

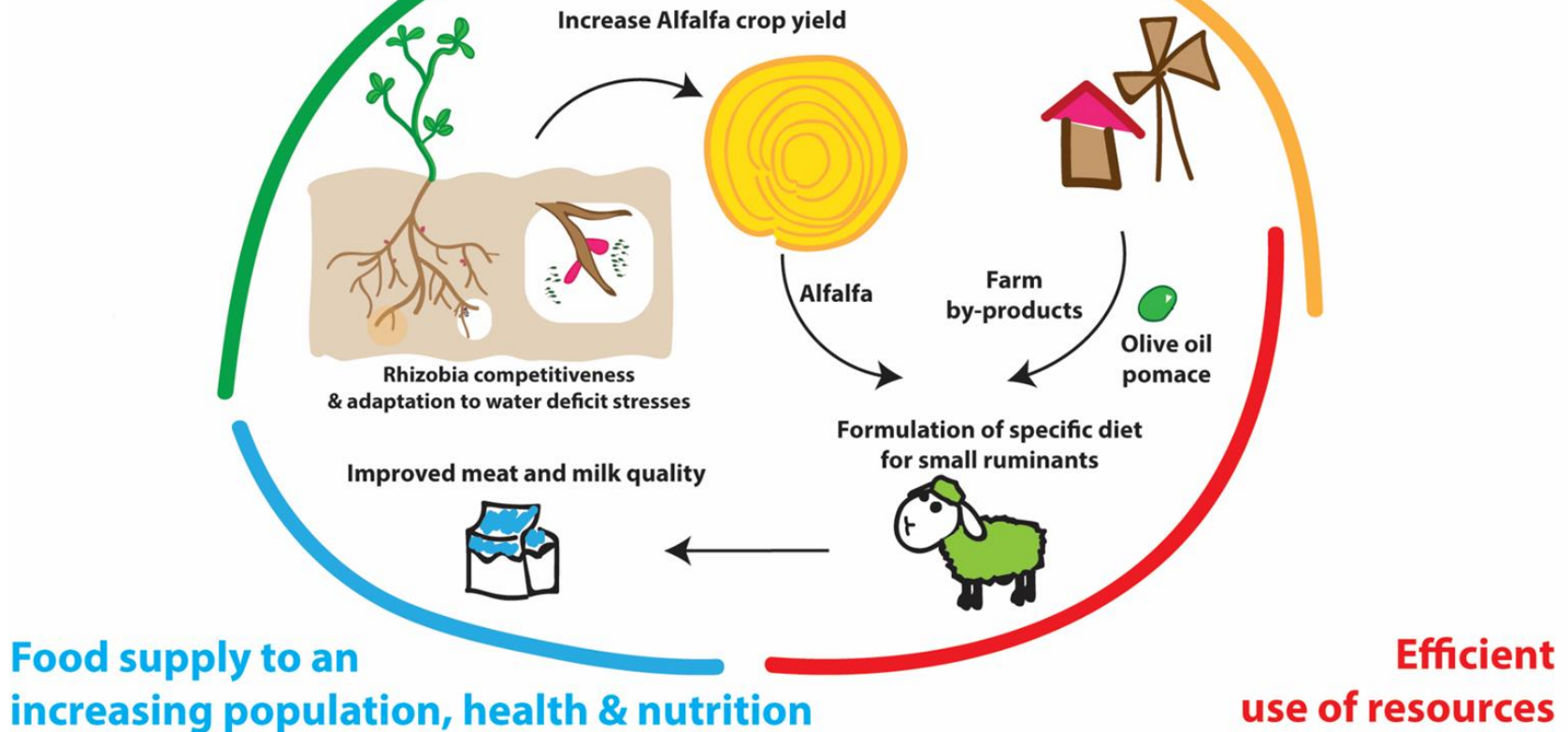


Joint Project Seminar 16th and 17th November 2022 Brussels (Belgium)



