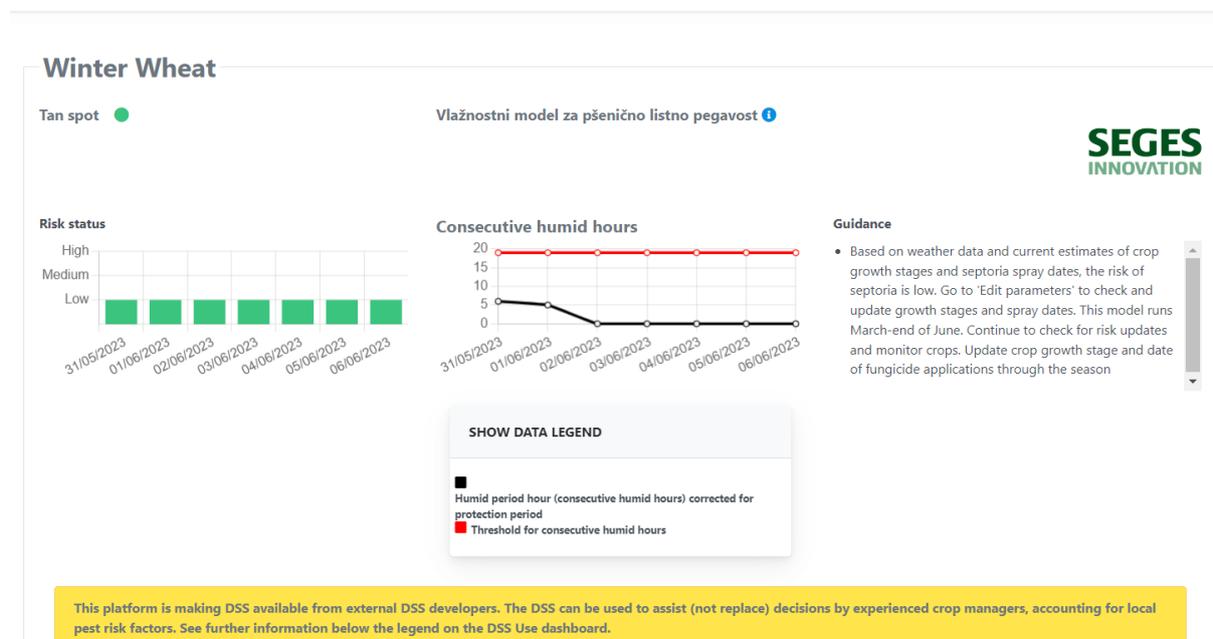**Figure 5:** Platform screenshot, March 2023: Overview of risk information for a location in The Netherlands

Figure 6: Platform screenshot, March 2023: Detailed information about Tan spot in winter wheat for a location in The Netherland

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3 Platform promotion and demonstration activities

The platform was launched in September 2022. From that point on, platform promotion started in all the participating countries. All project partners responsible for platform promotion in their countries developed and maintained a national activity plan. In the activity planning we distinguish between platform demonstration, platform promotion, workshops, newsletter, social media activity, website publications, articles in farm journals and other activities. As the winter period is not the best period for the demonstration of DSS, the focus for platform demonstrations is on the growing season of 2023. After the new Platform update in March, the range of DSS available was increased and it so it became more interesting for advisors and farmers looking to further advance application of integrated pest management on farms and in extensions services. This report gives an overview of the activities and number of stakeholders reached, up to April 2023.

IPM Decisions is connecting to different stakeholders. The stakeholder groups for the project are 1) farmers, 2) advisors, 3) DSS developers, 4 researchers, 5) educational institutions, 6) policy people, 7) value chain partners, and 8) general public.

3.1 Promotion and demonstration per country

IPM Decisions has partners in 12 European countries. The starting point for DSS availability and use is very different across Europe, and for this reason the strategy for platform promotion and demonstration needs a country specific approach. Looking over Europe we see the following differences:

- In some countries there is competition from already existing platforms up and running: Germany, Norway, Denmark, France, and Italy. In these countries we have to find the niche for the IPM Decisions platform. Options are: (i) to focus on promotion of DSS available on the IPM Decisions platform that are not available on the existing platforms, and (ii) that existing platforms use the back end services of IPM Decisions to show the output on their platform. We contacted these platforms for a discussion about common interest and possible collaboration.

