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CLIMED-FRUIT

Adaptation to climate change and mitigation for perennial crops in Mediterranean Area

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Deliverable D2.4_ List of knowledge and best practices from core OG group to be further disseminated

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Nature of the deliverable		
R	Document, report (excluding the periodic and final reports	x
DEM	Demonstrator, pilot, prototype, plan designs,	
DEC	Websites, patents filing, press & media actions, videos, etc.	
OTHER	Software, technical diagram, etc.	

Dissemination Level		
PU	Public, fully open, e.g., web	
SEN	Sensitive, limited under the conditions of the Grant Agreement	x
CO	Confidential, restricted under conditions set our in Model Grant Agreement	

CI	Classified, information as referred to in Commission Decision 2001/844/EC	

	Quality procedure			
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More information on the project can be found at project website.

Project summary

CLIMED-FRUIT aims to share knowledge ready for practice, collected from different Operational Groups (OG) across Europe, for a better adaptation to climate change and mitigation, in perennial crops in the Mediterranean Area (grape vine, olive, fruits). The project builds on the results of a core group of 9 OG coordinated by a multi-actor consortium members (advisors, farmer organisations, research and education institutes, standardisation organisation), covering several Mediterranean crops in 7 different countries (France, Spain, Portugal, Greece, Italy, Croatia, Serbia). Best practices collected and shared range from (i) soil conservation and carbon storage, (ii) improving resilience of crops facing climatic hazards (frost, hail), (iii) innovative practices for adapting water stress management, (iv) adaption of food chain processes to climate change and diversification, and (v) preserving biodiversity for a better resilience to climate change issues and pests. These groups will share their experience through a combination of innovative digital formats, cross-visits and interactive local dissemination events. In addition, new knowledge and practices will be gathered more widely by organising an open contest. Participants from other European projects, other EIP OGs or even international projects from the Mediterranean area will be invited to propose abstracts. The most applicable solutions will be selected and pitched in a broad online conference. Participants will be invited to rank the best presentations according to cost/benefit ratio, which will then be widely disseminated and shared. Social media channels, videos, podcasts, crowd writing contests will be used to spread the knowledge. Specific editorial partnerships will be established with most popular technical reviews. The network will host a forum to capitalise on existing OG experiences and aims to foster new OGs to spread and explore new practical knowledge in relation to adaptation to climate change.

Objective and executive summary

Deliverable 2.4. is the product of the activities done in task 2.3, whose text is here entirely reported:

Task 2.3. Selection of material and practical solutions from core OG group to be disseminated *(Task Leader: AVAASAJA, Participants: all partners): Following the digital cross visits and extended Practice Abstract produced in task 2.2, partners will apply the method defined for selecting the material and practical solutions to be further disseminated (D.1.1.2). The result will be a list of materials and practical solutions to be further disseminated (D2.4).*

Table des matières

List of tables

1. Assessment process: reminder of the applied methodology

The selection of practices was done thanks to digital cross visits (described in D1.5), which were online meetings where each partner, in turns, presented its OG working methodology and results. The main purpose of those cross visits was to assess the different OGs results and practices by benefiting from the expertise of each of the partners. The evaluation was made according to pre-defined criteria such as ease of implementation on the field or impact on climate change.

This evaluation was carried out using the methodology and the excel table (see table 1 below) developed in deliverable D1.2.

Table 3 : Excel table established by the consortium to assess the different results and practices from OG core group

Template for the evaluation of materials and practical solutions to be disseminated

Name of the Operational Group:

Name of the practice evaluated:

TRL — *Instructions: Choose from 1 to 9 the TRL level of the practice. This cell is to be completed exclusively by the OG coordinator.*

