SUCSEED

Stopping the use of -cides in seeds

Coordinator: Barret Matthieu (IRHS Angers)

Kick-off meeting, 23 Septembre 2020

Introduction

Seed as trading material : **France an important player**

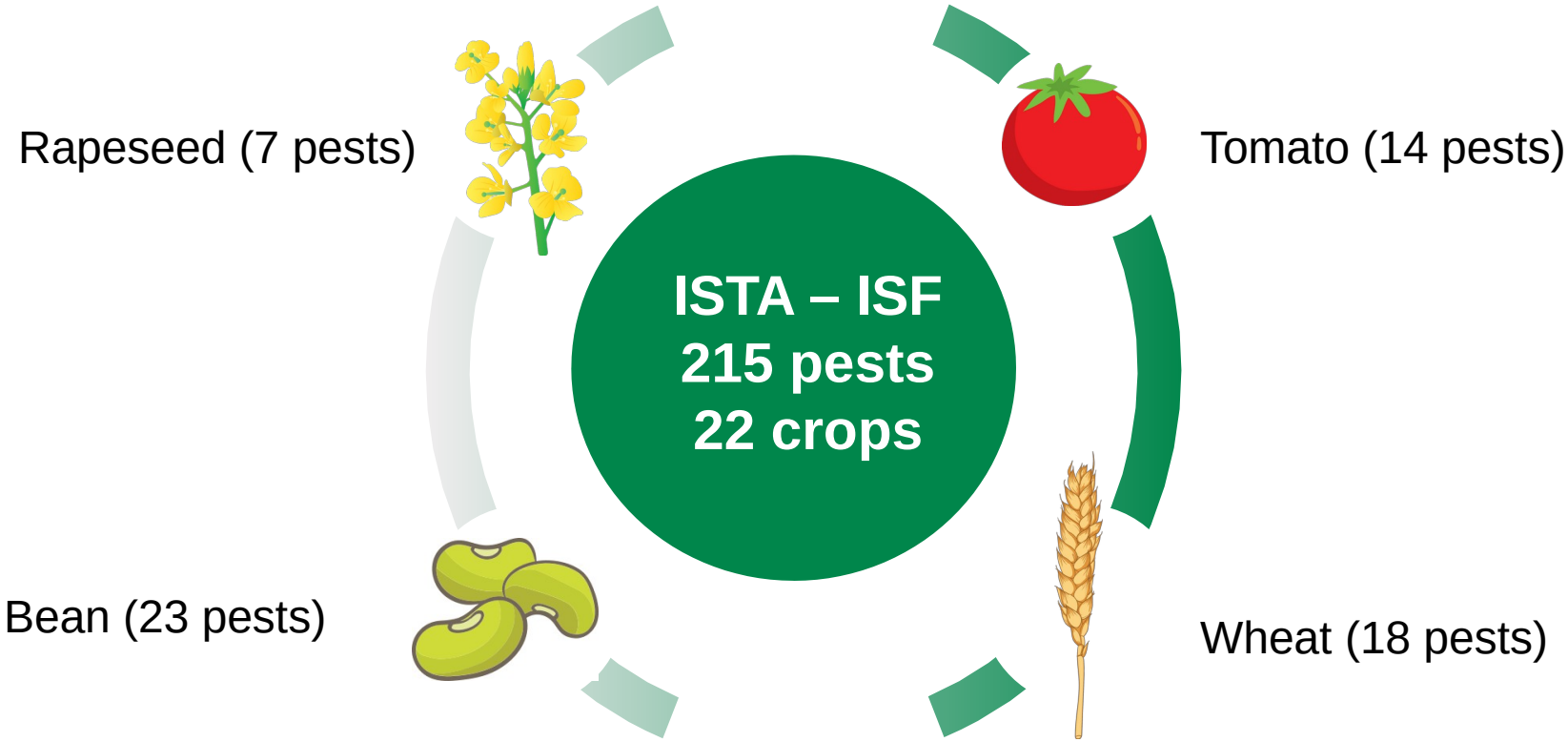
1st seed-producer in Europe

12,000 employees

World leader of seed export