- In Norway and Denmark many farmers use DSS through their advisors. Advisors base their recommendations on DSS and share this information with their clients. Farmers rely on their advisor and do not directly consult the DSS. In such countries, we focus on advisers as key stakeholders.

- Countries where DSS are often used (e.g. Norway, Denmark, Germany) versus countries where DSS or not commonly used (e.g. Lithuania, Slovenia, Greece). In the latter case, the first step is creating trust in DSS. As advisors play an important role in knowledge exchange with farmers, focus will be on building trust with advisors rather than with farmers in these countries.

- The platform has DSS that are validated and/or valid for just a limited number of countries. In countries where DSS are not yet valid, the important first step to take is to test of validate most interesting DSS. DSS for potatoes and cereals are of potential interest in most European countries. As validation of DSS is not an IPM Decisions activity, partners have to search for opportunities to promote and support validation

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activities. Best possible option is to cooperate with advisors, and ask them to test most relevant DSS with a group of farmers in practice. Resources have been developed in the project to support validation exercises.

- DSS are missing for some pests of important crops (e.g. in onions, sugar beets, carrots, vineyards, olives). The project team continues to collaborate with developers to integrate more DSS on the platform, we expect that by the end of 2023 a range of new DSS will be available.

The current situation in the different countries poses contrasting and significant challenges for achieving a high number of platform uses in the first year of the platforms launch. Specific communication and dissemination work is needed to interest potential users. In each country the best options for platform promotion have been discussed, looking at activities from the partners but also the opportunity for cooperation with other Horizon projects, particularly our sister project IPMWORKS (H2020 No. 101000339). Options to connect to other national stakeholders with a potential interest in the promotion of IPM, and in extension of this promotion of the platform (for example, pesticide producers as part of their Product Stewardship activities), and extension service organizations, have also been identified and progressed.

Figure 7 gives an estimation of the total number of engagements through project promotion activities up to April 2023. The different strategies for the partner countries lead also to differences in number of activities so far and the audiences reached, see **Table 1**.
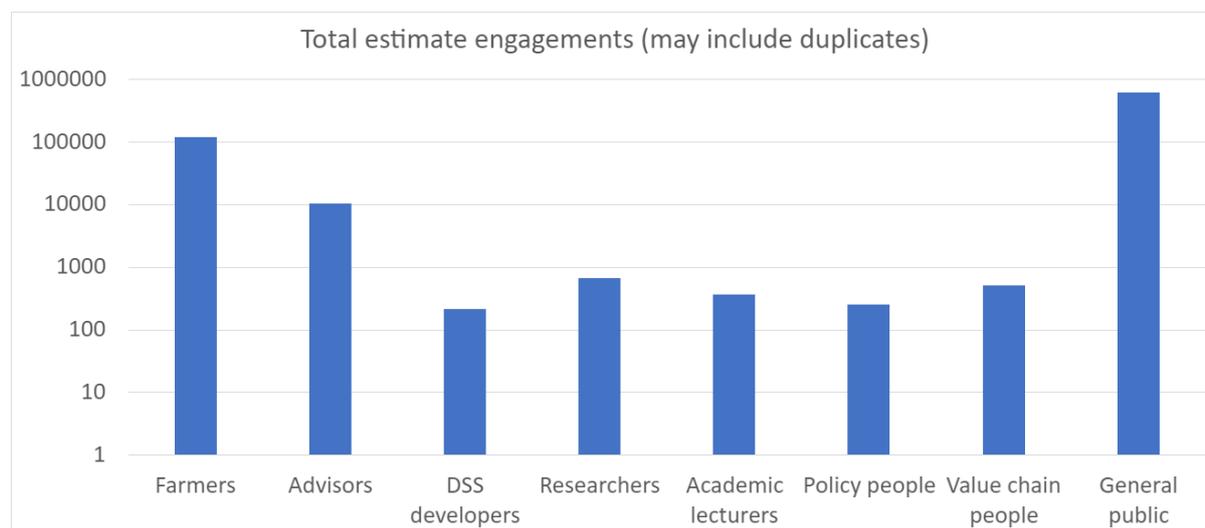