**Depletion of natural resources
& climate change**

**Food loss and
waste**

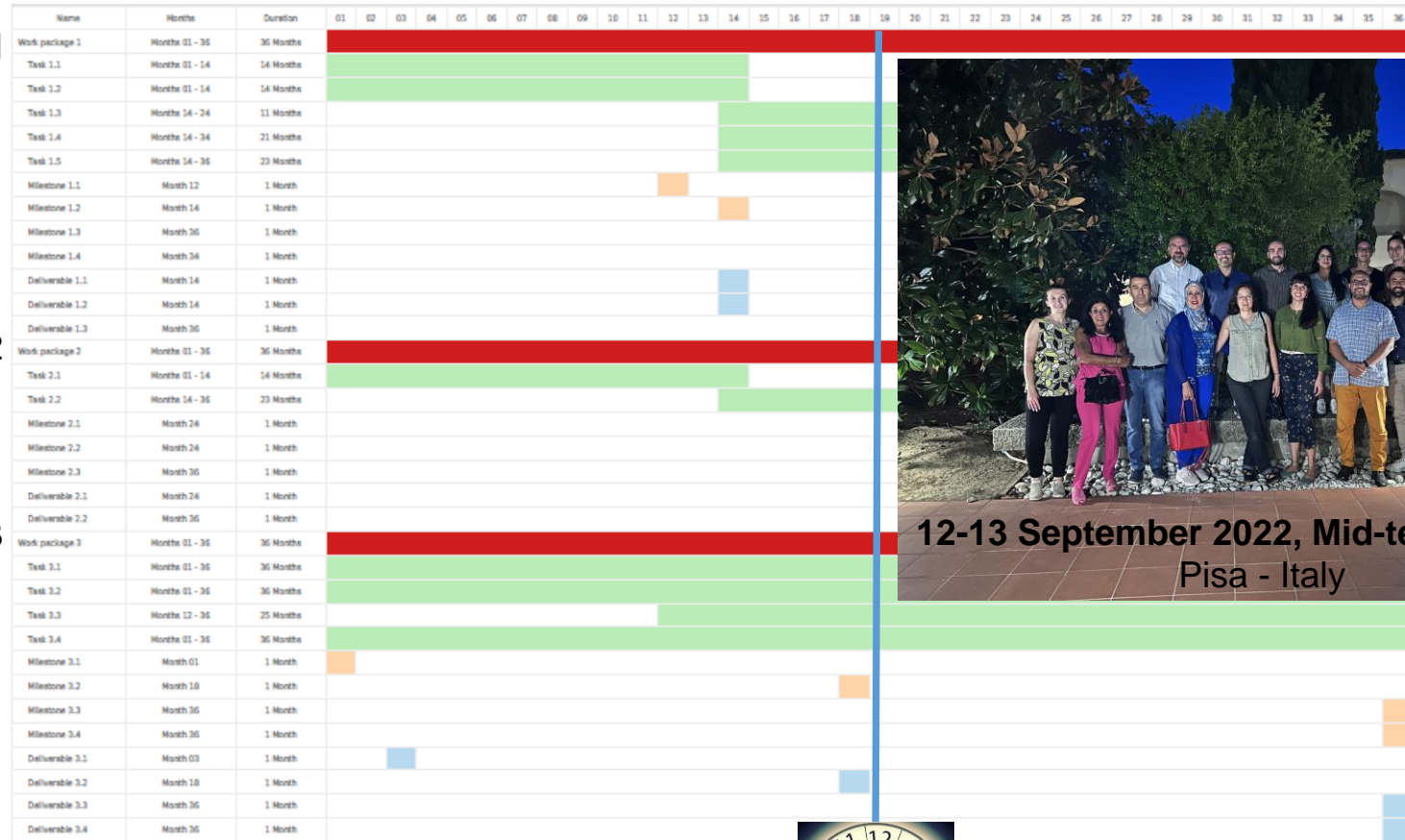




Gantt chart of ALL-IN

GANTT CHART

WP1



WP1

selection of elite bacterial inoculants to boost legume production

Task 1.1 Exploration of the competitive capability of rhizobial strains during the first steps of the symbiotic process

