

# IWMgames a tool for trainers and advisers

Philippe DELVAL



IWMPRAISE

EU grant agreement No.727321



To use it as an awareness tool



To facilitate the exchange of technical knowledge



To understand complexity of weed management

# Why play?

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## A strong opportunity

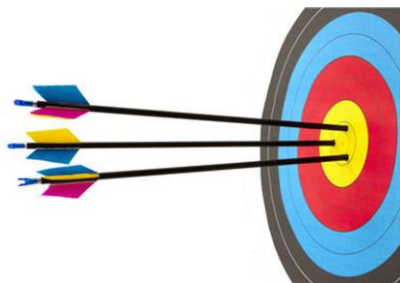
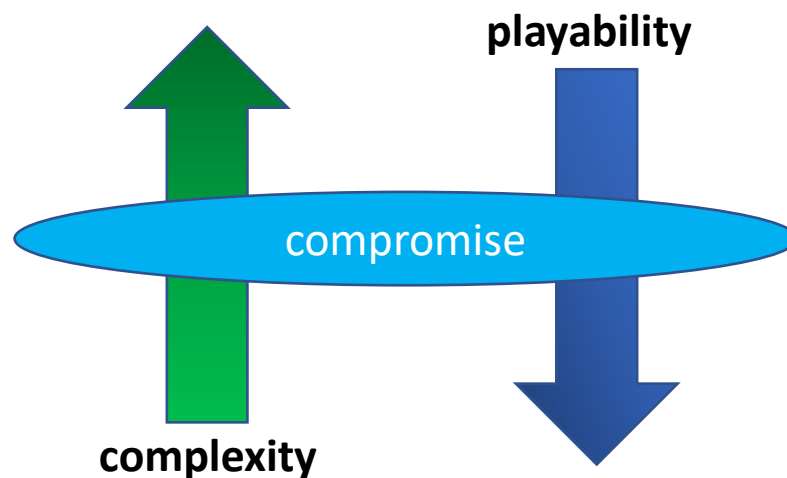


the new platform on serious games in Agriculture, Food, Environment, Territorial Development in France

**105**  
Games collected  
in 2021



=> Provide interactive training and awareness materials



Trainers, advisers  
for  
Students and farmers

Two games



Arable



Perennial  
crops





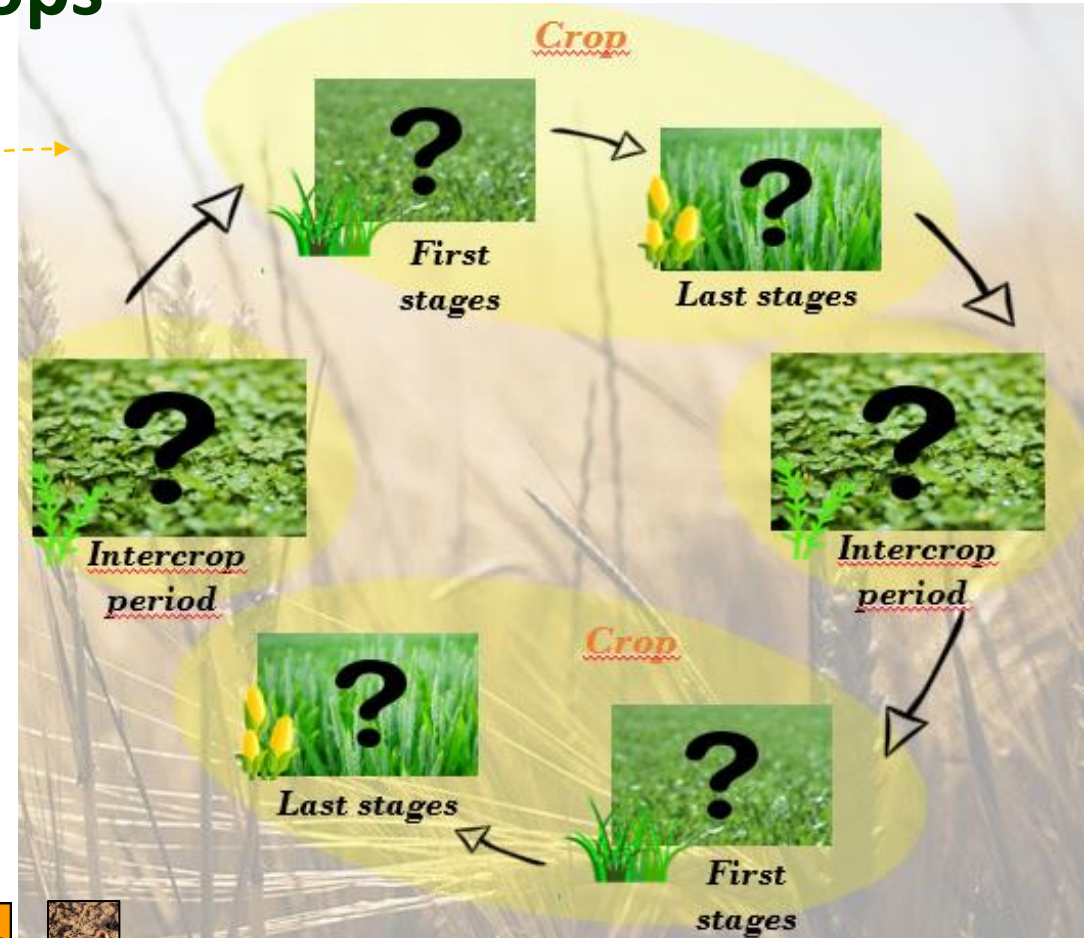
# Game concept for arable crops

## Principle:

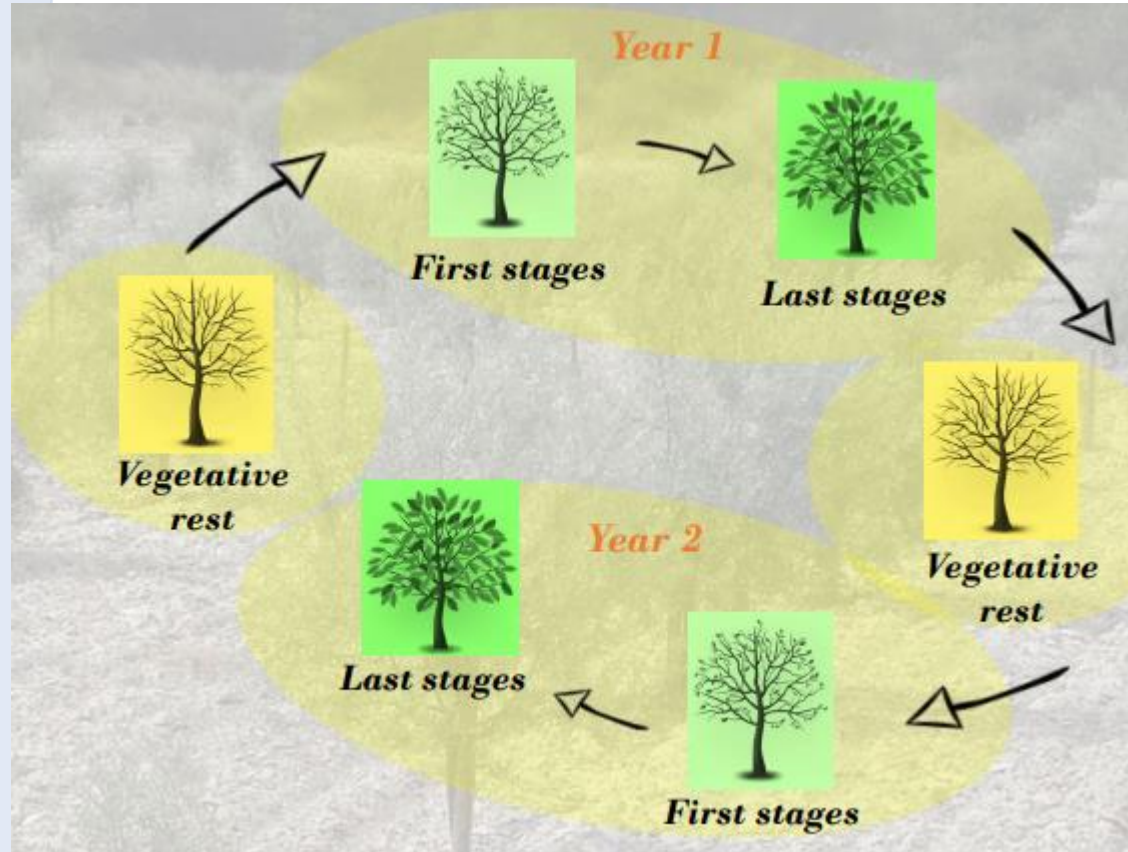
Develop a strategy to control the evolution of weeds within the framework of a rotation (2 years) of field crops according to climatic and agronomic factors.

