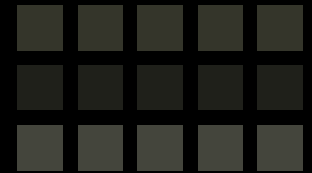


USDA Pesticide Data Program

Overview



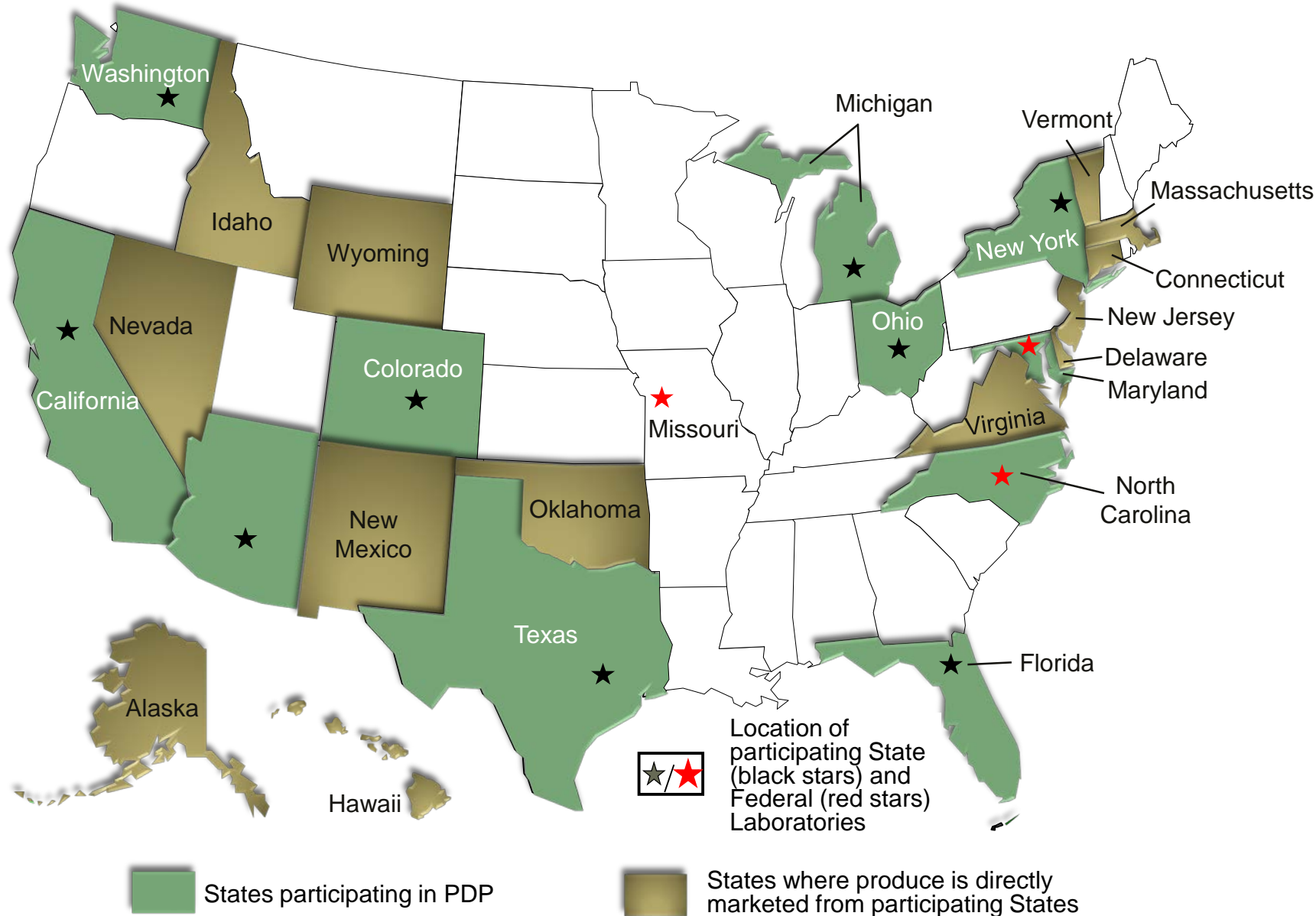
Agricultural Marketing Service
Monitoring Programs Division