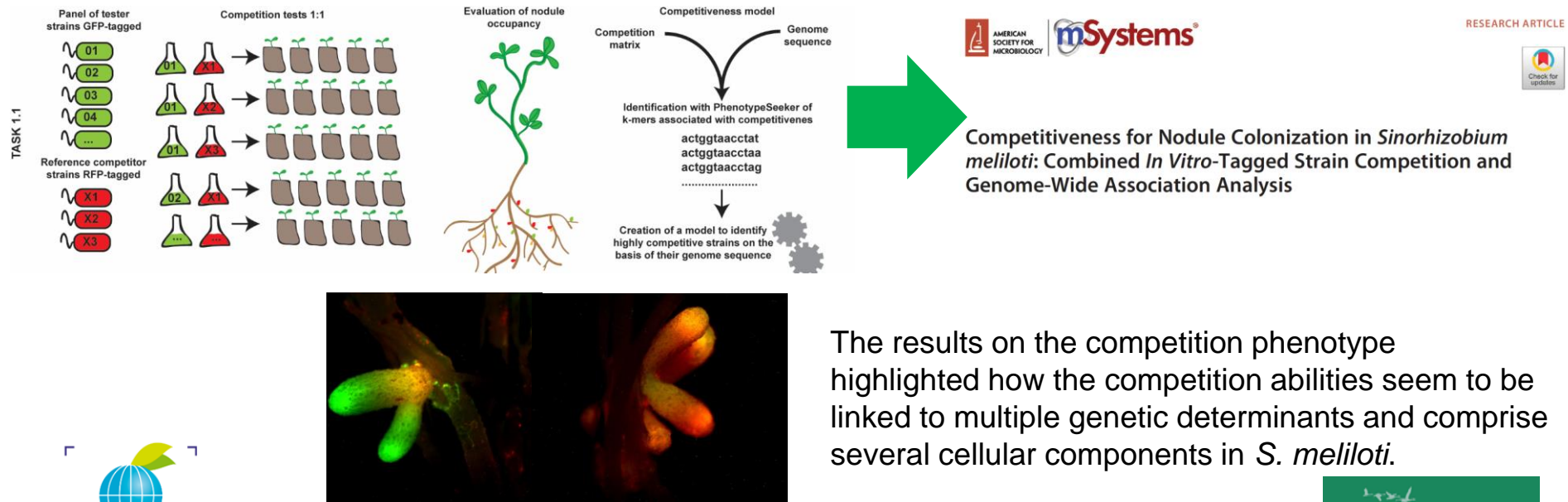
Task 1.2 Isolation, characterization and selection of rhizobial strains with enhanced tolerance to water deficiency

Task 1.3 Formulation of elite inoculants

Task 1.4 In field trials

Task 1.5 Evaluation of the effect of inoculants on soil health (fertility and microbial diversity)

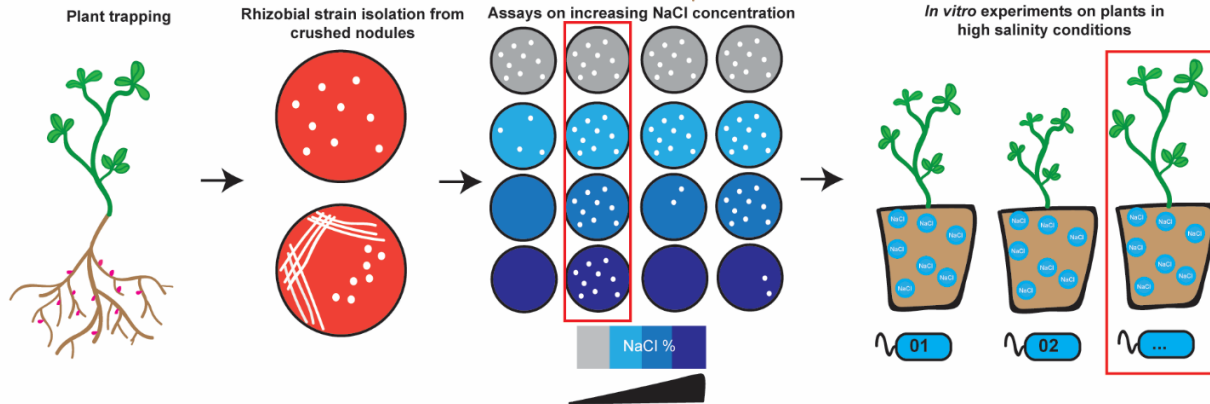
Task 1.1 Exploration of the competitive capability of rhizobial strains during the first steps of the symbiotic process



The results on the competition phenotype highlighted how the competition abilities seem to be linked to multiple genetic determinants and comprise several cellular components in *S. meliloti*.

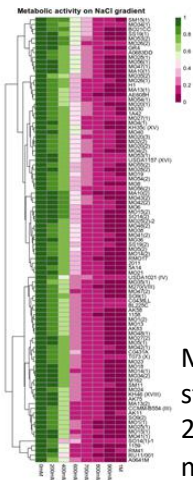
Task 1.2 Isolation, characterization and selection of rhizobial strains with enhanced tolerance to water deficiency

