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Workpackage 4

SHARING KNOWLEDGE IN SUSTAINABLE AGRICULTURE

Session II

Prospects for Conservation Agriculture The Mediterranean Platform

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KASSA

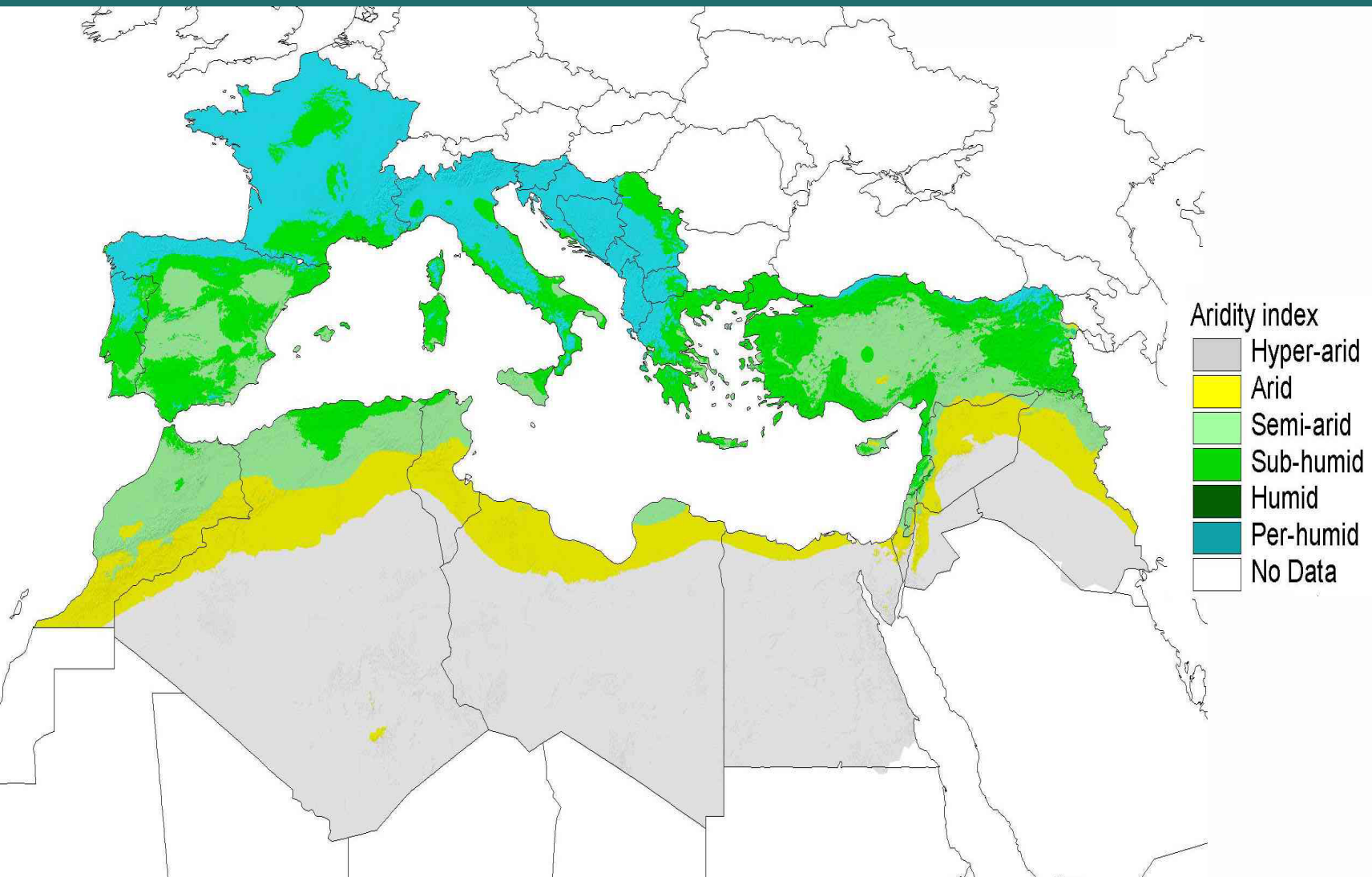
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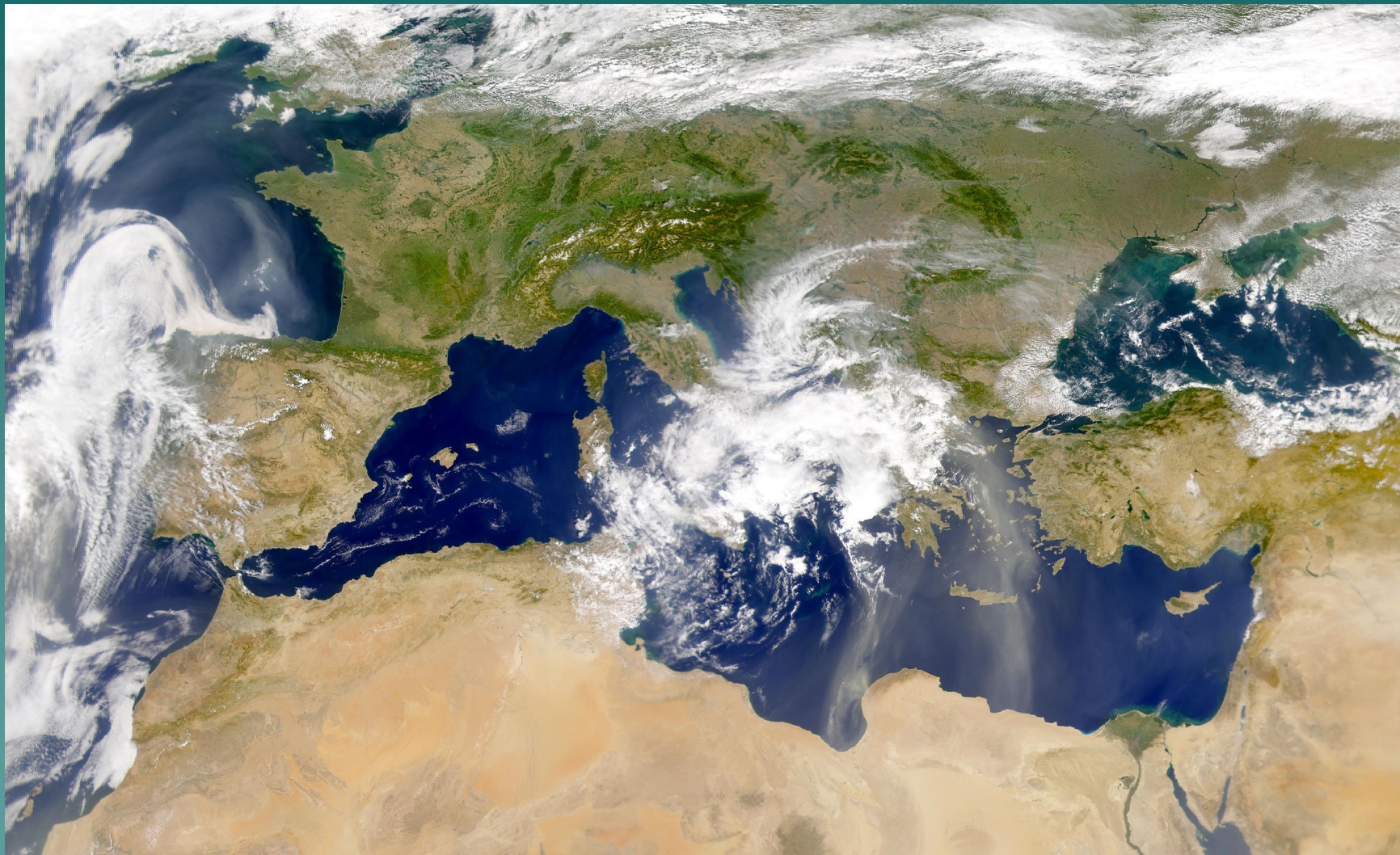
The Mediterranean Platform Partnership

