

CHAPTER 14

FROM 'WAGENINGEN CITY OF LIFE SCIENCES' TO 'FOOD VALLEY'

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INTRODUCTION

The Netherlands is among the world's most important exporters of agricultural and food products and one of the epicentres for research in the area of agri-food and life sciences. This chapter is about the collaboration between the food production industries and research institutes, all predominantly located in the East of the Netherlands, and the creation of 'their' Food Valley. As will become clear, Food Valley is not just another government marketing initiative but a dynamic concentration of research organizations, food companies, start-ups, pilot plants and academic institutions, located around Wageningen University and Research Centre (WUR), one of the leading agri-food research establishments in Europe. Other public and private research laboratories include NIZO food research BV, TNO Quality of Life, Centre for BioSystems Genomics, Innovation Cluster Nutrigenomics, and the Netherlands Plant Protection Agency. Another key player in Food Valley is the Top Institute Food & Nutrition, the former Wageningen Centre for Food Sciences (WCFS), which is an alliance of some of the larger Dutch food producers (e.g. Unilever, Royal Friesland Foods, Campina, DSM, Cosun and Avebe) and Wageningen UR, TNO and Maastricht University to carry out joint pre-competitive R&D. There are also a number of innovative companies located in the area, such as Keygene, Seminis Vegetable Seeds, Dr. van Haeringen Labs, Heinz, and Struik Foods Europe, and an increasing number of agri-food and life sciences

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W. Hulsink and H. Dons (eds.), Pathways to High-tech Valleys and Research Triangles: Innovative Entrepreneurship, Knowledge Transfer and Cluster Formation in Europe and the United States, 295-311.

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start-ups such as Genetwister, Catchmabs, Checkpoints and EasyGene. Consequently, because of its knowledge infrastructure, facilities and the presence of highly educated professionals, Food Valley has become the location of choice for a variety of innovative companies such as Campina, DMV and Numico Research.

Among food producers, researchers, entrepreneurs, civil servants, the concept of Food Valley by now has a familiar ring to it, nationally as well as internationally, where there is a lot of attention for this initiative (Borst 2004; Van Dinther 2004; Eggink 2004; Financieele Dagblad 2004; Libbenga 2004; Lloyd 2005). Although Food Valley does not mean the same thing to everybody, that does not necessarily have to be a problem: after all, Food Valley is a politically charged concept that evokes different reactions from the various interest groups. The business community may have another perspective than the government or the academic community. Small and medium-sized enterprises without research departments have other expectations than multinational food companies, such as Unilever or DSM Nutrition.

Today, Food Valley's core objective is to activate and bundle the strengths of parties – in spite of their different interests – and thus to benefit from a stronger and more innovative food sector in the Netherlands. However, Food Valley is not a straightforward recipe with precise and measurable objectives, nor is it likely that it will ever be. It is more like a living organism in which the university, research institutes, food manufacturers, start-ups and intermediate organizations work together to realize synergies and to make the emerging cluster into a success.

The genesis of Food Valley did not follow a predetermined path. Some people said: *Food Valley already exists, all you need to do is expand it*. Which is true, since a number of crucial core players were already present. The process, then, did not start from scratch – all the more so because the design of Food Valley could be developed from an earlier and smaller initiative called Wageningen Foundation City of Life Sciences, established in 1997.

Food Valley as a working and marketing title has been crucial to the successful characterization of the cluster. First of all, it refers to *Silicon Valley*, a name that is synonymous with economic success, knowledge as a driving engine, innovation, entrepreneurship and cooperation between knowledge institutes and the business community. *Food* appeals to many people directly, and automatically implies related domains – *life sciences, health*, etc. In addition, Food Valley is an attractive metaphor: a valley like a land of milk and honey – green and fertile. This an image that fits the Dutch perfectly. After all, the Netherlands have a long-standing tradition in food production and international trade in food commodities.

The events leading up to the creation of the Food Valley Foundation were of a fuzzy and sometimes chaotic nature. Immediately, there were many questions: What exactly does Food Valley focus on? Who is in charge? What does Food Valley want to accomplish? Where are its boundaries? However, that apparent chaos is probably a natural phenomenon in any incubation period. Be that as it may – Food Valley exists, has managed to build a reputation nationally and internationally, and is actively supported by dozens of companies and organizations. In the narrative that follows the various achievements that were reached during the construction of Food Valley are reported and discussed.

