COST Action - Towards zer0 Pesticide AGRIculture

WG1. Identify research gaps and needs

Prof. dr. Mugurel JITEA
University of Agricultural Sciences and Veterinary Medicine
Cluj-Napoca, Romania

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WG1. Identify research gaps and needs

Objective:

- identify research gaps, barriers and opportunities that end-users face in pesticides reduction in small grains and viticulture;

❖ **Task 1.1 Analyze research gaps and needs based on an innovative multi-actor approach:**

Concept-knowledge (C-K) workshops using a common methodology.

❖ **Task 1.2 Analyze research gaps and needs based on literature review**:

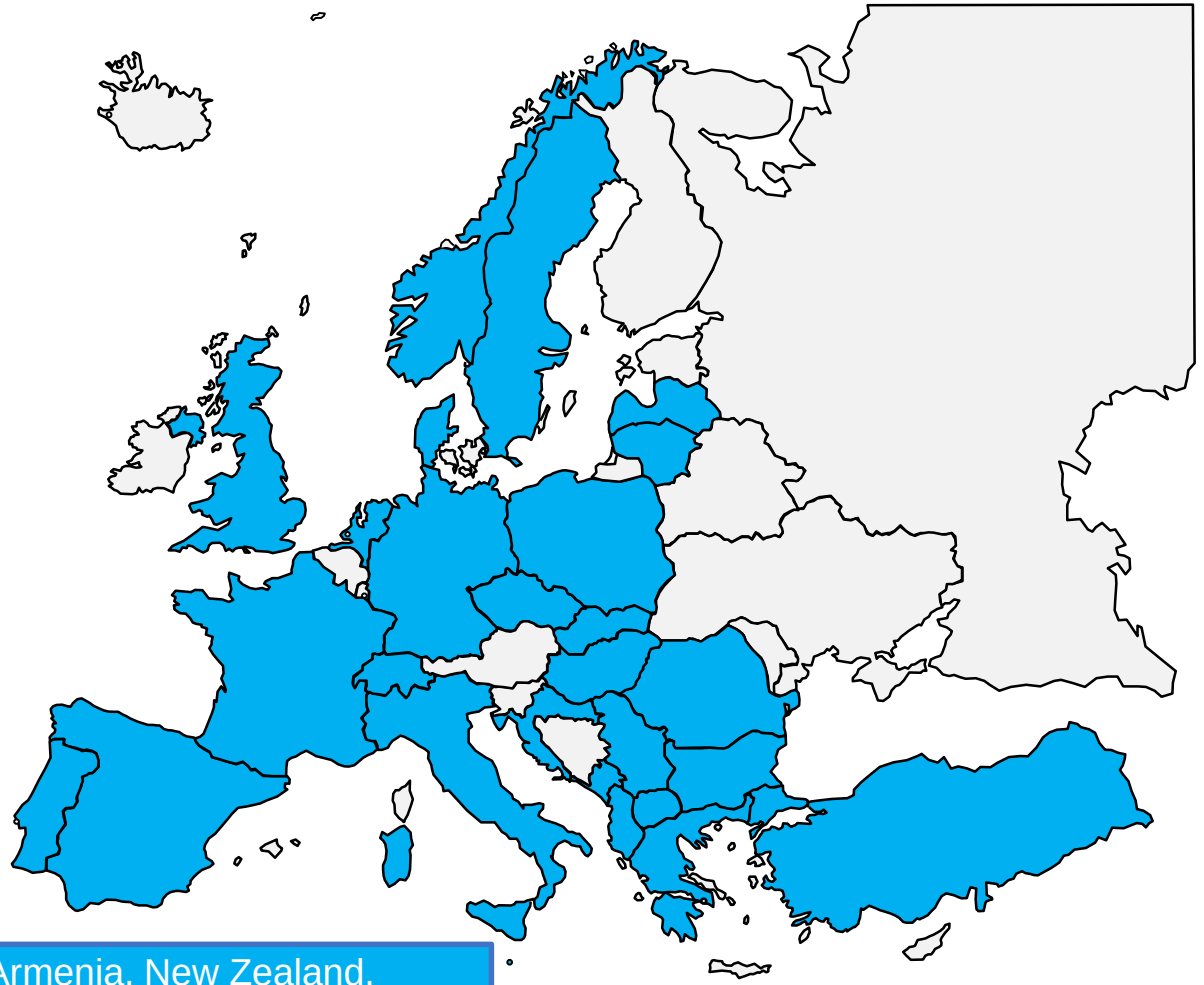
Review of the scientific publications.

