



Rizobi : i pilastri dei Biostimolanti

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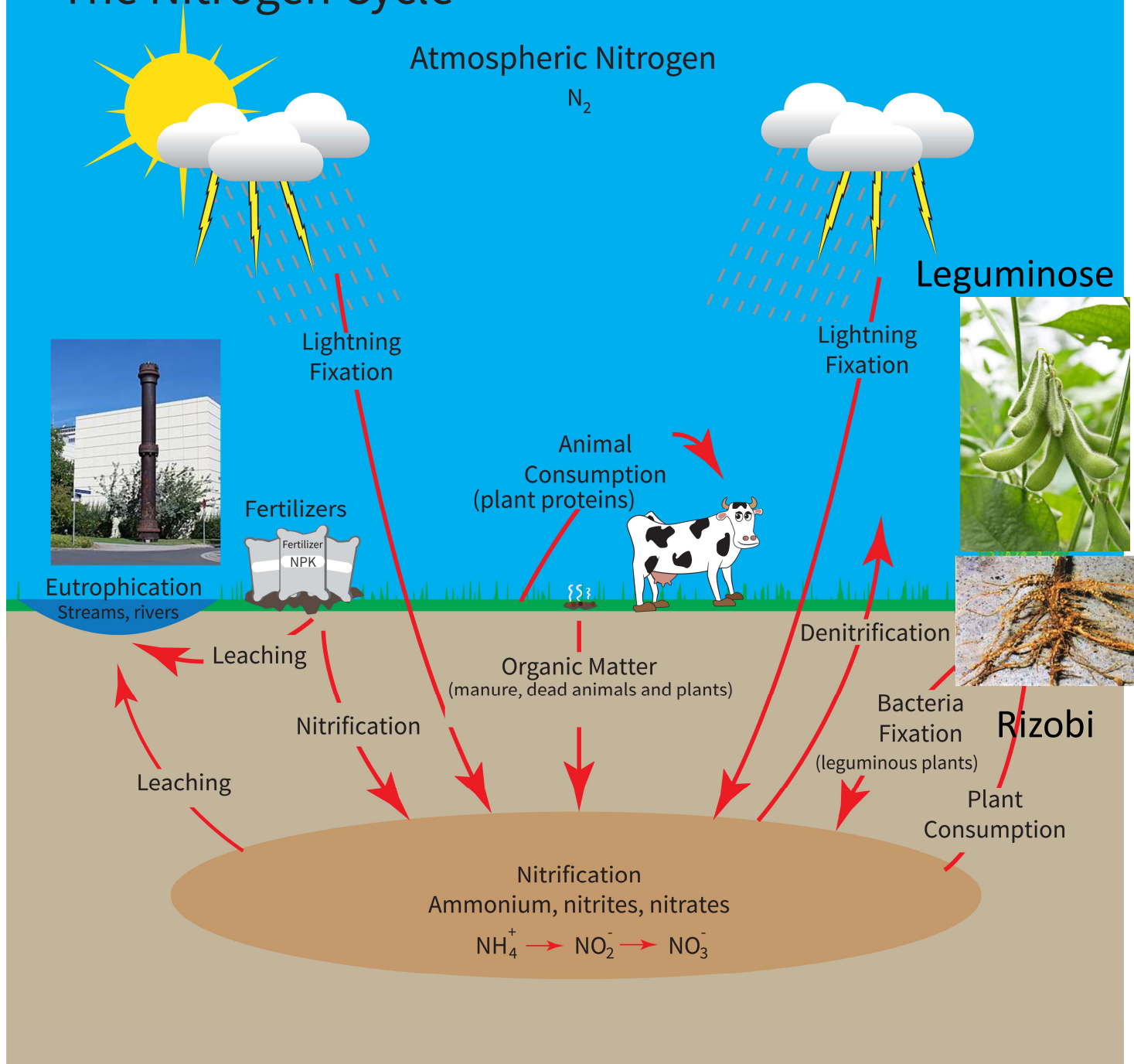
Biostimolanti Conference Bologna, 21 Febbraio 2024

HABER AND BOSCH
NOBEL PRIZE 1918



A HISTORICAL (1921) HIGH-PRESSURE STEEL REACTOR
AT KARLSRUHE INSTITUTE OF TECHNOLOGY

The Nitrogen Cycle





Agrifutur

azienda leader nella produzione dei Rizobi



Fermentatori nei quali avviene la crescita dei
Rizobi in forma axenica



NITROGEN™

Préparation bactérienne pour Soja à base d'un
inoculum de *Bradyrhizobium diazoefficiens* souche G49

Masse nette
400 g
Dose pour 1 ha



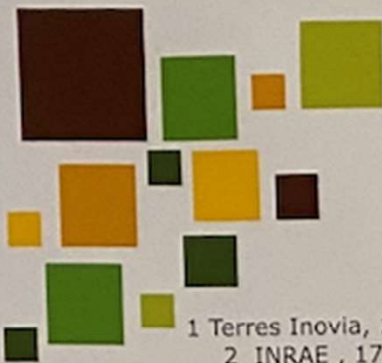
Alcuni marchi di Rizobi prodotti da Agrifutur



Bradyrhizobium diazoefficiens liquido e confezione di adesivante (sticker) liquido

Formulati dei Rizobi Agrifutur

- su torba sterile (trattamento semi)
- in granuli non solubili (trattamento suolo)
- liquido + osmotollerante (trattamento semi)
- polvere concentrata (trattamento semi)
- dispersione oleosa (trattamento semi)



Keeping Bradyrhizobia Inoculant high quality standards : a challenge for French organizations, inside Europe

