

# We Need Youth! Small mechanization to preserve Moroccan Oases

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For centuries, oases supported agriculture and sustained livelihoods in arid climates. Over the last few decades, oases in Morocco have been progressively neglected. They are fragile ecosystems and without constant care from the next generation, are facing progressive degradation. Date palms are one of the most important resources in an oasis, but as a consequence of the progressive land abandonment, the loss of knowledge and labour force are hindering its production.

The University of Florence, in collaboration with the University of Moulay Ismail and ICARDA, proposed the introduction of small machines as a possible solution to reduce the drudgery of farm work, facilitate field operations, and make agriculture more attractive for the young farmers.

**Improving the date production chain in the Moroccan oases through small mechanization inputs to support the governmental development strategies**

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**Traditional palm-based oasis ecosystem:**

- 3 layers intensive agriculture
- Oasis agrobiodiversity
- Livestock
- Water management
- Palm grove
- Commerce
- Ksounien habitat
- Traditional knowledge

**Degraded oasis ecosystem:**

- Palm grove crisis: Capital losses, Decreasing date production, Diseases
- Agricultural crisis: Soil losses, salinization, Plot subdivision, Fam. agriculture abandoned
- Biodiversity losses
- Water crisis: Structural hydraic stress, Inadequate hydraulic system, Overpumping
- Degraded palm grove
- Demographic growth
- Rural exodus
- Youth involvement in agriculture decreased
- Conflict between urban development and traditional management
- Traditional and familiar knowledge losses

**Moroccan date production main problems:**

| Farmers                                                                                                                                                                                                                                    | Cooperatives/associations                                                                                                                                             | Economic Interest Groups (GIE)                                                                                                                                                                                                                             |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"><li>Lack of interest by young generation</li><li>Lack of money</li><li>No palm renovation</li><li>Informal agreement with brokers and buyers</li><li>Poor logistic for transport and marketing</li></ul> | <ul style="list-style-type: none"><li>Poor marketing</li><li>Health certification (ONSSA) difficult to be obtained</li><li>HACCP principles rarely followed</li></ul> | <ul style="list-style-type: none"><li>Equipment inadequate or insufficient</li><li>Infrastructure not fitting international certification criteria</li><li>Lack of adequate formation</li><li>Difficult relations with cooperative and producers</li></ul> |

In Moroccan oases, date palm agricultural operations are mainly manual and seldom implemented, contributing to palm grove degradation.

**The introduction of small mechanization may reduce drudgery, encourage/attract youths, increase labor productivity and safety.**

**Proposed mechanization scheme:**

- Small size tractor with trailer and multiple tools
- Small size transporter
- Small size excavator
- Motocultivator with multiple tools
- Motorhoe
- Small size self-propelled off-road aerial platform
- Metal ladder (adapted to date palm)
- Power scissors (pneumatic or electric)
- Chain saw (pneumatic, electric)
- Knapsack motorized sprayer

**Main oasis degradation factors:**

- Land and water scarcity
- Salinity

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However, Pietro Bartolini explained that the main limitations may be linked to access, in fact the investment cost is often not affordable for smallholders. For this reason, the proposed intervention will target local cooperatives, in order to ensure a better economic sustainability.