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GREECE	23	NAGREF	Victor Kavvadias Christos Paschalidis Georgios Zervakis

Biophysical conditions and cropping systems in MED Region



Biophysical conditions and cropping systems in MED Region



Heterogeneous, high variable, dry and rainfed

General Constraints

Water is the main constraint for Agriculture in MED region. Water scarcity and drought are constant features in the area.



General Constrains

Soil degradation and desertification is becoming the critical phenomenon.



Why CA is an alternative ?

Socio-economic aspects:

- * Better economy at farm level.
- * CA technologies reduce costs in machinery and fuel and time-saving in the operations.
- * Yield increase (10-15 %) but overall YIELD STABILITY.

These are the main reasons for adoption by farmers in the MED Area.

Environmental aspects:

Better water economy and water productivity

Better soil protection and soil and water quality

Reduction of greenhouse gas emissions

Better nutrient use efficiency (reduction of inputs and pollution)

These have not been the main reasons for CA adoption by farmers in the MED Area.

... However, after the farmers practice CA for several years, they recognize the environmental benefits.



Which are the main constraints for CA adoption in MED Area?

CA is in early stage (considering all MED Region).

There are places with high intensity adoption after more than 20-25 years.

Climatic and soil conditions are not constraints...but biophysical features become main reasons for CA adoption.

Only under humid conditions, soil compaction and some pest, weeds and diseases, rodents and slugs may have a negative impact.

Despite that, some constraints can be detected generally spread over the whole MED Region.

Example of 25 years of continuous CA practice



Crop residue management is a very important matter of concern among CA users.



How much residue must be retained ?