Concept-knowledge (C-K) workshops

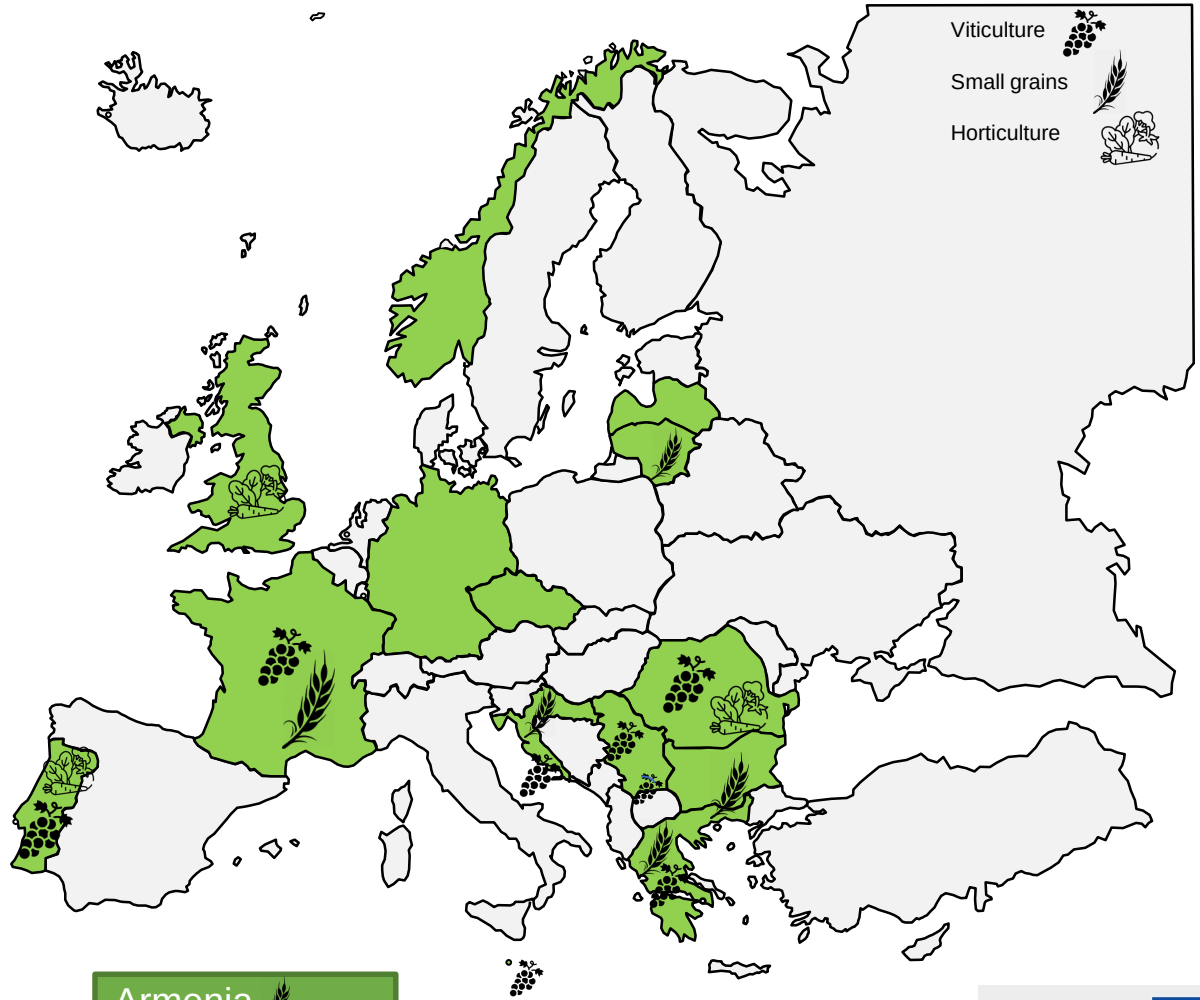
WG 1 member countries

From 34 partner countries, 17 expressed the intention to organize national Concept-Knowledge workshop.

