FOODINTEGRITY
Ensuring the Integrity of the European food chain

613688: Collaborative Project

Seventh Framework Programme
KBBE.2013.2.4-01: Assuring quality and authenticity in the food chain

Publishable Summary Period 2

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3.1 Publishable summary

The Challenge

The provision of safe and authentic European food produced to defined quality standards is a key expectation of consumers as well as a key selling point for the European agri-food economy. European food is recognised globally for its high standards of production, labelling and safety. As such it is susceptible to lower quality imitations that seek to exploit the added value that European products have with respect to consumers and the global food market. Counterfeiting of food products has a major detrimental effect on the EU food industry as consumers start to doubt the authenticity of European brands. Whereas food safety within Europe is well co-ordinated and has a high profile, this is not the case for detection of food fraud or the enforcement of associated legislation. The main stumbling blocks to progress are reluctance to share data/intelligence/reference materials due to concerns from industry about competition, the need to protect the brand specification and the market price, lack of trust in third party understanding of the data and concerns about consumer reaction.

In recent years consumer preference for food with declared provenance has led to an increase in the marketing of foods from designated origins/productions and a strengthening of European legislation regarding the labelling of food. As a result the food industry is highly engaged in establishing an infrastructure that will verify food authenticity/provenance and is seeking to actively contribute to assuring the authenticity of the food supply.

There is a clear need for an initiative that will link up the major stakeholders, establish data sharing tools and working practices, provide rapid fit for purpose screening and verification methods, exploit past and present work and provide a consolidated research base from which to identify and commission new work, as well as provide a source of expertise to advise on future activities within Horizon 2020. The aim of FoodIntegrity (FI) is to fulfil that need by:

- providing Europe with state of the art and integrated capability for detecting fraud and assuring the integrity of the food chain;
- developing a sustainable body of expertise that can inform high level stakeholder platforms on food fraud / authenticity issues and priorities;
- acting as a bridge that will link previous research activities, assess capability gaps, commission research and inform Horizon 2020 research needs.

Project objectives

The FoodIntegrity project will achieve these aims by fulfilling the following specific objectives

1. Establish an international network of expertise that will inform regulatory and industry stakeholders about food authenticity issues and inform Horizon 2020 on future research needs
2. Consolidate available information on existing datasets, available methodology and establish a tangible knowledge base that can be interrogated and which will facilitate data sharing between European stakeholders.
3. Prioritise research requirements to fill the commodity, method, reference data and intelligence gaps
4. Commission research and development needed to address the gaps
5. Develop fit for purpose verification methods and systems for three food commodities that are significantly affected by adulteration and fraud (olive oil, spirits and seafood)
6. Investigate consumer attitudes and perceptions toward food authenticity and traceability, of European products, in home and emerging markets (using China as a case study)
7. Develop and test an early warning system for use by stakeholders that can identify potential food fraud events.
8. Provide practical tools and systems that can be integrated into food industry production and supply chains for assuring the integrity of food
9. Ensure knowledge transfer of FoodIntegrity outputs and initiatives to the food industry, regulatory, enforcement, research and consumer stakeholders.

**Progress**

**Expertise**

A FoodIntegrity (FI) network portal, reported in the previous reporting period, has been established that now has over 230 members comprising the main expert and stakeholders groups. This portal is used for the project to communicate/invite relevant parties to take part in FI activities as well as for the members to contact each other for services/information.

- The first Scientific Opinion (SO) on “The use of stable isotope technology to determine geographical origin in legal cases” has been completed and is awaiting publication, six other SO’s are in progress;

- Themed workshops on laboratory analysis, food crime, geographical origin have taken place and exploit the fact that FI is now the international focal point for the food authenticity community.

**Evidence**

- The KnowledgeBase, a comprehensive database of methods cross referenced against matrices, databases, providers and authenticity problem has been beta tested and populated with data for formal open release in the autumn of 2016. Formal discussions are taking place with a partner about sustaining the resource in the future.

**Research**

- Olive oil: a comprehensive survey of olive oil stakeholders, including consumers has been carried out; a large study looking at identifying olive oil origin and variety is near completion and will be reported in the next reporting period.

- Spirits: a range of rapid/field methods have been assessed for detecting both safety and authenticity parameters and a workshop on rapid methods for spirit drinks held in Edinburgh in 2015.

- Seafood: a large pan European “Citizen Science” survey of restaurants has been carried out in order to obtain a qualitative assessment of fish mislabelling in the restaurant sector.
Samples are currently being analysed to confirm whether the fish matches its claimed label and will be reported in the next reporting period.

- Two Early Warning System models have been developed that both show promise in predicting future food fraud events: 1) a Bayesian network of belief has been trained using the historical data of fraud; 2) a model based on macro-economic trade data that identifies potential vulnerabilities in the food chain. These systems will be further refined in the following 18 months.

- Eight new sub-projects worth ~€3M have been commissioned following a 12 month process involving an evaluation by independent experts. The projects cover the following areas: Quality assurance for non-targeted analysis; authentication of complex foods; transparency along the food chain and rapid methods. At the time of this report the projects are awaiting sign off by DG RTD.

Impact

- A large scale consumer study has been undertaken and the data analysed. The results will be discussed at a multi stakeholder forum in Shanghai in November 2016 and will also be submitted to scientific journals at the end of 2016. The final conclusions will be reported in the next period.

- Assessment and integration of FI outputs into industry has already started assessing ensuring FI outputs such as the network portal, the KnowledgeBase and the research outputs are relevant to industry. In addition case studies have been initiated to provide practical examples of how FI methods and systems can have direct industry applications.

- During the reporting period there have been several industry workshops in Lodi (IT), Bilbao (ES) and Prague (CZ) with the FI conferences now being an international focal point for those stakeholders and experts involved in food integrity. Over 250 attendees from 28 countries attended the latest FI conference in Prague. This figure is expected to rise considerably for the 2017 conference in Palma. Extensive training and dissemination activities are planned in the final reporting period.

- The website (www.foodintegrity.eu) continues to be a growing source of information with a range of web correspondents updating the site with new articles and events.

Expected Results

FoodIntegrity will enhance the value of the European Agri-food sector by developing consolidated information, processes and tools, endorsed by major stakeholders. Not only will European producers be able to provide authentic, high-quality food from sustainable production, but they will be able to document this authenticity with reference to accepted and transparent methods, both paper trail and analytical. This visibility will not only ensure that European food products are protected from counterfeiting and fraud due to state of the art systems and processes, but will also ensure that the legacy from the world’s leading food safety and quality systems is preserved/enhanced.

Specific outputs from the project will be:

- An international network of expertise that will inform regulatory and industry stakeholders about food authenticity issues and inform Horizon 2020 on future research needs
• A consolidated knowledge base on food authenticity available on central website containing readily accessible information on publications, reports, media articles, videos, existing datasets, available methodology.

• Outputs of new research on: non targeted analysis, procedures for authenticating complex foods, rapid methods and increased transparency along the food chain

• Fit for purpose verification methods and systems for three exemplar food products that are frequently affected by adulteration and fraud (olive oil, spirits and seafood)

• Improved understanding of Chinese consumers’ attitudes and perceptions toward food authenticity and traceability of European products

• A working model of an early warning system for use by stakeholders that can identify potential food fraud risks.

• Provide practical tools and systems that can be integrated into food industry production and supply chains for assuring the integrity of food

• Transfer of FoodIntegrity outputs and initiatives to the food industry, regulatory, enforcement, research and consumer stakeholders