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VALMEDALM

Deliverable 6.5

# Final Data Management Plan

**VALMEDALM: Val**orization of **Med**iterranean **Alm**ond orchards through the use of intercropping integrated strategies

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## Document information

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# 1. Executive Summary

This report constitutes the deliverable D6.5 – Final Data Management Plan of the VALMEDALM project. This document is the final actualization of the D6.1 – Data Management Plan, elaborated on the M6 of the project.

During the 48 months of the project, research data was collected, processed and when possible, published in technical and scientific journals and national and international conferences. Also, along the project, the consortium organized seminars, workshops and field trips. A technical sheet for farmers was also prepared to better share and exploit the data.

The results were also shared in the VALMEDALM website and social media and in the IWRM Action Hub and WEFE4MED, two international platforms that allow sharing knowledge and expertise about experiences between different stakeholders.

All data gathered throughout the execution of the project may be consulted within the respective deliverables

# 2. Data collection and relation to the objectives of the project

The VALMEDALM project aims to strengthen local almond production in the Mediterranean by implementing intercropping practices. This integrated strategy aligns with economic, social, and sustainable principles to help the industry adapt to climate change. To achieve this, each partner generated its own data, from an inventory of intercropping systems in Mediterranean almond orchards (WP1) to assess their impact using environmental, economic, and social indicators (WP4). To optimize data use, all partners built and shared structured databases. As a result, VALMEDALM has produced high-quality, integrated datasets in the areas of agronomy, pest and weed management, and food production. This includes access to scientific papers and studies on intercropping strategies.

## 2.1. Types of data

The data generated through the VALMEDALM project covered a wide range of research fields including:

- Data of success and failure factors of intercropping system in almond orchards (WP1)
- Strategies to encourage farmers to adopt sustainable agriculture (WP1)
- Data of intercropping effect on crop production and environmental impact (WP1)
- Data of practices for pest and weed management (WP2)
- Data of nutritional and biochemical composition of almonds and intercrops (WP3)
- Economic, social, environmental data (WP4)
- Treated data on main results of the demo sites (WP1-WP4)
- Literature data, textbooks, webpages, newspaper articles, social network data, and blog posts (WP5)

An overview of the datasets obtained by WP is presented in the following table:

**Table 1.** Overview of datasets obtained in each WP of the VALMEDALM Project.

| Work packages | Task | Partner Responsible | Datatype & Dataset Description | Description/Purpose Data | Access type | Data access | Utility |
|---|---|---|---|---|---|---|---|
| WP1 | 1.1 | CNCFS | Experimental data: Inventory of failure and success factors of intercropping systems | This dataset contain an inventory on the use of intercropping systems and strategies in order to present failure and success factors to be taken into account. | Public | • Deliverable 1.1<br>• *Horticulturae 2026, 12, 384*<br>• Technical booklet for farmers n 1 and 2 | Researchers, general public, nut and/or legumes producers, agri-food sector |
| | 1.2 | CNCFS | Experimental data: establishment of almond orchards with intercropping practices | The data provide information about the implemented demo sites | Confidential results used for confidential deliverable | • Deliverable 1.2 | |
| | 1.3 | CNCFS | Experimental data: evaluation of the effect of intercropping practices on almond orchards | Data of the productivity, plant growth, use of resources, input use, soil fertility, soil and plant microbial population composition | | • Deliverable 1.3 | |
| WP2 | 2.1 | ARO | Experimental data: Inventory of main pests affecting almond orchards in the Mediterranean region | Data on the main pests in almond orchards in the Mediterranean region to characterize exposures to pests, environmental and agroecological conditions that contribute to sensitivity or tolerance to different pests | Public | • Horticulturae 2026, 12, 384<br>• Deliverable 2.1 | Researchers, general public, agri-food sector, ecological sector |
| | 2.2 | ARO | Experimental data: Inventory of practices for pest and weed management associated with intercrops | Data on the main practices for pest and weed management, associated with intercrops, already applied by local farmers in the Mediterranean | Confidential | • Deliverable 2.2 | |
| | 2.3 | ARO | Experimental data: Impact of intercropping practices on pest and weed management | Data on the impact of intercropping practices on the pest and weed management, namely biodiversity, almond orchards characterization, soil analysis, etc. | Public | • Deliverable 2.3<br>• Technical booklet for farmers n. 4, 5, 6 and 7 | |
| WP3 | 3.1 | IPB | Experimental data: Nutritional and | This dataset will contain results from the assessment of nutritional and | Public | • Deliverable 3.1 | Researchers, general |