TASK 1.2

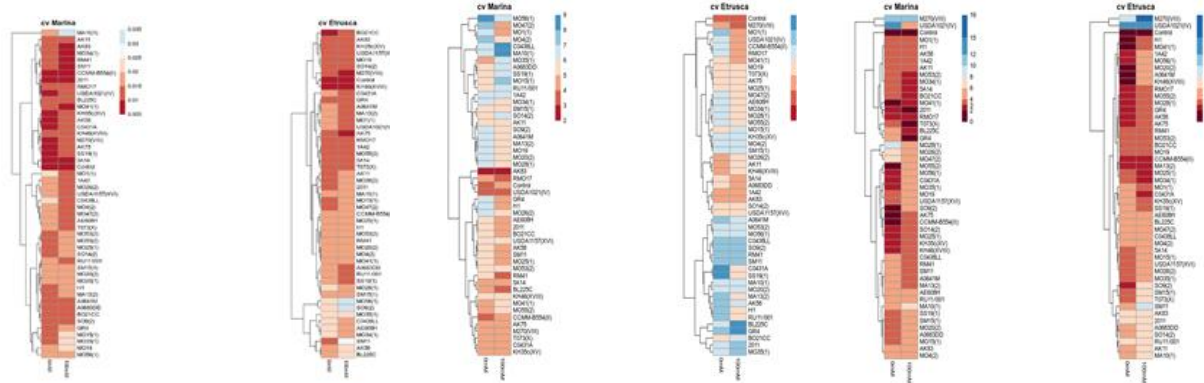


Preparing a draft manuscript:

- Rhizobial genomic features associated to salt resistance
- The genome of 21 *S. meliloti* was sequenced and the datasets generated were submitted to NCBI (BioProject ID: PRJNA853716)

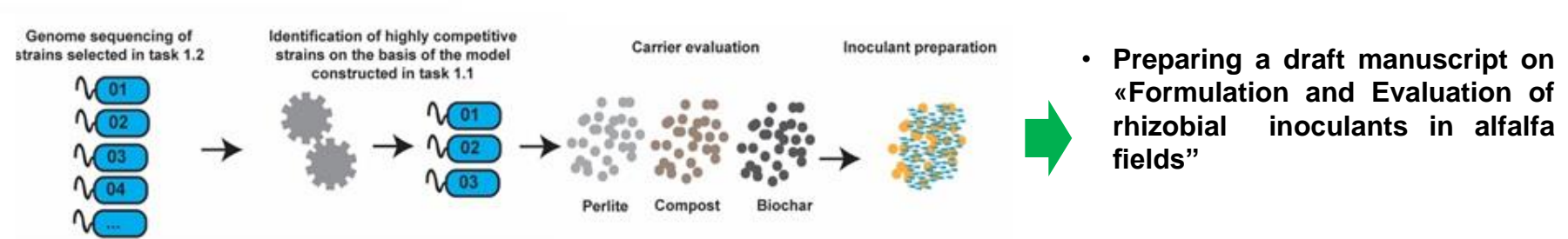


Metabolic activity of *S. meliloti* strains on NaCl gradient (0 mM, 200 mM, 400 mM, 600 mM, 700 mM, 800 mM, 900 mM, 1M).

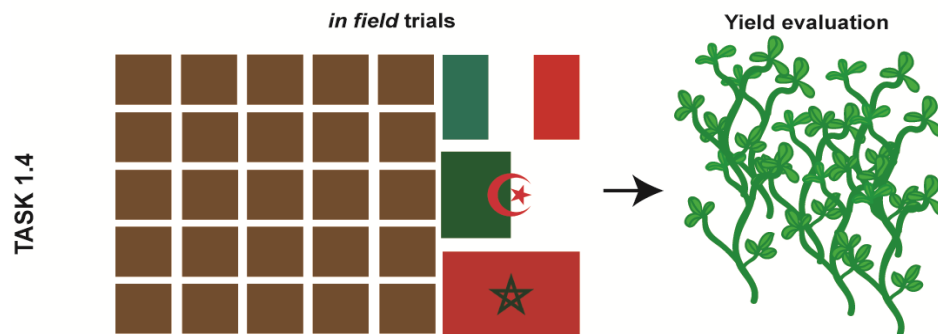


A Heatmap of Dry weight (the two panels on the left, g), Stem length (the two panels at central, cm) and number of nodules (the two panels on the right) of *M. sativa* cv Marina and Etrusca in association with *S. meliloti* strains at 0 mM and 100 mM NaCl.