By and by, the initiative developed from a regional into a national project. Although Food Valley's knowledge basis is concentrated in the region surrounding Wageningen and its university, in actual fact it leans on the food cluster of the Netherlands as a whole. Food Valley is concerned with (the promotion of) innovation, knowledge economy, entrepreneurship, awareness and public support in de domains of food, health, life sciences and agriculture.

Food Valley's human resources

- Approximately 10,000 people are active in sciences, technological development and related agri-food businesses. This combined expertise is focused on basic and strategic research programmes as well as applied R&D.
- Wageningen University and related institutes educate and train dedicated agri-food and life science professionals (at various levels up to academic and postgraduate).
- There is an increasing number of graduate and PhD students from Asia Africa and South America applying for programmes at Wageningen University.
- Wageningen Business School, a part of the university, offers a broad range of courses and training modules in the area of science and entrepreneurship.
- A growing number of scientists choose to start their own spin-off companies transforming science into products and services. Start-ups are created at a rate of ten per year.

The regional Development Agency East Netherlands and Wageningen Foundation City of Life Sciences, supported by the Province of Gelderland, started to market the concentration of innovative food companies and research organizations in the region. In less than five years people had not only become aware of this emerging agri-food cluster, but Food Valley was also established officially in 2004. Below we present an outline of the steps, events and intermediate results on the road to the actual creation of Food Valley. In addition, we will provide an insight into its regional economic significance.

PREVIOUS HISTORY (1997-2001)

The Foundation City of Life Sciences has been the breeding ground and launching pad for Food Valley (Kraak and Oevering 2003). The Board of Foundation City of Life Sciences was locally oriented: its partners operated locally, and its stated purpose was to reinforce the synergy between the business community, knowledge institutes and government in Wageningen and its surrounding areas. City of Life Sciences was created in the middle of 1997 by the then Agricultural University, the Agricultural Research Foundation DLO – the research arm of the Ministry of Agriculture – , the WICC Convention Centre, the Gelderland Development Agency GOM, the municipality of Wageningen, the Rabobank and Stoas, an educational support organization. Later, this group of organizations was joined by DLV Consultancy. Soon, the initiative was supported by a growing number of companies, etc. – over 40 in all. In the 1980s, an Agro Business Park for science-driven

enterprises had been created with a common building and Meteoconsult, Keygene, CTA and Stoas being the most important businesses within the Park at the time. Also, a number of science-driven companies had moved into the Compotex Business Centre, such as Noldus Information Technology and Triqua.

Food Valley's Research Centres

Wageningen University and Research Centre
NIZO food research BV
TNO Quality of Life
Centre for BioSystems Genomics
Kluyver Centre for Genomics of Industrial Fermentation
Innovation Cluster Nutrigenomics
National Plant Protection Agency

The Foundation City of Life Sciences set up various projects fostering the synergy of knowledge and entrepreneurship and lay the foundations for the acquisition of science-driven companies and start-ups. In 1999, the Foundation started an investigation for the creation of an incubator that was later to become the Biopartner Centre Wageningen. The Ministry of Economic Affairs made around € 2.2 million available for this purpose, and the Province of Gelderland an additional € 1.4 million. Wageningen UR acted as co-financier *in kind*.

Two other events were equally important on the way to Food Valley: the location of a newly created research department of Numico in Wageningen, and the foundation of WCFS, the Wageningen Centre for Food Sciences – now Top Institute Food & Nutrition - in which the major food corporations and knowledge institutes were going to conduct five years' worth of research. The € 14 million would be funded by businesses and government together. To date (2007) a new long-range programme for the Top Institute Food & Nutrition has been approved by the Minister of Economic Affairs, who has promised € 30 million in subsidies. The municipality of Wageningen also focused increasingly on the knowledge economy and in its PR policy it chose the slogan *City of Life Sciences*.



