

Punjab Horticultural Postharvest Technology Centre Punjab Agricultural University, Ludhiana

PHPTC Newsletter

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Grading of Fruits and Vegetables-----An Important Postharvest Operation for Efficient Marketing

Grading is sorting or categorization of fruits and vegetables into different grades according to the size, shape, colour, and volume to fetch high price in market. Besides grading the other postharvest operations such as precooling of produce to remove field heat, postharvest treatments and packaging etc are also critical to marketing success.

Produce brought in many markets often has variable characteristics and sometimes it may be delivered immature or contain shriveled, damaged and rotten materials. Delivering such produce generally results in lower prices. Systematic grading is pre-requisite for

efficient marketing of fruits and vegetables. The bruised, damaged and mis-shapen produce should be sorted out and healthy fruits or vegetables should be graded according to their size, weight, shape, colour, maturity etc. The fruits or vegetables can be graded in extra fancy, superior and standard grades or class I, II and III, respectively.

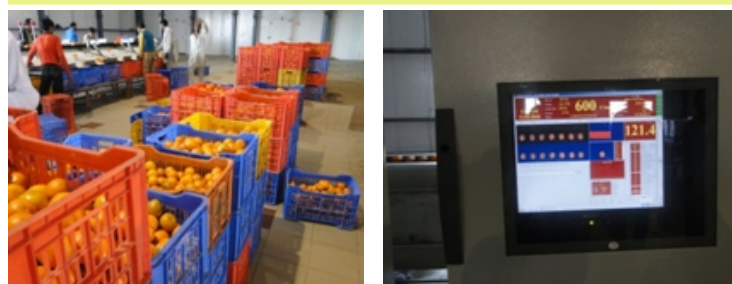
Methods of grading:

Grading of fruits and vegetables is generally done on the basis of physical characteristics like weight, size, colour, shape, specific gravity, and freedom from diseases. For

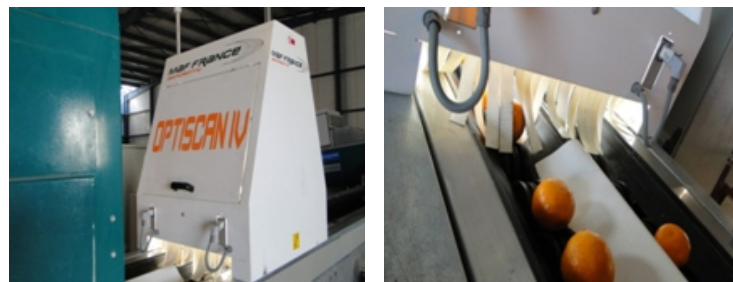
Manual Sorting and grading of Okra and Peas



Size grading through image processing



Kinnow and Potato grader



fresh marketing, the known methods of grading of fruits and vegetables are manual grading, or machine grading. In both the methods the produce is graded on the basis of size.

For International market three general grades are considered as:

1. Extra class
2. Class I
3. Class II.

1. Extra Class: The extra class is of superior quality posses the shapes and colour of the variety and without

internal defect likely to affect the inherent texture and flavour. A 5% tolerance is allowed for errors. It must be carefully presented taking into accounts the uniformity of the produces in size, colour, condition arrangement of the produce in the package, quality and appearances of the packing or pre-packing material.

2. Class I: Almost having a same quality is like the Extra Class except that a 10% tolerance is allowed. Individual fruit is allowed a slight defect in shape, colour and minor skin defect which do not affect the general appearance for keeping qualities.

3. Class II: This class product may exhibit some external or internal defects provided they are fit for consumption while fresh. This class is best fitted for local or short distance market. This category will satisfy the needs of customers who are not too demanding and for whom price is more important than quality.

