

- One objective of the EUCLID program is to propose existing or innovative integrated pest management strategies to the stakeholder community of the bio-control.
- **EUCLID_DSS** was developed to promote sharing and use of these strategies. EUCLID_DSS is free.
- EUCLID_DSS is implemented by some strategies of protection for tomato crops under greenhouses. Because DSS application is generic, other cropping systems can be taken into account. Application allows to use the decision rules contained in the DSS. Experts in this field will be able to create and validate new strategies.
- Advices for phytosanitary management against pests or diseases are generally provided according to attacks severity. The crop health state, as well as environmental factors, are evaluated using specific field indicators, by mean of regular samplings. Protocols can be shared on-line.
- Strategies of integrated protection are composed by decision rules for which using bio-control methods is a priority. Archiving of advices and phytosanitary actions allows to describe the crop protection history.
- Online surveys are made to collect information on existing protection strategies used in different cropping systems: sampling methods, crop health state indicators, protocols for phytosanitary actions. After validation, these strategies could be integrated to the DSS catalogue.
- **EUCLID_SAMPLING_TOOLS**, free of use, is complementary to the EUCLID DSS application. The user can set-up crop monitorings consistent with existing decision rule indicators or define fully customized sampling methods. Some examples are provided by the application.
- EUCLID_SAMPLING_TOOLS allows to record in a database, then administer, all the observations made on the field and the cropping history. This information can be edited and displayed in graphical form.

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1. Instructions for use

1.1. User identification

The **user** account gives access to the documentation, to the use of the decision rules and to the archiving of the DSS advices.

Any user has the possibility to connect using a demo account using the FREE ACCESS on https://isaceaweb.sophia.inra.fr/euclid_dss/ or to request a personal account by contacting the webmaster using the “Contact Us” tab or automatically by the JOIN US icon.

The personal connection to the DSS is made by entering the « login » and « password » of the account.

The **administrator** account adds the possibility of creating and of administering strategies. An administrator account should be requested by using the “Contact Us” tab on the website.

It is forbidden to share password to anyone.

1.2. Choice of a language

An English homepage will display when connecting to the site.

Three languages are then available: English, French, Chinese (first page only).

The flag of a country allows to select the corresponding language.

EUCLID
Europe China Lever for IPM Demonstration

Horizon 2020 Programme for Societal Challenge
DSS Decision Support System

Credit: E. Thomine

EUCLID's goal is to contribute to securing food production for the increasing worldwide population while developing sustainable production approaches to be used in European and Chinese agricultures.

The project has the ambition to optimise existing integrated pest management strategies and assess innovative ones.

Our role is to combine validated strategies in EUCLID Decision Support System: decision making tool designed to support bio-control stakeholders in integrated pest management framework.

EUCLID_DSS groups protocols, decision rules and biotic or abiotic indicators of different strategies. Once the indicators informed, the system proposes advices adapted to the health status of the crop.

EUCLID_SAMPLING_TOOLS is a complementary application to EUCLID_DSS. Dedicated to diagnose the health status and to inform indicators activating the decision rules, it allows to archive sampling data and DSS advices.

FREE ACCESS JOIN US PERSONAL ACCESS

This project has received funding from the European Union's Horizon 2020 research and innovation program under grant agreement No 633999

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In all the steps of the navigation in the site, it will be possible to obtain detailed explanations or to consult the documentation by positioning the computer mouse on the bold text, major text or on icons.

1.3. The menu

After identification, a menu proposes the access to the different functionalities.
The main and sub-tabs give access to the different functionalities.

· One objective of the EUCLID program is to propose existing or innovative integrated pest management strategies to the stakeholder community of the bio-control.

· EUCLID_DSS was developed to promote sharing and use of these strategies. EUCLID_DSS is free.


· EUCLID_DSS is implemented by some strategies of protection for tomato crops under greenhouses. Because DSS application is generic, other cropping systems can be taken into account. Application allows to use the decision rules contained in the DSS. Experts in this field will be able to create and validate new strategies.