REGIONAL POLICY: FOCUS ON KNOWLEDGE ECONOMY

The way to political support from the Province was paved in 2002, when Gelderland decided on adopting the knowledge economy as its main engine of regional growth. Four so-called *knowledge clusters* were identified: agri-food life sciences, medical technology, environmental and energy technology, and ICT. The Development Agency was given the responsibility to implement this cluster policy. It decided to focus more on *food*, and much less on agribusiness and/or life sciences. After all, the food sector was much bigger than the other industries in terms of turnover and employment. In addition, food as a keyword was much easier to communicate, which made it much more suitable for acquiring support from the business community.

Food Valley's companies

- The Top Institute Food & Nutrition (before Wageningen Centre for Food Sciences (WCFS)) is a powerful alliance of European food corporations such as Unilever, DSM, Campina, Royal Friesland Foods and Vion, together with public and private food research laboratories. TIFN is a unique and much acclaimed concept where public and private sector partners share responsibilities for innovative research.
- Wageningen Business Generator is a spin-off company of Wageningen University and Research Centre. It facilitates new ventures in agri-food life sciences.
- Food Valley hosts innovative companies such as Keygene, Numico Research, Heinz, Nestlé, Givaudan, Campina Innovation, Seminis Vegetable Seeds, Noldus IT and Dr. van Haeringen Labs, AgriQ and Blgg.
- Recently, a growing number of biotech start-ups have established themselves close to Wageningen University, including Genetwister Technologies, Catchmabs, Checkpoints, Plant Dynamics, Clean Light and Nsure, and many others.

In December 2001, a report entitled *The Wageningen Knowledge Cluster in View*, assessing the opportunities of the food theme, was submitted to the Province. The report made the explicit recommendation of choosing Food Valley as the title for the future programme of this knowledge cluster (Koene and Rhemrev 2001). Because the Province was able to make funds available from its Economic Development Fund, initial explorations for this cluster could be carried out. Later, more funds were made available via a European programme, the Innovative Action Programme (IAP). These funds have served as lubricant for the creation of Food Valley and helped considerably to raise the interest among companies and research institutes for Food Valley. In 2003, the development agencies of the provinces Gelderland and Overijssel were combined into the Development Agency East Netherlands NV. This merger accelerated the elaboration and identification of a triangular cluster including the three university cities in the East Netherlands, notably Nijmegen – Enschede – Wageningen.

ESTABLISHING FOOD VALLEY

The creation of the Biopartner Centre Wageningen, the incubator facility for starting and young companies, was an essential step in the development of Food Valley. The Biopartner incubator turned out to be an excellent place to grow for the R&D departments of existing companies like Campina, as well as for young start-ups that still need to find their way in the world. This is one of the places where people get the feeling that something special is going on. So all the delegations that visit Food Valley make a scheduled stop at the Biopartner Centre. In 2006, the Biopartner Centre Wageningen was expanded for the second time. The breakthrough for the Centre took place in 2002, when dairy giant Campina decided to concentrate its R&D in Wageningen, merging three existing research units into one new department called *Campina Innovation*. It is based on a novel concept: research employees, product developers and marketing people would be working closely together in the same department. Later, by the end of 2005, DMV International, Campina's industrial-ingredients division, also decided to move to the Wageningen incubator (Financieele Dagblad 2005; Scholtens 2003), as did Catchmabs and a number of other small start-up companies. This meant that the formula of young, relatively inexperienced starters combined with existing companies that need an innovative environment within a single incubator had become a reality.

Food Valley's experimental facilities and services

- A restaurant to investigate consumer behaviour, a collaborative project with Sodexo, Europe's biggest food-catering company.
- High-tech facilities for testing and developing liquid foodstuffs are found in Ede at NIZO food research.
- The National Bakery Centre at Wageningen is a facility dedicated to training and testing.
- Specialized experimental stations of Wageningen University are found all over the Netherlands, including facilities for growing mushrooms, flower-bulb research, glasshouse technology, aquaculture systems, animal husbandry, etc.
- Wageningen is home to RIKILT Institute for Food Safety, the Dutch Plant Protection Agency and many consulting companies and public advisory bodies dedicated to the various agri-food sectors.

