

# Innovation

groupe coopératif  
 **MAISADOUR**



*Though Maisadour Cooperative Group's strategic commitment to protecting members' income through the structuring of business segments has certainly paid off, it has also proven to be a driving force behind innovation. Furthermore, for a number of years now, this approach has been conceptualised using a term that is making headway both in our sector and in associated innovation concepts: that term is Agro-chain.*

*Agro-chain is a way of putting into words the changes we have all witnessed over the last couple of decades. Though the structuring of segments was originally based on a rationale of supply, it then evolved to focus on what is known as "farm-to-table" traceability. It then reversed direction to focus on traceability and "table-to-farm" requirements. You could even talk of "from market-to-local area" traceability and requirements, such is the complexity of production and the way it is linked to those involved in the region and its environment, climate, soil, people, culture, etc.*

*This idea of "reversed" traceability and requirements is not neutral: it symbolises the fact that production activities and organisation depend on the specific features that the market expects; it insists that each link in the chain interact with others and lastly, it stops us from focussing our attention on an individual link without taking its environment into consideration. This approach takes better account of the significant changes that have taken place in the international trade of agricultural and agro-food products as well as the tastes of consumers. It also better reflects the improvements in production, transportation and other supply chain technologies as well as changes in public policies and regulations.*

*Innovation should, therefore, be based as much as possible on this idea, in order to implement actions that strengthen Agro-chains' structure. This is so that we can increase products' compatibility with market requirements or with corporate expectations imposed by regulatory or fiscal policies, which impact our sector and require us to constantly adapt.*

*The Maisadour Cooperative Group has two major assets; on one hand the Group has positioned the concept of Agro-chains at the heart of its strategy and on the other the Agro-chains have provided the Group with the diversity and wealth of skills that range "from the seed to the finished product".*

*This agricultural and agro-food innovation must also count on openness, collaboration, partnerships, alliances, etc. It must take into account the utmost need to decompartmentalise experience, understanding and business segments and to build on what's happening outside our Group or even in other sectors of activity.*

*These processes were no doubt strongly supported by the creation of Ovalie-Innovation in 2012 and the increased coordination and structuring of innovation between and within different business segments.*

*The prospect of creating Technopôle AgroLandes (an agricultural technology park) in the local area and the potential that it brings for exchanges with colleagues, engineers, researchers and various start-ups, etc. give us additional hope of implementing the dynamic required to develop our Agro-chains.*

*This reminds me of a quote from French author Antoine de Saint-Exupéry, who perfectly summed up the position to adopt when looking for ways to progress in a highly versatile and moving environment: "in life there are no solutions, there are only active forces; they must be created and the solutions will follow".*



**Thierry Véronèse**  
Scientific Director  
at Ovalie Innovation

■	Editorial	2
■	R&D-Innovation of the Maïsadour Cooperative Group	4
■	Ovalie-Innovation continues to establish its structure and develop inter-disciplinary activities	4
■	The Agronomic Division/sustainable development continues to grow	4
■	Maïsadour Semences doubles its research capacity	5
■	Nutricia strengthens its R&D	5
■	Organising the downstream Division	5
■	Maïsadour's innovation dynamic	6
■	I. At the heart of business segments to strengthen and optimise members' income	6
■	Snapshot on Seeds Innovation	6
■	Snapshot on Agronomy	7
■	Snapshot on Precision Agriculture	7
■	Snapshot on Animal Production	8
■	II. New business segments to create new revenue for members	10
■	Ovalie-Innovation explores new markets... ...in the bioenergy industry ...not forgetting green chemistry and biorefinery	10
■	The Maïsadour Cooperative Group and local businesses involved in the development of the Technopôle Agrolandes	11

# R&D-Innovation of the Maisadour Cooperative Group

( A dynamic organisation,  
increasing its coordination across a Group  
that is going from strength to strength )

## OVALIE-INNOVATION CONTINUES TO ESTABLISH ITS STRUCTURE AND DEVELOP INTER- DISCIPLINARY ACTIVITIES

Directly serving various activities within Maisadour and Vivadour, Ovalie Innovation's inter-disciplinary tasks in support of innovation are to help stimulate and structure R&D-Innovation within Group business segments, meet their specific requirements, explore and suggest new ways forward and provide efficient financial engineering strategies as part of public support measures for innovation. Ovalie-Innovation also proactively explores its own new avenues, particularly in both public and private collaborative projects with innovative companies, universities and research institutes.