· Advices for phytosanitary management against pests or diseases are generally provided according to attacks severity. The crop health state, as well as environmental factors, are evaluated using specific field indicators, by mean of regular samplings. Protocols can be shared on-line.

· Strategies of integrated protection are composed by decision rules for which using bio-control methods is a priority. Archiving of advices and phytosanitary actions allows to describe the crop protection history.

Example: starts the consulting of the DSS

Example: access to the protocols

The  icon allows to return to the menu from any place in the website.

1.3.1. The Quick Help tab

Documents for on-line quick help are available for administrator and user depending the grants allowed.

1.3.2. The Identification tab

It allows to return to the login page in English.

1.3.3. The Euclid sub-tab

The official Euclid website contains information on the project, partners, and other links to topics related to crop protection: <http://www.euclidipm.org/>

1.3.4. The DSS-Consult tab

The **consultation** of the DSS is accessible to all. The archiving of the advices is personal.


Users are **responsible** for the searches they carry out, as well as the **interpretation** and **use** they make of the results. Users are informed that their use of the results should not infringe on current legislation.

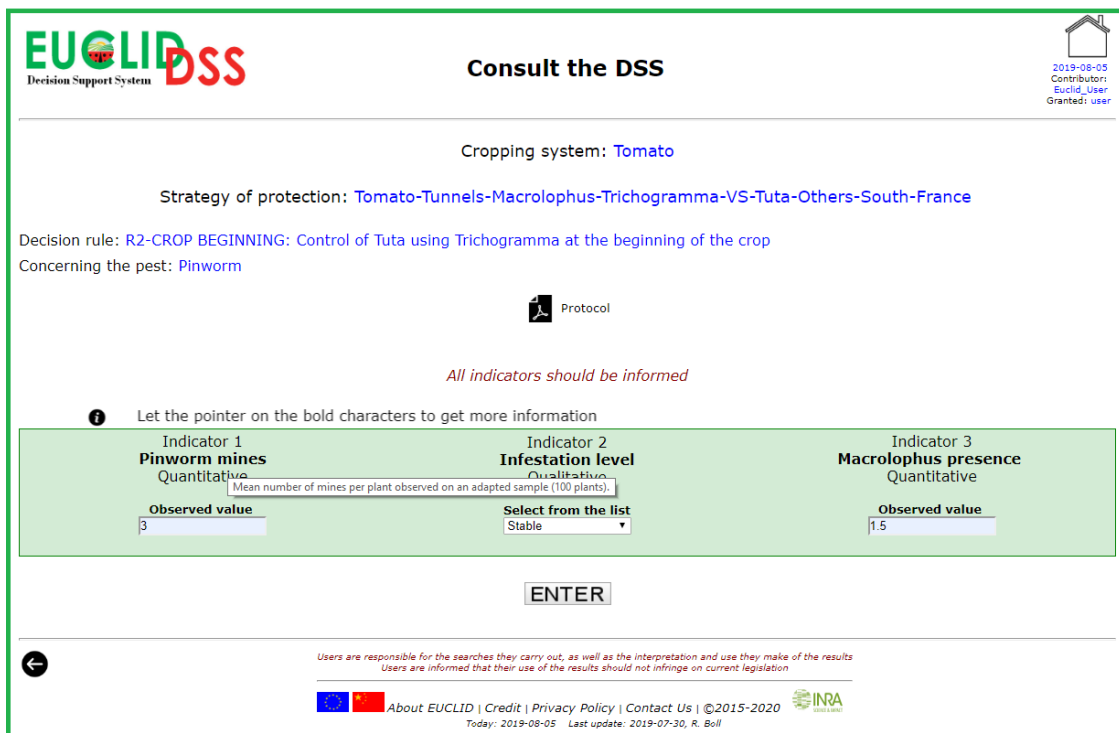
After starting the consultation, it is necessary to select a cropping system, a strategy of protection and a decision rule (3 successive screens). The DSS is then activated in consultation mode for the selected rule and will ask to the user to inform indicators.

1.3.4.1. Fill-in the indicators

According to the decision rule, the number of indicators varies from 1 to 5.