PDP Mission



- Provide EPA with data for dietary risk assessments and pesticide re-registration decisions
- Support marketing of U.S. commodities
- Support USDA responsibility under the Food Quality Protection Act of 1996
- Provide information to FDA on violations

Program Participants



Reevaluation of Pesticides



- Food Quality Protection Act requires that pesticide registrations be periodically re-evaluated
- EPA must accelerate registration of reduced risk pesticides
- Pesticides used on food commodities must meet new safety standard of “reasonable certainty of no harm”
- PDP provides data on actual consumer exposure (vs. farm gate or field trial residue values)
- PDP data “refine” risk assessments

Dietary Risk Assessments

▣ USDA Consumption Surveys

▣ Residue Data

- Field trial data: provided by the registrant
 - ▣ Maximum application rates
 - ▣ Minimum pre-harvest interval
- Monitoring data
 - ▣ USDA-PDP: statistically representative
 - ▣ FDA : targeted sampling for tolerance enforcement
- FDA Market basket data: limited in scope but refined to reflect actual consumer exposure

Risk Assessment Data Key Elements

- Unbiased sampling
 - Continuous sampling to reflect seasonal variability
- Use of standardized analytical methods
 - Harmonize laboratories' capabilities
 - Low Detection Limits
- Uniform data reporting
 - Harmonize data elements to be reported

Testing Frequency

- High consumption commodities and foods highly consumed by infants and children are tested for 2 consecutive years
- Data for these foods are updated frequently – must be retested every 5 years or more often if necessary
- More than 700 samples per commodity per year are tested
- FDA is notified if test results show non-compliance with U.S. Tolerances

PDP Commodity Counts (1991-2013)



| Commodity Type | Number of Commodities |
|---|-----------------------|
| Fresh Fruit and Vegetables | 48 |
| Processed Fruit and Vegetables | 35 |
| Grains | 8 |
| Meat/Poultry/Fish | 9 |
| Dairy | 4 |
| Nuts | 2 |
| Water | 4 |
| Total Number of Commodities Tested | 112 |

PDP Commodities in Calendar Year 2014



- Bananas
- Blueberries
- Broccoli
- Carrots
- Celery
- Grape Juice
- Green Beans fresh
- Green Beans fz/cn
- Infant Formula
 - Dairy-based
 - Soy-based
- Nectarines
- Peaches
- Salmon
- Summer Squash
- Cherries (April)
- Watermelon (July)
- Potatoes (October)
- Sweet corn (October)

Sampling

Goal: Obtain statistically defensible representation of U.S. food supply so that PDP data reflect actual pesticide residue exposure from food

- Rigorous statistical design
- Random sampling
- Reflects what is typically available to consumer
- Sample collectors are trained in collection techniques
- Special surveys to capture imports or regional data



Sampling

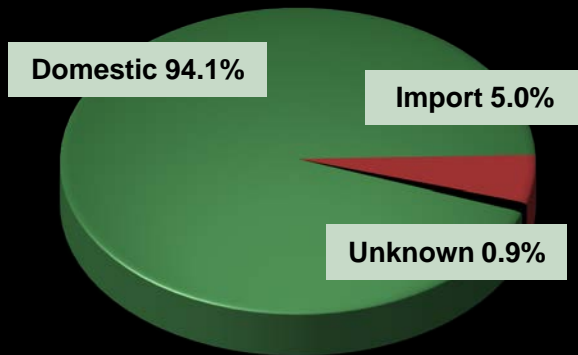
- 59 samples/commodity/month for most; 63 for selected commodities collected by North Carolina
- Sample information captured via handheld or laptop computers by inspectors onsite
- Fruit and vegetable sites at major food distribution centers and terminal markets
- Number of samples collected is apportioned according to population:

| | | | |
|------------|----|-------------|---|
| California | 13 | New York | 9 |
| Colorado | 2 | N. Carolina | 4 |
| Florida | 7 | Ohio | 6 |
| Maryland | 4 | Texas | 8 |
| Michigan | 6 | Washington | 4 |

