
**Proposal for a CEN Workshop
on "Guidelines for
characterization of extracts for
the recycling/upcycling of
organic agrifood wastes"**

1 Proposal Form for the Workshop proposer

Details of the Workshop proposer:

Name: José Manuel de la Torre Ramírez
Organization: AGRO2CIRCULAR Project (European Union's Horizon 2020 research and innovation programme under grant agreement No. 101036838)
Postal address: Camino de Jayena, 82. 18620. Alhendín (Granada). Spain.
Email: josemanuel.delatorre@dmcrc.com
Phone: +34655779320
Webpage: <https://www.domca.com/>

Already known partners:

DMC RESEARCH CENTER SL
CENTRO TÉCNOLÓGICO DEL CALZADO Y DEL PLÁSTICO
CENTRO TECNOLÓGICO NACIONAL DE LA CONSERVA
AGROTRANSFORMADOS S.A.
LABORATORIOS ALMOND S.L.
PROEXPORT-ASSOCIATION OF PRODUCERS AND EXPORTERS FROM REGION OF MURCIA
CITROMIL SL
SAIREM
EXPERIMENTAL STATION FOR THE FOOD PRESERVATION INDUSTRY
FUNDACIÓN CLUSTER AGROALIMENTARIO DE LA REGION DE MURCIA
FUNDACIÓN PRIMAFRÍO
CETEC BIOTECHNOLOGY SL

Title of the proposed Workshop:

Guidelines for characterization of extracts for the recycling/upcycling of organic agrifood wastes

Background/Objectives:

- Motivation for the creation of this Workshop

This workshop is motivated by the currently ongoing Horizon 2020 AGRO2CIRCULAR project (TERRITORIAL CIRCULAR SYSTEMIC SOLUTION FOR THE UPCYCLING OF RESIDUES FROM THE AGRIFOOD SECTOR), whose general objective is the implementation of the first territorial systemic solution for the upcycling of most relevant residues in the agrifood sector (fruits&vegetables and plastic multilayers) into high added value products, powered by a digital tool and constructed upon a systemic approach with high replicable/scalable potential. Specifically, the fruits & vegetables are the group of major contribution to food waste along the food supply chain rising up to > 40% of waste, and are as excellent source of natural bioactives. However, these fruits & vegetables wastes are not exploited. Agro2Circular project works for valorising them by green routes to obtain these bioactives for the production of nutraceuticals, functional foods, and cosmetics.

The creation of this CEN Workshop was identified by the project consortium as a very useful way for the translation of its results to marketable solutions. This initiative aligns the Agro2Circular project with Commission Recommendation (EU) 2023/498 "Code of Practice on standardisation in the European Research Area" and Council Recommendation (EU) 2022/2415 "Guiding principles for knowledge valorisation".

This workshop will be used for the dissemination of the project and its results reaching stakeholders on national, European and international level. Agro2Circular will lead the development of a CWA closely connected to project objectives and the developed technologies and processes in order to bring these closer to the market and to spread technological advances.

- Market environment

The European Commission's policy advocates increasing the recovery of organic waste, reducing the volume of by-products that end up in landfills or incineration, with the consequent reduction of greenhouse gas emissions. Enhancing the recovery of organic by-products is also in line with EU policies of green transition and circular economy.

A wide array of studies has demonstrated the potential of different extracts from agri-food wastes for the enrichment of food formulations as natural alternatives to synthetic additives.

Conventional synthetic food additives	Alternative natural extracts	Wastes
Thickening, texturizing, gelling, & stabilizing agents- Hydrocolloids, phosphates	Dietary fiber, pectin, agar	Fruit (olive, grape, pineapple, citrus, apple, pear), vegetable, algae
Colorants- Erythrosine (red), cantaxanthin (orange), amaranth (azoic red), tartrazine (azoic yellow), and annatto bixine (yellow orange)	Carotenoids: β -carotene, astaxanthin, canthaxanthin, zeaxanthin.	Tomato, paprika, and algae, berries, citrus peels
Emulsifiers- polysaccharides (gum arabic), phospholipids (lecithins)	Okara protein	Soy
Antioxidants- Butylated hydroxy anisole, butylated hydroxytoluene, ethoxyquin, tert-butylhydroquinone, propyl gallate	Phenolic substances	Fruits, vegetables
Preservatives- Nitrates (E240-E259) and nitrites (E249-E250)	Enzymes, bacteriocins, fungicides, salts, essential oils	Fruit peels and seeds

