

Managing water scarcity in rainfed agriculture in West Asia and North Africa: ICARDA's experience

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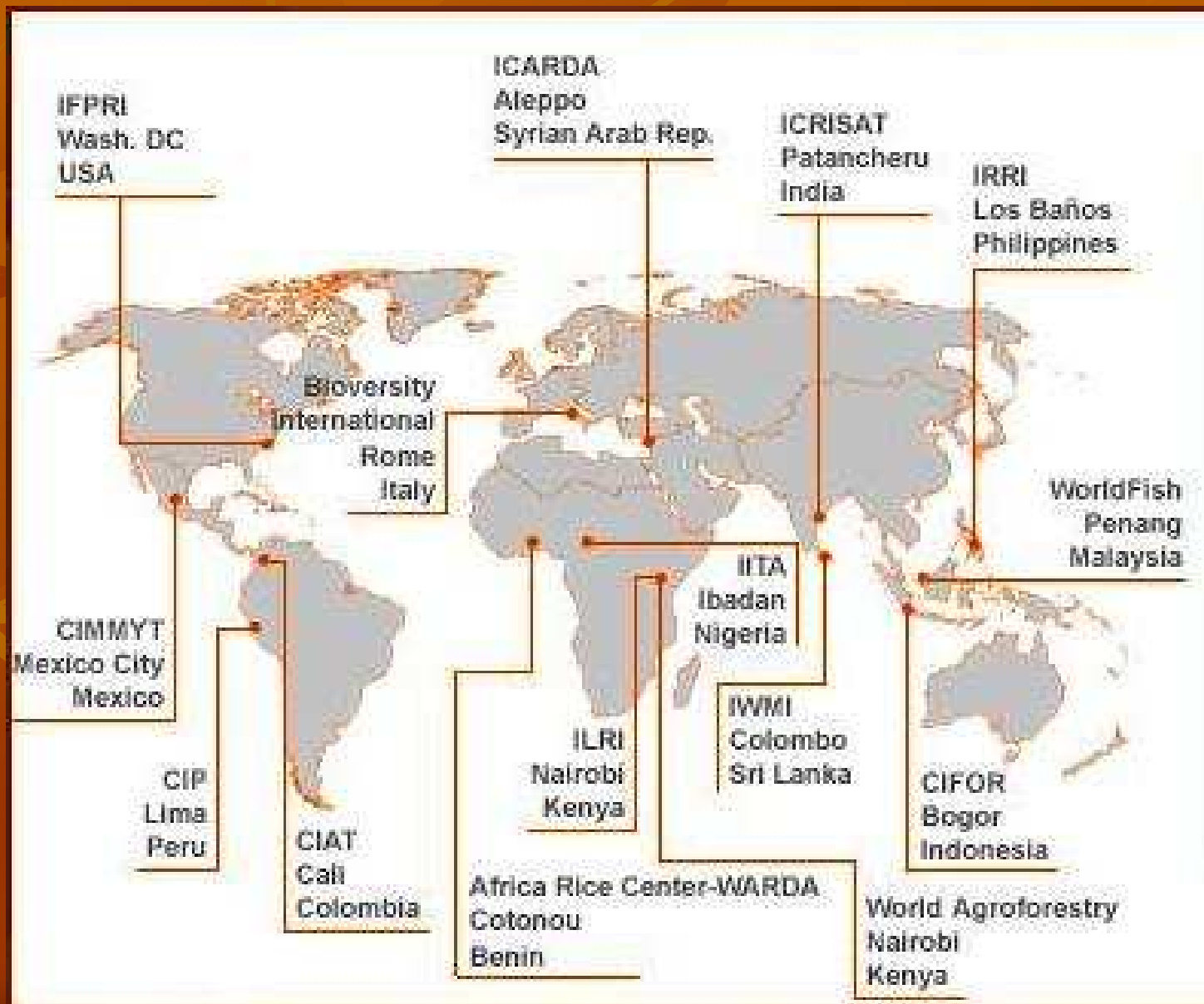
(*): INRA Morocco

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What is ICARDA?

