Long Island Pesticide Pollution Prevention Strategy

Initial Technical Review and Advisory Committee (TRAC) Meeting

October 30, 2014

NYSDEC Region 1 Office
Stony Brook, New York

Today's Goal

1. Present Active Ingredient Information for:
   1) Atrazine
   2) Imidacloprid
   3) Metalaxyl/Mefenoxam
2. Discuss Concerns & Possible Data Gaps
3. Identify & Prioritize Possible Pollution Prevention Measures
4. Plan for Next TRAC Meeting

Agenda

10:00 - 10:15	Introduction/Briefing
10:15 - 11:15	Atrazine
11:15 - 11:30	Break
11:30 - 12:45	Imidacloprid
12:45 - 1:15	LUNCH
1:15 - 2:45	Metalaxyl/Mefenoxam
2:45 - 3:30	Discussions/Thoughts/Next Steps

Atrazine use and alternatives for L.I. sweet corn growers

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ATRAZINE

Use Pattern History

- Primary use has been in corn production.
- Commercially available since 1958.
- The concept of reduced rates (~1lb/a a.i.) was developed for vegetable growers in the 1970s to allow for crop rotation flexibility.

ATRAZINE

Weeds controlled:
Annual Broadleaves

- Eastern Black Nightshade
- Galinsoga
- Lambsquarters
- Ragweed
- Purslane
- Pigweed
- Smartweed
- Wild Mustard/Radish

Weeds not controlled:

- Annual grasses
- Yellow nutsedge

Properties of Herbicides labeled for Sweet Corn on L.I.

			•	Weeds Controlled		
Trade Name	Active Ingredient	Restricted	Application timing	Grasses (GR)	Broadleaves (BL)	Yellow Nutsedge (YNS)
DREXEL ATRAZINE (& 14 other atrazine products still labeled on LI)	ATRAZINE	**yes**	Pre/ Post		BL	
Accent	nicosulfuron	**no**	Post	GR	few bl	
Aim EC	carfentrazone	**no**	Post		BL	
Basagran	bentazon	**no**	Post		BL	YNS
Callisto	mesotrione	**no**	Pre/ Post	GR	BL	
Impact	topramezone	**no**	Post	GR	BL	
Laudis	tembotrione	**no**	Post	GR	BL	
Option	foramsulfuron	**no**	Post	GR	few bl	
Sandea	halosulfuron	**no**	Pre/ Post		BL	YNS
Prowl H2O	pendimethalin	**no**	Pre/ Post	GR	BL	
Roundup Weathermax	glyphosate	**no**	Pre/ Post	GR	BL	YNS
2,4-D	**2,4-D**	**yes**	Post		BL	

		Rotational Crop Restrictions (months until new planting)					
Trade Name	Active Ingredient	**Bean**	**Cucumber**	**Pepper**	**Potato**	**Pumpkin**	**Tomato**
DREXEL ATRAZINE (& 14 other atrazine products still labeled on LI)	ATRAZINE	following year or more (see label)					
Accent	nicosulfuron	1	10	10	10	10	10
Aim EC	carfentrazone	1	1	1	1	1	1
Basagran	bentazon	No restrictions (NR)					
Callisto	mesotrione	18	18	18	18	18	18
Impact	topramezone	18	18	18	9	18	18
Laudis	tembotrione	10	18	18	10	18	10
Option	foramsulfuron	2	2	2	2	2	2
Sandea	halosulfuron	NR	NR	10	9	NR	NR
Prowl H2O	pendimethalin	NR	9	9	NR	9	9
Roundup Weathermax	glyphosate	NR	NR	NR	NR	NR	NR
2,4-D	2,4-D	3	3	3	3	3	3

Mode of action of atrazine alternatives:

Atrazine MOA GROUP 5: Inhibition of photosynthesis at photosystem II

MOA GROUP 27: Bleaching: Inhibition of (4-HPPD)

- Callisto (mesotrione)
- Impact (topramezone)
- Laudis (tembotrione)

MOA GROUP 14: Inhibition of protoporphyrinogen oxidase (PPO)

- AIM *EC* (carfentrazone-ethyl)

MOA GROUP 9: Inhibition of EPSP synthase

- Roundup (glyphosate)

Mode of action of atrazine alternatives:

Atrazine MOA GROUP 5: Inhibition of photosynthesis at photosystem II

MOA GROUP 2: Sulfonylurea - Inhibition of acetolactate synthase (ALS)

- Option (foramsulfuron)
- Sandea (halosulfuron)
- Accent (nicosulfuron)

MOA GROUP 6: Photosystem II inhibitor

- Basagran (bentazon)

MOA GROUP 4: Action like indole acetic acid (synthetic auxins)

- 2,4-D (Several trade names)

MOA GROUP 3: Microtubule assembly inhibition (ROOT TIPS)

- Prowl (pendimethalin)

EIQ (Environmental Impact Quotient)

- EIQ={C[(DT*5)+(DT*P)]+[(C*((S+P)/2)*SY)+(L)]+[(F*R)+(D*((S+P)/2)*3)+(Z*P*3)+(B*P*5)]}/3

DT = dermal toxicity, C = chronic toxicity, SY = systemicity, F = fish toxicity, L = leaching potential, R = surface loss potential, D = bird toxicity, S = soil half-life, Z = bee toxicity, B = beneficial arthropod toxicity, P = plant surface half-life.

