Clust-ER Agrifood

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Agri-food as a key driver for the regional economy

Some data (year 2017)

Utilised agricultural area: 1.064.000 ha
Number of farms: 64.480
Number of workers in agri-food sector: 310.000
Agricultural output: 6,8 billion €
(49% animal prod., 39% Fr&Veg, 12% cereals/industrial crops)
Agri-food industry output: 24 billion €
Agri-food Export: 6,2 billion € (1st Italian region for export)
Organic farming: 6.200 operators, 152.000 hectares
Leadership in the world per agri-food mechanics

Source: "Unioncamere / Emilia-Romagna Region"

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The "Food Valley" - A dynamic and internationalized system

PDO   **PGI**

Emilia-Romagna:

1st Italian region in EU per number of PGI & PDO
(44 food products + 29 wines)

The Clust-ERs

Communities of **public and private subjects,** operative since January 2018, <u>co-financed with regional funds</u>, sharing ideas, skills, tools, resources to strengthen competitiveness of the most relevant regional production systems

Objectives:

1. Facilitate **integration** between **laboratories**, **innovation centres** and **enterprises** to multiply opportunities and develop strategic projects
2. Support the identification of technology trends and long term **strategies** to address investments in R&I
3. Identify **training** needs within the regional system
4. Strengthen regional participation in **international research programs**

The seven regional Clust-ERs

The Members of the Clust-ER Agrifood

LABORATORIES
- BioDNA
- BIOGEST-SITEIA
- BIOPHARMANET-TEC
- CIDEA
- CIM
- CIPACK
- CIRI Agroalimentare
- CIRI Energia e Ambiente
- CIRI ICT
- CIRI Meccanica e Materiali
- CIRI Scienze della Vita
- CNR IMAMOTER ISTEC
- COMT
- CRAST
- CRPA Lab
- CRPV Lab
- EN&TECH
- GeoSmart.Lab
- INFN TTLab
- LEA Tracciabilità
- LEAP
- MECHLAV
- Proambiente
- REDOX
- SITEIA.PARMA
- SSICA
- TEKNEHUB
- Terra&Acqua Tech

INNOVATION CENTRES
- CITIMAP
- ROMAGNATECH
- CNA INNOVAZIONE
- Confindustria Emilia-Romagna Ricerca
- DEMOCENTER-SIPE
- Fondazione REI
- Warrant Innovation Lab
- CREA

OTHER SUBJECTS
- Innovacoop S.R.L.
- SERINAR

ENTERPRISES
- Bioagricoop
- Centoform
- Cyanagen
- Granarolo Spa
- Haifa Italia Srl
- Mbs
- Consorzio Agribologna
- Orogel Soc. Coop. Agricola
- Casella Macchine Agricole
- CFT
- Hi-Food
- SIRAM
- e-Soft
- Soc. Coop. Agr. GESCO
- GEA Procomac
- Prosciuttificio San Michele
- HPP Italia

TRAINING BODIES
- I.F.O.A.
- Dinamica
- Fondazione ITS
- Irecoop Emilia Romagna

59 members

President:
Dr. Vittorio Zambrini (Granarolo)

Vice President:
Prof. Arnaldo Dossena (Parma University)

Member of 3 EU Thematic Platforms

High-Tech Farming

New tools (Robotics, ICT, Big Data, Earth Observation, etc.) for a new paradigm of Sustainable Precision Agriculture; enabling farmers to dominate technologies

Traceability & Big Data

Facilitating the incorporation of digital technologies and data application in agri-food sector value chains; more complete and trusted information available to consumers.

Nutritional Ingredients

Promoting interregional collaboration and strengthening competitiveness of industries to better respond to specific consumer demands emerging from the market

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Two EU Projects approved in 2018

TRACK (COSME)

"Tracking opportunities to develop and strengthen **data collection and big data** in agri-food chain to increase competitivity of SMEs"
Partners: clusters from FR, ES, NL, RO, IT.
Clust-ER's role: **Partner**

SmartAgriHubs (H2020)

"Connecting the dots to unleash the innovation potential for **digital transformation** of the European agri-food sector"
Partners: 108 from 22 countries.
Clust-ER's role: **Stakeholder**.

