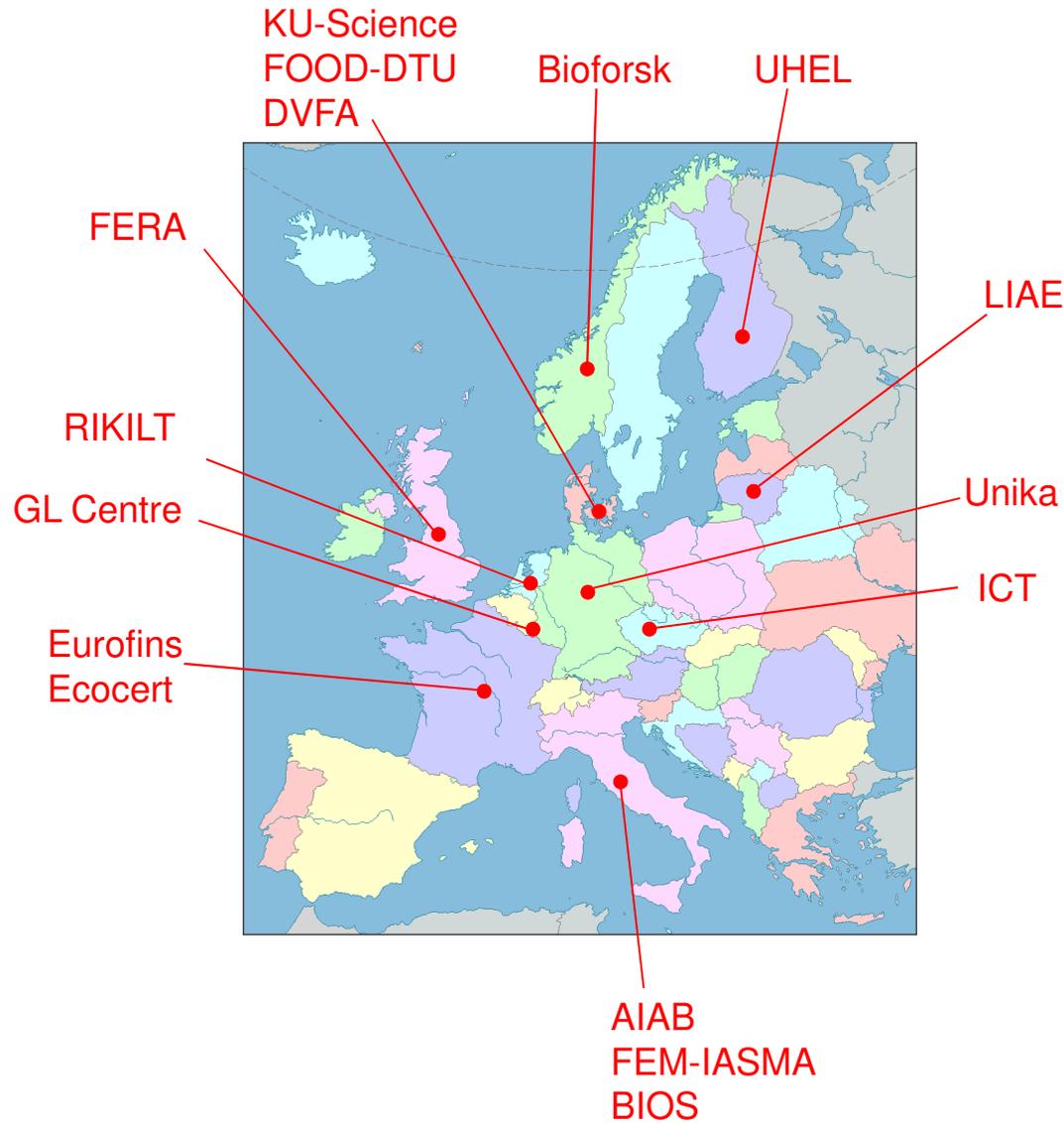


# AuthenticFood

*- Fast methods for authentication of organic  
plant based foods*

Søren Husted  
Faculty of Life Sciences  
University of Copenhagen  
Denmark





FP7 ERA-NET project  
16 partners  
11 European countries  
Project leader: Søren Husted  
Period: 2011-2014