Originally published as: A Method to Measure the Environmental Impact of Pesticides. 1992. New York Food and Life Sciences Bulletin Number 139. Authors: J. Kovach, C. Petzoldt, J. Degni**, and J. Tette, IPM Program, Cornell University, New York State Agricultural Experiment Station Geneva, New York 14456*

Total EIQ (Environmental Impact Quotient) now includes:

- **Farm Worker *plus*:**

C(DT*5C(DT*5)+C(DT*P)

- **Consumer+Leaching *plus*:**

C*((S+P)/2)*SY)+L

- **Ecological *plus*:**

fish(F*R)&

Birds (D*((S+P)/2*3)&

Bee(Z*P*3)&

Beneficial(B*P*5)(Beneficial)+(Plant 1/2L)&

Terrestrial(D+B)(Bird)+(Beneficial

3

DT = dermal toxicity, C = chronic toxicity, SY = systemicity, F = fish toxicity, L = leaching potential, R = surface loss potential, D = bird toxicity, S = soil half-life, Z = bee toxicity, B = beneficial arthropod toxicity, P = plant surface half-life.

Trade Name	Active Ingredient	EIQ Total	Est. Half-Life**
DREXEL ATRAZINE (& 14 other atrazine products still labeled on LI)	ATRAZINE	23	60 to 100+ days (soil)
Accent	nicosulfuron	20	26-63 days (soil)
Aim EC	carfentrazone	20	0.3-1.1 days (soil aerobic)
Basagran	bentazon	19	14-35 days (soil)
Callisto	mesotrione	19	14 days (soil)
Impact	topramezone	27	30-35 days (anaerobic soil)
Laudis	tembotrione	46	11-133 days (soil)
Option	foramsulfuron	15	5-176 days (soil)
Sandea	halosulfuron	20	18-27 days (anaerobic)
Prowl H2O	pendimethalin	30	90 days (soil)
Roundup Weathermax	glyphosate	15	12-70 days in pond water
2,4-D	2,4-D	21	1.5 to 16 days (soil)
tested under a wide variety of conditions, est. only!			

Atrazine alternatives

- Combining other herbicides with atrazine and reducing the atrazine rate to 0.25 -0.5 lbs/a is an approved method of maintaining good weed control and reducing atrazine by up to 75%.
- Unknown how the weeds that are controlled by atrazine now will be controlled by alternatives.

