

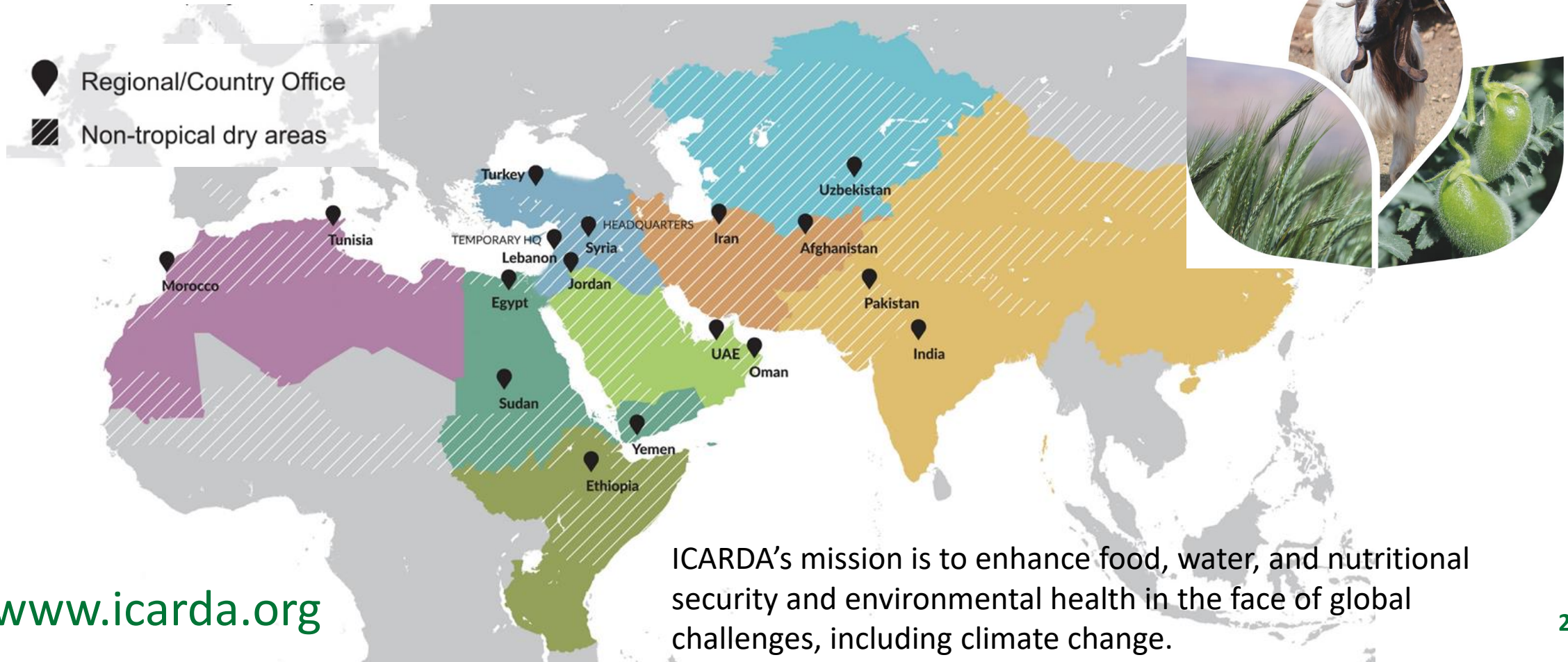
ICARDA's Strategy (2017-2026)

A new strategic approach for delivering innovative science based-solutions for thriving and resilient drylands.

Presented by: Hassan Machlab, Country Manager-Lebanon



ICARDA is a **Decentralized Non-Profit R4D** International Organization on **Dryland Agriculture**



www.icarda.org



Why Drylands Matter ?

Facts

- Cover 41% of world surface
- Inhabited by 30% of world's population
- Support 50% of world's livestock
- Grow 44% of world's food
- Account for majority of world's poor
- Suffers from continuous land loss due to desertification

Challenges

- Scarce water resources
- Highly impacted by climate change
- Harsh environments
- Low and erratic precipitation
- Infertile soils
- Drought & salinity
- Loss of biodiversity
- High unemployment
- Conflicts & wars
- Rapid urbanization
- Poor governance of resources
- Hunger, malnutrition

The Potential

- Rich plant biodiversity, the key to adaptation to CC.
- Opportunities to diversify and intensify crop and livestock production systems
- Millions of hectares of degraded land to restore
- There are prospects for economic development thru empowerment of women and youth

ICARDA Strategy 2017-2016: Responding to Dryland Challenges

Our Strategic Plan aligns with the CGIAR Strategy and Results Framework and eight of the United Nations' Sustainable Development Goals: Goal 1, No Poverty; Goal 2, Zero Hunger; Goal 3, Good Health; Goal 5, Gender Equality; Goal 6, Clean Water and Sanitation; Goal 13, Climate Action; Goal 15, Life on Land; and Goal 17, Partnerships for the Goals. It addresses the significant challenges facing the world's non-tropical dry areas: rising temperatures, critical water scarcity, fragile natural resources, and an insecure food and nutritional future under often-unstable social conditions.



Sustainable Development Goals

The Research Agenda

Strategic Research Priority 1: Collect, conserve, and use agricultural biodiversity

1. Collect, conserve, and distribute genetic resources.
2. Phenotyping and genotyping plant genetic resources in order to identify critical traits of resistance that can be used within our breeding programs .
3. Pre-breeding initiatives to introduce adaptive traits from wild relatives and landraces into elite germplasm of mandated crops
4. Join efforts with NARS to assess the status and threats to dry areas agrobiodiversity.



