Managing MRLs and Integrating New Products

Mark Ritenour
UF/IFAS – Indian River REC
Introduction

• Maximum Residue Limits (MRLs)
  – Represent the legal tolerances of different countries for residues of different chemicals (often pesticides) on fruit & vegetables.
Introduction

• Japan (2006)
  – Implemented positive list for MRLs

• EU (2008)
  – MRL Harmonization Regulation (EC) No 396/2005

• A variety of MRLs for different countries greatly complicates pest control choices for growers and packers.
2014 MRL Harmonization Workshop

- June 18-19, 2014 – California
- Over 120 people from at least 9 countries, including Europe and Korea
- I presented on “Non-Anticipated Impacts of Residue Tolerances”
2014 MRL Harmonization Workshop

- South Korea
  - Switching to a positive list system in 2017
- China
  - Moving to a positive list system
- Taiwan
  - Has many missing MRLs (backlogged) and a restrictive sanctions policy
  - FAS Sent them a priority list recently
2014 MRL Harmonization Workshop

• Asia-Pacific Economic Cooperation (APEC)
  – MRL harmonization effort with 21 countries underway (initial stages)

• FAS is encouraging Japan to ease postharvest residue tolerances as they are duplicative

• EU
  – Will only accept responses to their notices from the US Govt. They have not usually welcome responses directly from industry.
Unintended Consequences

- Producers cannot segregate blocks for specific markets
- Industry vigilance is required when MRLs for export markets are lower than U.S. MRLs
  - Especially critical because countries change MRLs periodically
  - Limited knowledge of how fast residues of various compounds decline under different production/postharvest conditions
Residue Detection

• Improving residue detection methodologies and technology
  – Increased detection does not equate to increased risk
  – However, with increased reports of pesticide residue detections, the public perceives the reports as indications of increased residues (increased risk)
Secondary Standards

• Even more confusing can be individual buyer residue tolerances that are more restrictive governmental MRLs
  – These include food processors
• Such tolerances are not widely reported, but must be obtained through communication directly with the buyer
  – Close and frequent communication with buyers is essential
Conclusions

• Industry must stay current on MRLs for potential markets
  – Industry awareness has increased greatly over the past 10 years

• Reducing MRLs solely based on average previous use can hamper responses to emergency situations (e.g., to eradicate introduced diseases)
Conclusions

• MRL dis-harmony among various markets introduces many potential problems
  – Many producers cannot segregate blocks for specific markets
  – Dedicated equipment is often required to reduce the potential for cross contamination
Our goal is to generate and disseminate information so that perishable horticultural commodities are delivered to consumers fresh, safe, nutritious and in the form (e.g. ripe or fresh-cut) consumers desire.

Packinghouse Day 2014
Packinghouse Day was held on Aug. 21st at the IRREC in Ft. Pierce. Details of many of the presentations can be found in the Previous Events section.

Pesticide Residues & Limits
Look up the latest citrus MRLs for selected export markets and other resources for all commodities. More...

Food Safety
For a narrated personal hygiene training
Pesticide Residues & Maximum Limits

UF/IFAS Publications

- Maximum Residue Limits (MRLs) for Citrus (22KB pdf)
  For U.S. & Selected Export Markets
  Updated Nov., 2014.

- UF Pesticide Information Office
  Chemically Speaking Newsletter

Pesticide MRL Web Resources

- International Maximum Residue Level Database - USDA Foreign Agricultural Service (FAS).

- U.S.A. Code of federal regulations - Go to Title 40, Part 180 found here for the official list of U.S. MRLs.
  - Index to Title 40, Part 180 also here
  - See Subpart D—Exemptions From Tolerances
  - See EPA's excellent overview on Pesticides and Food
  - Alphabetical list of Substances Generally Regarded as Safe (GRAS)

- European Union - EU-MRL Pesticide Database--
  Also see the Pesticide Action Network (PAN) Europe for
## Maximum Residue Limits (MRLs) in part-per-million (ppm)

### For Citrus - By Country

Because MRLs change frequently, no guarantee is made concerning the accuracy of the below values. Verify these values with other knowledgeable sources within specific markets of interest.

Materials EXEMPT from US tolerances or only labeled for application to NONBearing trees are NOT included. Proposed values are not in effect and may never be adopted, but are listed to notify of potential upcoming changes.

