CMNP – AN ENABLING TECHNOLOGY FOR CITRUS MECHANICAL HARVESTING

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ABSTRACT

The cost to manually harvest processed oranges accounts for a significant portion of the total production costs. This fact puts Florida processed citrus producers at a competitive disadvantage to foreign producers. Mechanical harvesting promises to reduce costs but depends on an effective abscission agent to selectively loosen mature fruit and allow mechanical harvesting of late season Valencia oranges without impacting next season’s crop. Following an extensive screening program, CMNP was selected by UF-IFAS and the Florida citrus industry for development as a citrus abscission agent. AgroSource, Inc. has partnered with the Florida Department of Citrus to develop, register, and commercialize CMNP as an abscission agent for the mechanical harvesting of citrus. The performance of CMNP is influenced by both application and environmental conditions. Thorough product coverage on mature fruit is necessary to achieve optimal performance, as CMNP does not act systemically. Reduction in fruit detachment force by CMNP is a function of application rate, temperature after application, and length of time between application and harvest. UF-IFAS trials have demonstrated application of CMNP using multi-head sprayers with individual fans resulted in increased fruit removal and recovery compared to standard air-blast sprayers. Timing of optimal harvest date following CMNP application must balance fruit detachment force reduction and fruit drop. In a majority of situations, UF-IFAS trials show the optimal harvesting window is three to four days after CMNP application. Citrus processors note increased debris (twigs, leaves etc.) from mechanically harvested fruit and studies by UF-IFAS have confirmed this from mechanically harvested fruit when an abscission agent is not used. However, UF-IFAS trials have shown when CMNP is used prior to mechanical harvesting, debris amounts are equal to or less than levels seen from hand harvesting. UF-IFAS research over 10 years demonstrates that when CMNP is applied according to label directions, formation of the abscission layer in mature oranges is enhanced resulting in a 10-15% improvement in fruit removal when using harvesting equipment with reduced intensity settings. By selectively targeting the mature fruit, CMNP enables the use of mechanical harvesting in late season Valencia oranges without adversely impacting the following season’s crop. AgroSource has made a Section 3 submission to the EPA for CMNP use on oranges in Florida and anticipates a decision in time for the 2012-2013 crop season. Thus, CMNP will provide Florida orange

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growers with a critical tool to allow increased use of mechanical harvesting throughout the season at substantial cost savings versus hand harvesting.