


CGIAR RESEARCH PROGRAM ON Dryland Systems



## Cactus in the word....

**International Cactus Pear Workshop:** Development of a cactus pear agro-industry for the sub-Saharan Africa Region  
Bloemfontein, South Africa. 27-28 January 2015

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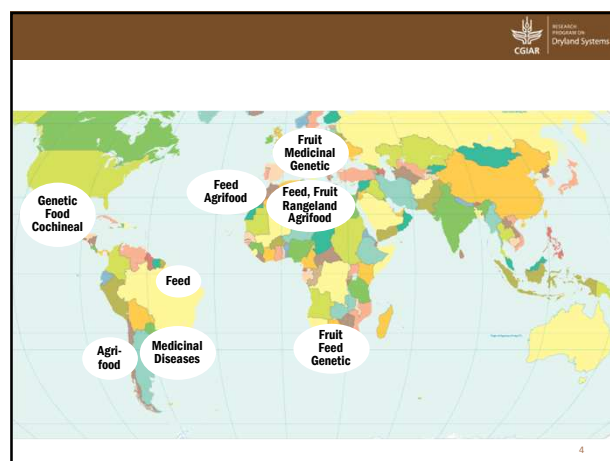
Dr. Ali Nefzaoui  
CRP Dryland Systems, North Africa and West Asia Flagship Coordinator

January 2015



### Some statistics .... *Need to be updated*

Regions/countries	Area cultivated, (x 1000 ha)
Brazil	600
Other South American Countries	75
Mexico	230 + 3 M
Other North American countries	16
Tunisia	600
Algeria	150
Morocco	150
Italy	70
Total	1891 + ~ 3 M



### Cactus helping the rural poor in the World...

- Mauritania
- Ethiopia
- Iran
- India
- Libya
- Arabian Peninsula
- Morocco
- Tunisia
- Etc...

### New countries ... new challenges (examples)

#### Mauritania



### New countries ... New challenges (examples)



Mauritania

### New countries ... New challenges (examples)



Ethiopia

### New countries ... New challenges (examples)



M4Ms is promoting cactus as nutritious food

NGO helping young single mothers in Mekele, Tigray (find the means to support themselves and their families)

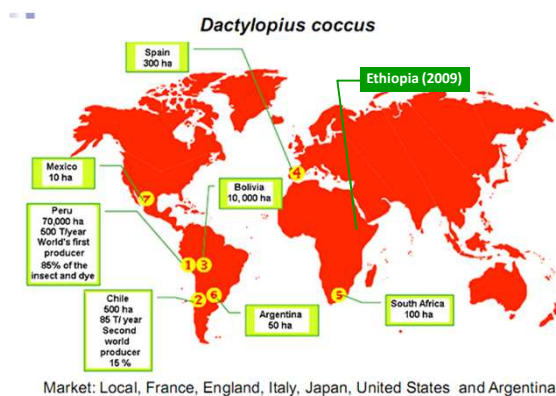
Ethiopia

FAO-TCP/ETH/2901

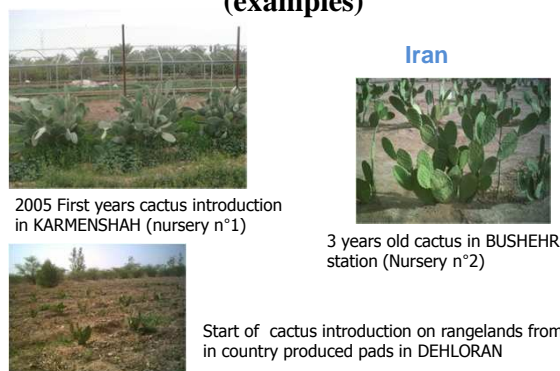
### Ethiopia: Ecopia (Swiss cooperation)



### Ethiopia: Red dye



### New countries ... New challenges (examples)



Iran

2005 First years cactus introduction in KARMENSHAH (nursery n°1)

3 years old cactus in BUSHEHR station (Nursery n°2)

Start of cactus introduction on rangelands from in country produced pads in DEHLORAN

### New countries ... New challenges India and Pakistan

Year	No. of Accessions	Source	Place of Introduction
1987	33	Texas, USA	Nimbkar Agricultural Research Institute at Phalton, Maharashtra
1991	5	Texas, USA	Central Soil Salinity Research Institute, Karnal
1997	51	Texas, USA	Central Institute for Arid Horticulture, Bikaner
2010	43	Italy, Tunisia (ICARDA)	CAZRI, Jodhpur