# Partners in CoreOrganic II

## ”AuthenticFood”

	Acronym	Organisation	Country	Contact person	
1	Coordinator	KU-LIFE	University of Copenhagen, Faculty of Life Sciences	Denmark	Professor Doctor Søren Husted
2	Partner	AIAB	Italian Association of Organic Agriculture	Italy	Doctor Cristina Micheloni
3	Partner	FEM-IASMA	The Research and Innovation Centre (CRI) of the Edmund Mach Foundation	Italy	Doctor Federica Camin
4	Partner	FERA	Food & Environment Research Agency	United Kingdom	Doctor Simon Kelly
5	Partner	Food DTU	Technical University of Denmark	Denmark	Professor Doctor Erik Huusfeldt Larsen
6	Partner	EAF	Eurofins Analytics France	France	Director Michele Lees
7	Partner	ICT	Institute of Chemical Technology, Prague	Czech	Professor Doctor Jana Hajslova
8	Partner	RIKILT	Wageningen University and Research Centre	Netherlands	Doctor Saskia van Ruth
9	Partner	GL centre	University of Luxembourg, G. Lippmann Centre	Luxembourg	Doctor Cedric Guignard
10	Partner	Bioforsk	Bioforsk	Norway	Senior advisor Torfinn Torp
11	Partner	UniKa	University of Kassel, Organic Agriculture	Germany	PD, Doctor Johannes Kahl
12	Partner	ECOCERT SA	ECOCERT SA	France	Doctor Pierre Ott
13	Partner	UHEL	University of Helsinki, Ruralia Institute	Finland	Senior Planning Officer, M.Sc. Marjo Särkka-Tirkkonen
14	Partner	LIAE	Lithuanian Institute of Agrarian Economics	Lithuania	Head of division Virgilijus Skulskis
15	Partner	BIOS	BIOS	Italy	President Vittorino Crivello
16	Partner	DVFA	Danish Veterinary and Food Administration	Denmark	Head of section Erik Andersen



# Research Objectives

To develop and test a portfolio of analytical techniques for authentication of organic plant foods

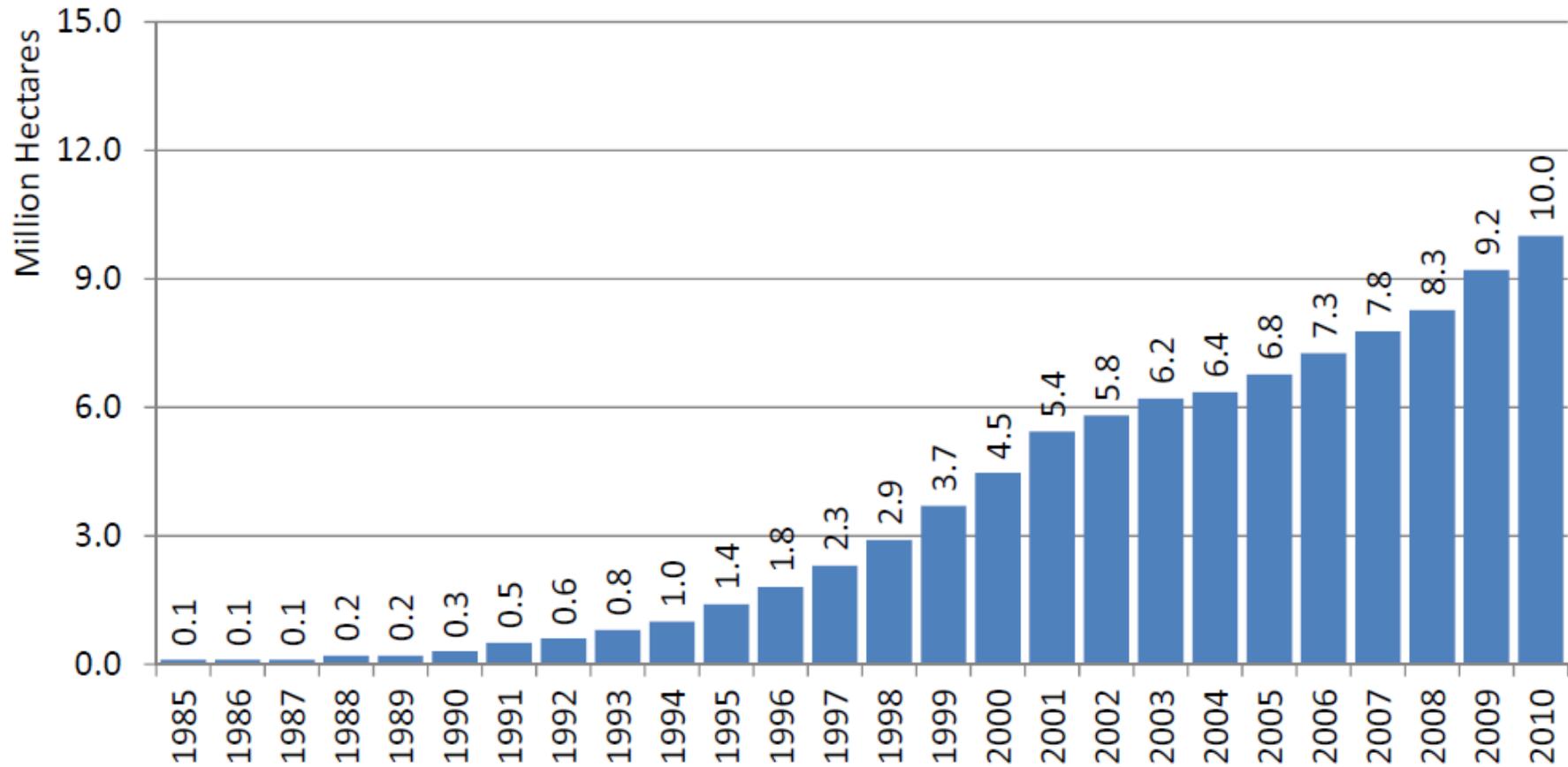
- Ionomics
- Stable isotopes
- Metabolomics
- Pesticide screening

