

Innovative Management of Animal Genetic Resources un puente hacia el 2020



X Congreso Ibérico de Recursos Genéticos Animales
Castelo Branco 15-17 Septiembre

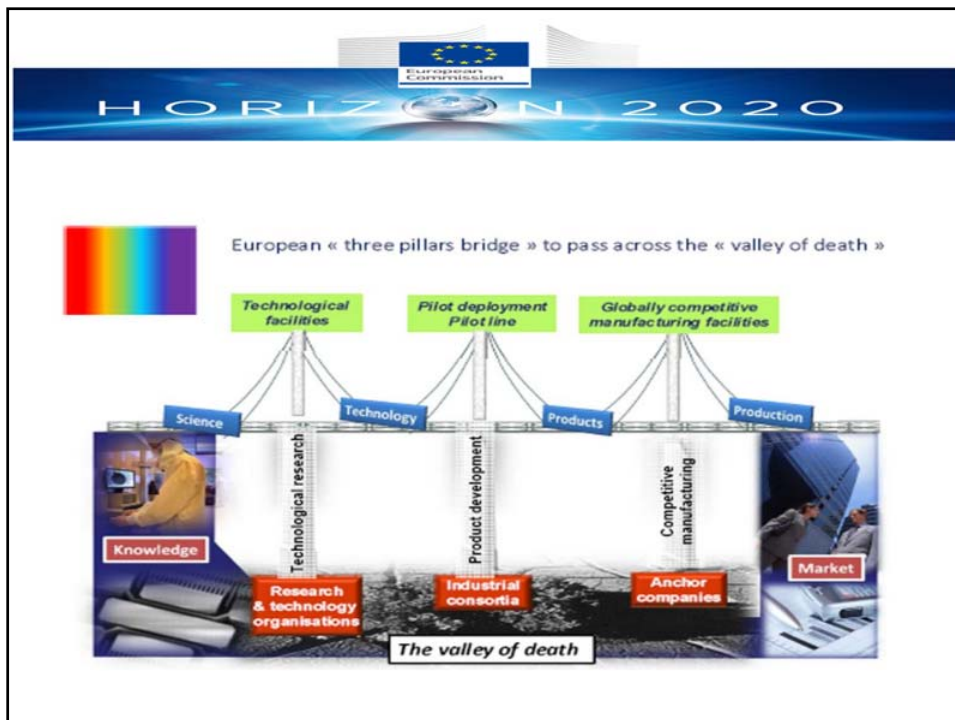
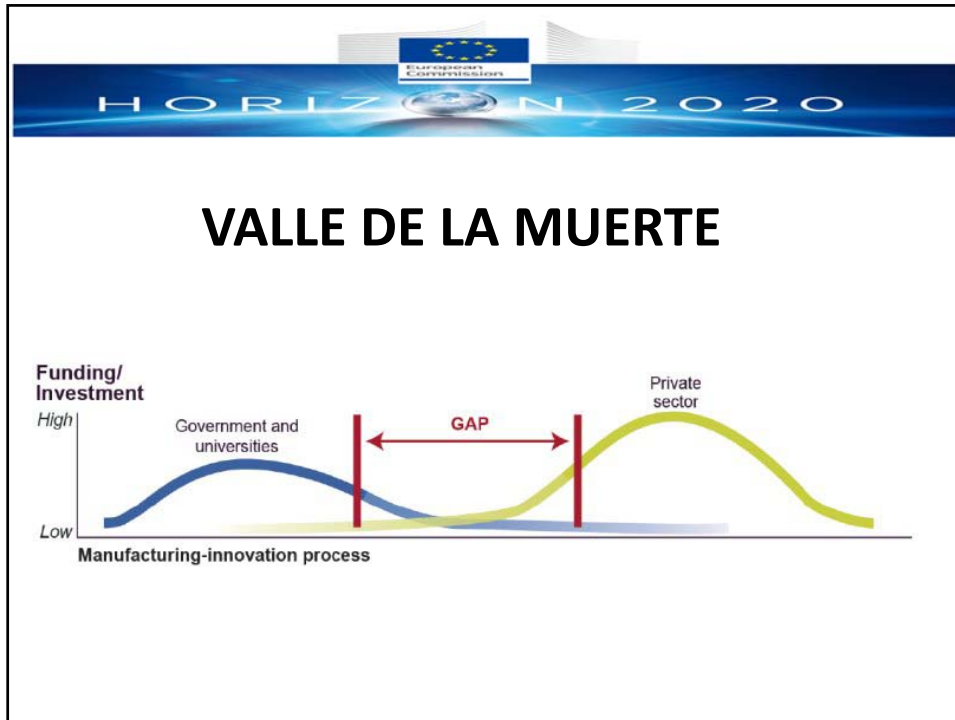
THE EU FRAMEWORK PROGRAMME
FOR RESEARCH AND INNOVATION