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Background

- Soybean inoculation necessary when cropped for the 1st time
- High quality standards established since the end of the 60's with good anticipation
- INRAE Quality labelling since 1980 in France
- New European rules since 2011 for Pesticides, fertilizers, and other products
- Mutual recognition of market authorization among UE states
- Risks of leveling down on inocula quality and introducing undesirable strains

Objectives

- Sensibilisation on risks of leveling down on inoculant quality
- Explain historical French choices and positions
- Describe respective tasks of ANSES, INRAE and TERRES INOVIA
- Propose a way for better coordination among UE countries and Organizations

Stakeholders on the French *Bradyrhizobium* Inoculants market

Public and Professional bodies involved in Quality controls of Inoculants



National Agency:

- in charge of registration and market authorizations



National Research Institute :

- Historical partner
- A lot of research on Rhizobia ecology
- Has chosen strain G49
- In charge of quality controls and Labelling



**Farmer organisation
Applied research and extension Institut**

Inoculants available on the French Market

Market Authorization in France
+ INRAE Quality Labelling

80%

| Type | Product | producer | Strain |
|---------------------------|------------------|---------------|--------|
| Peat on seed | NPPL | BASF | G49 |
| | Nitrogen | Agrifutur SRL | G49 |
| µgranulars | Nitrogen GR | Agrifutur SRL | G49 |
| Peat with sticky additive | NPPL Force48 | BASF | G49 |
| Liquid + C solution | Rizoliq Top | Rizobacter | G49 |
| | Vitalianz R soja | Calister | G49 |

Le leguminose di interesse agrario e ambientale,...e gastronomico

Leguminose da granella

- Soia (Microbiome4Soy EU project)
- Fagioli (CREA BO, Regione Piemonte)
- Fava
- Pisello
- Cece (LeguMed PRIMA Project)
- Lenticchia “
- Lupini
- Arachide (AGF Project)

Leguminose da sovescio

- *Crotalaria juncea* (CREA BO)
- *Sesbania sp* (CREA BO)

Leguminose mellifere

Leguminose da foraggio

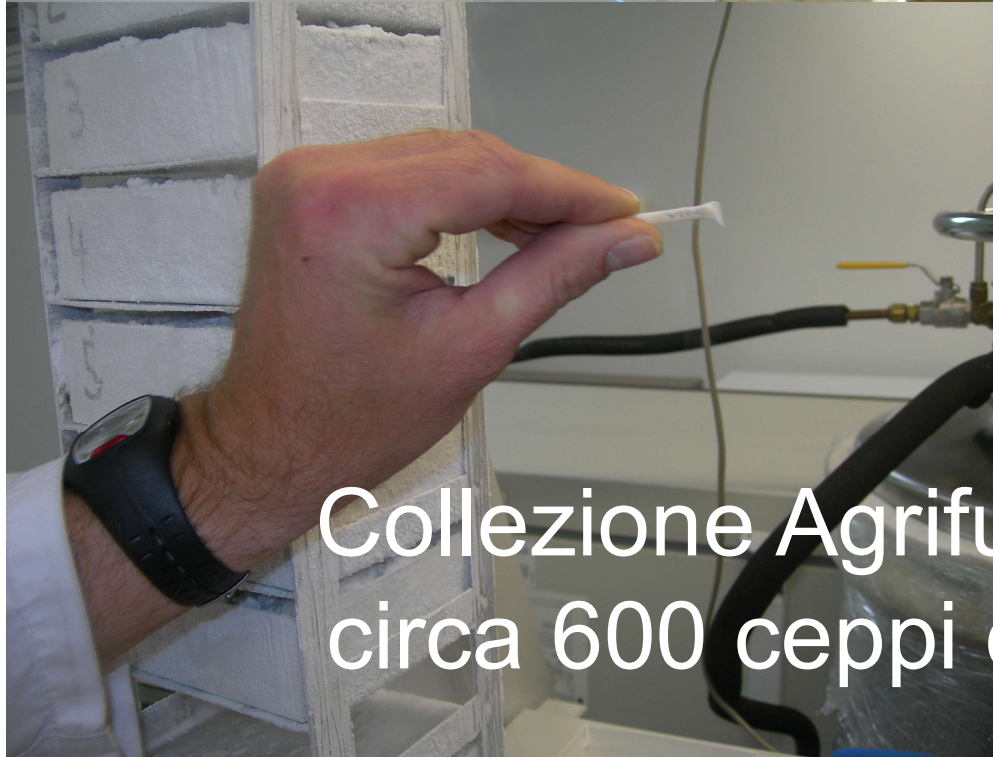
- Erba medica (AGF Project)
- Sulla (Agris, Alghero)
- Favino
- Trifogli (UNI SS)



Piastre Petri



Microscopia



Collezione Agrifutur di microrganismi
circa 600 ceppi dei quali 150 Rizobi



Rizobi :

i pilastri dei Biostimolanti

- Regolamento EU Biostimolanti n°2019/1009 (da luglio 2022) (include nella lista positiva i Rizobi)
- Azotofissazione simbiotica con le leguminose:
Simbiosi mutualistica
- PGPR (Plant Growth Promoting Rhizobacteria)
grazie a composti promotori di crescita quali l'acido indolo acetico (IAA), gibberelline (GA3), ed enzimi
- Concorrono al miglioramento della struttura del suolo (EPS)
- Ottimizzazione delle loro prestazioni in consorzi microbici !!!
-e tanto altro !



La microbiologia fa la differenza
i Rizobi sono fondamentali
e Agrifutur li coltiva bene



Annibale Carracci (1584-1585), Galleria Colonna , Roma