Figure 7: Total estimate of engagements, total of all partners and countries

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Table 1: Activities and total number reached

Country & project partner	Number of activities	Total number reached		
		Farmers & advisors	Developers, value chain partners & researchers	Other/all categories
Norway (NIBIO)	7	75	530	
Sweden (SLU)	13	60.000	10	
Finland (LUKE)	1	100	30	5
Lithuania (LAMMC)	10	75	15	6.900
Denmark (SEGES, IPMC, Aarhus)	13	1.100	100	150
United Kingdom (ADAS, AHDB)	46	5.000	250	230
The Netherlands (Delphy)	24	3.300	250	15.000
Germany (LfL)	13	2.400	200	900
France (APCA, INRAe)	3	60	15	5
Slovenia (MPS)	2	15	100	20
Italy (Coldiretti)	14	55.000	15	100.000
Greece (AUA, GAIA)	8	350	100	150
Total	**154**	**127.000**	**1.600**	**123.000**

3.2 Platform demonstration and number of users

Since the March platform update, the focus of network activities has shifted from platform promotion towards platform demonstration, aiming at increasing the number of platform users. Each partner country aims to run a minimum of 12 platform demonstrations, as part of bespoke workshops or at wider industry events. Demonstrations have begun, and up to the end of April 2023 24 demonstrations have been conducted, see **Table 2**.

Table 2: Number of demonstrations by April 2023

Country	Number of demonstrations
Norway	0
Sweden	4
Finland	0
Lithuania	2
Denmark	0
United Kingdom	4
The Netherlands	4
Germany	5
France	3
Slovenia	1
Italy	1
Greece	3
Total	24

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The total number of users by the end of April 2023 was almost 600 (**Figure 8**). At the registration stage, users are asked to select which stakeholder group(s) reflect their main interest. Users can select more than one option, for reporting we use their first choice only. We see a good spread over farmers, advisors and researchers. The actual number of farmers that benefit from the platform outputs is likely higher, as many farmers get risk information through their advisors.
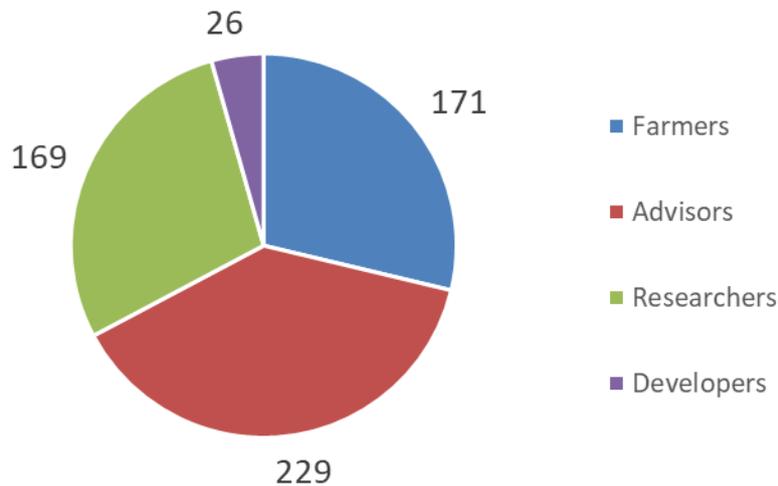

Figure 8: Number of register users on the IPM Decisions platform, and their self-defined main stakeholder group [29 My 2023].

Looking at the spread across Europe we see large differences in the number of registered users between countries, reflecting the different starting positions as explained section 3.1 (**Figure 9**). Up to 29 May 2023, the United Kingdom and The Netherlands have relatively high numbers of registered users, and Eastern and Southern Europe have relatively low numbers. Tailor-made promotion and demonstration activities are planned to significantly increase the number of users in all countries.