### Organisation:

Under the responsibility of Thierry Véronèse, Scientific Director:

- 4 project managers, Patrice Galaup, Stéphane Ballas, Jean-Pierre Arsault and Anne-Marie Busutill (ENSAT work placement contract).
- Maryline Cotentin, Strategic Monitoring and Communications Manager.
- 3 PhD students in cooperation with public laboratories and private partners.

### Governance and leadership:

- An Executive Committee: Régis Fournier (Director of Innovation at Maisadour), Franck Clavier (Managing Director at Vivadour), Thierry Véronèse.
- A Steering Committee: Executive Committee + Michel Prugue (President of Maisadour), Jean-Marc Gassiot (Vice-President of Vivadour).
- A Multi-Disciplinary Technical Innovation Committee (C2TI): an Ovalie-Innovation team and one operational representative per business segment for each cooperative (18 people in all).

## THE AGRONOMIC DIVISION/ SUSTAINABLE DEVELOPMENT CONTINUES TO GROW

In 2010, long-term work was started with the creation of three networks bringing Maisadour alongside interested volunteer members, collaborating in working groups. Reporting to Michel Montet, the team is led by Phillippe Pean and is structured as follows: Sylvain Pons (agronomy), experimentation technicians, Jean-Christophe Rodaro (seeds), Fabrice Comte (plants), Adrien Chassan (environment), and lastly two apprentice engineers from agricultural institutions in Toulouse and Angers (ENSAT and ESA respectively).

This team supports members in a multi-year experimentation process comprising 5 Agrosites which represent the Group's main pedoclimatic zones. Farmers among the network of experimenters are to all intents and purposes an integral party of the team, sharing their experience, thoughts and results.



*Agronomic meeting on the Agrosite in Rion-des-Landes*

## MAISADOUR SEMENCES DOUBLES ITS RESEARCH CAPACITY

Since its inception, the company has relied on high-performance research which now represents 15% of its turnover. 172 people are actively working on creating new hybrids (around 30 are registered each year). This R&D potential continued to grow in 2013-2014:

- After Haut-Mauco, Rhodon and Neckarmühlbach in Germany, the company has just opened a new R&D station in Mogilev, Ukraine and inaugurated a new site in Romania which includes another R&D station.
- A recent strategic alliance with the American company Nature Source Genetics should mean that the research capacity of Maisadour Semences will double!



Research and Development Centre in Belciugatele, Romania

## NUTRICIA STRENGTHENS ITS R&D

Nutricia has enjoyed recognised experience in leading R&D projects in the field of animal feed since 1990, thanks to the in-field expertise gained by technical teams and the partnerships forged with public research institutes, technical institutes, joint-trade organisations (ITAVI, CIFO, ARVOL, INRA, etc.) and also with service companies and suppliers. Nutricia R&D's main goal is to provide production managers with support in analysing day-to-day issues.

The R&D team's field of expertise is also expanding to cover all segments (selection, incubation, production, animal feed and health, abattoir, etc.) for a more integrated vision of technical choices. Lastly, Nutricia is the business interface of Ovalie-Innovation in the search of new technologies that may develop or add value to our production models.



The recent strengthening of the R&D team is part of an inter-disciplinary approach to meet the stated requirements and is a decision-making tool in the day-to-day activities of everyone: reporting to Jean-Louis Zwick, Maxime Quentin is the new team coordinator at Nutricia. Hubert Clavé continues in his R&D role and will increase support to the business activity that includes ruminants and pork. Fanny Rochon takes on responsibility for experimental resources (experimental station in Benquet and advisor breeders) with station operators, Charles Desorthes and Rémi Quentin, under her leadership.