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| | | | physicochemical characterization | physicochemical composition on almonds and intercrops produced under intercropping practices in order to determine the most promising samples. | | • Bruna et al 2024, Agriculture 14, 1149<br>• Technical booklet for farmers n. 3 | public, food sector |
| | 3.2 | IPB | Experimental data: Chemical composition | This dataset will contain results from the characterization of almonds and intercrops samples concerning its composition in fatty acids, organic acids, vitamin C, carotenoids, tocopherols, folic acid and phenolic compounds. | Public | • Deliverable 3.2<br>• Technical booklet for farmers n. 3 | |
| | 3.3 | IPB | Experimental data: Bioactive compounds characterization | This dataset will contain results from the characterization of the samples in terms of bioactive compounds, in order to select the most promising | Confidential | • Deliverable 3.3 | |
| WP4 | 4.1 | UNIPA | Experimental data: Economic analysis of almond production | This dataset will contain study costs (labour, energy, fuel, seeds, etc.) from almond production using intercropping practices | Public | • Deliverable 4.1<br>• Technical booklet for farmers n. 8 | Researchers, general public, food sector |
| | 4.2 | UNIPA | Experimental data: Determination of the most suitable environmental, technical and social indicators | This dataset will contain results covering the three pillars of sustainability (environmental performance, economic development, and social growth) | Public | • Deliverable 4.1<br>• Technical booklet for farmers n. 8 | |
| | 4.3 | UNIPA | Experimental data: Assessment of the integration of the different indicators | This dataset will contain results on the joint assessment conducted using MCDA tools to integrate environmental, economic, and social sustainability results | Public | • Deliverable 4.2 | |
| WP5 | 5.1 | CNCFS | Interaction channels (workshops, webinars and conferences) | This dataset contain results from the implementation of interaction channels to promote knowledge transfer | Public | • Deliverable 5.1 | Farmers, associations, farmers cooperatives, companies, the scientific |
| | 5.2 | CNCFS | Demo site visits | This data contain the knowledge transfer derived from visits and field trips along the demo sites of the project | Public | • Deliverable 5.1 | |

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| | 5.3 | MORE | Data collected through the implementation of network strategies | Data will result from the creation of a knowledge networking framework to promote collaborative work, knowledge transfer and women's engagement in productive activities | Public | • Deliverable 5.1 | community, consumers |
| WP6 | 6.1 | MORE | Data management plan | Information on how research data will be collected, processed or generated | Public | • Deliverable 6.1 and D6.5 | Consortium project, Researchers, general public, agri-food sector |
| | 6.2 | MORE | Multimedia to promote intercropping practices in almond orchards and shared through different means | Data used in communication and dissemination activities (e.g. website, newsletter, social media, etc.) | Public | • Deliverable 6.2, 6.3 and 6.6 | |
| | 6.3 | MORE | Data on technical, legal, and economic aspects to exploit the results of the project | Data to identify of strengthens, weaknesses, opportunities and threatens, Marketing Strategy and financial projections. | Public | • Deliverable 6.5 | |
| WP7 | 7.1 | MORE | Reporting and communication data | This dataset contains documentation to the European Commission (deliverables, cost statements, audit certificates, etc.); project intranet and documents server; partners contact list (contacts of consortium and Management Board). | Confidential | • Deliverable 7.3 – 7.10 | Consortium project |
| | 7.2 | MORE | Administrative data | This dataset contains documentation related with administrative activities (agreements, certificates, reports…). | | • Deliverable 7.3 – 7.10 | |
| | 7.3 | MORE | Technical and contractual data | This dataset contains documentation related with technical and contractual activities (financial statements, relevant certificates, contracts, reports…). | | • Deliverable 7.3 – 7.10 | |
| | 7.4 | MORE | Financial data | Bank details for the distribution of the financial contribution of the Financing Authority | | • Deliverable 7.3 – 7.10 | |

### 2.2. Re-use existing data

Project VALMEDALM capitalized on already existing data and integrate the newly generated data. Some examples are:

- In WP1, existing databases on intercropping practices used in the Mediterranean, internet sources (websites, Youtube, patent databases, etc.), review of scientific and technical literature to create an inventory on success and failure factors for the implementation of intercropping practices;
- In WP2, the inventory of the main pests affecting almond orchards was created to identify and characterize the main pests in almond orchards across the Mediterranean region;
- In WP3, to quantify some compounds (e.g. fatty acids, tocopherols, phenolic compounds) software databases was used to assist on the identification;
- In WP4, existing databases, internet sources and scientific and technical literature was used for setting up the most suitable environmental, technical and social indicators to be used in order to evaluate the impact of intercropping practices in almond orchards.

### 2.3. Potential users of published research data

Datasets generated by project VALMEDALM might present interest for:

- Members of the scientific community
- Agri-food sectors, including primary production
- Professionals linked to plant-based products
- General public
- Other research projects that can continue to build on or combine their work with the VALMEDALM datasets
- Policy makers in relevant topics such as agriculture, climate change, sustainability and pest management

### 2.4. Data exploitation

The project data was widely disseminated by the consortium at both national and international conferences, featuring 28 oral presentations and 20 poster communications. Additionally, the results were published in 3 technical papers and 6 peer-reviewed journals, with another 3 peer-reviewed manuscripts currently submitted. An additional 8 drafts are under preparation for upcoming publication. To demonstrate these results, the consortium also organized 4 workshops, 5 seminars, 1 conference, and 8 field trips/visits to demonstration sites, and prepared an online logbook with the best management practices for optimizing almond tree yield and quality (detailed information about all these activities can be found in D6.3 and D6.4).

