



JORDAN

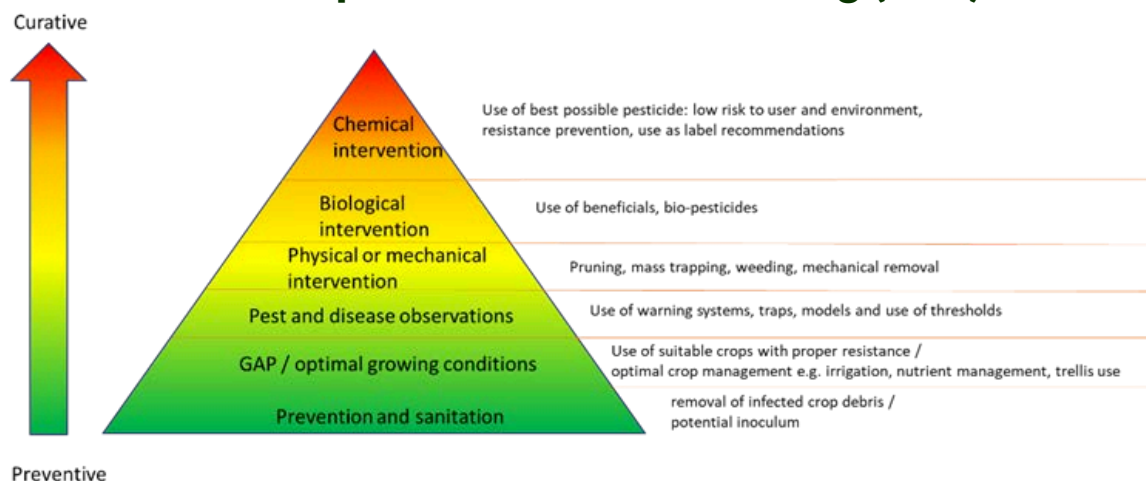
HORTIFUTURE

JORDAN PESTICIDES GUIDE user manual



INTRODUCTION

In vegetable and fruit production, pests and diseases can lead to significant yield and income losses. To mitigate these losses Integrated Pest Management (IPM) strategies should be applied, focusing first and foremost on prevention and monitoring (ref 1).



Farmers can reduce the risk of pest and disease infestations by selecting pathogen-free fields, choosing crops that are less susceptible to prevalent pests and diseases, and opting for crop varieties with resistance or tolerance to pests and diseases. In addition to these preventive measures, proper sanitation practices are crucial. This includes removing infested crop debris, timely removing harvested crops that could infest subsequent crops, and practicing sound crop management. Continuous crop monitoring is also essential for early detection of the presence of pests and diseases. When action is required (when a threshold level is reached), non-chemical methods should be prioritized. Chemical pesticides should only be considered as a last resort.

IPM allows for the use of chemical pesticides, however this should be managed judiciously and responsibly. Preferably low risk products should be considered. In addition, it is important to apply the correct pesticide for the specific pest or disease identified and ensure it is applied to a crop for which it is registered, handle pesticides with care for health and environment, and manage pesticide resistance by rotating pesticides and applying the prescribed doses following the product label specifications.

Reference:

1) <https://www.fao.org/pest-and-pesticide-management/ipm/integrated-pest-management/en>

JORDAN PESTICIDES GUIDE

The Jordan Pesticides Guide (JPG) is an application designed to support users in identifying and selecting appropriate products as a last resort for pest and disease control, following Integrated Pest Management (IPM) principles.

The Open as App platform (free and open access) was chosen as the application to run the JPG. This platform is easy to use and maintain by the administrator, as the programming and design of the application with Open as App is Microsoft® Excel®-based and can be kept in-house, without the involvement of an application developer. The application is available in both smartphone and web-based versions.