Advantages of Grading:

1. The graded produce fetch better price in the market.
2. Grading helps to develop greater confidence between buyers and growers.
3. Increase the marketing efficiency by facilitating buying and selling a produce without personal selection.
4. Heavy marketing cost in packing and transportation can be avoided by grading.
5. Increasing Distributors' Profits
6. Increasing producers' profits
7. Grading improves product uniformity within a particular grade and serves as the basis for price.

iii) Mangoes

Size Code	Weight (g)	Max. permissible difference between fruits within packages (g)
A	100-200	50
B	201-350	75
C	351-550	100
D	551-800	125

iv) Grapes

Class	Large berries bunch weight (g)	Small berries bunch weight (g)
Extra Class	200	150
Class I	150	100
Class II	100	77

v) Litchi

Class	Diameter (mm)
Extra class	33
Class I	28
Class II	23

vi) Pear

Class	Diameter (mm)
Extra class	60 mm
Class I	55 mm
Class II	50 mm

vii) Strawberry

Class	Diameter (mm)
Extra class	25 mm
Class I	18 mm
Class II	18 mm

VEGETABLES

i) Cabbage

Size Code	Weight (gms)
A	201-600
B	601-1200
C	1201 and above

ii) Tomato

Size Code	Diameter (mm)
1	30-34
2	35-39
3	40-46
4	47-56
5	57-66
6	67-81
7	82-102
8	102 and above

iii) Onion

Size code	Diameter (mm)
A	10-20
B	21-40
C	41-70
D	71 and above

Grades of different fruits & vegetables as suggested by Directorate of Marketing and Inspection (DMI)

FRUITS

i) Kinnow

Size code	Diameter (mm)	No. of fruits in 10 kg pack
A	60-64	84
B	65-69	72
C	70-72	60
D	72-74	54
E	75-79	51
F	80-85	45

ii) Guava

Size code	Weight (g)	Diameter (mm)
A	>350	>95
B	251-350	86-95
C	201-250	76-85
D	151-200	66-75
E	101-150	54-65
F	61-100	43-53

iv) Potato

Size Code	Diameter (mm)
A	18.1-28.0
B	28.1-45.0
C	45.1-65.0
D	65.1-80.0
E	more than 80

Manually grading is costly and grading operation is affected due to shortage of labor in peak seasons. Human operations may be inconsistent, less efficient and time consuming. New trends in marketing as specified by World Trade Organization (WTO) demand high quality graded products. Farmers are looking forward to having an appropriate agricultural produce-grading machine in order to alleviate the labor shortage, save time and improve graded product's quality. Grading of fruits is a very important operation as it fetches high price to the grower and improves packaging, handling and brings an overall improvement in marketing system. The fruits are generally graded on basis of size and graded fruits are more welcome in export market. Grading could reduce handling losses during transportation.

PHPTC Activities

i) Visit of Sh. Sibin C., IAS, Managing Director, Punjab Agro Industrial Corporation, Chandigarh

Sh. Sibin C., IAS, Managing Director, Punjab Agro Industrial Corporation, Chandigarh visited PHPTC on 14th August, 2018 and interacted with the faculty of PHPTC. Dr. B.V.C. Mahajan, Director, PHPTC conducted the visit of Managing Director in different laboratories of the Centre and explained different research and training activities of the Centre.



ii) Visit of participants from Asian and African countries to PHPTC

International Training programme on Modern storage technologies in agriculture was organized by CIPHET for participants from Asian and African countries on 14th June, 2018. About 20 participants from Asian and African countries visited the Centre. Dr. B.V.C. Mahajan, Director, PHPTC gave detailed presentation on safe ripening techniques for fruits. The participants took keen interest in the technologies developed by PHPTC scientists.



iii) Workshop on Safe ripening techniques for fruits under "Tandrust Punjab Mission"

A series of four workshops on safe ripening techniques for fruits was organized by Punjab Mandi Board and District Administration on 15th, 16th, 21st, and 22nd June, 2018 at Amritsar, Jalandhar, Patiala and Ludhiana. Dr. B.V.C. Mahajan, Director, PHPTC gave detailed presentation on safe ripening techniques for fruits. Sh. G.P.S. Randhawa, General Manager (Projects), Punjab Mandi Board told the traders about fruit safety norms and their regulations. About 150 traders at each place attended the workshop. Health officials in each districts also participated in these workshops.



Metro

The advertisement features a collage of various refrigeration and air conditioning components. At the top, a large, snow-capped mountain is visible. Below it, a large, complex refrigeration unit with multiple blue circular components is shown. To the right, a smaller unit with a cylindrical tank and a blue frame is displayed. In the center, a large, light blue rectangular unit with three circular fans is shown. Below this, a white rectangular unit with four circular fans is visible. To the right of the white unit, a small, cylindrical refrigeration unit is shown. In the bottom left, a large, rectangular, textured unit is displayed. The background of the collage is a blue and white pattern of water droplets and ice cubes.

Metro Refrigeration Industries
Since - 1986

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