Joint Research Centre (JRC)

Upcoming challenges:
GMO analysis in a Bio-economy context

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The (well) functioning of the (internal) **market** depends upon a (regulatory) international framework that allows for standardisation and connected quality assurance.

Labelling for GMOs: a historical perspective

Between 1992 and 1998, the EU approved 18 GMOs under the environmental Directive. Labelling was required but validated detection methods were not required or foreseen and no thresholds existed.

No sequence information deposited/available
No reference material

Labelling for GMOs: a historical perspective

In 1997 Commission Regulation (EC) no. 258/97 (Novel Foods) sets the labelling provisions for GM Food "in order to ensure that the necessary information is available to the consumer".

No sequence information deposited/available
No reference material

2003: Full traceability and labelling provisions

In 2003, the EC issued Regulation (1829/03) covering GM Food and Feed:

(1) Strict provisions for traceability and labelling of genetically modified organisms and the traceability of food and feed products produced from genetically modified organisms;

(2) Requirements upon the developers to provide:
- DNA based detection methodology;
- Certified Reference Materials.

(3) Information relating to the methods for detection, sampling and identification shall not be subject to confidentiality.

Community Reference Laboratory

Legislation (EC) 1829/2003:

The Community reference laboratory is the Commission's Joint Research Centre.

For the tasks outlined in this Annex, the Commission's Joint Research Centre shall be assisted by a consortium of national reference laboratories, which will be referred to as the '**European Network of GMO laboratories'**.

EURL – NRL: the instrument for internal market control

National Reference Laboratories implement the official controls and must:

- work in accordance with **internationally approved** *performance standards and thus,*
- use methods of analysis that havebeen validated.

Controlling Authorities

Uniformity and Quality of Analytical Results

European Union Reference Laboratories:

- Ensure **validated methods** are available;
- Ensure **reference materials** are available;
- Organise **comparative testing**;
- Organise **training**;
- Do **not exercise controls** but may intervene in cases of dispute.

Conclusions - Outlook

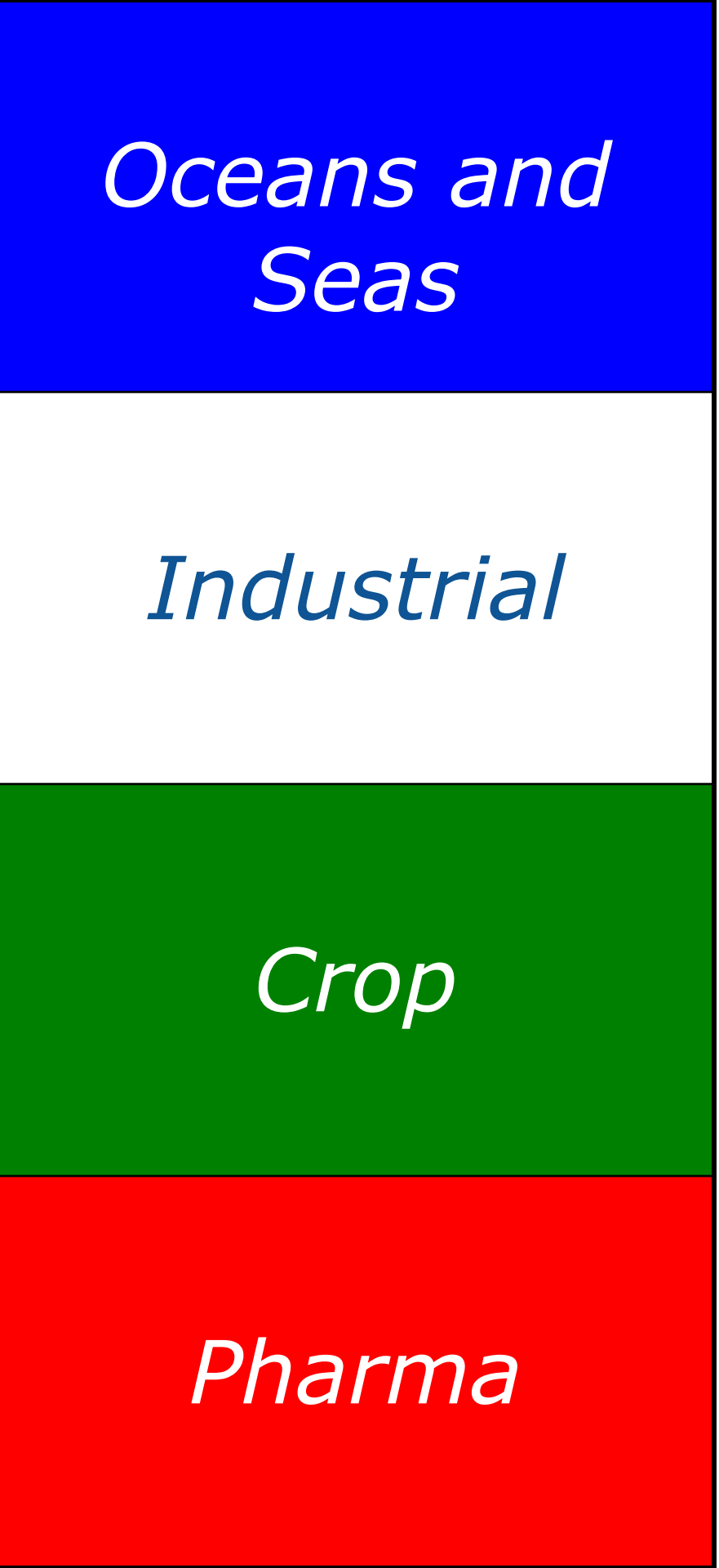
The JRC has built up a globally recognised expertise in DNA-based diagnostics;