Abbreviations: G = grapefruit, O = orange, T = tangerine, L = lemon, P = pummelo


<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Trade Names (Examples only, not inclusive)</th>
<th>U.S. Citrus</th>
<th>Canada Citrus</th>
<th>CODEX Citrus</th>
<th>EU (G &amp; O only)</th>
<th>Japan (G &amp; O only)</th>
<th>Taiwan (G &amp; O only)</th>
<th>Korea (G &amp; O only)</th>
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</thead>
<tbody>
<tr>
<td>2,4-D (2,4-Dichlorophenoxyacetic acid)</td>
<td>Citrus Fix, Hivol</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>0.15 (G); 0.05 (O)</td>
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<tr>
<td>Abamectin</td>
<td>Agri-Mek, Clinch, Zephyr, ABBA, Epi-mek, Reaper</td>
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<td>0.01</td>
<td>0.02</td>
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<td>0.05</td>
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<td>10</td>
<td>15</td>
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<td>10</td>
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<td>7 (G); 5 (O)</td>
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<td>Bifenthrin</td>
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<td>Boscalid</td>
<td>A component of Pristine</td>
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<td>Buprofezin</td>
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<td>Altacor, part of VoltamFlexi</td>
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<td>Chlorpyrifos</td>
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<td>Kryocide</td>
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<td>Micromite</td>
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<td>3</td>
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<td>Dimethoate</td>
<td>Dimethoate, Cygon</td>
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  Also see the Pesticide Action Network (PAN) Europe for listings of substances banned or authorized in the EU market.

- **Japan** - MRLs - List of Agricultural Chemicals in Foods—The Japan Food Chemical Research Foundation.
  See: Grapefruit; Orange; Lemon; Lime; Other citrus.
  Postharvest fungicides must also be designated by Japan as Food Additives.
  Original website on Japan’s "Positive List System for Agricultural Chemical Residues in Foods."
  See also MHLW Notification No. 498 (Exempted Substances)

- **Canada** - Health Canada.
  Specific MRL information.

- **CODEX Alimentarius** - Pesticide Residues in Food - FAO/WHO Food Standards. CODEX homepage.

- **Taiwan** - See specifically the Standards for Pesticide Residue Limits in Food (located at the bottom of the page), as amended June 4, 2013.

- **Korea** - MRL database. For an explanation of their policy’s decision tree, go to “Pesticide MRLs — sorted by food” on left side of page, and select “English” in upper right corner to see the translation of the decision tree policy. Korea does not accept Codex crop group MRLs.
UPDATE – On January 29, the International Maximum Residue Level Database will be relocated to GlobalMRL.com.

Registered users will be able to access information in GlobalMRL.com using their existing MRLDatabase.com login credentials, and will not need to re-register. The site will have a new look, with subscription options available for additional features and data.

Register
The MRL Database Is Moving!

Launching January 29, 2015

On January 29, the International Maximum Residue Level Database at MRLDatabase.com will be moving to its new home at GlobalMRL.com.

You will be able to log into GlobalMRL.com with your existing MRLDatabase.com username and password.

Despite this change of address, all of the MRL data you currently rely on will remain available, but will feature a new look, easier searches, and clean, downloadable results.
Pesticide MRL Database

Stay up-to-date with MRL News. Updated daily, this news feed will keep you informed of MRL changes to the database as well as other MRL regulatory and policy updates from around the globe. Register to receive these updates as a digest in your email every Monday.

Pesticide Directions:
1. Select a Commodity Type Tab - Plant Product Commodities, Animal Product Commodities, or All Commodities.
2. Select Commodity, Pesticides, and Markets to Include in Database Search.

Please specify the commodities, pesticides, and markets per page below.

