

TOMRES

A novel and integrated approach to increase multiple and combined stress tolerance in plants using tomato as a model

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WP6 – Dissemination

DELIVERABLE 6.8

Final Plan for the Exploitation and Dissemination
of Project Results



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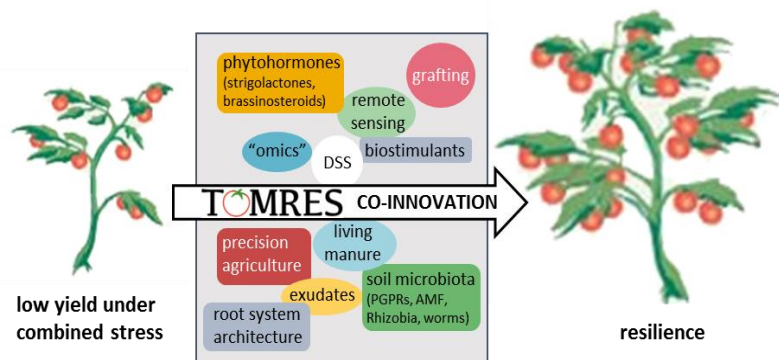
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TOMRES Project Summary

Tomato is a main EU agricultural commodity, cultivated all over Europe in open and protected field and in glasshouses, representing a biological and agronomical model crop. Combined water and nutrient stress is a major problem for tomato farmers and solutions are needed to safeguard yields, while preserving the environment.

The overall goal of TOMRES is to enhance resilience to combined water and nutrient stress in tomato and to maximize water (WUE) and nutrient use efficiency (NUE) by designing and testing in the field (open and protected) novel combinations of genotypes and management practices reducing the environmental impact of agricultural activities.



To this aim, TOMRES will select, among over 10,000 available accessions, rootstocks and scions tolerating combined stress, while retaining fruit quality and yield, taking advantage of innovative screening approaches. Novel traits, in particular belowground, to be exploited in breeding, will be identified. The role of selected hormones (strigolactones and brassinosteroids) will be studied to identify further resilience traits. TOMRES will test and optimize sustainable crop management strategies such as legume intercropping, precision fertilization and irrigation techniques, manipulation of symbiotic microorganisms, and the use of rootstocks more suited to water and nutrient uptake from the soil.

Novel genotypes X management strategies will be developed with the goal of reducing N and P application by at least 20%, water input by 40%, while granting environmental sustainability and economic viability of the solutions proposed. Testing will be integrated with analysis of environmental (greenhouse emissions, water quality), and of socio-economic impact. Agronomical, environmental, and economical data will be processed to construction of models and of a Decision Support System.

Demonstration and dissemination activities will follow the whole course of the project, and will transfer the results to different environments and other cropping systems, thus ensuring the widest impact of the gained knowledge on the EU economy. Trans-disciplinary knowledge transfer among farmers, breeders, industries, associations and scientists will be granted by a solid multi-actor approach since the planning stage.



Tab.1 TOMRES Project Partners

No	Participant organisation name (and acronym)	Country
1 (C*)	Università degli Studi di Torino (UNITO)	Italy
2	Agricultural University of Athens (AUA)	Greece
3	Agroilla SAT (AGROILLA)	Spain
4	Casella Macchine Agricole Srl (CASELLA)	Spain
5	Confederazione Generale dell'Agricoltura Italiana (CONFRAGRICOLTURA)	Italy
6	Edypro Fertilisantes Srl	Spain
7	Europese Organisatie Voor Wetenschappelijk Plantenonderzoek (EPSO)	Belgium
8	Gaia Epicheirein Anonymi Etaireia Psifiakon Ypiresion (GAIA)	Greece
9	Gautier Semences SAS (GAUTIER)	France
10	Institut Jozef Stefan (JSI)	Slovenia
11	Institut National de la Recherche Agronomique (INRA)	France
12	Neurather Gärtner GbR (NEURATHER)	Germany
13	Novareckon Srl (NOVARECKON)	Italy
14	Raffaele Tamburrino (TAMBURRINO)	Italy
15	Research and Development Institute for Processing and Marketing of the Horticultural Products Horting (HORTING)	Romania
16	Rheinische Friedrich-Wilhelms-Universität Bonn (UBO)	Germany
17	STC Research Foundation (STC)	United Kingdom
18	Strigolab Srl (STRIGOLAB)	Italy
19	Technion – Israel Institute of Technology (TECHNION)	Israel
20	The Hebrew University of Jerusalem (HUJ)	Israel
21	The James Hutton Institute (JHI)	United Kingdom
22	The University of Nottingham (UNO)	United Kingdom
23	Università degli Studi di Milano (UMIL)	Italy
24	Università degli Studi di Napoli Federico II (UNA)	Italy
25	Universitat de Les Illes Balears (UIB)	Spain

*Coordinating institution



1. Scope of the document

The reason for this *Final Plan for the Exploitation and Dissemination of Project Results* is to ensure that the TOMRES project results reach the intended audiences and will generate impact beyond the project duration. The plan builds upon D6.2 (Dissemination and Training Plan) which was delivered in the beginning of the project, and relates to D4.2 (Data Management Plan (DMP)) and D5.5 (Plan for commercial exploitation of TOMRES results). It discusses different tools to engage with TOMRES stakeholders (Figure 1 and Annex 1).

