

CLIMAGRI – Climate Change and Agriculture

FAO/UCEA CLIMAGRI^{med} PROTOCOL FOR COLLABORATION

Development of a network in the Mediterranean region on climate change and agriculture

Technical component (iv)

Development of a land evaluation system useful for defining climatic risk for agriculture due to climate variability and climate change in the Mediterranean area at a local and national scale

Report of the First Mission from Morocco

Duration: 25-30 January 2005

Place: Bologna (Italy)

Collaborative Institutions:

- Agenzia Regionale Prevenzione e Ambiente dell'Emilia-Romagna (ARPA-SIM, Regional Agency for Prevention and the Environment of the Emilia-Romagna Region)
- Istituto di Biometeorologia Sezione Monitoraggio Agroecosistemi (CNR-Sassari, Institute of Biometeorology, Agroecosystem Monitoring Laboratory)
- Department of Agronomy and Agricultural Machinery, INRA Morocco

National Experts from the National Institute for Agronomic Research (INRA):

- Mohammed **KARROU**, Head of Agronomy and Agricultural Machinery Department; E-mail: karrou@ibnawam.inra.org.ma
- Hassan **BENAOUA**, Head of Agroclimatology and GIS, CRRA, Settati, Morocco; E-mail: hbenouada@yahoo.fr
- Riad **BALAGHI**, Head of Agroclimatology and GIS, CRRA Meknès, Morocco; E-mail: balaghi@caramail.com

Framework of the mission:

This scientific visit is undertaken within the Mediterranean network on climatic changes in Agriculture which is coordinated by FAO (CLIMAGRI^{med} Network). The objective of this network is to test and validate methodologies of land evaluation, developed by the Italian CLIMAGRI project that are useful for defining climatic risk for agriculture due to climatic variability and climatic change in the Mediterranean basin.

This mission is a follow up of the visit, to Morocco, of the Italian counterparts (Andrea MOTRONI, Simona CANU and Gabriele ANTOLINI) from 10 to 15 December, 2003. During this visit, it was decided that the Moroccan partners (Department of Agronomy) prepare required data for testing the methodologies mentioned above. These data concern the climate, soil, topography and land use.

Objectives of the mission:

- Exchange of information on methodologies used in Morocco and in Italy in the domains of Agrometeorology;
- Presentation, by the Moroccan team, of collected available agroclimatic data concerning Settat and Meknès provinces;
- Discussion of the possibility of using, by Moroccan partners, some tools developed within the framework of the Italian CLIMAGRI project;
- Discussion of the possibility of preparing a Mediterranean project on climatic change and risk management in agriculture.

Principal researchers involved in the discussions:

- INRA, Institut National de la Recherche Agronomique-Morocco
 - Dr. Mohammed Karrou (karrou@awamia.inra.org.ma)
 - Dr. Riad BALAGHI (balaghi@caramail.com)
 - Dr. Hassan Benaouda (hbenaouda_inra@yahoo.fr)
- ARPA, Servizio Idrometeorologico Regionale
 - Dr. Franco Zinoni (fzinoni@smr.arpa.emr.it)
 - Dr. Vittorio Marletto (vmarletto@smr.arpa.emr.it)
 - Dr. Lucio Botarelli (lbotarelli@smr.arpa.emr.it)
 - Dr. Gabriele Antolini (gantolini@smr.arpa.emr.it)
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 - Dr. ssa Francesca Ventura (fventura@pop.agrsci.unibo.it)
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- CNR, Istituto di Biometeorologia, di Bologna
 - Dr. ssa Federica Rossi (f.rossi@ibimet.cnr.it)
 - Dr. Teodoro Georgiadis (t.georgiadis@ibimet.cnr.it)
- CNR, Istituto di Biometeorologia, Sezione di Sassari
 - Dr. Pierpaolo Duce (p.duce@ibimet.cnr.it)

Summary of activities:

During the first day of the visit (26th January) , there were presentations of certain research activities conducted within the framework of the Italian CLIMAGRI project. The first presentation concerned the Agrometeorological activities conducted by ARPA in the Emilia-Romagna region and it was given by Drs Franco Zinoni and Gabriele Antolini. The second presentation, on Water Balance (CRITERIA model), was made by Dr Vittorio Marletto and it was followed by that of Dr Pierpaolo Duce on Land Capability Evaluation in relation to scenarios of global climatic change. On the same day, the team visited the Weather Forecasting Service of the Emilia-Romagna region.

During the second day, INRA-Morocco scientists (Benaouda, Balaghi and Karrou) presented some tools and methodologies developed by their agrometeorology and GIS laboratories. They also presented the available data collected within the network taking into consideration the terms of references of the first meeting in Morocco. As outputs of their work, they presented also different maps and indices (maps of Morocco describing the spatial distribution of average rainfall, land capability, synoptic weather stations, all climatic stations network, NDVI, land use, length of growing period and some indices like SPI). Also, the group visited the Micro-meteorology, Physiology and Tissue culture laboratories of CNR of Bologna.

In the afternoon of the second day, all the partners attended a seminar organized by the Department of Agroenvironmental Sciences and Technologies (DISTA) of the University of Bologna. The presentations made during this seminar were:

- CLIMAGRI and CLIMAGRImed project, by Dr P. Duce;
- Organization and research orientations of INRA and agroclimatic context of Morocco by Dr Mohammed Karrou;
- Follow up and evaluation of land degradation (Scientists of DISTA);
- Water balance in 3 dimensions of CRITERIA (Scientists of DISTA);
- Influence of cultural practices on sustainability of soil fertility (Scientists of DISTA);
- Renewable energy from industrial crops (Scientists of DISTA).

Conclusions and recommendations:

- The partners (INRA-Morocco, ARPA-Bologna and CNR-Sassari) decided to continue the collaboration in the field of risk management in agriculture due to climatic change;
- INRA-Morocco showed interest in testing, in Morocco, the tools developed in the CLIMAGRI Project;
- The partners expressed interest in improving some tools and methodologies developed in the CLIMAGRI Project;
- The partners recognized that the test of the tools in Morocco and their improvement required financial support. This issue will be discussed with FAO;
- The partners supported the idea of developing a larger project for the Mediterranean region on aspects related to risk management in agriculture due to climatic change;
- A group of Italian scientists will visit Morocco during 2005 to prepare with their counterparts a project document.

Agenda

Wednesday, 26 January:

- Presentation of the agrometeorological activities of ARPA-SIM (G. Antonili);
- Presentation of the water balance model CRITERIA (V. Marletto);
- Presentation of the activities in IBIMET (P. Duce);
- Discussion;
- Visit to the Hydrometeorological Service of the Regional Agency for Health Prevention and Environmental Protection in the Emilia-Romagna Region;

Thursday, 27 January:

- Presentation of the agrometeorological activities of INRA and data collected in the framework of the network activities of CLIMAGRI*med* (R. Balaghi and H. Benaouda);
- Discussion;
- Visit to the National Research Council (CNR, Bologna);
- Workshop at DISTA (Department of Agroenvironmental Sciences and Technologies):
 - Presentation of the activities of the CLIMAGRI (P. Duce);
 - Presentation of the activities of INRA (M. Karrou);
 - Influence of cropping techniques on the sustainability of soil fertility (G. Baldoni);
 - Presentation of some activities in the Department of Agroenvironmental Sciences and Technologies;
 - Discussion.

Friday, 28 January:

- Discussions of the future activities and cooperation within the CLIMAGRI*med* network;