The Open as App application can be downloaded from the Google Play store or Apple App store, however the JPG can only be installed using the QR code or the link below. Both Arabic and English versions of the JPG are available:



<https://oaa.app.link/launch-app-f0354256-3e0d-4004-ac72-2410c259be8b>

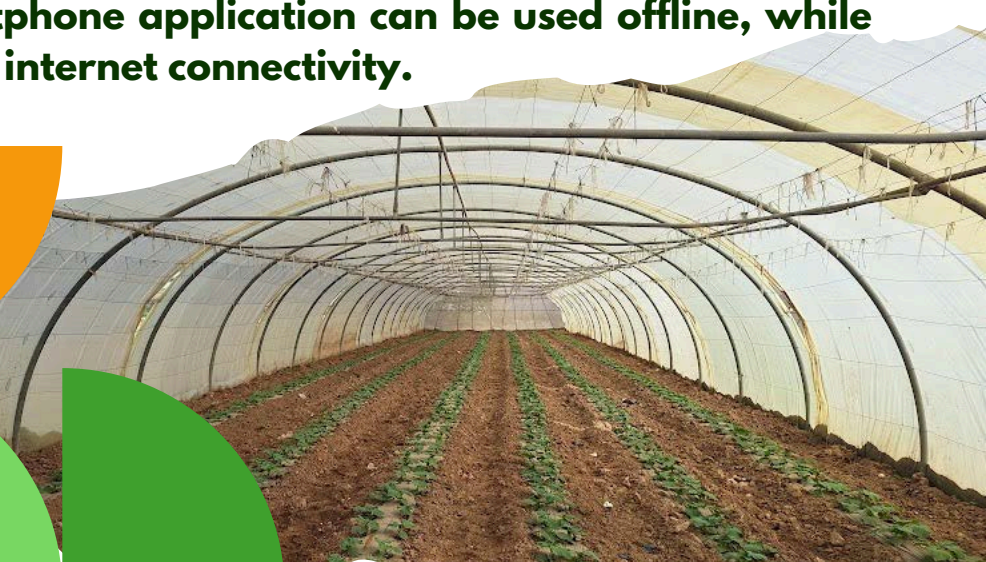


<https://oaa.app.link/launch-app-664c5205-d612-4163-9bb9-dfc994b02a6f>



After accessing the link, the JPG application will automatically download and install on your device.

Once installed, the smartphone application can be used offline, while the web version requires internet connectivity.



INTENDED USE & USERS

The Jordan Pesticides Guide (JPG) application has been developed to assist users to select appropriate pesticides from all registered and authorized pesticides in Jordan, to control a specific pest or disease, for a particular crop, while providing additional information and selection options on e.g. product name, mode of action, toxicity and harmful side effects, and other relevant information.

The JPG application aims to support more informed decision-making on pest and disease control. The application is not developed for pest and disease identification and therefore can only be used once the pest or disease has been properly identified.

The JPG application is primarily developed for use by public and private extension service providers. Additionally, farmers with sufficient agronomic knowledge and literacy may also benefit from using it. To effectively use the application, users should have knowledge, expertise and understanding in the following areas:

- Integrated Pest Management (IPM), to assess whether pesticide application is truly necessary for controlling pests and diseases;
- Accurate identification of pest and disease symptoms, to correctly input the search criteria for pesticide selection;
- Pesticide toxicity and its classification according WHO standards, to understand the related health risks of pesticide use, and how to protect oneself (with PPEs) against these risks;
- Environmental risks of using pesticides, to understand the related environmental risks and impact of pesticide use and disposal, and how to handle pesticides judiciously;
- Pesticide resistance, to be aware of the resistance effect of overuse and repeated applications of the same pesticide, and how applying different Mode of Action groups of a pesticide can help prevent resistance;
- Interpretation of information and symbols on the label of the pesticide product, to be able to review and verify the generated advice against the actual label instructions;
- Digital tools, to be able to use and operate the JPG application on a smartphone, tablet or desktop or laptop computer.