SCWA Occurrence Data for Atrazine

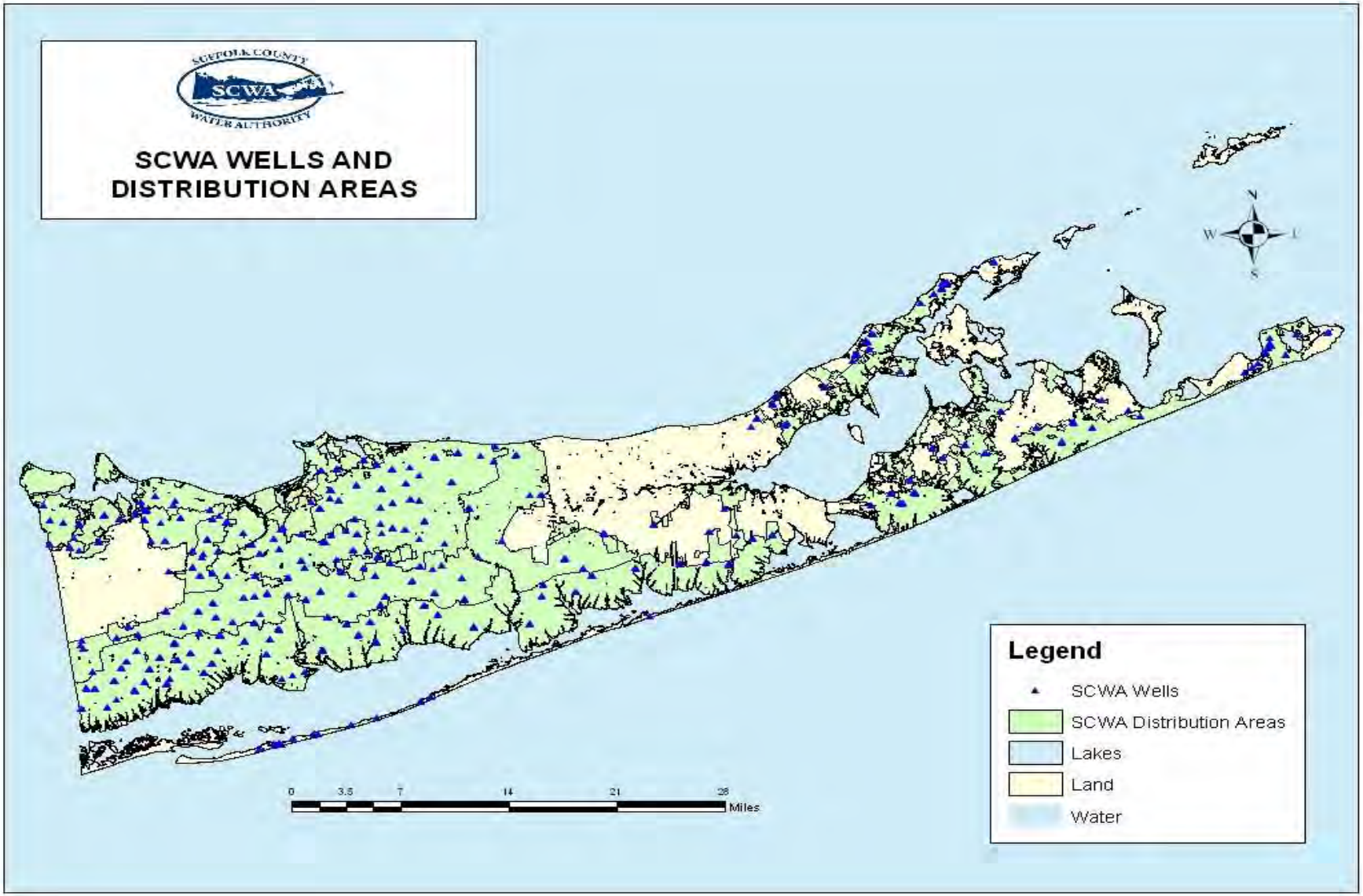
Kevin Durk

SCWA Information

SCWA:

- Operates 610 active wells at 234 wellfields
- Analyzes 60,000 samples per year for 182,000 results
- Tests for 325 chemicals
- Monitors at a higher frequency than required by SCDHS

SCWA Wells and Distribution Areas



Atrazine

- Used as an herbicide
- SCWA has monitored for Atrazine since January 2003
- Analyze using EPA Method 551.1
- Reporting Limit = 0.50 ppb
- MCL = 3.0 ppb
- No Detects

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Atrazine Trends Observed in Groundwater Monitoring Wells

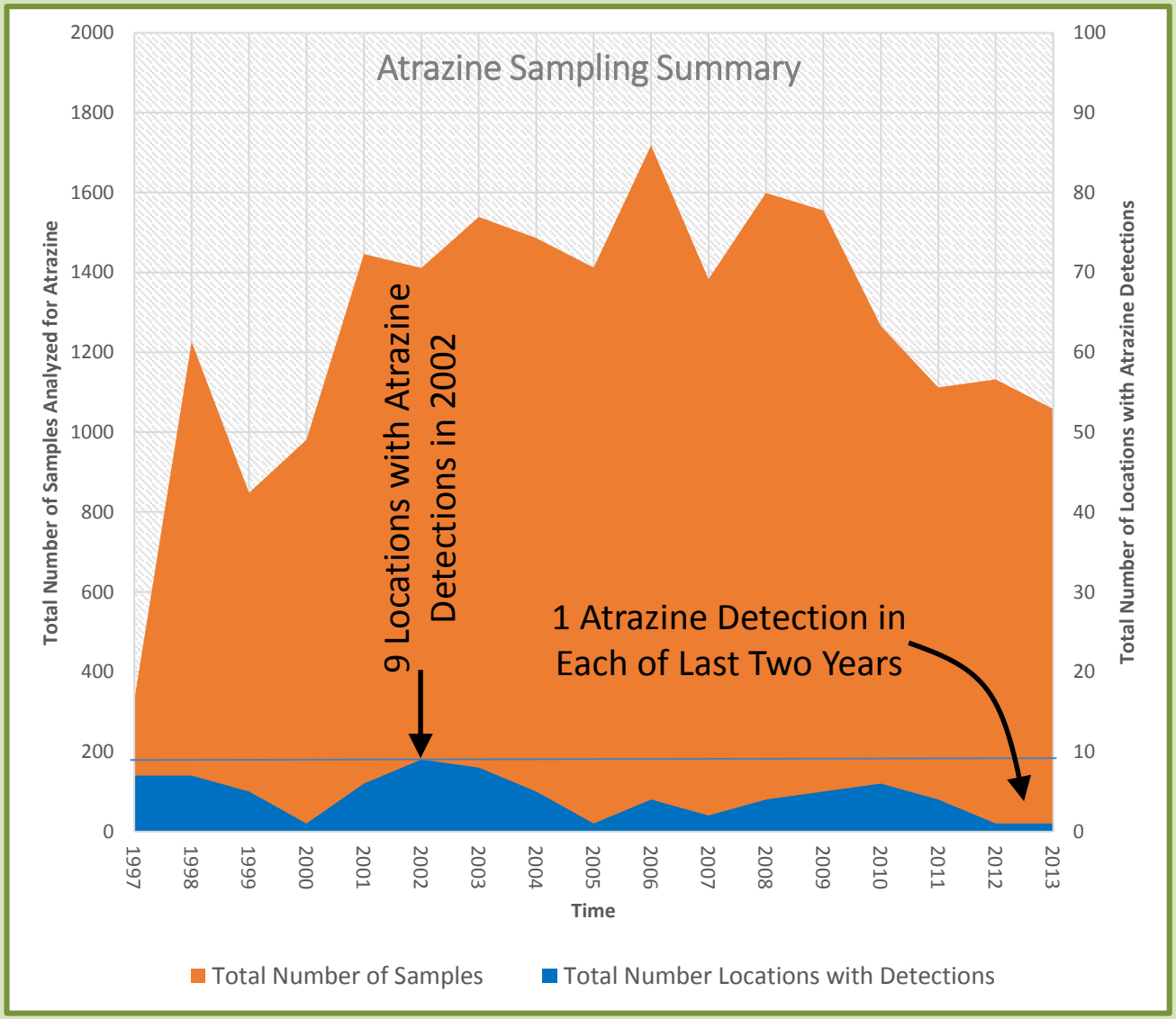
Jason Pelton
Engineering Geologist
Bureau of Pest Management
NYSDEC