HORIZON 2020



EXCELLENT SCIENCE
COMPETITIVE INDUSTRIES
BETTER SOCIETY

Horizon 2020 is the biggest EU Research and Innovation programme ever with nearly €80 billion of funding available over 7 years (2014 to 2020) – in addition to the private investment that this money will attract. It promises more breakthroughs, discoveries and world-firsts by taking great ideas from the lab to the market.





Horizon 2020 sections

- Excellent Science
 - European Research Council
 - Future and Emerging Technologies
 - Marie Skłodowska-Curie actions
 - Research Infrastructures, including e-Infrastructures
- Industrial Leadership
 - Leadership in Enabling and Industrial Technologies
 - Nanotechnologies, Advanced Materials, Advanced Manufacturing and Processing and Biotechnologies

Agriculture and forestry

Agriculture and forestry have always had and maintain an important role for EU's society: they supply reliable, healthy and nutritious food as well as feed and non-food products for a wide range of industries, shape and take care of our landscapes, provide public goods, and keep the countryside alive by providing jobs. Research activities and policies will help to cope with the three main challenges these sectors are facing today: securing viable food production in face of a growing world food demand; ensuring sustainable management of natural resources and climate action; and finally to contribute to a balanced territorial development of the EU's rural areas and their communities.

Food Security, Sustainable Agriculture and Forestry, Marine, Maritime and Inland Water Research and the Bioeconomy

A transition is needed towards an optimal and renewable use of biological resources and towards sustainable primary production and processing systems. These systems will need to produce more food, fibre and other bio-based products with minimised risks, environmental impact, and greenhouse gas emissions, and with advanced ecosystem services, zero waste and adequate societal values.

Agriculture, forestry, fisheries and aquaculture, together with the bio-based industries, are integral parts of the European economy and society. Relying on the use of limited natural resources, these sectors produce and process biological resources to satisfy the demand of consumers and a wide range of industries for food, feed, bio-energy and bio-based products. With the enhanced Europe's performance and provide jobs and business opportunities essential for rural, coastal and marine areas. These sectors are also facing significant challenges which require actions based on research and innovation.

Bio-based industries

The transition from fossil-based European industries towards bio-based, resource efficient and sustainable ones is a major challenge. It entails the transformation of conventional industrial processes and products into environmentally friendly bio-based ones. The development of integrated biorefineries and the opening of new markets for bio-based products. Research and innovation will provide the means to reduce the current dependency on fossil resources and contribute to meeting the energy and climate change policy targets for 2050.

Investments in research and innovation under the societal challenge will support Europe in contributing to food security, climate protection and sustainability. It will also enable Europe to take leadership in the potential markets and add value in supporting the goals of the European Agricultural Policy, the European Bioeconomy Strategy, and more broadly of the Europe 2020 strategy and its flagship initiatives: Smart Growth and Research Efficient Europe.



H2020-EU.3.2. - SOCIETAL CHALLENGES - Food security, sustainable agriculture and forestry, marine, maritime and inland water research, and the bioeconomy

Innovative Management of Genetic Resources

From 2016-03-01 to 2020-02-29, ongoing project

Project details

Total cost: EUR 9 013 157,5	Topic(s): SFS-07b-2015 - Management and sustainable use of genetic resources
EU contribution: EUR 7 000 000	Call for proposal: H2020-SFS-2015-2 See other projects for this call
Coordinated in: France	Funding scheme: RIA - Research and Innovation action

Objective

This aim of IMAGE is to enhance the use of genetic collections and to upgrade animal gene bank management. IMAGE will better exploit DNA information and develop methodologies, biotechnologies, and bioinformatics for rationalising animal genetic resources. It will demonstrate the benefits brought by gene banks to the development of sustainable livestock systems by: enhancing the usefulness of genetic collections to allow the livestock sector to respond to environment and market changes; using I...

