



Sustainable
Food Group

Sustainability in the Supply Chain: What Food Buyers Need and Why

American Spice Trade Association

April 13, 2014 Charleston SC



Dr. Thomas Green, CCA, TSP, President and Cofounder

IPM Institute of North America

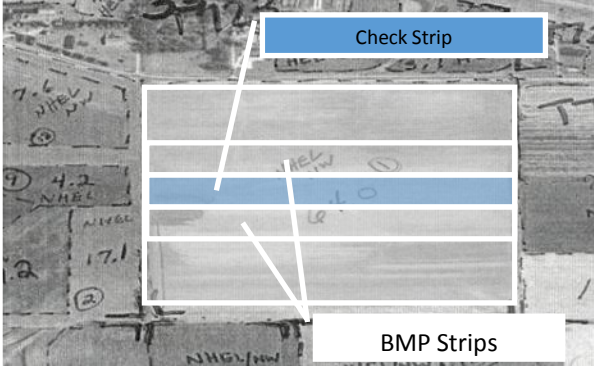
2012, 2009 US EPA Sustained Excellence in IPM Award

2009, 2008, 2005, 2004 National Champion, US EPA Pesticide Environmental Stewardship Program

2005 Children's Environmental Health Recognition Award, US EPA Office of Children's Health Protection



Leveraging marketplace power to improve health, environment and economics



Eighth International IPM Symposium
March 2015, Salt Lake City



It's all about sustainability

Meeting our needs
without
compromising the
ability of future
generations to
meet their needs