Palmiped experimentation

## ORGANISING THE DOWNSTREAM DIVISION



Teams at Delpéyrat and Fermiers Du Sud-Ouest have actively initiated consultations on their strategy and the way in which innovation is organised. One example is Simon Augereau's appointment as R&D correspondent for Fermiers Du Sud-Ouest.



# Maisadour's innovation dynamic

Just as a picture is worth a thousand words, a few examples are more revealing than a long speech. We have decided, therefore, to showcase the Group's dynamic innovation through a series of thematic snapshots taken all along the chain from supplies to sales.

## I. At the heart of business segments to strengthen and optimise members' income

In terms of Animal or Plant-based Production, there are three main areas of innovation:

- Agronomic and zootechnical innovation: work on genetics, production itineraries.
- Innovation on inputs and/or methods of supply: new materials, biofertilisers or other biocontrol products to optimise effectiveness of treatments, fertilisation, etc.
- Technical and technological innovation towards "precision" practices, combining automated information capture (digital and measurement technologies, Internet of Things, etc.) and Decision Making Tools, machinery, etc.

## SNAPSHOT ON SEEDS INNOVATION

Maisadour Semences is committed to ambitious programmes

### 1. Collaborative projects...

...Some are at the top end of international scientific partnerships!

Three large-scale projects (2012-2020) with a budget totalling over 60 million euros.

- **Project Amaizing:** to improve knowledge and exploit the natural diversity of maize, so as to improve productivity under conditions where water and fertiliser are limited.
- **Project Sunrise:** to stimulate genetic progress and improve oil production from the growing of sunflower hybrids under conditions of reduced water availability.
- **Project Rapsodyn:** to improve rapeseed oil production per hectare and maintain yield stability in contrasting environments, whilst limiting nitrogen inputs over the growing cycle.



Sunflower seed research plot

...Others are recognised for their direct competitive potential!

- **Project Helios** approved by the "Mer Bretagne" Competitive Cluster: new methods to combat broomrape plants.  
In partnership with Timac Agro International (Roullier Group) CETIOM, the University of Nantes; Duration: 3 years (2012-2014); Overall budget: 2.75 million euros.  
Broomrape plants are parasites which attack several types of cultivated plant. There is no effective or sustainable method to combat them. The project is developing a solution to combat broomrape on sunflowers and rapeseed. It involves using the "inhibitor" effect of different seaweed and halophytic plant extracts.  
This close contact with Timac-Agro-International also provides Maisadour with opportunities for new projects in the field of biocontrol.

### 2. Product and product/services innovations

**Innovation varieties 2014:** Maisadour Semences registered around 30 new varieties, mostly in maize but also in rapeseed (following the launch of rapeseed R&D in 2008, the first high-quality Maisadour Semences hybrids are pending registration) and sunflowers (one new oleic variety, resistant to the latest mildew strains).

#### Innovation by combining technologies:

- **"Nutriplus"**, for dairy farms (new alfalfa products and forage additives/enhancers from the MAS range, through the international partnership with Jouffray Drillaud).
- **"Mas'Pilot"**, for advice on how to manage crops via agro-climatic models.
- **"Agrostart"**, an offer that includes seed treatment with a biostimulant.

### 3. High-tech investments: genomic selection!

New selection methods take the entire genetic makeup of a plant into account. With the bimolecular analysis laboratory recently investing in a "replikator" robot, Maisadour Semences is continuing to improve its genetic analysis resources and thereby its selection potential in maize, sunflower and rapeseed programmes. This technology is being deployed with three main objectives: genotyping genetic resources, guiding selection in the laboratory and in the field and lastly checking the quality of new genetic strains and hybrids as well as seed production.

### 4. Strategic bioinformatics alliance to promote genetics

A unique partnership was recently signed with the American company Nature Source Genetics. This partnership should allow research capacity to double, thanks to statistical tools and state-of-the-art bioinformatics.

