

Final Report

Group Training Course on

Rangelands Plant Terminology & Basic Plant Identification



Jointly organized by the
**International Center for Agricultural Research
in the Dry Areas (ICARDA)**
and
Office de l'Elevage et des Pâturages (OEP)
Direction Générale des Forêts (DGF)
In Tunisia

11 - 14 December 2018
Hotel Averroes Iberostar, Hammamet South, Tunisia

Introduction

Plants growing in rangelands are of significance, particularly due to their major cultural, livelihood or economic roles that they play in many people's lives (Ros-Tonen and Wiersum 2005). In addition to their role as sources of livestock feed, they play a major environmental role in water and soil conservation. They also play an important economic role, especially in medicinal and aromatic use, honey and truffle production (Hamilton 2004). Furthermore, these plants represent a strategic reservoir for developing well adapted genotypes to face the negative impacts of climate change expressed by the biotic and abiotic stresses (drought, heat, salinity, pests, etc.). Therefore, to maintain a rich biodiversity and preserve the provisioning of ecosystem services, it is necessary to identify plant species, determine their family and their communities to which they belong. Knowing a plant's identity will also contribute towards planting it in ideal sites, for its continued conservation and growth/cultivation. This is also important when planning for the uses of certain plants for such roles as medicinal plants, or plants of economic value which provide non-timber products.

Objectives

This course aimed to develop and improve the capabilities of engineers and technicians in the Office of Livestock and Pasture (OEP, Tunisia) and other governmental departments/Universities on the identification and classification of rangeland plants, through conducting field surveys and statistical analyses to identify plant species and the vegetation communities they belong to.

The Course topics

The training course was designed to include the scientific basis of plant classification, rangeland biodiversity, presentation and characterization of the most important pastoral plants in Tunisia's rangelands. The course also included rangeland plant collection and conservation, and the different methods of identifying vegetation communities based on field measurements and statistical analysis.

Participants

The training took place in Hammamet during 11- 14 December 2017. The participants representing several institutions: technical staff from the Office de l'Elevage de des Pâturages (OEP), graduate students from the Ecole Supérieure d'Agriculture de Mateur (ESA Mateur), Commissariat Régional de Développement Agricole (CRDA), Direction Générale de la Pêche et de l'Aquaculture (DGPA) and La Banque Nationale des Gènes (BNG).

Course implementation

First day: 11-12-2018

- The first presentation was about rangeland importance presented by Dr. Mouldi Gamoun (Rangeland Scientist at ICARDA). He showed that Tunisia's rangelands have important ecological significance, are an important economic resource and have significant cultural and heritage values for the indigenous and non-indigenous population. He also highlighted the fact that the management of rangelands, in the present and into the future, is of great interest and consequence to the whole Tunisian community.
- Flora of Tunisia: in this section, Dr. Zeineb Ghrabi (Professor of Botany at INAT), presented the floristic diversity of Tunisia including the total number of endemic species. Then, she cited the main vegetation

communities in Tunisia, information on the names, taxonomic relationships, country-wide distributions, and morphological characteristics of main native plants in Tunisia.

- Dr. Zeineb then described the process of carrying out phytosociological surveys and their importance towards understanding ecosystem structure and species distribution within ecosystems. Dr. Zeineb pointed out that identifying species found within the same habitat is important in describing the physiognomy of the landscape, as well as determining why plant communities have a given structure through the mechanisms of species distribution within them.
- Dr. Mouldi then explained the basis of scientific names of plants and he then described the main perennial and annual species of arid rangelands in Tunisia, through using their common and scientific names.

Second day: 12-12-2018

- Field trip: This field trip aimed to perform a phytosociological survey. The participants were divided into two groups to collect plant samples present in the area which would then be identified. After species identification, 5 phytosociological surveys were conducted. The collected species were then brought back to the conference room to illustrate how to set-up a herbarium using specimens.

Third day: 13-14-2018

The aim of the third day was to form different workgroups which would identify the collected species and to make a herbarium specimen.

- Dr. Mouldi described and demonstrated how to enter the data of phytosociological surveys in excel and how to perform the field data analysis. He did this by explaining and demonstrating to the participants a Factorial Correspondence Analysis and Hierarchical Clustering (Dendrogram and classification) using SPSS Statistical software.
- The groups were divided separately according to a working groups i) focusing on excel data entry analysis with SPSS and ii) focusing on plant identification with Dr. Zeineb.