	IFV	VIN	SEASN	IPN	CIHEAM-IAMB	AVA-ASAJA	HMU	UNE	APPITAD	External experts	Total / criterion	Score/ section	Limit check Does not exceed the minimum score
1. Impact in climate change												#DIV/0!	#DIV/0!
1.1. Increase in carbon capture and storage as a result of the implementation of the solution											#DIV/0!		A selected practice must obtain a minimum of 4/5 for at least one of the four criteria
1.2. Reduction of field inputs (water, fertilizers, pesticides, energy, etc.)											#DIV/0!		
1.3. Increasing adaptation to climate change (new tolerant rootstocks, new varieties, need for less water, increased tolerance to pests and diseases, ecological infrastructure development and diversification, etc.)											#DIV/0!		
1.4. Biodiversity preservation for greater resilience to climate change											#DIV/0!		
2. Dissemination												#DIV/0!	NO MINIMUM SCORING
2.1. Crop access: Europe-wide utility (not variety or situation specific)											#DIV/0!		
2.2. Practice access: Accessibility of technology or practice around Europe											#DIV/0!	louble points	
2.3. Allows further research on the basis of the results of the OG											#DIV/0!		
2.4. Ease of understanding and communication of the method or practice											#DIV/0!		
3. Implementation of the practice												#DIV/0!	#DIV/0!
3.1. Level of newness of the technique, practice or technology											#DIV/0!		A selected practice must obtain at least 2/5 in each criteria
3.2. Efficiency in field productivity											#DIV/0!		
3.3. Economic cost-effectiveness in the application of the solution, considering implementation costs and associated savings or benefits.											#DIV/0!		
3.4. Replicability of the solution (in terms of ease of implementation by the grower)											#DIV/0!	louble points	
TOTAL / Partner	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00			

FINAL SCORE #DIV/0!

As the evaluations progressed, it became clear to us that certain criteria needed to be weighed more heavily to ensure that the practices selected were fully in line with the project's objectives, this has led to a few improvements to the evaluation excel table:

- **The practices selected must correspond to a minimum TRL of 8** (as indicated in the Grant Agreement) as they must already be ready to be implemented in the field => New cell to indicate the TRL of the practice, to be included by the OG coordinator, which also moves by a limit, accepting only practices with a TRL level equal or higher than 8 (as indicated in the Grant Agreement).

- **The practices selected must have a sufficiently significant impact on climate change** => More restrictive threshold in the group of indicators on climate change impact: a selected practice must obtain a minimum of 4/5 for at least one of the four criteria.

- **The practices selected must be ready to be deployed in the field and easily implemented by farmers** => Indicators 2.2. « Access to practice" and 3.4. "Replicability", score twice as high as the others

- **The "innovation" criterion must be taken carefully in the context of the project**, as a practice may not be innovative in a given region or for a targeted crop but may be so for other countries or other crops => Include indicator 3.1. Level of newness of the technique, practice or technology as a bonus, and not in the average of the final score.

2. Results of the selection process

The evaluations of each practice presented during the cross visits, together with all the scores awarded by the partners, were compiled in a single excel file (see table 2 and 3 next pages). This global file was used to establish an initial ranking.

This initial ranking was discussed with all the partners at our second General Assembly meeting in November 2023. In addition to the final scores given in the evaluation table excel file, three additional criteria were taken into account in the final selection: the representativeness of the different crops, the representativeness of the 5 subtopics of Climed-Fruit and at last, the distribution of the OGs from the core group (one selected practice per OG, with the following project tasks stemming from the selected practices).

Table 4 : Excel table summarising all practice evaluations (part 1)