## Objectives

- ✓ Control five groups of weeds 
- ✓ While minimizing the impacts of practices 
- ✓ And ensuring good quality and sufficient quantity in production.



# Differences for perennial crops



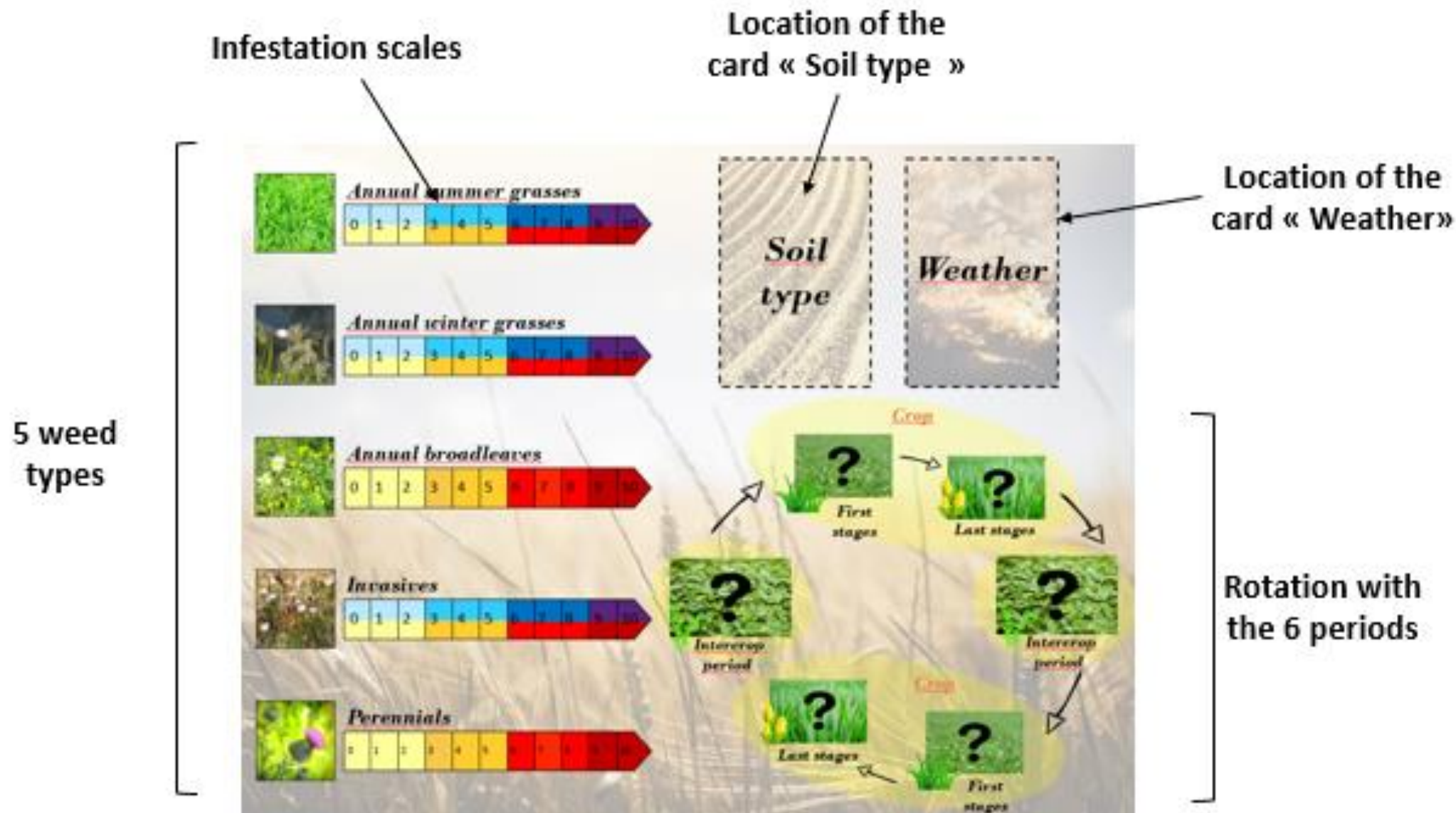
- ✓ Three groups of weeds



- ✓ Under-row and inter-row .

