



Traditional harvest of quinoa in Ecuador (Courtesy: Leatherhead Food RA)

## Ancient grain becomes biotech snack

Quinoa: a so-called “superfood”, will soon be part of the European diet. Described by the Smithsonian Institute, Washington, as “the most nutritious grain in the world”, quinoa was also a favourite of the ancient Incas in South America, for whom it was a staple food. In Europe, this superfood is still largely unknown outside health food shops, but a team at the School of BioSciences at the University of Westminster, London, looks set to change all that.

### Entirely new form of food

The project aims to develop an entirely new form of food, based on fermenting quinoa to a meat-like consistency. The quinoa is placed in a pilot scale fermenter with the fungus *Rhizopus oligosporus*, which produces the end result. The team is developing procedures to ensure tough safety standards in microbiology and toxicology for each batch of the product. Partners in food manufacturing include

Leatherhead Food Research Association, Plas Dairy Farm Ltd (Wales) and Old McDonnell’s Farm Ltd (Ireland), and are all in the process of evaluating the new food. When the testing phase is complete, the food will be marketed all over Europe as a meat replacement, and a nutritious ingredient for others.

The fermented quinoa can be used to make a range of high quality foods, from burgers and crispy snacks through to coated vegetables. Enthusiastic responses from testers about appearance and flavour of the new products have encouraged the partners, who are now scaling up from a pre-pilot plant to a pilot plant. This will increase the capacity from just 25 kg produced per day, to a huge 400 kg!

### New developments in Europe

Quinoa will also be cultivated for the first time in Europe in Greece, Denmark and Portugal, thanks to the project partners Camateras Aquaculture Ltd and Nordfeld I/S. Experiments



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*The Incas revered it, the Smithsonian praises it and now Europe is about to discover it. Quinoa is allegedly the most nutritious grain in the world and plans are afoot to launch it in the European food market. This project is investigating a novel food product with a meat-like consistency based on this grain. This involves testing its microbiological and toxicological safety as well as developing a fully operational pilot production process. A new and potentially profitable crop is about to burst onto the European market thanks to this project.*



under way in each country have revealed that the crop cannot be cultivated in Denmark and Greece, but it was successfully established in Portugal, where the climate is more favourable. The project has also displayed its ingenuity in the development of new electronic probes. Aber Instruments Ltd designed an instrument to measure the fermentation of the quinoa, using capacitance and conductance properties as indicators. These probes have tremendous potential for use in other research, both industrial and academic, particularly into biofilms.

**The future?**

Quinoa will be marketed, manufactured and supplied throughout Europe, for both processing and retailing in the food industry. Building on the success of the field trials, the crop will be grown in Portugal, providing a cheaper source than importing from South America. Being a cheap, nutritious and easily prepared food, maybe it is time Europeans shared the knowledge of the Incas, and made quinoa their staple too!



**INFORMATION**

**FULL TITLE:**

Novel solid substrate fermentation of Quinoa grains – a new European food product

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**PROGRAMME:**

FAIR, Cooperative Research Measures



**LOCATION**

- DENMARK
- IRELAND
- GREECE
- UNITED KINGDOM

