

comparative studies on marketing and exporting quality between some local and imported varieties of tomato

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Evaluation was carried out to measure the vegetative growth characters, flowering characters, early, marketable and total yields, as well as physical and chemical properties of fruits at their harvesting time. The keeping quality of these cultivars under room temperature (33~10°C) and cold (10°C+) storage was also studied to follow changes occurred during storage from the stand point of physical properties of fruits such as percentages of weight loss and decay in fruits as well as changes in firmness and color. Changes in chemical composition were also estimated including total soluble solids, total sugars, total acidity, ascorbic acid, and dry matter content. The results of these investigations can be summarized as follows:

I. Concerning vegetative growth characteristics, the following results were obtained:

1. The variety Yates surpassed all other varieties in the length and thickness of the main stem, followed by the varieties Marmand, V.F.N. Bush and Strain B.
2. The number of internodes and number of leaves in the variety Marmand showed the highest values followed by Yates, V.F.N. Bush and Strain B.
3. The four varieties tested showed no differences in the number of main lateral branches.
4. The variety Yates exhibited the highest total vegetative weight followed by V.F.N. Bush, then Marmand and finally the variety Strain B.

II. With regard to flowering behaviour results were as follows:

1. The variety Strain B showed the lowest number of days till the first cluster initiation and flower anthesis followed by the varieties Marmand, Yates, and finally V.F.N. Bush which showed highest values in this respect.
2. The variety strain B was the earliest in fruit setting compared with other varieties followed by the variety Marmand. Yates and finally V.F.N. Bush which was the latest variety in this respect.
3. Concerning the number of internode carrying the first cluster the variety Marmand showed the lowest number of internode bearing the first cluster followed by the variety Strain B, V.F.N. Bush and finally Yates which clusters were beared on relatively highernodes.

III. Regarding fruit physical characters data obtained showed that:

1. Average fruit weight was much higher for the variety V.F.N. Bush followed by the variety Marmand, Yates and finally the variety Strain B.
2. The variety V.F.N. Bush showed higher fruit length compared with all other varieties.
3. The fruits of the two varieties Strain B and V.F.N. Bush were globular in shape. while the other two varieties showed flattened fruits.
4. Varietal differences in wall thickness and number of locules of fruits were also noticed where the varieties Strain B and V.F.N. Bush having fruits with less number of locules and thicker wall than either Yates or Marmand.

IV. Fruit analysis at harvest revealed that:

1. The variety Marmand had the highest content of juice % followed by Yates, V.F.N. Bush and Strain B.
2. Generally, fruits of the two varieties Strain B, and V.F.N. Bush proved to have higher contents of total soluble solids, total sugars, vitamin C, higher firmness values and lower total acidity compared with the other two varieties i.e. Marmand and Yates. Therefore the fruits of the two varieties Strain B and V.F.N. Bush surpassed the other two varieties, in the flavor as noticed from the sugar/acid ratio which was higher.

V. Concerning yield in capacity in tons/feddan of the four varieties tested, it was found that:

1. The variety V.F.N. Bush proved to be a high yielding variety more than the variety Strain B. which showed lesser yield, whereas the varieties Marmand and Yates exhibited the lowest relative yields in tons/feddan in comparison with the other two varieties

i.e. V.F.N. Bush and Strain B.2. The same trends were obvious as for the marketable yield in tons/Feddan where the variety V.F.N. Bush had the highest marketable yield (Tons/Feddan), the varieties Marmand and Yates showed the least values while the variety Strain 81 was intermediate in this respect.

3. The two varieties Strain Band Marmand proved to be early yielding varieties considering the total yield during the first three pickings whereas the varieties V.F.N. Bush and Yates were found to be late yielding varieties.

B. Storage Behaviour~I. Changes in physical properties:

1. There was a continuous reduction in fruit weight during storage periods for all varieties tested at both room and cold storage and for the two ripening stages used. Weight loss was much higher at room temperature compared with cold storage conditions. The two varieties Strain Band V.F.N. Bush exhibited lower weight loss percent in comparison with the varieties Marmand and Yates. Tomato fruits picked at the mature green stage showed lower weight loss compared with those of the turning stage of ripening.
2. Decay percent increases with the prolongation of storage. It was high in magnitude at room temperature compared with cold storage which retarded the appearance of decay. The varieties Strain Band V.F.N. Bush showed less susceptibility to decay as shown by the lower decay percent and delayed appearance of decay loss incidence compared with the other two varieties Marmand and Yates. Ripening stage affected decay percent as it was found that fruits of the mature green stage showed lower decay % compared with those of the turning stage.
3. There was a gradual decrease in fruit firmness with the prolongation of storage at room temperature as well as cold storage conditions for all varieties tested. The rate of decrease in firmness was much higher at room temperature than at cold storage. It was also observed that mature green tomatoes showed higher firmness values during the storage period at both room and cold storage conditions in comparison with turning stage of ripening.
4. Generally there was a gradual degradation of the green colour (chlorophyll) with the storage period in the mean time the red and yellow pigments started to appear. The appearance of red colour was much faster at room temperature compared with cold storage. Colour development was more rapid in fruits of the turning stage of ripeness compared with those of mature green stage. It was also clear that fruits picked at the mature green or at turning stage of ripeness and stored at cold storage of 10°C or at room temperature did not develop the colour shade of those fruits left to ripen on the plant. The two varieties Strain B and V.F.N. Bush showed bright red colour after 20 days while the other two varieties Marmand and Yates allowed deep red colour 16 days after storage.

II. Changes in chemical properties:

1. It was found that there were increases in total soluble solids percent at the beginning of the storage period followed by a decrease at the end of storage period at cold storage for all varieties tested. Changes of total soluble solids values at room temperature showed continuous increase due to the excessive weight loss which tends to give higher values of total soluble solid especially at the end of storage period. As weight loss leads to concentration of the juice in the fruits. The fruits of the mature green stage showed lower total soluble solid values compared with the turning stage during storage at both room and cold storage conditions.
2. Fruits stored at cold temperature showed a gradual increase in total acidity at the beginning of storage period followed by a decrease at the end of storage period for all varieties used. At room temperature, a fluctuated level of total acidity was observed with a final decrease at the end of storage period. The rate of changes in total acidity was much higher at room temperature than at cold storage. Acidity content of mature green stage was higher compared to the turning stage during storage period at both room and cold temperature. The two varieties Strain B and V.F.N. Bush exhibited lower level of total acidity during storage period.
3. At both room and cold temperature there was a gradual decrease in total sugars with prolonged storage. The reduction in total sugars was higher at room temperature compared with cold storage. Fruits of the mature green stage showed lower total sugars compared with those of the turning stage. The rate of decrease in total sugars was greater in fruits of turning stage compared with the mature green stage.
4. Ascorbic acid content showed an increase at the beginning of storage period followed by a decrease at the end of storage period. Fruits of mature green stage was found to be lower in ascorbic acid content compared with those of the turning stage. The reduction in ascorbic acid content was greater at room temperature compared with cold storage.
5. Dry matter content showed continuous decrease during storage period for all varieties under investigation at both room and cold temperature. There was a considerable decrease in dry matter content at room temperature. The decrease was lower at

cold storage. The turning stage of ripening exhibited higher decrease in dry matter content compared with the mature green stage at both room and cold storage temperature.