WG 1 C-K workshops



Armenia, New Zealand, Chile, Mexico, Israel, Benin



Armenia
New Zealand

Concept-knowledge (C-K) workshops

14 reports

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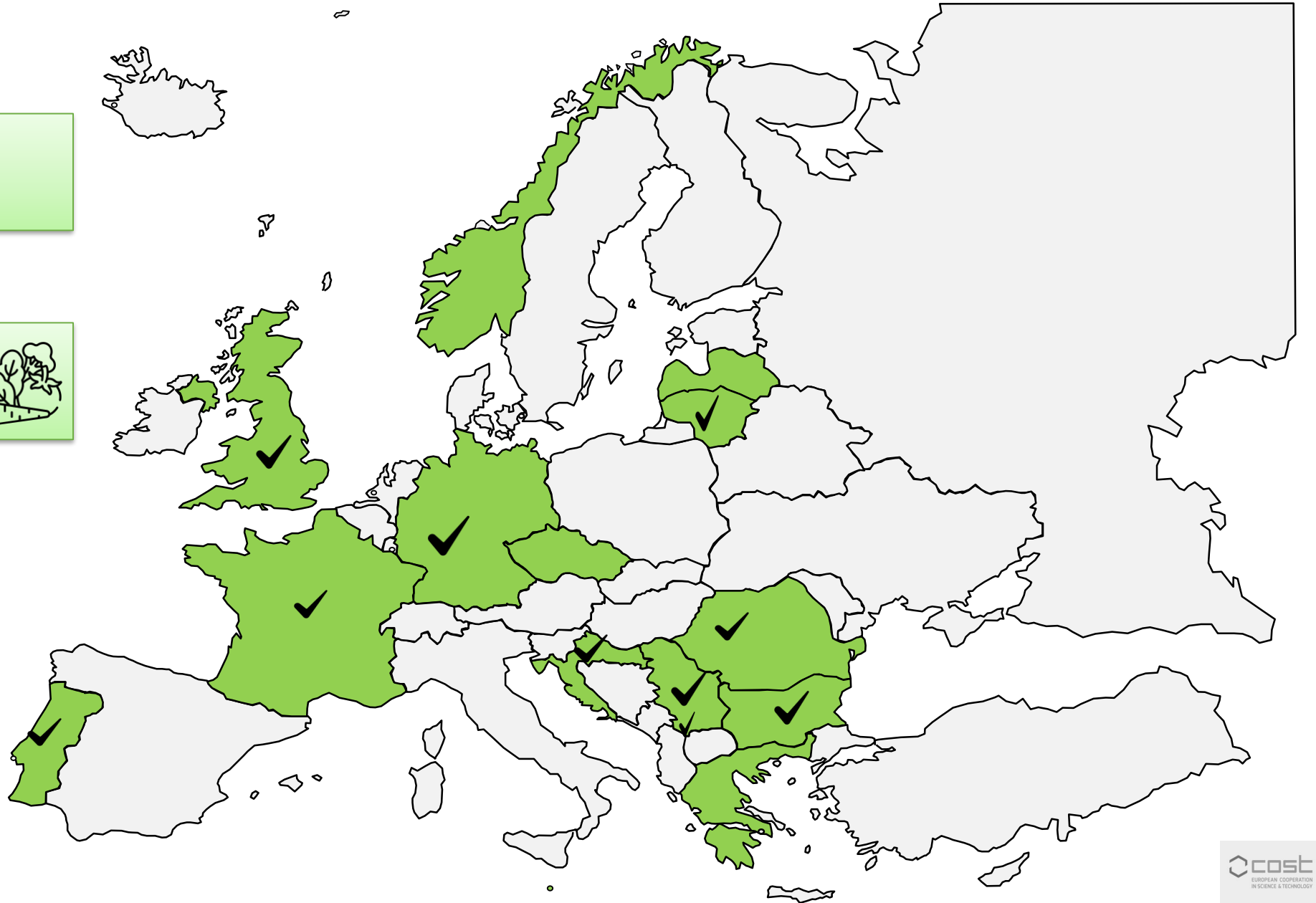