As well as tracking the number of registered users of the platform, we also monitor visits to the platform web address using [Plausible Analytics](); an open source project dedicated to making web analytics more privacy-friendly. Based on this data, there have been 1,185 daily unique visitors to the platform home page in the period March – May 2023 (**Figure 10**). Plausible is a privacy-friendly process, and does not use cookies or other persistent identifiers. If a person visits from multiple devices or on multiple days, they are counted as separate visitors. We estimate that around 30% of these visits represent duplicate visits by around 50 individuals, leading to and estimated 850 actual unique visits to the platform homepage between 23 March and 31 May 2023. The majority of visitors come from direct links, indicating they are members of the project consortium, or linking via project publications and events. The country of connection identified for each visitor broadly matches the number of registered users of the platform, with most visitors based in the United Kingdom, The Netherlands, Denmark, France, Sweden and Germany. A more detailed breakdown of platform visitors and users will be produced at the end of the project.
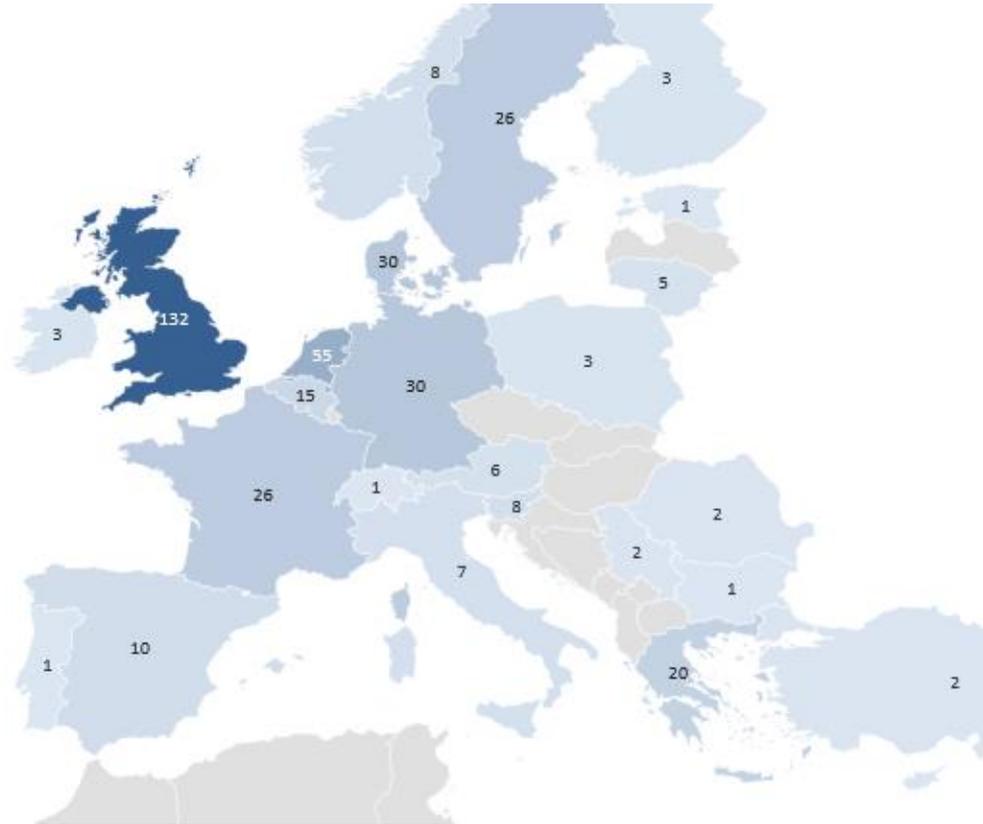
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Figure 9: Number of users per country, based on the location of registered users primary farm location [29 May 2023]. Not all registered users have selected locations within Europe.
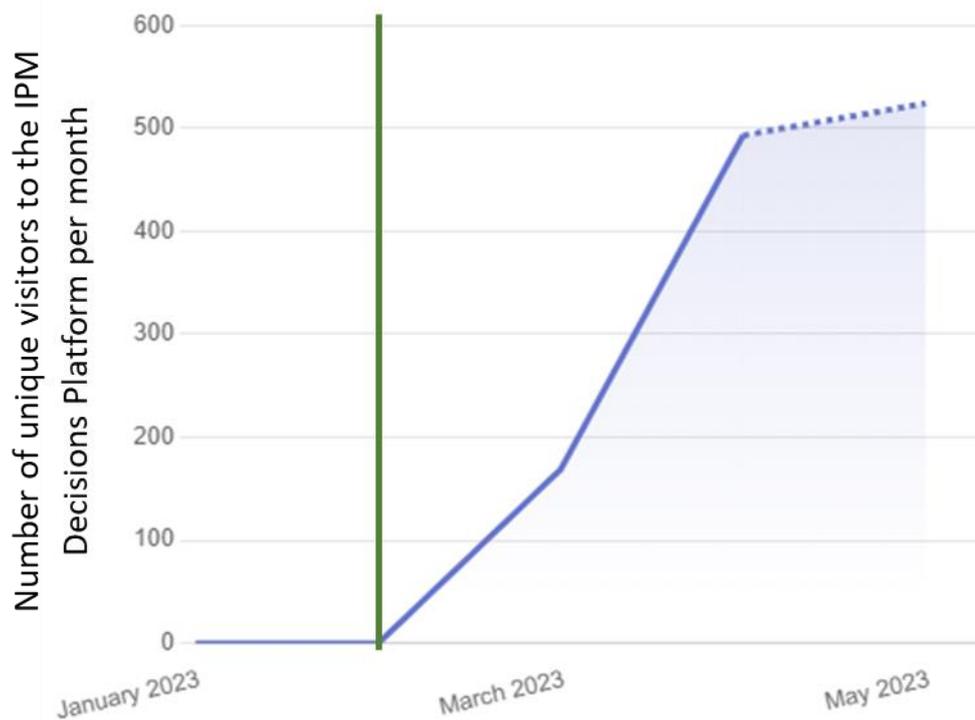