Setting up a network of highly specialised national laboratories could become necessary to organise regulatory oversight in certain parts of the developing bioeconomy as well as in the domain of public health;

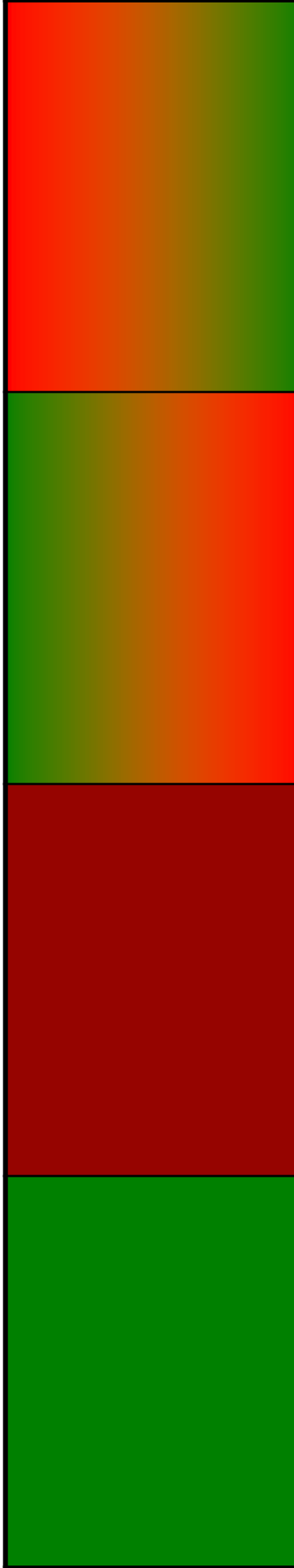
The expertise of the JRC can be readily applied to other domains, e.g. microbial food safety, determination of food origin (fraude), genetic testing for rare diseases etc.