CV n°		1.1	1.2	2.1	2.2	2.3	3.1	3.2	4.1	4.2	4.3	4.4		5	6.1	6.2
CV / Practice **Indicators**		OFIVO - FERTIGATION	OFIVO - SUBSURFACE IRRIGATION	CARBOCERT - OLIVE. Permanent covers	CARBOCERT - VINE. Organic amendments	CARBOCERT - ALMOND. Spontaneous covers	GASCOGN'INNOV - Set of indicators to diagnosis soil fertility	GASCOGN'INNOV - Green manure	OLTREBIO - Water use efficiency	OLTREBIO - DSS	OLTREBIO - On-farm compost and compost tea	OLTREBIO - Blowdevice		INTAVIEBIO - Active copper measurement	VIRECLI - Late Winter Pruning	VIRECLI - Precision Irrigation
TRL		9	9	9	9	9	9	9	8	9	8			-	-	-
												Specific criteria for practice applied to food chain process				
1. Impact in climate change	1.1. Increase in carbon capture and storage as a result of the implementation of the solution	2,2	2,9	4,1	3,6	4,1	2,6	3,4	2,3	2,0	3,6	*1.2.1. Reduction of food waste by extending the shelf life*	5	2,6	2,8	2,6
	1.2. Reduction of field inputs (water, fertilizers, pesticides, energy, etc.)	4,2	4,2	3,0	3,1	3,4	3,2	3,4	4,4	4,3	3,8	*1.2.2. Reduction of food waste by recycling and reusing by-product*	1	4,5	3,6	4,4
	1.3. Increasing adaptation to climate change (new tolerant rootstocks, new varieties, need for less water, increased tolerance to pests and diseases, ecological infrastructure development and diversification, etc.)	3,9	4,0	3,9	3,6	3,4	3,7	3,8	4,3	4,1	4,4	*1.2.3. Reduction of inputs in the food chain (water, energy, etc.)*	0,0	4,0	4,4	3,9
	1.4. Biodiversity preservation for greater resilience to climate change	3,6	3,4	4,3	4,1	4,1	5	4,1	2,5	2,1	4,1	*1.2.4. Adaptation of food chain process to climate change*	3,5	3,8	3,0	3,3
LIMIT CHECK *A minimum of 4/5 for at least one of the criteria*		OK	OK	OK	OK	OK	OK	OK	OK	OK	OK		OK	OK	OK	OK
2. Dissemination	2.1. Crop access: Europe-wide utility (not variety or situation specific)	4,1	4,1	2,8	3,9	4,0	3,8	4,6	4,1	4,8	4,5	3,7		3,6	3,1	4,2
	2.2. Practice access: Accessibility of technology or practice around Europe (double points)	4,2	3,9	3,4	4,1	4,4	3,6	4,5	3,0	2,9	4,1	3,9		4,0	4,8	4,1
	2.3. Allows further research on the basis of the results of the OG	4,2	4,2	2,8	2,8	3,0	4,2	3,4	3,4	3,5	4,0	3,7		4,3	4,1	4,0
	2.4. Ease of understanding and communication of the method or practice	4,4	4,4	4,1	4,5	4,0	3,2	4,4	3,9	3,5	5,0	3,8		4,6	3,7	4,0
3. Implementation of the practice	3.2. Efficiency in field productivity	4,3	4,3	2,6	3,4	2,9	3,6	3,5	4,0	4,0	4,4	2,0		3,9	3,9	4,1
	3.3. Economic cost-effectiveness in the application of the solution, considering implementation costs and associated savings or benefits.	3,9	3,4	3,4	3,8	3,5	3,4	3,3	3,5	3,1	3,9	3,6		4,0	3,7	3,6
	3.4. Replicability of the solution (in terms of ease of implementation by the grower) (double points)	4,3	4,1	4,3	4,5	4,5	4,4	4,8	3,5	3,1	4,5	3,4		3,8	4,6	4,0
LIMIT CHECK *A selected practice must obtain at least 2/5 in each criteria*		OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK		OK	OK	OK
FINAL SCORE		**3,98**	**3,92**	**3,57**	**3,85**	**3,86**	**3,75**	**4,04**	**3,49**	**3,34**	**4,22**	**3,15**		**3,92**	**3,93**	**3,87**
BONUS	3.1. Level of newness of the technique, practice or technology	3,0	3,3	1,8	1,8	2,0	3,3	2,5	3,1	3,3	4,0	4,3		3,9	3,1	3,2

Table 5 : Excel table summarising all practice evaluations (part 2)

