



## STUDY OF FRUIT QUALITY ATTRIBUTES OF *KINNOW MANDARIN* IN RELATION TO FRUIT SIZE

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### ABSTRACT

Kinnow is an important citrus fruit crop grown in Punjab. Being a prolific bearer Kinnow bears the fruit of different sizes. These fruits can be used for different purposes according to their quality, so it is necessary to evaluate the physico-chemical quality attributing factors in relation to their weight. Study was conducted to evaluate the fruit quality of different grades of Kinnow fruits. Nine grades of fruits on the basis of weight were analysed for fruit weight, juice percentage, peel thickness, seed number, seed weight, number of segments, total soluble solids and total acidity. Results showed a significant variation among different grades of the fruit for all the quality parameters except number of segments.

**KEY WORDS:** Kinnow, mandarin, grade and quality.

### INTRODUCTION

Citrus fruits are grown commercially in the subtropics of the world. Kinnow, a mandarin hybrid (King x Willow leaf) occupies the prime position amongst the citrus fruits grown in India, particularly in Punjab it occupies 50% (approximately) of cropped area under fruits. It is precocious, prolific bearer and has excellent fruit quality with high juice content. Kinnow fruit matures from mid January to mid February. Being a heavy bearer it bears the fruits of different sizes. These fruits of different grades can be used for different purposes *viz*; as fresh fruits or processed products, but it is must to know about its quality before its use for a particular purpose. Keeping it in view, a study was planned to analyze the quality attributes of different sizes of kinnow fruits.

### MATERIALS & METHODS

Kinnow fruits of different sizes (nine sizes on weight basis) were collected from the sub-mountainous zone of Punjab in the month of February. These fruit were analysed for various physico-chemical characteristics *viz*; Fruit weight, juice percentage, peel thickness, seed number, seed weight, number of segments, total soluble solids and total acidity. The fruit juice was extracted with the help of citrus juicer and was strained through mesh (32 mm) and weighed. The percentage of juice was calculated on fresh weight basis. Peel thickness was measured with Vernier Caliper. The total soluble solids were determined with the help of hand refractometer. One or two drops of juice were placed on the refractometer plate and the per cent TSS on the scale were recorded. The reading was calibrated against a standard temperature of 20°C (AOAC 1980). Whereas, acidity was determined by titrating 2 ml of juice against 0.1 N NaOH using phenolphthalein as the indicator. The

data was analyzed as the method described by Singh *et al* (1998).

### RESULTS & DISCUSSION

Kinnow fruit weight varied from 209.04g to 70.87 g among the samples analysed. Fruit juice also showed a significant variation in samples. Highest juice percentage (46.82) was recorded in sample number-2 *i.e.*: second largest fruits, whereas, lowest was found in smallest size fruits (sample-9). Juice percentage showed a declined trend from sample number -2 to sample number-9 (Fig.-1). Peel thickness of fruits depicts that large size fruits retained the thick peel as compared to smaller fruits (Fig.-2). Similar trend was followed by seed number, large sized fruits have more number of seeds than smaller ones (Fig.-3). Seed weight effected by seed health, bold seed recorded more seed weight, whereas immature or weak seeds registered low weight. Highest seed weight (8.91g) was recorded in sample-1 and lowest (2.92g) in sample-9 (Fig.- 4). Number of segments per fruit showed a non-significant difference among different sizes of fruits. All the fruits showed average number of segments in the range of 10-11.5 (Fig.- 5). Fruits also showed a variation in its bio-chemical characteristics *ie*: TSS and acidity. Highest total soluble solids (13.3%) were observed in smallest size fruits (sample-9), whereas, minimum (10.4) in largest fruits (sample-1). Total soluble solids showed an increasing trend from larger fruits to smaller ones (Fig.-6). Similar results were earlier reported by Susumu and Motoyoshi (2002) in citrus *cv.* Harumi. Fruit acid content was recorded in the form of total acidity, it also showed a non-significant variation between sample 1,2 and 3 (Fig.-7). But, from sample-4 to sample-9 an increase in acidity was recorded with the decrease in fruit weight.



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