



INTERCROP
VALUES

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PRACTICE ABSTRACT N°3

Interplay©: a support tool to help novice farmers choose cereal-legume intercrops

Problem

If intercropping (IC) is so little explored today, it is probably due to the difficulty of answering all the questions raised by the practice: Which species to combine? When and how to sow? How to manage pests and diseases, weed control operations and phytosanitary treatments? What opportunities are possible? And for which environmental, health or economic purposes?

Solution

The founders of Interplay© chose to develop a participatory serious game to help farmers explore IC.

It has two objectives:

- Exploring a wide range of cereal-legume IC scenarios sown simultaneously and identifying the most appropriate intercrops based on the context and goals of the players.
- Ensuring that players become more knowledgeable about intercropping.

Benefits

Interplay© is a tool for reflection enabling assessment of the ecosystem services provided by cereal-legume intercropping, grown under different crop management systems, both organic or conventional.

It can also be a source of inspiration for advisors to create their own tool to help farmers choose IC, to conduct workshops, increase players' knowledge and create a space to exchange knowledge.

Applicability box

Theme

Cropping systems, Cereals, Legumes.

Keywords

Agroecology tool, serious game, Intercropping, Crop management, Environmental impact assessment.

Context

French soil-climate conditions.

Application time

Before sowing, with novice farmers, students, advisors (groups of 10 people maximum).

Required time

4 hours

Period of impact

NA

Equipment

Board game and computer model

Best in

NA



Figure 1: Farmer using interplay© game boards.
Photo: Lionel ALLETTO





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Practical recommendations

- Download manual to read complete instruction of the game:
<https://forms.gle/K8SDGuaxYg2CPkcp9>
- Use the game in small groups (5 players)

It is often more effective and productive to work on real cases, and so it is necessary to collect information from participants before the workshop (choice of plot, type of soil, climatic conditions, etc.).

- If used in bigger group (>10 people), implement individual reflection time and collective sharing sequences.
- This serious game can be used linked to a “causal tree” method to identify problems encountered to use intercrops. [Diverimpacts guideline ideas webinar](#)

Physical board game

1 What is your plot context and crop rotation?

Context and constraints
Cannot be changed | Can be modified

2 Which issues would you like to solve, and what benefits do you expect from the intercrop?

• **REGULATING**: Slightly endocyclic pest control, Mildly endocyclic pest control, Highly endocyclic pest control
• **PROVISIONING**: Cereal yield, Legumine yield, Cereal protein content
• **SUPPORTING**: Soil structure, Nitrogen supply

3 In your context, what to grow together?

Crops grown simultaneously

Two harvested crops → One harvested crop + One companion plant

4 How to manage the intercrop?

Selected intercrop

Quantity (in 1000kg)	Price	State
50%	100%	100%
50%	100%	100%
100%	100%	100%

Resistance to lodging	Low	High
Cereal	High	Low
Legume	Low	High

Carbon sequestration	Low	High
Cereal	Low	High
Legume	High	Low

Input costs	Carbon fertilizers	Nitrogen fertilizers
Carbon	Yes	No
Nitrogen	No	Yes
Lake input	Yes	No

Sowing → Harvest

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1. Design the intercrop scenarios





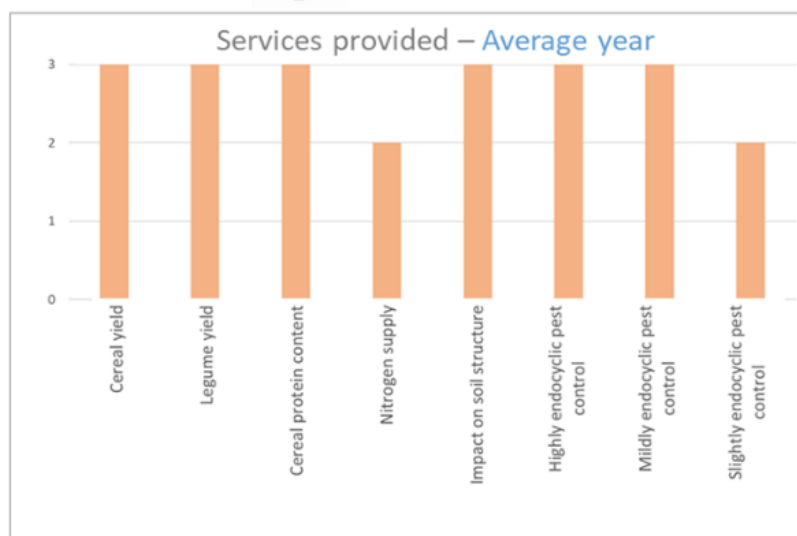
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Computer evaluation module



2. Assess the services designed on the board

Further information

Further readings

- Clémentine Meunier, Marion Casagrande, Blandine Rosiès, Laurent Bedoussac, Cairistiona F.E. Topp, Robin L. Walker, Christine A. Watson, Guillaume Martin., 2022. Interplay: A game for the participatory design of locally adapted cereal-legume intercrops <https://doi.org/10.1016/j.agry.2022.103438>
- Clémentine Meunier, Lionel Alletto, Laurent Bedoussac, Jacques-Eric Bergez, Pierre Casadebaig, Julie Constantin, Noémie Gaudio, Rémi Mahmoud, Jean-Noël Aubertot, Florian Celette, Maé Guinet, Marie-Hélène Jeuffroy, Marie-Hélène Robin, Safia Médiène, Laurence Fontaine, Bernard Nicolardot, Elise Pelzer, Véronique Souchère, Anne-Sophie Voisin, Blandine Rosiès, Marion Casagrande, Guillaume Martin, 2022. A modelling chain combining soft and hard models to assess a bundle of ecosystem services provided by a diversity of cereal-legume intercrops. <https://doi.org/10.1016/j.eja.2021.126412>





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Weblinks

- [Access to Interplay](#) to download freely the manual for users (English and French) and the game content (boards, cards, technical data sheets...)
- INRAE webpage on Interplay <https://www.inrae.fr/actualites/interplay-jeu-serieux-evaluer-services-fournis-associations-cereales-legumineuses>

About this practice abstract

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IntercropVALUES aims to exploit the benefits of intercropping to design and manage productive, diversified, resilient, profitable, environmentally friendly cropping systems acceptable to farmers and actors in the agri-food chain. As a multi-disciplinary and multi-actor project, it brings together scientists and local actors representing the food value chain. It includes 27 participants from 15 countries (3 continents) from a wide diversity of organizations and stakeholders. The project will run for four years and started in November 2022.

Project website: <https://intercropvalues.eu/>

Permalink: [Organic-farmknowledge.org/tool/53686](https://organic-farmknowledge.org/tool/53686)

