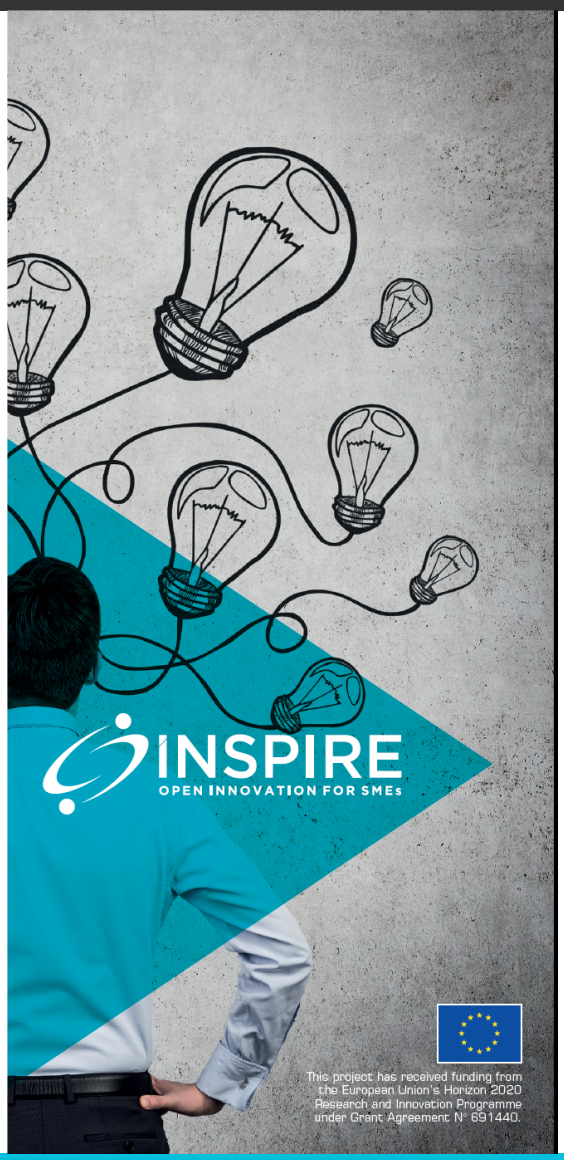


# AGROVEGETAL

Spain, www.agrovegetal.com

A Spanish SME with an overseas connection managed to convert its competitors into collaborators and involve key stakeholders from industry to align its interests with market opportunities

**Executive Summary**

Agrovegetal was set up in 1998 as an initiative between the International Maize and Wheat Improvement Center (CIMMYT) and the regional government of Andalusia in order to produce new and better varieties of wheat, which would be trialled, registered and sold through the founding partners of the company (principally the farming cooperatives of the region). From this starting point, the company has blossomed through its collaborations with key actors within the supply chain, and has succeeded in becoming the second leading (national) market player for durum wheat, as well as having important breakthroughs in triticale and chickpeas.

**CASE N°: SE05**

**SECTOR: AGRICULTURE**

**TECH INTENSITY: LOW-MEDIUM TECH**

**LIFE CYCLE STAGE: ESTABLISHED**

**INNOVATION VECTORS: PRODUCT**

**OI PARTNERS: PSR, LARGE CORPORATION, LEAD USERS & CUSTOMERS**

**KEYWORDS: Agriculture, seeds, business model, lead customer testing, public-sector research, cooperatives**

- BACKGROUND FRAMEWORK
- INNOVATION CHALLENGE & MARKET OPPORTUNITIES
- OI TRAJECTORY
- BUSINESS IMPACT
- LESSONS LEARNED

Agrovegetal
Seleccionadores de variedades

# BACKGROUND

In 1998, the International Maize & Wheat Improvement Centre (CIMMYT) – based in Mexico – and the Council of Agriculture of Andalusia, in southern Spain, had the idea to establish a company to carry out applied research in order to create new varieties of wheat. This company was Agrovegetal. The majority of partners of this company would be the agricultural cooperatives in Andalusia. For an annual fee CIMMYT would provide advanced lines/strains of wheat to Agrovegetal for them to carry out R&D work, and the resulting new varieties of wheat would then be sold by the cooperatives, who would have ownership of the IPR on the genetics.

In 1998 they hired Ignacio Solís as Technical Director of Agrovegetal. Since he had a background in biotechnology and experience of working both in university and research institutes as well as in industry, he fitted exactly the profile that the management was looking for, i.e. someone with a scientific background who could relate and work with the scientists at CIMMYT.

