

## QUALITY CONTROL

Quality of fresh horticultural commodities is a combination of characteristics, attributes and properties that give the commodity value to humans for food (fruits and vegetables) and enjoyment (ornamentals). The term quality implies the degree of excellence of a produce or its suitability for a particular use. Quality is a human construct comprising many properties or characteristics. Quality of produce encompasses sensory properties (appearance, texture, taste and aroma), nutritive values, chemical constituents, mechanical properties, functional properties and defects. The word “quality” is used in various ways in reference to fresh horticultural produce.

*The quality of fresh fruits and vegetables* may be explained in terms of the following:

1.	Fresh	market	quality
2.		Edible	quality
3.	Storage quality		
4.		Transport	quality
5.		Shipping	quality
6.		Table	quality
7.		Internal	quality
8.		Nutritional	quality
9.		Appearance	quality
10.	Processing quality		

For producers of horticultural crops “good quality” produce (fruits, vegetables or flowers) should give high yield with good appearance, disease resistance, insect resistance, good transport quality and bring higher profit. To receivers and market distributors, appearance quality is most important and also the firmness and long storage quality. Consumers consider good quality fruits, vegetables or flowers to be those that have good fresh market quality i.e., good appearance, good colour, firm or tender (good and optimum texture), good flavour and nutritive value. Although, consumers buy on the basis of appearance and feel, their satisfaction and repeat purchase are dependent upon good edible quality in case of fruits and vegetables.

### **Quality components**

The different components of quality are listed in the following table. These components are used to evaluate quality of the commodities in specifications for grade and standard, selection in breeding programme, and evaluation of responses to various environmental factors and post harvest treatments.

Quality components of fresh fruits and vegetables

Main factors	Components
Appearance(visual)	Size, dimension, weight, volume, shape and form, smoothness, compactness, uniformity colour, uniformity and intensity Gloss, nature of surface wax Defects: external, internal (morphological, physical and mechanical, physiological, pathological and entomological)
Texture	Firmness, hardness or softness, Crispness, succulence, juiciness, Mealiness, grittiness, fibrousness, Toughness
Flavour (Taste and smell)	Sweetness, sourness(acidity), astringency, bitterness, aroma, off odour, off flavour
Nutritive value	Contents of carbohydrates, proteins, Lipids, vitamins, minerals, fiber, water Antioxidants <i>etc.</i>
Safety	Naturally occurring toxicants, Contaminants(chemical residues, heavy metals) Mycotoxins Microbial contamination

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There is no universal set of quality standards for any given commodity. Each country has its own criteria depending on local circumstances. Different standards may apply for produce for home consumption and for export. Generally only the better/higher quality produce is exported, because of longer time it has to survive before consumption and to excel in the international market competition.

## Quality systems

Management of quality in horticulture industries in whole distribution chain from farm gate to final point of sale requires holistic approach. To achieve this, it is necessary to monitor and prevent quality problems as early as possible in the production or initial post production process rather than relaying on end point.

*Among quality assurance systems*

- 1. ISO 9000 series was used initially but it is a slow process.
- 2. HACCP (Hazard Analysis Critical Control Point) risk management approach systems - It enable to assess the risk and thus identify what go wrong, establish control to minimizes the likelihood of such an occurrence and take corrective action to manages those wrongs.

*The 7 steps in HACCP are*

- Identify and assess all hazards
- Identify the critical control points
- Identify the critical limits
- Establish the monitoring procedures
- Establish the corrective actions
- Establish a record-keeping systems
- Establish verification procedures

*Based on HACCP*, many systems has been established such as

- EurepGAP – European Good Agriculture Practices
- SQF 2000 <sup>TM</sup> - Safe Quality Foods