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## Introduction

Mediterranean dry-farming systems mostly rely on cereal production, often on sole crops, due to a lack of alternatives. In this view the 4CE-MED project aims at wide spreading the adoption of CA by introducing a new oilseed crop, camelina (*Camelina sativa L. Crantz*), which can be grown as a cash cover crop in the Mediterranean region. The inclusion of camelina, as a cash cover crop, within conventional Mediterranean farming systems will match environmental benefits related to cover crop “attitude” and additional revenue for farmers, that can get profit from selling seeds, oil and protein. Among concurrent cover crops, camelina was chosen as the most suitable for the Mediterranean climate being extremely drought tolerant, very suitable to CA, and characterized by short growth cycle allowing double cropping systems in several environments. Basing on a strong participatory approach, the locally tailor-made 4CE-MED systems, including camelina, will be tested, adjusted and finally demonstrated to farmers and other stakeholders in order to finally foster the adoption in the Mediterranean of CA. The concept behind the 4CE-MED project is presented in Figure 1.

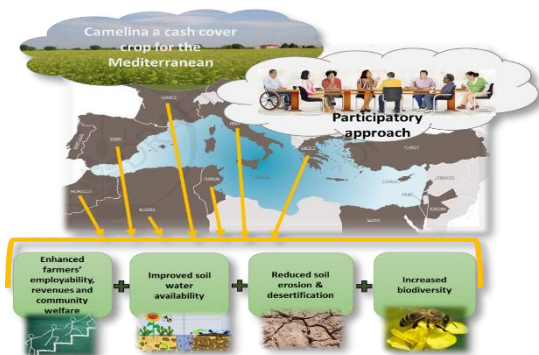


Fig. 1. Concept behind the 4CE-MED project.



Fig. 2. Geographical localization of the eleven 4CE-MED partners.

## The consortium

The 4CE-MED consortium was conceived in order to follow a multi-actor approach. The consortium includes 11 partners from 7 different PRIMA countries (Fig. 2): 4 EU (MED-EU = Italy, Greece, Spain and France) and 3 non-EU (MED = Algeria, Morocco and Tunisia), including research organizations, universities, SMEs, and farmers' cooperatives. The consortium is well-balanced with 7 partners belonging from the R&D and 4 others representing the productive world, with the aim of maximizing the impact of 4CE-MED's results. The consortium combines the experiences of CCE, CRES, and UNIBO on camelina; ICARDA, INRAA, and INRAT on cropping systems tailored for semi-arid environments of northern Africa; ARVALIS, CRES, UNIBO, BIOS and Spanish Co-ops on cropping systems tailored for environments of southern Europe; CREA on the fine tuning of locally available mechanization systems to the 4CE-MED solutions; and INI on effective dissemination, communication and exploitation strategies.

## Preliminary results

The 4CE-MED project established in each participating country a local multi-stakeholder platform including farmers, practitioners, long-term CA adopters, scientists, representatives from farmer associations and political venue. A first consultation was carried during summer 2020 at the scope of engaging local stakeholder in the co-design of the tailor-made 4CE-MED solutions, which will be then tested in the field trials established in autumn 2020. In each participating country, different field trials have been successfully established during autumn/winter 2020 (Fig. 3) in all participating countries. It was the first time that camelina was sown in northern African countries (i.e. Algeria, Morocco, Tunisia), but it established well in all the conditions/trials. Its high suitability to CA was confirmed and the emergence rate and soil coverage was remarkably high at each test site. Weed management remains an open question since only herbicides against monocot weeds are selective for camelina, so in condition of high weed pressure the only weapon is plant density. The organization of field visits in each participating country will give the chance of a fruitful interaction with local stakeholders in order to understand if their expectations toward this almost new crop are met.

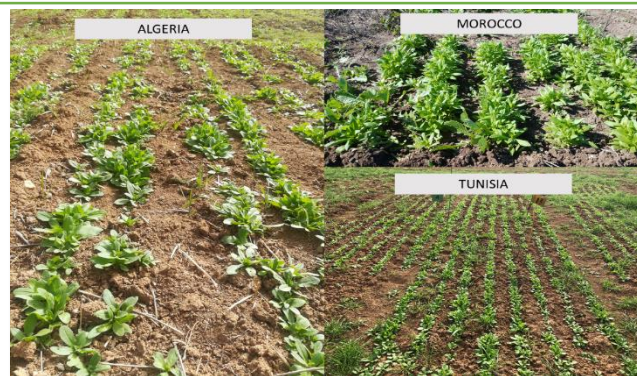


Fig. 3. Field trials with camelina established in the 4CE-MED project in Algeria, Morocco and Tunisia (Photos taken at the end of February 2021, all right reserved to 4CE-MED partners).

## Conclusions

The 4CE-MED project has very challenging objectives, but the close cooperation among all partners will permit to achieve a significant progression in the implementation of CA in Mediterranean dry-farming systems. The choice of camelina, as a cash cover crop, to widespread the acceptance of CA among smallholders is challenging, but the whole 4CE-MED consortium will actively cooperate to achieve it. The co-design of the 4CE-MED systems, by the engagement of local stakeholders, will permit to easily deploy the achieved results for improving the well-being of the rural communities of the Mediterranean region.

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