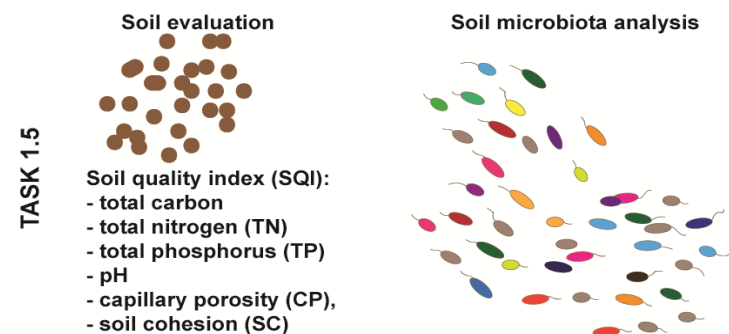
Task 1.3 Formulation of elite inoculants



Task 1.4 In field trials



Task 1.5 Evaluation of the effect of inoculants on soil health (fertility and microbial diversity)



<http://www.all-inproject.com/front/gimmai/default.aspx?pagina=8>

In field trials



Italy



Algeria



Morocco

.....data are being collected and processed.....

Milestone

M1.1	12	Title: Identification of competitiveness traits Description: Identification of candidate genes involved in high competition capabilities and resistance to dry environments analysing reference and Algerian rhizobial strains
M1.2	14	Title: Rhizobia isolation and characterization Description: Isolation and characterization of at least 100 rhizobial strains. On selected strains (at least 5) complete genome sequence are obtained



Deliverable

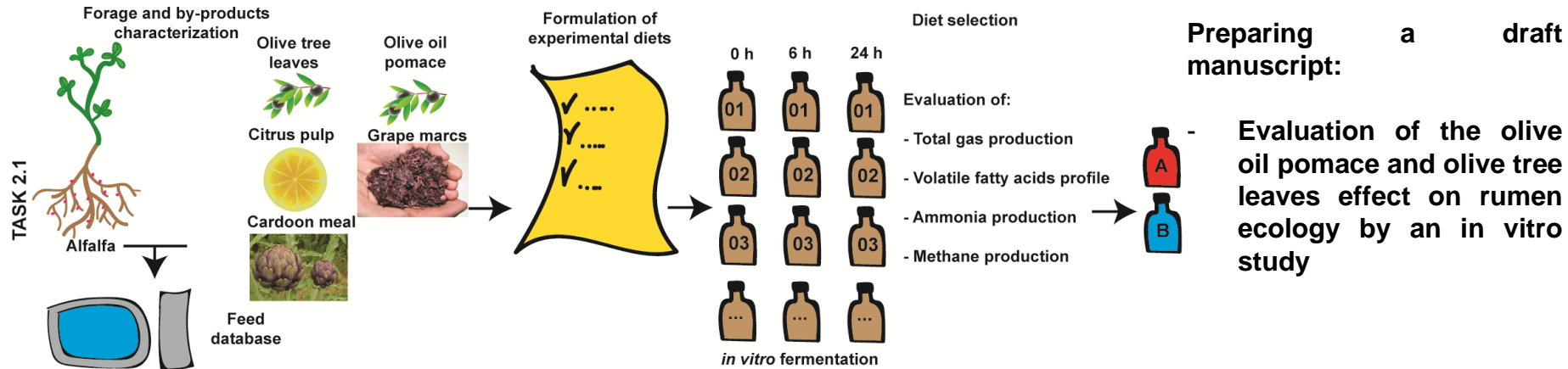
D1.1	14	Title: List of genes Description: Report with a list of genes involved in rhizobia in high competition capabilities and resistance to dry environments obtained analyzing at least 10 genomes available in international databases and at least 5 genomes obtained from isolates in the ALL-In project
D1.2	14	Title: Genome sequence of Algerian rhizobia Description: Genome of selected isolates (at least 5) resistant to salinity will be made available on a public repository.



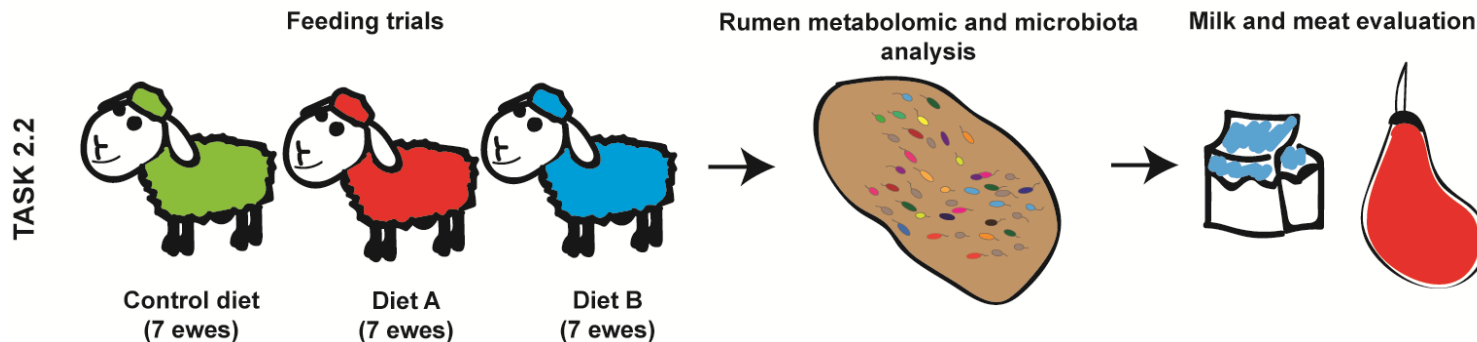
WP2

development of **ruminant experimental diets** using the optimal combination of **alfalfa** with **local by-products**