Fourth day: 14-12-2018

- This day was based on a presentation by Dr. Mouldi on how to calculate rangeland productivity and estimate carrying capacity. Participants were then given their own scenarios to practice and apply the examples already given to them. This presentation was followed by an evaluation of the course and a general discussion involving all participants.

Course Outcomes

Dr. Mounir Louhaichi led the discussion about the next steps which as a follow-up from the training course. Due to the training course subject, there was a decision to produce the following:

Herbarium:

There was a decision to start establishing a herbarium for the Tunisian flora in each region. For easier identification, a plant needs at least four months to reach the flowering stage. Therefore, it was agreed that:

- The first and most important step was to agree on a workplan (who does what, and when) which should be respected.
- OEP will assign this task to certain staff in each regional office.
- A training program should be set-up to enhance the capacity of the staff.

Manual about plant identification:

Dr. Zeineb will prepare a simple manual to help the technical staff who are interested in plant identification. This manual will document the same information which was presented in this training. One of the suggestions from the participants was for the manual to demonstrate the practical aspects useful in the identification of rangeland species in the field. Dr. Zeineb mentioned that there is an important document that is already available at the *La Banque Nationale des Gènes* (BNG) for such a purpose. It was agreed that an official letter will be sent by Mr. Nasri (DG of OEP) to the DG of BNG to request enough copies to be distributed to all regional offices.

Manual about the rangeland measurements:

All participants insisted on the importance of having another manual covering techniques for rangeland inventorying. This manual will help technical staff to perform their work properly and to improve the accuracy of the data collected by staff. Dr. Mounir mentioned that this is planned to be a deliverable in 2019.

Digital herbarium:

ICARDA's rangeland team has already started preparing a digital herbarium of Tunisian flora, initially focusing in Tataouine, Southern Tunisia. Drs. Mounir and Mouldi presented the draft of this herbarium and asked for suggestions on what information should be added to complete it. Following the discussion, it was agreed to include the following to the digital herbarium:

- Latin names
- Synonyms
- Family names
- Common names
- The life cycle: annual, perennial, biannual (this can be added on the picture as a symbol)
- Life form: shrub or grass
- General palatability (this can be added on the picture as a symbol)

Participants insisted on the importance of verifying the accuracy of the information provided in the manual before publishing. For this, the herbarium will be checked and revised by national experts.

Training and capacity building:

Due to the importance of this training course, OEP senior management decided to conduct a similar training in January 2019. The first course will be organized in the capital (Tunis) which will involve the remaining districts that could not be represented during the current phase of training, and then a regional training will be conducted in each region.

Overview of the training and perspectives with the General Director of OEP Mr. Mohamed Nasri (general discussion).

The general evaluation of this course was positive, and the participants thanked ICARDA for arranging and giving them the chance to participate in this this course that covered a very important topic. Mr. Kamal (Ministry of Agriculture) was keen to know what was next concerning how to implement what the participants learned in this course. He mentioned the need of continuing this trend to benefit from the advantages of this training. Participants mentioned the importance of establishing the national herbarium and that this should be considered as a very important outcome of this training. They highlighted that a herbarium is one step towards knowing Tunisia's plant resources, which will be important towards contributing to their conservation for future use to help to mitigate climate change. The participants also emphasized that there is a need to have some basic tools to achieve this mission, such as high-resolution cameras for taking pictures and GPS units for recording the location of the identified plant species.

However, some participants were concerned about the differences in the staff experience among the regional offices. For example, Tataouine team has more experience than other staff members in other regions due to the training they already received from ICARDA's rangeland team. Some participants suggested that other less experienced regional offices should use the more experienced staff to their advantage through engaging them more so as to tap in to their knowledge. Participants stated that the ideal selection of course participants for each training course was needed, seeing that staff members belong to different regions as well as institutes. At the same time, they insisted on the importance of increased research integration and collaboration among these institutes, especially between OEP and CRDA, as this would help to achieve the common goals for both institutes.

Houda from *La Banque Nationale des Gènes* (BNG) insisted on the importance of this training and the advantages of having participants from different agencies. She highlighted the importance and the need to collaborate with BNG to conserve the Tunisian flora. This could be done through fruitful collaboration among different institutes and she requested all participants to actively cooperate with CRDA, OEP and BNG to achieve this goal. Participants insisted on the importance of data analysis and interpretation and they requested a specific training on rangeland data management and analysis. On behalf of the graduate students, Dr Slim thanked ICARDA for the valuable and important training. He emphasized on the importance of student's engagement in such training as this will help them to enhance their education and widen their knowledge, with the expectation that their research output and quality is improved.