# INNOVATION CHALLENGE & MARKET OPPORTUNITIES

The appointment of Ignacio Solís was the initial strategic move which helped get scientists and industry collaborating. Other triggers which can be considered over time were:

1. The relations between the partner institutions of Agrovegetal changed from competitors to collaborators.
2. The involvement of key stakeholders from industry (GALLO SL being the most notable) aligned their interests with the market opportunity.

In 1998 when Agrovegetal was founded, the farming cooperatives of Andalusia were producing and selling varieties of wheat developed by public institutions. At that time there were not many companies in the market and the cooperatives did not pay royalties on the public varieties. The new leading private varieties were worth €30-40 / tonne more than the public ones. The cooperatives always stayed in the low cost end of the market in order to maximize profit margins, and there was little incentive to change their behaviour.

The challenge was to break the vicious circle between farmers and industry: the farmers did not want to produce quality because industry paid poorly, and industry did not pay much because there were no large supplies of a homogeneous quality.

# OPEN INNOVATION TRAJECTORY

## Concept development

The concept involved producing new varieties of durum and common wheats and triticale of high quality and with high yields which could be tested by industry in order to generate interest in the final products, and eventually break the market dominance of poorer quality products.

## The development process, IPR and competition strategy

Ignacio Solís recognized the importance of collaborating with key actors in the supply chain. The founding partners of Agrovegetal already provided a highly strategic network (farming cooperatives and seed producers), but they were also competing among themselves. Solís' strategy for the company was always to have only a small group of employees in the company itself (today there are still only five people on its books) and establish key reference points (people) in each of the partner companies; there are around 20 people working under his instructions in the 10 founding partner companies.

Solís' aim during the development process of new varieties of wheat was primarily to collaborate with and involve the farmers in Andalusia and at CIMMYT; but for quality testing he looked to collaborate with industry (flour and pasta producing companies), and to ensure disease resistance he chose to collaborate with scientists at CSIC, the University of Cordoba and University of Seville. In this way, he created a strong collaborative network with the expertise necessary to cover the value chain.

For the wheat markets - clearly separated in common wheat, durum wheat, and triticale – it took until 2003 to register the first new varieties, and a further four years until Agrovegetal became self-sufficient. For the first 8-9 years, it relied on the capital provided by the founding partners and only started to generate income from when they were able to commercialize the first varieties.

The aim of the company at the start was very simple: to carry out applied research to create new varieties of wheat. It was not envisaged that Agrovegetal would sell anything, because the company's owners (the farming cooperatives) were the ones who would exploit the products and were competing among themselves: they sold seeds and competed in the market. But after 6 or 7 years researching and collaborating together under the Agrovegetal umbrella, when their new products (new varieties of seed) appeared, they decided to commercialize them together.

The aim has always been to produce high-quality and high-yielding varieties (wheat and later legumes) in order to break the existing market prevalence of poor-quality and cheaper varieties.

Agrovegetal's competitors normally have one single point from which to select and produce all their varieties. That makes their logistics complicated. The strategy employed has been to establish strategic collaborations with public institutions (research and cooperatives) as well as private companies (usually manufacturers who purchase the end product) to make sure that everyone is working towards a common goal.

## Commercialization and follow-up

Ignacio Solís approached the pasta manufacturer GALLO S.L. in order to ask them to test the quality of different durum wheats. They agreed, and after 3-4 years of having this relationship, the owner of GALLO asked if they could buy a 10% participation in Agrovegetal. For GALLO it was extremely interesting to have the varieties of wheat being produced of the quality that they want for pasta manufacturing. Instead of having to fund their own R&D department, they could get a better service and results by paying a participation in Agrovegetal, plus assured quantities of grain every year. This relationship provided Agrovegetal with a strong market position, and has ensured that their strategy to produce new, high quality durum wheat varieties paid off. They now have the second leading variety in the market in Spain with a 25% market share.

Agrovegetal has tried to achieve something similar in the market of common wheat, but they have not found a company that values quality as much as GALLO. They signed agreements which later were not fulfilled. This is combined with the technical problem that it is more difficult to reach high standards of quality with this type of wheat and obtain high yielding crops. Their main competitor (Limagrain) holds 70% of the market in Spain, and there is also a tendency to import large quantities of common wheat grain from abroad. In this market area therefore they have not succeeded in promoting varieties of high quality. Currently they have around an 8% share of the common wheat market.

