



Ecole Nationale d'Agriculture de Meknès



FSD7-2022 Workshop

**Designing Climate Smart Agricultural Systems
for a Sustainable Transformation of the Agri-food
Systems of the Dry Areas**

**30 October to 03 November 2022
Marrakech (Morocco)**

Session 3: 31 October 2022



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WHO WE ARE :

• M Sc degree Majors:

- Agricultural Economics
- Animal Production and Range Management
- Fruit Trees
- Plant Sciences and Production Techniques
- Plant Protection and Environment
- Rural Development Engineering
- Agroecology (Accredited recently)

National School of Agriculture Meknès



• *Serving Agriculture and Rural Development for more than 80 years*



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ENA and AGROECOLOGY

○ MSc in Agroecology

Support the GG strategy by filling the gap in managers and engineers to contribute to the acceleration of Morocco's agroecological transition.

Education

Agroecology
Master
degree Major

Outreach

Agroecology
R&D
Platform

Research

Agroecology
Research
Team

○ AgroEcology R&D Platform

A research and demonstration site for promoting the agroecology as a sustainable way for production at both regional and national levels.

○ Research Team (AGREE)

Innovate in agroecological practices and environmental education (stakeholders: farmers and sons of farmers, educational institutions, local authorities, associations and NGOs ...).



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AGROECOLOGY AND CSA

Both CSA & AGROECOLOGY aims to:

Sustainably
increase
agricultural
productivity;

Adapt and
build the
resilience;

Reduce
greenhouse
gas emissions



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Introducing agroecological practices in vegetables productions in small scale farming system in the Saïs region of Morocco

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Agroecology & Environment Research Team

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OVERALL OBJECTIVES

To promote agroecology as a climate smart set of practices for a resilient and sustainable agricultural production system;

To introduce agroecological practices in the agricultural production systems in the Saïs region.



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Kingdom of Morocco

Diversity and Adaptation



INTRODUCTION

“The Sais region of Morocco accounts for more than 50% of onion and potatoes production of Morocco.”



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METHODOLOGY

The scale:
The Fes–Meknes region
in the Saïs Plateau

The Survey

The Experimental trials

The Dissemination



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Objectives

Analysis of local onion and potatoes production system

Agroecological practices used by farmers in the area

Results

- The two crops are mainly grown in conventional monoculture
- Conventional tillage are used by 100% of the producers
- Chemical pesticides are used by 100% of the producers
- Biological control is unknown in the studied area;
- 90% of the farmers surveyed use mineral fertilization;

- Agroforestry (72%)
- Organic and chemical fertilization (93%)
- Cover crops (75%)
- Bio-protection (unused)
- **Intercropping remains unused in the sample surveyed.**



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EXPERIMENTAL TRIALS

OBJECTIVE: Test some agroecological practices identified based on the survey results



INTERCROPPING:

An agroecological practice based on the simultaneous cultivation of several crops in the same plot, for at least one growing season, interacting with each other and with the agroecosystem

- Main crops: Onion (*Allium cepa*) and Potatoes (*Solanum tuberosum*)
- Intercropped with:
 - Zucchini (*Cucurbita pepo*)
 - Faba bean (*Vicia faba major*),
 - Carrot (*Daucus Carota*),
 - Fennel (*Foeniculum vulgare Mill.*), et
 - Pepper (*Capsicum annum*).





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EXPERIMENTAL TRIALS: Results

Intercropping impact on the soil quality traits



Intercropping impact on the plant

- The microbial load was abundant in the intercropping models compared to the monoculture crop;
- The Organic fertilization and intercropping increased the microbial load in terms of bacteria and fungi;
- The highest microbial biomass was recorded in the treatment combining onion and fennel with organic fertilization;
- The lowest microbial biomass was attributed to the treatment having onion in monoculture with mineral fertilizer;

- Onion intercropped with carrot, with an organic fertilizer amendment, recorded the highest onion's yields;
- The associations using organic fertilization inhibited the growth of weeds compared to the control.



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DISSEMINATION

The dissemination took different forms



Students involvement (ENA, Universities (MSc, PhD))



National and international Seminars and workshops (Circular farming and Agroecology, RENO 2022)



Publications



Field days for students



Field days for farmers could not be held because of Covid 19 restrictions





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WHAT IS NEXT?

The results need to be confirmed by continuing these crop associations' trials in the future;

Economic studies should be done to show the economical and environmental gains that intercropping could bring to farmers;

Search for funding opportunities to keep on this path of promoting agroecology practices for resilient profitable and social accepted agricultural production systems;

Search for opportunities to upscale the results.

ROYAUME DU MAROC
MINISTRE DE L'AGRICULTURE, DE LA
PECHE MARITIME, DU DEVELOPPEMENT
RURAL ET DES EAUX ET FORETS
—
ECOLE NATIONALE D'AGRICULTURE
DE MEKNES



المملكة المغربية
وزارة الفلاحة والصيد البحري والتنمية القروية
والمياه والغابات
—
المدرسة الوطنية للفلاحة
بمكناس

NATIONAL CENTER FOR INNOVATIONS AND RESEARCH IN AGROECOLOGY and ORGANIC AGRICULTURE OF MEKNES (CNIRAB)

TRAINING – ADVISING – RESEARCH



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The missions assigned to the center are in line with the national Generation Green strategy:

Stimulate innovation in agroecological practices leading to profitable, resilient, eco-efficient and environmentally friendly production systems

Act as a resources center to strengthen the capability of farmers, sons of farmers, agricultural advisers, public administration executives and private entities interested and/or involved in the issue of agroecology

Build an agro-ecology network (researchers, public and private institutions (national and international), NGOs and Associations

Support the newly accredited Msc in Agroecology at ENA Meknes

Promote agroecology at National and Regional Levels (MENA, Africa)

An aerial photograph of a village in a desert valley. The foreground shows several buildings with flat roofs and a small square courtyard. The middle ground is filled with a dense grove of palm trees and other vegetation. The background is a vast, arid desert landscape. The text "Thank you" is overlaid in the center in a large, yellow, serif font.

Thank you