Task 2.1 In vitro rumen fermentation trials



Task 2.2 In vivo feeding trials



WP3

Aims to promote **knowledge sharing**, greater **public awareness**, transparency, and **education** at all cultural levels and for all ages & promoting interactions, disseminate the results **beyond the consortium**.

Task 3.1 Dissemination plan and development of project web social platform;

Task 3.2 Communication activities;

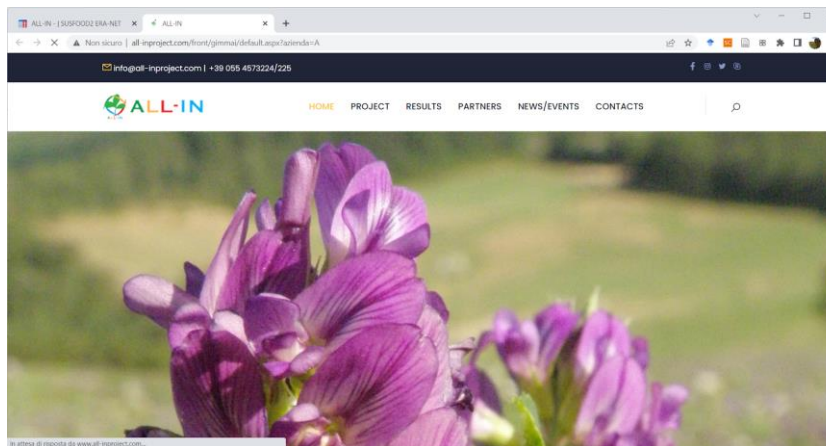
Task 3.3 Educational activities;

Task 3.4 Technology transfer - Stakeholder dialog and exploitation activities.

The dissemination plan was discussed during the kickoff meeting of ALL-IN and was updated during the midterm meeting (12-13 Sept. 2022)

Task 3.1 Dissemination plan and development of project web social platform

The ALL-IN website (<http://www.all-inproject.com/>) was created in month 4
Twitter of ALL-IN (@CarloViti5)



Task 3.2 Communication activities

Communication activities:

- Online learning day **“INNOVATIVE SOLUTIONS FOR THE USE OF LEGUMINOUS IN A SCENARIO OF CLIMATE CHANGE”** (8th April 2021) organized by the Georgofili Academy and the University of Florence. The event was attended by ca. 150 people, professional associations of Italian agronomists, associations of stakeholders (e.g. CIA agricoltori, Associazione grani antichi di Montespertoli, Associazione lenticchia di Altamura, Consorzio di tutela Fagiolo di Lamón), stakeholders, farmers, policymakers (e.g. Ministero delle Politiche Agricole, Regione Toscana, Azienda Regionale per lo Sviluppo dell'Agricoltura Calabrese-ARSAC, Agris Sardegna).
- Online meeting on **“Solutions innovantes pour l'utilisation des légumineuses dans un scénario de changement climatique”** (23th November 2021) dedicated to French-speaking stakeholders. The event was attended by ca. 50 personnes. Among the stakeholders presented and which were also sponsors of the event, three professional associations of Moroccan farmers (Fédération Interprofessionnelle Marocaine de la Filière Bio, Terre & Humanisme Maroc, RIAM Réseau de Initiatives Agroécologiques au Maroc) and the Chamber of Agriculture of Wilaya of Oran- Algeria.
- Meeting **“1ère Journée de sensibilisation des partenaires socio-économiques autour des diverses applications des projets Prima et Susfood-Eranet”** held in The amphitheater of the Taleb Mourad Salim Campus (14th December 2021).
- Workshop **“SMART FARMING II”** Amphithéâtre Talahit du Campus Taleb Mourad Salim, Université Oran 1- November 13th 2022
- Webinar **“Terra Pianeta Alieno”** (22nd April 2021). The event was on April 22nd 2022, in relation to the Earth Day where prof. Mengoni, participant of the unit of the coordinator presented a talk (in Italian) on “rhizobia as inoculants for legume crops and more”. The event was attended by ca. 400 people. Among the stakeholders presented and which were also sponsors of the event, three professional associations of Italian agronomists were included: “Ordine dei dottori agronomi e dei dottori forestali della provincia di Bologna”, “Collegio dei Periti Agrari e dei Periti Agrari Laureati di Bologna”, “Collegio Nazionale Agrotecnici e Agrotecnici laureati”.
- Event **“Festa degli alberi e della biodiversità”** (Montespertoli FI, Italy 20-21-22 May 2022)