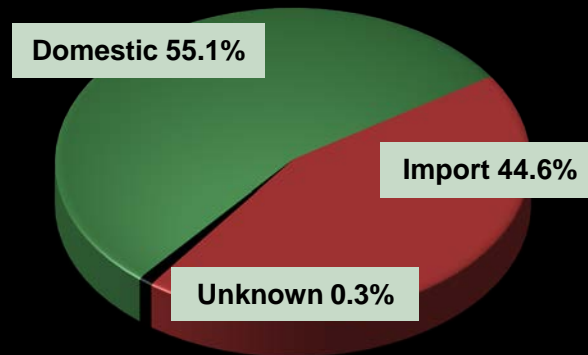


Summary of 2011 Commodity Origin (Fresh)

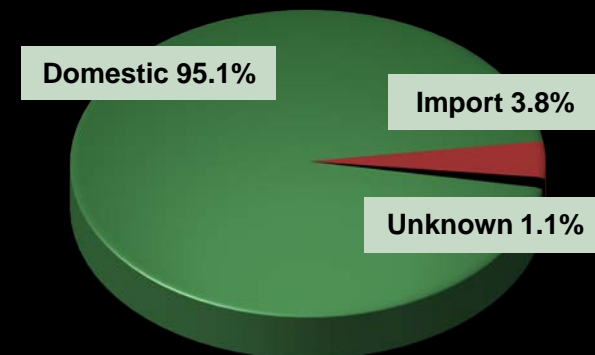
Cabbage (742 Samples)



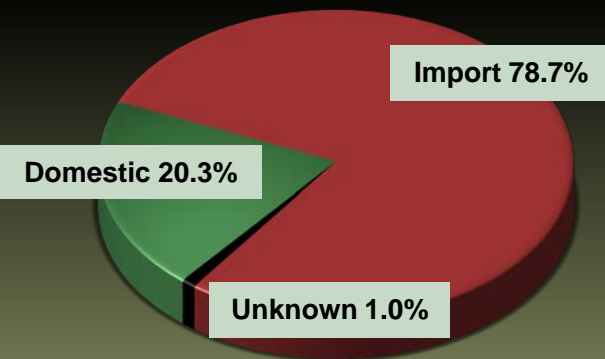
Cantaloupe (739 Samples)



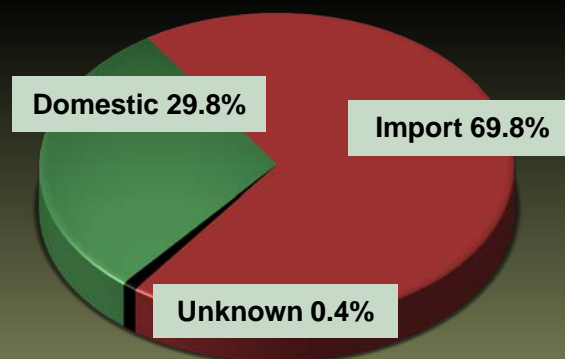
Cauliflower (186 Samples)



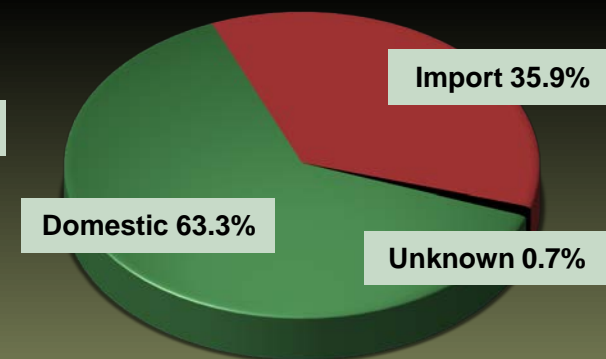
Papaya (384 Samples)



