Date palm cultivation for the development of desert areas

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Abstract

Desert regions of developing countries occupy about 3 billion hectares and are occupied by 2.5 billion people (over a third of the world population). These regions will be in the future, areas of major tensions in terms of access to water and food resources and will be responsible for large-scale population migration. The date palm cultivation is one of the answers to the development of desert areas. Indeed, the date palm, emblematic species of the oasis agriculture, produces dates with high nutritional value, maintains fertile areas of life in deserts and is therefore of major geostrategic importance for the sustainable development of drylands, particularly in Africa and Middle East. Today, palm groves are threatened by climate change, pests, genetic erosion, land abandonment... Preservation of these agro-ecosystems requires maintaining their genetic diversity and to initiate breeding programs to select new varieties adapted to local conditions in a context of global change. A wide analysis of date palm population structure provided new insights on the geographic origins and genetic history of the cultivated component of this species and enables the establishment of core collections to preserve the germplasm diversity. Furthermore, we identified molecular sex markers allowing early selection of female plants which produce the dates, therefore avoiding the culture of unproductive male plants, accounting for half of the planting. In addition, we develop the creation of genomic resources and search for new markers associated with agronomic traits. All these researches participate in the preservation and renewal of date palm agrodiversity and in the longer term will contribute to food security in desert areas.