### India



### New countries ... New challenges (examples)

#### India



### New countries ... New challenges (examples)

#### India & Pakistan



25-26 November 2011, NASC, New Delhi India

### Cactus Pear-Progress of work in India

- Adaptability Trials
  - Jodhpur, Rajasthan
  - Bhuj, Gujarat
  - SBS Nagar, Punjab
  - Jhansi, Uttar Pradesh
  - Karnal, Haryana
  - Bikaner ( Two Locations), Rajasthan
- Agrotechniques-Jodhpur,Karnal
- Utilization-Karnal,Jodhpur, Avikanagar
- Prospects

### Future Thrust and Issues

- ✓ There is need to introduce the best available varieties and extensive acclimation and evaluation is required before it is expansion
- ✓ Policy support from government is needed
- ✓ International collaboration with countries where the crop is commercially cultivated and is a part of their diet is needed for exploring such avenues in India
- ✓ Coordinated effort within the country is needed to promote cactus and its linking with the already existing international network on cactus.

### New countries ... New challenges (examples)

- Introduced by Italian colons early 1900<sup>th</sup>
- ICARDA introduced around 50 accessions from Italy (Univ. Palermo and Sassari)
- Rainfed (fruit)

Libya



### New countries ... New challenges (examples)

Libya



### New countries ... New challenges Arabian Peninsula



In 2004, 38 accessions of spineless cactus were introduced from Tunisia. A nursery was established in Rumeis, Oman



Adaptation of these accessions to Arabian Peninsula environmental conditions was assessed.



- Water requirement
- Tolerance to salinity
- Tolerance to hail



Spineless cactus transferred from mother nursery in Oman to pilot growers in all AP countries

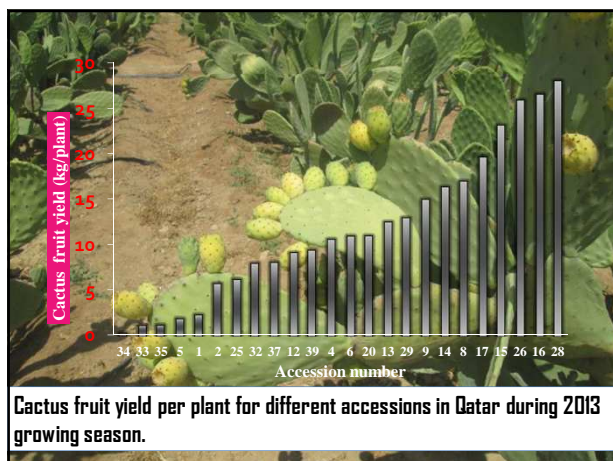


In 2014, total accumulative number of growers adopted the spineless cactus in all AP countries reached 35.

In Al Jouf, Northern KSA: most of spineless cactus accessions showed very good regeneration after harmful hail



Evaluation of the spineless cactus fruit production under Arabian Peninsula Environmental Conditions: the case of Qatar



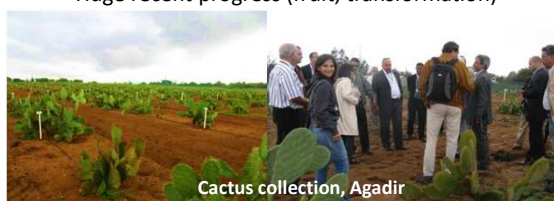
Alternative feed resources in GCC countries: spineless cactus as energy source component of feed blocks based on date palm by-products



## New countries ... New challenges (examples)

Morocco

- Introduced by the Moors from Andalusia
- Traditionally used for fruit
- Huge recent progress (fruit, transformation)



Cooperative for cactus processing, beekeeper union and green technology = will be presented in a short movie



### Fruit processing unit =

- Taking advantage of 60,000 Ha of plantation close to Guelmim
- Almost six month of fruit production (Aissa & Moussa)
- Spineless fruit sold in supermarket, nationally and internationally

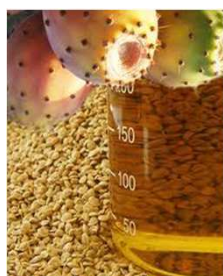


### Futuristic vision = the cactopole

- Industrial quarter devoted to cactus transformation on 25 Ha
- Close to the national road, close to Guelmim, close to the provincial water treatment plant



### New products... Morocco & Tunisia



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### Japan-Morocco partnership, Green Morocco Plan



- ✓ JCB enterprise (Japan) is investing in Sidi Ifni an oil extraction unit to produce 5000 liter from 40,000 ha (launching 2016)
- ✓ The Moroccan Green Plan (MGP/ Pillar II) is investing 9 million \$US in cactus value chain for the benefit of 27000 farmers.

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### Tunisia

- Introduced by the Moors from Andalusia
- Traditionally used for fencing (land appropriation, livestock feeding, fruit)
- Italian colons introduced improved varieties & scozzaltura one century ago
- Rangeland improvement and soil & water conservation since 60's
- Recently modern orchard for fruit production (local market & export), transformation
- Investment in research

### Cactus Pear is a good business... example 1 from Tunisia

**Fresh prickly pear fruit**

Fresh organic prickly pear cactus *OPUNTIA FICUS INDICA*.

