

SEMINIS VEGETABLE SEEDS

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This paper describes the innovation strategy of Seminis, the largest producer of vegetable and fruit seeds in the world. Basic data on Seminis is provided, along with a discussion of how Seminis was created, its market position, and product portfolio. The innovation strategy pursued by Seminis in the 1990s is also discussed, as are the future challenges faced by the company.

Key Words: Seminis; seed industry; biotechnology; innovation strategies; fruit and vegetable markets.

Seminis is an United States (US) company whose main activity is the production of hybrid vegetable and fruit seeds. The corporation has its administrative and research and development (R&D) headquarters in California, where much of its basic research activities are concentrated. Although Seminis is an American company, its European division is largely independent. The company built part of its technological and marketing capabilities through its acquisition of one of the largest European vegetable seed companies—Royal Sluis. It has 15 research locations in Europe and its European headquarters are located at Enkuizen in the Netherlands. Its biotechnological research activities are predominantly located in the Netherlands, France, and California. However, there are additional biotechnology research stations in other European countries, such as in Spain and Italy, which are also very important.

Seminis is majority owned by Savia, which is part of the Pulsar group of companies located in Mexico. Pulsar operates in the agro-technology, insurance, and packaging industries. Savia is basically a large conglomerate with strong interests along the entire food chain, which are realized by two companies—one of which is Seminis (which is concentrated in seed production) and the other is Bionova (which is concentrated in fruit and vegetable production, distribution, and R&D).

In 2000, Seminis' annual sales exceeded \$US 474 million and R&D expenses were about \$US 58 million (see table 1). In that year, Seminis had 3,800 employees, of which 765 worked on R&D activities. Seminis is today the world leader in hybrid seeds for fruit and vegetables, with production capabilities in 30 countries and R&D facilities in 34 countries around the world.

History, Markets, And Products

Seminis was born in 1995 from the merger between the vegetable divisions of three seed companies—Asgrow (US), Petoseed (US), and Royal Sluis (the Netherlands). After the creation of Seminis, the seed and coating technologies of these three divisions were all placed under the INCOTEC name. In July 1998, Seminis then acquired 70% of Hungnong Seed, Korea's largest seed and vegetable firm, and Choong Ang Seed (AGROW, 1999). Hungnong and Choong Ang

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are leading companies in the oriental vegetable market. In November 1998, Seminis purchased the vegetable division of Sementes Agroceres, a Brazilian company that produces and distributes vegetable seeds throughout Brazil. In 1998, Seminis acquired the distribution rights to LSL PlantScience tomato varieties. LSL PlantScience is a world market leader in tomatoes developed for long shelf life. In September 1999, Seminis acquired Barham Seeds, a company dedicated to the research and development of seedless watermelon varieties.

Table 1: Key Figures (in US\$ Millions).

	1996	1997	1998	1999	2000
Net Sales	381.4	379.5	428.4	530.6	474.4
Gross Profit	167.3	229.4	265.6	328.3	237.3
R&D Expenses	42.3	41.0	49.4	62.4	58.4
Income from Operations	-61.5	33.4	34.7	45.0	-74.1

Note. From “Form 10K Annual Report – Year Ending September 30, 2000,” by Seminis, 2001. Available on the World Wide Web: http://www.seminis.com/investors/Seminis10K_2000.pdf.

As a result of these acquisitions Seminis has the following brands: Asgrow, Petoseed, Royal Sluis, Bruinsma, California, Genecorp, Hungnong, Choong Ang, and Horticerres. Asgrow, Petoseed, and Royal Sluis are full-line brands (with a broad catalogue of products which operate at a global scale); the other brands are regional or specialty brands. Table 2 shows the main products and primary markets of each of these brands.

INCOTEC provides coating and other seed preparation technologies to Seminis’ subsidiaries, as well as to other seed companies. The majority of the more fundamental research of INCOTEC takes place in the Netherlands. Through INCOTEC, Seminis is directly linked to the pesticides industry – as some of INCOTEC’s technologies incorporate pesticides in seed coatings.

In 1998, Seminis had the following share of the vegetable seed market: 26% of the global market; 39% of the US market; 24% of the European market (Seminis, 2000); and 15% of the Asian market (Joon-Hun, 1998). Seminis’ main markets are North America and Europe. In 2000, 35.8% of Seminis’ sales took place in North America, 29.8% in Europe, 17.7% in Asia, 8.6% in South America, and 8.1% in Middle East and Africa. Seminis is highly diversified in its products, customers, and regions in which it operates, “no one customer or product represents more than 2 percent of our sales.” (Seminis, 2000). In Europe, Italy and Spain are the most important regional markets. In 2000, 29.6% of Seminis’ European sales took place in Italy and 20% in Spain.