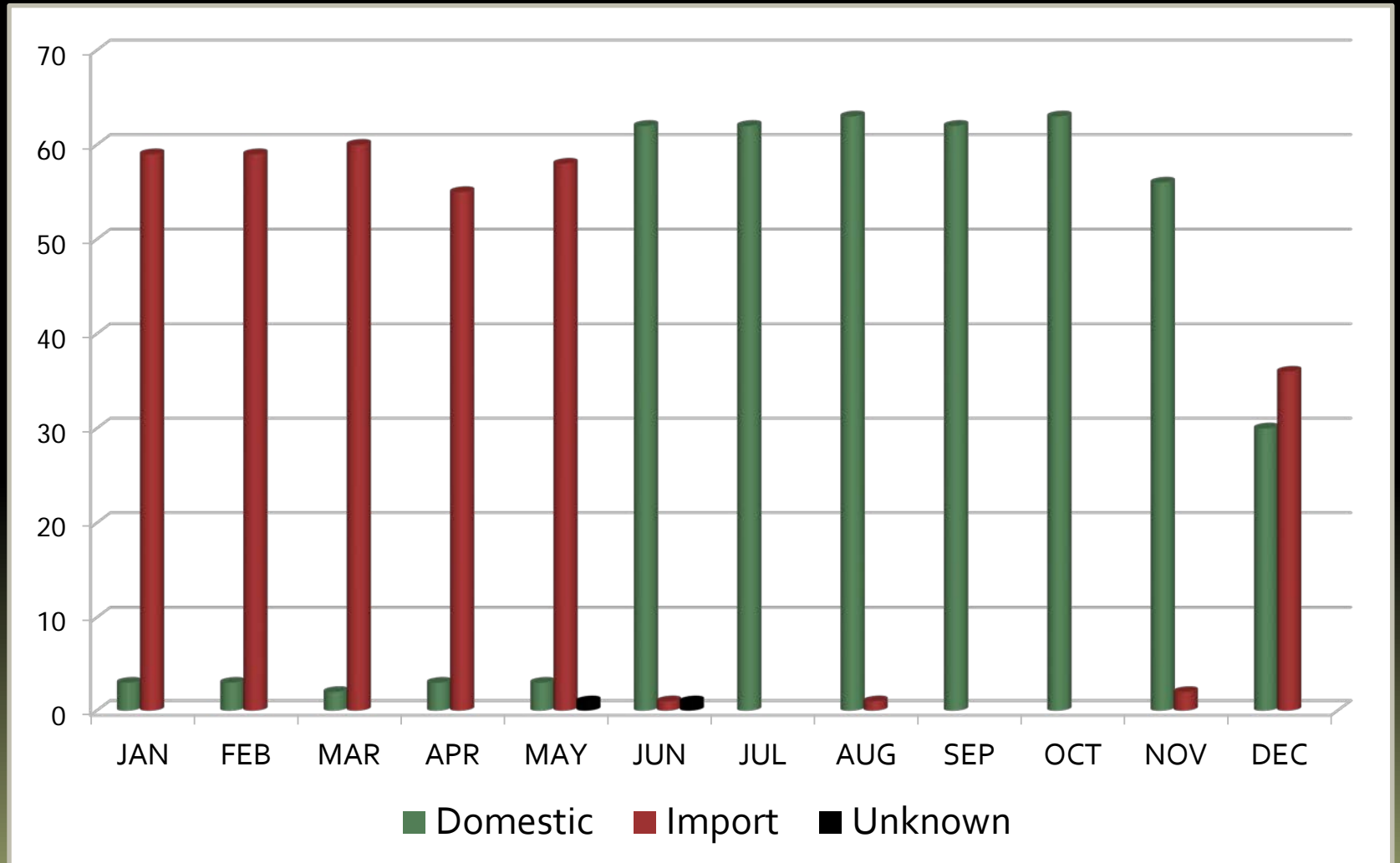
Snap Peas (744 Samples)