# Managing relations with relevant institutions in the world

- Brazil
- Canada
- China
- Cuba
- UAE (Dubai)
- Ethiopia
- European Union
- Hong Kong
- Perù
- USA

Clust-ERs and Value Chains

		Vertical domains			Horizontal domains	
Agrifood	**Building & construction**	**Mechatronics & motoristics**	**Health**	**Cultural & creative industries**	**Energy & sustainable development**	**Service innovation**
Sustainable & precision farming	Cultural Heritage Management	Digital manufacturing	Regenerative Medicine	Digital culture	Low Carbon Economy	Intelligent IT services
Quality, safety, traceability & nutrition	Green2Build	Automation & robotics	New generation of Medtech	Design & digital craft technologies	Environmental sustainability & ecosystems	Service platform for IoT
By-products & waste valorization	Safety of buildings & infrastructure	Advanced materials	Pharmaceutical & Omits sciences	Fashion		Cybersecurity
		Nautical affairs	Smart & active living	Multimedia		Scalable big data
		Fluid Power				Goods logistics
		Smart engines				
		Aerospace				

The Value Chains of the Clust-ER Agrifood

SOSFARM
Sustainable agriculture and precision farming

varietal innovation
environmental sustainability
data driven agriculture   drones
decision support systems
life cycle assessment   big data
ground truthing   sensors
prescription maps
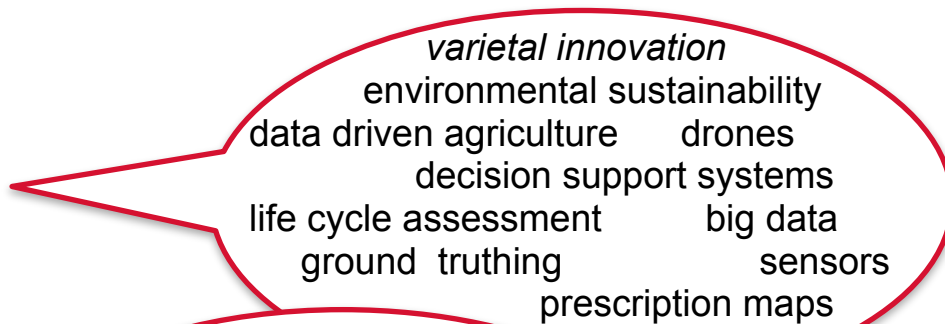
FoodQST
Quality, security and traceability for processes/ products and nutrition

well being
health   ICT
food security   plants sanitization
food processing plants
shelf life prolongation
biomarkers   traceability
authenticity
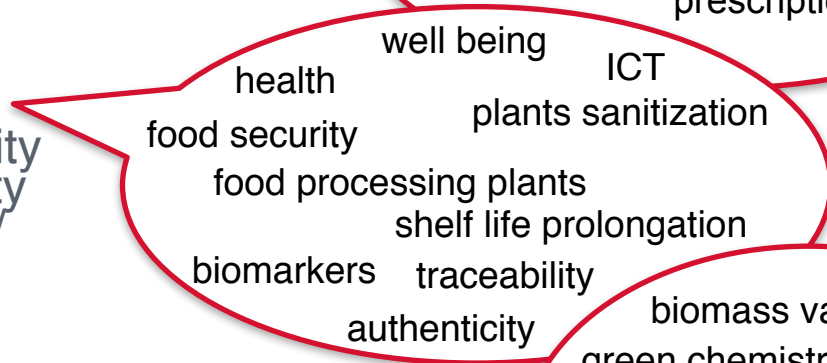
SPES
Valorization of by-products and waste and biomass chemistry