DATABASE OF THE APPLICATION

The supporting database of the JPG application (in Excel® format) contains information of all insecticides and fungicides registered for agricultural purposes in Jordan, and is based on the official pesticides register available on the website of the Jordan Ministry of Agriculture (MoA) (ref 1). The following information is included:

- Registration number
- Active Ingredient or common name
- Trade name
- Local name
- Formulation
- Concentration
- Manufacturing company
- Expiry registration

The MoA provides all labels digitally, from which the following information was sourced and included in the database:

- Crops for which registered
- Target pests/diseases
- Recommended dose
- Re-entry interval (REI)
- Pre-harvest interval (PHI)
- Usage guidelines
- Label color indicating toxicity
- Additional warnings

In addition, the following information has been added to the database and JPG application (external sources):

- Mode of action (ref 2,3)
- Pollinator toxicity (high, medium, low, none) (ref 4)
- Highly Hazardous Pesticide rating, based on PAN ratings for class 1, 2 and 4, excluding class 3 (environmental risks) (ref 5)

References:

- 1) https://dms.moa.gov.jo/Pesticides_Inquiry/
- 2) <https://www.frac.info>
- 3) <https://irac-online.org>
- 4) <https://www.ncagr.gov> (traffic light pesticide toxicity to bees)
- 5) <https://www.pan-uk.org/site/wp-content/uploads/PAN-HHP-List-2021.pdf>



HOW TO OPERATE THE JPG

- 1** Select the crop concerned
- 2** Select the specific pest or disease concerned
- 3** Filter on minimal label colour toxicity
- 4** Filter on Highly Hazardous Pesticides
- 5** Filter on pollinator toxicity
- 6** Review selected products and product details
- 7** Select product and consult product label



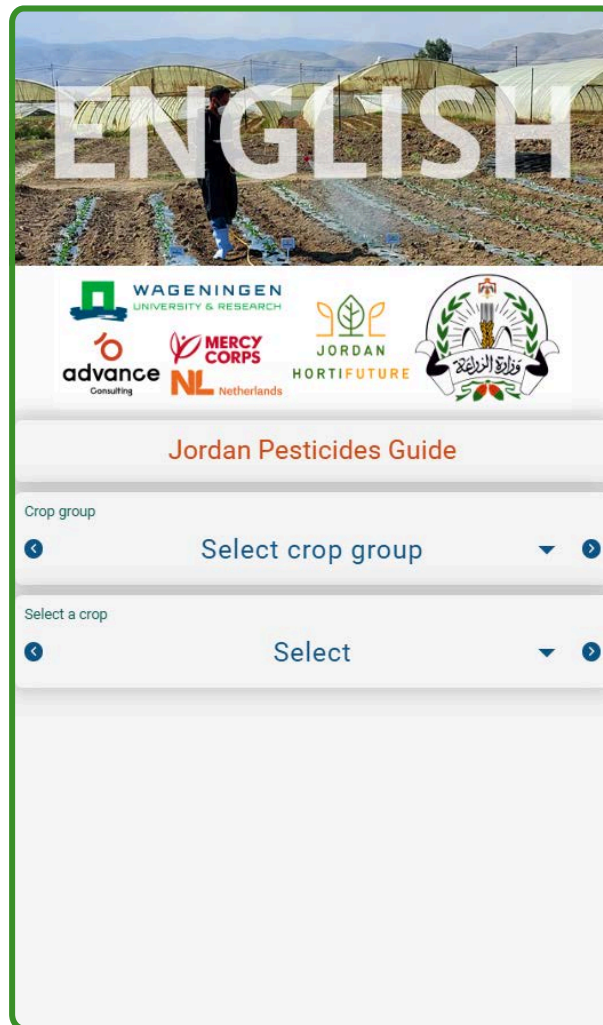
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SELECT THE CROP IN WHICH TO CONTROL A PESTS OR DISEASE

When the JPG application is launched, an input screen will appear, where you can first select the crop in which the pest or disease needs to be controlled.

You can first choose a crop group, then specify the exact crop and production method (open field/indoor).