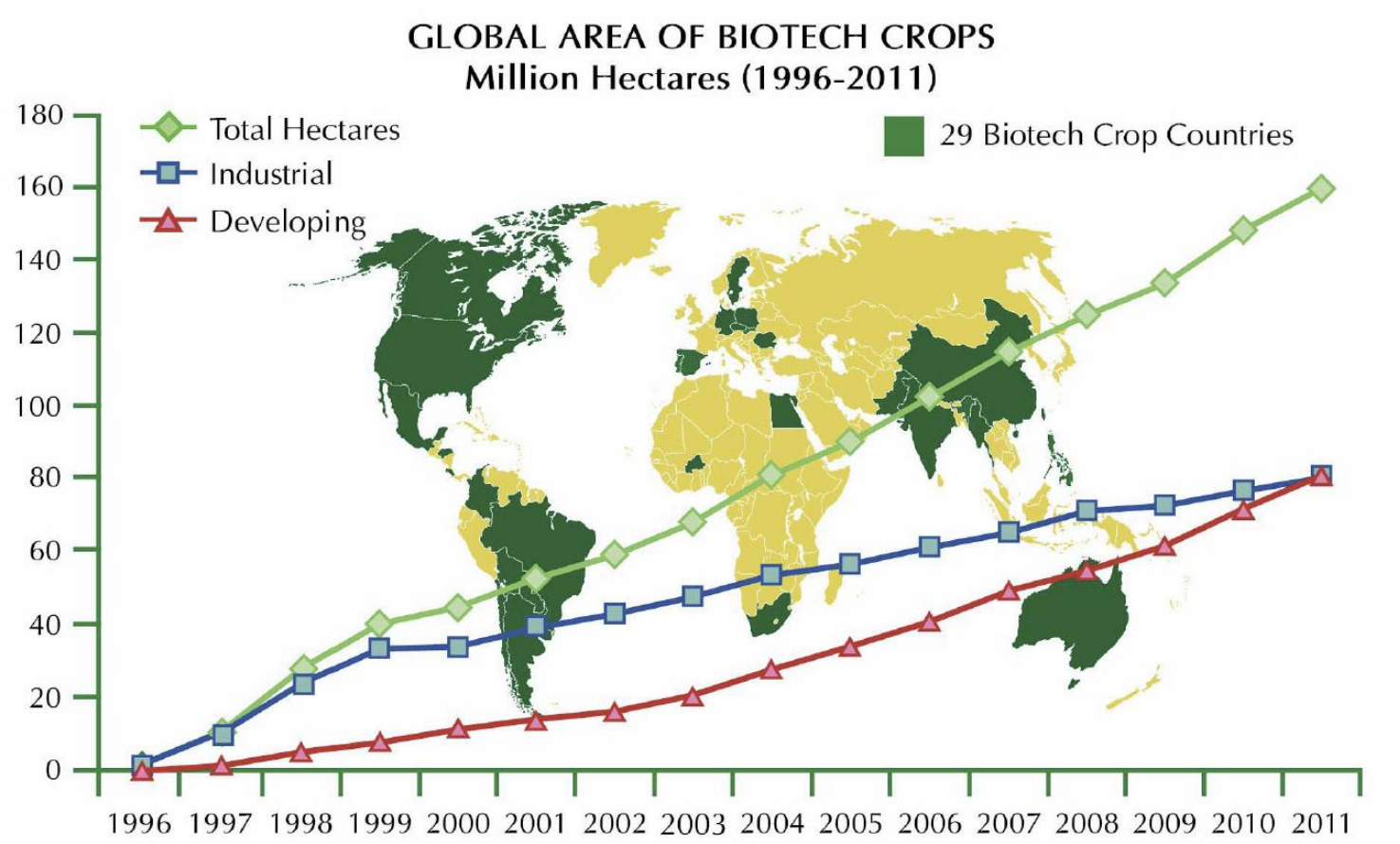
(JRC evaluation: Impact Analysis of the Joint Research Centre's activities for the regulation of GMOs in the European Union)

Public opinion about any new technology plays a critical role in determining whether the innovation fails or succeeds.



Public Acceptance:





Source: Clive James, 2011.

	Worldwide		EU	
	1	n	1	n
1992	1	0	0	0
1993	0	0	0	0
1994	12	0	1	0
1995	15	0	0	0
1996	19	0	3	0
1997	8	0	4	0
1998	13	0	6	0
1999	3	0	0	0
2000	1	0	0	0
2001	3	1	0	0
2002	4	2	0	0
2003	6	2	0	0
2004	9	5	0	0
2005	3	7	1	5
2006	5	3	7	0
2007	6	3	0	2
2008	5	2	2	0
2009	2	3	3	1
2010	3	1	4	0
2011	0	0	1	0
2012	0	2	0	0
	118	31	32	8