The expected outcomes resulting from the application of the plan are:

- Pathways for the exploitation and dissemination of project results beyond the project duration are clear to all TOMRES partners;
- TOMRES stakeholders have relevant knowledge of TOMRES project;
- TOMRES research and development results are taken up by the relevant stakeholder groups.



Figure 1: Tools to disseminate TOMRES project results to stakeholders

2. Exploitation and Dissemination Plans

While **Dissemination** is the public disclosure of the results by any appropriate means, including by scientific publications in any medium, **Exploitation** is the utilization of results in further research activities other than those covered by the action concerned, or in developing, creating and marketing a product or process, or in creating and providing a service, or in standardisation activities. **Dissemination** transfers knowledge and results to those who can make best use of it and maximises the impact of research by enabling the value of results to be potentially wider than the original focus. **Exploitation** makes use of the results, recognizing exploitable results and their stakeholders. It concretises the value and impact of the R&I activity for societal challenges (Ala-Mutka, 2017). Dissemination and exploitation beyond the project lifespan will represent the legacy of the TOMRES



project (Fig. 2). Both actions must be focused on the project stakeholders, which have been preliminarily identified during the course of the Project (See ANNEX1).

In the following, we will look at the actual dissemination activities within TOMRES and present plans for further dissemination beyond the project duration. We will then look at exploitation activities within the duration of TOMRES and further potential to broaden exploitation beyond the project duration.



	Description	Tools	Aims
Dissemination	<ul style="list-style-type: none"> • HOW? Describing and making available results so that they can be used • WHO? Audience that may make use of the results • WHAT? All results which are not restricted due to the protection of IPR, security rules or legitimate interests 	<ul style="list-style-type: none"> • Scientific publications • Policy brief • Training, Workshops • Practice Abstracts • Demonstration activities • Sharing data on online repository (research data, software, reports) 	 Making results available
Exploitation	<ul style="list-style-type: none"> • HOW? Making use of results, for scientific, societal or economic purposes • WHO? Groups and entities that are making concrete use of results • WHAT? All results generated during the projects. Participant shall make best efforts to exploit the results it owns, or to have them exploited by another legal entity 	<ul style="list-style-type: none"> • Innovation management • Data management Plan • Active stakeholder engagement • Patents • Spin-off/start-ups • Further research • Societal activities • Open licences • Policy change 	 <p>Facilitating further use of results</p> <p>Making use of results</p>

Figure 2: Dissemination and Exploitation in the TOMRES project (adapted from K. Ala-Mutka, 2017).



2.1. Dissemination Plan

2.1.1 Achievements until the end of the TOMRES project

a) Written communication

At the time of completion of this Deliverable (end of May 2021), 35 scientific research papers, 8 technical articles in praxis-oriented journals, 30 Standard Operating Procedures (SOPs) and 23 Practice Abstracts have been published.

The **research articles** were published in 22 scientific periodicals with impact factors ranging from 34.209 (2-year IF) to 1.636. One paper has been published on the pre-print server bioRxiv which has no IF assigned yet. The **technical articles in praxis-oriented journals** were published in national journals and magazines in Germany, Greece, Italy, Romania and Spain in local language. The print of these journals varies between 4,500 and 7000 copies in addition to the respective online versions.

The **Standard Operating Procedures (SOP)** are available from Zenodo: https://zenodo.org/communities/tomres_sops/?page=1&size=20.

The detailed list of scientific articles, technical articles, and SOPs is reported in Deliverable 6.9.

The 23 **Practice Abstracts** are available in English, Italian, Spanish, Catalan, German, Greek, Romanian, Slovenian, French and Hebrew (see D6.6) from the TOMRES website: www.tomres.eu. The list of TOMRES Practice Abstracts is reported in Deliverable 6.6.

b) Communication to a broad audience

Events directed at specific stakeholder groups include scientific symposia and conferences, farm open days, European Science Open Forum, EU researchers' night, etc. Table 2 reports a non-exhaustive list of TOMRES presentations at scientific or technical events.