- **ICARDA: International Center for Agricultural Research in the Dry Areas.**
- **ICARDA is one of 15 CGIAR Centers worldwide, working to reduce hunger and poverty as well as protecting the natural resource base through agricultural research for development, and capacity building.**

The CGIAR 15 Centers



ICARDA's mission:

- “To alleviate poverty and increase food security by achieving better, more sustainable livelihoods for the resource poor in the **non-tropical dry areas of developing countries** through increased agricultural productivity and development, including adding value to primary products, while fostering the equitable and more optimal management and the conservation of the natural resources (water, soils, biodiversity etc.) and human capital.”

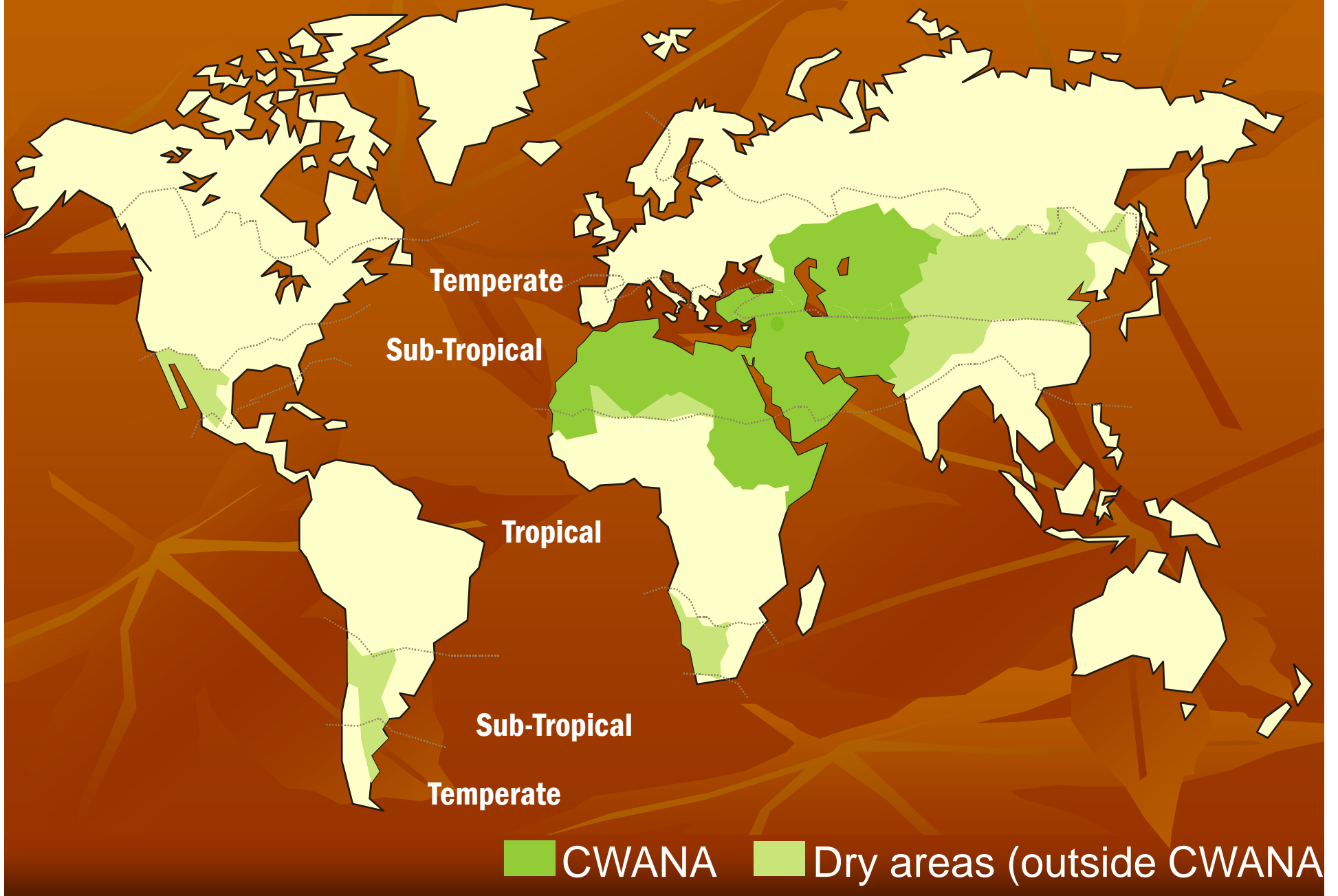


ICARDA Vision

ICARDA's vision is a future where farm communities throughout the world's **dryland areas enjoy secure food supplies, stable incomes, and sustainable livelihoods.**



ICARDA ECOREGIONAL MANDATE





ICARDA's Regional Programs





ICARDA 4 major programs to implement the new agenda...

