

New approaches in cherry and chestnut harvest systems

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Abstract

Michigan is home to an extensive diversity of agriculture, including many specialty crops. One well-established crop of abundance, sour (tart) cherries, and a second and emerging crop, chestnuts, are each looking toward new opportunities and technology for harvest. The sour cherry industry is progressively looking toward new orchard systems coupled with new technology and automation, quite possibly over-the-row, to decrease environmental footprint and increase profitability. Test orchards are being planted and established in multiple unconventional styles for evaluation with over-the-row spindle and tine harvest equipment which has been shown in preliminary trials with unmodified berry harvesters to have good potential for effective fruit removal. Harvester design is ongoing in parallel and in collaboration with orchard design; and, variables include plant cultivar, growth and pruning, mechanical engagement techniques and detachment dynamics. The goals are to bring orchards into production sooner and maximize fruit quality. Domestic chestnut production is gaining a foothold in Michigan and the U.S. The opportunity for grower diversification and the support of research in production, marketing, handling and processing is helping a chestnut industry become a reality. While Europe is well established in chestnut production and associated technology, such as harvesters, North America has much to learn, as well as possibly having unique situations such as orchard size being economically incompatible with commercially available harvesters. Conventional harvest systems as well as newly designed concepts are being studied and developed. Initial results of a new single-stage harvest-separation concept are presented. Variables include chestnut quality, cost, ergonomics, orchard floor approaches and harvest and separation efficiency. The expected outcome of the effort is system options and analysis for profitability for the producer and maximizing chestnut quality for the marketplace.