October 30, 2014

Groundwater Sampling Program

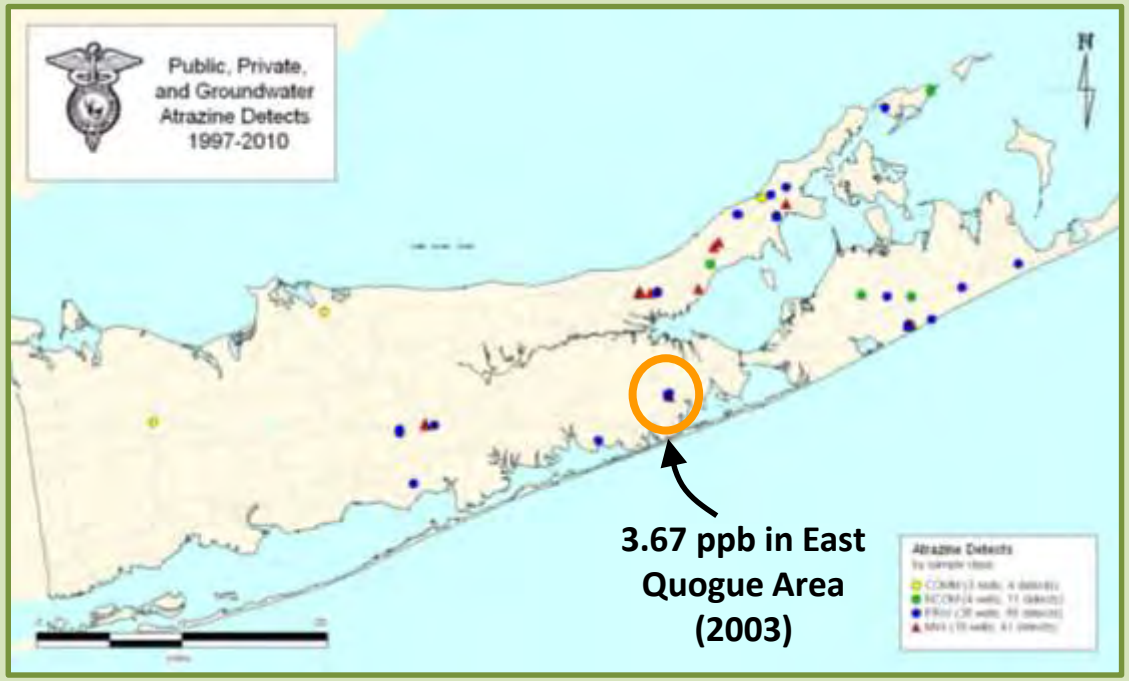
- Joint program between Department and Suffolk County
- In-Place Since 1997
- Established ~200 Monitoring Wells
- Analysis Includes ~300 Parameters
- Key Element to Strategy

Atrazine Groundwater Data Summary – Suffolk County



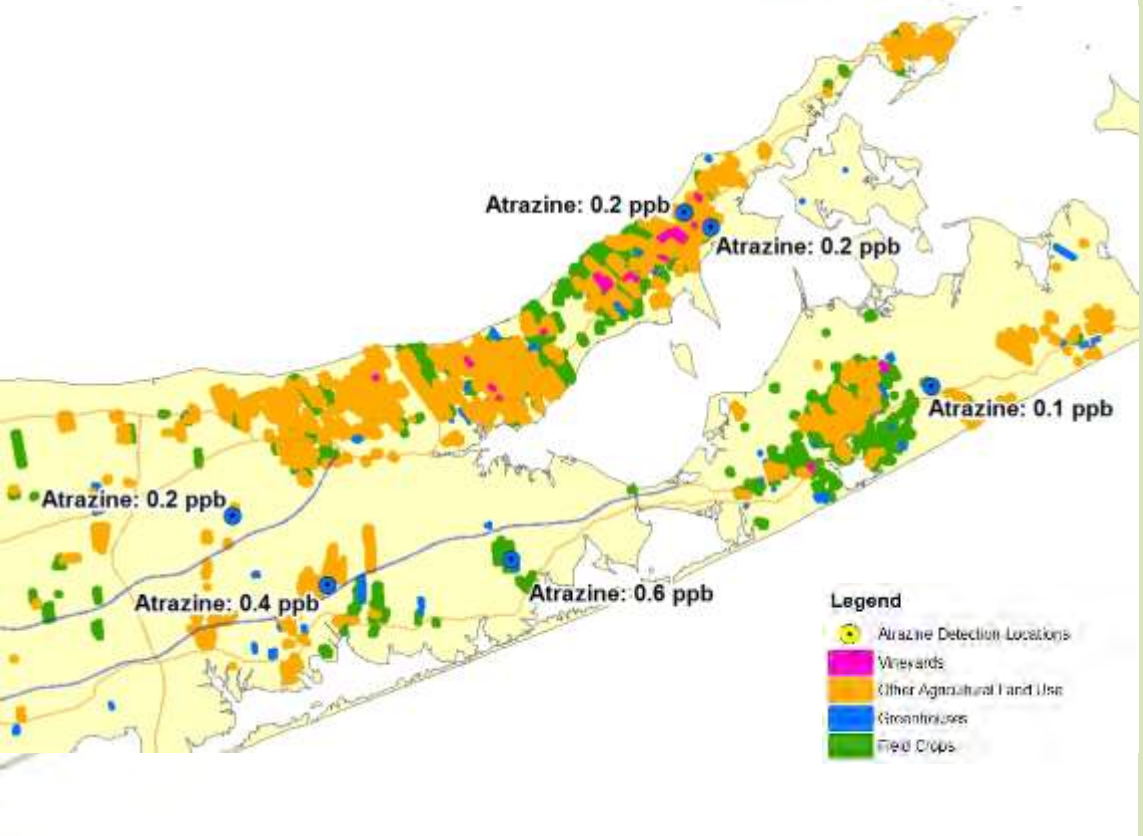
- >1,000 samples collected/year since 2000
- Maximum locations with detections = 9 in 2002
- Locations with detections declining
- 1 atrazine detection in 2012 & 2013