All the indicators should be informed.

An on-line help is available under the bold texts. The access to the protocol consulting is by clicking on the following icon .



EUCLID
Decision Support System **DSS**

Consult the DSS


2019-08-05
Contributor: Euclid_User
Granted: user

Cropping system: **Tomato**

Strategy of protection: **Tomato-Tunnels-Macrolophus-Trichogramma-VS-Tuta-Others-South-France**

Decision rule: **R2-CROP BEGINNING: Control of Tuta using Trichogramma at the beginning of the crop**

Concerning the pest: **Pinworm**


 Protocol




All indicators should be informed

i Let the pointer on the bold characters to get more information

Indicator 1	Indicator 2	Indicator 3
Pinworm mines	Infestation level	Macrolophus presence
Quantitative	Qualitative	Quantitative
Mean number of mines per plant observed on an adapted sample (100 plants).		
Observed value	Select from the list	Observed value
3	Stable	1.5

ENTER

 Users are responsible for the searches they carry out, as well as the interpretation and use they make of the results
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Today: 2019-08-05 Last update: 2019-07-30, R. Boll

1.3.4.2. Consult the advices

The DSS advice page displays the values observed and reminds the limit conditions (or boundaries) defined for each indicator. These boundaries will condition the advices (see the protocols).

The combinations of the values provided for the indicators lead to one or several advices. These are ordered by the rank of priority that was previously assigned to the advices. Advices with a same rank of priority might happen, if the expert considered that the solutions are equivalent.

It is sometimes difficult, even impossible, to take into account all the theoretical combinations of indicator values. Only the more relevant combinations have to be taken into account.

If a combination was not taken into account in the coding, the following message will be displayed: « check input: it is however possible there is no advice for the indicated values ».

The user has the possibility of archiving the advices proposed by the DSS. The advices history can be edited (see tab « Archives » in the menu).

EUCLID DSS Decision Support System

Consult the DSS

2019-08-05
Contributors: Euclid_User
Granted: user

Cropping system: **Tomato**

Strategy of protection: **Tomato-Tunnels-Macrolophus-Trichogramma-VS-Tuta-Others-South-France**

Decision rule: **R2-CROP BEGINNING: Control of Tuta using Trichogramma at the beginning of the crop**
Concerning the pest: **Pinworm**

Protocol

DSS Advices

Let the pointer on the bold characters to get more information

Indicator	Observed value	Limit conditions
Pinworm mines	3 <input type="text" value="Value actually observed."/>	0 2
Infestation level	Stable	Stable Slightly increasing Strongly increasing
Macrophophus presence	1.5	3 8

OBSERVED VALUES CORRESPOND TO THE FOLLOWING ADVICE WITH A PRIORITY: **1**

Advice 229 : If the number of mines > 2 per plant in spite of the doubling of the dose of Trichogramma or the application of Bacillus thuringiensis, apply a pesticide against Tuta. Caution: use a safe pesticide for BCAs and take into account its persistence delay.

This decision rule was shared by: **Richard Brun** on: **2017-04-19** Archive this advice

Users are responsible for the searches they carry out, as well as the interpretation and use they make of the results
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Today: 2019-08-05 Last update: 2019-07-30, R. Boll

1.3.5. The Archives tab

The archiving of advices can be consulted by period, strategy and / or decision rule. The owner of the archive can edit it: read, modify, delete fully or partially.

The screenshot shows the 'Archives' section of the EUCLID DSS interface. It displays details for a specific advice record (ID 229) registered on 2019-08-05. The record includes information about the cropping system (Tomato), protection strategy (Tomato-Tunnels-Macrolophus-Trichogramma-VS-Tuta-Others-South-France), and decision rule (R2-CROP BEGINNING: Control of Tuta using Trichogramma at the beginning of the crop). The pest is identified as Pinworm. The record shows three indicators: Pinworm mines (Observed value: 3), Infestation level (Stable), and Macrolophus presence (1.5). A 'Feedback' button is highlighted with a green arrow, indicating that users can provide input on the efficiency of the phytosanitary actions.

