



GLOBAL EVENT

JOHANNESBURG SOUTH AFRICA

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INNOVATION
PROJECT LEADER

CIRAD



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

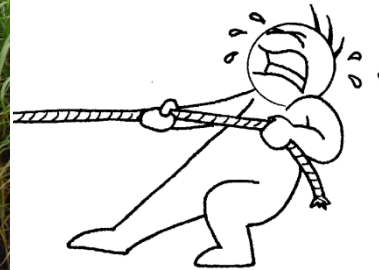
Creation of value

Creation of logistics conditions

Sustainability

Farmers

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



Industrials

Knowledge on potential end uses
, biomass-conditioning
procedures and supply, a
sustainable business model

Sorghum : what does it look like ?



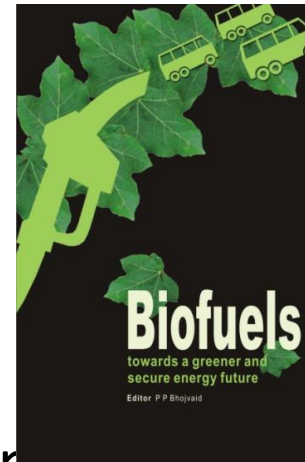
Sorghum : An opportunity of diversification for agro-ecological and bio- economy purposes at the territorial level



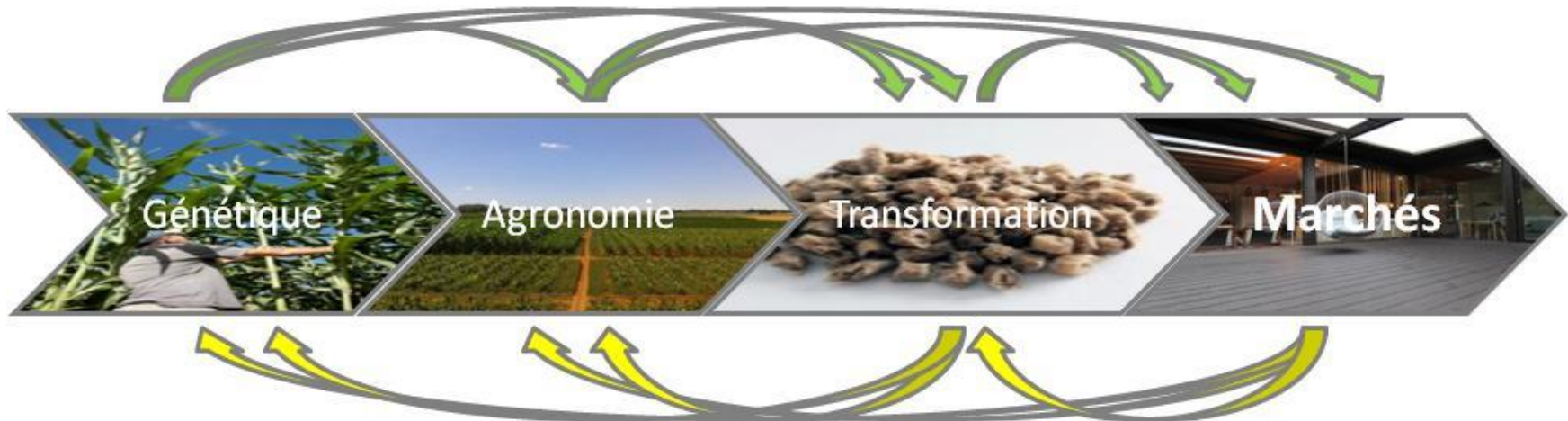
New opportunities

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...)

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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