Recognition and media coverage

Food Valley received unexpected support from Michael Porter, Professor of Economics and Management at the Harvard Business School. Porter had been invited by the Ministry for Economic Affairs to hold the *Innovation Lecture* in the Hague. On 1 December 2001, Porter presented his analysis of the competitiveness and productivity of the Netherlands. In his analysis Porter (2001) praised the agri-

food cluster as one of the few in the Netherlands that met with his approval, and he concluded that in his view Wageningen was the only university that to a reasonable extent managed to cooperate with the business community. These conclusions provided a welcome foundation for the Food Valley concept. Generally speaking, the combination of high tech and food is not that obvious. Many people see food primarily as an artisan activity involving a great deal of marketing. Porter made it clear that food is a potentially successful cluster. It makes perfect sense to invest in high-tech development and innovation in the food industry in order to create added value (Wissema 2003). In October 2004, *Nature* paid attention to the Food Valley phenomenon, and in January 2005, the international magazine *New Food* published an article entitled *Food Valley: where good ideas grow* (Lloyd 2005).

Four publications should be mentioned here that have contributed considerably to the positive reputation of Food Valley and helped to communicate the Food Valley concept to relevant parties and opinion leaders at the national level: de Vries et al. (2003), Omta et al. (2004), *Het Financieele Dagblad* (2004) and Reijnen (2005). De Vries et al. argued that with Food Valley the Netherlands possessed a highly valuable trump card and that an impulse from the national Innovation Platform was needed to benefit fully from its opportunities. Omta et al. showed that the Dutch agri-food sector, with its effective knowledge transfer and innovation system, including Food Valley, should be used as an example to be followed by other industrial sectors. Finally, *Het Financieele Dagblad* devoted an entire glossy section of 20 pages to Food Valley. This marked without a doubt a milestone in the history of the initiative. The publication was entitled *The dream of Wageningen*. The subtitle was promising as well as critical: *In the Gelderse Vallei scientists and the food industry work together on innovation. However, as far as recognition at a national level, let alone at a global level, is concerned, enthusiasm and good will are not enough.*

Last but not least we have to report the statement of European Commissioner Philippe Busquin, responsible for science and technology. Prior to paying a visit to Wageningen on February 2, 2004, he was interviewed by *de Volkskrant*, a Dutch daily newspaper. Busquin confessed he was playing with the idea of larger regions and countries within the EU specializing themselves according to their natural strengths and most successful clusters. When asked “What do you think of when you think about the Netherlands?” he answered without hesitation: *Wageningen and agriculture*. As far as he was concerned, the Wageningen-based knowledge and innovation cluster was the Netherlands’ strongest asset. If he were in charge, Busquin would identify the Netherlands as the Food Valley of Europe.

Food Valley's innovations in genomics

- Food Valley plays an important role in the Netherlands Genomics Initiative, which aims at capturing a leading position in scientific and industrial genomics. Its strategy is focused on excellence, true innovations and social relevance. Core activities in Food Valley genomics include:
- Centre for BioSystems Genomics, using its R&D to improve food and non-food crops to reduce environmental impact and enhance product qualities for the consumer;
- Kluyver Centre for Genomics of Industrial Fermentation, which includes R&D on the production of fermented food and beverages, compounds for the pharmaceutical industry, food ingredients, nutraceuticals and chemicals;
- Nutrigenomics, another exciting research area where Food Valley is building a science platform for major breakthroughs in food and health in the near future;
- Companies like Genetwister Technologies, Dr. van Haeringen laboratories, Nsure, Blgg and Keygene.

International benchmark and business link

Funds were made available from the IAP to conduct a benchmark study and some additional explorations to underpin the Food Valley plans. The central question of the benchmark study was: which are relevant food clusters in Europe, what do they look like and what can we learn from them? Would it be possible and sensible to work together? The benchmark study conducted in 2004 revealed that there were only a few food clusters in Europe that could be considered as reference 'valleys', potential partners or competitors (Provincie Gelderland 2005; Verheul 2004). The conclusion was that Food Valley was indeed among the most important European food clusters, together with Øresund (Denmark and South-Sweden), Emilia Romagna (Parma, Italy), and possibly South-East England (Norwich, Cambridge, Reading). The benchmark study was followed up and extended in the Food Innovation Network Europe (FINE), a project in the framework of the EU *Knowledge Regions* programme involving 'food valleys' from all over Europe, managed by the Development Agency East Netherlands NV (Sixth Framework Programme, FP6).