Agrovegetal has also branched out into working with chickpeas, peas and beans. Here the innovation process has been curtailed by a lack of funding and backing from key partners, and success has only been partial in the case of chickpeas.

From an original business plan which involved just creating new varieties but not selling them, the relationship with the partners grew to such an extent that they decided to commercialize the products together. Agrovegetal now creates the new varieties, produces them, commercializes and sells them.

Agrovegetal holds the IPR on the genetics and is able to license to third parties. However the business model is interesting. Agrovegetal's partners are involved in the field trials of the new varieties, thereby ensuring that enough can be tested in the development phases. When they get to the stage of having certified seed first reproduction (R1), in order to scale-up to R2 (which is when the seeds are ready for commercialization), each partner buys from the others those R1 seeds they are interested in in order to multiply them; then they choose the R2 seeds they want to sell later. Since this is all done under the same company, each year they agree the sales price for the R1 and R2 seeds. Agrovegetal charges the cooperatives a fixed fee for every kilo of R1 and R2 produced, while the commercial profit margin is kept by the cooperatives.

Agrovegetal sells in Spain and a very small amount in Portugal. The company does not envisage moving outside the Spanish market for two reasons:

1. The varieties they produce are short-cycle varieties which do not work well in climates outside southern Spain. They could function in Italy, but there the market is already very closed.
2. The varieties would work well in northern Africa, but since CIMMYT is a non-profit organization and they already send their lines free of charge to developing countries, Solís does not believe it ethical for Agrovegetal to try to sell seeds to those countries given the relationships involved.

Until 2012, Agrovegetal did not have any sales staff; the cooperatives sold the seeds. In 2012, the governing council approved the appointment of a sales representative for Agrovegetal to sell outside

Andalusia. This currently accounts for 12% of total sales. The limitation is that their portfolio is currently only short-cycle varieties which are not so well suited to the rest of Spain. The current challenge of the company is therefore to develop high-quality, long-cycle durum wheats, and they have looked for additional alliances/collaborations accordingly.

The agricultural partners of Agrovegetal became increasingly interested in developing new varieties of other products, such as chickpeas, peas and beans. However these generally have small markets and low profits. When Solís proposed to the Board to start research on these products, they agreed but refused to put any money into the venture.

Financing this R&D work had to come from public research funding. Only when external funding was secured would the Board support Solís to carry out field trials. He had therefore to find the mechanisms and money to cover the cost of collaborations to improve other cultivars. Agrovegetal has been involved in various collaborative R&D projects funded by the EC and Spanish ministries to improve quality and disease resistance. In the case of chickpeas, they have had successful collaboration and results in their Ituci chickpea project. However, in the case of peas and beans, even after many years of work, they still do not have much to show for it.

Limited success or partial failure with products other than the durum wheat and triticale varieties is due mainly to the liability of being small and the poor incentives for open innovation networks. The earnings to be made from some markets are small and there are few incentives for stakeholders to move on or scale-up. Solís also recognizes that he has not been able to take advantage of involvement in EU-funded research projects. The company lacks someone with knowledge of the workings of EU projects in order to manage the administrative burden and ensure that the company can take full advantage of the funding and manage the budgets and reporting. Solís estimates that he dedicates a least 25% of his time to managing their European projects and gets limited return on investment.

## BUSINESS IMPACT

Through their successful collaborations within the supply chain for wheat varieties, Agrovegetal has been able to convince additional companies/ institutions to collaborate on new projects.

Examples of such OI projects are:

**1. The Ituci chickpea project**: In 2001-2, Ignacio Solís contacted the University of Cordoba and IFAPA to ask if Agrovegetal could trial some of their chickpea varieties. Agrovegetal's results showed that the quality of the chickpeas was not very high – the yields were good, but the legume itself was small and brown. Agrovegetal's partners were interested in having large, white-coloured chickpeas. There was a basic problem: the directives of the public research programme between Uni Cordoba and IFAPA were focusing on varieties which were of less interest to the producers in Andalusia.

In order to rectify this, Solís had to convince the scientists and public authorities that they should switch to doing research on the milk-white chickpea. Agrovegetal was able to provide some initial funding and also paid for a biologist employed by the Cooperative Campo de Tejada (founding partner of Agrovegetal) to work part-time for three years in the University of Cordoba learning how to cross varieties and getting involved in the programme for improvements.