## SNAPSHOT ON AGRONOMY

### 1. The Agronomic Division is continuing to develop activities on its Agrosites

Since 2012, the Maisadour Cooperative Group has been encouraging a new dynamic in terms of innovative agronomic techniques. This dynamic is based on agronomic experiments led by volunteer farmers. These Agrosites are set up, run and monitored by the Group's Agronomy department with member farmers heavily involved. The Agrosites are devoted to studying various production factors and technical itineraries via a set of economic and environmental indicators monitored over at least a seven-year period.

Since this scheme was set up, several studies have been and continue to be run, for example:

- The cross-impact of the following parameters: tillage/herbicide strategy, tillage/bioactivators, tillage/growing system, growing system/bioactivators.
- The impact of tilling on structural stability and the crop's supply.
- The role of organic matter in soil fertility.
- Alternative techniques for ploughing, weeding and sowing (simplified techniques, strip-till, twin-row weeding machine, etc.).

### 2. Study on new growing systems: Ovalie-Innovation is mobilising start-of-the-art scientific resources

- Caroline Roussy's thesis funded by ADEME (2012-2015).
- Associated with the economic research laboratories of INRA (Rennes UMR SMART) and the Ecole d'Ingénieurs de Purpan (Toulouse).
- In partnership with the Arterris and Terres du Sud cooperatives, with support from the Water Agency and Arvalis.

The aim of this work is to highlight the main obstacles and motivations farmers have in terms of the changes in the two crop systems used extensively in the South-West of France: maize monoculture and a rotation of durum wheat and sunflower. Since March 2013, surveys have been conducted among members of various cooperatives that partner the project (200 surveys). The first statistical analyses highlight that farmers have shown contrasting behaviour in terms of adopting innovative practices. Perceptions, risk management strategies and agronomic issues specific to each farmer seem to play a key role. These are preliminary results which will be approved for spring 2015. Identifying the determining factors in whether or not farmers adopt these new practices will enable us to provide innovative solutions whilst combining system performance with the expectations of farmers.



Meeting on an Agrosite

## Snapshot on Precision Agriculture

### 1. Ovalie-Innovation is involved in the AGRI-DRONES-SERVICES project to develop Decision Making Tools by using drones to observe crops

- Approved by Agri Sud-Ouest Innovation and Aérospatiale Valley competitive clusters.
- Duration: 4 years (2014-2018). Overall budget: €3.9 million
- Subsidised by the Ministry of Agriculture, as part of Interministerial fund for competitive clusters (FUI) and by the Regional Councils of Midi-Pyrénées and Aquitaine.
- Coordinated by the Convergence cooperatives (Ovalie-Innovation for Maisadour and Vivadour, Arterris, Terres du Sud), in partnerships with In Vivo, the company Delair-Tech, based in Toulouse, Arvalis and Cetiom and laboratories of INRA and CNRS.

Precision, adaptability, flexibility of use, price... these are all good reasons to develop observation systems using the latest breakthroughs in drone technology. In this project, Delair-Tech will provide all its expertise in long-endurance drones. Delair-Tech is currently the only company to offer products that can be used in civil airspace over large distances and is therefore the authority on network surveillance tasks, mapping vast spaces, etc. The company's next challenge is to supply information, at minimal cost, for DMT models that are already available on the market. The purposes of these models include nitrogen modulation, irrigation, phytosanitary treatments, yield forecasts and the detection of certain insects or weeds. Ovalie-Innovation and other stakeholders in the agricultural sector are united in this project to contribute to developing efficient and profitable services for farmers. These services will be approved under real conditions throughout the project.



Drone carrying out observations on crops

**2. The Agronomic Division...**  
**...Assesses and deploys Decision Making Tools**

- Systems developed by In Vivo: Phytènes for crop protection and Épiclès for nitrogen fertilisation.
- Vigieflore from Syngenta for effective weeding.
- Irré-LIS®: An irrigation management DMT from Arvalis-Institut du Végétal. It was tested on 75 plots (2,500 ha) in 2014 and specific adaptations have been made across Maïsadour's territory to enable large-scale deployment in 2015.



