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## 1. INTRODUCTION

Strawberries are one of the most perishable fruit crops and are essentially fully ripe at harvest. They have a high rate of metabolism and will destroy themselves in a relatively short time, even without the presence of decay-causing pathogens. The structure of the strawberry makes it susceptible to deterioration. It has a thin, tender skin that is easily damaged. The achenes are easily torn away and the flesh is soft, due to high water content, making it very susceptible to bruising and crushing. Any injury can invite an attack by decay-causing pathogens, to which this berry is very vulnerable. Deterioration of ripe strawberries is enhanced by high fruit temperature, which hastens metabolic activities, decay development, and internal breakdown. Delivery of high quality fruit to the consumer depends on the care taken by the various handlers. Damage may occur at every step in the handling system, from grower to retailer, but may not become apparent until later in the marketing system.

## 2. MATURITY AND HARVESTING

The harvest date is determined based on berry surface color. All berries should be harvested near full ripe (>3/4 red color), as eating quality does not improve after harvest. Appearance (color, size, shape, and freedom from defects), firmness, flavor (soluble solids, titratable acidity, and flavor volatiles), and nutritional value (vitamin C) are all important quality characteristics. For acceptable flavor, a minimum 7% soluble solids and/or a maximum 0.8% titratable acidity are recommended (Mitcham, 2003).



Harvesting of strawberries (photo: J. DeEll)

Strawberries have a relatively high rate of respiration (50-100 mL of CO<sub>2</sub> per kg per hour at 20°C) and thus are highly perishable. They produce very little ethylene (<0.1 ppm per kg per hour at 20°C) and do not respond to exogenous ethylene by stimulation of the ripening processes. Removal of ethylene from storage air may reduce disease development in all berries. Strawberries are usually hand harvested and field packed. Berries are harvested with the calyxes attached and must be held loosely in the hand to avoid bruising injury and discoloration. The strawberries must be handled with care and placed gently into the container, not dropped into it. Harvest should be as frequent as needed to avoid over-mature berries. Fruit should be sorted carefully, to discard any fruit with fungal lesions or injuries (cuts, bruises, torn calyxes, etc.). Harvesting, sorting, and packing are done simultaneously in the field.