Furthermore, natural compounds may also be regarded as nutraceutical ingredients for products with enhanced nutritional value, health benefits, and longer shelf-life, highlighting phenolics compounds and carotenoids (high antioxidant potential), and dietary fibers (digestive properties). Moreover, some agrifood wastes extracts have been demonstrated for their cosmetic activity (carotenoids from pineapple) or already employed in cosmetic formulations (such as commercially available lycopene from tomato extraction or essential oils from citrus). But many others could be proposed for further applications, where less effective & more expensive products are currently being used.

Organic solvent extraction is the conventional method to recover bioactives from vegetal matrix including agrifood wastes, however it has important problems: low selective yield (many other molecules co-extracted with the target ones), environmental unsustainability. To overcome the problems alternative green extraction processes are emerging.

The suitability of the extracts obtained from the agrifood wastes to be valorised into different products depends on the raw material and the extraction routes of the bioactive compounds. However, standardized methods or guidelines to characterize and evaluate the extracts do not exist so far. The development of these guidelines will facilitate to systematically compare results across extraction technologies and different raw materials and will allow the end-users of the extracts to evaluate their suitability for the specific final products. This CEN workshop can strongly support the transfer to the market of the new technologies and methods implemented by the Agro2Circular for the valorization of the agrifood wastes.

Scope of the proposed Workshop (planned area of application):

The planned document specifies the methodologies for the analysis of aqueous natural antioxidant extracts obtained from wastes and by-products of the agri-food industry. These methodologies encompass the determination of total polyphenols content, total flavonoid content and antioxidant activity assessment through colorimetric assays employing various techniques. The method for quantifying total polyphenol content involves the use of the Folin-Ciocalteu reagent, while the total flavonoid content is determined using the aluminium chloride method. Multiple methods for evaluating antioxidant activity are described, including ABTS, DPPH, and FRAP assays.

The planned document is applicable to aqueous extracts obtained from agri-food waste and by-products, specifically those originating from vegetables and fruits. Depending on the specific matrix and composition of the extract, it may be necessary to employ different methods for characterizing these extracts.

Are the following aspects potentially affected?

	YES	NO
Safety matters	<input type="checkbox"/> ¹	<input checked="" type="checkbox"/>
Management system aspects	<input type="checkbox"/> ²	<input checked="" type="checkbox"/>
Conformity assessment aspects	<input type="checkbox"/> ³	<input checked="" type="checkbox"/>

¹ For CEN: The CEN/CENELEC Workshop proposal shall be submitted to CEN/BT for decision. For CENELEC: Work on the proposed CEN/CENELEC Workshop shall not be initiated.

² The CEN/CENELEC Workshop proposal shall be submitted to the CEN/CENELEC BT(s) for decision.

³ CEN/CENELEC Internal Regulations - Part 3, 33 applies.

Security matters

⁴

<Add information/explanations to the points marked yes">

Theme related standardization Technical Bodies, standards or regulations, if applicable:

The subjects of the planned CWA are not at present the subject of a standard. There are also no committees, standards and/or other technical specifications that deal with related subjects.

Optional attachments:

<List optional information, e.g. estimated project duration and date of the Kick-off, manuscript, short description, presentation, etc.>

⁴ For projects dealing with security matters the security risk analysis provided below (item 3) shall be carried out.

2 Proposal Form for the Workshop secretariat

CEN Workshop on "Guidelines for characterization of extracts for the recycling/upcycling of organic agrifood wastes"

Details of the Workshop secretary:

Name: Ana Benedicto
Organization: UNE Asociación Española de Normalización
Postal address: C/Génova 13, 28004 Madrid (SPAIN)
Email: abenedicto@une.org
Phone: +34 650 50 02 08
Webpage: une.org

Finance:

The administrative costs of the CEN Workshop will be financed by resources from the Agro2Circular project. The final document will include the following paragraph: "Results incorporated in this CEN Workshop Agreement have received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 101036838".

Both registration and participation at the CEN Workshop described here are free of charge. The use of electronic meetings will be preferred. Nevertheless, in the case of physical meetings, they will be held in Europe and each participant has to bear his/her own costs for travel, accommodation, and subsistence.