Also, in this IAP project it was investigated what an information centre for small and medium-sized enterprises (SMEs) should look like. This research led to the creation of the Food Valley Innovation Link, which handles inquiries from food companies and organizations needing a solution based on the Valley's technological expertise. In the Autumn of 2003, interviews were conducted with various knowledge providers, like TNO, NIZO, Wageningen UR, Syntens and several other institutions. This made it clear how the demand side viewed this initiative. It gave the project a solid foundation. The knowledge institutes and schools would be open to questions from SMEs via specific liaisons officers: the concept of the so-called 'lighthouse keepers'. The national innovation broker Syntens was allocated the role of coordinator.



Food Valley Society and Conferences

It was clear that on the road to Food Valley a direct and active participation of companies from the relevant sectors was invaluable. This led to the idea of a *Food Valley Society*. The Society's first meeting took place on 16 January 2003 at NIZO food research, and was attended by some 25 food-related companies. Today, the Food Valley Society has more than fifty contributing company members making up the network of the Food Valley Society. They meet regularly and can benefit from a number of privileges, e.g. in accessing the science centres of the Food Valley. It is a platform for entrepreneurs to actively exchange and pursue new business activities and to be well informed about new developments and perspectives in food technology and related science areas.

Each year a Food Valley Conference is held to feature important developments in food innovation. The annual Conferences strengthen the fabric of science and business in food, nutrition and health, and draw national and international attention to innovative solutions. Moreover, through press coverage public awareness of the food industry as an innovative sector is enhanced. On the road to establishing Food Valley the Conferences were a major factor in spreading the concept to the relevant interest groups on a national level.

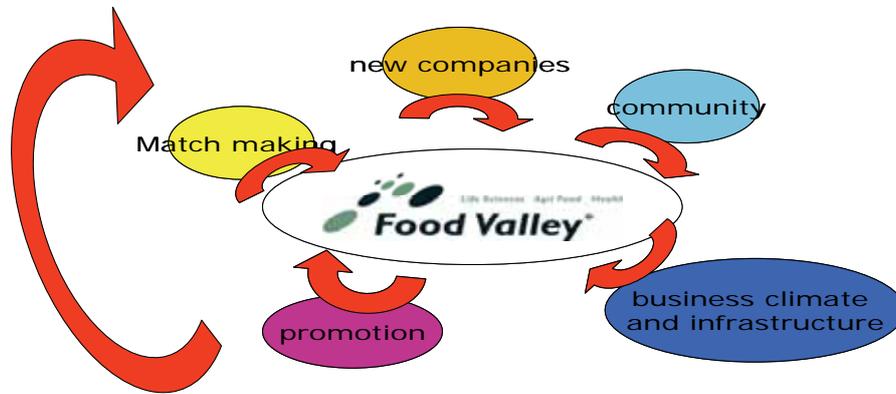


Figure 1: The Food Valley concept.

Attracting new business

To attract new business Food Valley would have to present itself as a unique location for entrepreneurs in the food and life sciences, not only from the Netherlands, but from Europe and America as well. This meant benefiting from the regional perspective of the four local municipalities and from the strength of the national food cluster. The recently created Biopartner incubator was one of the strong magnets for new companies. This broad and much more ambitious approach to acquisition became one of the spearheads of Food Valley. In those days the idea behind the so-called WERV concept – the cooperation between the cities of Wageningen, Ede, Rhenen and Veenendaal – was still being developed (KWA Bedrijfsadviseurs 2004).