- Brundtland Commission 1987





SUSTAINABILITY

**Economic
Justice**

**Social
Equity**

**Corporate
Ethics**

**Fair
Trade**

**Worker
Safety**

**Fair
Labor
Practices**

**Animal
Welfare**

**Resource
Distribution**

**Environmental
Stewardship**

**Personal
Health & Wellness**

**Eco-
efficiency**

Biodiversity

**Food
Safety**

Nutrition

**Soil, Water, Wildlife
Conservation**

**Body
Burden**

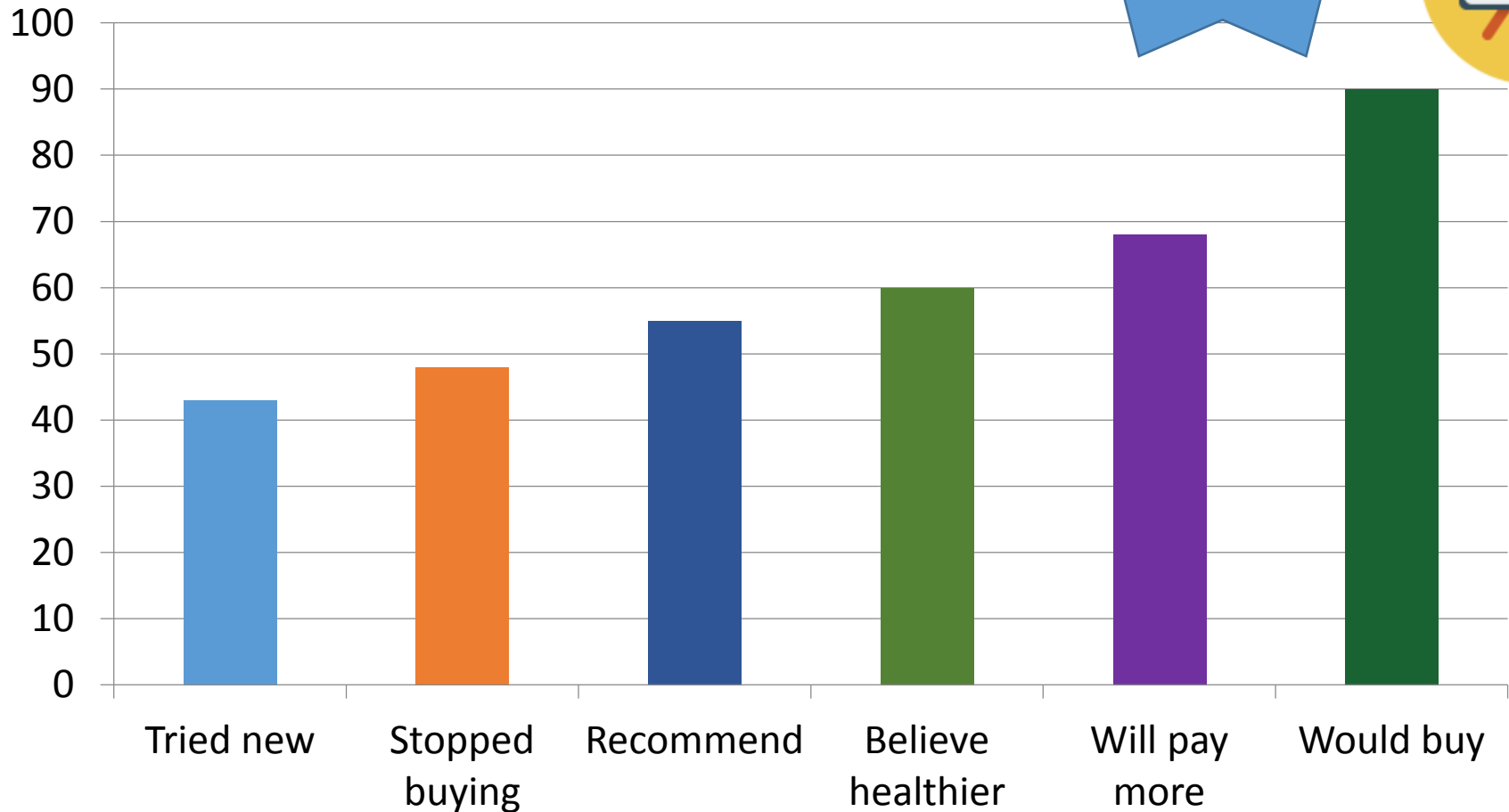
STRATEGIES



Market Drivers

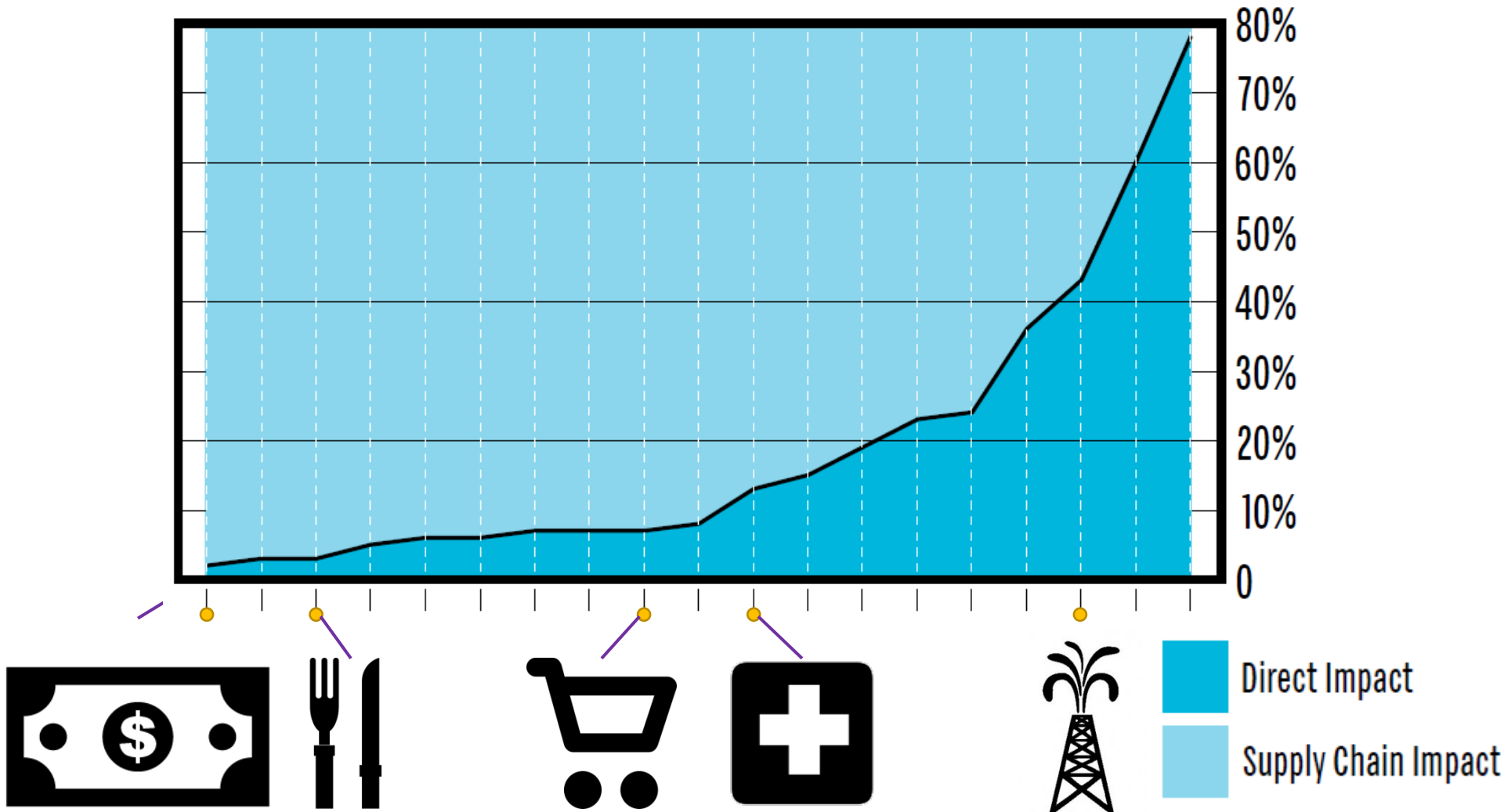
Customers choosing green

Pesticides a
top concern
of 60%!



Food/Bev Supply Chain Impacts

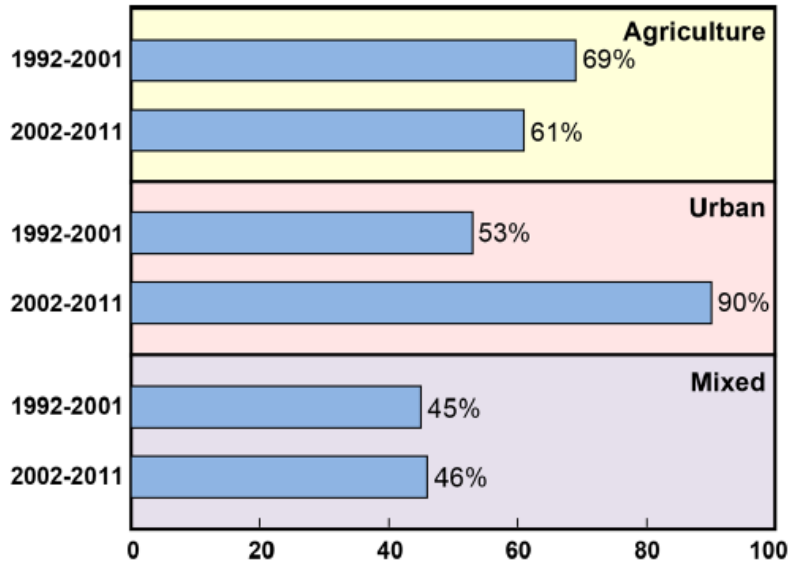
Direct vs. Supply Chain Impacts by Super Sector



Pesticides and impacts?

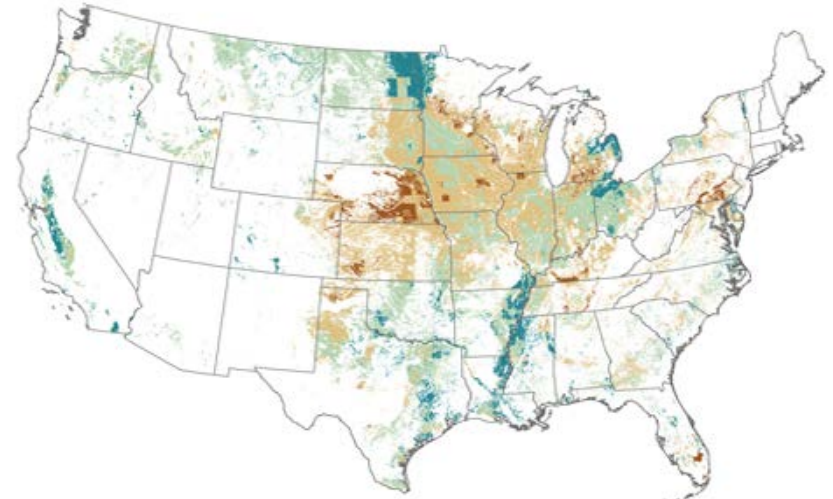
*surface
water*

*Lots of progress,
and plenty more to do*



- From 2002-2011, pesticides above levels of concern for aquatics in 90% of URBAN streams, up from 53% in the prior decade.
- Samples above levels of concern for human health way down in second decade.
- Changes in pesticides found driven by regulation and new products.
- *Not the whole story: Neonicotinoids, fungicides not included.*

Likelihood that atrazine plus deethylatrazine will exceed drinking-water standard in shallow groundwater underlying agricultural areas



Probability of exceeding 3.0 µg/L



*ground
water*

Source: Stone *et al.*, 2014, Pesticides in US Streams, Env. Sci. and Tech.

USGS Pesticide National Synthesis Project, water.usgs.gov/nawqa/pnsp/

The cover features a close-up photograph of a bright yellow sunflower with two honeybees on its center. The USDA logo is in the top left corner. The title is prominently displayed in the upper half, and the location and date of the conference are at the bottom.

- ### Managed honey bee colony losses in the US
-
- The chart displays the percentage of total colony winter loss for managed honey bee colonies in the US across eight consecutive seasons. The y-axis represents the 'Percent total colony winter loss' from 0% to 40% in 5% increments. The x-axis lists the seasons from 2006-2007 to 2013-2014. Each bar is composed of two segments: a blue segment at the bottom representing 'Lost colonies' and a red segment on top representing 'Dead colonies'.
- | Season | Lost colonies (%) | Dead colonies (%) | Total loss (%) |
|-----------|-------------------|-------------------|----------------|
| 2006-2007 | 15 | 17 | 32 |
| 2007-2008 | 15 | 21 | 36 |
| 2008-2009 | 18 | 11 | 29 |
| 2009-2010 | 15 | 19 | 34 |
| 2010-2011 | 13 | 17 | 30 |
| 2011-2012 | 14 | 8 | 22 |
| 2012-2013 | 15 | 16 | 31 |
| 2013-2014 | 19 | 4 | 23 |

Epest-High

Estimated use on agricultural land, in pounds per square mile

- < 0.0018
- 0.0018 - 0.0128
- 0.0129 - 0.0569
- 0.0570 - 0.2426
- > 0.2427
- No estimated use

Estimated use in million pounds

Legend:

- Other
- Pasture and hay
- Orchards and grapes
- Rice
- Vegetables and fruit
- Cotton
- Wheat
- Soybeans
- Corn

What do buyers need?

Credible, reportable data on:

***Practices
Performance metrics
Success stories
Outcomes***

Efficiently, cost effectively

Deliver value throughout the supply chain

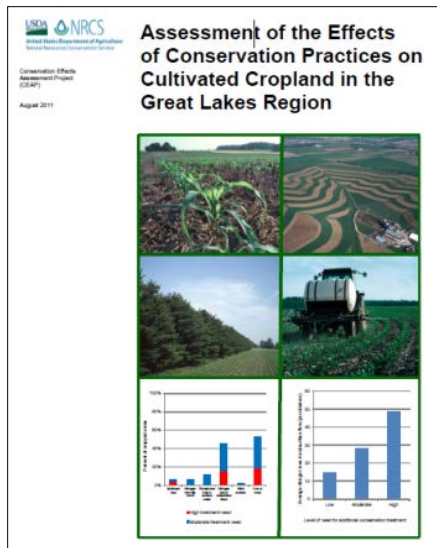
Why not Organic?

Growing,
still less than 1% of US cropland,
4% of US food purchasing dollars

Long-standing and new production challenges:
plant diseases
spotted wing drosophila
brown marmorated stink bug

We all do IPM; the question is how much?

**2010-2012: USDA
Natural Resources
Conservation
Service. Five
watersheds
assessed to date.**



Percent of cropland acres under low, moderate and high-level Integrated Pest Management.

