



GROUP ACTIVITIES

INNOVATION

KEY FACTS & FIGURES

The need to innovate and technological advances afford significant impetus to the development of the agricultural and food industries.

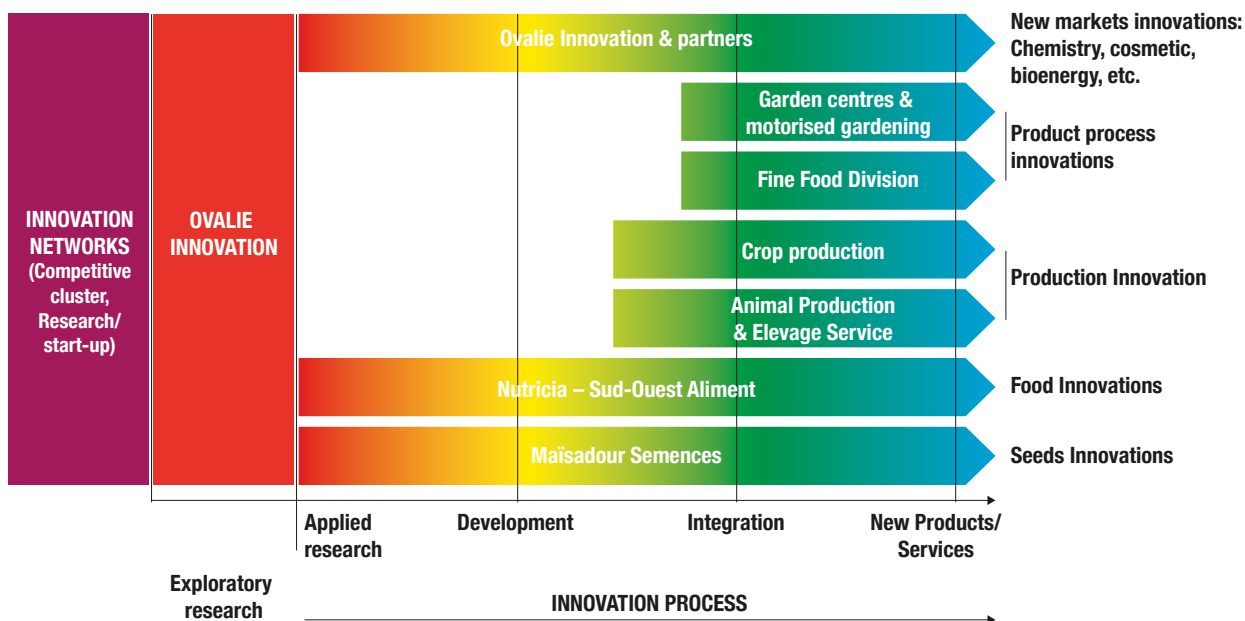
With Ovalie Innovation, the Group is adapting its structure, using powerful vectors to innovate effectively.

The 2010s will undeniably be a decade marked by an abundance of initiatives to innovate in our farming and food industries. Not a month or week goes by without our attention being drawn to a new technology, player, or way of doing things...

This is hardly surprising: the acknowledgement of the need to innovate coupled with the growing maturity of technology mean that creativity has almost limitless potential!

As such, the structure in place at every level of Maïsadour Cooperative Group is essential to assessing the suitability of this plethora of ideas and their development as technical solutions that will drive progress and profitability of our member businesses, as well as that of the cooperative's and its subsidiaries' production tools.

When establishing an overview of this concept, you first have to remember that each company is best able to position innovation based on its technical relevance and business viability, and second that we have to manage the replenishment of our ideas and the development of our skills through recruitment and links forged with the grey matter in the research and innovation network: universities and engineering



schools, business clusters, start-ups, etc. And this is exactly the role assigned to Ovalie Innovation. Ovalie Innovation will reach out into these networks and evaluate the interest of a whole range of solutions upstream (either directly or following a research & development process), with a view to implementing them within the Group, or by opening up other markets through strategic alliances in sectors beyond agriculture and the food industry.

This is an ambitious decision by Maisadour Cooperative Group, committing to “open innovation”, in which innovation is driven and inspired by experiences in other systems, thereby increasing its own system’s capacity for renewal.

R&D-INNOVATION AT MAÏSADOUR COOPERATIVE GROUP: A REMINDER OF HOW IT WORKS

Ovalie Innovation

Structure

Managed by Thierry Véronèse, the team is made up of four project managers (Patrice Galaup, Stéphane Ballas, Anne-Marie Busutill et Joëlle Messon), a Strategic Monitoring Manager (Maryline Cotentin), and four postdoctoral researchers working with public labs and private partners.