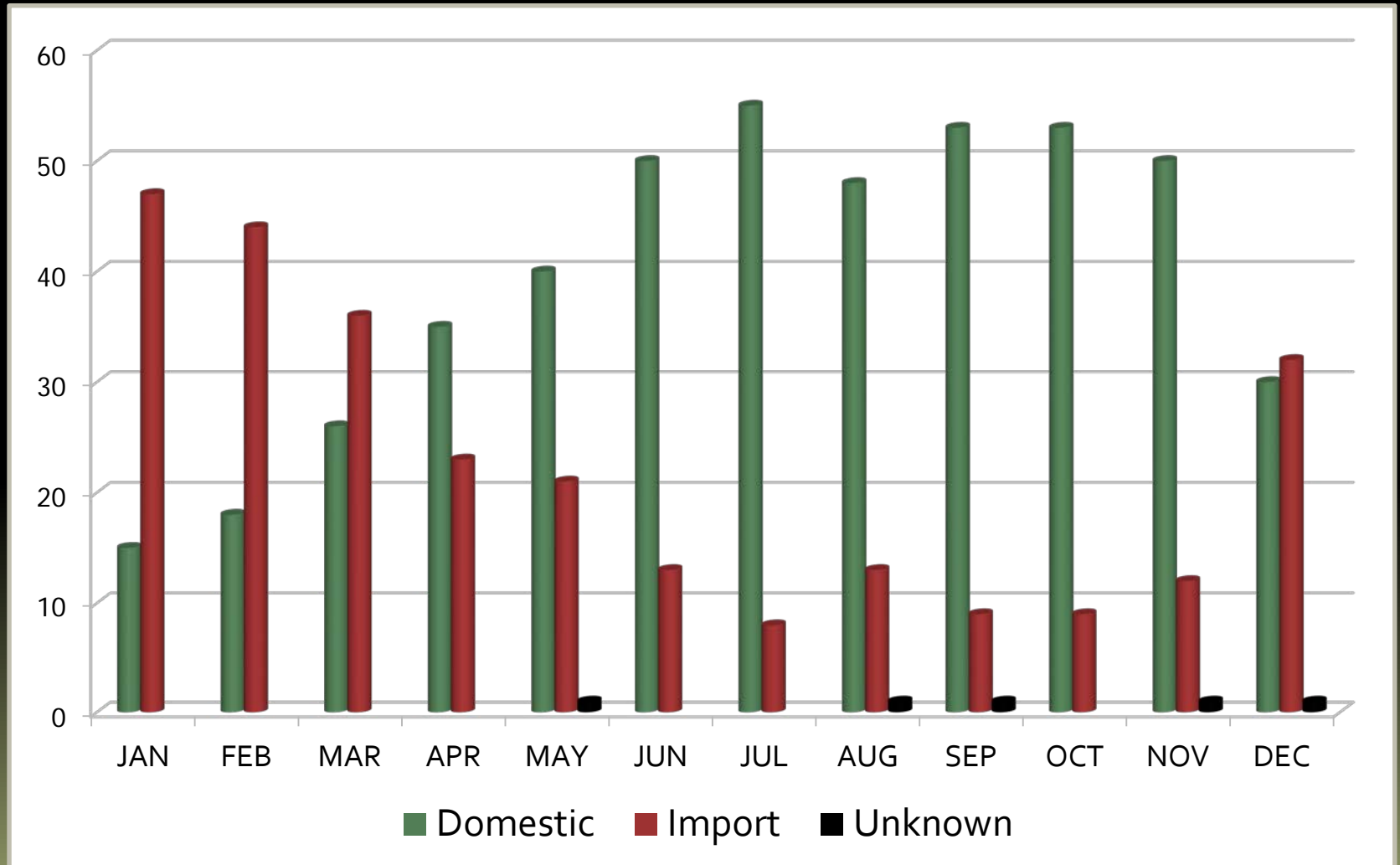
Sweet Bell Peppers (741 Samples)