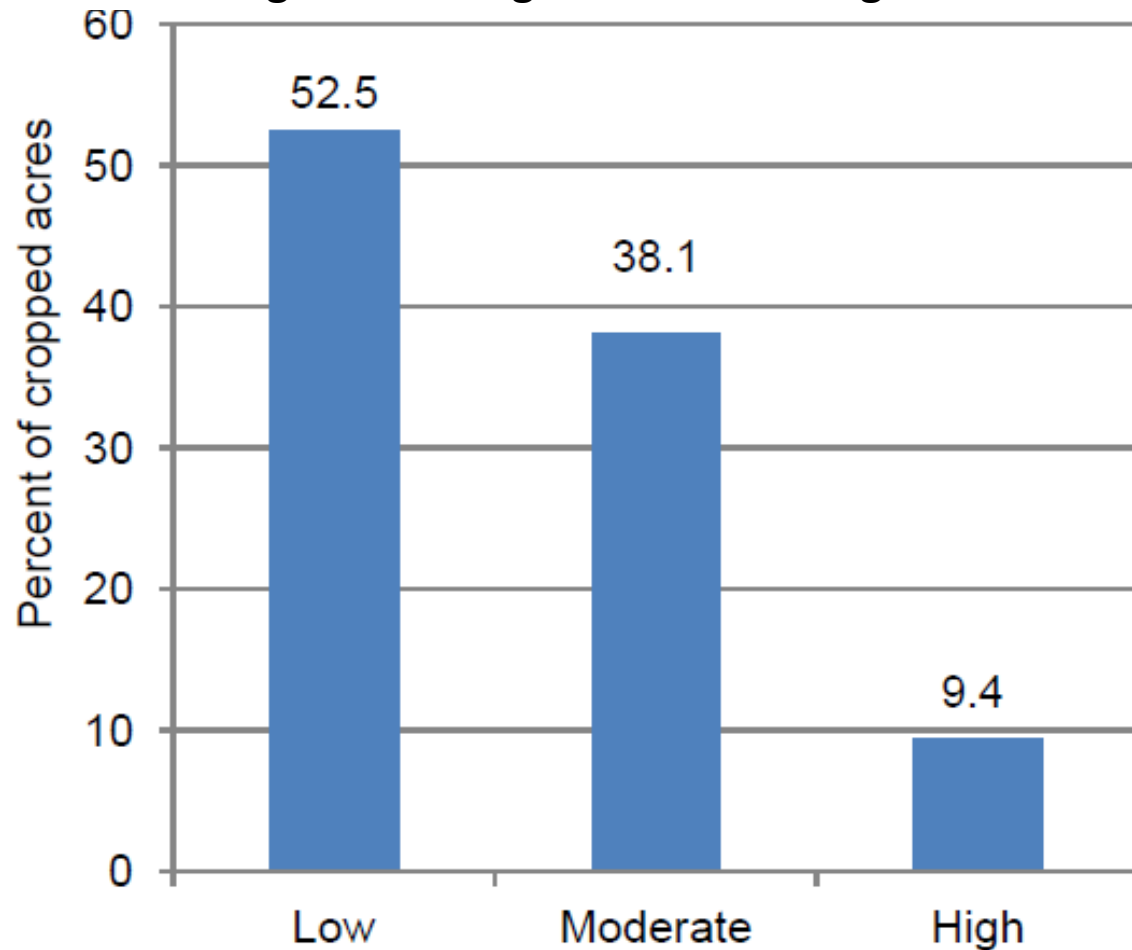


Table 10. Summary of survey responses to pest management questions, Chesapeake Bay region

Survey question*	Number samples with "yes" response	Percent of cropped acres
Prevention		
Pesticides with different action rotated or tank mixed to prevent resistance	252	33
Plow down crop residues	133	20
Chop, spray, mow, plow, burn field edges, etc.	264	33
Clean field implements after use	272	35
Remove crop residue from field	72	10
Water management used to manage pests (irrigated samples only)	12	1
Avoidance		
Rotate crops to manage pests	531	66
Use minimum till or no-till to manage pests	482	56
Choose crop variety that is resistant to pests	299	34
Planting locations selected to avoid pests	109	12
Plant/harvest dates adjusted to manage pests	53	6
Monitoring		
Scouting practice: general observations while performing routine tasks	278	36
Scouting practice: deliberate scouting	366	44
--Established scouting practice used	156	19
--Scouting due to pest development model	62	8
--Scouting due to pest advisory warning	99	9
Scouting done by: (only highest of the 4 scores is used)		
--Scouting by operator	221	27
--Scouting by employee	2	<1
--Scouting by chemical dealer	86	10
--Scouting by crop consultant or commercial scout	63	7
Scouting records kept to track pests?	140	17
Scouting data compared to published thresholds?	221	26
Diagnostic lab identified pest?	58	6
Weather a factor in timing of pest management practice	250	31

IPM Elements/Guidelines

= Lists of IPM and related practices. Also known as IPM checklists, protocols, standards, definitions.

Used to:

- Assess level of adoption/uptake.
- Identify potential practices to adopt
- Provide incentives for specific practices.
- Identify practices that suffer low adoption, to identify and address barriers.

Boutwell, J.L. and R.H. Smith. 1981. A new concept in evaluating integrated pest management programs. *Bull. Entomol. Soc. Amer.* 27(2) 117-188.

Coli, W.M. and C.S. Hollingsworth. 1996. Defining the ambiguous: Massachusetts' crop-specific IPM guidelines allow growers to understand and benefit from their pest management programs. *The Grower*, April 1996, pp. 48-49, 58.

Petzoldt, C., J. Kovach and A. Seaman. 1998. *Integrated Pest Management Elements for New York Crops*. Cornell IPM Publication #124 .

Elements of IPM for Fresh Market Sweet Corn in New York State

MAJOR PESTS

Insects	Diseases	Weeds
European corn borer	common rust	broadleaves
corn earworm	smut	annual grasses
fall armyworm	northern corn leaf blight	perennials
corn flea beetle	Stewart's wilt	
corn leaf aphid	anthracnose	
western corn rootworm	maize dwarf mosaic	
seed corn maggot	seed rots	
cutworms	barley yellow dwarf virus	
common armyworm		
sip beetles		

A. Site Preparation	Priority	Points	Acreage Goal	Achieved
1) Review weed map/list of fields to choose appropriate weed control strategies. See the Weed Assessment List available for use in satisfying this element.	M	5	50%	2.5
2) Crop Rotation. Plant only in fields where sweet or field corn has not been grown in the previous year to avoid corn root worm, anthracnose, smut, and northern corn leaf blight				
a. Fields harvested before Aug. 15:	L	3	25%	
b. Fields harvested after Aug. 15:	H	10	75%	
3) Soil test at least every three years; fertilize according to recommendation	H	10	100%	
B. Planting				
1) Use tolerant or resistant varieties whenever possible for controlling common rust, smut, and Stewart's wilt, NCLB, maize dwarf mosaic, barley yellow dwarf	M	5	25%	
2) Seed treatment. Use fungicide treated seed or biological seed treatment for control of root and seed rots.	H	10	100%	

Crop and geographic scope.

In this case, users can receive five points for implementing this element on 50% of their acreage.

The user enters points scored, e.g., this practice was completed on 25% of the producer's total acreage.

Points allow developers to signal priority or level of difficulty, and users the flexibility to pick and choose practices that fit their operation.

Nutrient management practices are included. Although not typically considered an IPM practice, nutrient management addresses water quality concerns and can also impact pest populations, e.g., excessive nitrogen can sometimes flare aphid populations.



Available LGU Elements/Guidelines

Alfalfa (New York)
 Alfalfa (Ohio)
 Apple (Massachusetts)
 Apple (Ohio)
 Apples (New York)
 Asparagus (New York)
 Banana (Hawaii)
 Beets (New Jersey)
 Beets (New York)
 Blueberries (New York)
 Blueberry, Highbush (Massachusetts)
 Brussels Sprouts (New York)
 Cabbage (New Jersey)
 Cabbage (New York)
 Cabbage (Ohio)
 Carrot (Ohio)
 Carrots (New Jersey)
 Carrots (New York)
 Cauliflower (New Jersey)
 Cauliflower (New York)
 Cherry (Ohio)
 Christmas Trees (North Carolina)
 Christmas Trees (Virginia)
 Cole Crops (Massachusetts)
 Corn, Field (New York)
 Corn, Field (Ohio)
 Corn, Sweet (Ohio)
 Cranberry (Massachusetts)
 Cucumber (New York)
 Cucumber (Pickles) (Ohio)
 Cucumbers (New Jersey)
 Dry Beans (New York)
 Grapes (New York)
 Greenhouses (New York)