Innovation Action Programme

In the first half of 2003, thanks to the support of the EU and the Province of Gelderland, an Innovative Action Programme (IAP) was set up (Stichting Kennisstad Wageningen 2005). This opened up ample possibilities for parties in the East Netherlands to receive co-funding for innovative projects and support from knowledge institutes and the business community. In 2003, eight Food Valley projects were funded, at a total amount of € 2 million. The project that most appealed to the imagination was the milk genomics project. In this project the following parties participated: the dairy industry, the livestock industry and the Wageningen UR departments of animal breeding and genomics. The Milk Genomics project (IAP contribution € 120,000) was so successful that it was soon expanded with the support of other funds, which resulted in an overall budget of € 1.7 million. This expansion has been continued within the framework of a region-oriented support by the Ministry of Economic Affairs into a broad Food Valley project

entitled *Melk op Maat* (Milk made to measure) which is aiming at developing milk with special properties. The project is based on new applications of the area of genomics and will provide insight into the genetic variation of the Dutch cattle population in order to develop differentiated dairy products.

Another core project that received IAP backing was the *Company Restaurant of the Future*. The idea was to set up a practically oriented research facility for the observation of consumers in a company restaurant. The project was initiated by the Agrotechnology and Food Innovations institute A&F of Wageningen UR, in cooperation with interested companies from the food service industry like Sodexho. The facility had to connect directly to the existing restaurant of Wageningen UR. IAP provided € 300,000 for the development of the business plan. By 2005, the project had developed into one of the business units of the reorganized division for agrotechnology and food at Wageningen UR. In addition to the above-mentioned project, a number of other Food Valley-related projects were supported by the IAP fund, for instance:

- Sustainable Design in Food Valley: food design based on principles of sustainability;
- Allergenic Cross-reactivity: prevention of allergenic cross-reactions by peanut proteins in a factory that also processes various other nut species;
- Food for Thought: tailor-made training courses for the food and processing industry;
- Home Cage Phenotyper: development of a so-called home cage, a stress-free environment where test animals can be observed;
- Knowledge centre biodegradable packaging.

Official start of Food Valley

In the late Summer of 2003, a business plan was written for a virtual organization consisting of the Development Agency East Netherlands NV, Syntens, Wageningen UR and the four WERV municipalities. Based on the business plan, the funds these parties would contribute in the period 2004-2007 were €130,000 (the Development Agency East Netherlands NV), €85,000 (Syntens), €90,000 (Wageningen UR), €45,000 (WERV), €45,000 (Wageningen) and €45,000 (Ede). This resulted in an annual budget of €440,000. In September 2004, the Food Valley office was set up; this was the official start of Food Valley.

REGIONAL ECONOMIC IMPACT OF FOOD VALLEY

Assessing the regional economic impact of Food Valley implies determination of 1. the regional area under study, 2. the industrial sectors involved, and 3. the impact indicator to be used. Figure 2 shows the WERV municipalities as the location of Food Valley. The map also shows other high-potential regions in the Netherlands. It is part of a public memorandum of the government marking a shift in Dutch regional policy from 'backing economically weak regions' to 'backing up high-potential regions'. The appearance of Food Valley in the map indicates that the region is

accepted as a high-potential one. Of course, it makes sense to consider Food Valley a network with a ‘fuzzy’ location with no exact geographical boundaries. However, this would make it difficult to determine the regional economic impact. Further, it is to be decided which indicator must be used. Employment in the sectors concerned seems a suitable and convenient impact indicator. Table 1 presents the employment figures (number of jobs) for the relevant sectors in the WERV municipalities and in the Netherlands as a whole.



Figure 2: The WERV municipalities (Food Valley) and other high-potential regions in the Netherlands. Source: (Ministerie van Economische Zaken 2004).

Total employment in the Netherlands and the WERV municipalities in 2003 equals 6,979,400 and 430,200, respectively. With these numbers and the data in Table 1, it is possible to compute the *location quotient* of Food Valley-related activities in the

Table 1. Number of jobs in Food Valley-related sectors in the Netherlands and the WERV municipalities (2003)

Industrial sector	The Netherlands (*1000)	WERV municipalities
Agriculture and forestry	79.8	2512
Food	128.2	1370
Related industries	30.9	731
Trade	101.7	1951
Research	33.5	3322
Academic education	56.1	2890
Total	430.2	12,776

Source: (Bobeldijk and Van Dieren 2005).