Outreach activities on the circular economy and the role of legumes in the ecosystem:

- **Lesson** held at the Rita Levi Montalcini primary school in Montespertoli (FI-Italy), May 5th, on the importance of legumes and the circular economy. This activity involved ca. 60 students.
- Event **SCIENZAESTATE** organized by the University of Florence (Sesto Fiorentino-Italy, 15-16 June 2022). This event was attended by more than 1000 people.

Scientific Articles

1. Viti, C.; Bellabarba, A.; Daghighi, M.; Mengoni, A.; Mele, M.; Buccioni, A.; Pacini, G.C.; Bekki, A.; Azim, K.; Hafidi, M.; et al. Alfalfa for a Sustainable Ovine Farming System: Proposed Research for a New Feeding Strategy Based on Alfalfa and Ecological Leftovers in Drought Conditions. *Sustainability* 2021, 13, 3880.
<https://doi.org/10.3390/su13073880>, Organic Eprints Archive <https://orgprints.org/id/eprint/44026/>
2. Bellabarba, A.; Bacci, G.; Decorosi, F.; Aun, E.; Azzarello, E.; Remm, M.; Giovannetti, L.; Viti, C.; Mengoni, A.; Pini, F. Competitiveness for Nodule Colonization in *Sinorhizobium meliloti*: Combined In Vitro-Tagged Strain Competition and Genome-Wide Association Analysis. *mSystems* 2021 Aug 31;6(4):e0055021
<https://doi.org/10.1128/mSystems.00550-21>
3. Cangioli L., Vaccaro F., Fini M., Mengoni A., Fagorzi C. (2022) Scent of a Symbiont: The Personalized Genetic Relationships of *Rhizobium*—Plant Interaction. *Int. J. Mol. Sci.* 23(6), 3358 <https://doi.org/10.3390/ijms23063358>
4. Kuzmanovic N., Fagorzi C., Mengoni A., Lassalle F., diCenzo G.C. (2022) Taxonomy of Rhizobiaceae revisited: proposal of a new framework for genus delimitation. *Int J. Syst Evol Microbiol* 72:005243
<https://doi.org/10.1099/ijsem.0.005243>

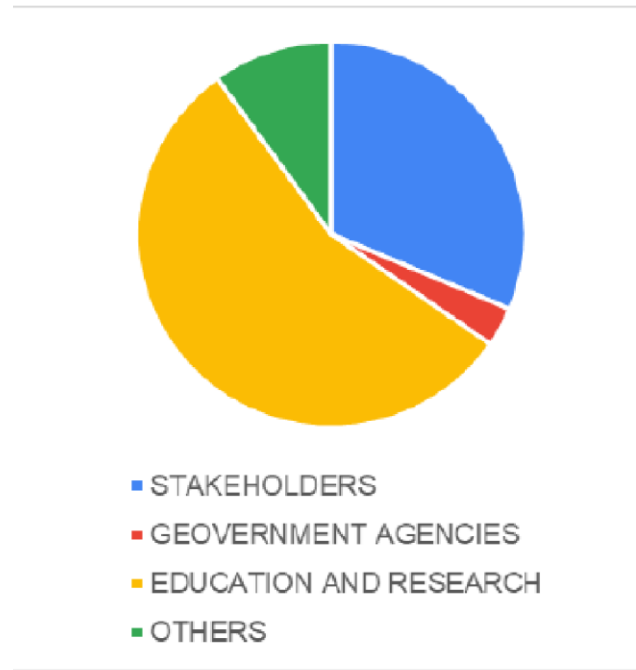
International conferences

1. Bellabarba A, Bacci G, Decorosi F, Aun E, Azzarello E, Remm M, Giovannetti L, Viti C, Mengoni A, Pini F, (2021). Competitiveness for nodule colonization in *Sinorhizobium meliloti* combined in vitro tagged strain competition and genome wide association analysis. **6th International Conference Microbial Diversity: Advances in Microbial Diversity**, online event. Oral presentation - doi: 10.1101/2020.09.15.298034
2. Bellabarba A, Bacci G, Decorosi F, Aun E, Azzarello E, Remm M, Giovannetti L, Viti C, Mengoni A, Pini F, (2021). Competitiveness for nodule colonization in *Sinorhizobium meliloti*: combined in vitro tagged strain competition and genome-wide association analysis; The **14th European Nitrogen Fixation Conference**, online event hosted by Aarhus University, Denmark. Poster presentation.