European Commission

	US	EUROPE
maize	14	14
cotton	8	6
potato	0	1
rice	1	0
soybean	4	3

products approved 2003-2012

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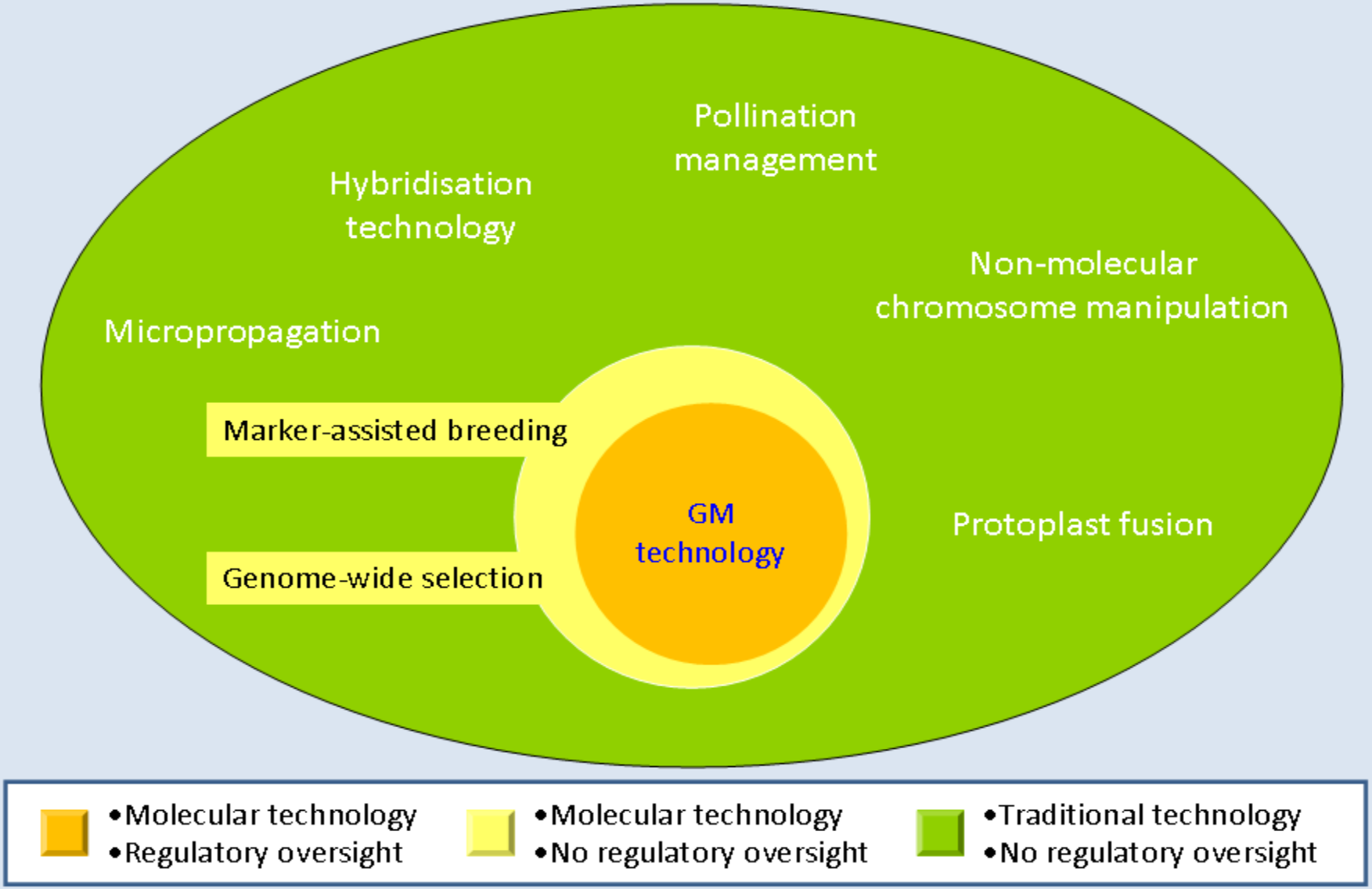
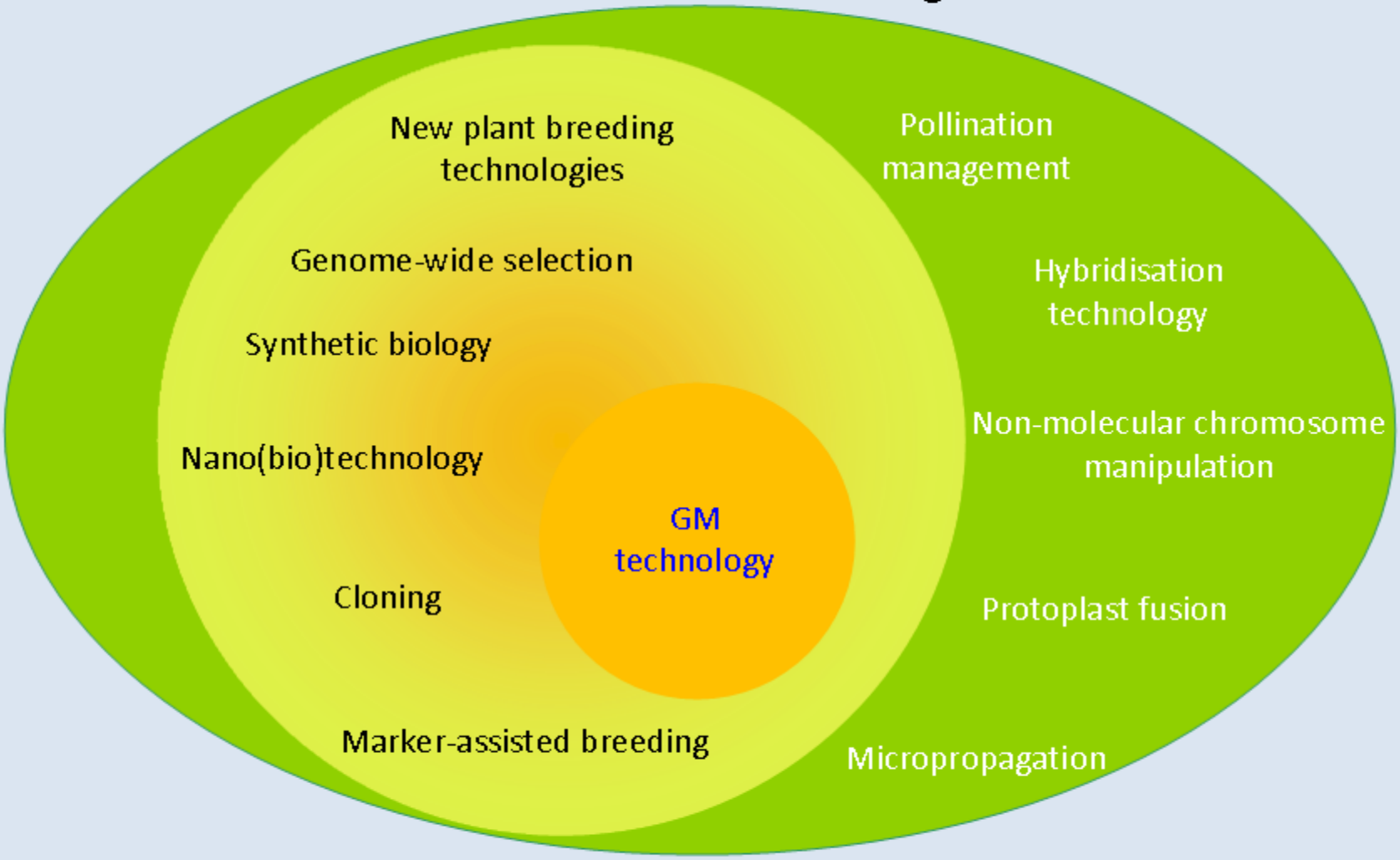
Agro-food crop technology landscape ~2000
GMO: major new technology



