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INFLUENCE OF MICROWAVE RADIATION ON RIPENING OF DHAKKI DATES

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ABSTRACT

Research was conducted to investigate the impact of microwave (Mw) radiation for stimulating the ripening of Dhakki date fruits. The fruits picked at four sub-Khalal (Doka) maturity stages well before the onset of ripening, were radiated for 10 to 50 s at three microwave power levels of low (210 W), low medium (360 W) and medium (480 W) intensity. The radiated samples along with no radiated control were placed for ripening/curing at 40 ^{o}C under fluorescent light, dark or sun. The effectiveness of a treatment was evaluated by estimating ripeness after 24, 48, 120 and 144 h incubation. Ripening/curing of the fruits increased gradually during the incubation displaying no difference in the rate whether incubated under dark or light. However, the Mw radiation boosted up the date forming process seven times, reducing the curing period sharply from 288 h for the control samples to 40 h for the samples that were Mw radiated for 50 s at 480 W. The stage of maturity of the fruits also offered a positive response to the ripening process thereby enhancing yield of the product substantially and maturity levels at the late Doka stage with hardness level of 180-200 mmHg.cm^{-2} believed the attractive maturity range for the ripening. Moreover, the radiation at 480 W facilitated early harvesting of fruits prior to attaining optimum maturity stage, thereby saving at least two weeks hanging of the fruits on the tree, and hence the damage by monsoon rain is expected to be reduced while the desirable qualities of the dates are held intact. However, exposing the fruits beyond 480 W manifested heat roasting and resulted in undesirable baked flavor.