Innovation Strategy

The main aim of Seminis’ innovation strategy is to strengthen its leadership position in the global vegetable seed market. To reach such an objective, Seminis has completed nine acquisitions of seed companies to date and has reinforced its presence in several regional markets. Seminis was established in Europe through the acquisition of two Dutch companies—Bruinsma (part of Asgrow) and Royal Sluis—both with a long tradition in plant breeding.

After its initial expansion period, Seminis is now implementing a “Global Restructuring and Optimization Plan” to save costs and to rationalize its product portfolio. This plan is expected to be fully implemented by 2001 and includes a reduction of Seminis’ operation and production facilities from 21 to 6; a reorganization of its seed companies into four geographical regions (North America, South America, Europe, and Asia); and a reduction of commercialized varieties—concentrating its sales across the most profitable markets and products. Also, a new top

management team has been created. These changes in its structure reflect its new situation as a public company, which it has been since 1999, and the adoption of a more global strategy.

Table 2: Main Products and Primary Markets of Seminis' Brands.

Brand	Main Products	Primary Markets
Asgrow	Tomato, carrot, onion, pepper, bean, pea, corn, melon, cucumber, brassica.	Worldwide
Petoseed	Tomato, pepper, eggplant, brassica, onion, melon, cucumber, lettuce.	Worldwide
Royal Sluis	Broccoli, cabbage, carrots, cauliflower, leeks, spinach, bean, tomato, lettuce.	Europe, Asia
Bruinsma	Greenhouse tomato, pepper, cucumber.	Europe
California	Cucumber, melon, squash, tomato.	Middle East and North Africa
Choong Ang	Chinese cabbage, hot peppers, oriental melon, radish, watermelon.	South Korea
Hungnong	Broccoli, cabbage, Chinese cabbage, hot peppers, oriental radishes.	Asia
Genecorp	Lettuce.	US
Horticeres	Beans, lettuce, okra, tomato, tropical cauliflower.	Brazil

Note. From “ELM: A New Global Player in the Vegetable Market,” by Y. Massieu, 1998, *Biotechnology and Development Monitor*, 34, pp. 9-13; and from “Form 10K Annual Report Year Ending September 30, 2000,” by Seminis, 2001. Available on the World Wide Web: http://www.seminis.com/investors/Seminis10K_2000.pdf.

Based on the information provided by Seminis, and through interviews, Seminis has developed three main goals. These are as follows,

- To address specific needs in global markets. Despite its global reach, Seminis is focused on local markets around the world, because regional and local conditions strongly influence vegetable sales. For example, European markets and, in particular, national markets such as in Spain and Italy, are some of the most important markets for Seminis for several reasons: they account for 29.8% of its total sales; they have been growing for the last two years; and European consumers are willing to pay higher prices for new varieties. Key market trends in Europe, such as the rejection of genetically modified organisms (GMOs) by consumers, are closely watched and strongly influence the company's decisions. Seminis has been able to identity preserve its brands as GMO free, and as a result, has successfully met changing European consumer demands. Its flexible organization and highly independent brands account for much of this success.
- To capture value from the whole food production chain through the production of functional foods—that is, foods designed to meet specific nutritional needs. Seminis' affiliation with Bionova provides research and marketing synergies which allows it to reach final consumer needs. Bionova produces fruit and vegetables for final consumption and also has important technologies in this area. As the following quote indicates, Seminis is building close relations

with almost all the big supermarket chains worldwide. The goal is to meet consumer demand for foods designed to meet specific nutritional needs,

We have very close relations with almost all the big supermarket chains...they prefer us as partners because we [are] not...linked with agrochemicals and because...we [see market developments the same way they do]. (Personal communication, Seminis company interview, June 6, 1999).

- To connect their seeds with the ideas of “a better environment,” by reducing the need for the use of chemicals, limiting spoilage and so on; and by producing “more food for more people.”