Armenia ✓
New Zealand

Concept-knowledge (C-K) workshops

No.	State	Region	Location	Number of participants	Agricultural sector
1	France	Nouvelle-Aquitaine	Face to face	49	Viticulture
2	Serbia	National	Online	12	Viticulture
3	Romania	Transylvania	Online	12	Viticulture
4	Croatia	National	Face to face	20	Viticulture
5	Kosovo	National	Face to face	N/A	Viticulture
6	Germany	National	Online	13	Viticulture
7	Portugal	North and Centre	Online	9	Viticulture
		South	Online	9	Viticulture
8	Armenia	Yerevan	Face to face	10	Small grains
9	Lithuania	Baltic	Face to face	133	Small grains (Cereals, Brassiceae, Fabaceous)
10	Croatia	National	Face to face	15	Small grains
11	Bulgaria	Sofia	Face to face	20	Small grains
12	Portugal	National	Online	14	Horticulture (Vegetable)
13	UK	National	Online	8	Horticulture (Strawberry)

Concept-knowledge (C-K) workshops:

Technological

NEEDS:

- Better describe and understand the role of the microbiota in production quality (All);
- Better understand/research plant immunity (All);
- Develop/promote alternative agroecological practices (All);
- Systematic data on the impact of microbiota on soil and crop condition, health and disease and pest control (LI, AR, BG);
- Develop productive varieties with higher systemic resistance (All);
- Update of Integrated Plant Protection Guidelines (BG);

BARRIERS:

-Lack in demonstrating the efficiency of biostimulants/alternative solutions – cost/benefit (All);

-Farmer scepticism (All);

-Lack of appropriate solutions/ available resources for farmers (All);

-Enhanced microbiota supply by wine producers and consumers (FR, RO, PT, CR);

-Investment costs in precision farming and mechanical tools (All);

-Develop energy sustainable monitoring sensors (FR);

-Lack of knowledge and agrotechnologies for multi cropping, multifunctional crops;

-Strong influence& resistance to change for the input companies (UK);

EXEMPLES:

- VITAE project (FR)
- BIOVINE project (FR)
- HOLOVITI project (FR)
- Benoit Vinet, Viticulteur Domaine Emile Grelier / Gironde (FR)
- Jelna Winery (RO)

Concept-knowledge (C-K) workshops

Social/market

NEEDS:

- develop educational & training resources on alternative systems and practices (All);
- training for advisory services (All);
- educate producers, policy makers and consumers about the negative effects of pesticides on human health & environment (All);
- need to adapt the didactic curricula to zero pesticides alternative approaches (FR);
- quality schemes which are promoting pesticides free production and pesticides free products (All);
- appropriate producers' organizations (All); alternative public policies (RO, BG);

BARRIERS:

-lack of knowledge for producers and consumers (All)

-Agricultural Knowledge and Information System (AKIS);

- insufficient sharing of knowledge and innovations (All);

-low market drivers;

-confusion between zero-pesticide and organic (FR, RO, CR);

-consumer reluctance to change consumer habits, lack of awareness campaigns (All);

-limited resources for employing professionals in the advisory service (CR);

-low governmental support towards this kind of production (except some subsidies for organic agriculture) (SB, RO);

EXEMPLES:

- AgroSustentável, ADVID, SOGRAPE (PT)
- F.R.I.S. Fränkisches Rebschutz Informations System in Franconia, "Vitimonitoring" by Bavarian State Institute for Viticulture and Horticulture (DE)
- "Free from pesticides residues" - standard and a Guarantee mark" Permaculture Association of Serbia.