biomass valorization
green chemistry   biorefinery
higher added value
resources optimization
waste fractioning
circular economy
reuse
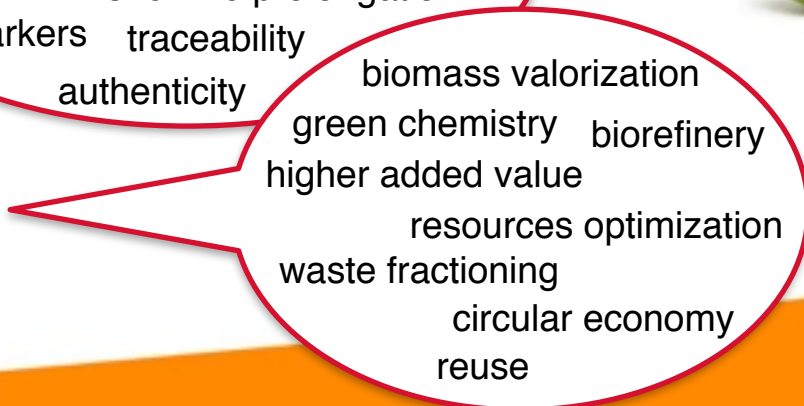
The Value Chain FoodQST

Strategic objectives:

1. Health and wellbeing throughout the entire life cycle; typical & traditional products enriched (e.g. celiacs); increase functional food components, optimizing agronomical practices; sensitive biomarkers;
2. Food safety; shelf life optimization, biological-chemical-physical risk assessment; alternatives to antibiotics (bacterial & vegetal), in animal feeding;
3. Production processes to improve food quality, sustainability & competitiveness; industrial transfer of non-thermal technologies
4. Machines and plants for the food industry; use of innovative construction materials, dedicated software; hygienic design;
5. ICT in the agri-food industry and technology transfer tools; Industry 4.0, traceability; management of food supply chain.

The Value Chain FoodQST

Materials:

a) innovative materials for packaging, biodegradable fibers and biomaterials;
b) ingredients with specific properties in formulation;
c) edible coatings;
d) materials for plants with improved diffusional, mechanical and optical properties of the components
e) biobased products to reduce environmental pathogenic load.

Interested subjects: manufacturers of polymers, plastic films, sensor manufacturers and parts made of composite material, of powders for additive manufacturing, of metal alloys.

The Value Chain FoodQST

Technologies:

a) conservation & transformation (frozen foods)

b) non-thermal technologies

c) advanced technologies ("omics", epigenetic, nutrigenetic and nutrigenomics approaches)

d) biomarkers

e) advanced packaging materials production technologies

f) shelf-life extension technologies

g) development of new fermented products with prebiotic and probiotic activities

h) cleaning and sanitizing phases of plants and environments

i) monitoring, simulation, automation and control during the processing phases, LEAN manufacturing

j) advanced machine building and assembly technologies and systems; advanced sensors

k) functionalization of surfaces of building materials for plant machinery

Interested subjects: food companies, ICT companies, sensor manufacturers, producers of packaging technologies & surface coatings, thermal/physical treatments

Some projects implemented by our members

Ecopacklab (UNIBO)

- Creation of a "network" pilot laboratory for the study and production of new active and eco-sustainable packaging with pre-industrial validation.
- Creation of new flexible active packaging for the food sector.
(UNIBO - CIRI AGRO)

EcoBioCAP (UNIBO)

- Ecoefficient Biodegradable Composite Advanced Packaging
- Providing customizable, ecoefficient, biodegradable packaging solutions with direct benefits both for the environment and EU consumers in terms of food quality and safety.
- using advanced composite structures based on constituents derived from food (oil, dairy, cereal and beer) industry by-products.
(UNIBO, Department of Civil, Chemical, Environmental, and Materials Engineering)

Thanks for your attention !!!

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