Honey Bees (Delaware)
 Honey Bees (Maryland)
 Honey Bees (New Jersey)
 Honey Bees (North Carolina)
 Honey Bees (Pennsylvania)
 Honey Bees (South Carolina)
 Honey Bees (Virginia)
 Honey Bees (West Virginia)
 Lettuce (New York)
 Lettuce (Ohio)
 Macadamia Nut (Hawaii)
 Melon (New York)
 Melons (New Jersey)
 Onions (New York)
 Peach (Ohio)
 Pear (Ohio)
 Peas (New Jersey)
 Peas (New York)
 Pepper (Massachusetts)
 Pepper (Ohio)
 Peppers (New Jersey)
 Peppers (New York)
 Pineapple (Hawaii)
 Plum (Ohio)
 Poinsettia (Massachusetts)
 Potato (Massachusetts)
 Potato (Ohio)
 Potatoes (New York)
 Pumpkin (Massachusetts)
 Pumpkin (New York)
 Pumpkin (Ohio)
 Pumpkins (New Jersey)
 Radish (Ohio)
 Raspberries (New York)

Raspberry (Massachusetts)
 Residential Turfgrass (Ohio)
 Snap Bean (Ohio)
 Snap Beans (New Jersey)
 Snap Beans (New York)
 Soybean (Ohio)
 Squash (Massachusetts)
 Squash (Ohio)
 Strawberries (New York)
 Strawberry (Massachusetts)
 Sugarcane (Hawaii)
 Summer Squash (New Jersey)
 Summer Squash (New York)
 Sweet Cherries (New York)
 Sweet corn (Massachusetts)
 Sweet corn (New Jersey)
 Sweet Corn, Fresh Market (New York)
 Sweet Corn, Processing (New York)
 Tomato, Field (Massachusetts)
 Tomato, Greenhouse (Massachusetts)
 Tomato, Processing (Ohio)
 Tomatoes (New Jersey)
 Tomatoes, Fresh Market (New York)
 Tomatoes, Greenhouse (New York)
 Wheat (Ohio)
 Wine Grapes (Massachusetts)
 Wine Grapes (North Carolina)
 Wine Grapes (Virginia)
 Winter Squash (New Jersey)
 Winter Squash (New York)



Eco Apple



The IPM Institute
of North America, Inc.

- ❑ RED TOMATO distributes; IPM Institute maintains standards, certifies growers.
- ❑ IPM, water, energy, waste, LOCAL!
- ❑ Learning community: UMass, UConn, Penn State, Cornell, growers, crop consultants.
- ❑ Biggest customers? Trader Joe's, Whole Foods



Minimum requirements:
You must (for example)
sample mites and mite predators before applying miticide, use insecticide for tarnished plant bug only if trap captures over threshold.

Point-based advanced practices:
E.g., use trap out to control apple maggot fly

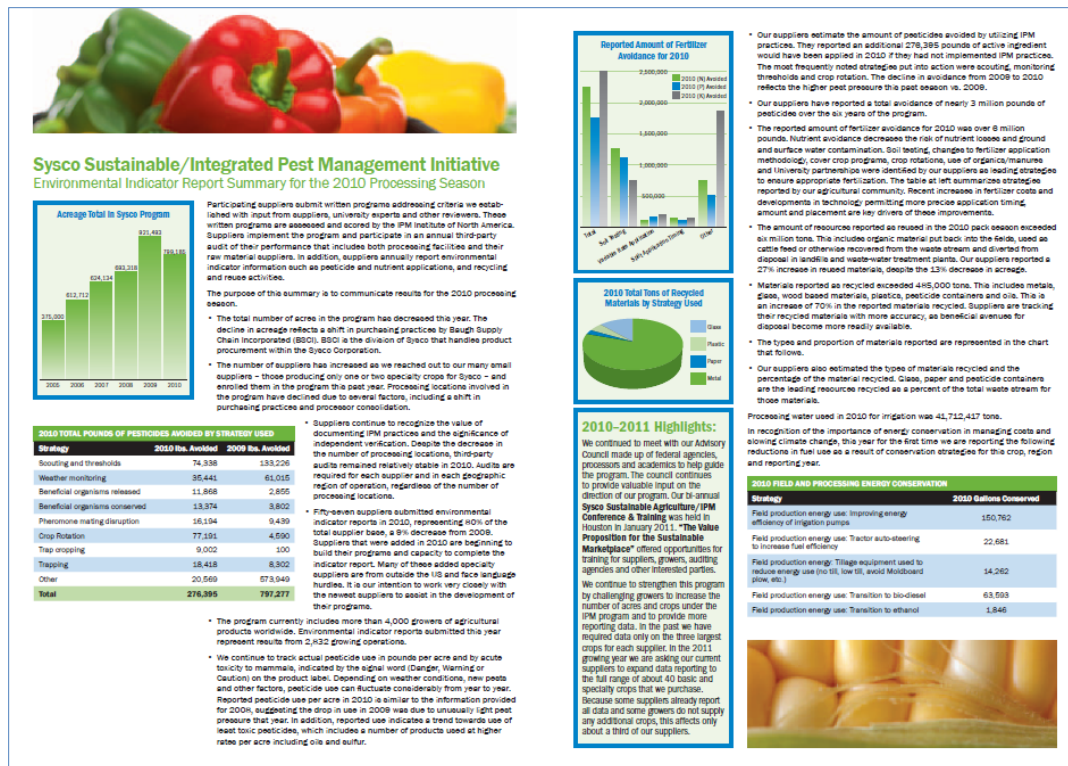
Red (do not use), Yellow (use with restrictions) and Green (use with justification) pesticide list:
E.g., do not use organophosphates, endosulfan, paraquat, permethrin, ziram,

Sysco IPM/Sustainable Ag Initiative



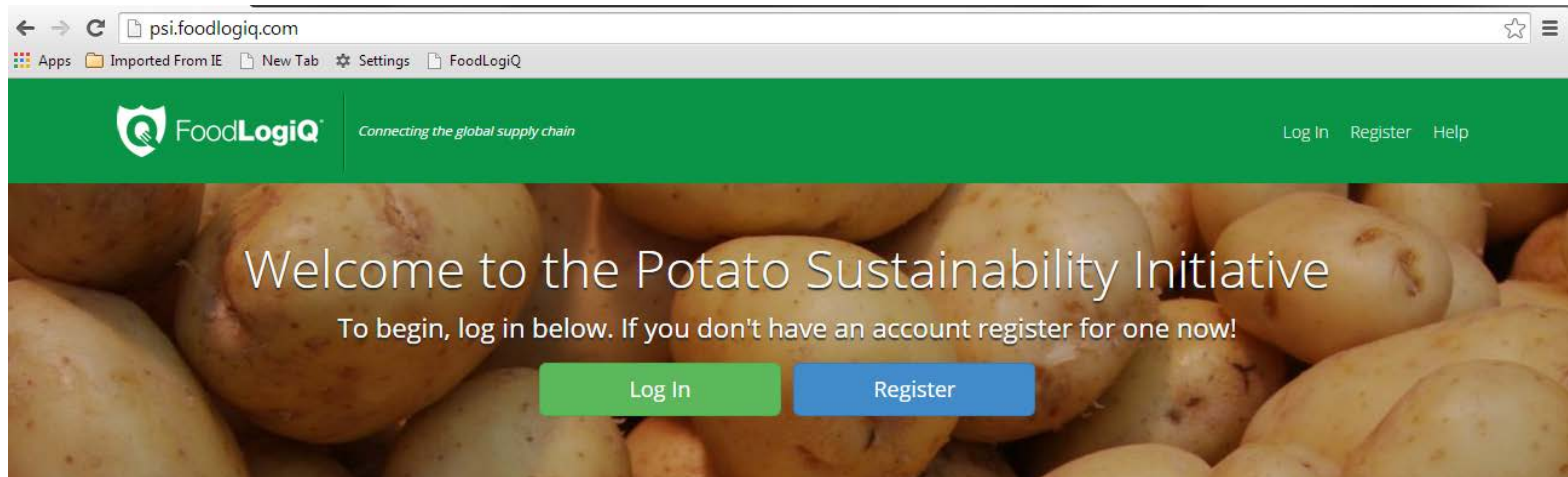
Launched in 2004.

IPM Institute reviews/scores supplier programs; maintains standards with input from Sysco, suppliers, scientists.



- Standards developed through iterative drafts with supplier and other input.
- Not crop-specific, apply to any crop, any region.
 - Supplier identifies crops, key pests, key management strategies.
- Practices and performance metrics:
 - pesticides, fertilizer, water, energy, waste...
- Field production and processing plant performance.

