

NON-INVASIVE QUALITY ASSESSMENT WITHIN THE FRESH FRUIT SUPPLY CHAIN

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Fresh fruit are perishable commodities and longer supply chains (time for harvest to consumption) demands attention to product quality. Further, achieving premium price for fresh fruit requires premium product. Fruit quality is thus important for open world economy and should be objectively defined and measured to allow communication between trading partners. Overseas, markets have progressed from government regulated specifications on fruit quality to industry regulated specifications. These specifications are usually based on the Codex Alimentarius and UNECE guidelines. As a developing economy, Nepal is only beginning to develop its retail and export markets for fresh fruit. At this stage simple manual sorting and grading using human labour is sufficient, if backed up by training documentation and quality control procedures, to develop premium markets, e.g. fresh citrus to the Bhatbatani retail chain or to Tibet.

However, it is also useful to understand sorting technologies used elsewhere in the world. Like mobile phones, sometimes a technology has direct relevance to a large base in Nepal. Near infrared spectroscopy as an optical method of fruit quality assessment is presented for non-invasive assessment of dry matter, soluble solids and firmness and internal defects in mango, apple and mandarin. The in-field, in storage and in packing house assessment of quality will be presented from practical experience. Fruit are assessed and sorted at speeds of up to 5/second. Examples such as sorting of apple with internal browning with classification accuracy as high as 95% will be presented.