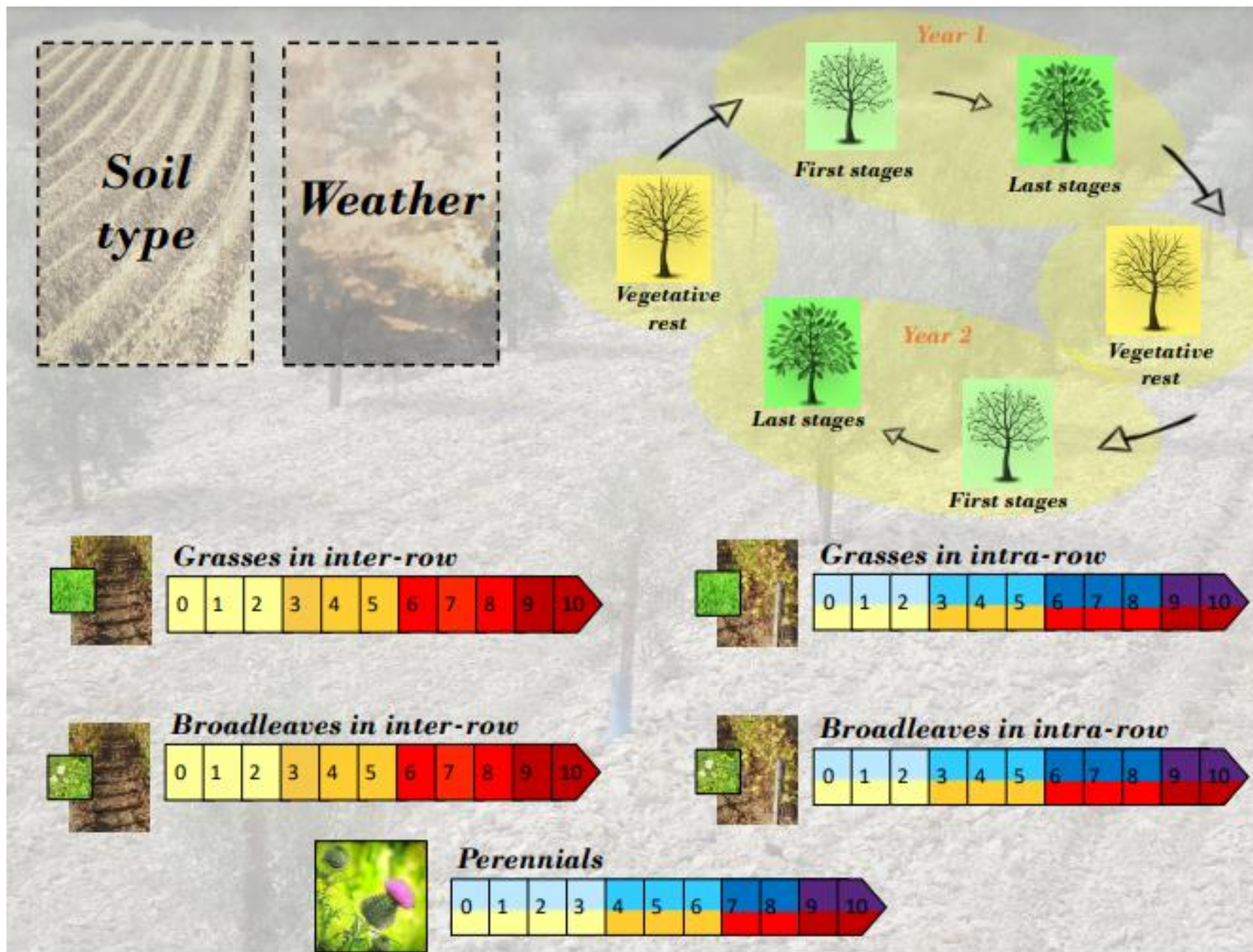


# A common board



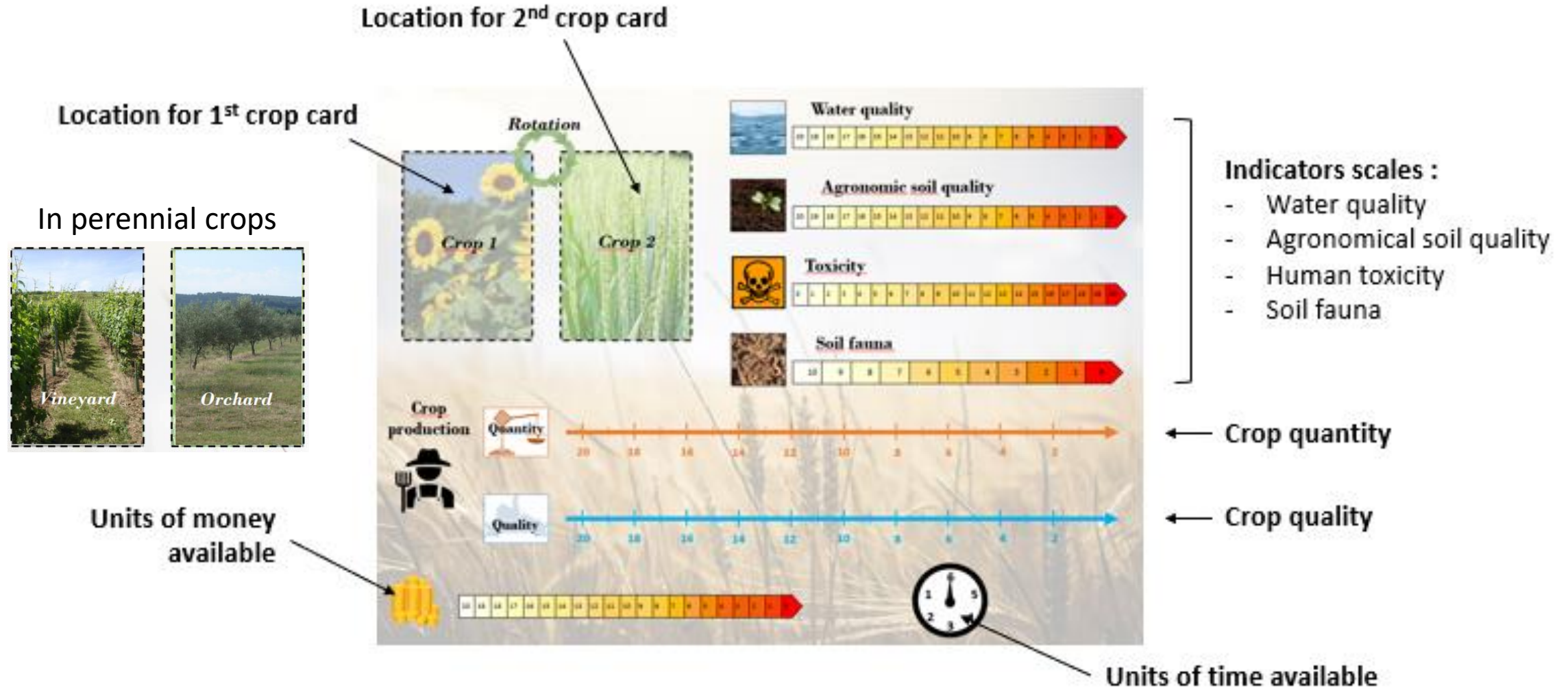


- ✓ Adaptated for perennial groups





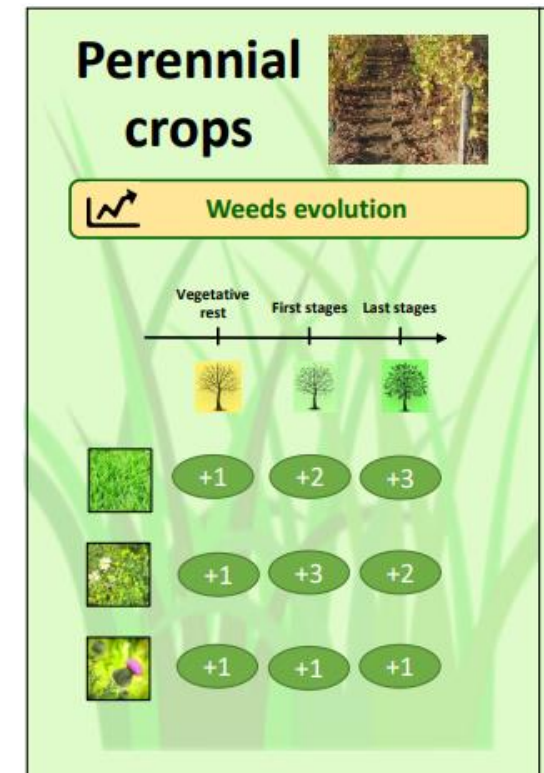
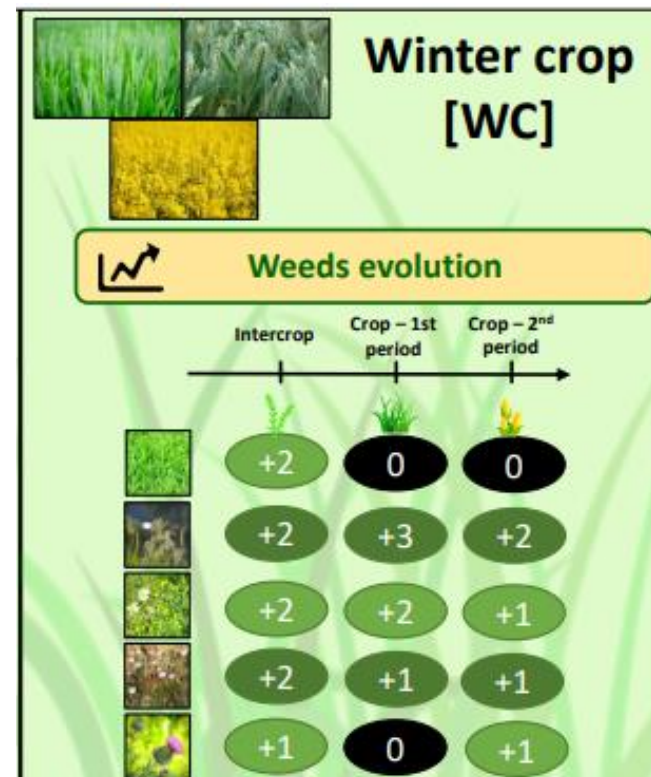