1997 – 2010 Detection Locations – Suffolk County



- 51 Individual Locations
- Primarily Detected in Monitoring Wells and Private Wells (red and blue symbols)
- Most Detections in North and South Fork Areas
- One Exceedance of MCL (3 ppb)

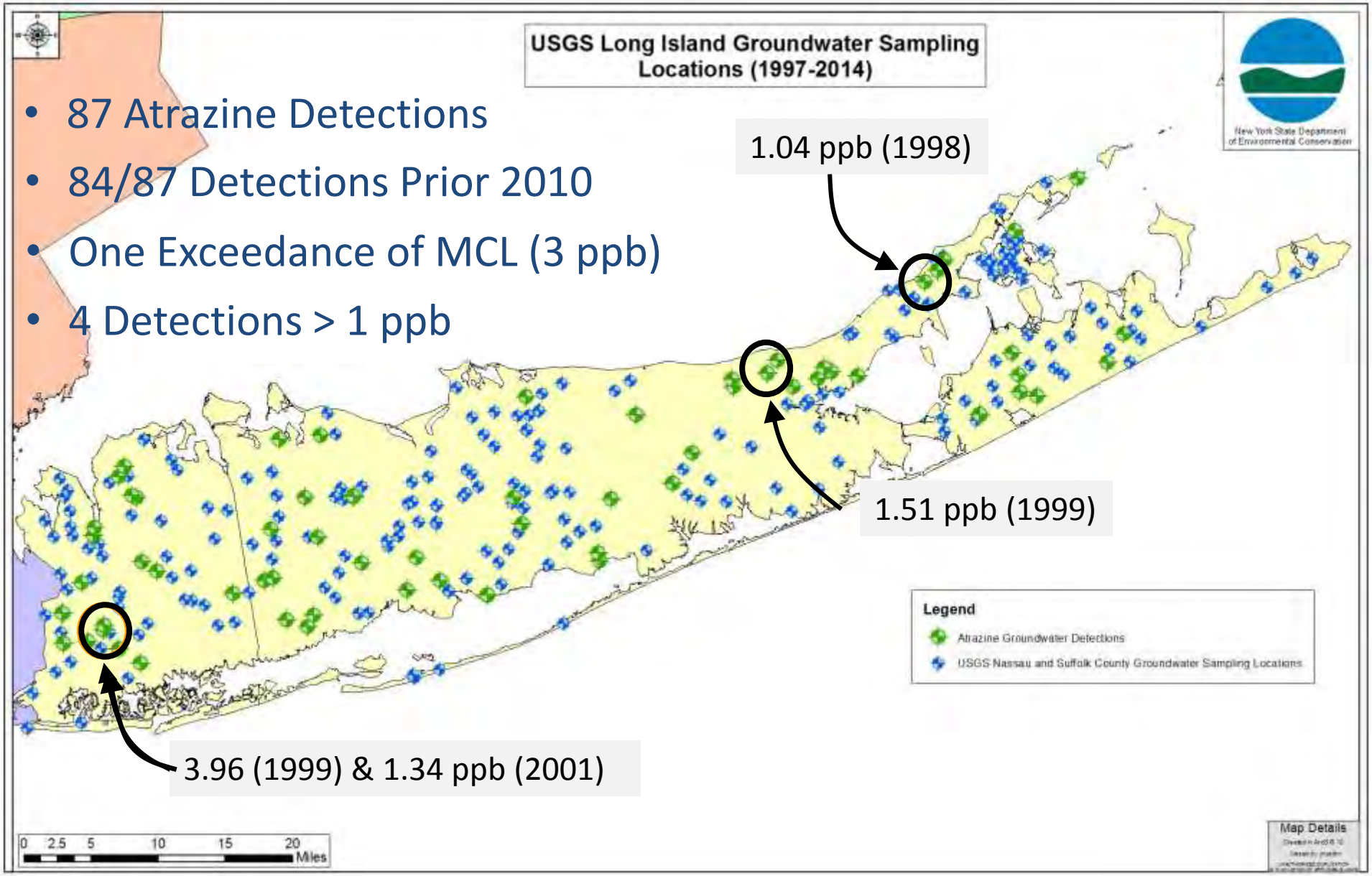
2011 - 2013 Detection Locations – Suffolk County



- 6 Individual Locations
- Highest Concentration (0.6 ppb) in Same East Quogue Area
- Most Recent Detections Occurring in Areas with Surrounding Agricultural Land Uses

1997 – 2014 Detection Locations – USGS

- 87 Atrazine Detections
- 84/87 Detections Prior 2010
- One Exceedance of MCL (3 ppb)
- 4 Detections > 1 ppb



Conclusions

1) Two (2) historic detections exceeded 3 ppb MCL
   - One Nassau County (3.96 ppb in 1999)
   - One in Suffolk County (3.67 ppb in 2003)

2) Suffolk County data indicates frequency of occurrence is declining
   - 2 detections in 2,190 samples in 2012 and 2013

3) Most recent Suffolk County detections located near agricultural land uses

Groundwater Follow-Up

- Assessment of Temporal Trends
- Evaluation of Atrazine Degradates
- Current Usage Relative to Groundwater Quality

Atrazine

James Leach
NYSDOH Bureau of Toxic Substance Assessment

- Human Health Concerns

Atrazine

Jan Morawski
NYS Ag&Mkts.

