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Technology Watch study of the Iberian pig

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Abstract. The Mediterranean Pig is represented in Spain by a group of varieties, strains or ecological adaptations that make up the Iberian pig. We carried out a study on scientific publications in various strategic areas (genetics, nutrition, health, meat and products quality and traceability) related to the Iberian pig. The application of Technology Watch methodologies allows any industry to anticipate market changes and opportunities, understand and reduce the impact of new technologies, overcome access barriers, develop new business ideas, identify potential partners and minimize risk. Several relevant high quality information sources such as scientific publications have been selected using a high-impact database: FSTA (Food Science and Technology Abstract). The information processing required the use of advanced data mining tools (Analyzer Matheo Software). The main findings are reflected in a Technology Sector Map.

Keywords. Technology Watch – Iberian Pig – Technology Map.

Veille technologique pour l'étude du porc Ibérique

Résumé. *Le porc méditerranéen est représenté en Espagne par un ensemble de races et de variations génétiques différentes, issu d'adaptations écologiques, qui composent le porc Ibérique. Nous avons effectué une étude sur des publications scientifiques dans divers domaines stratégiques sur le porc Ibérique (génétique, nutrition, santé, qualité de la viande et des produits ainsi que traçabilité). L'application des méthodologies de veille technologique permet à l'industrie d'anticiper les changements du marché, d'identifier les opportunités, de comprendre et de réduire l'impact lié à l'arrivée de nouvelles technologies, de surmonter les obstacles bloquant l'accès à un projet, de développer de nouvelles pistes liées à l'investissement, d'identifier des partenaires potentiels et de minimiser les risques. De nombreuses données sont sélectionnées à partir de sources d'informations de haute qualité et de pertinence telles que les bases de publications. Nous avons utilisé une base de données spécialisée dénommée FSTA (Food Science and Technology Abstract). Le traitement de l'information nécessite l'utilisation d'outils de data mining avancés (Matheo Analyzer). Une information efficiente est obtenue grâce à l'analyse de cartes retraçant tous les secteurs technologiques du domaine recherché.*

Mots-clés. *Veille Technologique - Porc Ibérique – Carte de la technologie.*

I – Introduction

The current challenge for the jamón *ibérico* (Iberian ham) sector is to provide a product with well defined and constant quality. It is therefore necessary to use the scientific and technological knowledge that has been so far generated and can be applied to serve this remarkable sector in Spain [1].

Technology Watch is the integrated and systematic effort of capturing, analyzing and accurately disseminating and pertinently exploiting all relevant technological and legal information that is necessary for the survival and growth of any institution. In today's knowledge economy, the access to information and its treatment is a prerequisite for the successful undertaking of R&D projects leading to new products, processes or services. The aim of the Technology Watch activities is to alert the company's decision makers of any scientific or technical innovation likely to modify their environment.

II – Methodology

The methodology for this study initiates with the identification of keywords and the narrowing the scope of search. This allows for the retrieval of the relevant information from the selected database. Once a corpus of information is obtained, the analysis and synthesis of the retrieved information is carried out in accordance with the objectives of the study.

The selected database was Food Science and Technology Abstracts, FSTA [2], produced by the International Food Information Service (IFIS). FSTA contains over 500,000 references and covers all areas of food science, food technology, and human nutrition, including basic food science, biotechnology, toxicology, packaging and design. The data mining software Matheo Analyzer [3] was used for the processing of bibliographic records.

III – Analysis of scientific publications

We performed a retrospective study on the research work that has been produced related to Iberian ham. The study covers scientific research published during the period 2000-2010 (August).

1. Scientific indicators

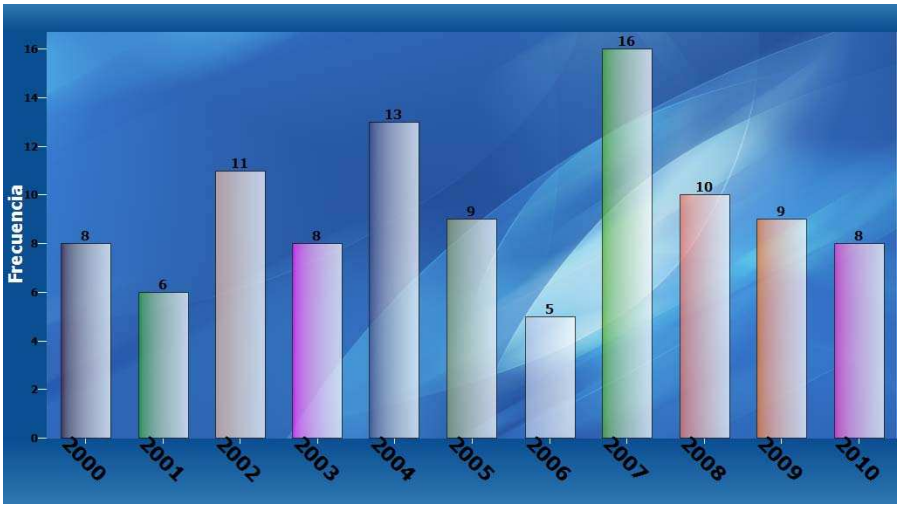

Fig. 1. Evolution of the number of scientific publications (2000-2010).