**...Contributes to developing new generations of soil moisture sensors:**  
**The IRRIS project**

in partnership with TCSD, Measurement Specialties, Comptec, and the ENSAT and CNRS laboratories. Approved in 2012 by the EAU competitive cluster for a duration of 3 years (overall budget of €1.6 m) and funded by the Ministry of Industry as part of the Eco-Industry call for projects, the project is coming to an end and in 2015 Maïsadour teams will work on approving this new technology under real usage conditions.



A screen used to monitor irrigation with Irré-Lis®



Determining the agricultural profile of a plot to better manage irrigation

**SNAPSHOT ON ANIMAL PRODUCTION**

**1. Nutricia, a year full of developments and projects**

**Benquet station in full swing**

The station in Benquet (France) is meeting production challenges in full and its recent authorisation by the State confirms it as a high-level experimentation centre. The professionalisation of the team means that experimental protocols can be led. These protocols were approved by the regional committee based in Pau (France) and the French Ministry of Higher Education and Research. CALIPSO is the steering committee, and the managers of the Palmiped and Poultry Divisions within Maïsadour and Vivadour as well as the formulation manager at Nutricia supervise the tests monitored at the station.

- **Examples of palmiped tests conducted in 2014:** new genetic cross-breeds to gauge their value in our segments and to optimise their food programs; managing the breeding of thin female ducks of the Mulard variety; testing of female Barbary ducks to specify the nutritional requirements during the start-up phase (this led to a revision of standards on the ground).



- **Standard poultry** have been incorporated into the Nutricia schedule for the first time: feed plan for an export client; comparing several feed itineraries; exploring various sources of fibre for their poultry feed efficiency; developments of Label Rouge genetics in interaction with nutritional levels; comparing flora stabilisers: applications as part of the demedication of farms are pending!



### Several partner research projects:

- Actively participating in projects carried out by research or technical institutes of joint-trade organisations (as part of the Ministry of Agriculture's CASDAR calls for projects).
  - **Avialim Bio Project:** testing of raw materials to move to fully organic meat poultry feed.
  - **Ovalie Project:** creating a multi-criteria assessment tool to design innovative poultry production systems. Nutricia was involved in the participatory committee during creation of this tool.
- Contributing to precision feed projects (**DIGSPIR**), or the implementation of farming systems that recover local raw materials (**VOCALIM** project).
- In partnership with Ovalie-Innovation, participating in the KOMPLANTES project approved by the Agri-Sud-Ouest-Innovation competitive cluster, the aim of which is to test and assess the value of fermented plant extracts as anti-parasites in poultry production (in partnership with the company Caribou-Keficare, the INRA in Tours and the Ecole d'Ingénieurs de Purpan).

- A thesis project is currently being set up with the aim of exploring microbial interactions that may reduce the growth of salmonella in palmipeds.

### 2. Ovalie-Innovation: a project to combat mealworm in livestock buildings

Ovalie-Innovation and AB7-Innovation have partnered up to provide new solutions in order to reduce the development of mealworm in livestock buildings. The aim too is to restore and improve their insulating potential, since these insects destroy the insulating material. The plan is to provide farmers with a better zootechnical performance and significant energy savings.

AB7 is a small to medium-sized company and is very active in the field of anti-parasite and insecticide solutions. These solutions are used frequently in repellents on farms, making the company a first-choice partner. The project will come to an end in late 2014 with deployment scheduled for 2015.



Combating mealworm in livestock buildings

## II. New business segments to create new revenue for members

Those involved in agriculture possess a material that is becoming increasingly valuable: biomass. New industrial markets are hungry for biomass and this is a strength for the Maisadour Cooperative Group. It is therefore crucial to accurately estimate the resource potential that we can use to our advantage. Ovalie-Innovation and the organisations participating in C2TI are actively carrying out work to do so: storage or processing by-products, crop residue, new crops on existing plots (coverage, strategies including growing three crops in a two-year period), use of available resources (short rotation coppice)... all avenues are being explored. These available resources are to be found on unused land, animal tracks or as part of new CAP provisions (in 2015, farmers must have at least 5% Ecological Focus Area on their farms. This will be one of the three conditions of the "greening" payments).