157,000 Accessions

Strategic Research Priority 2: Breeding for Climate-adapted crops and livestock

1. Widen the genetic base through breeding to ensure tolerance to and resistance to biotic and abiotic stresses
2. Understand the mechanisms of resistance to key pests of cereals and food legumes and identify alleles associated with this resistance.
3. Develop dual-purpose barley and legumes that provide nutritious feed for livestock and people; improve the malting quality of barley
4. Research on the genomics of small ruminants, identify key traits for coping with climate change
5. Undertake research into seed delivery systems through increased private-sector participation, including institutional and policy options to improve the availability of improved varieties of mandated crops.



Strategic Research Priority 3: Building resilient integrated crop–livestock farming systems

1. Promote the up-scaling of conservation agriculture and low-cost smallholder mechanization with strategic partners
2. Undertake research on farmer- and community based breeding programs, with the goal of increasing sheep and goat productivity using indigenous animal breeds.
3. Promote climate-smart feed production and feeding systems. the safe use of marginal-quality water in feed and forage production will be promoted to address water scarcity in the urban–rural interface.
4. Continue our research to improve the governance and productivity of rangelands through a range of interventions that include policy and institutional innovations and sustainable rangeland restoration



Strategic Research Priority 4: Sustainable value chains, supportive policies, and viable off-farm activities to improve livelihoods

1. Assess, assist, and evaluate with strategic partners the creation of sustainable value chains for durum wheat, barley, legumes, seed, and small ruminants in the MENA region and elsewhere – based on a thorough evaluation of local and new markets
2. ICARDA prioritizes the involvement of women and youth – two marginalized demographic groups with much to gain from taking part in strong value chains



Strategic Research Priority 5: Sustainable use and management of scarce water and land resources

1. Maximize in situ storage of water in rainfed agriculture and rangelands through: conservation interventions, improving on-farm water use and management and safe use of treated wastewater for the production of feed and forages for livestock.
2. Effective and low-cost systems for harvesting rainwater that deliver larger and more stable water supplies for crops and livestock.
3. Contribute to the restoration of degraded dry agro-pastoral ecosystems through rainwater harvesting and forages breeding.
4. Increase our capacity in soils research with a focus on soil fertility and health.



Cross-Cutting Themes



Scaling Up Proven Technologies

Engage with partners to put knowledge into action



Empowering Women, Youth

- Improve women's access to land, assets, knowledge
- Use technology and commodities value chain to engage youth



Building Capacity

Empowered young researchers and institutions



Big Data and ICT

Enhance research efficiency and policy communications

GIS, RS, Information Exchange, IT.



Success Stories

Impact Studies

New pattern: Rice–Lentil- Rice in South Asia

Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
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Monsoon rice



**Super-early lentil
(<90 days)**



Spring rice

Climate resilient super-early lentil (<90 days) varieties fit well in rice-rice system, thus provides a sustainable production system and house-hold nutritional security

Barimasur-9, Pusa Ageti and L4727 new super-early lentil varieties recently released in South Asia

Increasing Water Productivity in Wheat for Enhancing Food Security while Saving Water Resources in Egypt

Increasing wheat crop productivity and food security while saving on water resources



- Reduce applied water by 30%
- Increased yields by 25%
- Reduced seed rate by 50%
- Increased WUE by 72%

Adopted on 700,000 acres across Egypt in 6 years. Egyptian Government National Campaign is targeting 1.8 million acres (730,000 ha) by 2020.

Several machines have been produced and sent to: Ethiopia, Jordan, Iraq, Morocco, Nigeria, Sudan, Tunisia, Uzbekistan

Implementation of mechanized raisedbed at farmer fields



Sub-Surface Irrigation on date palm



- ✓ Reduce water use by **30-50%**
- ✓ Reduce the evaporation,
- ✓ Increase efficiency of irrigation,
- ✓ Reduce weeds development.



ICARDA's Experience on Rangeland Improvement



Fodder Reserves

Multi-Purposes Pastoral Species



Seed Germination & Establishment



Biodiversity Conservation of Threatened Pastoral Species



Cactus: A forage and multi-purpose crop to meet Climate Change challenges in Dry Areas



Multipurpose species: Forage, Fruit, Agri-food, red dye, cosmetic and medicinal uses

Cacti with their high biomass productivity and water use efficiency can be considered for the terrestrial sequestration of atmospheric CO₂ in under-exploited arid and semi-arid regions.

Cactus chopping for creating jobs for women and youth

- Cactus is abundant in central Tunisia, rich in water, vitamins and energy
- Use of cactus chopper reduces work load (easier, faster, less injuries)
- Distribution of 30 locally produced manual cactus choppers



Ideas for National Agricultural Strategy

Water Harvesting

- Medium- High rainfall Areas → Dams
- Shift to more efficient irrigation methods, Drip irrigation, Private sector
- Low rainfall areas: Water harvesting, Stone walls, contour lines etc.. to facilitate rangelands rehabilitation.
- Gray Water harvest: technology is now at LARI



Ideas for National Agricultural Strategy

Seed Multiplication

- ICARDA has released many varieties of wheat, barley, Lentil, chickpea and forages legumes in the past. Seeds available for Cereals only.
- Winter chickpea, promising for future
- Barley cultivation in North Bekaa
- Wheat production as a strategic crop.



ICARDA CAPACITY DEVELOPMENT - LEBANON from 1978 – till 31 December 2018 by Categories

Type of Training	PERIOD From 1978 till 2018
Post Graduate (PhD and MSc)	22
Individual Non-Degree and Internship	97
Group Courses	652
TOTAL 1978 – 31 December 2018	771

Thank You
for Your Attention