The archive displays the date, the detail of the observed values and the advice.

A feedback form can be filled with regard to the efficiency of the phytosanitary actions.

This screenshot shows the 'Feedback' form for advice 229. The form is titled 'Feedback' and includes fields for 'Implementation' (set to 'Fully implemented'), 'Date' (2018-04-11), and 'Assessment' (set to 'No effect'). A calendar dropdown menu is open, showing the date 'Aout 20' (August 20th) selected. The 'Comments' field is labeled '1000 authorized characters' and contains the text: 'If the number of mines > 2 per plant in spite of the doubling of the dose of Trichogramma or the application of Bacillus thuringiensis, apply a pesticide against Tuta. Caution: use a safe pesticide for BCAs and take'. An 'Update' button is visible below the form. The background shows the same archive details as the previous screenshot, but with the 'Feedback' button now filled.

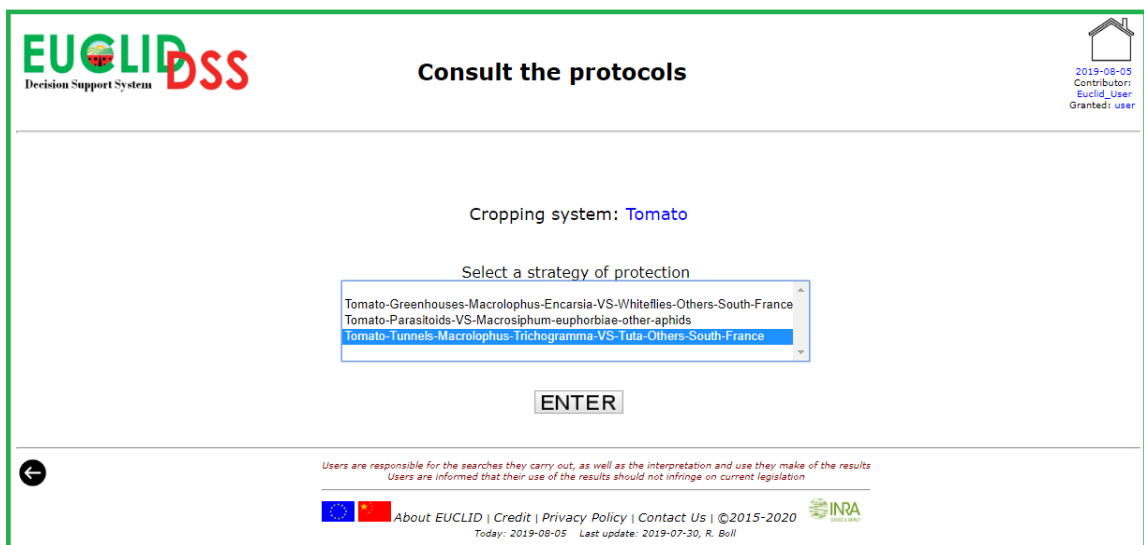
1.3.6. The DSS-Admin tab (not enabled)


This tab, enabled only for “administrator” account, leads to the creation and edition functionalities for the decision rules.