WERV municipalities. It is defined as: percentage Food Valley-related activities in the WERV municipalities divided by Food Valley-related activities in the Netherlands as a whole. In the Netherlands this percentage equals $(430,200/6,979,400) \times 100 = 0.062$. In the WERV municipalities the percentage equals: $(12,776/103,333) \times 100 = 0.123$. So, the location coefficient for Food Valley-related activities in the WERV municipalities in 2003 equals: $0.123/0.062 = 2.0$. This indicates that Food Valley-related activities are 100% over-represented in the WERV municipalities compared to the Dutch economy as a whole. This implies that these activities are highly concentrated in the WERV municipalities¹.

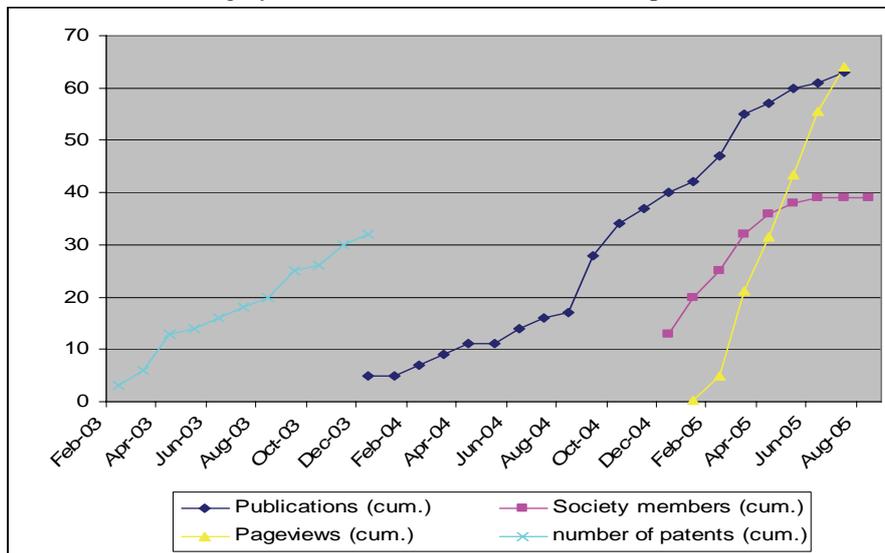


Figure 3. Some indicators reflecting the dynamics of Food Valley

The location quotient is an indicator for the relative regional importance of Food Valley. Other available indicators showing the dynamics of Food Valley are: 1. the number of publications about Food Valley; 2. the number of members of Food Valley Society; 3. the number of pageviews at www.foodvalley.nl; and 4. the number of Food Valley-related patents. Figure 3 gives the overview. It appears that, in the short period that Food Valley has existed, it has generated quite some media attention. Furthermore, Figure 3 shows that the Food Valley Society is growing, and that the number of hits on its web site, and the number of Food Valley-related patents are increasing. Especially indicator nr 4, the number of patents, is interesting. In Table 2 the number of patents in the WERV municipalities is compared with the whole of the Netherlands. It appears that the number of patents per capita in the total of the WERV municipalities and especially in Wageningen, which can be considered the geographic core of Food Valley, is much higher than the average for the Netherlands. This is a strong indicator for the innovativeness of the region. In conclusion we can state that there are strong indicators that Food Valley as defined in this section is a research-oriented agri-food cluster in the making.

Table 2. Number of patents per 100,000 inhabitants in the WERV municipalities and the Netherlands as a whole (2003)

Region	Number of inhabitants	Number of patents	Number of patents per capita (*100,000)
Wageningen	34,841	12	34.44
Ede	104,771	11	10.50
Rhenen	17,690	1	5.65
Veenendaal	60,953	8	13.12
Total WERV	218,255	32	14.66
Netherlands	16,193,000	1892	11.68

Source: (Bobeldijk and Van Dieren 2005).

SUCCESS FACTORS ON THE ROAD TO FOOD VALLEY

Below, we present a summary of the decisive circumstances, crucial success factors and important stages in the process on the way to the actual foundation of Food Valley.