Concept-knowledge (C-K) workshops

Regulation

NEEDS:

- clear policy objectives (All);
- review/adapt the process of registration and the use of pesticides (All);
- appropriate regulatory framework for ecosystem services of pest control (RO)

BARRIERS:

- regulators do not communicate directly with farmers, there is a lack of understanding of the requirements (All);
- conflict of interest within regulatory organizations and their connections with phytosanitary industry (SB);
- mandatory requirements are different comparing the EU products and non-EU products – unfair competition (FR, RO);
- EU biopesticides registration consider to be too expensive and taking a tot of time (All);
- lack of knowledge and poor connections between the scientific community and farmers community (CR, RO)

Literature review: search terms

Technological

“microbiota” “chemical ecology” “plant immunity” “ecological immunology” “immune responses” “plant stimulation” “plant defences” “plant nutrition” “rotation” “diversification” “spatial arrangement” “precision farming” “organic farming” “organic products” “organic production” “organic certification”	AND	“crop” “viticulture” “need” “obstacle” “barrier”

Social-market

“consumer behavior” “value chain” “farmers education”	AND	“crop” “viticulture” “need” “obstacle” “barrier”

Regulation

“policy” “quality system”	AND	“crop” “viticulture” “need*” “obstacle*” “barrier*”

Literature review

- later than 2009 (EU directive 2009/128/EC);
- Google, Google Scholar, Web of Knowledge, Scopus, ScienceDirect;

Literature review

Technological

NEEDS:	BARRIERS:
- Applied knowledge on agroecological techniques; - Supply farmers with improved varieties; - Understand the significance of the plant beneficial microbiome in terms of ecology and function; - Studies that determine how edible termite species interact with environment in other agroecological zones - Farmers' main need is for varieties that have drought tolerance or low irrigation requirements. - Appropriate experimental designs to address the problem of assessing responses to mixtures of semiochemicals in chemical ecology;	- Difficulties to obtain a marketing authorization for agroecological inputs (input-firms); - Lack of inputs for agroecological techniques; - Dependence of farmers on traditional seeds; - Low acceptance of GE (Genome Editing); - Lack of information regarding the effectiveness of different pesticides and the effect on human health; - Lack of equipment; - Poor organization of the farmers and poor market information - Little knowledge about plant immunity (farmers)

Literature review

Social-market

NEEDS:

- Foster change of consumer habits;
- Foster participation of farmers in peer-exchange groups on agroecological management of soil health;
- Theoretical basis for the development of novel agricultural antibiotics and their judicious and safe application;
- Better market organization;
- Providing schemes to help regions adopt sustainable processes;
- Developing performance measures and monitoring frameworks to facilitate adoption and benchmark progress.
- Consumers education;

BARRIERS:

- Limited markets;
- Lack of information of the farmers;
- Wholesalers and retailers had many restrictive demands;
- Little information on the inputs available for agroecological practices;
- Consumer reluctance to change their habits, lack of awareness campaigns;

Literature review

Regulation

NEEDS

- **Adapt EU regulation on agricultural input approval to agroecological inputs and techniques;**
- **Need for international harmonization of both regulatory frameworks for GE crops and governance of advanced breeding techniques to prevent widespread disruptions in international trade of livestock feedstuffs in the future;**
- **Promoting and recognizing products that meet quality (certification) standards, but their effectiveness may depend on factors such as consumer awareness and trust in the certification process;**
- **Adaptation of standards and labelling;**
- **Need for regulating ecosystem service of pest control**

BARRIERS:

- **Inadequate regulatory frameworks or incentives to promote sustainable and integrated pest management strategies**

Next steps:

1. Concept-knowledge (C-K) workshops (**mid of June**):
   - **Expected reports:**
     Small grains: Cech Republic; Greece; France; New Zeeland;
     Viticulture: Greece; Malta;
     Other ? Portugal; Norway; Latvia.
   - **EU C-K workshop:**
     Cluj-Napoca- 11 – 12 September 2023.

2. Literature review (initial proposal **mid of June**)
3. WG 1 Report - **end of November**;
4. Publications