

March / April, 2002

"A Fruit Salute"

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Worldwide competition, food quality and safety, worker safety, labor availability and regulations, pesticide regulations, and low profit margins....Wow...and this is only a partial list of the challenges in providing consumers with the apple that keeps the doctor away!

Several things are happening in Farrall Hall at MSU to try and help our friends in the fruit industry face these challenges. One significant issue that has faced, and will continue to face, the industry is the loss of chemical control agents due to food safety regulations, environmental concerns, as well as worker safety considerations. The result is the need to develop ever more effective and lower input mechanisms for insect and fungal control as well as means to identify and sort out problematic fruit. With fewer options for in-field control, problematic fruit reaching the packaging and processing phases of the fruit industry will likely be more prevalent

In addition to the development and application of some successful novel sprayer designs and concepts, the department is involved in looking at methods to assess and ensure fruit quality at the point of packaging and processing. Agricultural Engineers, both MSU and USDA-ARS, are working to improve upon and evaluate commercially available electronic sorting systems. The research is focused on evaluating concepts and developing instrumentation capable of measuring physical and sensory quality characteristics of fruit. Techniques being studied involve the reflectance, absorbance, transmittance, and scattering characteristics of visible and near infrared light in addition to tissue fluorescence to differentiate desirable and undesirable quality characteristics. Optical sensing of possible insect presence is also within the research domain. Another area of concern and challenge, fruit and vegetable safety and security, is being studied through research in [biosensor development for detection of pathogens](#) on and in raw products.

Agricultural Engineering's service to the fruit and vegetable industry has ranged from studies and development related to planting, harvesting, post-harvest handling, storage, and sprayer technologies to current projects in rapid and nondestructive sensing and sorting. MSU Agricultural Engineering, in partnership with the USDA-ARS Engineering unit at MSU, is proud of their relationship, accomplishments, and service to the fruit industry considering the industry's importance to Michigan's rural landscape, tourism, and overall economy.