### OVALIE-INNOVATION EXPLORES NEW MARKETS...

### ...IN THE BIOENERGY INDUSTRY

Further thought is being given to biomass energy in order to either offer farmers new outlets or to suggest that they themselves play an active role in a new type of processing.

The central theme of these studies is methanisation, for which Ovalie-Innovation is setting up partnerships to better define strategies that suit each context. These contexts vary from methanisation on the farm, to industrial-scale operations such as the **Methadour** project, which is due to be launched on ALS's site in Montgaillard (France), in partnership with FONROCHE.

In this approach, the efficiency with which the digestate (methanisation residue) returns to the soil is not overlooked. Ovalie-Innovation is therefore actively involved in the **Valodim** project alongside regional (Arterris) and national (Vivescia, Cap Seine, Union des distilleries de la Méditerranée) colleagues as well as research laboratories (UTC Compiègne, INSA Toulouse, Irstea). The aim of this project is to better develop the ways in which methanisation digestates are used, depending on particular features of crops.

As for "small-scale methanisation", consultations with Élevage Service, Animal Production and our partners continue, in order to design a consistent offer that is economically viable for members who would like to develop. Pilot projects should be implemented in the coming months and by the end of 2015.



*A methanisation site*

### ...NOT FORGETTING GREEN CHEMISTRY AND BIOREFINERY

On the theme of bioplastics, the partnership between Ovalie-Innovation and Végéplast continues as part of Nicolas Andin's doctorate at INSA Toulouse and the Thermobiopack project for Delpyrat (which is aiming to develop new bio-sourced and biodegradable packaging compatible with cooking operations).

In terms of recovering by-products, exchanges are going well with the strong research network that the South-West of France enjoys. Examples include collaborations with the Procedures and Organic Systems Engineering Laboratory (INSA-INRA-CNRS mixed unit) and the Laboratory of Agro-Industrial Chemistry (INRA - Toulouse INP Mixed Unit).



*ALS's site in Montgaillard*

## THE MAÏSADOUR COOPERATIVE GROUP AND LOCAL BUSINESSES INVOLVED IN THE DEVELOPMENT OF THE TECHNOPOËLE AGROLANDES

Through its participation in local socio-economic consultations, the Maïsadour Cooperative Group played an active role in the debates that emerged around the business club of Saint-Sever and local authorities (Community of Communes, General Council of the Landes) to plan new avenues of economic development. More specifically, attention was drawn to the potential of the Mont-de-Marsan/Saint-Sever geographical area, in which the head office of the Maïsadour Cooperative Group as well as many of its subsidiaries are located (Delpeyrat, Sud-Ouest-Aliment, Nutricia, Fermiers Du Sud-Ouest, Élevage Service, etc.)

In 2013, a positioning study commissioned by the General Council highlighted the opportunity of creating an agricultural and agro-food technology park (Technopôle) devoted to a wide range of

agricultural activities. This Technopôle would have 4 main focuses:

livestock (an extension of the "Palmipôle" in Benquet), food processing, biorefinery and bioenergies.

The study also highlights the necessity of having a "Campus" zone within the Technopôle AgroLandes. This campus zone will be devoted to innovation and R&D, hosting start-ups, creating innovation platforms that foster public/private collaboration (taking inspiration from the famous Silicon Valley concept), thereby increasing its appeal. For an area located at the crossroads of Pau, Bayonne, Bordeaux and Toulouse universities, this necessity is certainly a valid one.

In early 2014, communities identified an area of 84 ha located between Mont-de-Marsan and Haut-Mauco, and acquired it through a joint association. In anticipation of the laying of the foundation stone, legal considerations concerning management, governance and arrangements are progressing well.

For the Maïsadour Cooperative Group, this prospect is highly encouraging, given the project's great geographical environment and the importance the Group places on dynamic innovation, as has been shown in this report. The Group will continue to participate in consultations alongside local companies and in partnership with local communities.