Agro-food crop technology landscape 2012 +
The rise of new technologies



The Bio-Economy: new frame of thinking

European Commission

BIO-BASED ECONOMY

IN THE MEMBER STATES
AND ASSOCIATED COUNTRIES

OECD

GROWING THE
BIOECONOMY

IN EUROPE

IN THE WORLD

Policy Context

European Commission

The Bioeconomy: An EU priority

EU 2020 Strategy:

Smart growth

Sustainable Growth

Inclusive Growth

Building a sustainable Bioeconomy for Europe

Innovation Union: Turning innovative ideas into products and processes for growth and job creation.

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EU Bioeconomy Strategy

European Commission

STRATEGY

TACKLING SOCIETAL CHALLENGES
- Ensuring food security
- Managing natural resources sustainably
- Reducing dependence on non-renewable resources
- Mitigating and adapting to climate change
- Creating jobs and maintaining European competitiveness

DEVELOPING A BIOECONOMY
- Coherent policy
- Investment in knowledge, innovation and skills
- Participative governance and informed dialogue with society
- New infrastructures and instruments

ACTION PLAN

INVESTMENTS IN RESEARCH, INNOVATION AND SKILLS ↔ REINFORCED POLICY INTERACTION AND STAKEHOLDER ENGAGEMENT ↔ ENHANCEMENT OF MARKETS AND COMPETITIVENESS IN BIOECONOMY SECTORS

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What lessons can we learn?

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