According to CEN/CENELEC Guide 29, the resulting CWA will be available for free downloading from CEN-CENELEC Webpage, since it is under R&D domain. Related cost will also be covered by Agro2Circular project.

Drafting and Dissemination:

The preliminary Workshop schedule will be the following:

	Activities	Schedule
1	WS kick-off meeting + presentation of first draft of the CWA	2024-04
2	Elaboration and agreement on the draft CWA (3 virtual meetings are envisaged)	2024-04 / 2024-08
5	Publication of CWA after editorial check by CCMC	2024-09

In relation with dissemination, as indicated above, the CWA will be available for free download from CEN-CENELEC webpage (CWA download area).

The results obtained from this workshop will be disseminated throughout the specific Agro2Circular website (<https://agro2circular.eu/>) and social media (Twitter and LinkedIn), and into the Agro2Circular dissemination network, including the selected stakeholders and multipliers, such as the scientific community, technical experts, strategic experts and policy makers and the general public and end-users. This will be done according to the Agro2Circular dissemination strategic plan.

Does the proposed CWA conflict with an EN or an HD?

	YES	NO
EN	<input type="checkbox"/> ⁵	<input checked="" type="checkbox"/>
HD (CENELEC)	<input type="checkbox"/> ⁵	<input checked="" type="checkbox"/>

Is the proposed CWA within the domain of an existing CEN and/or CENELEC Technical Body?

No

CEN/CENELEC Management Centre (to be completed by CCMC):

Name of the CCMC project manager:

Organization: CCMC

Postal address: Rue de la Science 23, 1040 Brussels

Email:

Phone: +32 2 550 xxxx

Webpage: <https://www.cencenelec.eu/aboutus/MgtCentre/Pages/default.aspx>

Response of identified potentially affected CEN/CENELEC TCs

	YES	NO
Is there an active work item covering the scope of the planned CWA?	<input type="checkbox"/>	<input type="checkbox"/>
Are there arguments against the topic of the planned CWA?	<input type="checkbox"/>	<input type="checkbox"/>
<Add information/explanations to the points marked „yes“>		

⁵ Work on the proposed CWA shall not be initiated.

3 Security risk analysis

3.1 General

Security risk analysis is a process of identifying and analysing the main negative factors that may affect a standardization project's objectives. The following is targeted at secretariats of CEN/CENELEC Workshop Agreements (CWA) dealing with security issues. Its purpose is to help them identify and mitigate the risks associated with their project. It is structured around two main security threats that can affect the success of the work: major diverging interests among stakeholders and sensitive information.

3.2 Risk analysis on major diverging interest among stakeholders

Diverging interests among stakeholders can impede the process in reaching agreement on the CWA and even lead to failure to deliver the planned CWA. In order to identify and possibly mitigate the risks, the following questions should be reviewed:

- Is the planned CWA expected to have a major impact on the security policy/strategy of the core stakeholders?
- Does the scope of the CWA cover products or services with a clear dual-use purpose (i.e. which can be used for military purposes)?

3.3 Risk analysis on sensitive information

- In light of the scope of the CWA, is it likely that it may deal with sensitive information? If so, what is the information sensitivity level?
- Is there a need for a (non-)disclosure agreement?
- Is there any conflict of interest for stakeholders involved in the CEN/CENELEC Workshop, regarding especially the use they may make of any information they receive during the development of the CWA?
- What steps should be taken to manage information dissemination and storage (e.g. memory stick, emailing, storage) during the development process of the CWA?

The planned CWA is **not** expected to have a major impact on the security policy/strategy of the core stakeholders here.

The scope of the CWA does **not** cover products or services with a clear dual-use purpose (i.e. which can be used for military purposes).

In light of the scope of the CWA, it **is not** likely that it may deal with sensitive information.

There is **no** need for a (non-)disclosure agreement.

There is **no** conflict of interest for stakeholders involved in the CEN/CENELEC Workshop, regarding especially the use they may make of any information they receive during the development of the CWA.

The information will be disseminated throughout emailing, including the corresponding disclaimer to guarantee the confidentiality of the information contained in the messages, and the protection of personal data. Each participant will choose its own suitable storage form that likewise guarantee the indicated above. All communication shall be copied to Secretariat and all participants to ensure transparency, openness and equal treatment of all stakeholders.