**Abstract**

One of the fundamental concerns for a post-harvest researcher is to conserve the quality of the produce. In most of the fruits and vegetables, firmness is the key factor in deciding the commercial acceptance of the produce. Therefore, determination of firmness of a horticultural produce by a non-destructive method is of prime importance. Use of such a technique during harvest would help assure that consistent quality is being delivered to marketers, retailers, and consumers. Sonic and vibration response method is one of the non-destructive techniques for predicting the textural quality of agricultural products. Two basic methods have been explored: 1) resonant frequency and 2) sound velocity. Mizrach *et al.* (1989) suggested that the velocity of ultrasonic sound could be used for ripeness classification in some fruits and vegetables. Sugiyama *et al*. (1994) stated that utilization of the transmission velocity as a measure of firmness has two major advantages over resonance frequency technique, *viz.,* the transmission velocity method compensates for variations in the size of the samples, because the circumference of the sample is included in the calculation, and it is easy to detect the maximum peak in the impact waveform for calculation of transmission velocity (Sugiyama *et al*., 1998). Sugiyama et al. (1994, 1998) successfully used an instrument named 'Firm Tester' for determination of fruit firmness non-destructively for muskmelon. A modified version was then used for pear (Sugiyama, 1998). In the present study Firm Tester was used to determine the firmness of a non-symmetrical fruit, *i.e.,* mango. The primary objective of the study was to judge the most appropriate place on a mango fruit that could reflect the firmness. The secondary objectives were to find the range of transmission velocity of the ripened mangoes and at the best eating time.