Potato Sustainability Initiative



The Potato Sustainability Initiative (PSI) is a collaboration of customers, processors and growers creating an industry leading program to improve and communicate the sustainability of potato production. We appreciate all of the growers taking the time to be involved in this initiative and to carry out the survey and implement improvement. Our goal is to create one potato sustainability program.

BASIC AMERICAN FOODS



Lamb Weston



Simplot

Good things
come from
Sysco

Easy to use, on-line grower survey

PSI Surveys

My Surveys

Create New

Configuration

Help

Morrow Farms Test ▾

Environmental Sustainability

Waste

102

i

Choose one that applies:

☐ Farm burns waste/garbage

☒ Farm does not burn waste/garbage

103

i

Choose one that applies:

☐ If vegetation is burned, burning is limited to where it is an acceptable Best Management Practice (BMP)

☒ No vegetation is burned.


☐ Vegetation is burned without consideration of Best Management Practices

104

i

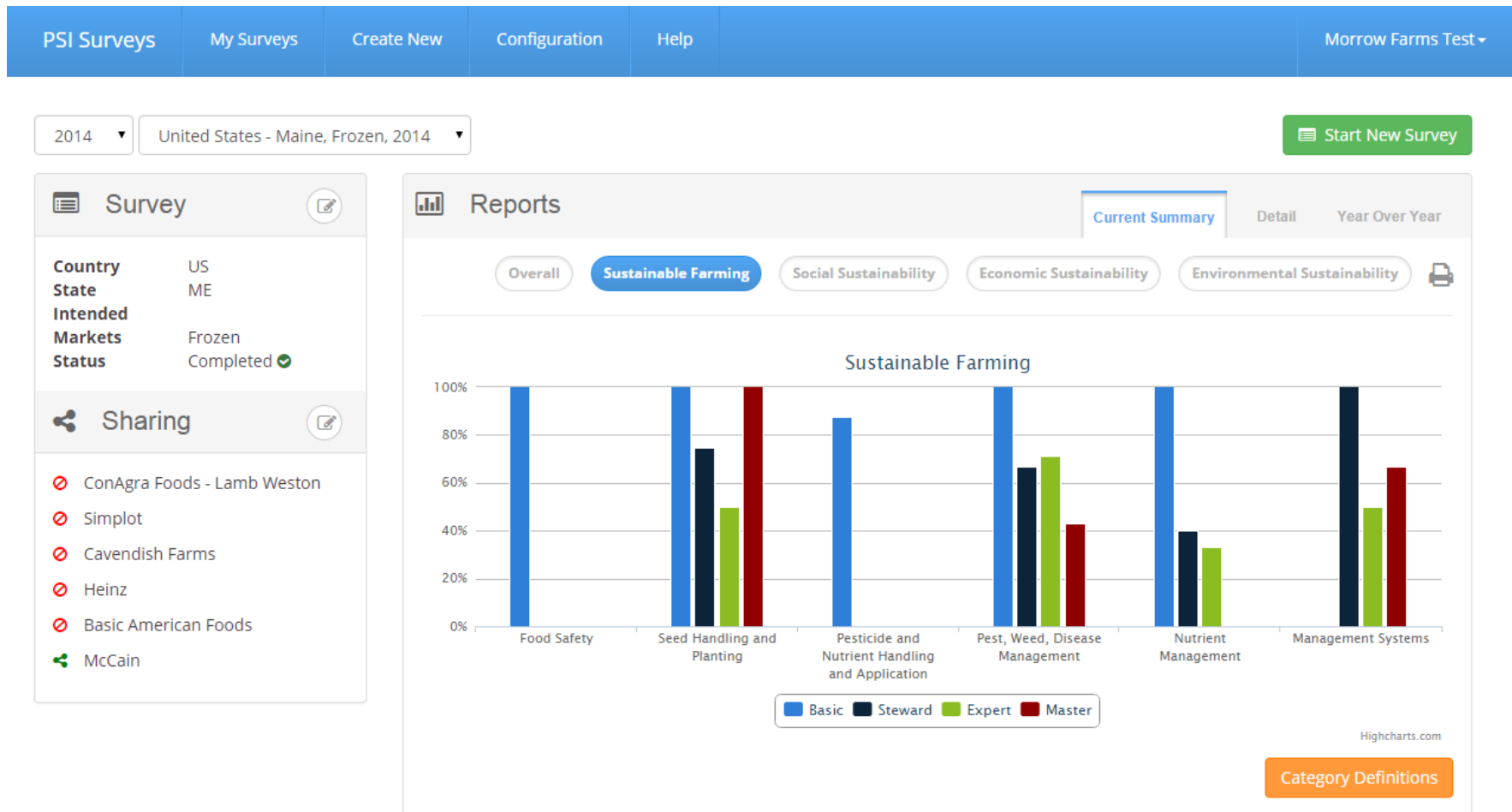
All seed waste, culls and other crop waste are properly disposed of, composted, or fed to livestock according to regional guidelines to eliminate disease risk and prevent

Current Assessment

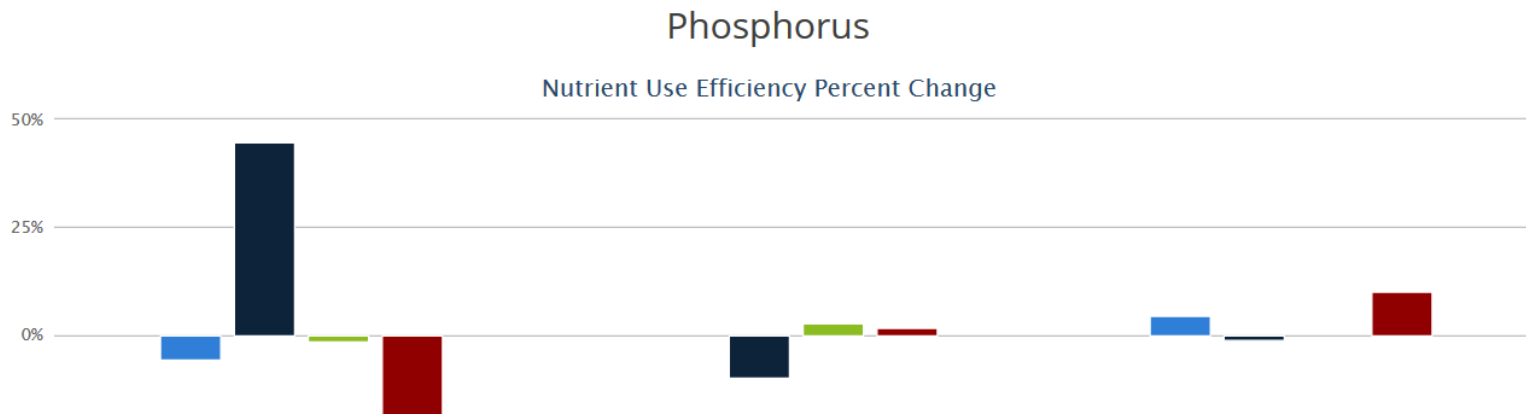
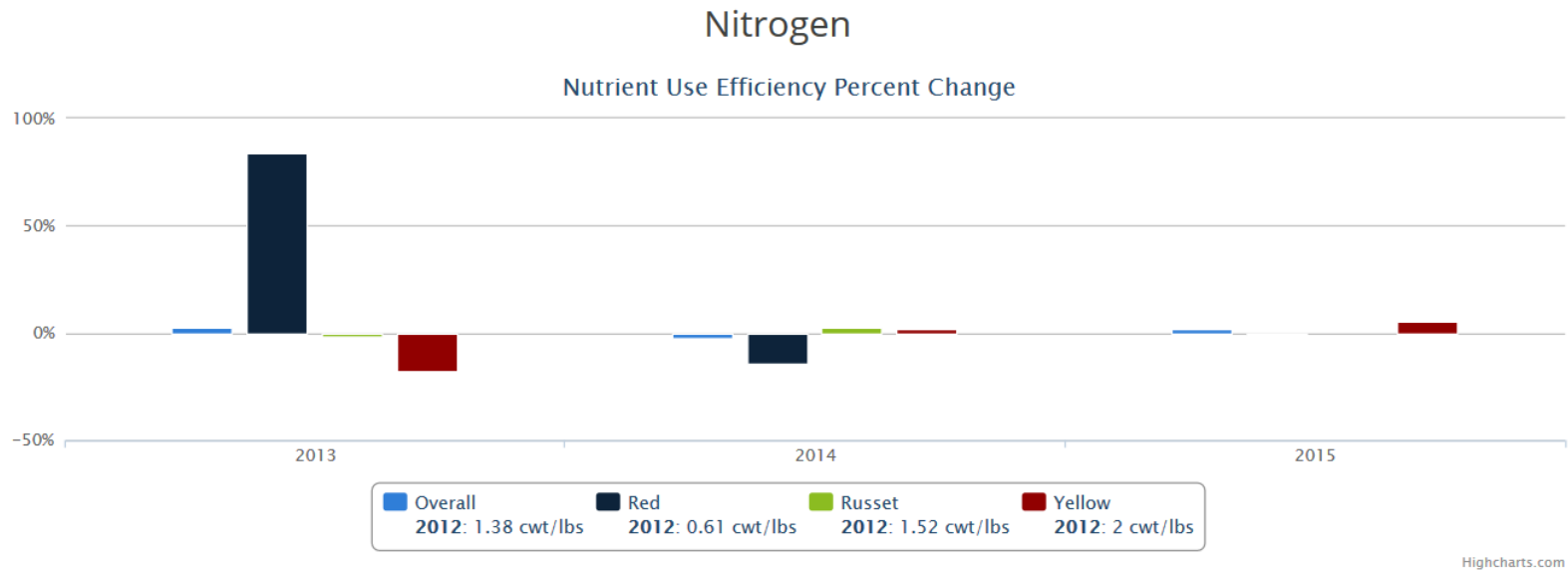