To evaluate the techniques in corporation with European inspection and certification bodies

- Ecocert - France
- BIOS - Italy
- DVFA - Denmark



# Organic Agricultural Land in Europe



Source: [www.fibl.org](http://www.fibl.org)



# Export of Organic Foods on a national scale is booming



## EKSPORT AF ØKOLOGISKE FØDEVARER RUNDER EN MILLIARD

23. november 2012 af: Line Skouboe 

For sjette år i træk sætter dansk, økologisk eksport rekord, viser nye tal fra Danmarks Statistik. Eksporten runder således en milliard og er firedoblet på seks år.



Foto: colourbox.dk

Danske, økologiske virksomheder eksporterede økologi for 1.038 mio. kroner i 2011, hvilket er en stigning på 21 procent fra 2010 til 2011. Det viser nye tal fra Danmarks Statistik. Dermed sætter dansk, økologisk eksport rekord for sjette år i træk og er således firedoblet på seks år.

"Potentialet for eksport af dansk økologi er virkelig stort. Danske, økologiske producenter formår at udvikle internationale produkter og tilpasse danske succesvarer, så de også bliver internationale. Det er nøglen til eksportsuccesen," siger Klaus Bentzen, eksportchef i Økologisk Landsforening, Danmarks forening af økologiske virksomheder, forbrugere og landmænd.

### SENESTE NYHEDER

Mindre kød er godt for miljø og klima  
Forsigtig øko-optimisme omkring LDP-forhandlinger  
Myndighedskontrol viser: Økogrise har det godt  
Stor frokostleverandør i Aarhus får øko-bevis  
Øko- og miljø...



# Credibility in the Organic Market

Thursday 05 May 2011

## The Telegraph

HOME NEWS SPORT FINANCE COMMENT BLOG  
Motoring Health Property Gardening Food and Drink  
Wine Shop Wine Pub

Food and Drink News

### One sixth of 'fr food is fake

One in six farm shops offer "organic," "fresh" customers, an investi

February 14  
英文中國郵報  
The China  
News Opinion  
Health  
Update Medicines  
Six out  
food:  
TAIPEI,  
had the  
not ge  
yeste

Company director jailed for selling fake organic food  
One Food Limited repackaged non-organic ingredients in £500,000 scam