Introduction

Seed as trading material : **Carrier of plant pathogens**



Securing seed health to avoid plant disease emergence

Introduction

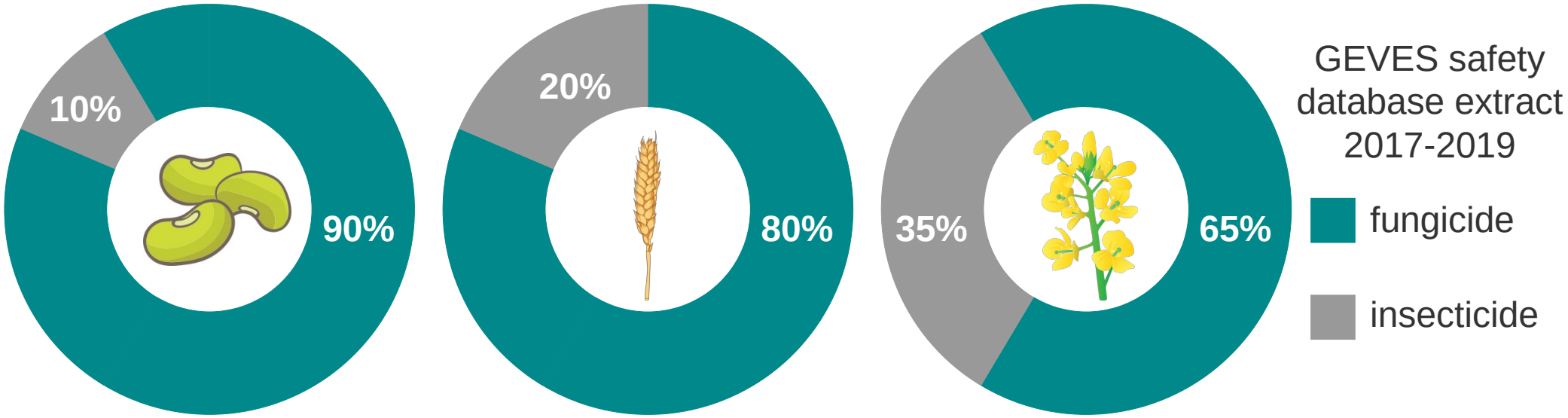
Damping-off is due to seed- and soil-borne pathogens

@ A. Dorrance (APSnet)

Incidence on crop establishment/yield: 5-80% (Lamichhane 2017)