Origin of Cantaloupe Samples

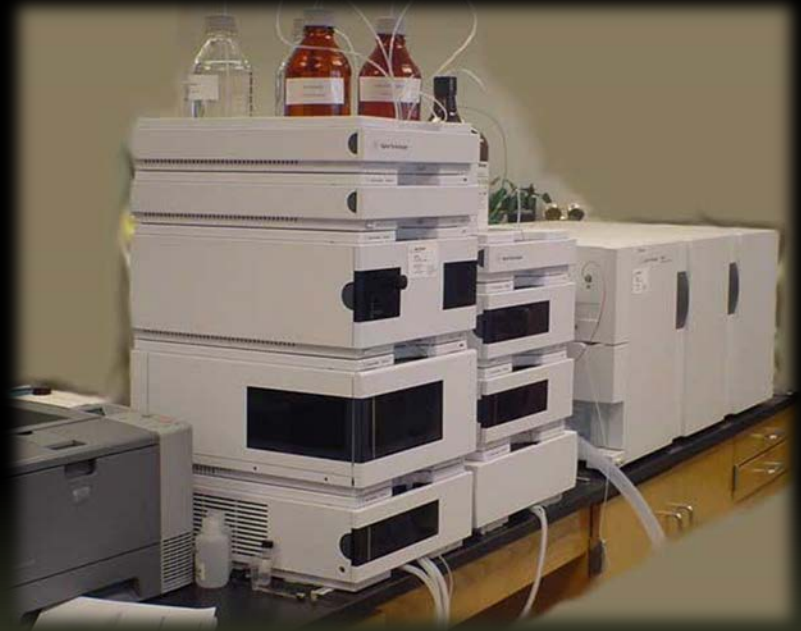


Origin of Sweet Bell Pepper Samples



Pesticide Residue Testing

- ▣ One or two laboratories analyze each commodity
- ▣ Lists of required compounds are commodity-specific
- ▣ State-of-the-art instrumentation
 - GC/MS and GC/MS-MS
 - LC/MS and LC/MS-MS
 - Low Limits of detection



PDP QA/QC Program

- Blanks, spikes, and process controls used with each sample set
- Method validation required for each new commodity and pesticide
- Limit of detection (LOD) and limit of quantitation (LOQ) determined experimentally at ppb levels (ppt for water)
- Participation in National and International Proficiency Testing required
- International accreditation required (ISO 17025)



Pesticides Tested

■ Over 400 pesticides, metabolites, and isomers tested using multi-residue methods

■ Pesticide Classes:

- Carbamates

- Chloroacetanilides

(*alachlor, acetochlor...*)

- Imidazolinones

(*imazapyr, imazaquin...*)

- Neonicotinyls

(*acetamiprid, clothianidin...*)

- Organochlorines

- Organophosphates

- Phenoxy acids

(*2,4,5-T; 2,4-D...*)

- Pyrethroids

(*allethrin, bifenthrin...*)

- Strobilurins

(*azoxystrobin, Kresoxim-methyl...*)

- Sulfonyl ureas

(*bensulfuron methyl, halosulfuron.*)

- Triazines

(*atrazine, simazine, etc.*)

- Triazoles

(*difenoconazole, hexaconazole...*)

O-Phenylphenol

- ▣ Fungicide with registered uses in apples, pears, sweet potatoes, orange juice, plums...
- ▣ Tolerances ranging from 5 ppm to 125 ppm
- ▣ Limits of detection for this pesticide range from 0.003 ppm to 0.010 ppm
- ▣ o-phenylphenol also used in:
 - Manufacturing of paper products
 - Disinfectant products

Residue Levels Observed

- Overall, residue levels are much lower than tolerances
- PDP has been gradually incorporating pesticides used overseas
- The PDP database can provide:
 - Data for specific commodities and pesticides
 - Data that include/exclude imports
 - Data for specific regions/States
- FAS is receiving U.S. MRLs non-compliance reports

Remote Data Entry (RDE) System



RDE is custom-built software with two major components:

- RDE electronic Sample Information Form (e-SIF) System
 - Stand-alone Windows-based software for laptops/tablets/desktops
 - Used by 180+ State Sample Collectors to enter and submit e-SIFs
 - Can be used by USDA/Labs for off-line data entry of paper SIFs

- Web-based RDE System
 - Centralized .NET-based software
 - Used by PDP Labs to enter and submit complete data sets
 - System and database reside on USDA-AMS servers in D.C.