- **P1: Water and land management**
- **P2: Biodiversity and integrated gene management**
- **P3: Diversification and sustainable intensification of production systems in dry areas**
- **P4: Socioeconomic and policy program.**

ICARDA's sub-regional programs will be expanded. Specifically, the highlands research network and the Latin American program will be strengthened, and a new Asian network established.

Importance of dry areas

- **about 4 billion ha (25% of the total global land area)**
- **more than 1,850 million people (28% of the global population).**
- **About 74% of this area and 90% of its inhabitants are in the developing world.**
- **A large proportion of these inhabitants are not only economically disadvantaged but also chronically resource poor.**

Challenges to meet

- **Low adoption of new technologies at large scale in the rainfed agriculture**
- **Global Climate Change and Droughts;**
- **Environmental Degradation;**
- **Water Scarcity.**

Water poverty

Water scarcity standard (500 m³/year)

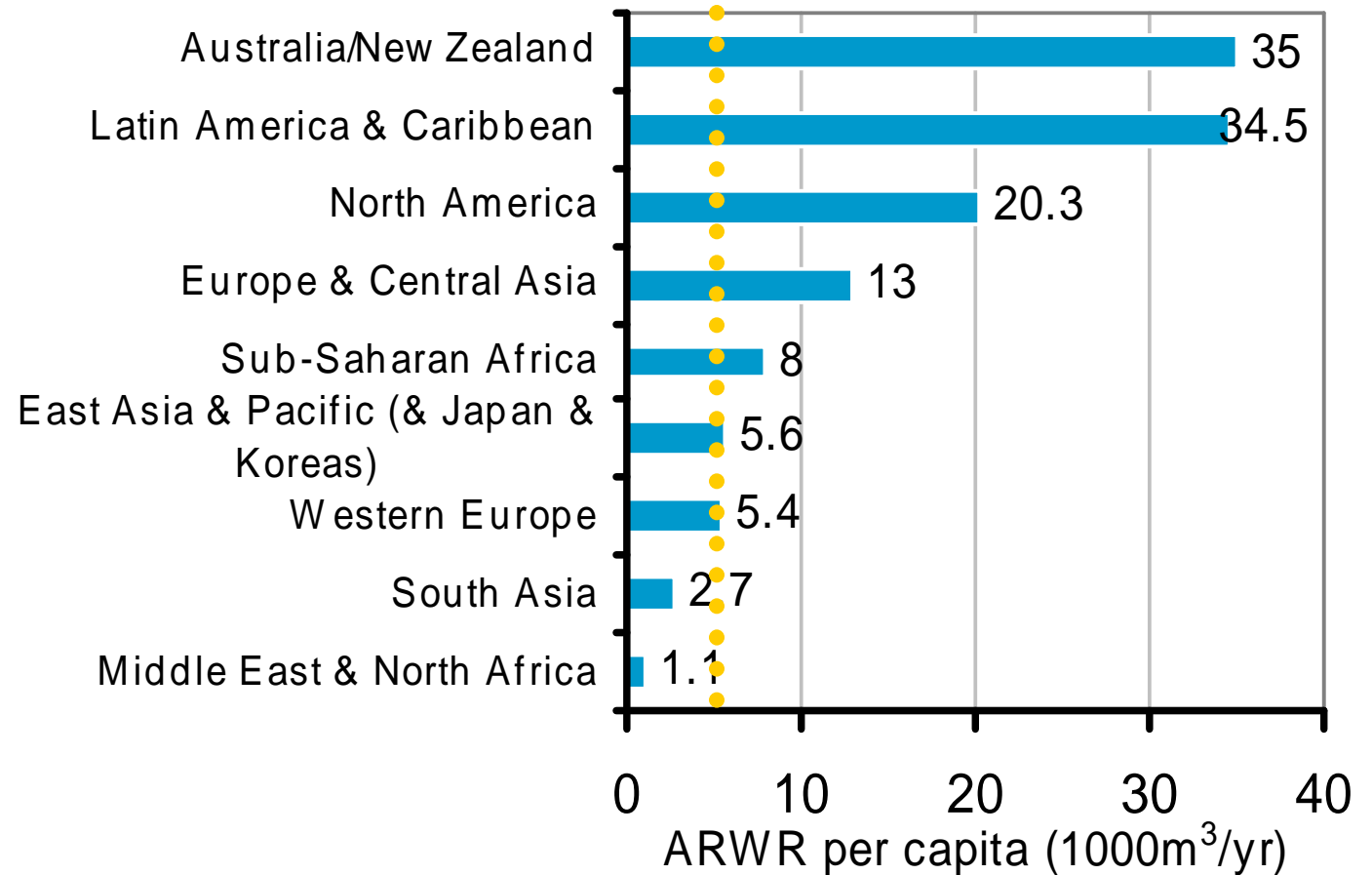
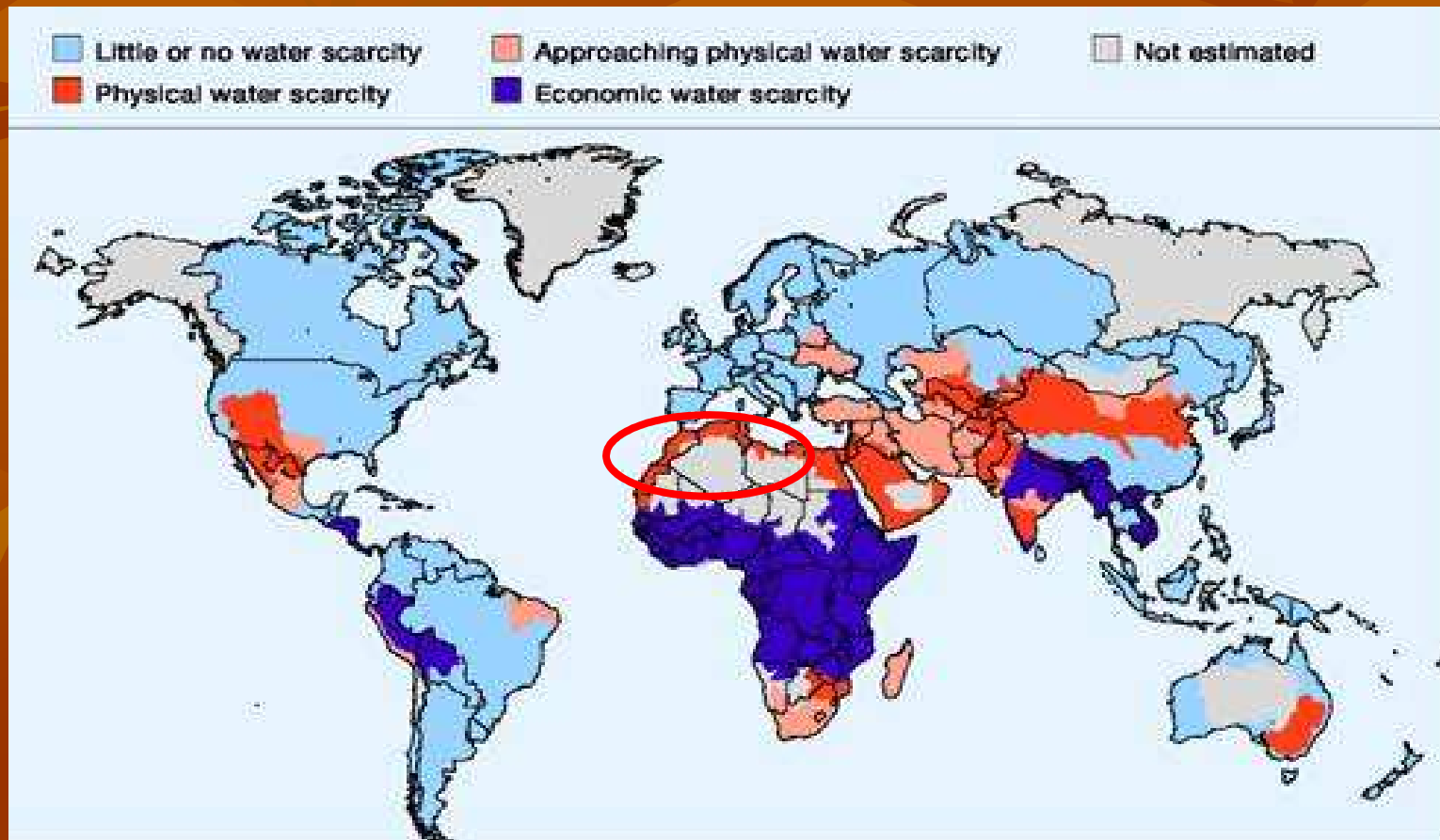


Fig. 2.1. Actual Renewable Water Resources (ARWR) per capita (1000 m³/yr) by region.