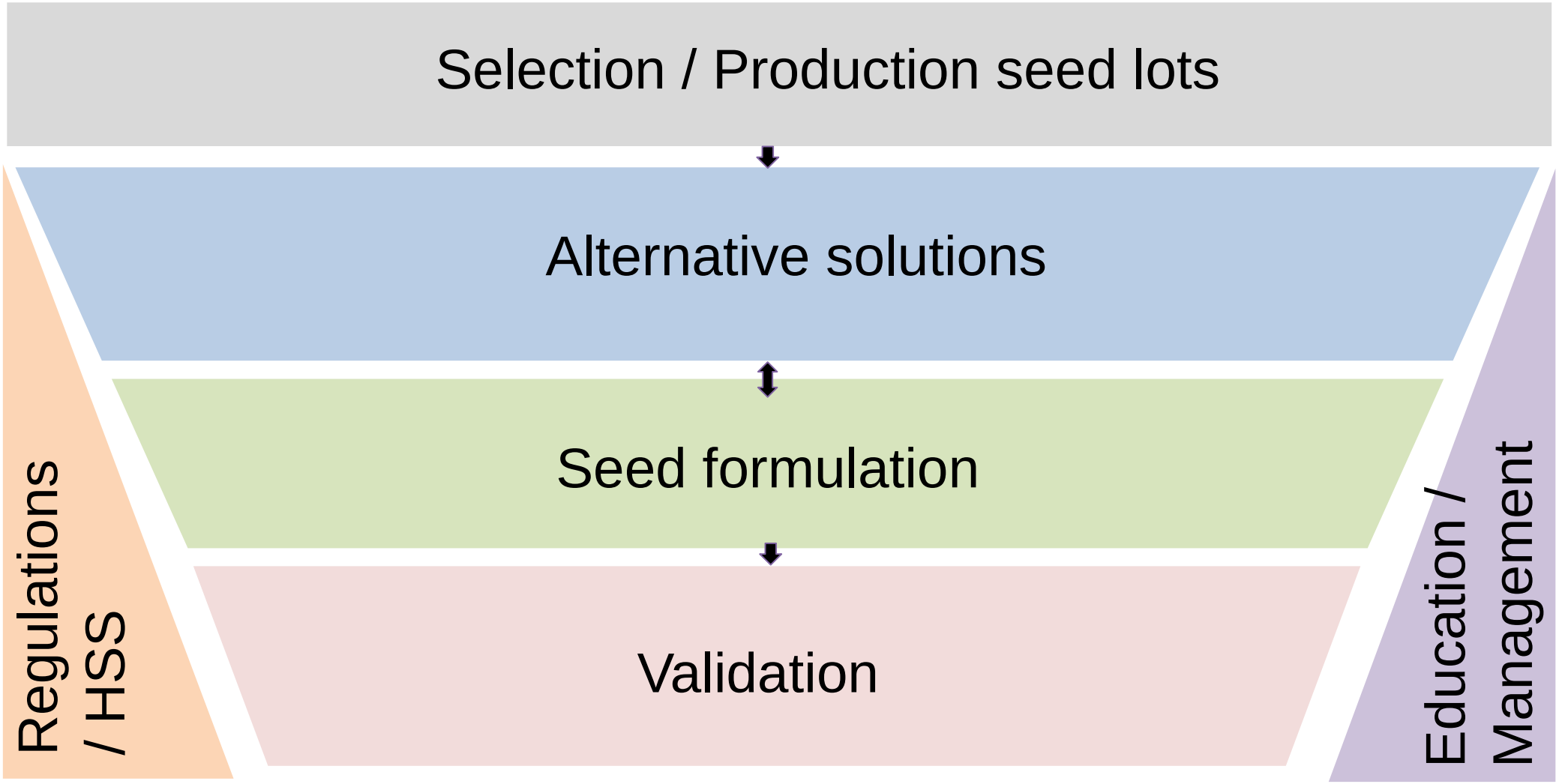
Introduction

Secure seed quality through **seed treatment**

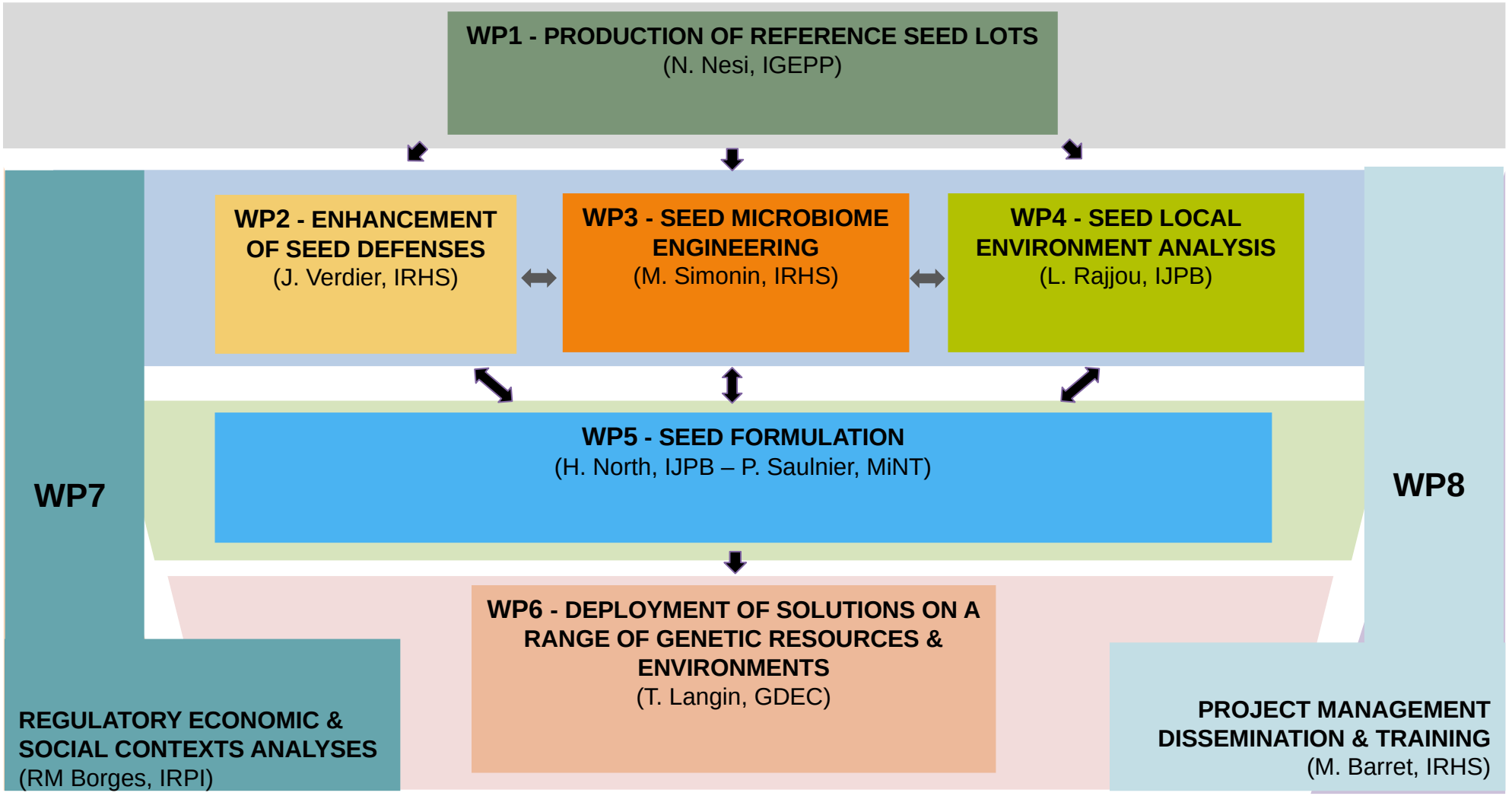


Need for **innovative solutions** adapted to **seed protection to prevent damping-off**