Table 2: Scientific and technical events where TOMRES was presented

Date	Event	TOMRES partners
11-12 Oct 2017	AgrInnovation Summit, Lisbon, Portugal	UNITO
9-10 Nov 2017	4 th Panhellenic Congress on the development of Greek Agriculture, Thessaloniki, Greece	AUA
28 Feb – 1 Mar 2018	52 DGG and BGHL meeting, Geisenheim, Germany	UBO
20 Mar 2018	Seminar, Ljubljana, Slovenia	JHI, JSI, UNITO
23-27 Apr 2018	Hanover Fair	UBO



2-4 May 2018	XIX Eucarpia Congress	UNA, UNITO
11-15 Jun 2018	XV International Symposium on Processing Tomato	CONFAGRICOLTURA
18-21 Jun 2018	PBE2018	UNITO
2 Jul 2019	Open Day Klein-Altendorf, Germany	UBO, Neurather
12-16 Aug 2018	XXX. International Horticultural Congress, Istanbul, Turkey	AUA, UBO
26-28 Sep 2018	12 th World Congress on Polyphenol Application	UBO
27 Sep 2018	Copa Cogeca Working Group Meeting, Brussels, Belgium	GAIA
1 Mar 2019	Seminar "Novel approach aiming to improve resilience of tomato to multiple stress in the era of climate change", Athens, Greece	AUA, INRA, UNITO
4-12 March 2019	A series of training and dissemination events, Athens, Thessaloniki and Heraclion, Greece	AUA
May 2019	Fattoria Didattiche Aperte 2019, Naples Italy	UNA
May 2019	Fascination of Plants Day, Salerno, Italy	UNA
2-5 Jul 2019	SEB Annual Meeting	UNITO
27-30 Aug 2019	Wageningen Soil Conference	UNITO
15-20 Sep 2019	SOL Meeting2019	UNA
14 Oct 2019	infoAgro Exhibition, Almeria, Spain	EDYPRO
10-16 Nov 2019	Agritechnica, Hanover, Germany	Casella
9-11 Mar 2021	Symposium for Horticulture in Europe (SHE), Stuttgart, Germany (online)	AUA

- TOMRES Summer School was held online in 2020 (Milestone 21)
- Two Online Seminars were held in 2021 (Milestone 18)



- Demonstration to farmers and related stakeholders was performed in WP5 (Milestone 20)
- TV/radio presence and interviews in media were continued

c) Open Data

TOMRES has participated in the Open Data Pilot which entails that Data collected in the project must be made Findable, Accessible, Interoperable and Reusable (FAIR) by the wider research community.

TOMRES data management principles after the project end have been agreed by the consortium (Milestone 22): partners will submit all datasets and associated MEFs and SOPs of all TOMRES trials within 12 months of project end; JHI will review and check the data and/or SOPs within 2 months of submission of the data; data will then be uploaded by JHI to Zenodo under the terms stated by the data owner and will be released as fully Open Access under a Creative Commons Attribution 4.0 International licence.

d) Social media

This includes the project's internet presentation, YouTube videos, blogs, twitter and facebook. The project has developed a website (www.tomres.eu), a facebook and a twitter account.

The TOMRES website is composed by **10 pages**:

1. *Home page*
2. *About*
3. *News – 32 news* divided per year of publication;
4. *Events – 20 events* divided per year of publication;
5. *Press Reviews – 70 press reviews* in **7 different languages**;
6. *Deliverables – 15 public deliverables* and the **flyer** in **10 different languages**;
7. *Publications – 23 practice abstracts, 34 scientific papers* and **9 technical papers** with direct connection to the link of the publication;
8. *RP2 – second reporting period* with the password to access it;
9. *Newsletters – 5 newsletters*; there will be one more by end of project;
10. *Contact* – indication of **project coordinator** and **project manager**.

Two videos present the project idea and expected outputs:

<https://www.tomres.eu/europe-teams-up-for-tomatos-future-in-the-tomres-project/>

<https://www.tomres.eu/tomres-projects-the-benefits-of-the-optimized-tomato-production/>

Further two videos explain the TOMRES activities (<https://www.tomres.eu/to-learn-more-about-tomres-project>).



2.1.2 Communication plans for the period after the end of the Action

- Further scientific publications are expected in the coming 2-3 years as research results are further analysed and elaborated.
- Following the end of the TOMRES project, further opportunities for conference presentation will be sought and taken by the project partners.
- TOMRES researchers are encouraged to make use of the Horizon Result Platform, Open Research Europe and the Horizon Results Booster provided by the Commission.
- TOMRES datasets and associated MEFs and SOPs will be uploaded to Zenodo under the terms stated by Milestone 22 and by the data owner and will be released as fully Open Access under a Creative Commons Attribution 4.0 International licence.
- The Project website will be maintained active for at least 3 years after end of the project and will be updated as needed by the NOVARECKON and UNITO partners.