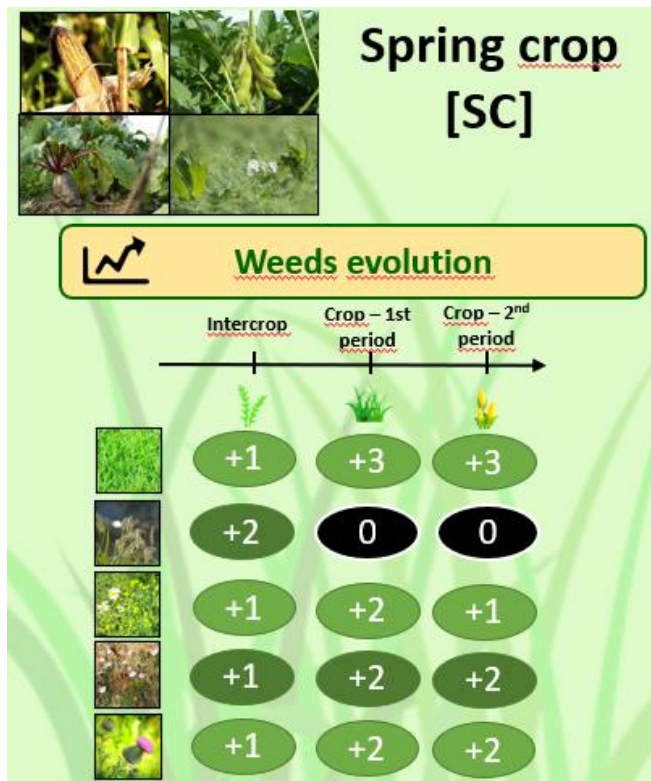
# A player board for each team



# Weeds evolution

Depending :

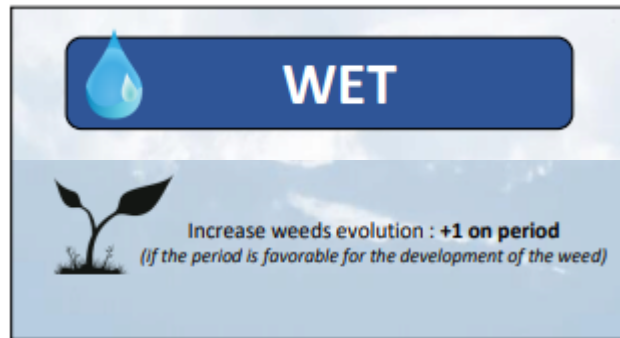
- Type of crop and period



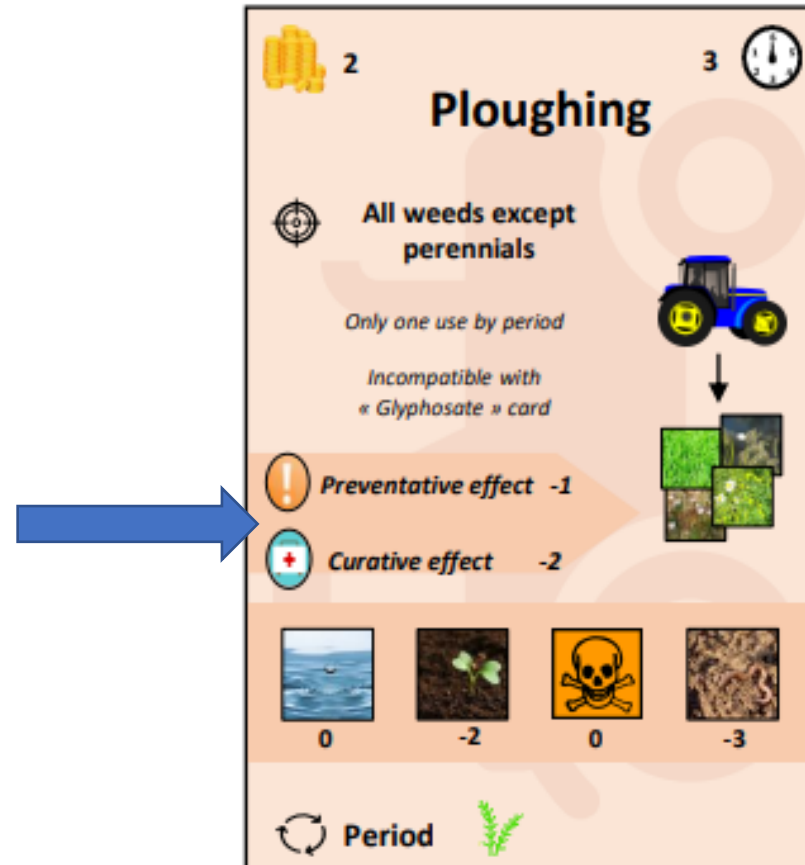
# Weeds evolution

Depending :