SUCSEED - Project overview

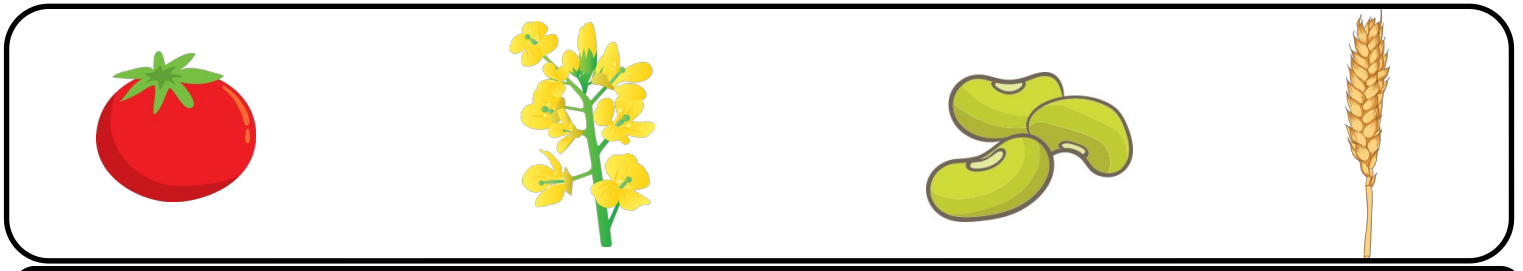


SUCSEED - Project overview



Selection / Production seed lots

WP1 - PRODUCTION OF REFERENCE SEED LOTS
(N. Nesi, IGEPP)