CV n°		7.1	7.2	8.1	8.2	8.3	9.1	9.2
CV / Practice Indicators		AVOCADO - Humidity probes + drones + vegetative covers	AVOCADO - Agroclimatic map	CITRICS - Capacitance probes	CITRICS - Drones and satellite information	CITRICS - Rice straw mulching	RAINFED OLIVE GROVES - Cover Management	RAINFED OLIVE GROVES - Foliar Protection
TRL		8	9	9	8	8	-	-
1. Impact in climate change	1.1. Increase in carbon capture and storage as a result of the implementation of the solution	3,7	2,5	0,7	0,4	3,9	3,8	0,8
	1.2. Reduction of field inputs (water, fertilizers, pesticides, energy, etc.)	4,0	3,8	4,0	4,0	3,9	3,6	3,5
	1.3. Increasing adaptation to climate change (new tolerant rootstocks, new varieties, need for less water, increased tolerance to pests and diseases, ecological infrastructure development and diversification, etc.)	4,0	4,0	2,8	3,1	4,3	4	3,5
	1.4. Biodiversity preservation for greater resilience to climate change	3,8	3,1	1,8	0,9	1,4	3,8	0
LIMIT CHECK *A minimum of 4/5 for at least one of the criteria*		OK	OK	OK	OK	OK	OK	NO
2. Dissemination	2.1. Crop access: Europe-wide utility (not variety or situation specific)	3,2	2,8	5,0	3,6	2,9	4,8	4,5
	2.2. Practice access: Accessibility of technology or practice around Europe (double points)	4,2	4,5	4,7	4,1	2,1	4,4	5,0
	2.3. Allows further research on the basis of the results of the OG	4,3	4,6	4,3	4,1	4,3	3,2	3,8
	2.4. Ease of understanding and communication of the method or practice	4,7	4,8	4,5	4,4	4,6	4,4	4,5
3. Implementation of the practice	3.2. Efficiency in field productivity	4,3	4,1	3,5	3,3	2,0	3,6	4,0
	3.3. Economic cost-effectiveness in the application of the solution, considering implementation costs and associated savings or benefits.	2,5	4,0	2,3	2,3	3,6	3,4	3,3
	3.4. Replicability of the solution (in terms of ease of implementation by the grower) (double points)	3,8	4,4	3,5	4,0	3,3	4,6	5,0
LIMIT CHECK *A selected practice must obtain at least 2/5 in each criteria*		OK	OK	OK	OK	OK	OK	OK
FINAL SCORE		**3,88**	**3,96**	**3,48**	**3,25**	**3,21**	**4,05**	**3,68**
BONUS	3.1. Level of newness of the technique, practice or technology	3,0	3,9	1,7	2,4	1,7	2,2	2,0

Evaluation

3. Final ranking and selected practices

Based on the above criteria, the practices selected appear in green in tables 2 and 3, and are shown below:

Table 4 : Final selected practices

Practice n°	Selected practice	Crop	Related OG	Partner involved	Remark
1	Subsurface irrigation	Vines	OFIVO	IFV	-
2	Spontaneous covers	Almonds	CARBOCERT	UNE	-
3	Green manure	Vines	GASCOGN'INNOV	IFV	-
4	On-farm & compost tea	Cherries	OLTREBIO	CIHEAM-Bari	-
5	Blowdevice	Agri-food process	OLTREBIO	CIHEAM-Bari	*only practice covered by subtopic 4*
6	Late winter pruning	Vines	VIRECLI	VINIDEA	-
7	Precision irrigation	Vines	VIRECLI	VINIDEA	*2 practices were selected for OG VIRECLI because the practices from the other OG coordinated by VINIDEA (INTAVIEBIO) didn't reached the desired TRL*
8	Vegetative covers management thanks to drones and humidity probes	Avocados	GO AVOCADO	AVA-ASAJA	-
9	Rice straw mulching	Citrus	GO CITRICS	AVA-ASAJA	-
10	Vegetative covers management	Olives	New practices in rainfed olive groves	APPITAD	-