➤ Weather



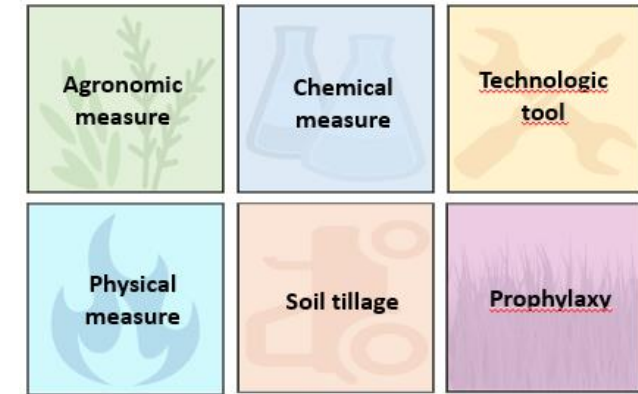
➤ Weed management



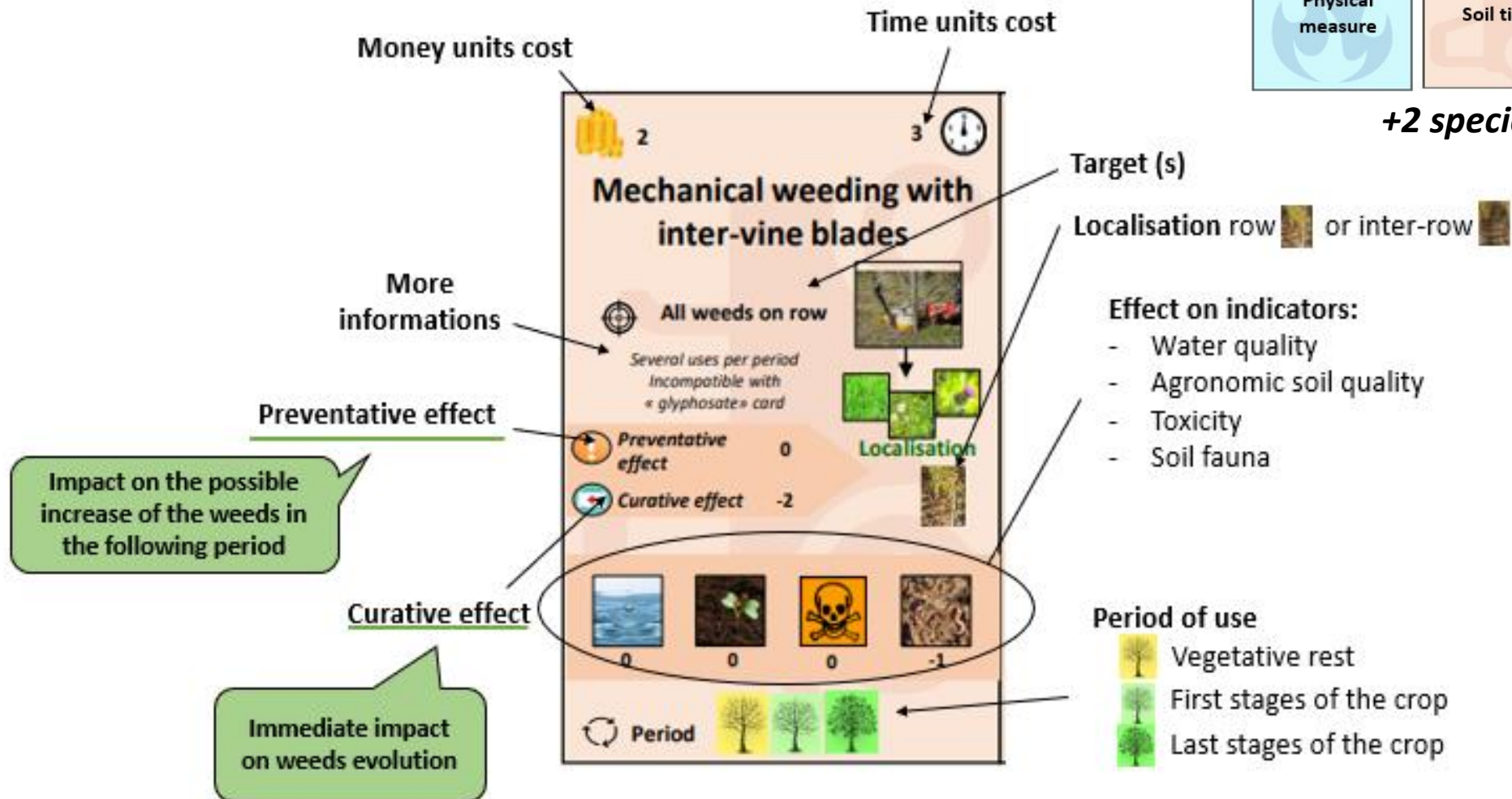


# Weed management cards

Around 30 cards




+2 special cards



# Implementation of "methods" cards

Depending :

➤ Crop

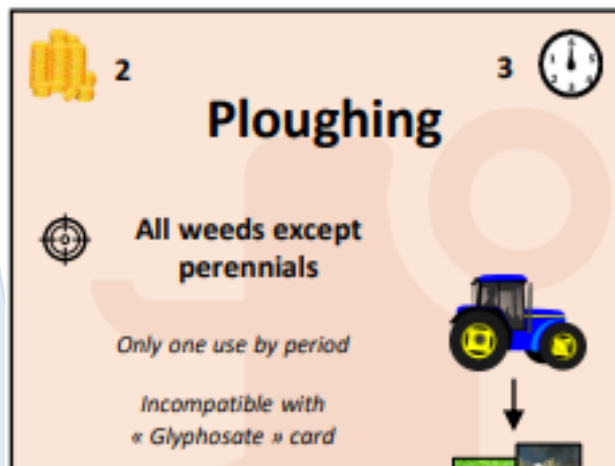


**Spring crop [SC]**

**Constraint**

Cover crop mandatory during the previous intercrop

➤ Incompatibility between methods



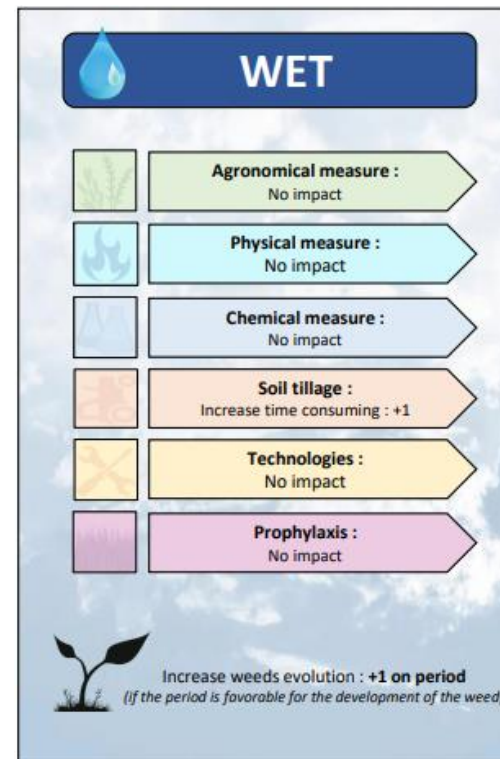
**Ploughing**

All weeds except perennials

Only one use by period

Incompatible with « Glyphosate » card

➤ Weather

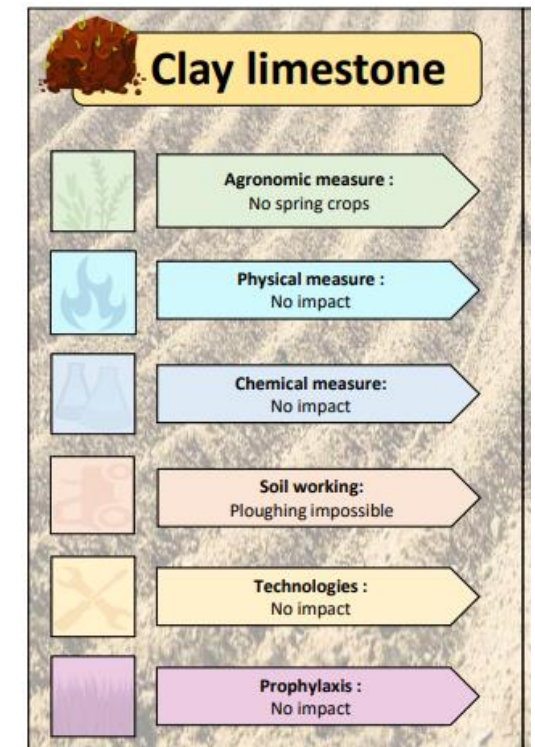


**WET**

	<b>Agronomical measure :</b> No impact
	<b>Physical measure :</b> No impact
	<b>Chemical measure :</b> No impact
	<b>Soil tillage :</b> Increase time consuming : +1
	<b>Technologies :</b> No impact
	<b>Prophylaxis :</b> No impact

Increase weeds evolution : +1 on period  
(if the period is favorable for the development of the weed)