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Commodity</th>
<th>Commodity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acerola</td>
<td>Fennel, bulb</td>
<td>Parsley, dry</td>
</tr>
<tr>
<td>Alfalfa</td>
<td>Fennel, Florence, seed</td>
<td>Parsley, fresh</td>
</tr>
<tr>
<td>Allspice</td>
<td>Fennel, leaves, fresh</td>
<td>Parsley, turnip-rooted</td>
</tr>
<tr>
<td>Amaranth, leafy</td>
<td>Fennel, seed</td>
<td>Parsnip, root</td>
</tr>
<tr>
<td>Ambarella</td>
<td>Fennel, seed</td>
<td>Parsnip, tops</td>
</tr>
<tr>
<td>Angelica, dry</td>
<td>Fennel, seed</td>
<td>Partidgeberry</td>
</tr>
<tr>
<td>Angelica, stem and leaves, fresh</td>
<td>Flo</td>
<td>Passion fruit</td>
</tr>
<tr>
<td>Anise, seed</td>
<td>Flaxseed/Linseed</td>
<td>Pawpaw</td>
</tr>
<tr>
<td>Annatto, seed</td>
<td>Fritillaria, bulb</td>
<td>Pea, black-eyed, succulent</td>
</tr>
<tr>
<td>Apple</td>
<td>Fritillaria, leaves</td>
<td>Pea, dry (black-eyed)</td>
</tr>
<tr>
<td>Apricot</td>
<td>Garden huckleberry</td>
<td>Pea, dry (crowder)</td>
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<tr>
<td>Apricot, Japanese</td>
<td>Garlic, bulb</td>
<td>Pea, dry (dwarf)</td>
</tr>
<tr>
<td>Aronia berry</td>
<td>Garlic, great headed, bulb</td>
<td>Pea, dry (English)</td>
</tr>
<tr>
<td>Araracuara, root</td>
<td>Garlic, serpent, bulb</td>
<td>Pea, dry (field)</td>
</tr>
<tr>
<td>Arrowroot, tuber</td>
<td>Gherkin, West Indian</td>
<td>Pea, dry (garden)</td>
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<tr>
<td>Artichoke, Chinese, tuber</td>
<td>Ginger, root</td>
<td>Pea, dry (green)</td>
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<tr>
<td>Artichoke, globe</td>
<td>Ginger, white, flowers</td>
<td>Pea, dry (pigeon)</td>
</tr>
<tr>
<td>Artichoke, Jerusalem, tuber</td>
<td>Ginseng root, fresh</td>
<td>Pea, dry (snow)</td>
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</tbody>
</table>
### Pesticide MRL Database

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#### Please specify the commodities, pesticides, and markets per page below.

<table>
<thead>
<tr>
<th>Commodities</th>
<th>Pesticides</th>
<th>Markets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Select a Pesticide Below</td>
<td>or</td>
<td>Search for a Pesticide</td>
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</tbody>
</table>

- Etiadiazole
- Famoxadone
- Fenamidine
- Fenamidon
- Fenbuconazole
- Fenbutatin-oxide
- Fenhexamid
- Fenoxaprop
- Fenpropathrin
- Fenpyramidine
- Fenpyroximate
- Fentin hydroxide
- Ferbam
- Fipronil
- Flazasulfuron
- Flonicamid
- Florasulam
- Fluchloralin
- Flumioxazin
- Fluren
- Fluridone
- Flurtarol
- Fluten
- Fluvalinate
- Flufenacet
- Flurfen
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Pesticide MRL Web Resources

- **International Maximum Residue Level Database** - USDA Foreign Agricultural Service (FAS).
- **U.S.A. Code of federal regulations** - Go to Title 40, Part 180 found [here](#) for the official list of U.S. MRLs.
- **Index to Title 40, Part 180** also [here](#)
- **See Subpart D—Exemptions From Tolerances**
- **See EPA’s excellent overview on Pesticides and Food**
- **Alphabetical list of Substances Generally Regarded as Safe (GRAS)**

  Also see the [Pesticide Action Network (PAN) Europe](#) for listings of substances banned or authorized in the EU market.

- **Japan** - MRLs -List of Agricultural Chemicals in Foods—The Japan Food Chemical Research Foundation.
  See: **Grapefruit; Orange; Lemon; Lime; Other citrus**. Postharvest fungicides must also be designated by Japan as **Food Additives**.
  Original website on Japan’s "Positive List System for Agricultural Chemical Residues in Foods."
  See also MHLW Notification No. 498 (**Exempted Substances**)

- **Canada** - Health Canada.
  Specific MRL information.

- **CODEX Alimentarius** - Pesticide Residues in Food - FAO/WHO Food Standards. [CODEX homepage](#).

- **Taiwan** - See specifically the **Standards for Pesticide Residue Limits in Food** (located at the bottom of the page), as amended June 4, 2013.

- **Korea** - MRL database. For an explanation of their policy’s decision tree, go to "Pesticide MRLs — sorted by food" on left side of page, and select "English" in upper right corner to see the translation of the decision tree policy. Korea does not accept Codex crop group MRLs.
Thank you!

See the UF Postharvest Information Website for more information

http://irrec.ifas.ufl.edu/postharvest/