Choose the crop group and specific crop from the drop-down menus, or by clicking the arrows in the selection boxes to browse through the different available options.



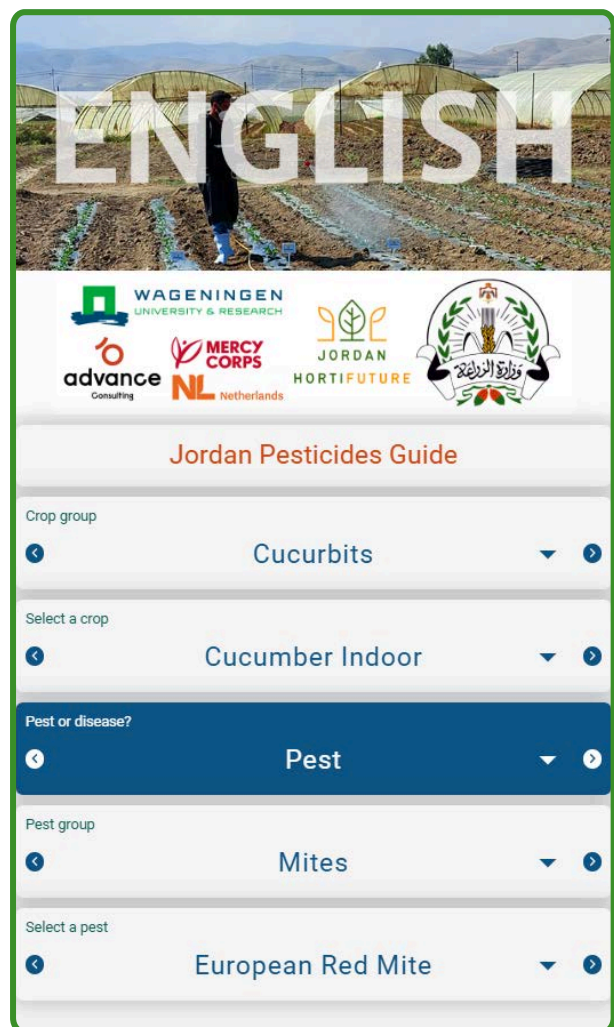
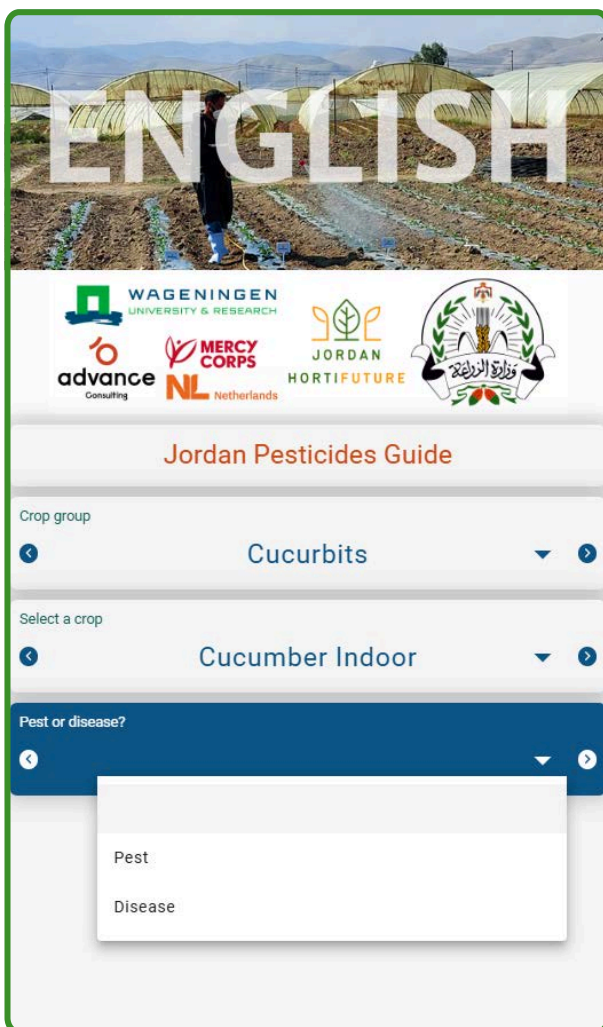
SELECT THE SPECIFIC PEST OR DISEASE CONCERNED

Next, the specific pest or disease you wish to generate a selection of suitable pesticides for needs to be selected.