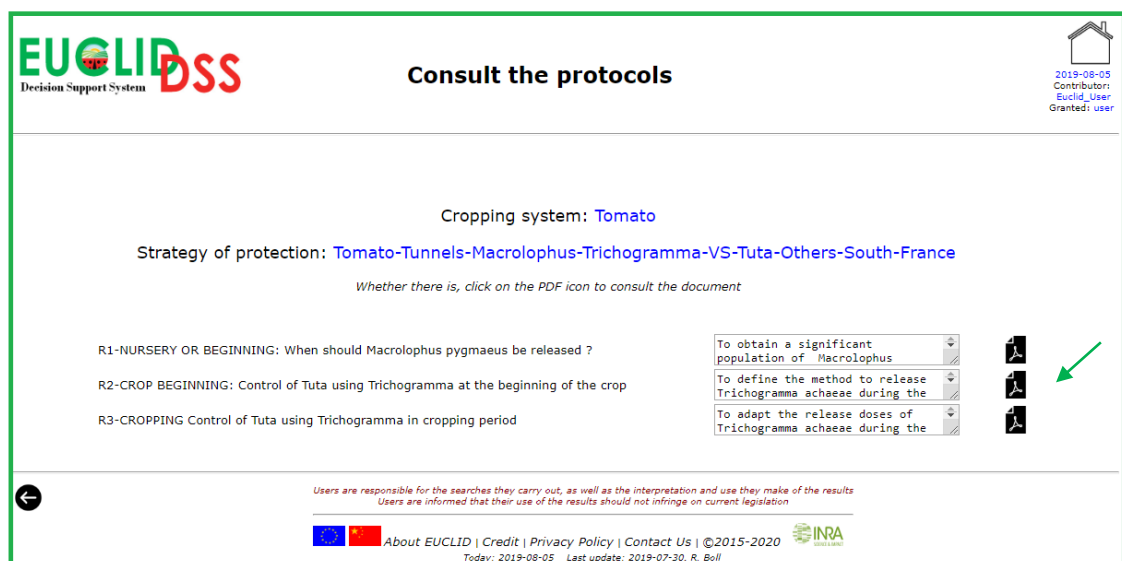
1.3.7. The Protocols tab

It allows to access the protocols which are forms detailing the functioning of the decision rules composing the different crop protection strategies. The list of the protocols for a given strategy may be obtained by selecting in the choice-box: the cropping system, then the strategy.

Example for tomato:



The  icon allows to open the protocol form of a decision rule in a new window.



EUCLID DSS Decision Support System **Consult the protocols**

2019-08-05
Contributor: Euclid_User
Granted: user

Cropping system: [Tomato](#)

Strategy of protection: [Tomato-Tunnels-Macrolophus-Trichogramma-VS-Tuta-Others-South-France](#)

Whether there is, click on the PDF icon to consult the document

R1-NURSERY OR BEGINNING: When should *Macrolophus pygmaeus* be released ?

R2-CROP BEGINNING: Control of *Tuta* using *Trichogramma* at the beginning of the crop

R3-CROPPING: Control of *Tuta* using *Trichogramma* at the beginning of the crop-R2.pdf - Google Chrome

[To obtain a significant population of *Macrolophus pygmaeus* against *Tuta* in](#)

[To define the method to release *Trichogramma achaeae* during the](#)

https://isaceaweb.sophia.inra.fr/euclid_dss/DOCUMENTS/Tomato/Tomato-Tunnels-Macrolophus-Trichogramma-VS-...

EUCLID IPM Protocol Decision Rule Compendium

Name:
Control of *Tuta* using *Trichogramma* at the beginning of the crop-R2

Object:
Biological control of *Tuta absoluta* based on the use of *Trichogramma achaeae*. Advise mainly for tunnel and beginning of the crop conditions.
Part of the strategy: "Protection strategy on tomato crop under shelters mainly against *Tuta absoluta*. Use of the generalist predator *Macrolophus pygmaeus* and the parasitoid *Trichogramma achaeae*".

1.3.8. The Surveys tab

The choice-box leads to on-lines surveys. Surveys are disseminated in order to obtain information on DSS-eligible strategies for different cropping systems.

The, this information will be integrated to the DSS.

At the moment, only a survey for tomato is available.

A specific help guide is associated with the surveys.

1.3.9. The DSS User Guide tab

This tab is to download the corresponding guide as xps format.

1.3.10. The STools tab

It allows the downloading the installation and using guidance of the Stools application. This application proposes to set-up crop monitorings consistent with existing decision rule indicators or to define fully customized sampling methods. STools allows to record in a database, then administer, all the observations made on the field and the cropping history. This information can be edited and displayed in graphical form.

1.3.11. The Download DSS + STools tab

Here the link to the "image" file which contains the operating system and the DSS + Stools applications. These inseparate applications can be used on a personal computer equipped with the free soft "Virtual Box". The guidance for a quick install is provided at § 1.3.10.