2016 Apple MRL Charts:
Adjusted Pre-harvest Intervals to Comply with the Maximum Residue Limits of U.S. and Selected Export Markets for Single and Multiple Applications of Five Insecticides Registered for Use in Managing Late Season Pests in Michigan

Purpose & Methods: These charts were developed to provide adjusted pre-harvest intervals for five pesticides registered for use on apples against late season pests. The charts are based on cross-referencing residue degradation curves with the maximum residue limits (MRLs) of key apple export markets. Data are from replicated trials conducted at Michigan State University on apples that received either single or multiple application of Assail, Danitol, De lửa, Exirel, or Imidan to close harvest in 2015. Residue analysis was conducted on freshly harvested fruit and followed a generally accepted standard protocol known as the QuEcHERS method. The MRLs used to develop this tool come from those adopted by Bryant Cappie, Inc. as of May 2016. Markets included in each chart are USA, Brazil, Canada, Central America (i.e. Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, and Panama), South America (i.e. Argentina, Chile, Colombia, Paraguay, Peru, and Uruguay), Mexico, Israel, Jordan, Mexico, Philippines, Saudi Arabia, Singapore, Thailand, and Vietnam.

Key to Charts:

RED means the product should not be used during this time frame because of EPA label restrictions or due to a high risk of exceeding MRLs for a given market.

YELLOW means the product should be used with caution during this time frame given all the variables (e.g. tank mixes, application methods and calibration, use of adjuvants, environmental conditions post-application, and other factors) and it cannot be assumed that any tank mix will be safe for use in this period. Since it takes for a residue to degrade in order to meet the MRL for a given week.

GREEN means the product is likely to be safe for use at this time with low risk of residues remaining at harvest that would exceed MRLs for a given market.

Charts 1a (left below) and 4b (right below). These charts indicate that when exporting to China or Vietnam, one application of Delegate® (spinetoram) is risky within 14 days of harvest, and if multiple applications are planned, they should end 28 days before harvest. Otherwise use as directed on the label for the other markets listed.

Charts 2b (below). This chart indicates that Danitol® (fenpropathrin) is not recommended for use within 1 month of harvest if exporting to Central America, Columbia, Dominican Republic, India, Israel, Jordan, Philippines, Saudi Arabia, Singapore, or Thailand. Otherwise use as directed on the label for the other markets listed.

Charts 3b (below). This chart indicates that Imidan® (phosmet) should be safe to use according to label for exporting to any of the markets listed. However, 2014 data suggested a risk for exports to China at 7 days to harvest and for Israel and Brazil within 1 month of harvest.

Charts 5a (left below) and 5b (right below). These charts indicate a high risk of exceeding MRLs for China and Vietnam when Exirel® (cyrantraniliprole) is applied once within 1 month of harvest, and should be used with caution within 7 days of harvest for all other markets listed. Multiple applications are not recommended within 1 month of harvest for any of the markets listed.

Disclaimer: The authors of this tool cannot guarantee that any of these MRLs have not changed since May 2015, therefore, the user assumes all responsibility for its use subsequently. We also cannot guarantee that a material listed for use here in Michigan is registered for use outside of Michigan (material registration status is determined by the USEPA and State Governments where ‘special use’ are concerned). Users outside of Michigan are cautioned to consult with their local extension service to determine what is allowed. We also make no guarantees that any of the products listed will be effective against a particular pest. Finally, given all of the variables that can affect degradation rates – in particular the use of adjuvants and tank mixes, environmental conditions post-application, and post-harvest handling – we cannot guarantee that if a product is used according to this tool it will not leave residues that exceed tolerances (MRLs) for the selected market.

Aknowledgements: This work was made possible in part through grants funded by the MDARD Strategic Growth Initiative, the USDA Technical Assistance for Specialty Crops Program Agreement No. 2013-30, and the Michigan Apple Committee. Diane Smith of Michigan Apple provided input on which markets to include. Mark Whalen, John Wies, Anthony VanWerkom, Larry Gut, and Nikki Rothwell designed and/or conducted the replicated trials. The MSU Pesticide Analytical Lab provided the residue analyses. Rosemary Bolton obtained the published MRLs and combined them with the data generated in this project to create the first draft of these charts. Julianna Wilson designed and wrote the text for this poster.