### 88% of Organic Food is Fake

By Nathan Schwartzman Dec 03, 2007 9:59AM UTC

16 Comments and 0 Reactions

Tweet 0 Like

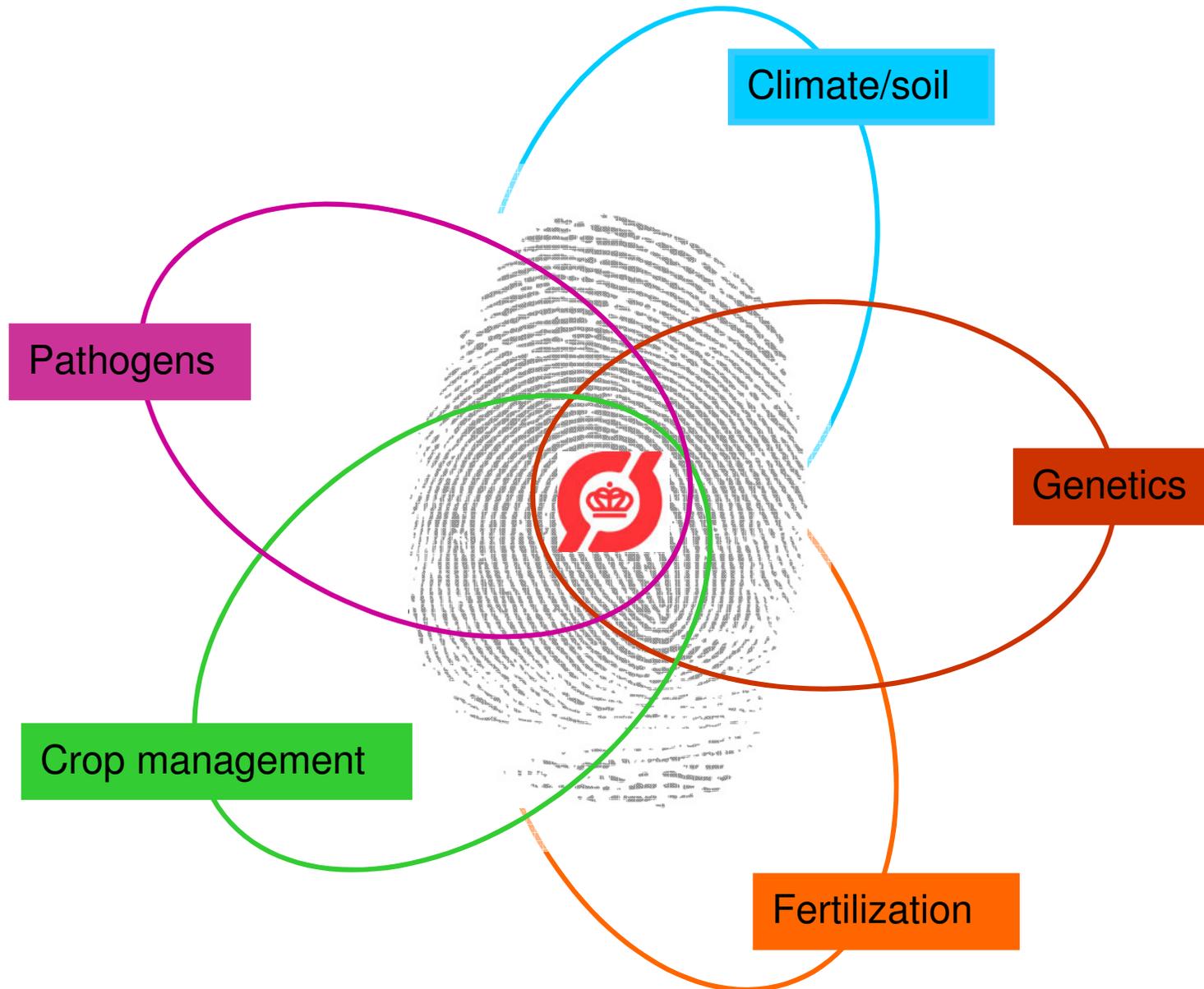
Original Article.

“Organic tofu,” “organic jam,” “organic olive oil.”