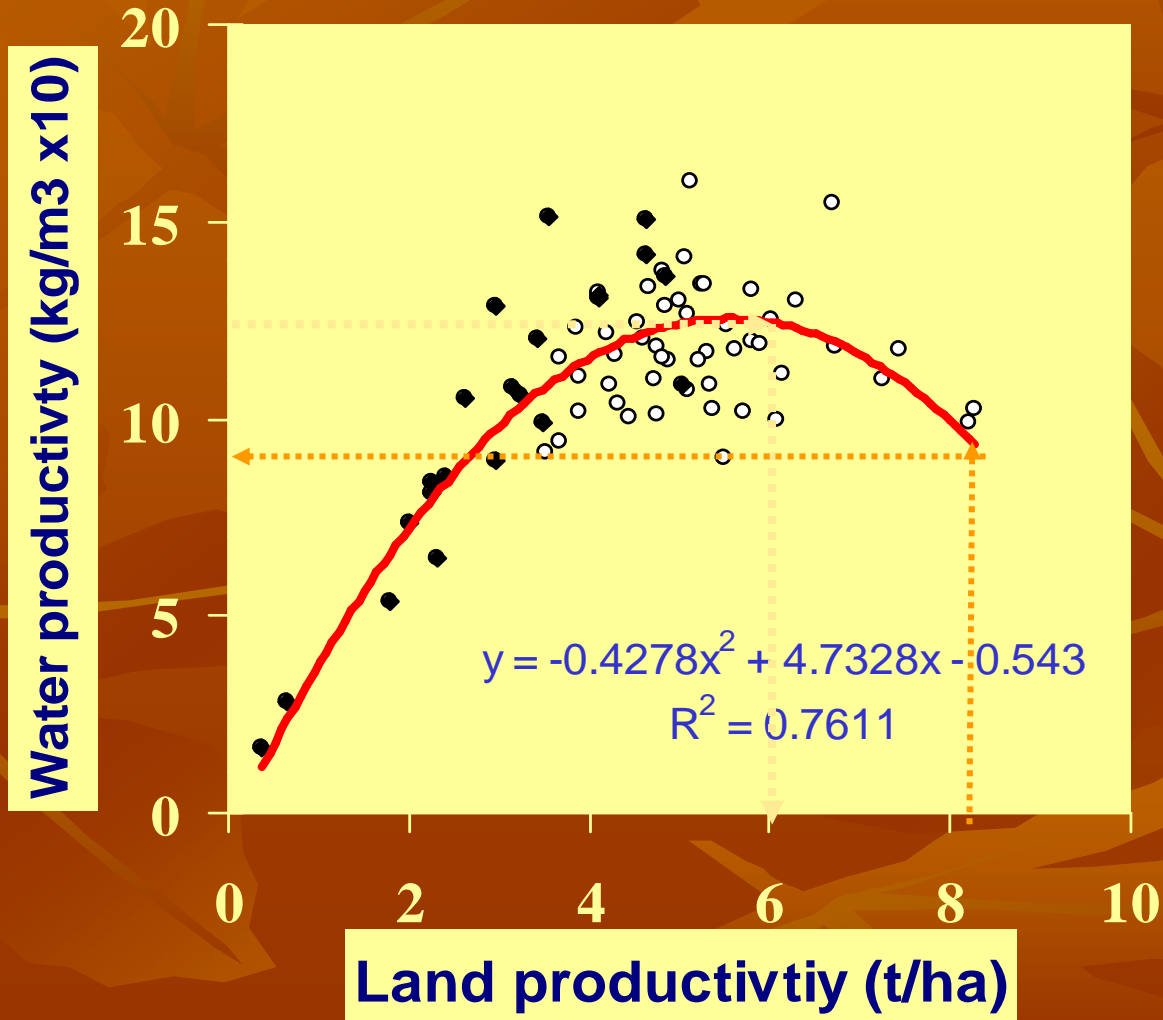
Source: FAO/Aquastat data for 1998–2002.