➤ Soil



**Clay limestone**

	<b>Agronomic measure :</b> No spring crops
	<b>Physical measure :</b> No impact
	<b>Chemical measure:</b> No impact
	<b>Soil working:</b> Ploughing impossible
	<b>Technologies :</b> No impact
	<b>Prophylaxis :</b> No impact



## A few specifics...

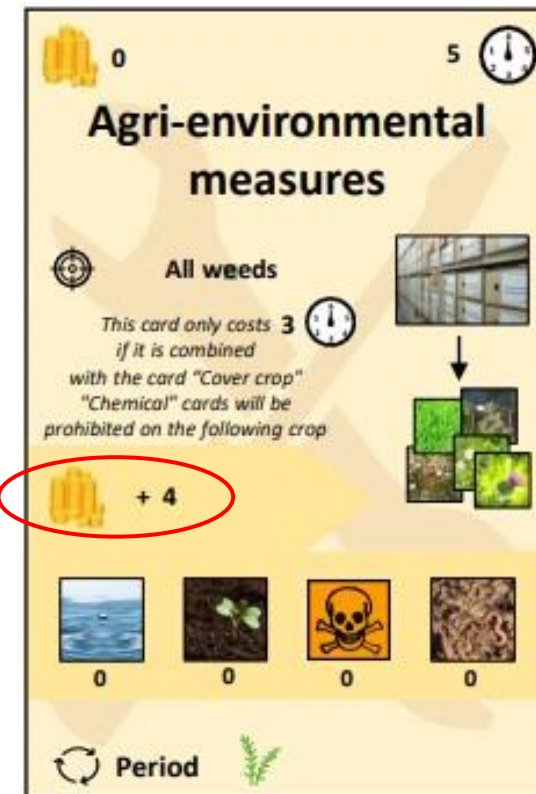
Cards to be used **in combination** with one or more chemical methods



Mitigate the impacts of the associated method



A card that allows you to recover **units of currency**



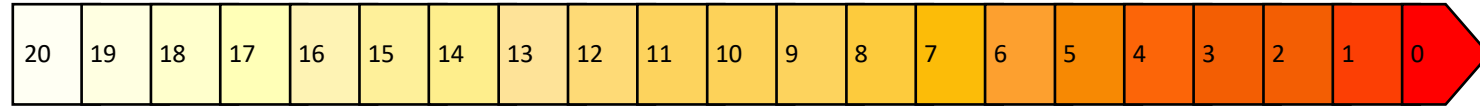
A card that allows you to recover a **unit of time**



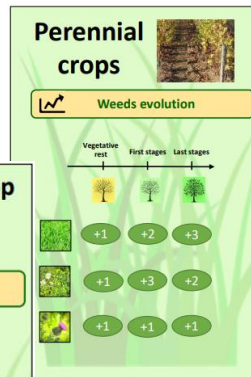
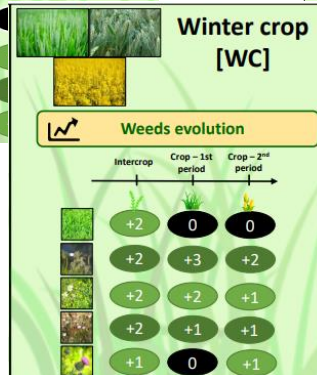
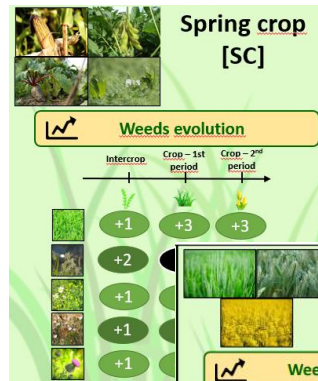
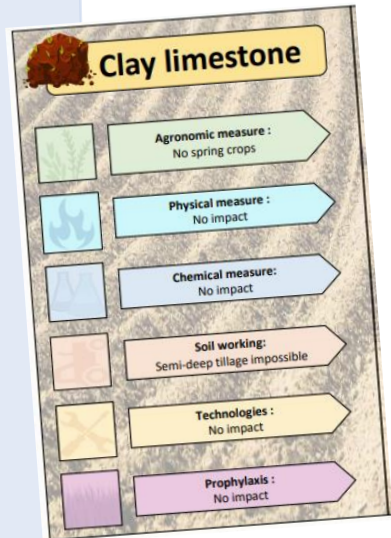


# Installing the game

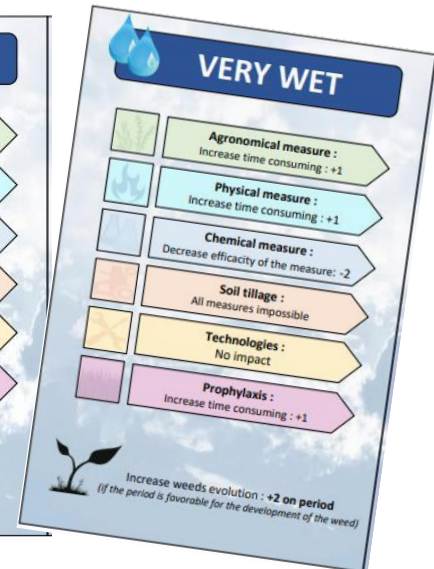
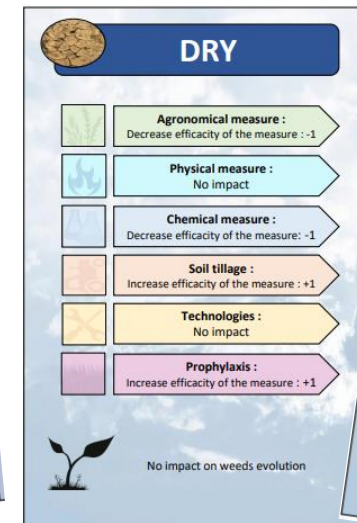
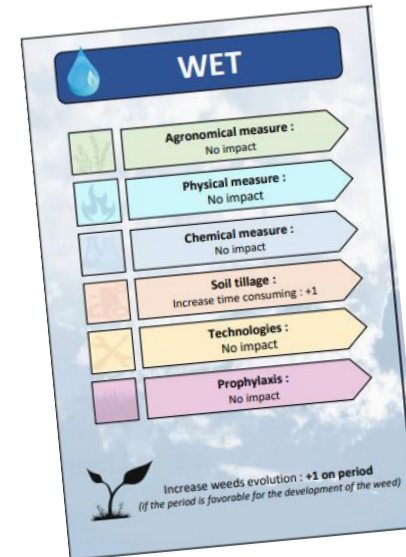
Arrange the tokens of each team in the initial position  
to the left of the different scales



Choose or draw the type of soil and crop



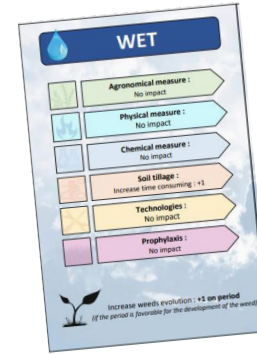
Decide the ratio of weather cards  
each turn  
(default 2 of each)