Sustainable Farming	57/57
Social Sustainability	19/19
Economic Sustainability	1/1
Environmental Sustainability	29/29
Water Conservation and Quality	✓
Soil Conservation and Quality	✓
Biodiversity	✓
Pollinator Protection	✓
Energy Conservation	✓
Waste	✓

Reporting to buyers, growers

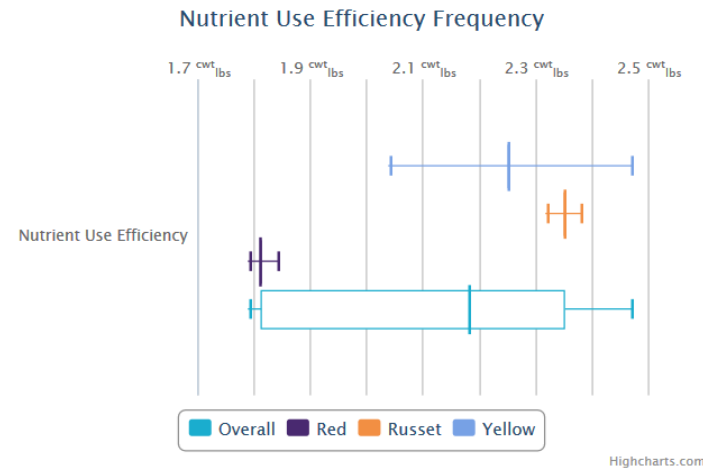
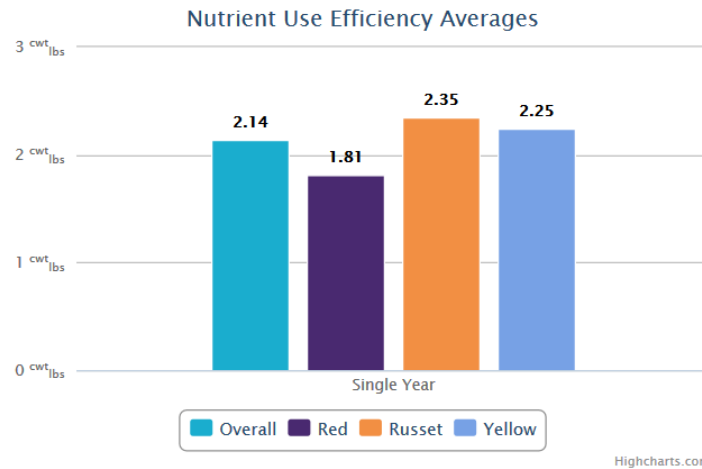


Metrics: Comparison by year

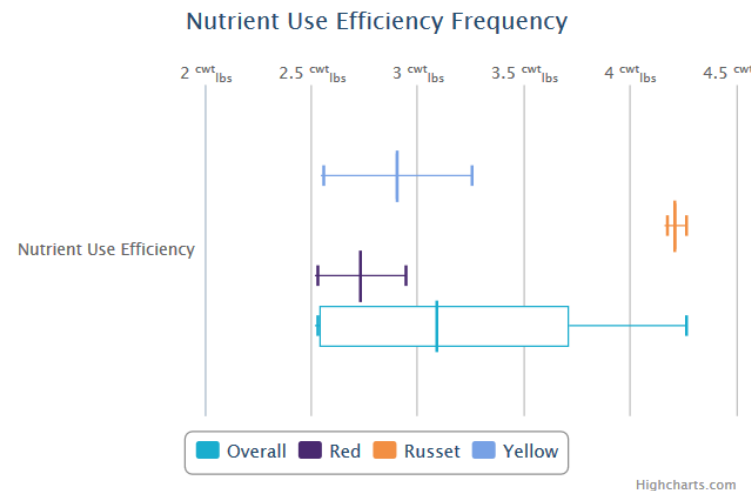
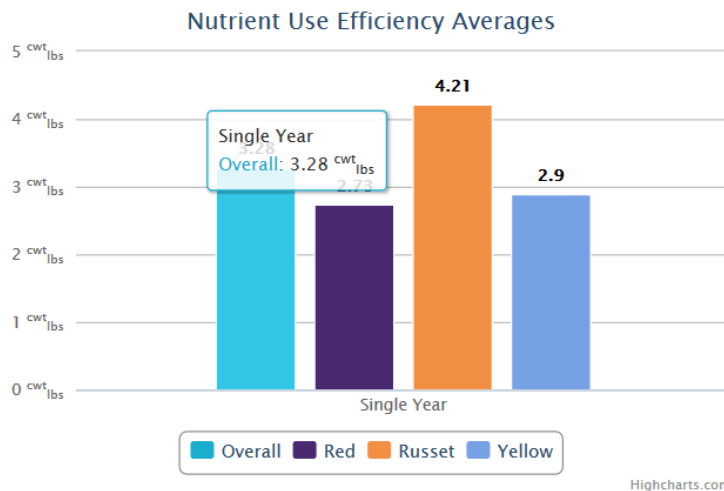


Metrics: Comparison by variety

Nitrogen (cwt/lbs N)



Phosphorus (cwt/lbs P)



ipmprime.com: Pesticide risk metric

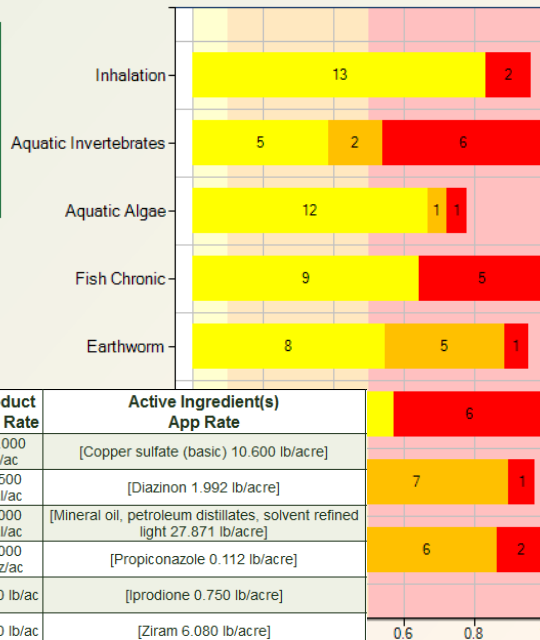
Data source: California DPR Pesticide Use Reporting

Applications to a block of peaches, illustrating risk reduction from 1999 to 2009.