When to remove the excess of crop residues ?



Alelopathic effects



How to manage crop residues
in combination with livestock ?



Grazing stubble



Low height cut



High height cut

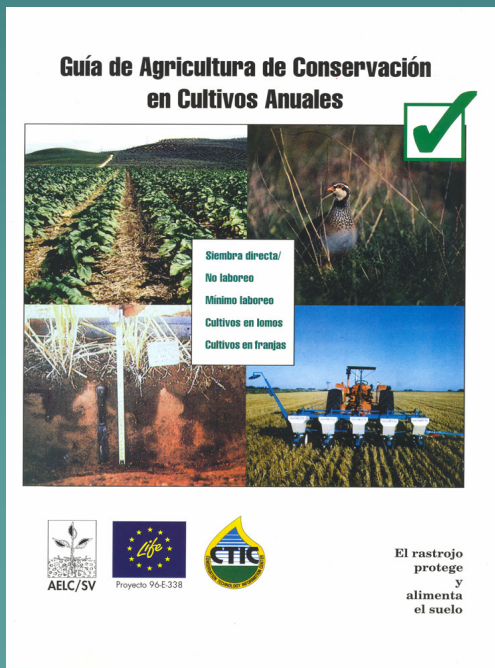
How to manage the straw
and stubble ?



Access to CA machinery and adaptation to local conditions, specially in Northern African Countries of MED area.

Social traditions and reluctance of farmers to changes.

Insufficient transfer of technology



In which conditions CA is suitable?

Most of the geographical and biophysical conditions could be suitable for CA in the MED Region:

In semiarid conditions, where crop is high dependent on water availability

In areas where the soil has low organic matter content.

In erosion and desertification-prone areas.

.....However, more site-specific experimentation is needed to assess the viability of specific CA practices.



In which conditions CA is not suitable ?

Soils with impeded drainage and susceptible to compaction are not always suitable for CA.

Locations with low crop residue production are not fully suitable for no-tillage.

Reclaimed soils in marsh areas (i.e. Marismas del Guadalquivir) are not suitable for CA due to the high clay content, high salinity and an extremely saline shallow water table



Which approaches and technologies should be used ?

Objectives in dryland areas:

Improving water economy
(availability and use by crop)

Increasing soil protection.

Objectives in irrigated areas:

Improving water management
(saving and distribution)

Improving water and soil quality



Technologies:

Increase crop residue production and optimise crop residue management

Optimise crop and livestock relationships

Use of cover crops between rows in fruit tree crops

Optimise irrigation systems adapted to CA for saving water and energy and avoid loss of soil quality

Optimise technologies (use of organic products, placement on time-space and machinery) to increase fertilizer use efficiency

Use of crop rotations to increase crop diversification and improve weed, pest and diseases control.

Which are the research proposals ?

Knowledge gaps

There has been some excellent research on CA in the MED Region, however,



There is limited information on the following issues:

- * Time to arrive to complete stabilisation of the cropping system in CA (transition phase).
- * Nutrient dynamics under CA and its relationship with fertiliser use efficiency.
- * Performance of crop rotations under CA.
- * CA technologies taking into account site-specific environmental aspects.
- * Socio-economic factors affecting the adoption and impact of CA systems.



Which are the research proposals ?

Research topics and priorities

For the **MED Region**, it would be of paramount importance gathering new knowledge on the following topics:

- * Crop residue management
- * Perennial crops management (olive, almond, vineyard).
- * Crop and soil response of CA under irrigation conditions
- * Crop nutrition and fertilization management
- * Integrated crop-livestock production systems
- * Integrated crop production under CA

Which are the research proposals ?

These research priorities should be supported by the design, development and maintenance of **site-specific long-term CA field experiments** (rainfed and irrigated conditions at both research and on-farm levels)

The strategy for MED Region in both dryland and irrigated conditions should be aimed at:

Management for soil and water conservation

Which are the current policies on CA ?

In Northern European MED countries, some mandatory national and local directives have been released according CAP. However, measures related with CA are only indirect.

In Southern MED countries, as Morocco and Tunisia, governments support the proposals and projects from researchers and advisers taking into account CA techniques as the best option for the agricultural development in dryland areas.



Which are the proposals for future local and regional policies ?

Current policies in European Mediterranean countries aimed at

- * Preserving natural resources (soil and water).
- * Maintaining crop productivity and enhancing yield stability
- * Promoting sustainability of agricultural systems

should emphasise CA practices.

New policies should encourage CA use through incentives to farmers for natural resources and biodiversity conservation.



For the success of the CA adoption and related policies, **specific Technology Transfer Systems** should also be promoted.

Private industries and farmer associations should have a role in the dissemination of CA technologies.

It should be clarified and **recognized by public opinion** the long term benefits of CA practices.



In MED Region,
please leave me on the soil !!!

Thank you