Clavibacter
Pythium

Alternaria
Rhizoctonia

Xanthomonas

Fusarium

- 4 plant species
- 8 genotypes / species
- 2 production sites
- 2 agricultural practices (with/without pesticides)

Identification of alternative solutions

WP1 - PRODUCTION OF REFERENCE SEED LOTS
(N. Nesi, IGEPP)

WP2 - ENHANCEMENT OF SEED DEFENSES
(J. Verdier, IRHS)

WP3 - SEED MICROBIOME ENGINEERING
(M. Simonin, IRHS)

WP4 - SEED LOCAL ENVIRONMENT ANALYSIS
(L. Rajjou, IJPB)

Unravel existing **seed defense** mechanisms during seed maturation

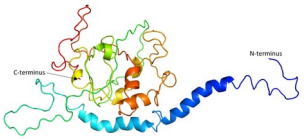
Impact of seed **microbiome** on seed vigour and plant pathogens

Role of **seed exudates** on seed susceptibility and interaction with microbiome

small RNAs

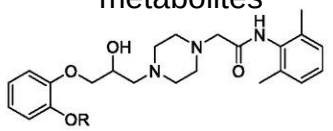
micropeptides

Synthetic Communities



proteins

metabolites



Seed Formulation

WP1 - PRODUCTION OF REFERENCE SEED LOTS
(N. Nesi, IGEPP)

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(J. Verdier, IRHS)

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(M. Simonin, IRHS)

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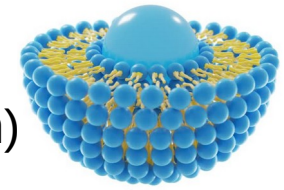
(L. Rajjou, IJPB)

WP5 - SEED FORMULATION
(H. North, IJPB – P. Saulnier, MiNT)

Promote molecular stability and bioavailability by

“Classical” seed formulation

Novel pharmaceutical formulation
(emulsion and nanoencapsulation)



Validation of alternatives

WP1 - PRODUCTION OF REFERENCE SEED LOTS
(N. Nesi, IGEPP)

WP2 - ENHANCEMENT OF SEED DEFENSES
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(L. Rajjou, IJPB)

WP5 - SEED FORMULATION
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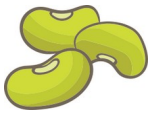
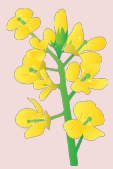
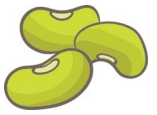
Field trials

WP6 - DEPLOYMENT OF SOLUTIONS ON A RANGE OF GENETIC RESOURCES & ENVIRONMENTS
(T. Langin, GDEC)