A study has found that the majority of ‘organic’ farm products sold in Korea are fake. The Korea Food Research Institute announced on the 29th that “88% of domestic organic farm products have been marked as organic by their manufacturers, not the government.” Unlike in foreign countries, organic products in Korea do not need government certification, creating these abuses. Organic products are 2.82 times as expensive as their non-organic counterparts. Consumers are buying expensive “organic” products without knowing what they truly are.

'Food fraud' is a growing problem in Britain as consumers become increasingly willing to pay more for produce seen to be fresher, healthier or less harmful to the environment Photo: ALAMY

# The unique chemical fingerprint of organic plant products



# Organic vs. Conventional Agriculture

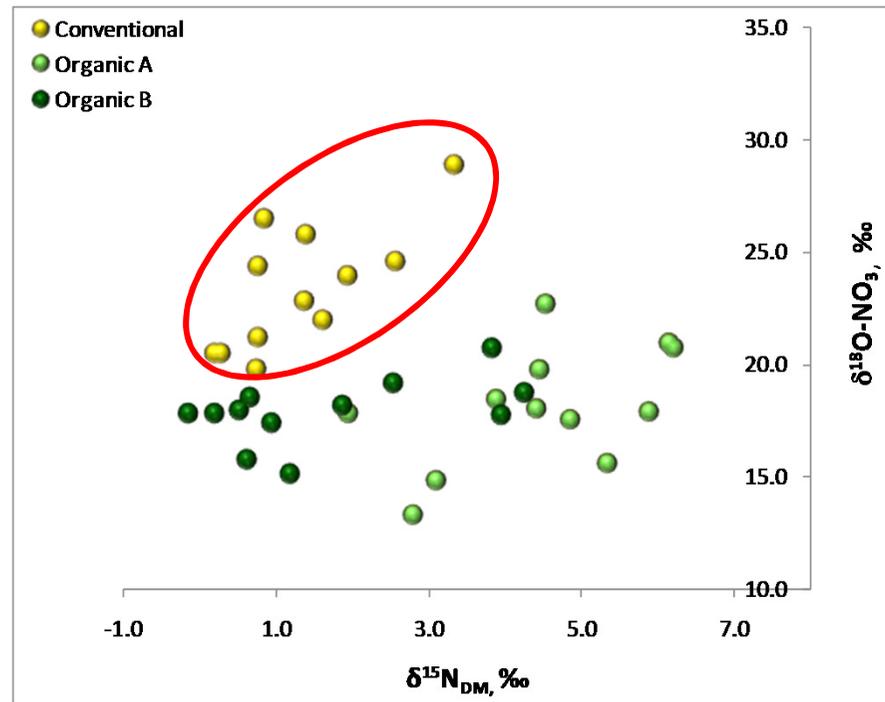
	<b>Organic</b>	<b>Conventional</b>
<b>Pesticides</b>	No	Yes
<b>Synthetic fertilizers</b>	No	Yes
<b>Organic fertilizers</b>	Yes	Yes
<b>Fertilizer amount</b>	Lower or similar	Higher or similar
<b>Crop rotations</b>	Longer	Shorter
<b>Yields</b>	Lower or similar	Higher or similar
<b>Product price</b>	Higher	Lower



# Scientific Idea



# AuthenticFood will build upon previous research indications.....



# Hypotheses

The following main hypotheses (h) will be tested:

*h1.* Organic plant samples can be authenticated at the field and farm levels under conditions where bias is introduced by differences caused by *e.g.* farming practise, geographical location, plant cultivar and growth season.

*h2.* Authentication of the organic origin is maintained in processed cereal and vegetable samples when data from suitable analytical methods are applied and combined.

*h3.* The validated methods can be implemented by relevant stakeholders such as inspection and certification bodies.



# Biological Cases



# Analytical Strategies

Ionomics

Stable Isotope Analysis

Metabolomic Fingerprinting:

Pesticides



# Expected results and "added value"

- Provide "proof-of-concept"
  - Identify bottlenecks in implementation
  - If successful: prepare for official CEN/AOAC Validation
- 
- Impossible for a single country
    - Analytical/Scientificallly
    - Validation required at EU level
  - Elimination of geographical and enviromental chemical imprints



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# Thank you !



"Mess yourself up a little —  
the key to this business  
is authenticity."