Coordinator

INSTITUT NATIONAL DE LA RECHERCHE AGRONOMIQUE France




IMAGE
Innovative **M**angement of **A**nimal **G**enetic Resources

Coordinadora: Dra. Michele Tixier-Boichard (INRA)
Marzo-2016-Marzo-2020






IMAGE
Innovative Management of
Animal Genetic Resources



El objetivo de las colecciones genéticas es la de mantener, conservar y evaluar los recursos genéticos y coordinar su disponibilidad, conservación y utilización; y proveer además información y acceso a la información genética sobre determinados genes o conjuntos de genes de interés.

Proportion of countries reporting conservation activities

Regions and subregions	Number of countries	In situ conservation programmes	Ex situ in vivo conservation programmes	Ex situ in vitro conservation programmes
		%		
Africa	40	70	48	30
East Africa	8	75	63	50
North and West Africa	20	65	40	20
Southern Africa	12	75	50	33
Asia	20	90	80	65
Central Asia	4	100	50	50
East Asia	4	100	100	100
South Asia	6	83	83	33
Southeast Asia	6	83	83	83
Southwest Pacific	7	71	29	14
Europe and the Caucasus	35	100	69	86
Latin America and the Caribbean	18	83	72	61
Caribbean	5	100	80	60
Central America	5	60	40	60
South America	8	88	88	63
North America	1	100	100	100
Near and Middle East	7	71	71	29
World	128	84	63	55

Note: Figures refer to the proportion of countries reporting conservation activities for at least one species.
Source: Country reports, 2014.



Breed coverage in conservation activities for the big five species – average scores

Conservation programmes	Species	Africa	Asia	Southwest Pacific	Europe and the Caucasus	Latin America and the Caribbean	North America	Near and Middle East	World
In situ conservation	Cattle (specialized dairy)	Red	Red	Red	Yellow	Yellow	Green	Red	Orange
	Cattle (specialized beef)	Red	Red	Red	Yellow	Yellow	Green	Red	Orange
	Cattle (multipurpose)	Red	Red	Red	Yellow	Yellow	Green	Red	Orange
	Sheep	Red	Red	Red	Yellow	Yellow	Green	Red	Orange
	Goats	Red	Red	Red	Yellow	Yellow	Green	Red	Orange
Ex situ in vivo conservation	Pigs	Red	Red	Red	Yellow	Yellow	Green	Red	Orange
	Chickens	Red	Red	Red	Yellow	Yellow	Green	Red	Orange
	Cattle (specialized dairy)	Red	Red	Red	Yellow	Yellow	Green	Red	Orange
	Cattle (specialized beef)	Red	Red	Red	Yellow	Yellow	Green	Red	Orange
	Cattle (multipurpose)	Red	Red	Red	Yellow	Yellow	Green	Red	Orange
Ex situ in vitro conservation	Sheep	Red	Red	Red	Yellow	Yellow	Green	Red	Orange
	Goats	Red	Red	Red	Yellow	Yellow	Green	Red	Orange
	Pigs	Red	Red	Red	Yellow	Yellow	Green	Red	Orange
	Chickens	Red	Red	Red	Yellow	Yellow	Green	Red	Orange
	Cattle (specialized dairy)	Red	Red	Red	Yellow	Yellow	Green	Red	Orange

Note: Scores provided by countries were converted into numerical values (none = 0; low = 1; medium = 2; high = 3). The colours indicate average scores for the countries of the respective region, as shown in the legend (border values assigned to the higher category).
Source: Country reports, 2014.



Jornada sobre la conservación ex situ de los recursos genéticos animales en España.

17 de Junio de 2015

SITUACIÓN DE LAS RAZAS AUTÓCTONAS EN RELACIÓN A LA CONSTITUCIÓN DE BANCOS DE GERMOPLASMA

■ Razas sin Asociación
■ Razas sin Banco de Germoplasma
■ Razas de las que no se ha recibido cuestionario
■ Razas con Banco de Germoplasma

ESTADO	RAZAS CONSERVADAS
FRANCIA	162
España (DATOS ARCA 2014 TOTAL RAZAS CATALUÑAS)	126
REINO UNIDO	126
HOLANDA	101
ALEMANIA	80
España (SITUACION BANCOS DE GERMOPLASMA) 2012	79
AUSTRIA	51
España (INGA) 2014	38
BULGARIA	36
PORTUGAL	31
UCRANIA	30
HUNGRIA	21
NORUEGA	19
DINAMARCA	13
LITUANIA	9
POLONIA	9
ESLOVENIA	9
ESPAÑA (INGA) 2012	8
FINLANDIA	7
SUECIA	7
LETONIA	6
ALBANIA	3
BÉLGICA	3

Jornada sobre la conservación ex situ de los recursos genéticos animales en España.