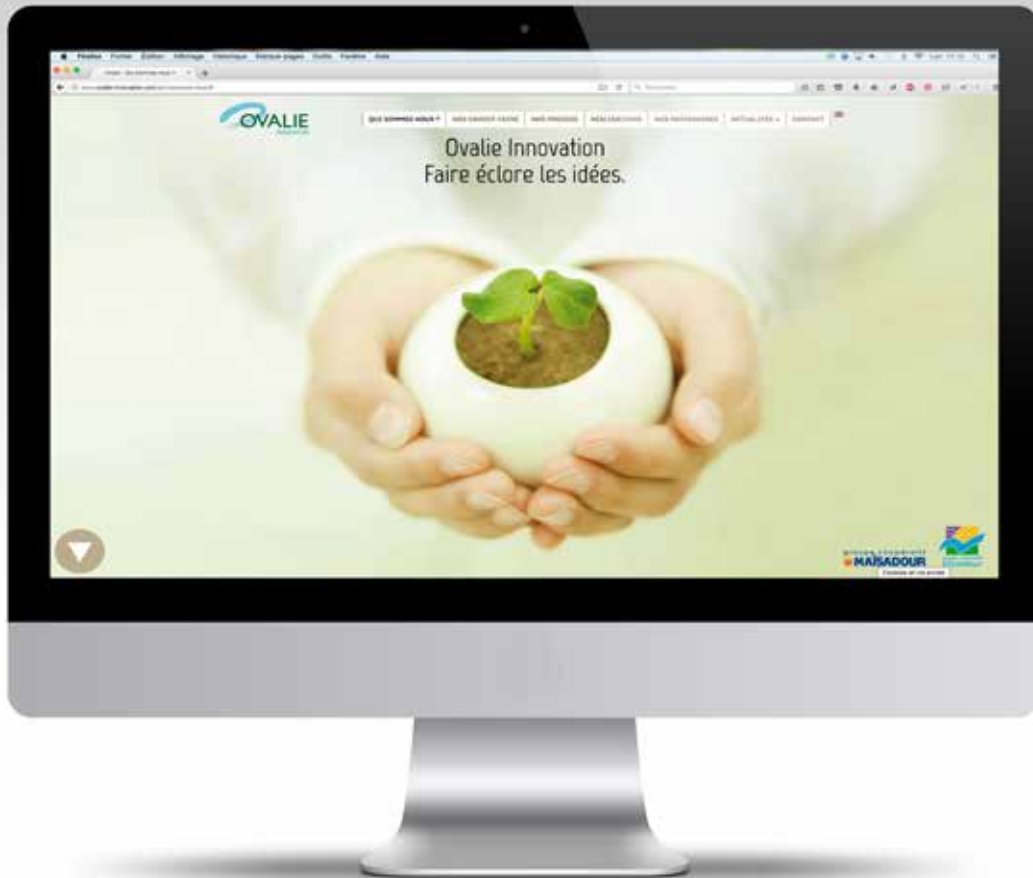
Directly serving the work of Maïsadour and Vivadour cooperative groups, its cross-disciplinary support for innovation take the form of:

- Helping to stimulate and organise R&D and Innovation within the Group's members
- Catering to their specific needs, researching and suggesting new possibilities

- Suggesting financial engineering strategies through public mechanisms in support of innovation
- Explore new avenues of research as part of public-private research projects, working with innovative companies, universities, and technical institutes.
- Joining innovations network

Governance and Leadership

- Executive Committee: Régis Fournier (Director of Innovation for Maïsadour Cooperative Group), Franck Clavier (Managing Director of Vivadour), Thierry Véronèse.
- Steering committee: Executive Committee + Philippe Carré (Managing Director of Maïsadour Cooperative Group), Michel Prugue (Chairman of Maïsadour Cooperative Group), Jean-Marc Gassiot (Chairman of Vivadour).



Website www.ovalie-innovation.com

KEY LEVERAGE FOR INNOVATION

Our work in figures, and examples of open innovation carried out or coordinated by Ovalie Innovation.

Since 2014 Ovalie Innovation has launched a number of R&D projects, exploring innovations that, by 2020, will produce new products, services, and investments, and therefore new value.

Ovalie Innovation is involved in more than **20 R&D project partnership** in which public and private partners have made major investments: the total R&D investment stands at **€37m over 5 years** with Ovalie Innovation contributing **€2.5m** over this same period.

Ovalie Innovation remains focused on its strategic orientations: ecological agriculture (agronomics, digital and sensors, drones, etc.), biofuels (methanisation, biomass), bio-refinery (green chemistry), and the promotion of produce (new markets).