Accurate identification of the pest or disease in the field is essential before using the JPG application to generate appropriate pesticide options!

First the selection needs to be made whether a pest or disease is concerned.

Next, the pest or disease group needs to be selected, followed by the specific pest or disease wished to control.



SELECT THE SPECIFIC PEST OR DISEASE CONCERNED

After entering the initial selection criteria, you can scroll down to already view the pesticides available for controlling the selected pest or disease on the specified crop.

Additionally, the number of filtered products will be displayed.

In our example, selecting indoor cucumber as a crop, and european red mite as the pest to be controlled, results in a selection of 61 available products with an active ingredient that can control european red mite in indoor cucumber.

Filters:

Minimal toxicity (label colour) All

Highly Hazardous Pesticide All

Some of the listed pesticides may be considered as a Highly Hazardous Pesticide. Please select "No" to exclude those in order to choose from less dangerous pesticides.




Minimal Bee toxicity All

Total number of results: 61

Active Ingredien...	Trade/Brand name	Mode o...	Pre-harvest ...
Abamectin	Maactin 8.4 SC	6	7
Abamectin	Agri Ten 8.4 SC	6	7
Abamectin	Qwactin 8.4 SC	6	7
Abamectin	Supervertic Plus 8.4 SC	6	7
Abamectin	Agrimec Gold 8.4 SC	6	7
Abamectin	Deltamec 18 EC	6	7
Abamectin	Laotta-1.8% EC	6	7
Abamectin	Acimic Super -8.4% SC	6	7
Abamectin	Maximix 8% SC	6	7
Abamectin	Sight EC	6	7
Abamectin	Abamec Gold 8.4 SC	6	2
Abamectin	Vertimec EC	6	3

FILTER ON MINIMAL LABEL COLOUR TOXICITY

If you additionally wish to make a selection based on toxicity, the minimal WHO hazard class can be selected, corresponding with the label colours:

Class Ia	Class Ib	Class II	Class III	Class U
Extremely hazardous very toxic	Highly hazardous toxic	Moderate hazardous harmful	Slightly hazardous caution	Unlikely hazardous
				

In our example, filtering on WHO class II (yellow), results in a selection of 56 available products with toxicity class II or higher (III and U).

Filters:

Minimal toxicity (label colour)
yellow

Highly Hazardous Pesticide
All

Some of the listed pesticides may be considered as a Highly Hazardous Pesticide. Please select "No" to exclude those in order to choose from less dangerous pesticides.

Minimal Bee toxicity
All

Total number of results: 56

Active Ingredien...	Trade/Brand name	Mode o...	Pre-harvest ...
Abamectin	Maactin 8.4 SC	6	7
Abamectin	Agri Ten 8.4 SC	6	7
Abamectin	Qwactin 8.4 SC	6	7
Abamectin	Supervertic Plus 8.4 SC	6	7
Abamectin	Agrimec Gold 8.4 SC	6	7
Abamectin	Deltamec 18 EC	6	7
Abamectin	Laotta-1.8% EC	6	7
Abamectin	Acimic Super -8.4% SC	6	7
Abamectin	Maximix 8% SC	6	7
Abamectin	Sight EC	6	7
Abamectin	Abamec Gold 8.4 SC	6	2
Abamectin	Vertimec EC	6	3

FILTER ON HIGHLY HAZARDOUS PESTICIDES

Highly Hazardous Pesticides (HHPs) are evaluated not only on acute toxicity, the WHO hazard class, but also on long term effects such as carcinogenic effects. If HHPs are part of the initial selection, you will get the following warning:

Some of the listed pesticides may be considered as a Highly Hazardous Pesticide. Please select "No" to exclude those in order to choose from less dangerous pesticides.

