

**CURRENT RESEARCH
AND DEVELOPMENT IN
BIOTECHNOLOGY
ENGINEERING
AT IIUM**

VOLUME I

Editors:

Suleyman Aremu Muyibi
Mohammed Saedi Jami
Zaki Zainudin



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(VOLUME I)

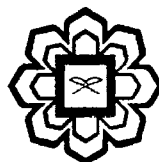
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CHAPTER 28

WASTE TO WEALTH: DATE SEED PITS

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ABSTRACT

The date seeds are considered a waste product of many date industries. In many countries, date seeds are discarded or utilized on a small scale as animal feed. In the United States, date kernels have been a problem to the date industry as a waste stream. Therefore, finding a way to make a profit on the pits would benefit date farmers substantially. With world production of dates reaching 6.9 million tonnes in 2004, from this approximately 863 thousand tonnes of date seeds are produced. Thus, utilization of such waste is very important to date cultivation and to increase the income to this sector.

Keywords: animal feed, date seeds, drink, food, medicinal, waste.

INTRODUCTION

Phoenix dactylifera, commonly known as the Date Palm, is a palm in the genus *Phoenix*. The date is an erect palm to 100 or 120 ft (30.5-36.5 m), the trunk clothed from the ground up with upward-pointing, overlapping, persistent, woody leaf bases. After the first 6 to 16 years, numerous suckers will arise around its base (Kacker *et al.*, 1989). The feather-like leaves, up to 20 ft (6 m) long, are composed of a spiny petiole, a stout midrib, and slender, gray-green or bluish-green pinnae 8 to 16 in (20-40 cm) long, and folded in half lengthwise. Each leaf emerges from a sheath that splits into a network of fibers remaining at the leaf base. Small fragrant flowers (the female whitish, the male waxy and cream colored), are borne on a branched spadix divided into 25 to 150 strands 12 to 30 in (30-75 cm) long on female plants, only 6 to 9 in (15-22.5 cm) long on male plants. One large inflorescence may embrace 6,000 to 10,000 flowers. Some date palms have strands bearing both male and female flowers; others may have perfect flowers (Krikorian & Cronauer, 1984). As the fruits develop, the stalk holding the cluster may elongate 6 ft (1.8 m) while it bends over because of the weight. The fruit is oblong, 1 to 3 in (2.5-7.5 cm) long, dark-brown, reddish, or yellowish-brown when ripe with thin or thickish skin, thick, sweet flesh (astringent until fully ripe) and a single, cylindrical, slender, very hard stone grooved down one side (Kacker *et al.*, 1989).