PDP Output

| Year | No. of samples |
|------------------|----------------|
| 2008 | 13381 |
| 2009 | 12244 |
| 2010 | 12845 |
| 2011 | 12737 |
| 2012 | 12546 |
| 2013 | 10399 |
| 2014 (projected) | 10056 |

Pesticides in Honey?

- 2007: Penn State researchers raise concern
- Florida growers worried about implications for orange blossom honey
- Prompt Response – 2 months – USDA Lab, Gastonia, 164 pesticides
- 2007 - 2008: 744 samples,
PT (3 samples, 12 analytes)
- Findings: 0.4% detections
 - coumophos (35%)
 - fluvalinate (12%)
 - amitraz metabolite (11%)
 - no tolerance violations (6.6%)

Baby Food

- Testing began in October 2010
- First commodities: green beans, pears, sweet potatoes
- Next: applesauce, carrots, peaches, peas



Baby Food Testing

- Overall, small amount of pesticides found in some of the samples
- A few violations were found where tolerances were not established
- EPA determined that findings did not present a health risk
- FDA issued statement that baby foods are in no way unsafe and parents and caregivers can continue to feed infants their regular baby foods



Infant Formula Testing

- Began testing October 1, 2013
- Test dairy-based and soy-based each
- Testing for one year (over 700 samples each type)
- Testing lists are commodity specific – based on milk and soybean established tolerances



Salmon Testing

- Testing began July 1, 2013
- Samples consist of:
 - One pound
 - Fresh or frozen raw salmon
 - Fillets, nuggets, strips, or steaks
 - Bones-in or no bones
 - Atlantic or Pacific
 - Farm-raised or wild, domestic or imported, organic or conventional



Salmon Testing

- Analysis for pesticide residues via QuEChERS modification
- Split sample sent to EPA/BEAD lab (Ft. Meade facility) for glyphosate/AMPA testing