1. *Launching platform.* A small and flexible bureau and network of founders and participants – The Foundation City of Life Sciences – was essential as a platform and operational working base for formulating and developing the ambitions of Food Valley. The Foundation's board provided the necessary room for these ambitions.
2. *Fast recognition and support.* Food Valley had the potential to get various people and organizations interested in the concept immediately – long before the

idea had been fully worked out into an actual plan. Soon, there was a network of influential professionals and ‘ambassadors’ from various organizations who were willing to take part in the development of Food Valley. The name Food Valley was short, powerful and inspiring to many.

3. *From regional to national.* Originally the concept of Food Valley had a decidedly regional character covering Wageningen and the three neighbouring municipalities. Gradually the concept developed into an initiative with a national appeal and an international ambition. Although the knowledge base concentrated on Wageningen and its surrounding areas, in actuality Food Valley concerns the Dutch agri-food industry as a whole and its ability to expand and innovate, including the adjacent areas of health and life sciences.
4. *The time was right.* The concept of Food Valley fitted perfectly into the so-called Knowledge Cluster Policy of the Province of Gelderland and the regional Development Agency East Netherlands NV. This generated a strong and continuous support from the Province. Secondly, at a national level the political emphasis on the knowledge economy and innovation was of great importance for the development of Food Valley.
5. *European support for innovation projects.* The European Innovative Action Programme (IAP) set up by the Province of Gelderland made it possible to start a number of key projects, showing that science institutes and companies could work together effectively. The IAP resources provided a financial incentive for parties to cooperate and create innovative solutions.
6. *Attention in the press.* The ambitious Food Valley idea aroused a great deal of curiosity as well as criticism, sometimes even envy. There was a lot of political attention, which led to visiting programmes by various national and international delegations. This, and the attention from local, national and international media created the conditions for a speedy expansion of the Food Valley concept.
7. *Involvement of companies.* The approval and support from companies for the Food Valley idea was more than welcome and of essential value as a test of the feasibility of the idea. The active participation of the food and related industries materialized in the Food Valley Society. Attracting national as well as foreign companies to the Food Valley area was organized with support from the region as well as from the national government.
8. *Incubation facilities for new businesses.* The development of the Biopartner Centre Wageningen, the incubator facility for starting and young companies, was an essential step in the formation of Food Valley. It became an attractive place to locate and grow for R&D departments of existing companies like Campina, as well as for start-ups.
9. *Conferences.* The first Food Valley Conferences held in 2003 and 2004 made the ambitions visible to the various target groups, with an emphasis on a business community that was heavily involved from the outset. Influential speakers made sure that the essential subjects were put on the agenda.

CONCLUSIONS

Food Valley has proved to be a way to promote the innovation cluster in the Netherlands: the agri-food cluster concentrated around the city of Wageningen. It was introduced successfully in 2001 and immediately gained support from the knowledge institutes and private and public sectors, because it was a kind of independent concept with no owner and the common understanding that all different actors had their own place and responsibility in realizing the Food Valley ambition. In the period from 2001 till now its basis has been strengthened. Through its Food Innovation Network Europe project FINE the cluster is working at its international positioning, with the help of European Technology Platform 'Food for Life' and together with other food networks. Food Valley will develop in the coming years into the European innovation hot spot for agri-food life sciences.

1. Over a period of five years, the initiative of Food Valley has gained considerable weight and recognition. Companies, science institutes and regional government have joined forces to create synergies that did not exist before.
2. Cooperation of public and private R&D in food and related areas has been intensified. Advanced infrastructure dedicated to new business and starting entrepreneurs in food and related industries has been established.
3. Food Valley has succeeded in putting food and nutrition on the national innovation agenda and in showing the major opportunities of food, health and life sciences in creating added value and economic growth.
4. Food Valley is a regional cluster with national impact. The region of East Netherlands is a true hotspot for the food industry with emphasis on science and innovation.
5. Food Valley is instrumental in providing a unique Dutch food profile in the framework of the European Union.

NOTES

- ¹ In this analysis a broad definition of Food Valley-related activities has been used. One may also use a narrow definition of Food Valley-related activities, with a similar result. In that case the location quotient is even higher: 2.3 (Bobeldijk and Van Dieren 2005).

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