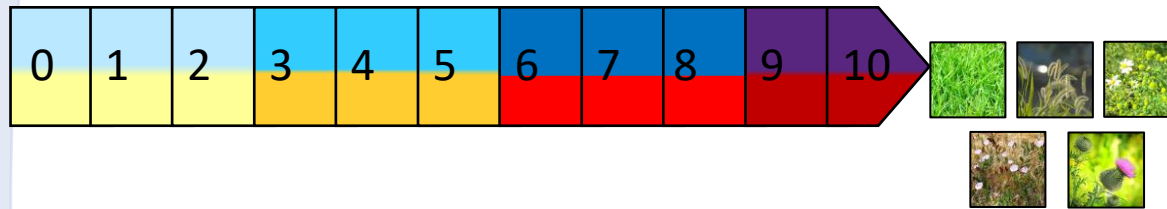


# a round of play

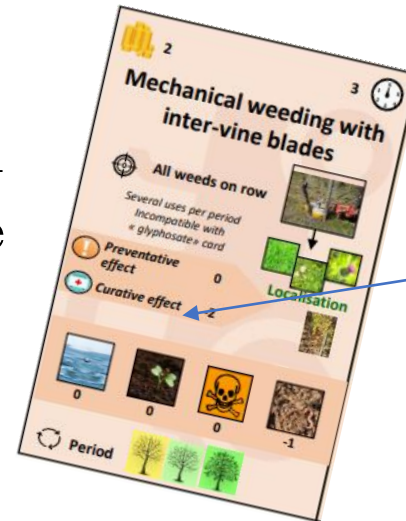
Draw a weather card



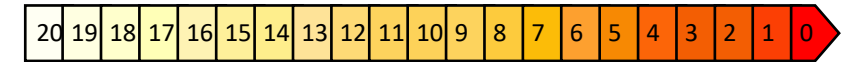
Update weeds scales



Choose one or more control methods among those available during the current period

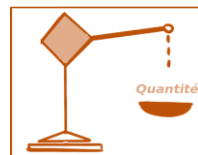


Change indicator scales  
(period+weather – preventative effects)



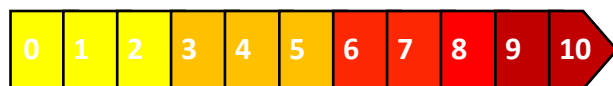
Deduce the curative effect of the chosen method(s)

# Calculation of losses / arable crops



**Harvest quantity**

*Depending on*



Weed pressure scale



**Harvest quality**

*Depending on*



Number of points lost on production indicators

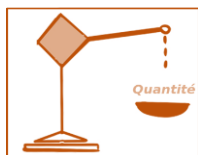


**and final score**



Crop 2

**X 3**



**X 2**



**X 1**



**X 1**





# Calculation of losses / perennial crops

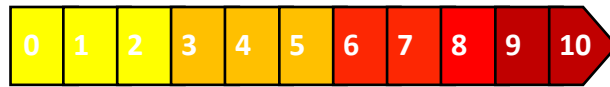


**Harvest quantity**

*Depending on*



*Under the row and inter-row*



**Harvest quality**

*Depending on*



*Only under the row*

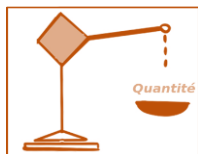


**and final score**



**Crop 2**

**X 3**



**X 2**



**X 1**

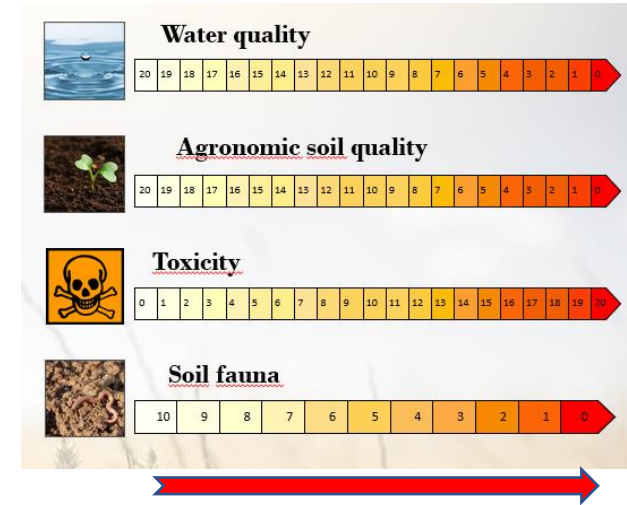


**X 1**

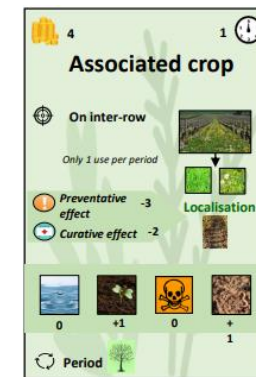
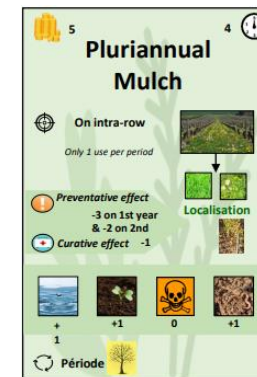
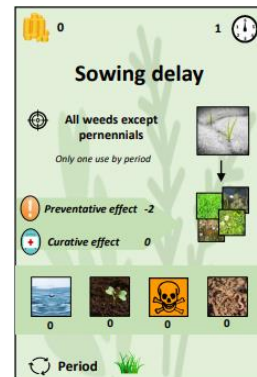


# Conclusion

You never win using only chemicals



You have to combine preventative measures if you don't want to use chemicals





# Feedback from testers

## Positive

The game gives an **exhaustive view of the practices** and their impacts on different factors (meteorological, agronomic, economic, ecological)

It is **fun, educational and collaborative**. This makes it possible to bring out group reflections and get out of the usual framework

The cards make it possible to **have an overview** all the options and tools and to become aware of the multiple consequences associated with an action and with the external parameters

## To improve

The rules of the game are **difficult** to assimilate, the presence of one or more animators during the game seems necessary

A **digital version** of the game would make the game easier to use (automatic point counting, hiding unusable cards)



# And now...play the game!





another tool  
for trainers and advisers

# Philippe DELVAL



# acta

# LES INSTITUTS TECHNIQUES AGRICOLLES#



- ⇒ **Make deliverables from the project known**
- ⇒ **Understand the evolution of weed management technics**
- ⇒ **Provide learning material**





# Using the NIAB digital training platform



NIAB has a long established and successful reputation in delivering specialist training to plant breeders and researchers, farmers, advisors and agronomists, government and commercial customers. In the field, in the classroom and online, courses range from crop inspection methods to statistics in quantitative genetics and practical approaches to precision farming.

Access to the digital training platform is by invitation only. If you have been given a username and password [click here](#) to log in

We have produced a technical requirements and help guide which can be downloaded [here](#)



Data organisation in spreadsheets



Inspectors course pulses



Inspectors course herbage



OSTS training on sampling requirements for ISTA



Fodder and Oilseed Crop Inspectors course



Seed Certification Administration Course



# A complete course about IWM

NIAB digital training platform

IWMPraise


Home / Courses / IWMPraise

Course categories: IWMPraise

Using an integrated approach to weed management

български	čeština	dansk	Deutsch	eesti	ελληνικά	English	español
français	Gaeilge	hrvatski	italiano	latviešu	lietuvių	magyar	Malti
Nederlands	polski	português	română	slovenčina	slovenščina	suomi	svenska

IWMPRAISE - This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement n° 727321





## IWM PRAISE

Home / [Courses](#) / IWMP / Topic 1 / Using an integrated approach to weed management in arable crops



### Using an integrated approach to weed management in arable crops

#### Key learning outcomes

- Demonstrate an understanding of the core principles of IWM
- Understand the context in which each component can be effectively delivered

#### Introduction to the course

Integrated Weed Management (IWM) is an approach to managing weeds that integrates multiple control tactics. By including a diverse range of control methods in the design of a management system, it allows growers to control the most troublesome weeds. The group at Wageningen University and Research have developed the excellent tool below. You can access the tool by clicking on the picture, or the link underneath the picture. The tool will open in a new tab on your browser.