17 de Junio de 2015

F.A.O.

MARCO ACTUAL

- Estrategia y Plan de acción mundial para los recursos zoogenéticos
- Declaración de Interlaken sobre los recursos Zoogenéticos

RFP EUROPE

CONVENIO Diversidad Biológica

U.E. (European Union)

Garantizar homogeneidad en calidad genética y evitar restricciones comerciales por motivos zootécnicos: **objetivos más comerciales que conservacionistas**

AYUDAS

CCAA NACIONAL (Autonomous Communities and National)

DADIS EFABIS ARCA



OBJETIVOS

- 1) Mejorar la utilidad de las colecciones genéticas para permitir al sector ganadero responder a desafíos ambientales y posibles cambios de mercado;
- 2) Minimizar accidentes genéticos como anomalías o alteraciones graves de la variabilidad genética;
- 3) Optimizar la complementariedad entre conservación *ex-situ* e *in-situ* para maximizar los recursos del futuro;
- 4) Hacer uso de los últimos avances en tecnología del ADN y de fisiología reproductiva para recoger, almacenar y usar recursos biológicos.



Terceros países:

Egipto
Colombia
Marruecos
Argentina

SME

Parco Tecnologico Padano (IT)
INRA Transfert (FR)
Institut de l'élevage (FR)
Lohmann Tierzucht (DE)

Asociaciones:

EFFAB (NL)
NordGen (SE)
SAFE (SW)

Organizaciones Internacionales:

FAO (IT)



RESPUESTAS CIENTÍFICO

Diversidad

Razas ganaderas predominantes a nivel mundial

Resiliencia en poblaciones autóctonas

Bancos de genes - Historia de las poblaciones autóctonas

Eficiencia Reproductiva

Genómicas – Germoplasmas – Programas de Mejora



RESPUESTAS TECNOLÓGICO

- Diseñar, desarrollar, analiza o implementar:

Armonización del manejo de los bancos de genes y racionalizar las colecciones existentes de materiales reproductivos y biológicos

Biotecnologías de conservación y reproductivas

Portal centralizado de los bancos de germoplasma y colecciones genómicas



RESPUESTAS APLICADO

- Diseñar, desarrollar y analizar métodos y herramientas para los actores finales:

- Restaurar la diversidad genéticas en ganadería
- Trazabilidad de productos de razas
- Mejora de razas que se exploten en ambientes limitantes
- Satisfacer las nuevas demandas del consumidor
- Facilitar la conservación en razas autóctonas
- Desarrollar regulaciones que permitan el Access and Benefit Sharing (ABS)



WORKPACKAGES

- WP1 Multi actor participation and knowledge exchange**
- WP2 Enhancing gene bank functioning to improve quality and access transparency**
- WP3 Improving reproductive technologies for gene banking**
- WP4 Innovative genomic characterisation for better evaluation of genetic collections**
- WP5 Information system for data integration and data sharing**
- WP6 Sustainable and innovative use of genetic collections**
- WP7 Outreach**



IMPACTO

“Enhanced quality and scope of European ex-situ collections and in-situ collections/on-farm management”

“Enhanced methodologies for management, conservation, characterisation and evaluation of genetic resources”

“Increased transfer of genetic material into breeding programmes, farming or forest practices, i.e. identification of useful traits (variation) in collections”

“Increased awareness on the value of genetic resources, engagement of end-users and contribution to implementation of international commitments in the area”

“More extensive use of genetic resources in agriculture and forestry”

“Overall contribution to food security by supporting innovations in breeding and farming”



IMPACTO – CAPACIDAD DE INNOVACIÓN

Sector ganadero:

Desaparición de razas
Consanguinidad
Anomalías genéticas
Resiliencia



Sector Alimentación

Sector Biotecnológico:

Reproducción
Genómica

Análisis

Sociedad

PROGRESO	INNOVACIÓN
<p>Análisis Recursos Genéticos Animales</p> <p>Predicción capacidad reproductiva de los bancos de germoplasma</p> <p>Armonización del manejo de los bancos de genes</p>	<p>Técnicas reproductivas</p> <p>Manejo de datos</p> <p>Análisis de costes de los bancos de genes</p>

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