It took nearly 10 years, but the result was the development of a high-yielding and disease-resistant variety of milk-white chickpea ("Ituci"). The hope is to begin to correct the current market situation for this legume, which in Spain currently runs at a deficit, and to reduce the import levels from other countries. The market is small, however (compared to wheat), but nevertheless they are having a lot of success nationally.

**2. The long-cycle wheat project**: Although the wheat market in Spain is large, Agrovegetal is still working on developing other varieties more suited to the rest of Spain (central and northern). Some 2-3 years ago, Agrovegetal signed an agreement with IRTA (a public research institute based in Catalonia). IRTA has always been a direct competitor of Agrovegetal and worked in parallel: they also received wheat lines from CIMMYT and developed and sold their varieties on the market. Ignacio Solís proposed a collaboration with them to co-develop varieties for Aragon, Castilla and Catalonia.

They agreed, and the expertise of both companies has now been pooled. Agrovegetal funds IRTA €20 000 /year in return for 12 lines of each new species to work with. The company then works these through the different development phases and if they are positive enough they are able to take them forward to register and commercialize. This takes around 5 years, and for an SME of Agrovegetal's size this represents a considerable investment.

The challenge remains the same for the company: to look for partners in public associations who want new varieties, be able to pay them a small amount

to carry out trials, for Agrovegetal to register the variety and launch it on the market. In the case of their continued work on wheat varieties Agrovegetal is able to offer scientists funding each year, because their profit margins are greater. But in the case of other products (peas, beans, chickpeas), Solís has to rely almost exclusively on external public funding sources to pay for collaborative projects. It is very hard to compete with the salaries that scientists can command in large multinationals; this happens a lot in the sunflower seed market where private funding of research collaborations is huge.

While some of Agrovegetal's partners would like to start R&D in more profitable markets, such as sunflowers or maize to compete against the likes of Monsanto or Limagrain, this would take far more investment than the founding partners are willing or able to provide. The company therefore continues to concentrate on products which are less profitable and markets which are less dominated by large companies.

The company has learnt how to be effective and efficient with the very limited resources and funding that it has. On the other hand, it is also limited by these factors: it has not yet found a way to deal effectively with the challenge of incentivising stakeholders to invest further in developing quality varieties other than those which had early success. A great deal of effort goes into establishing contacts and collaborations and maintaining them for long enough through the development and trial process, which can take many years.

The new varieties in durum wheat and triticale have allowed Agrovegetal to establish a good position in the market, offering quality products well suited and sought after by the stakeholders and end users. It has a turnover in excess of €2 500 000 / year with profits which can be re-invested in R&D. Only 12% of total sales are outside Andalusia. Expansion to other areas of Spain is limited so far because they do not yet have varieties suitable for less arid / hot conditions. To overcome this challenge, Agrovegetal is trying to exploit OI collaborations with R+D+I teams elsewhere in Spain. The company has no intention of expanding outside Spain due to the high market dominance of competitors.

# LESSONS LEARNED

This case shows the learning process and what can be achieved through OI collaborations on a small scale to break into established markets. It also is a good example of the liability of being small; the company recognizes the need for additional expertise to manage its externally funded R+D+I projects in order to go beyond simply covering basic costs and take full advantage of public funding programmes.

Also interesting is the management of incentives within the OI network: in some cases (such as in durum wheat) there has been success, but in others there is simply not the financial support in place to carry things through to fruition within a time-frame which makes sense for the company. These kinds of projects are therefore always small-scale and developed as a side-line.

The critical success factor in this case is fundamentally the ability of the key management figure (Solís) to scale gaps between research and business. His knowledge of both fields and strong communication skills meant that the OI partnerships flourished where they could easily have failed. Building trust among partners and key lead customers enables openness to new business opportunities and investments. A clear and simple initial mission in the collaborations is essential, and by developing a good basis you can build on the relationship and discover mutually beneficial developments. This is not something which can be done quickly.

**Main lessons learned**:

1. The process of strategic collaborations requires negotiations and agreement at different levels and points along the supply chain.
2. Collaboration with a PSR can require intense negotiations in order to convince them to focus in a new or slightly different area (especially when it refers to a research line that they have been following for some time and even if there is evidence of market pull).
3. Developing trust and knowing when to stop joint projects are critical enablers of OI.
4. Lack of investment and/or lack of government policy to help SMEs to extend their innovative work and take it to the next level represent a serious obstacle.
5. Small companies need additional expertise in order to manage publicly funded grants or loans correctly and effectively. In this example, the SME management is conscious that they would be able to advance certain projects if they were more confident in managing the paperwork and financial reporting of R&D funds.