Ecological farming sample projects: for maximum farm productivity (animals and plants) with minimal impact on the environment, human health, and animal welfare.

PRECIPALM®: after one year of joint effort involving staff at Animal Production, Delpeyrat, Nutricia, and the Group's administrative and financial departments, Ovalie Innovation launched an R&D project which, in late 2016, was accepted onto the French government's "investing in the future" programme, under section 212A which focuses on agriculture and the food industry, coordinated by France-AgriMer. Thanks to this seal of approval a project known as Precipalm® was launched in June 2017, scheduled to run for 48 months. It received €1.5m in funding, towards a project total of €2.6m.

The project sets out to provide force-feeders with a range of services and facilities that make use of the data gathered by sensors measuring the weight of the liver and other physiological and behavioural parameters of ducks in the fattening room, all managed via an online platform that issues recommendations on the amount of feed to administer according to changes in the weight of the liver and the animals' welfare.

The project is built around a consortium made up of Ovalie Innovation and Animal Production at Maisadour and Vivadour, Dussaue Distribution, and researchers at the CNRS, INRA, Toulouse Veterinary School, and ITAVI.

DRONES: ROBOTICS READY TO GO

DRONES: Ovalie Innovation's expertise is evolving, and research into drone technology is picking up pace around three main themes: **Drones & Biological Safety** (fight against pyralids), **Drones & Seeds** (in partnership with Maisadour Semences) and **Drones & Coverage**. On the last point, Ovalie Innovation has entered a partnership with Reflet du Monde to develop a drone able to carry and sow seeds over a cornfield to grow a "winter plant cover" crop before the harvest of the main crop.

The "spreader-drone" system was successfully designed, and its feasibility proven on a plot provided by Maisadour Semences: the first time an experimental plot has been sown by a 12kg drone! Buoyed by this positive result, 2018 will see formal testing begin in the agronomics department.



Example of a biofuels project: producing renewable energy (developing “energy cultivation” by producing energy on the farm).

MCUBE, renewable energy for farms: since 2013, major efforts have been underway to develop micro-methanisation on the scale of individual farms, no mean feat as to date there is no financially viable technology at this scale. After 3 years in the R&D lab, pilots are now scheduled for two prototypes, one near Aire-sur-l’Adour (beginning late 2017) and the other on a Mulor layer farm (beginning in 2018). When mature, this technology will be a major boon for the duck industry, bringing with it opportunities for in situ sanitation of liquid manure, new income through energy sales, and less odours...



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Bio-refinery sample projects: to develop new added value markets as part of the circular economy and/or new industrial applications (cosmetics, nutrition, biomaterial, etc.).

New protein sources with the INSECTES project: Since 2014, Nutricia and Ovalie Innovation have been looking into launching an insect production line that farmers would incorporate into a circular production process, and the livestock feed production and supply chains. Following the start-up Ynsect, Entomofarm has also become one of our companies' preferred partners. The first pilot production in real farming conditions will be carried out in 2017-2018.



DIVA: A GREEN HOUSING PROJECT

Eco-construction with DIVA: Ovalie Innovation has made a four-year commitment alongside and Parexgroup SA, the world leader in industrial mortar. The project is funded by ADEME, the French Environmental Agency, through its “Carbon Free Energy” programme under the housing renovation section. The programme is setting out to release insulating mortar **made using plant matter**, which is currently viewed as an agricultural by-product with poor fertilising properties, **by creating an end-to-end industry for the recovery of plant matter**, generating income for all those involved.

ABOUT CORIANDER OIL

Cosmetics/nutraceuticals with the CORIANDRE project: in 2016, Ovalie Innovation announced the development of a coriander oil formulated in partnership with the Industrial Chemistry Lab at Toulouse Chemistry School. Already chosen for an award in 2016 by a panel of experts at the SIAL International Food Show, the product has been given another boost by other favourable developments: **Ovalie Innovation obtained Novel Food certification**, opening up the European health food market. In 2018, the Group will run experiments to assess the best conditions for growing in the fields.



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INNOVAL SUD-OUEST

Innoval Sud-Ouest, an association between Arterris, Maïsadour, Terres du Sud and Vivadour formed to pool scientific awareness and discuss joint R&D projects, is pushing ahead with its cooperation. To that end, Innoval is now a member of Toulouse White-Biotech, a consortium of the biggest names in chemistry and the farming industry working to develop green chemistry.

As a result of this, **PRECIDRONES** is continuing its search across four territories to assess interest in Assisted Decision-Making Tools for data obtained by Delair-Tech's long range drones.