Figure 10: The number of daily unique visitors to the IPM Decisions platform following the March updates. Monitoring of visitor numbers began from the 23 March 2023 [31 May 2023].

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3.3 Key Performance Indicators

The project key performance indicators are detailed in **Table 3**. The number for outreach to the project stakeholders is already met. The challenge is to reach 2000 platform uses by the end of the project. Platform demonstrations are important for this and will be the focus of the dissemination activities during the last year of the project.

Table 3: Summary of IPM Decisions Key Performance Indicators relating to users of the IPM Decisions platform.

Type of indicator	Target	Actual	% Achieved
Communication with stakeholders	100.000	>100.000	100%
Platform demonstrated to potential users	12.000	3.200	25%
Number of platform users	2.000	600	30%
Number of platform visits	20.000	850	4%

4   Conclusions

The development of the IPM Decisions platform was ready for demonstration in September 2022, at the end of the growing season. After platform update in March 2023, just before the growing season, the platform offered access to fully integrated DSS for 26 pest/crop combinations and 19 linked DSS, and was ready for wider promotion and demonstration. The platform is useful resource for farmers and advisors for advising on integrated pest management in several crops. From March 2023 the focus of project dissemination is on platform demonstration, aiming at growing numbers of users. The current number of platform users over 600, the targeted number of users by May 2024 is 2,000. This is a challenging target; a joint effort from all partners is necessary to succeed. Country specific activity planning is in place to achieve growth in national uptake. Integration of further DSS for important crops across Europe will help to promote the platform and reach high numbers of users. In a range of countries a limited number of DSS are validated or judged as valid. In these countries the first step is to encourage and support testing of relevant DSS under local conditions and create trust in the use of DSS. For this, advisors are the most important stakeholders to connect with. Many farmers get information from DSS through their advisors rather than directly from DSS services, as such the number of registered users on the platform underestimates the number of farmers benefiting from DSS outputs provided. We are investigating how the number of these secondary users of the platform can be estimated.

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