We obtained 103 scientific publications from FSTA database showing research results related to Iberian ham.

As it can be seen from Fig. 1, the scientific production presents, in general terms, an unstable behavior during the studied period.

Spanish scientific institutions lead the research in the studied area (Table 1); the University of Extremadura holds an absolute leadership, with approximately 59% of all publications retrieved.

Other European institutions that investigate these issues are: Royal Veterinary and Agricultural University and the University of Copenhagen (Denmark), INRA (France) and Fleischerzeugung und fuer Inst Vermarktung (Germany).

Table 2 shows a first group of scientific key terms of the studied area. A total of 251 subject headings describing the different publications research topics were retrieved.

Table 1. Scientific institutions holders

Institutions	TOTAL
Univ. Extremadura	61
Instituto de la Grasa (CSIC)	5
Univ. Complutense of Madrid	4
INIA	3
Univ. of Salamanca	3
IFA-CSIC	2
IMIDA	2
Univ. Zaragoza	2

Table 2. Main scientific content

Subjects	TOTAL
Fatty acids	22
Feeding	21
Ripening	14
Colour	14
Sensory properties	13
Fats animal	13
Genetics	12
Volatile compounds	11
Oxidation	10
Carcasses	9

More recent work on Feeding, for example, focuses on: (i) the Influence of a diet with probiotic bacteria on the lipid composition of Iberian pigs from different tissues; (ii) Individual phospholipid classes from Iberian pig meat as affected by diet (both from the University of Extremadura, 2010).

Table 3 lists topics of new interest related to the study of Iberian ham. Its only appearance in the studied period (2000-2010) is found within the last three years (2008-2010), according to the data contained in FSTA database. The novelty of these terms should be understood in the context of the Iberian ham as the studied subject.

Research on Vacuum, for example, is focused on: (i) modified atmosphere packaging and vacuum packaging for long Period chilled storage of dry-cured Iberian ham; (ii) effect of pressure and holding time on color, protein and lipid oxidation of sliced dry-cured Iberian ham and loin during refrigerated storage; (iii) the effect of HHP treatment (600 MPa) on the oxidative stability of lipids and proteins of vacuum-packaged dry-cured Iberian ham and the Impact on the sensory characteristics of the product was investigated.

Table 3. Emerging scientific content

New topic	2008	2009	2010
Vacuum	0	1	2
Phospholipids	0	0	2
Ultrasound	1	0	0
Triacylglycerols	1	0	0
Swine livers	0	0	1
Subcutaneous fat	0	0	1
Polychlorinated biphenyls	0	0	1
Peptides	0	0	1
Nucleic acids	0	0	1

2. Technology Map

Figure 2 shows a technological map of the Iberian ham for three areas of special interest such as genetics, nutrition and meat quality.

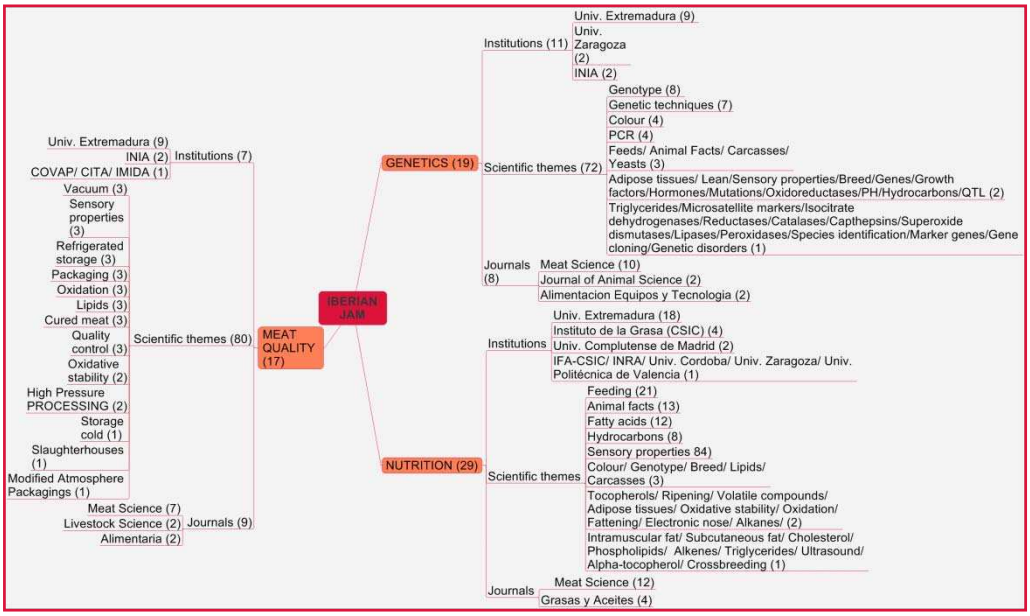

Fig. 2. Technology Map.

IV – Conclusions

The present Technology Watch study has identified key areas of research in the field of Iberian ham from 2000-2010. It enabled to observe the behavior of several selected indicators (evolution of publications, leading institutions, main scientific subjects as well as emerging areas of interest).

The University of Extremadura is the Spanish scientific institution leading research on this area, according to the studied period and the information obtained form the FSTA database.

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[3] Matheo Software, http://www.matheo-software.com/