- Implications of Reduced Availability

Atrazine

Open Discussion

- Pollution Prevention Measures
- Best Management Practices

Potential Pollution Prevention Measures

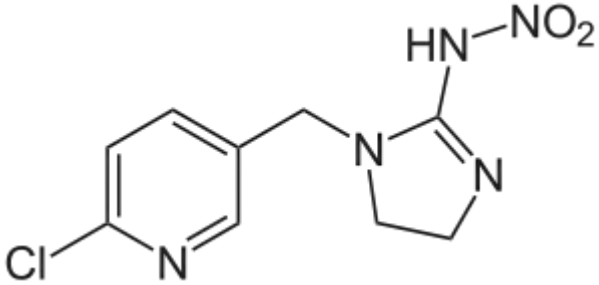
Pollution Prevention Measure	Applies to Atrazine	Does Not Apply to Atrazine
Between Row Cultivation		
Tank Mix		
Avoidance of Overspray and Drift		
Label for Corn Use Only		
Biological Control		
Reduction in Application Rates		
Limit Frequency of Use		
Better Storage and Handling		
Crop Rotation		
Spill Clean-up and Proper Disposal		

Pollution Prevention Measure	Applies to Atrazine	Does Not Apply to Atrazine
Improved Calibration of Equipment		
Buffer Zones		
Modified Applications		
Restrictions on the Timing of Applications due to Rain		
Restrictions on use in Shallow GW Areas		
Alternative Crops		
Conservation Tillage		
Banding or Incorporation		
Integrated Pest Management		
Filter Strips		

Imidacloprid History, Uses, and Alternatives in Long Island Agriculture and Professional Landscape Maintenance

Daniel Gilrein
Extension Entomologist
Cornell Cooperative Extension of Suffolk County

Cornell University
Cooperative Extension
of Suffolk County



Imidacloprid History

- January, 1986: US patent filed
- May, 1988: US patent granted
- March, 1994: EPA registration
- February-May, 1995: NY registration
  - Admire 2F, Marathon 1G, 60W, Merit 75WP/0.5G, Provado 1.6F/75W
- January, 2005: NY restricted-use, homeowner spray/drench products & soil injection prohibited on LI
- January, 2006: US patent expires
- January, 2014: addition of pollinator protection labeling, linden/Tilia spp. excluded on (most) labels
- 2017: EPA review due

MARATHON® II

GREENHOUSE and NURSERY INSECTICIDE — SPECIMEN LABEL

For Foliar and Systemic Insect Control on Ornamentals, Fruit and Nut Trees, and Vegetable Plants in Greenhouses, Nurseries and Interior Plantscapes

ACTIVE INGREDIENT:
* Imidacloprid,1-[(6-Chloro-3-pyridinyl)methyl]-N-nitro-2-imidazolidinimine 21.4%
OTHER INGREDIENTS 78.6%
TOTAL: 100.0%

Contains 2 pounds of imidacloprid per gallon
SHAKE WELL BEFORE USING

* Protected by U.S Patent No. 4,742,060

EPA Est. indicated by second and third digits of the batch number on this package.

EPA Reg. No. 432-1369-59807

(65) = 432-TX-1 (03) = 3125-MO-1

STOP - READ THE LABEL BEFORE USE
KEEP OUT OF REACH OF CHILDREN

CAUTION

PRECAUTIONARY STATEMENTS
HAZARDS TO HUMANS AND

USER SAFETY RECOMMENDATIONS
User should:
- Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet.
- Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.
- Remove PPE immediately after handling this product.

GROUP 4A INSECTICIDE

BAYER

MERIT® 0.5 G

INSECTICIDE

For systemic insect control in turfgrass and landscape ornamentals.

ACTIVE INGREDIENT:
Imidacloprid, 1-[(6-Chloro-3-pyridi
OTHER INGREDIENTS: .....
TOTAL:
EPA Reg. No. 432-1328

PARA EL USUARIO: Si usted
(TO THE USER: If you cannot
For MEDICAL

If swallowed:	• Call a poison control ce • Have person sip a glas • Do not induce vomiting • Do not give anything b
If on skin or clothing:	• Take off contaminated • Rinse skin immediately • Call a poison control ce
If in eyes:	• Hold eye open and rins continue rinsing eye. • Call a poison control ce

In case of emergency call toll free the Bayer you when calling a poison control center or

NOTE TO PHYSICIAN: No specific antidote

BAYER

ADMIRE® PRO™
SYSTEMIC PROTECTANT

Net Contents:
1 GAL. 12 OZ. (140 FL. OZ.)

GROUP 4A INSECTICIDE

For uses in pest management and maintenance of plant health.

ACTIVE INGREDIENT:
Imidacloprid, 1-[(6-Chloro-3-pyridinyl)methyl]-
N-nitro-2-imidazolidinimine 42.8%
OTHER INGREDIENTS: 57.2%

STOP - Read the label before use
KEEP OUT OF REACH OF CHILDREN
CAUTION

131212D 12/13

BAYER

MERIT® 75 WP

Insecticide
For foliar and systemic insect control in turfgrass (including sod farms), landscape ornamentals, fruit and nut trees, and interior plantscapes.