Prickly pear cactus or Nopal is one of the Cactaceae family, this American tropical plant is naturalized in other continents, such as the Mediterranean region.

its fruit is consumed peeled and its pulp is coral and red, it appears full of dark seeds which can be consumed, prickly pear cactus is juicy and perfumed with a floral flavouring.

It has a sweet savour. It is different than the other fruits pulps by a higher content fiber (from 4,4 to 5 g per 100 g).

- Fresh prickly pear fruit
- Prickly pear seed oil
- Nopal powder
- Dried prickly pear flower
- Prickly pear pulp
- Prickly pear seed flour



Scientific researches © Cactus Tunisie | Nopal Tunisie 2007

### Cactus Pear is a good business... example 1 from Tunisia

[WWW.NopalTunisie](http://WWW.NopalTunisie)  
[WWW.Cactee](http://WWW.Cactee)

À PROPOS | SOIN VISAGE | SOIN CHEVEUX | SOIN DE LA PEAU | CONSEILS | CONTACT

**CACTÉE**

*Nopal Tunisie*

**CACTUS PEAR FOR HAIR & SKIN**

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### Cactus Pear is a good business... example 1 from Tunisia



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### Cactus Pear is a good business... example 1 from Tunisia



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**CGIAR Research Program on Dryland Systems**

WHO WE ARE | WHAT WE DO | WHERE WE WORK | PUBLICATIONS & RESOURCES | NEWS & EVENTS

**RESISTING DESERTIFICATION**

**VIDEO:** Dryland Systems is building the resilience of smallholder farmers in marginal drylands – providing the tools to mitigate climate change

**Delivering Systems Solutions for Drylands**

Pastoral | Agro-Pastoral | Rainfed | Tree-Based | Irrigated

**SYSTEMS APPROACH** → An integrated approach to

**RESEARCH FOCUS** → Strengthening resilience in

**DRYLANDS** → The challenges facing food production in the Drylands

**IMPACTS** → The innovations improving livelihoods in Dryland communities

**CGIAR Research Program on Dryland Systems**

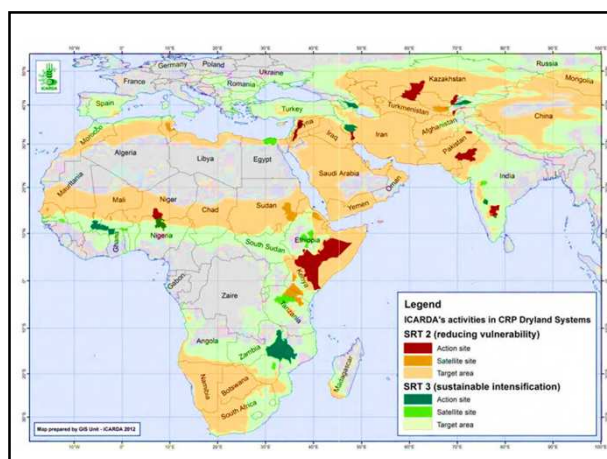
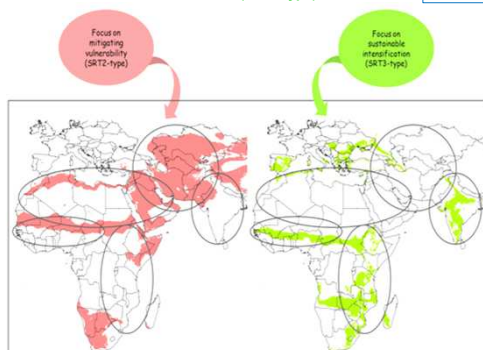
**ICARDA** International Center for Agricultural Research in the Dry Areas

**The New CGIAR Research Program (CRP) on Dryland Systems and what role for South Africa?**

### Selection of benchmark areas & action sites

1. Reducing vulnerability (SRT2 type)
2. Sustainable intensification (SRT3 type)

Circles/ovals indicate roughly the 5 Target Regions.



### CRP-DS Goal & Partners

- **Goal:** to identify and develop resilient, diversified and more productive combinations of crop, livestock, rangeland, aquatic and agroforestry systems that increase productivity, reduce hunger and malnutrition, and improve quality of life for the rural poor.
- **ICARDA (Lead Center) and 8 CG Centers**
  - ICRISAT
  - Bioversity International
  - CIAT
  - CIP
  - ICRAF
  - ILRI
  - IWMI
  - Sub-Saharan Africa Challenge Program (SSA CP)

### Noble Mission Serving the Rural Poor

