

SPAIN

outsourcing R&D

Food tech organisations in Spain provide an integrated and multidisciplinary range of services to support the international food industry. This third article in the series on Outsourcing Food R&D reviews what Spain has to offer.

The structure of the national food industry, largely composed of small and fractionated family businesses, has contributed greatly to the development and organisation of food technological centres in Spain. Local food industries are being forced to change their conservative and traditional attitude, to retain their market position against the growing number of highly technological, international food businesses entering the market. Many Spanish R&D centres were created to help the local food industry fill the technological development gap. This increasing internationalisation in Spain has also opened the doors of food R&D centres to international businesses.

FILLING THE INNOVATION GAP

To provide the practical support needed by the local industry, Spanish food tech centres have developed into diversified, multidisciplinary and flexible organisations offering a wide scope of integrated services. These often cover post-harvest topics, product and process development, equipment modification, packaging, quality aspects, personnel training and other supporting



Experimental hot air/MW drying equipment at the Universidad Politécnica de Valencia.



High-pressure experimental unit (1 lt capacity) at the Universitat Autònoma de Barcelona

services. In some cases, services offered also include additional links, either to agricultural and animal production (e.g. genetic improvement, plant/animal production, harvest/slaughter) or to commercialisation.

Even multinational companies are benefiting from these services, mostly for product improvement, adaptation and development.

Reasons which prompt international companies to use local food tech centres in Spain include distance to their own central R&D and adaptation to/from Spanish foods. Additionally, Spanish food tech centres may also provide a bridge to the Latin America food industry. Ties between these regions include cultural (foods and communication), commercial, educational and technological aspects.

BUSINESS OPPORTUNITIES IN SPAIN

International ownership in the Spanish food processing industry is reported to have increased considerably in the past 10 years. Reasons put forward for this include entrance into the EU and, more recently, demographic, social and lifestyle changes among Spanish consumers¹. Four factors affect the food choice of the Spanish consumer at the end of the '90s: health, time, pleasure and

TABLE 1. SOME MAJOR FOOD TECH ORGANISATIONS IN SPAIN, THEIR TYPE OF FOOD TECHNOLOGICAL WORK* AND MAIN AREAS OF WORK

Organisation	Type of food R&D work	Areas of work include:
Department of Food Technology - Universitat Autònoma de Barcelona	Food application Applied food research	Dairy products, UHT processing High pressure processing, Microbiology
Department of Food Engineering - Universidad Politécnica de Valencia	Applied food research Basic food research	Mass transfer-related processes, MW drying, vacuum impregnation, Process mechanisation
Consejo Superior de Investigaciones Científicas (CSIC)	Applied food research Basic food research	Consists of 8 centres working on many aspects of food science and technology in various food areas
Meat Institute (part of IRTA)	Food application Applied food research	Integrates diverse aspects of meat technology, linking to animal production.
AINIA - Instituto Tecnológico Agroalimentario	Food application Applied food research	Diversified and flexible food technological support centre for the food industry. Covers many areas.

* Types of food R&D centres according to Foodlink Forum's functional classification for collaboration with the food industry (2)

diversity which offer opportunities for functional and convenience foods (including ready-to-eat, pre-cooked and fast foods¹).

But Spanish consumers require foods to be adapted to their own particular and 'sui generis' Spanish taste, and international food companies can turn to Spanish food tech centres for support in understanding the necessary product changes; reformulations for local market requirements and for capturing of new opportunities.

TECHNO-COMMERCIAL SUPPORT

In contrast to the situation in Northern Europe, Spanish food tech organisations go beyond their technological services to offer techno-commercial support. This may turn out to be very useful, since these technological organisations know both local market and local players, and have facilities that an independent food manufacturer may lack in Spain. Techno-commercial services provided by certain organisations include technical sales support for finished foods, ingredients and equipment. Test equipment may be located at an appropriate centre. Workshops, lectures, trials, demonstrations and varying forms of product communication for the local industry can also be organised. Foodlink Forum may also be of assistance in this respect.

FOOD TECH ORGANISATIONS

Spain has many organisations providing industrial support. Main food R&D centres are found in universities, research centres and technological institutions. Some major food tech centres are listed in Table 1.

Many universities have departments of food technology, which work in close association with industry. Some have years of standing, many are just starting their technological food work. Often food technology departments are part of the faculty of animal science (Facultad de Veterinaria), as is the case in Barcelona, Zaragoza, Madrid, Leon and others. Their work is more product-, biotechnological- and microbiological-oriented. Food engineering is carried out in Valencia,

at the Politechnical University and in Lérida. Additional information on the universities of Barcelona and Valencia-Politechnical is given in Table 1. Cooperation with industry takes many forms and covers many areas, as professors have relative freedom to decide on their work programmes. Initial information may be obtained at the 'administrative centres for transfer of technology' at the universities.