Greenhouse trials

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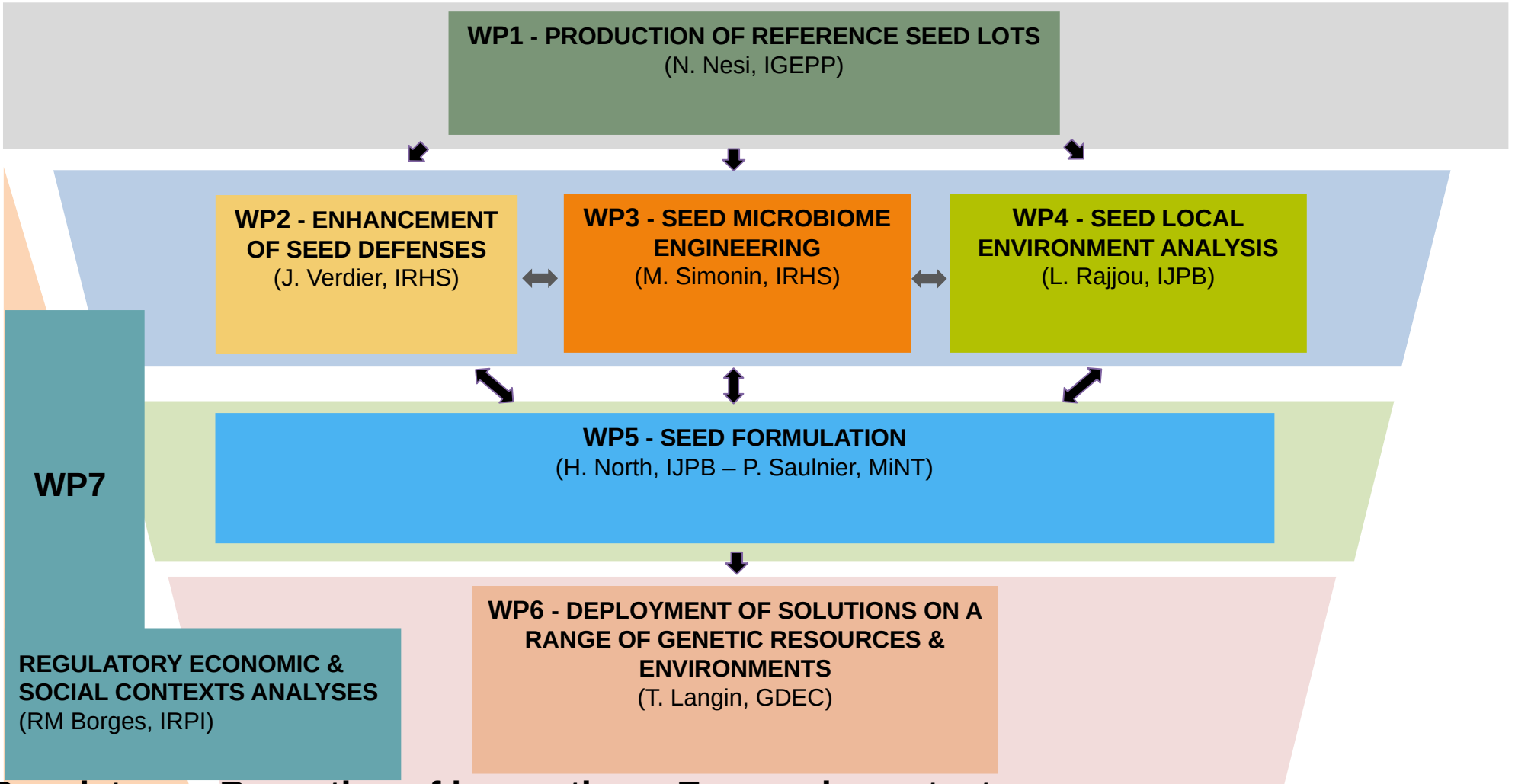