If you wish to filter out HHPs, the option "NO" can be selected.

In our example, filtering out HHPs, results in a selection of 24 available products.

Filters:

Minimal toxicity (label colour)

<
yellow
>

Highly Hazardous Pesticide

<
no
>

Minimal Bee toxicity

<
All
>

Total number of results: 24

Active Ingrid... ↑	Trade/Brand name	Mode o...	Pre-harvest ...
Acynonapyr	DanyOte 20 SC	33	3
Amitraz	Ametop 20 EC	19	7
Amitraz	Amitraz 20 EC	19	7
Amitraz	Miraz EC	19	7
Bifenazate	Somo 43 SC	20D	3
Bifenazate	Brutal 43 SC	20D	3
Bifenazate	Yamazata 24 SC	20D	3
Bifenazate	Nimadel 24 SC	20D	3
Bifenazate	Wopro bifenazate 24 SC	20D	3
Bifenazate	Duramite 24 SC	20D	3
Bifenazate	Loral 24 SC	20D	3
Bifenazate	Super Spike 43 SC	20D	3
Emamectin	Bioact 5 WDG	6	7
Etoxazole	Bano 20	10B	7

Last update Pesticide database:
10/22/2024

Liability claim

FILTER ON POLINATOR TOXICITY

To protect pollinators essential for fruit set and to safeguard biodiversity, you can additionally filter on bee toxicity.

The following selection option for bee toxicity are available: high, moderate, low, none.

When selecting a filter for e.g. moderate toxicity, only products with moderate, low or none impact on bee toxicity will be displayed.

In our example, selecting moderate bee toxicity, results in a final selection of 19 available products, based on all previously entered selection criteria.

Filters:

Minimal toxicity (label colour) ▼ ▶
yellow

Highly Hazardous Pesticide ▼ ▶
no

Minimal Bee toxicity ▼ ▶
moderate

Total number of results: 19

Active Ingrid... ↑	Trade/Brand name	Mode o...	Pre-harvest ...
Acynonapyr	DanyOte 20 SC	33	3
Amitraz	Ametop 20 EC	19	7
Amitraz	Amitraz 20 EC	19	7
Amitraz	Miraz EC	19	7
Bifenazate	Somo 43 SC	20D	3
Bifenazate	Brutal 43 SC	20D	3
Bifenazate	Yamazata 24 SC	20D	3
Bifenazate	Nimadel 24 SC	20D	3
Bifenazate	Wopro bifenazate 24 SC	20D	3
Bifenazate	Duramite 24 SC	20D	3
Bifenazate	Loral 24 SC	20D	3
Bifenazate	Super Spike 43 SC	20D	3
Etoxazole	Bang 20	10B	7
Fluxametamide	Gracia 10%EC	30	1

Last update Pesticide database: 10/22/2024 Liability claim ⓘ

REVIEW SELECTED PRODUCTS AND PRODUCT DETAILS

To further review the final selection, you can sort on Active Ingredient (A-Z and Z-A), Trade/Brand Name, Mode of Action (MoA) group, or Pre-Harvest Interval (PHI), by clicking on the respective column headers.

Filters:

Minimal toxicity (label colour): yellow

Highly Hazardous Pesticide: no

Minimal Bee toxicity: moderate

Total number of results: 19

Active Ingrid... ↑	Trade/Brand name	Mode o...	Pre-harvest ...
Acynonapyr	DaryOte 20 SC	33	3
Amitraz	Ametop 20 EC	19	7
Amitraz	Amitraz 20 EC	19	7
Amitraz	Miraz EC	19	7
Bifenazate	Somo 43 SC	20D	3
Bifenazate	Brutal 43 SC	20D	3
Bifenazate	Yamazata 24 SC	20D	3
Bifenazate	Nimadel 24 SC	20D	3
Bifenazate	Wopro bifenazate 24 SC	20D	3
Bifenazate	Duramite 24 SC	20D	3
Bifenazate	Loral 24 SC	20D	3
Bifenazate	Super Spike 43 SC	20D	3
Etoazazole	Bang 20	10B	7
Fluxametamide	Gracia 10%EC	30	1