Introduction

Monitoring and  
evaluation

Direct control

Diverse cropping  
systems

Field and soil  
management

Cultivar choice  
and establishment



For each  
topic, a  
definition



## Physical measures

### Definition

PRINCIPLES 4  
ALTERNATIVE  
MEASURES



Physical control in plant protection includes all control techniques whose primary mode of action does not involve any biological, biochemical or toxicological process.

In physical wrestling there are 2 types of methods :



Active = need for energy to act on the pest

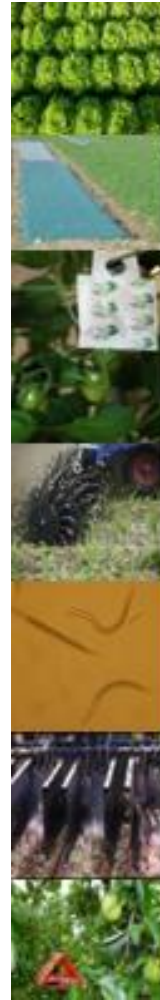


Passive = more sustainable methods that induce a modification of the environment

In this part we will discuss the methods of physical struggle

and the equipment they need

Explanations  
of the  
methods



## Physical measures against weeds

### Active methods



### Mechanical weeding of annual crops



Practicing mechanical weeding of annual crops over the whole surface



Practicing mechanical weeding on the row in annual crops



Practicing mechanical weeding on the inter-row in annual crops



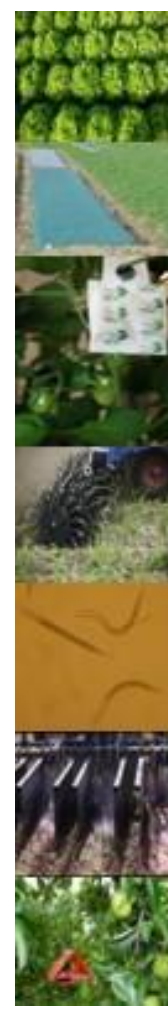
Mixed weed control is a technique allowing to limit the quantity of weedkillers used by combining with mechanical tools



Practicing mixed chemical / mechanical weeding in annual crops



Links to the  
iwmgame  
and other  
ressources



# Physical measures against weeds

## Active methods

**Ploughing**

All weeds except perennials  
Only used once per period  
Incompatible with + Glyphosate + Card

Preventative effect: 2  
Curative effect: -2

Period

**Mechanical weed control**  
With tine-harrow or roto-harrow

All weeds except perennials and invasives  
Used 2-3 times per period

Preventative effect: 2  
Curative effect: -2

Period

**Mechanical weed control**  
With hoe

All weeds except perennials and invasives  
Used 2-3 times per period

Preventative effect: 2  
Curative effect: -2

Period

**Mechanical weed control**  
With rotary-hoe

All weeds except perennials  
Used 2-3 times per period

Preventative effect: 2  
Curative effect: -2

Period

In-crop mechanical weeding  
for narrow row crops

Used 1-2 times

In-crop mechanical weeding

**Combined weed control**  
Weeder

All weeds except perennials  
Only used once per period

Preventative effect: 2  
Curative effect: -2

Period



Links to  
inspiration  
sheets



## Physical measures against weeds

### Active methods

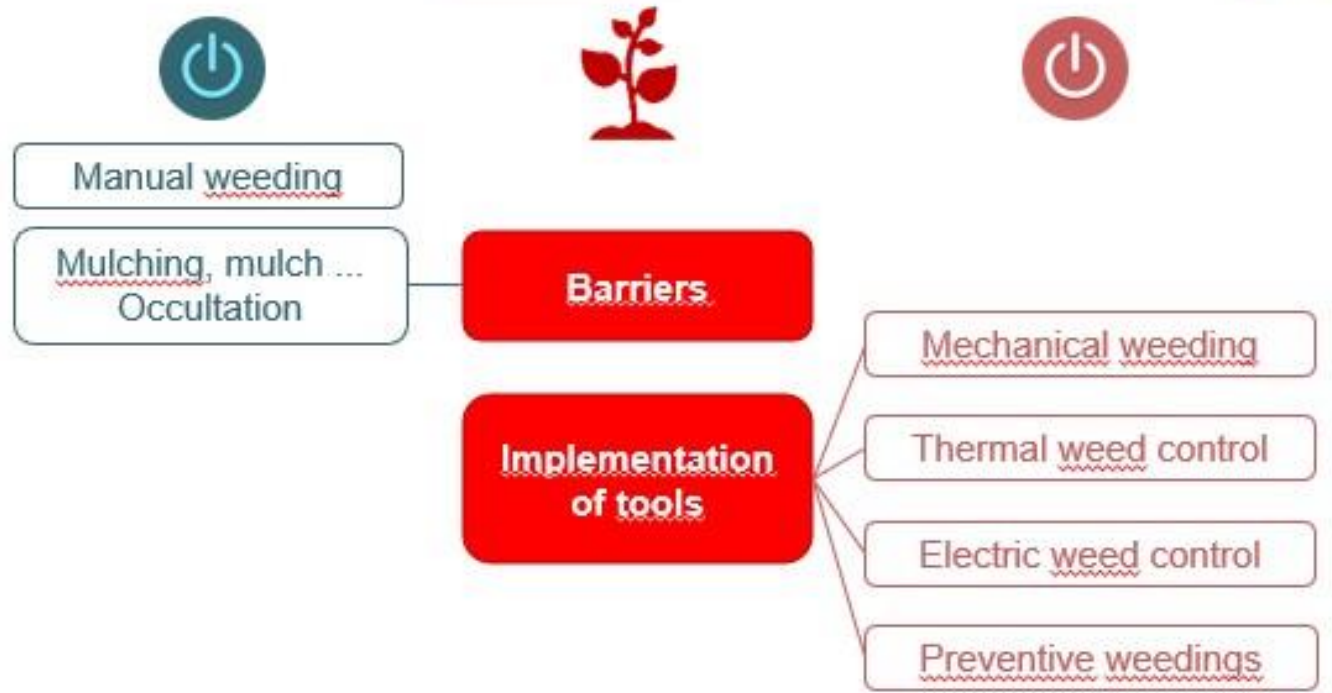
PRINCIPLES 4  
ALTERNATIVE  
MEASURES



# Physical measures against weeds

## Summary

A summary  
of the  
methods  
presented in  
the module

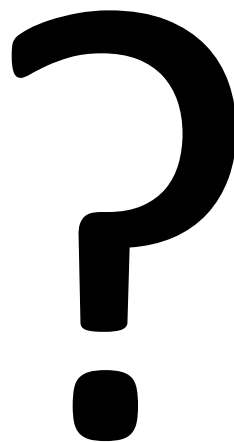


- ⇒ At this moment, it's only a prototype
- ⇒ The modules are almost ready – we need some adaptation of titles and content
- ⇒ We have to create an interactivity to link
  - ⇒ More information
  - ⇒ Any ressources and deliverables
- ⇒ We expect that the complete material will be available after the summer





# Thank you! Time for feedback



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EU grant agreement No.727321