Map Areas of physical and economic water scarcity



**The most limiting factor is and will be
Water availability in the future**

Water not land is the limiting resource



**What are some achievements of
ICARDA in terms of water scarcity
management?**



Species and Varieties improvement

- **Tolerance to drought**
 - **Growing cycle**
 - **Morphological and physiological traits**
- **Pest and disease resistance**
- **Adapted species to different environments**

Crop and soil management

- **Sound cultural practices**
 - **Crop rotations**
 - **Fertilization**
 - **Alternative cropping**
- **Conservation agriculture**
 - **No-till system**
 - **Large experience in Morocco and Tunisia**

**Management for Improved Water
Use Efficiency in the Dry Areas
of Africa and West Asia**



International Crops Research Institute for the Semi-Arid Tropics
International Center for Agricultural Research in the Dry Areas



**Efficient soil water use:
the key to sustainable
crop production in dry areas**



**SWNMP - The Soil, Water and
Nutrient Management Program**

International Center for Agricultural Research in the Dry Areas
International Crops Research Institute for the Semi-Arid Tropics

On-Farm Soil and Water Management in Central Asia

Editors

Fawzi Karajeh, John Ryan, Christoph Studer



International Center for Agricultural Research
in the Dry Areas

Water Benchmarks of CWANA

ICARDA's response to water scarcity for better livelihoods

Community-Based Optimization of the Management of
Scarce Water Resources in Agriculture
in West Asia and North Africa