Last update Pesticide database: 10/22/2024

Liability claim ⓘ

Sorted on active ingredient

Filters:

Minimal toxicity (label colour): yellow

Highly Hazardous Pesticide: no

Minimal Bee toxicity: moderate

Total number of results: 19

Active Ingridien...	Trade/Brand name ↑	Mode o...	Pre-harvest ...
Amitraz	Ametop 20 EC	19	7
Amitraz	Amitraz 20 EC	19	7
Spiromesifen	Apromin 24 SC	23	7
Etoazazole	Bang 20	10B	7
Bifenazate	Brutal 43 SC	20D	3
Pyflubumide	Danikong 20% SC	25B	3
Acynonapyr	DaryOte 20 SC	33	3
Bifenazate	Duramite 24 SC	20D	3
Fluxametamide	Gracia 10%EC	30	1
Bifenazate	Loral 24 SC	20D	3
Amitraz	Miraz EC	19	7
Bifenazate	Nimadel 24 SC	20D	3
Spiromesifen	Oberon 24 SC	23	3
Orange oil	Prev-AM		0

Last update Pesticide database: 10/22/2024

Liability claim ⓘ

Sorted on trade name

SELECT PRODUCT AND CONSULT PRODUCT LABEL

Once you have decided which product is preferred, it is important to review the label of the physical product. The label will inform you on several aspects and is the actual legal document on how the product should be used.

1. Actual registered use

Although the JPG application will only select products registered and available in Jordan, and provides detailed information for which crops and which pests or diseases it is actually allowed to use, it is still important to review the actual label first to confirm if the selected product is allowed for the intended purpose.

2. Dose instructions

Only on the label detailed information can be found on how to prepare the spray solution and apply the product.

3. Safety measurements

Next to instructions how to use the product to control the pest or disease the label also shows how to prevent poisoning, minimize health dangers and environmental pollution when using the product. The label will provide information on which personal protective equipment should be used, what to do in case of accidental poisoning, and how to dispose the empty package.

ACKNOWLEDGEMENTS

The Jordan Pesticides Guide (JPG) is an application designed to support horticulture stakeholders in Jordan in identifying and selecting appropriate products for pest and disease control as a last resort, following Integrated Pest Management (IPM) principles.

Both the JPG application and this user manual were developed as part of the JordanHortiFuture Program by Wageningen University & Research, with support of Advance Consulting, and in close collaboration with the Jordan Ministry of Agriculture's (MoA) Plant Protection & Phytosanitary Directorate (PP&PD).

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Wageningen Centre for Development Innovation, P.O. Box 88, 6700 AB Wageningen, The Netherlands; T +31 (0)317 48 68 00; E info.cdi@wur.nl; www.wur.eu/cdi

Wageningen Plant Research, Business Unit Field Crops, P.O. Box 16, 6700 AA Wageningen, The Netherlands; T +31 (0)317 48 07 00; www.wur.eu/plant-research

Photos: Herman de Putter, Edwin van der Maden and Yousef Botros Al-Kawalit



DISCLAIMER

JordanHortiFuture, Mercy Corps, Wageningen University & Research and Advance Consulting accept no liability for any damage or adverse consequences arising from the use of the Jordan Pesticides Guide (JPG) application or this Jordan Pesticides Guide user manual.

Since the JPG application generates selections of pesticides potentially capable of controlling selected pests or diseases, based solely on available registered and authorized pesticides and efficacy of the active ingredient, it is the user's responsibility to verify the generated recommendations against the actual label instructions provided by the product packaging.



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