1999

Summaries	Overall
N Missing	8
N Passes	12
N High Risk	24
N Medium Risk	21
N Low Risk	55
GrandTotal	120

Cumulative Risk Summary



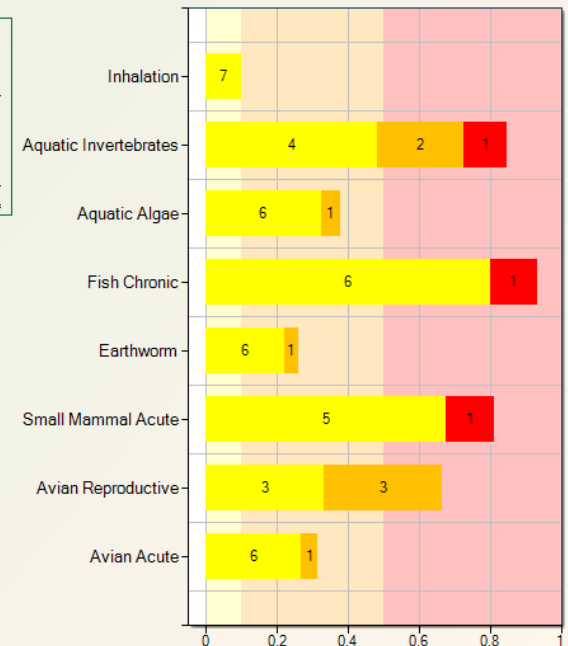
Product	EPA Reg. No.	Product App Rate	Active Ingredient(s) App Rate
BASICOP	19713-72	20.000 lb/ac	[Copper sulfate (basic) 10.600 lb/acre]
GOWAN DIAZINON 4E10163-163	5905-248	0.500 gal/ac	[Diazinon 1.992 lb/acre]
OMNI SUPREME SPRAY	5905-368	4.000 gal/ac	[Mineral oil, petroleum distillates, solvent refined light 27.871 lb/acre]
BREAK EC	100-702	4.000 fl oz/ac	[Propiconazole 0.112 lb/acre]
ROVRAL	264-453	1.500 lb/ac	[Iprodione 0.750 lb/acre]
ZIRAM 76 FUNGICIDE	4581-140	8.000 lb/ac	[Ziram 6.080 lb/acre]
PENNCAP-M MICROENCAPSULATED INSECTICIDE	70506-193	0.750 gal/ac	[Methyl parathion 1.501 lb/acre]
RED-TOP SPRAY SULFUR	2935-92	20.000 lb/ac	[Sulfur 19.400 lb/acre]
DU PONT VENDEX 50WP MITICIDE	70506-211	1.000 lb/ac	[Fenbutatin-oxide 0.500 lb/acre]
ELITE 45 DF	264-749	8.000 oz/ac	[Tebuconazole 0.225 lb/acre]
DU PONT LANNATE INSECTICIDE	352-342	2.000 lb/ac	[Methomyl 1.800 lb/acre]
ELITE 45 DF	264-749	6.000 oz/ac	[Tebuconazole 0.169 lb/acre]
DU PONT LANNATE INSECTICIDE	352-342	2.000 lb/ac	[Methomyl 1.800 lb/acre]
METHYL BROMIDE 89.5%	11220-17	30.000 gal/ac	[Methyl bromide 387.472 lb/acre]
ZIRAM 76DF FUNGICIDE	4581-140	8.000 lb/ac	[Ziram 6.080 lb/acre]

Product	EPA Reg. No.	Product App Rate	Active Ingredient(s) App Rate
BUMPER 41.8EC (PROPICONAZOLE) FUNGICIDE	66222-42	3.250E-002 gal/ac	[Propiconazole 0.122 lb/acre]
DUPONT ALTACOR INSECT CONTROL	352-730	0.200 lb/ac	[Chlorantraniliprole 7.000E-002 lb/acre]
SULFUR 6L	66330-211	1.000 gal/ac	[Sulfur 6.032 lb/acre]
ZIRAM 76DF FUNGICIDE	4581-140	8.000 lb/ac	[Ziram 6.080 lb/acre]
CHATEAU HERBICIDE SW	59639-99	0.750 lb/ac	[Flumioxazin 0.383 lb/acre]
GLYFOS X-TRA HERBICIDE	4787-23	0.600 gal/ac	[Glyphosate, isopropylamine salt 2.391 lb/acre]
SURFLAN A.S. AGRICULTURAL HERBICIDE	70506-43	1.000 gal/ac	[Oryzalin 4.000 lb/acre]

Cumulative Risk Summary

Summaries	Overall
N Missing	2
N Passes	4
N High Risk	3
N Medium Risk	8
N Low Risk	39
GrandTotal	56

2009



www.ipmprime.com

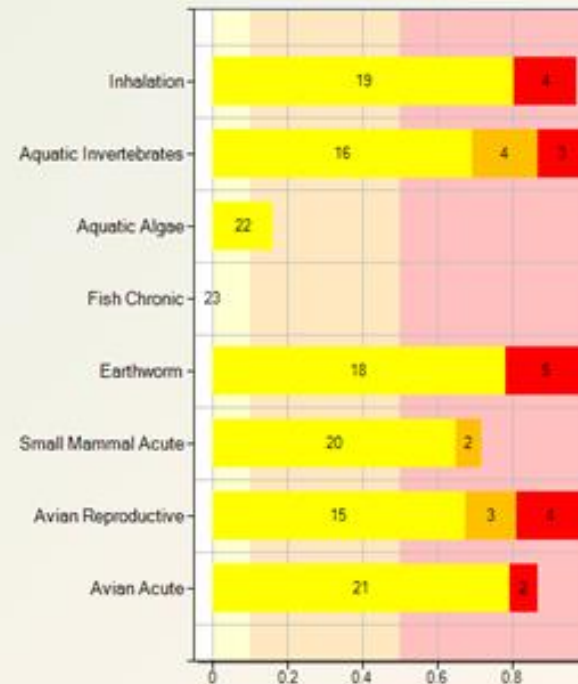
Funded by USDA NRCS, US EPA, Unilever, General Mills, USDA IPM Centers, others.

Before IPM



Product	EPA Reg. No.	App Rate	Active Ingredient(s) App Rate
Manzate 75 DF	1812-414	1.940 lb/ac	[Mancozeb 1.455 lb/acre]
Dormant Oil	19713-123	2.500 gal/ac	[Kerosene 17.371 lb/acre]
Manzate 75 DF	1812-414	2.630 lb/ac	[Mancozeb 1.973 lb/acre]
Manzate 75 DF	1812-414	2.630 lb/ac	[Mancozeb 1.973 lb/acre]
Penncozeb	70506-185	2.630 lb/ac	[Mancozeb 1.973 lb/acre]
Danitol	59639-35	0.260 quart/ac	[Fenpropathrin 0.165 lb/acre]
Captan 80	66222-58	1.580 lb/ac	[Captan 1.236 lb/acre]
Delegate	62719-541	2.740 oz/ac	[Spinetoram (XDE-175-J) 4.281E-002 lb/acre]
Sevin XLR	264-333	1.050 quart/ac	[Carbaryl 1.053 lb/acre]
Flint	264-777	2.110 oz/ac	[Trifloxystrobin 6.594E-002 lb/acre]
Captan 80	66222-58	1.580 lb/ac	[Captan 1.236 lb/acre]
Assail	8033-36	0.210 lb/ac	[Acetamiprid 6.300E-002 lb/acre]
Captan 80	66222-58	1.580 lb/ac	[Captan 1.236 lb/acre]
Captan 80	66222-58	1.500 lb/ac	[Captan 1.173 lb/acre]
Rimon	66222-35	32.000 fl oz/ac	[Novaluron 0.207 lb/acre]
Captan 80	66222-58	1.600 lb/ac	[Captan 1.251 lb/acre]
Imidan	10163-169	1.600 lb/ac	[Phosmet 1.120 lb/acre]
Zeal	59639-123	1.200 oz/ac	[Etoxazole 5.400E-002 lb/acre]
Captan 80	66222-58	1.680 lb/ac	[Captan 1.314 lb/acre]
Imidan	10163-169	1.680 lb/ac	[Phosmet 1.176 lb/acre]
Captan 80	66222-58	2.000 lb/ac	[Captan 1.564 lb/acre]
Assail	8033-36	0.250 lb/ac	[Acetamiprid 7.500E-002 lb/acre]

Cumulative Risk Summary



	N Low Risk
	N Medium Risk
	N High Risk
Summaries	Overall
N Missing	3
N Passes	6
N High Risk	18
N Medium Risk	9
N Low Risk	148
GrandTotal	184