Project Workplan and Budget

DRAFT

Edited by: T. Oweis, B. Benli



Irrigation water mangement in Egypt



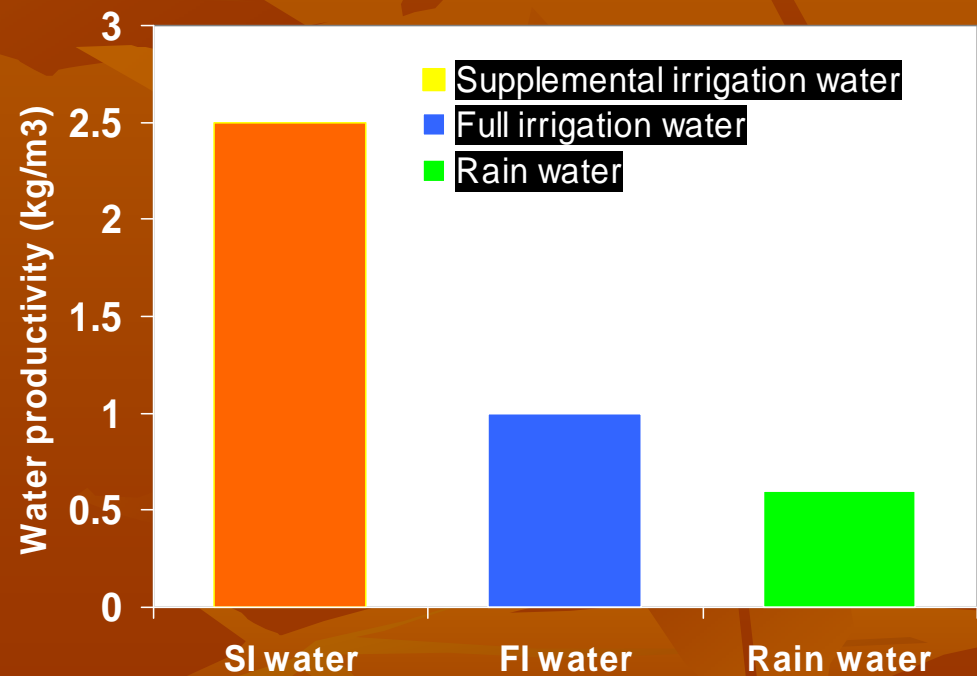
Supplemental irrigation in Morocco



Water Harvesting in Jordan



Potential water productivity





Indigenous Water-Harvesting Systems

in West Asia and
North Africa

Editors

**Theib Oweis
Ahmed Hachum
Adriana Bruggeman**



International Center for Agricultural Research in the Dry Areas

Technical options



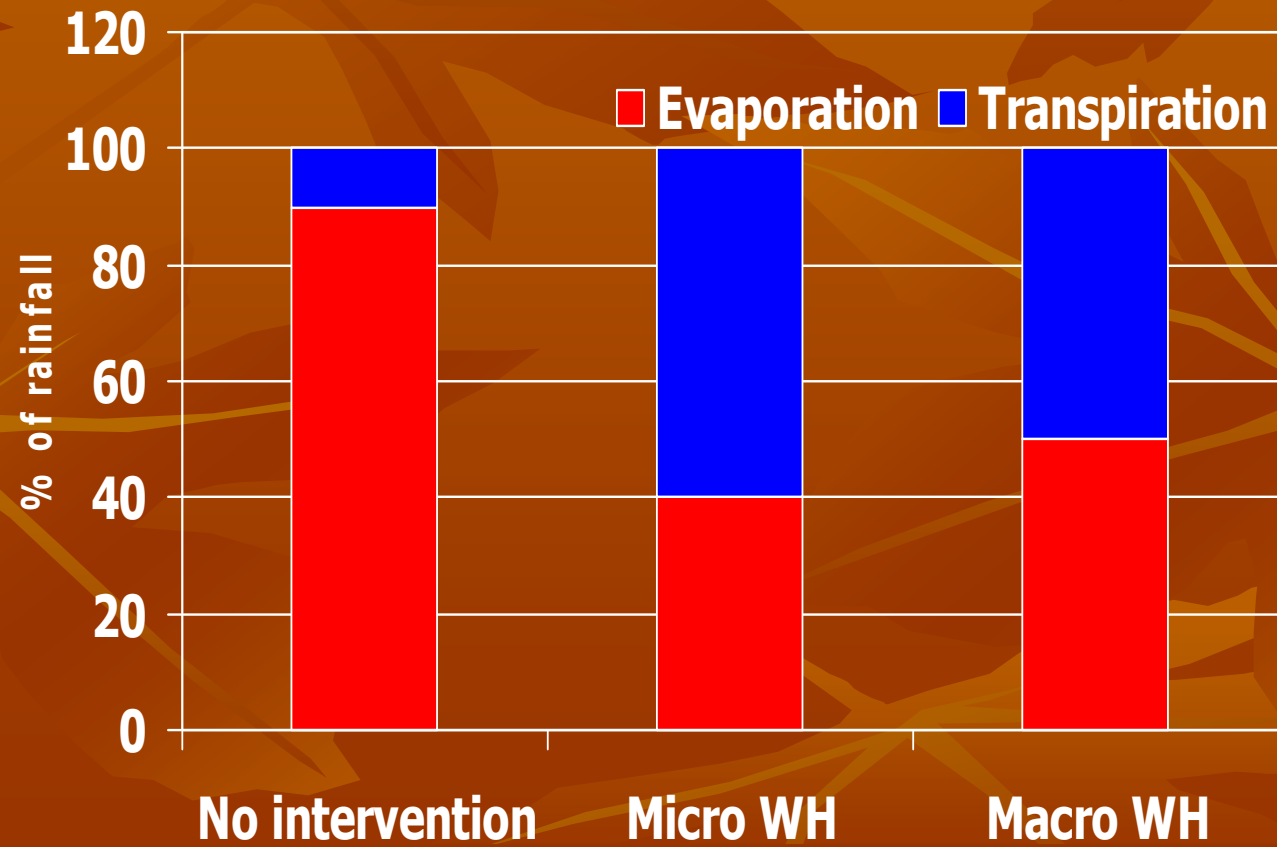
**Soil and water
conservation technologies**

Technical options

Water harvesting associated with rangeland improvement



Improved rainwater productivity





Large Scale implementation





Introduction of new species adapted to water scarcity



Improving co-learning by linking sources of local and scientific knowledge in the drylands

Differing perceptions of priorities for dryland Syria



Farmer-researcher dialogue

- Researchers' views:**

Lamb fattening	23
Micro-credit	22
Water harvesting	8
Home garden	8
Jabban institution	3

- Policy makers' views:**

Water harvesting	8
Micro- Credit	7
Modern irrigation techniques	4
Lamb fattening	3
Barley varieties	1

Regional Implications

- **National, regional and international awareness and commitment**
- **Sharing knowledge**
- **Networking: Research, Policy, Institutions, NGOs and Communities**
- **Investment in science and technology by NARS, IRC, Developed countries**

Thank you