Dr. Nasri, concluded the general discussion and he guaranteed the role of OEP in Tunisia towards making that the agreements established during the training course are executed. He acknowledged the importance of this training and the high level of the resource persons who attended the course, as well as acknowledging the commitment of participants and their eagerness to learn and practice the knowledge provided through this training. He insisted on achieving the action plan agreed in this training

and he encouraged all the concerned parties to aim to achieve and deliver on their tasks to reach the desired goal. At the end of the session, successful participants received the certificates presented by Drs. Nasri, Louhaichi, Zeineb, Mouldi, and Hassan.

References

Hamilton, A.C., 2004. Medicinal plants, conservation and livelihoods. *Biodiversity & Conservation*, 13(8), pp.1477-1517.

Ros-Tonen, M.A. and Wiersum, K.F., 2005. The scope for improving rural livelihoods through non-timber forest products: an evolving research agenda. *Forests, Trees and Livelihoods*, 15(2), pp.129-148.











Rangelands Plant Terminology & Basic Plant Identification

Training Agenda

11 - 14 December 2018

Hotel Averroes Iberostar, Hammamet South, Tunisia

Tuesday 11 December 2018		
09:00 – 09:30	Registration Opening note and course outline: - Mr. Mohamed Nasri (DG OEP) - Mr. Fethi Gouhis (OEP) - Dr. Mounir Louhaichi (ICARDA)	Participants
09:30 – 10:00	Coffee break	
10:00 – 10:30	- The importance of rangelands in Tunisia - Flora of Tunisia: plant diversity and endemic species	Dr. Mouldi/Ghrabi
10:30 – 11:30	Flora of Tunisia: main plant communities	Dr. Ghrabi
11:30 – 12:00	Plant Taxonomy and nomenclature	Dr. Ghrabi
12:00 -13:00	Phytosociological survey: methodology and interest	Dr. Ghrabi
13:00 – 14:00	Lunch	
14:00 – 15:30	The basic of scientific names of plants: Presentation of the main perennial species	Dr. Mouldi
15:30 – 15:45	Coffee break	
15:45 – 17:00	The basic of scientific names of plants: Presentation of the main annual species	Dr. Mouldi

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Wednesday 12 December 2018

08:00 – 16:00	Field trip to Zaghouan: <ul style="list-style-type: none">- Identification of plants on the field- The use of phytosociological methods in ecological investigations: The Braun-Blanquet method.- Methods of preparation of Herbarium Specimens	All
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Thursday 13 December 2018

08:30 – 10:00	Practical session: Identification of some plants by herbarium specimens	Working groups
10:00 – 10:30	Coffee break	
10:30 – 12:30	Field data introduction with Excel	Working groups
12:30 – 13:30	Lunch	
13:30 – 15:00	Field data analysis: Factorial Correspondence Analysis	Working groups
15:00 – 15:30	Coffee break	
15:30 – 17:00	Field data analysis: Hierarchical Clustering (Dendrogram and classification)	Working groups

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Friday 14 December 2018		
08:30 – 10:00	Practical Exercise: Determination of carrying capacity of some rangeland sites with different species composition	Working groups
10:00 – 10:30	Coffee break	
10:30 – 12:00	General discussion	All
12:00 – 13:00	Certificate and closing	Mr. Nasri Mr. Gouhis Mr. Mounir
13:00 – 14:00	Lunch	All
14:00	Departure	All

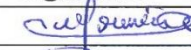

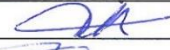

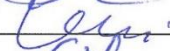
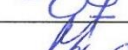
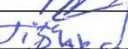
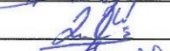

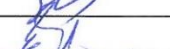
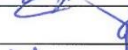

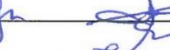
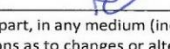
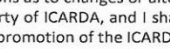



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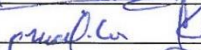

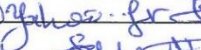

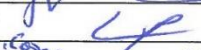

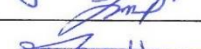

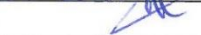
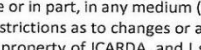
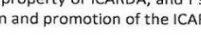
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