18 potential high risks

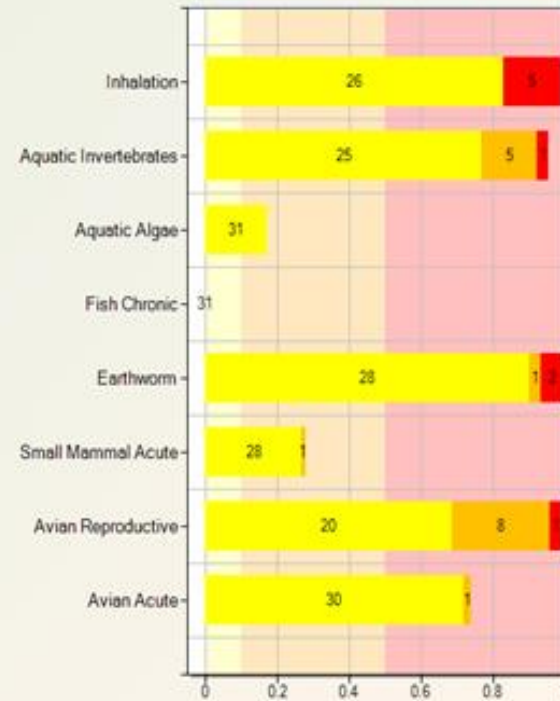
Midwest apples, 2011

After IPM with USDA \$\$



Product	EPA Reg. No.	App Rate	Active Ingredient(s) App Rate
Penncozeb 75 DF	70506-185	2.400 lb/ac	[Mancozeb 1.800 lb/acre]
Flint	264-777	1.600 oz/ac	[Trifloxystrobin 5.000E-002 lb/acre]
Dormant Oil	34704-805	2.500 gal/ac	[Mineral oil 17.640 lb/acre]
Penncozeb 75 DF	70506-185	2.570 lb/ac	[Mancozeb 1.928 lb/acre]
Penncozeb 75 DF	70506-185	2.400 lb/ac	[Mancozeb 1.800 lb/acre]
Penncozeb 75 DF	70506-185	2.400 lb/ac	[Mancozeb 1.800 lb/acre]
Penncozeb 75 DF	70506-185	2.400 lb/ac	[Mancozeb 1.800 lb/acre]
Captan 80	66222-58	1.600 lb/ac	[Captan 1.251 lb/acre]
Flint	264-777	1.200 oz/ac	[Trifloxystrobin 3.750E-002 lb/acre]
Round up	524-549	3.000 quart/ac	[Glyphosate, potassium salt 4.139 lb/acre]
Captan 80	66222-58	1.600 lb/ac	[Captan 1.251 lb/acre]
Indar	62719-416	3.200 foz/ac	[Fenbuconazole 5.147E-002 lb/acre]
Avaunt	352-597	2.400 oz/ac	[Indoxacarb, S-isomer 4.500E-002 lb/acre]
Rimon	66222-35	32.000 foz/ac	[Novaluron 0.207 lb/acre]
Captan 80	66222-58	1.600 lb/ac	[Captan 1.251 lb/acre]
Captan 80	66222-58	1.600 lb/ac	[Captan 1.251 lb/acre]
Captan 80	66222-58	1.600 lb/ac	[Captan 1.251 lb/acre]
Delegate	62719-541	3.900 lb/ac	[Spinetoram (XDE-175-J) 0.975 lb/acre]
Captan 80	66222-58	1.600 lb/ac	[Captan 1.251 lb/acre]
Delegate	62719-541	3.900 oz/ac	[Spinetoram (XDE-175-J) 6.094E-002 lb/acre]
Captan 80	66222-58	1.800 lb/ac	[Captan 1.408 lb/acre]
Assail	8033-23	6.400 oz/ac	[Acetamiprid 0.280 lb/acre]
Envirdor 2.5 EC	264-831	14.000 foz/ac	[Spirodiclofen 0.222 lb/acre]
Captan 80	66222-58	1.875 lb/ac	[Captan 1.466 lb/acre]
Assail	8033-23	7.100 oz/ac	[Acetamiprid 0.311 lb/acre]
Avaunt	352-597	4.500 oz/ac	[Indoxacarb, S-isomer 8.438E-002 lb/acre]
Captan 80	66222-58	1.690 lb/ac	[Captan 1.322 lb/acre]
Imidan	10163-169	1.020 lb/ac	[Phosmet 0.714 lb/acre]
Captan 80	66222-58	1.700 lb/ac	[Captan 1.329 lb/acre]

Cumulative Risk Summary



same orchard, 2012

	N Low Risk
	N Medium Risk
	N High Risk
Summaries	Overall
N Missing	4
N Passes	6
N High Risk	9
N Medium Risk	16
N Low Risk	213
GrandTotal	248

high risks cut in half

Whole Foods Market Responsibly Grown

Good – Better – Best Ratings on Produce



How It Works



Core Requirements	
<input checked="" type="checkbox"/>	Insurance
<input checked="" type="checkbox"/>	Traceability (PTI)
<input checked="" type="checkbox"/>	Food Safety
<input checked="" type="checkbox"/>	Social Accountability
<input checked="" type="checkbox"/>	GMO Transparency
<input checked="" type="checkbox"/>	No Biosolids
<input checked="" type="checkbox"/>	No Irradiation



300 Point Index			
	Third Party Certifications	<div><div></div></div>	10
	Waste	<div><div></div></div>	10
	Air, Energy, and Climate	<div><div></div></div>	30
	Water Conservation and Protection	<div><div></div></div>	30
	Ecosystems and Biodiversity	<div><div></div></div>	30
	Farmworker Welfare	<div><div></div></div>	30
	Soil Health	<div><div></div></div>	75
	Pest Management	<div><div></div></div>	85
Total			300



Good



- **Know key features of pests** including lifecycles.
- **Record** all nutrient and pesticide applications.
- Promote good crop health and reduce runoff by **matching nutrient applications to crop need.**
- **Calibrate** nutrient and pesticide application equipment.
- International growers must follow **US EPA regulations.**
- **Implement drift mitigation plan.**
- Apply pesticides based on **inspection and monitoring.**
- **Prohibit** certain **high-risk pesticides.**

Better



- Take steps to **enhance soil health**, including cover crops and crop rotation, to promote healthy crops.
- Implement measures to **reduce pest damage without the use of pesticides**.
- Provide **habitat for native species** including beneficial insects.
- Use **ipmprime.com** decision support tool to identify and reduce risks associated with pesticide applications.
- Measure and **reduce pesticide risks**.

Best



- Protect pollinators from pesticide exposure. Do not apply selected **neonicotinoids**.
- Identify pesticides and pests at high risk of developing resistance, implement measures to **mitigate**.

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Responsibly Grown | Whole Foods Market

GET TO KNOW RESPONSIBLY GROWN

Our Rating System for Fresh Produce and Flowers

Whole Foods Market® is working more closely than ever with farmer partners who support our commitment to quality, human health and the environment. We are excited to introduce our Responsibly Grown rating system for produce and flowers.

What is the Purpose of Responsibly Grown?

We're serious about rewarding responsible farmers, reducing pesticide use and helping our shoppers make informed choices.

[Learn more about our goals.](#)

And structural pests: Walmart IPM Pilot

46 distribution centers on green program:

- **16,916 fewer gallons of preventive pesticide applications**
- **8421 gallons of pesticide for fogging eliminated in entire network**
- **3.1 tons of rodenticide eliminated**
- **3234 fewer exterior devices**
- **2880 fewer interior devices**
- **PVC eliminates the replacement of 3.5 devices a month for a total of 2,058 devices(1.71 tons of landfill waste).**



Source: US EPA Office of Pesticide Programs. 2009. *Wal-Mart's PESP Strategy*.
www.epa.gov/opppdpd/pesp/strategies/2009/walmart09.htm Viewed on Dec. 8, 2009.

Efficiency: Credit for existing credentials



Sustainable agriculture programs reported 40.4 million certified US acres and 375.7 million worldwide in 2013.

- [Food Alliance](#)
- [Rainforest Alliance](#),
- [Forest Stewardship Council](#)
- [Protected Harvest](#)
- [Northeast Eco Apple](#)
- [Central Coast Vineyard Team](#)
- [Low Input Viticulture and Enology \(LIVE\)](#)
- [Salmon Safe](#)



Forest products (35 million acres), meats, dairy, fruits and vegetables, wine and cut flowers. www.ipminstitute.org/links.htm

Efficiency: Credit for credible tools



Cool Farm Tool

The Cool Farm Tool is an online greenhouse gas calculator that is free for growers to help them measure the carbon footprint of crop and livestock products.



Field To Market[®]: The Alliance for Sustainable Agriculture

Field To Market[®] is a diverse alliance working to create opportunities across the agricultural supply chain for continuous improvements in productivity, environmental quality, and human well-being. The group provides collaborative leadership that is engaged in industry-wide dialogue, grounded in science, and open to the full range of technology choices.



A SYSTEM FOR MEASURING
SUSTAINABLE PERFORMANCE
THROUGHOUT THE SPECIALTY
CROP SUPPLY CHAIN.



Thank you!



*A project of the
IPM Institute of North America*

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