Regulatory – Reception of innovation – Economic context

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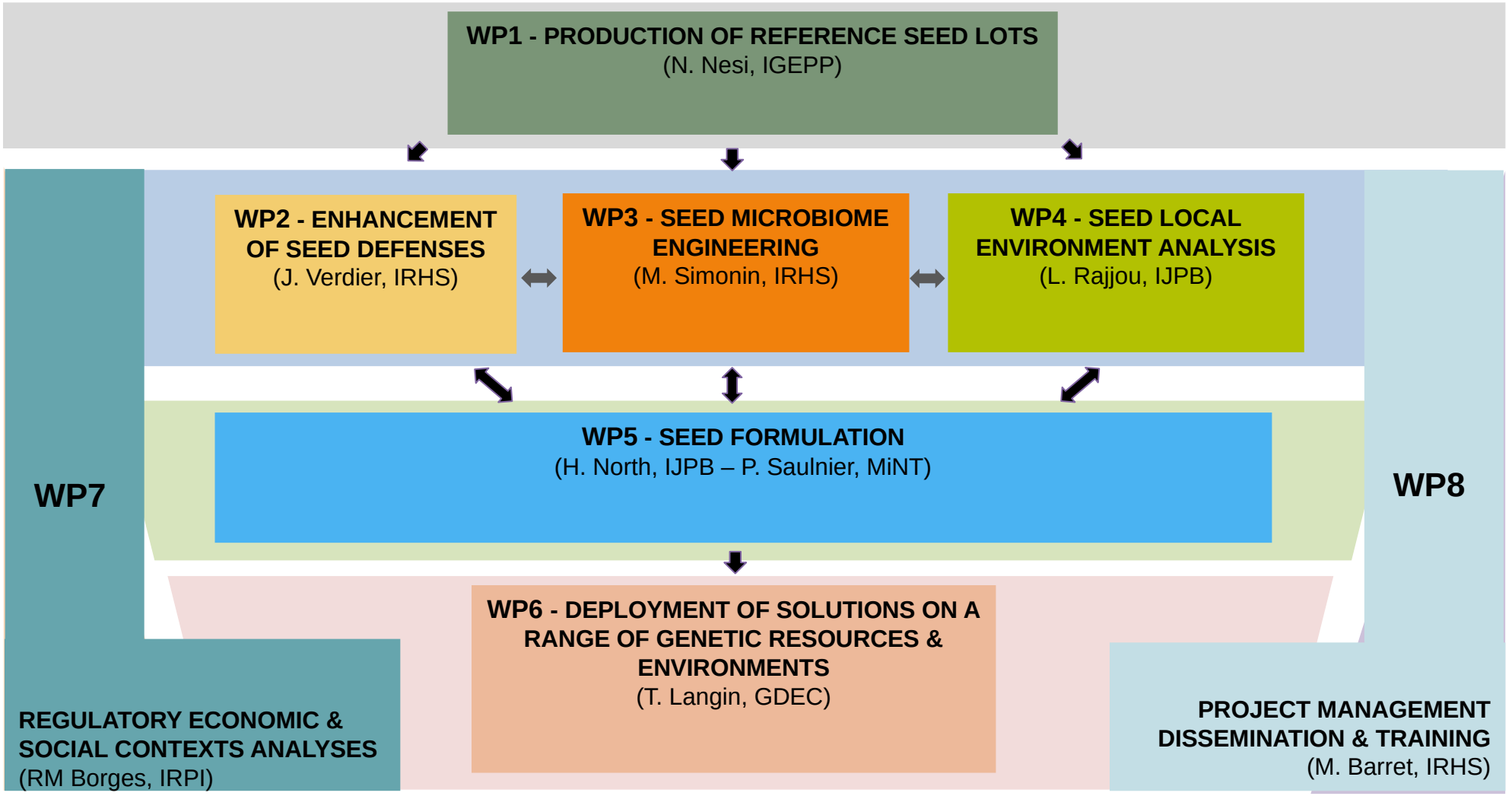