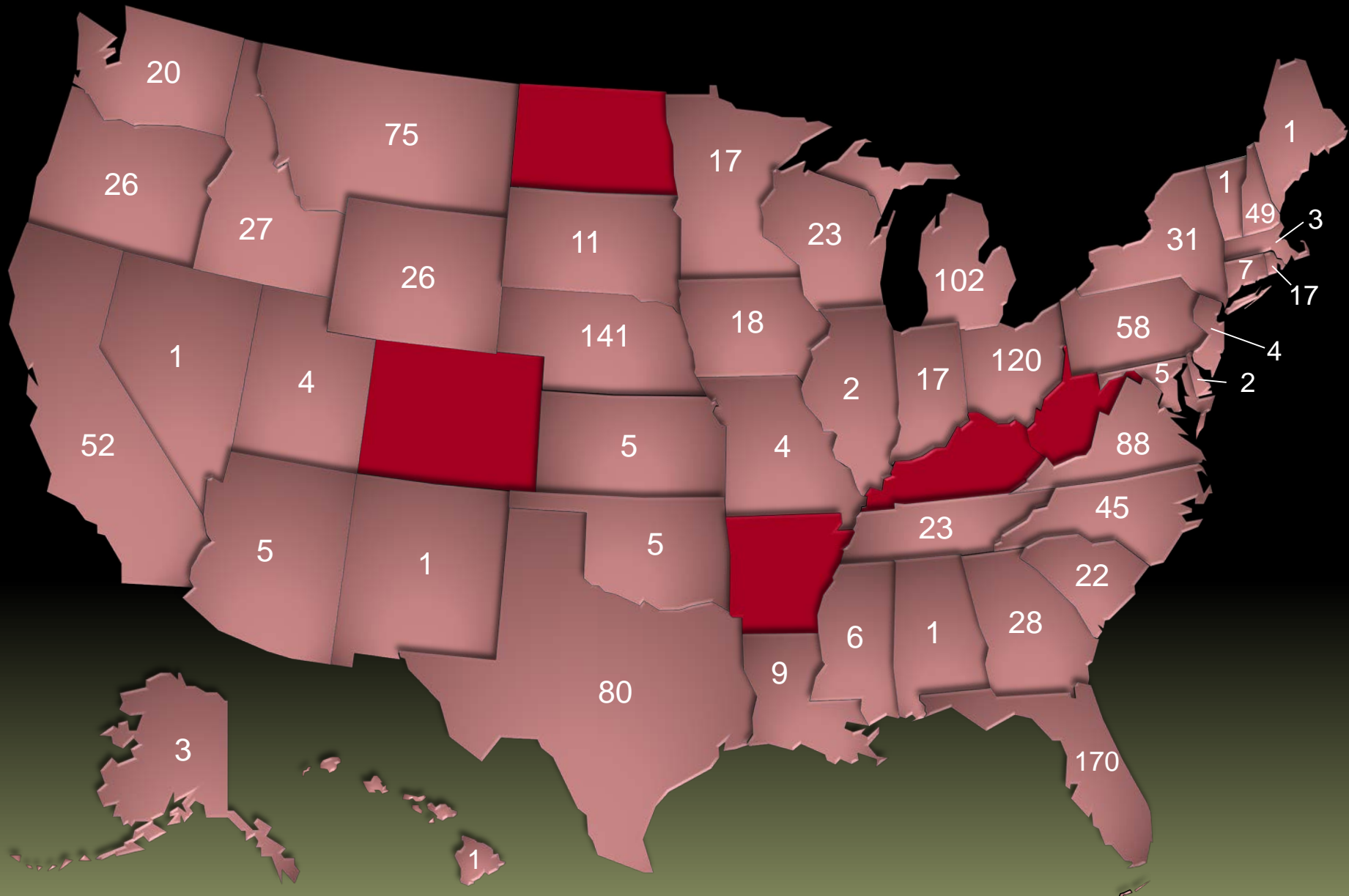
Groundwater

Discontinued in 2013 due to budget cuts

- 10-15% of the U.S. population have domestic wells supplying potable water needs
- Most of these domestic wells are in rural areas of the U.S., most frequently in agricultural regions
- PDP began testing groundwater in 2007
- To date 1,358 groundwater wells throughout the continental U.S. have been sampled and tested
 - Privately owned wells
 - State (EPA) monitoring wells
 - Schools/childcare facilities
 - Agricultural field wells
 - Public utilities drawing from groundwater



Groundwater Locations – 1,358 samples



Groundwater

- ▣ Over 100 compounds tested at parts per trillion levels
- ▣ Most commonly detected (>10% of samples)
 - Acetochlor ESA, alachlor ESA and OA, metolachlor ESA and OA
 - Atrazine and metabolites, simazine
 - Bromacil
 - Diuron
 - Imazapyr
 - Metalaxyl

How are PDP Data Used?

- Pesticide tolerances evaluated by EPA using PDP data
- Pesticide uses re-registered or cancelled based on outcome of tolerance evaluations
- Examine impact of agricultural practices on human health and the environment
- Monitor compliance with U.S. EPA tolerances (MRLs)
- Tolerance violations reported to FDA
- Verify pesticide usage statistics
- Facilitate export of U.S. commodities



Supporting Marketing of U.S. Commodities

- Support export of U.S. products
- Test for foreign use pesticides
- Exchange information with FAS re. MRL violations that cause rejection of U.S. products
- Conduct pilot surveys of crops for which data are needed
- Data show that most produce tested have residues much lower than U.S. EPA tolerances



International Activities

- Provide information on U.S. tolerances
- Participate in Codex and Pesticide Workshops in Europe and Latin America
- PDP has provided training or information to scientists from Belize, Brazil, Chile, China, South Korea, India, Indonesia, Peru, Saudi Arabia, South Africa



Thank you!