In order to achieve these goals, Seminis is using three main tools,

- *A multi-brand strategy and a worldwide marketing presence.* The branding approach allows breeding efforts to remain with each brand, in order to grow a brand’s identity and further build brand loyalty. The multi-brand strategy has been the key factor in the expansion and growth of Seminis within Europe. The brand approach is also used to meet local needs more efficiently. For this reason, Seminis maintains a flexible organization. As one manager indicated, “It’s not a fixed organization...we have our researchers, especially our plant breeders, we have free alliances with growers, with sales people, with product developers and a lot of ideas sprout from these relationships.” (Personal Communication, Seminis Company Interview, June 6, 1999). Most of Seminis’ products are non-GM, however, Seminis does have two genetically modified products on the market, both sold in the US. It sells genetically modified tomatoes to the food processing industry, and it has developed and marketed a virus resistant squash.
- *Flexible decision making processes.* Decision-making processes within Seminis are essentially informal. Seminis maintains loose alliances with growers; and within each brand, breeders work with growers and farmers to identify market needs. Market needs vary considerably by type of vegetable. Each market is also highly segmented. Seminis’ flexible organization has proved to be the best way to manage such complexity. For example, breeders often end up by providing the most important information for R&D decisions. Information from plant breeders flows through to the marketing department, which coordinates the decision-making process, and from informal meetings to discuss the market situation of each product. The groups attending these informal meetings are not very large and are guided by the marketing people. People from research, and sometimes from production, usually attend. The information from these meetings is collected by research directors and is discussed when the company’s research board meets. During planning meetings research activities are reviewed more than planned, and the discussion is focused on products. Hence, a market focus dominates its innovation strategy.
- *Strengthening R&D activities and technological leadership.* Seminis is using several technologies to create new products, such as disease-resistant varieties that reduce grower dependence on chemicals; improved varieties that exhibit quality traits, such as improved color, flavor, shape, size, texture, and nutritional value; and higher yielding varieties. Plant breeding—supplemented with molecular and cellular technologies—is the most important technology in its innovation package. Seminis is also investing in biotechnology that is considered key to its long-term innovation plan. At the brand-level, research activities are focussed on breeding. At the firm-level, basic research activities are divided into three groups: plant pathology, biotechnology, and vegetable quality.

The Plant Pathology Group consists of nine laboratories. Plant Pathology’s duties fall into two main categories—research and quality assurance. In the research category, Plant Pathology develops testing procedures to identify resistance to plant diseases and also keeps

breeders informed about disease trends. In the quality assurance category, Plant Pathology oversees an in-house seed health-testing program.

The Biotechnology Group operates in California, France, and the Netherlands. The fundamental biotechnology work is done in the US (i.e., in California), while in France and the Netherlands the focus is basic technology. One of Seminis' important strategic assets is its vegetables gene bank, which is the world's largest. In addition to the laboratories in California, France and the Netherlands, there is another small laboratory in Italy.

The biotechnology group works on genetic engineering, pollen culture technology, and molecular markers. In order to access the latest genetic technology, Seminis is forging alliances with universities and companies in the US and Europe. Examples of such relationships include an alliance with Monsanto, the aim of which is to apply biotechnological techniques developed for agronomic crops to vegetables; an agreement with the John Innes Center in the United Kingdom (UK) that provides Seminis with access to plant disease control technology; a research agreement with Bionova to introduce Monsanto's genes into vegetables and fruits; and an equity participation and research agreement with Mendel Biotechnology, which provides Seminis with access to genes and proprietary technology developed by Mendel Biotechnology's genomics effort in vegetables and fruits.

In Europe, Seminis keeps a balance between research in-house and research through cooperation. The size of the market and the presence of the best expertise are the two factors that influence the location of Seminis' research centers. That is why Seminis has their European headquarters in the Netherlands (Personal Communication, Seminis Company Interview, June 6, 1999).

The Vegetable Quality Laboratory in Woodland, California performs chemical and agronomic analyses for Seminis' brands. The laboratory's primary role is to assist breeders in developing new vegetables with traits desired by consumers, as well as growers. As already indicated, Seminis is more focused on traits which respond to the needs of consumers, such as color, flavor, and so on, than traits that reflect growers' needs, such as higher yields, packing, or processing qualities. At least 90 percent of the tests performed in this laboratory, therefore, are directly related to consumer needs.

Conclusions: Challenges Faced By Seminis

The major challenge now facing Seminis is to successfully complete its restructuring plan in order to consolidate its global position—achieved by the acquisition of several seed companies around the world. Through these acquisitions the company has incurred upfront expenses that have caused cash flow problems. Seminis needs to solve these financial problems and, at the same time, maintain its technological and marketing leadership. Research and development activities and strategic alliances are crucial to the innovation policy of the company. Plant breeding is the main research tool currently being used to create new products, but Seminis is also investing in biotechnology as a strategic long-term approach. Currently, biotechnology is being used to enhance its breeding programs and, to a much lesser extent, to produce genetically modified seeds (only 1% of total seed sales in 2000 were genetically modified). Since the rejection of genetically modified seeds by European consumers has hindered the sales growth of such seeds, Seminis is continuing to combine higher investments in breeding programs and biotechnology in order to increase its revenues and to remain competitive well into the future.

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