STOP - Read the label before use.
Keep out of reach of children.
CAUTION

ACTIVE INGREDIENT:
Imidacloprid, 1-[(6-Chloro-3-pyridinyl)
methyl]-*N*-nitro-2-imidazolidinimine 75.0%
OTHER INGREDIENTS: 25.0%
100.0%

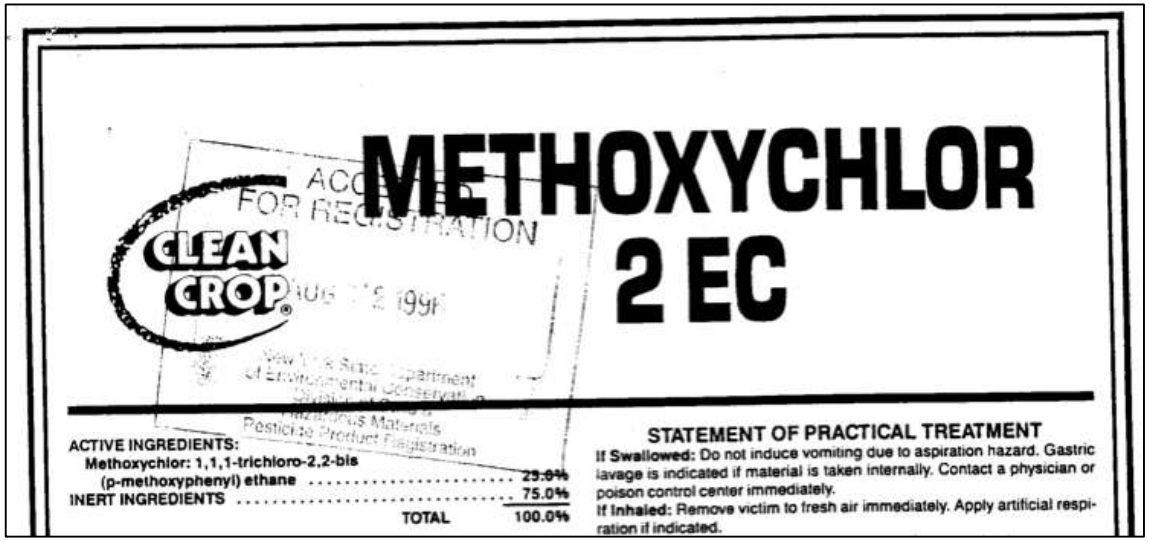
EPA Reg. No. 432-1314 EPA Est. indicated by the 2nd and 3rd digits of the batch number on this package. (85) = 065387-AR-002 (98) =33967-NJ-1

+ 100's of generic versions and patented formulations

Imidacloprid is an alternative to many older insecticides & others not approved for use on LI

- Diazinon
- Metasystox-R
- Di-Syston
- Thiodan
- Pyrethroids
- Methoxychlor
- Lannate
- Phosdrin
- Penncap-M
- Guthion
- Monitor
- Dimethoate
- Acelepryn
- Platinum

Many products/uses no longer available


METHOXYCHLOR
2 EC

CLEAN CROP®

ACCEPTED FOR REGISTRATION

Pesticide Product Registration

ACTIVE INGREDIENTS:
Methoxychlor: 1,1,1-trichloro-2,2-bis (p-methoxyphenyl) ethane 25.0%
INERT INGREDIENTS 75.0%
TOTAL 100.0%

STATEMENT OF PRACTICAL TREATMENT

If Swallowed: Do not induce vomiting due to aspiration hazard. Gastric lavage is indicated if material is taken internally. Contact a physician or poison control center immediately.

If Inhaled: Remove victim to fresh air immediately. Apply artificial respiration if indicated.

As a horticultural insecticide

- IRAC (insecticide Resistance Action Committee) MOA Group 4A
  - Shared with dinotefuran, acetamiprid, thiamethoxam*, thiacloprid*, clothianidin* ("neonicotinoids")
- Foliar spray, soil/media treatment, trunk injection, bark application
- Systemic and translaminar
- Crops, landscapes, invasive spp (ALB, EAB), baits/traps
- Veterinary, structural, industrial uses
- Minimal PPE: long-sleeved shirt/pants, chem-resis. gloves, shoes/socks
- Acute toxicity: LD50 450 mg/kg, rat[1] (caffeine LD50 human est 150 – 200 mg/kg[2])
- Landscape drench, granular apps exempt under Neighbor Notification
- Almost no phytotoxicity, v. low residue
- Max. allowed: 0.4 – 0.5 lb ai/A yr
- Concern for pollinator safety – included in EPA review (due 2017)

*Not for use on LI except some seed, structural, bed bug treatments; baits

[1]Extoxnet, accessed 10/20/14

[2]Peters, J.M. 1967 J. Clinical Pharmacol. 7(7):131-141

THE NEW EPA BEE ADVISORY BOX

On EPA's new and strengthened pesticide label to protect pollinators

PROTECTION OF POLLINATORS

APPLICATION RESTRICTIONS EXIST FOR THIS PRODUCT BECAUSE OF RISK TO BEES AND OTHER INSECT POLLINATORS. FOLLOW APPLICATION RESTRICTIONS FOUND IN THE DIRECTIONS FOR USE TO PROTECT POLLINATORS.

Look for the bee hazard icon in the Directions for Use for each application site for specific use restrictions and instructions to protect bees and other insect pollinators.

