SCALING UP FROM RESEARCH TO IMPACT
Learning from local initiatives

BUILDING LOCAL SORGHUM BIOMASS PRODUCTION AND VALORIZATION CHAINS IN SOUTHERN FRANCE:
THE INTERACTIVE INNOVATION MODEL
A special mission and a big ambition!

- Context: global warming and rarefaction of fossil fuel reserves → need for a renewable source of energy, materials and chemicals

- Biomass for the future “BFF”: a french “future investment” project → Towards new local, sustainable sorghum ligno-cellulosic biomass-based value chains in France: Ambition: a new local green economy through the establishment of a durable network of stakeholders on the territory

- Research Unit “AGAP”: A new approach “Plant breeding is not only a matter of genetics: Breeding in Context”

- CIRAD: A new role to play at the local level → new jobs?
An integrative approach

• Complexity
• a lot of cross-cutting issues,
• Multi-level innovation challenges + Mix of social /environmental values and profitability issues ==>

Integration of multi-level innovation challenges along the value chain

✓ Technical challenges: new varieties, new technical itineraries, new processes,
✓ Economic: business models
✓ Organizational challenges: logistics, co-products...
✓ Political and institutional challenges: compliance with priorities, strategies ...
✓ Communicational: common vision, work on incentives and triggers...
✓ Territorial: Anchorage /policies and local dynamics
The value chain development issue: key triggers

Securing upstream and downstream
Creation of value
Creation of logistics conditions
Sustainability

Farmers

Creation of value along the value chain ➔ new market
Availability of relevant varieties

Industrialists

Knowledge on potential end uses, biomass-conditioning procedures and supply, a sustainable business model
Sorghum: what does it look like?
Sorghum: An opportunity of diversification for agro-ecological and bio-economy purposes at the territorial level

New opportunities

Sorghum features

- Food and non food
- Biodiversity + Rusticity: Hydric stress and pest resistance, Low input needs (big issue in Languedoc R Midi-Pyrénées region)
- Biomass yield potential
- Diverse crop management
- Diversity of biomass composition ➔ multi-use plant ➔ a multi-valorisation model
Two catalysts for the value chain building

1. **R&I process** which objective is the maturation of the technologies to reach the market
   Activation through the retro-action loops

2. **The innovation ecosystem**
   The forces and dynamics, the policy and strategies, the categories of stakeholders, the alliances and interactions
   Mobilization of the financing tools, the competences, the experimentation devices (pilote facilities...)

Génétique : Agronomie : Transformation : Marchés
An animation process at the territorial level
Various outputs

• **A common vision of a multi-valorisation model** (biorefinery) combining food and non food valorization

• **Activation of R&I process** : mobilization of interdisciplinarity, academic and private partners, calls of proposals and various financing sources, new sub-projects of new valorization opportunities (i.e. “Couleur sorgho”)

• **Anchorage into the regional innovation ecosystem** through the regional innovation strategies (3S)

• **Emergence of a multi-stakeholder group** : an “Operational Group” (in progress) gathering institutions, the profession (chambers of agriculture, federation of coops...) academic and technical institutes, private (seed producers, intermediate and end-users industrials...)

→ **new paradigm** coherent with our strategy and philosophy
### What’s been done?

- **Spreading of the model**: A multi-valorisation model, toward biorefinery ➔ circular economy
- **New concept of stakeholders consortium**: Dynamic (variable geometry), local stakeholders
- **Anchorage**: Member of the Regional Innovation Strategy
- **Mix of different financing sources**: local, national, european
- **Integration of local constraints and specificities**
- **Works Implementation and projects portage by Operational Groups** (under progress)
- **Perspective of networking** with OG at national and european levels
- **Agro-ecology** and ecosystemic services integrated
How does Research operate? an impacting role of catalyst through learning processes

• Building new value chains is a longstanding process of collective learning and acting through an interactive innovation model

• Our case study: An excellent example highlighting the mediation role of research to aggregate stakeholders around the R&I process

• The new “dynamic” multi-stakeholders groups

  ➔ Innovation ==> adaptability

  ➔ New paradigms ==> resilience to face uncertain environment & uncontrollability

  ➔ Impact
THANK YOU FOR YOUR ATTENTION

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