## 3. Allocation of resources

### 3.1. Estimation of costs

Public project deliverables and close datasets (bibliographic linked cites) were uploaded to the VALMEDALM website. There was no additional cost for publication on the website as it was developed by a partner (MORE) that also was responsible for its management. On the other hand, VALMEDALM open datasets used standard formats in a free of charge research data repository (institutional repositories). However, some project partners institutions have budgeted dissemination costs supporting scientific articles to Open Access Journals. Other costs of data

management activities were covered by allocated resources in the project budget. Anyway, long-term preservation of public data was ensured through partners repositories.

### 3.2. Responsibilities for data management

Through the execution of VALMEDALM, the Steering Committee (Leader: Alexandre Gonçalves (MORE) and the participants (a representative from each organisation) was the main responsible for data management following the guidelines of this Data Management Plan. In any case, the potential decisions on data management does not conflict with the exploitation of the project´s results foreseen by the Plan for Exploitation and Dissemination of Results. Its members were responsible of informing their respective research teams on the provisions set by this Data Management Plan and thus monitoring its compliance in their own institution.

## 4. Data security, storage and backup

### 4.1. Data security as specified for SharePoint

The VALMEDALM project involves the participation of 8 partners and a large amount of data to be generated. Each partner was responsible for the security of its data, as well as storage and backup, however general recommendations and protocols were given:

- Save three copies of your data on two different storage mediums, as well as one copy off site;
- Backup your files/data on a regular basis and use different media for it (such as external hard drives, computer hard drives, department servers, etc.;
- Do not backup or store sensitive data on commercial clouds (such as Dropbox, Google Drive, etc.);
- Enable computer firewalls and keep antimalware software always up-to-date and operational;
- Users must have access to the computers and/or servers via individual user accounts and not shared accounts;
- On collaborative networks/platforms/Intranets: use permission-controlled files so that users, depending on their status, can “read only”, “write”, or “execute” files. Computers connected in such networks should not store sensitive data, unless data is encrypted, so as to minimize network vulnerabilities;
- Cloud-based storage is useful as a secondary or tertiary storage location for files.

VALMEDALM worked in a virtual workspace (Share Point) to storage and share internal data and documents. As coordinator partner, MORE, established a standard procedure by Share Point access to project members where the data generated by the project was deposited. Each partner has IT departments which ensure security standard protocols mentioned above and each WPs have data storage and backup specific conditions and requirements.

### 4.2. Research

Data repositories (such as ZENODO or institutional open data repositories) were recommended in such sense. However, this via was not recommended for sensitive or confidential data that will be encrypted or treated anonymously.

## 5. Ethical aspects

While no general ethical aspects are foreseen, on the topics of evaluating consumers’ interest and acceptance of VALMEDALM outcomes, when it comes to creating surveys and organizing focus groups, partners responsible for case studies that should have a Data Protection

Officer (DPO) (or similar figure) as well as an ethics committee in place (or a similar figure). When conducting experiments or surveys, the Principal Researcher and the Project Coordinator require a formal approval from the ethical committee and the DPO. More specifically, the data collection method and the model of the questionnaire as well as the focus group guide must be approved by the ethics committee, and the data collection must be conducted according to the ethical principles expressed in the Declaration of Helsinki. The Article 19 will be emphasised which introduces the concept of social justice while extending the scope from individuals to the community as a whole by stating that "research is only justified if there is a reasonable likelihood that the populations in which the research is carried out stand to benefit from the results of the research".

Furthermore, the protection of personal information according to the General Data Protection Regulation (EU) 2016/679 (EC, 2016) (GDPR) must be ensured or in accordance with the national Data protection rules, if required. The development of focus groups, survey and involvement of personal interviews (surveys and discussion sessions) proposed for extracting data from consumers or stakeholders followed the European General Data Protection Regulation No 2016/679 amended in May 2018. In particular, farmers and other stakeholders were randomly selected and informed about the purpose of the given study and the funding entity. Stakeholders were also informed that all information collected will be exclusively used for research purposes and its confidentiality will be absolutely guaranteed. The surveys respondents will be given the opportunity to omit the questions which they do not want to answer and to withdraw from the survey at any moment of the process.

For the Stakeholders analysis, a face-to-face discussion session was carried out and a consent form was provided. Once the participant of the Focus Groups were defined according to the selection criteria, names and contact details were collected for further participations following the EU rules protection.

The VALMEDALM does not include animals in any of the proposed tasks. Third countries: personal data will be imported from Israel and Morocco to EU countries and treated as described above.