A mailing list containing **180 e-mail addresses** the ALL-IN project.

The e-mail addresses refers to:

- stakeholders,
- students,
- researchers,
- government agency staff



Task 3.3 Educational activities

Summer school

Summer school on "Animal gastrointestinal microbiome (foregut, midgut and hindgut): exploring the relationship between microbial communities and fatty acids"

Florence, June 19-23, 2023

SIMTRE3A



Educational activities –The motion graphic video (Italian language, Italian, French and English subtitles)



ALL-IN project

9 iscritti

HOME

VIDEO

PLAYLIST

CANALI

INFORMAZIONI

Video caricati ▶ Riproduci tutti



La véritable histoire de l'amitié entre le rhizobiacée...

25 visualizzazioni • 1 mese fa



The true story of the friendship between rhizobia...

100 visualizzazioni • 1 mese fa



La vera storia dell'amicizia tra rizobi e leguminose- sub...

652 visualizzazioni • 1 mese fa

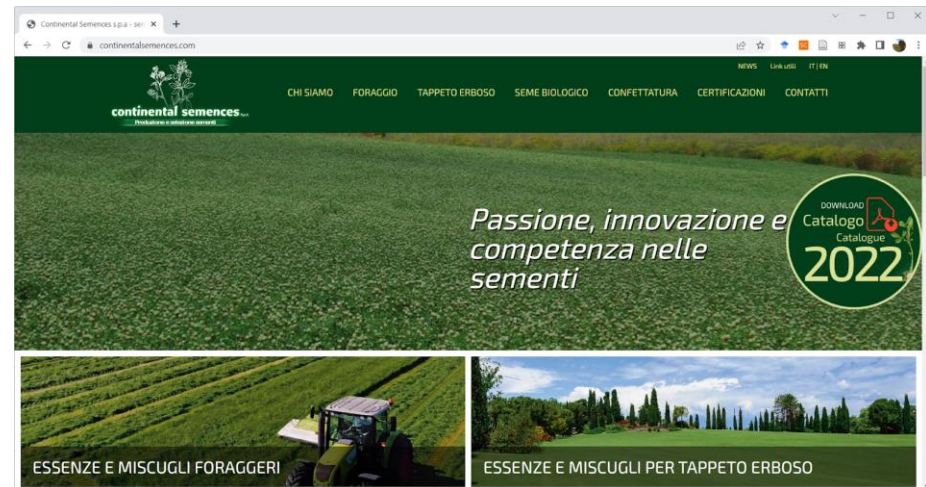
Task 3.4 Technology transfer - Stakeholder dialog and exploitation activities.

Stakeholder interaction for future exploitation:

CONTINENTAL SEMENCES S.p.A. supplied seeds of *Medicago sativa* cv. marina for the in field trials of the project.

CONTINENTAL SEMENCES has been involved also in future exploitation activities in relation to the testing of seed coating with the selected rhizobial strains

A PhD student belonging to the UniFI group will spend a 6-month stage at CONTINENTAL SEMENCES for technology transfer and learning methods on seed quality control analyses.



Milestone

M3.1	1	Title: kick-off meeting Description: The aim of the project kick-off meeting is to introduce the project network, understand the project background, understand what success looks like, understand what needs to be done, and agree on how to work together effectively. The communication plan including the priority Stakeholders is defined.
M3.2	18	Title: Joint network meetings Description: During the mid-term review meeting are presented the progress made in implementing the joint tasks of the network, are updated on the progress of the project, are discussed questions, concerns and difficulties and, if needed, finding solutions



Deliverable

D3.1	3	Title: web site Description: Publicly free website containing project details and all deliverables
D3.2	18	Title: mid-term report Description: 18-month project report with the results obtained



Conclusions

- The ALL-IN project activities proceed smoothly and successfully
- The pandemic forced changes in the dissemination strategy planned for the project.
- While Covid-19 not permitted the holding of in-person meetings, it increased the possibility of online meetings involving stakeholders who were unable to attend in-person events.

Acknowledgments

Partners



Founders



Associations/stakeholders



Chambre d'Agriculture
de la Wilaya d'Oran

