

Abstract:

Crop and product quality are based on the assignment of value to both by a farmer, processor, wholesaler, or consumer. Physical, chemical, biological, sensory, production method-based, and food safety- or human health-related characteristics of the commodity may be used to assign value (i.e., rate quality). They may also influence price and/or the frequency of initial or repeated purchase. Although crop and product quality is increasingly important in the marketplace, many scientific questions remain regarding mechanisms underlying its development and maintenance at all levels of organization within the plant. Likewise, additional questions persist regarding how crop or product quality may be managed during production and after harvest for the potential benefit of farmers, processors, wholesalers, consumers or others. Practical questions of immediate and long-term importance, in particular, have driven integrated, multi-disciplinary efforts among researchers in several departments within the College of Food, Agricultural and Environmental Sciences at The Ohio State University to explore natural and human forces which shape crop quality. We report here on a set of completed and ongoing studies dealing with the separate and combined effects of biotic and abiotic factors on vegetable crop quality. Numerous studies involving four crops (cabbage, *Brassica oleracea* L., Capitata Group; lettuce, *Lactuca sativa*, L.; potato, *Solanum tuberosum*, L.; tomatoes for processing, *Lycopersicon esculentum*, Mill.) grown in controlled environments or the field, using conventional, organic, or transitional-organic methods are discussed.