SUCSEED : dissemination

PPR-funded projects

Public Relation

Website

Social media

Outreach

Education

Novel training course

Summer school

Master & Ph.D student

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Side projects

Relation with companies

Seed

Biostimulation

Biocontrol

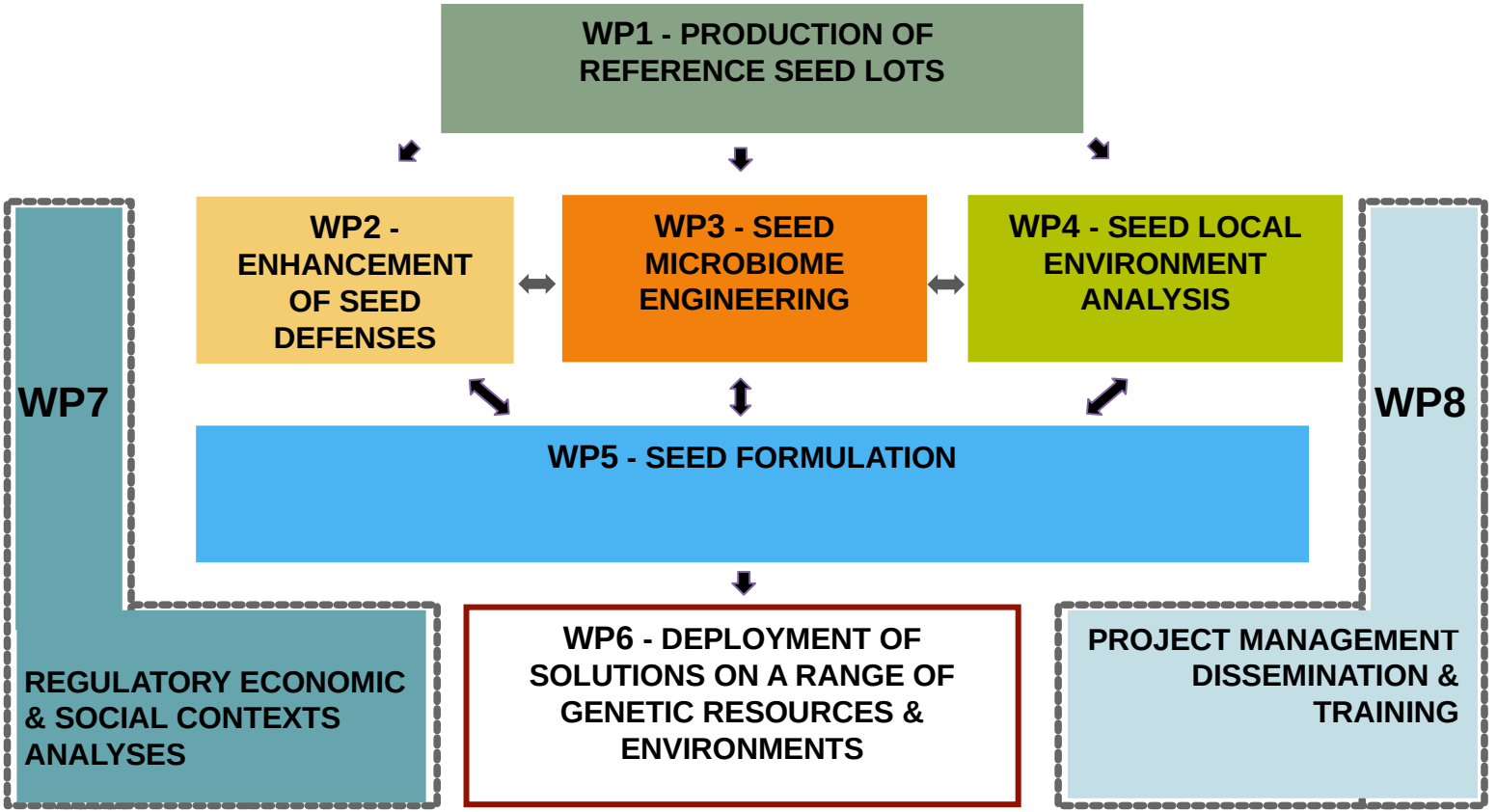
Academic

Publication

IP

SUCSEED

a multi *actor*|*disciplinary*|*object*|*scale* project
that targets a central element of agrosystems, the seed,
as vector of alternatives solutions to pesticides.



SUCSEED:
Stopping the Use of Cides in SEEDs

ACADEMIC PARTNERS

- Institut de Recherche en Horticulture et Semences (Angers)
- Institut Jean-Pierre Bourgin (Versailles)
- Génétique Diversité Ecophysiologie des Céréales (Clermont Fd)
- Institut de Génétique, Environnement et Protection des Plantes (Rennes)
- Institut des Sciences des Plantes - Paris-Saclay (Paris)
- Institut de Biologie de l'École Normale Supérieure (Paris)
- Micro et Nanomedicine translationnelle (Angers)
- Génétique et Amélioration des Fruits et Légumes (Avignon)
- Science Action Développement - Activités Produits Territoires (Paris)
- Institut de Recherche en Propriete Intellectuelle (Paris)
- Clermont Recherche Management (Clermont Fd))

ASSOCIATIONS

Union Française des semenciers

Syndicat professionnel du marché d'intrant agricole

FNAMS
Fédération Nationale des Agriculteurs Multiplicateurs de Semences

International Biocontrol manufacturer association

Groupe d'Etude et de contrôle des Variétés Et des Semences

PRIVATE SECTOR

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