National research institutions are grouped into the CSIC (Consejo Superior de Investigaciones Científicas = national research council). This is a large organisation (105 institutions; a total of 8,000 employees, of which 1,800 are scientists) and is responsible for the co-ordination and realisation of the national research plan. For food science and technology, the CSIC has eight different food centres throughout the country (Table 2). Their work focuses on the needs and products of the geographical regions where they are established, and sometimes overlaps.



Pilot-scale super-critical liquid extractor at the AINIA (Instituto Tecnológico Agroalimentario)

'The flexibility and integrated approach of Spanish food tech centres may be very useful for the realisation of product development projects as well as for market development and sales support for Spanish - and Latin American - markets'

TABLE 2. FOOD SCIENCE AND TECHNOLOGY CENTRES AT CONSEJO SUPERIOR DE INVESTIGACIONES CIENTÍFICAS (CSIC) AND THEIR MAIN AREAS OF WORK

1.CEBAS - microbiology, post-harvest physiology, heat processing, technology transfer, other
2.IATA - biotechnology, cereal technology, meat products, heat processing, other
3.IFI - dairy products, wine, nutrition, microbiology, other
4.IFR - process engineering, meat, dairy and fish products, post-harvest physiology, other
5.IGR - olive products, biotechnology, nutrition, post-harvest physiology, other
6.IIM - fish and seafood products, food biochemistry, waste management, other
7.INB - nutrition
8.IPLA - biotechnology, dairy microbiology

The technological centres provide a variety of services on applied food research and food application (Table 1). The AINIA is an industrial association, giving diversified support to its more than 500 member companies and other clients. Membership is not essential for use of this organisation's services. Areas of work cover product and process development including equipment design and modification, hygiene, quality aspects, support by certification, sensorial testing, training, marketing, legal and communication services.

The Centro de la Carne (Meat Institute) specialises in all aspects of meat. Its integrated approach links animal genetics, production, nutrition, welfare and slaughter to product and process development, packaging and sensorial evaluation. The meat institute is part of the IRTA, a large agro-industrial research organisation of the Generalitat de Catalunya (autonomous region of Catalonia).

REGIONAL COOPERATION PROGRAMMES

Decentralisation of the government in recent years has resulted in a large increase in regional autonomy. This has also had consequences for food R&D.

Regional co-operative programmes have been formed between already existing food tech centres in order to give more concerted action and support in policy making for the region. An example of technological support for the food industry is the CeRTA in Catalonia (Centro de Referencia en Tecnología de Alimentos; regional centre of reference in food technology). Composing centres work in complementary areas: food chemistry, technology and engineering, nutrition; dairy, vegetables, meat, wine products and post-harvest physiology.

OUTSOURCING TIPS

Many international companies already make use of Spanish R&D centres - particularly in product development and technology. Project results find application in the internal Spanish market, the Mediterranean region and even in Northern and Central Europe and other international markets — such as Latin America.

The internationality of Spanish R&D centres is due to two main reasons: (1) the market relevance and unique nature of the Spanish cuisine: foreign products have to be adapted for the Spanish consumer, and Spanish products internationalised for other countries



Pilot-scale ripening room for cured ham at the Centro de la Carne-IRTA.

and (2) the technological advancement of some centres for specific products, which has gained them international recognition as centres of excellence (e.g., centre for fats and oils-CSIC and the meat institute-IRTA).

Their flexibility and technological diversification can also be advantageous. Costs may also be lower, and vary depending on the work to be done and the organisation carrying them out. Spain participates actively in EU projects, which offer certain co-financing/subsidy possibilities.

As with any type of R&D outsourcing, you should be very careful in the selection of the appropriate organisation; its work focus, approach and the ready implementation of results. Take active part in the project design, selection of methods and procedures and supervise work realisation closely. See also recommendations in previous article⁽³⁾. Communication may pose a problem, not only in understanding of the industrial situation but also because of cultural differences. Language difference may still be a barrier, and specialised international support may be an advantageous link.

CONCLUSION

The integration of Spain into the EU has also greatly contributed to the development and international awareness of Spanish food tech centres.

Their strongly applied orientation is very useful to the food industry, not only for projects dealing with Spanish foods but also for projects of more general application. The flexibility and integrated approach of Spanish food tech centres may be very useful for the realisation of product development projects as well as for market development and sales support for Spanish — and Latin American — markets. Awareness and experience of these centres will undoubtedly increase the international utilisation of their services.

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CALL TO FOOD TECH CENTRES:

Foodlink Forum bridges food application and food R&D centres with the international food industry. It holds information on food tech centres in Europe and the Americas. Please send any information on food industry services provided by your organisation, together with contact details, directly to the author of this article.

■ *The next article in the series Outsourcing R&D will focus on organisations in the UK*