The Coordinating Institution UNITO will take care of periodically (every six months) checking for further communication initiatives stemming from the project for a period of two years after the end of the project, and will upload the most significant ones in the Horizon Results Platform <https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/horizon-results-platform>.

2.2 Exploitation Plan

The exploitation outlook and policy of TOMRES are described in Deliverable 5.5. According to the Grant Agreement Article 28, each beneficiary has the obligation, up to four years after the project, to take measures towards the exploitation of its project results by:

- (a) using them in further research activities (outside the action)
- (b) developing, creating or marketing a product or process
- (c) creating and providing a service, or
- (d) using them in standardisation activities.

The following exploitable project results have been identified in Deliverable 5.5:

- Novel biostimulants (Strigolab)
- Biofertilisers (EDYPRO)
- Variable rate technology (Casella)
- GAUTIER Innovation (tomato seed)

In addition, the following TOMRES outputs present opportunities for further exploitation:

- Information on characterization of TOMRES accessions under combined stress
- Other Scientific and Technical Knowledge developed within TOMRES
- Data repository, Protocols and Standard Operating Procedures (see above Open Data)
- Decision Support System
- TOMRES Partner Network

Exploitation of TOMRES results will thus include:

- exploitation for scientific and technical papers
- technology uptake by farmer partners (biostimulants, rootstocks)



- implementation and scaling up by companies
- exploitation for novel R&I initiatives

2.2.1 Exploitation plans for the period after the end of the action

While most of the exploitation outlooks of TOMRES results are in the hands of the single partners, who may use their own results or share TOMRES results in associate form, two initiatives have been taken during the lifespan of the project to help in this direction:

- The Coordinator signed an official agreement with the H2020 project HARNESSTOM, led by Antonio Granell, to provide phenotypization data under stress of TOMRES TC accessions
- The Decision Support System developed within TOMRES WP4 (Deliverable 4.7) will be made available within the TOMRES website www.tomres.eu in order to make it available to potential stakeholders for use in their research and policy implementation activities.

Parallel, as planned for communication activities, the Coordinating Institution UNITO will take care of periodically (every year) checking for further exploitation initiatives stemming from the project for a period of four years after the end of the project and will i) upload the most significant ones in the Horizon Results Platform <https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/horizon-results-platform> and ii) foster application to the Horizon Results Booster platform, also jointly with other linked Horizon projects <https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/d-e-booster>.

3. Specific Role of SHG in Dissemination and Exploitation

A specific role in dissemination and further exploitation of project results will rest on the project's Stakeholder Group (SHG). This group is comprised of 15 representatives of academia, industry and policy advisors relevant to the project. They have played an important advisory role during the project and, through their professional interests, will further contribute to dissemination and exploitation activities beyond the project's lifetime. This will be particularly valuable in connecting with industry and policy makers. EPSO will continue interaction with SHG members through its networking facility, which will also be an important avenue for TOMRES results into policy.



ANNEX 1. Preliminary Stakeholder Analysis (cf. D6.2)

Stakeholder	Expectation from Project	Importance to TOMRES	Risks...	Way of communication	Responsible within TOMRES
Researchers	New scientific insights into stress responses, new genetic materials	High	Scientific competition, other working groups publish same/similar information faster.	Journal articles; scientific presentations, symposia	EPSO, SHG, AB all research members
Policy makers	New insights for policy making, esp. regarding food safety, climate change	Medium	Not interested in specific information	Policy briefs, Policy round tables, discussion forum	CONFAGRICOLTURA, EPSO, SHG, Consortium lead
Input Industry	New germplasm material	High		Open days, direct communication	EPSO, SHG
Output Industry	New tomato lines for processing / food industry	Medium		Open days, information flyers, direct communication	EPSO, SHG



Farmers	New cultivars; new management options	High	Too busy with day-to-day pressures; have different needs depending on production system	On-farm demonstrations	Growers in the TOMRES consortium, CONFAGRICOLTURA
Consumers/general public	Tasty, attractive, healthy tomatoes	Medium	Wrong/inaccurate information (GMOs) influence view on TOMRES	Information flyers, videos, social media, tasting sessions, local events	NOVARECKON, EPSO, all
The Media	Exciting „stories“	Medium	Wrong/inaccurate information gets widely disseminated	Personal contact, interviews, press releases	Consortium lead, WP and Task leaders
EIP Agri	Practice abstracts	High		Personal contact, links to national EIP Focal Points	All WP leaders, Consortium lead
Young project researchers	Training/Education opportunities	High		PhD opportunities within the project, specific space during symposia and workshops, summer school	Supervisors, UNITO for summer school



Reference

Ala-Mutka, K. (2017.) Presentation to H2020 Coordinators Day. Online access: https://ec.europa.eu/research/participants/data/ref/h2020/other/events/2017-03-01/8_result-dissemination-exploitation.pdf.

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