NATAE
North African Transition to AgroEcology

Agroecological use of downgraded products in the Mediterranean: the case of dates

Agroecological zones

Oases

Introduction

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Date palms (Phoenix dactylifera) are grown in arid and semi-arid areas of the Mediterranean region, particularly in oases and peri-oasis zones. They are an essential source of income for farmers in these agrosystems. However, some of the fruits produced fall before or during harvest, or are downgraded, due to quality problems, damage at harvest, over-ripening, phytosanitary issues or poor pollination. In addition, some date varieties are not very popular in the food industry. Dates that have fallen, have been downgraded or are of low commercial value can represent 30 to 50% of production. Adding value to those dates reduces waste and improves the economic diversification of farms. Those dates can be used as animal feed or to produce vinegar or date sugar.

Valorisation of downgraded products in animal feed

Before or during harvest, dates can detach from the bunches, particularly when weather is wet after date ripening. A common practice in oases is to collect these dates after harvesting has been completed for use in animal feed. These dates and those downgraded by the industry or of varieties with low market value can be used raw as livestock feed or mixed with other fodder resources such as bran or barley. Dates mainly provide sugars (over 60%), making them an important source of energy for livestock in arid and semi-arid regions characterized by a structural fodder deficit.

Date vinegar

Traditional production: Date vinegar is obtained by fermentation. Downgraded dates, particularly those too ripe to be eaten directly, are sorted, washed and crushed to extract the juice. The juice, mixed with twice its volume of water, is then fermented by yeasts and bacteria naturally present in the dates. Fermentation takes place at room temperature under anaerobic (closed container) then aerobic (open container) conditions for a total of around 40 days. After fermentation, the vinegar is filtered before being packaged and consumed. Research has shown that traditional fermentation can be improved by stabilizing the temperature at 30°C during fermentation, and providing significant oxygenation from day 15th onwards.

Uses: Date vinegar is used in food as a condiment in salads and marinades, or as a natural preservative. Date vinegar is also used in traditional medicine for its digestive and detoxifying properties.

Date sugar

Production: Date sugar is a natural product obtained from the juice of declassified dates. The juice is heated until it becomes a thick syrup, which is then dried to obtain sugar in crystal or powder form. This process can be carried out on an artisanal or industrial scale, depending on the resources available.

Uses: Date sugar is used as a sweetener in drinks, pastries and other food products. Date sugar is rich in antioxidants and minerals, and is used in traditional medicine for its nourishing and revitalizing properties.

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Vinegar and date sugar in agroecological systems

Date vinegar and sugar production are traditional practices in oases. Their production is accessible to small farms with limited resources. It can also be a collective activity, uniting rural communities. These products can be consumed by the farmer households, valorised locally or promoted in national and international channels, as a local rural product sometimes associated with organic certification.

In agroecological systems, these productions help minimize food losses and agricultural waste, and diversify income. By valorising date varieties with low market value, they help preserve date palm cultivars considered secondary, but important for their resistance to pests and their adaptation to poor, poorly drained soils. In small quantities, date vinegar can be used to treat certain fungal or bacterial crop diseases.

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