This product can kill bees and other insect pollinators.

Bees and other insect pollinators will forage on plants when they flower, shed pollen, or produce nectar.

Bees and other insect pollinators can be exposed to this pesticide from:

- Direct contact during foliar applications, or contact with residues on plant surfaces after foliar applications
- Ingestion of residues in nectar and pollen when the pesticide is applied as a seed treatment, soil, tree injection, as well as foliar applications.

When Using This Product Take Steps To:

- Minimize exposure of this product to bees and other insect pollinators when they are foraging on pollinator attractive plants around the application site.
- Minimize drift of this product on to beehives or to off-site pollinator attractive habitat. Drift of this product onto beehives can result in bee kills.

Information on protecting bees and other insect pollinators may be found at the Pesticide Environmental Stewardship website at:
http://pesticidestewardship.org/pollinatorprotection/Pages/default.aspx

Pesticide incidents (for example, bee kills) should immediately be reported to the state/tribal lead agency. For contact information for your state/tribe, go to: www.aapco.org. Pesticide incidents can also be reported to the National Pesticide Information Center at: www.npic.orst.edu or directly to EPA at: beekill@epa.gov

Alerts users to separate restrictions on the label. These prohibit certain pesticide use when bees are present.

The new bee icon helps signal the pesticide's potential hazard to bees.

Makes clear that pesticide products can kill bees and pollinators.

Bees are often present and foraging when plants and trees flower. EPA's new label makes it clear that pesticides cannot be applied until all petals have fallen.

Warns users that direct contact and ingestion could harm pollinators. EPA is working with beekeepers, growers, pesticide companies, and others to advance pesticide management practices.

Highlights the importance of avoiding drift. Sometimes, wind can cause pesticides to drift to new areas and can cause bee kills.

The science says that there are many causes for a decline in pollinator health, including pesticide exposure. EPA's new label will help protect pollinators.

EPA

Read EPA's new and strengthened label requirements: http://go.usa.gov/jHH4

Food/Ag Crop Uses

- Potato – soil, foliar
- Soybean – foliar
- Cucurbit veg – soil, planthouse, foliar
- Bulb veg – soil
- GH veg (cuke, tomato) – soil
- Fruiting veg – soil, planthouse, foliar
- Herbs – soil, foliar
- Brassica/leafy veg – soil, foliar
  - 2ee for swede midge
- Leafy greens – soil, foliar
- Leafy petiole veg – soil, foliar
- Legume veg – soil, foliar
- Root, tuberous & corm veg- soil, foliar
- Strawberry – soil, foliar
- Bushberry – soil, foliar
- Caneberry – soil, foliar
- Cranberry – soil
- Grape – soil, foliar
  - 2ee for Asian ladybeetle, Jap. Beetle, BM stink bug
- Hops – soil, foliar
- Pome fruit – soil, foliar
- Stone fruit – soil, foliar pre-plant root dip
- Tree nuts – soil, foliar
- Christmas tree – soil, foliar
- Poplar/Cottonwood – soil, cutting/whip soak, foliar

Seed treatments – soybean, succulent/dry bean, field/sweet/pop corn, some grains, oil seed (canola et al.), carrot, potato

Ornamental Agriculture & Indoor Plant Uses

Greenhouses

Nurseries

Interior plantscapes

- All ornamental plants
  - Field- and container-grown plants
  - Plants in flats, benches, beds
- Veg. transplants for resale
- Non-bearing fruit/nut trees
- Grassy areas (field and forest nurseries)
- Foliar, broadcast, drench, irrigation (ebb-and-flood, drip, overhead)

Outdoor Turf & Landscape Uses

Turf – Landscape & Sod Production – granular, broadcast spray

- home lawns
- business and office complexes
- shopping complexes
- multi-family residential complexes
- golf courses
- airports
- cemeteries
- parks
- playgrounds
- athletic fields
- sod farms

Landscape trees, shrubs, flowers, groundcovers – spray, drench, bark application, trunk injection, tablet (in soil)

- in/around industrial and commercial buildings
- residential areas
- municipal, city, state, national, and private wooded and forested areas
- Home garden pome fruit, grape
- Quarantine pest use (ALB), emerald ash borer, hemlock woolly adelgid

Non-Horticultural Uses

Structural and animal health

- Fly, roach, ant, cricket baits
- Veterinary flea and tick treatments
- Rodent feed blocks (fleas)
- Livestock pens
- Termites (buildings)

Industrial applications

Above & below-ground trt for wood, wood composites, plastics, cables, geo/textiles, wall treatments, wood preservative

Labeled Plant Pests

- Aphids
- Adelgids
- Whiteflies
- Leafhoppers
- Mealybugs (some)
- Scales (some)
- Phylloxera
- Lace bugs
- Leafminers (some)
- Pine tip moths
- Borers (some)
- Psyllids
- Apple maggot
- Plum curculio (suppr)
- Stink bugs (suppr)
- Leaf beetles/veg (flea, CPB, cuke, Japanese)
- Leaf beetles/orn (Japanese, elm, viburnum)
- Fungus gnat larvae
- Black vine weevil larvae
- Sawflies
- Thrips (suppr)
- Diseases (some, suppr)
- White grubs (turf, ornamentals, Xmas, strawberry)
- Ann. bluegrass weevil
- Blk turfgrass ataenius
- Billbugs
- Cutworms (suppr)

Critical or Significant Uses

Food Crops – Potatoes, Fruiting Veg. (soil trt)

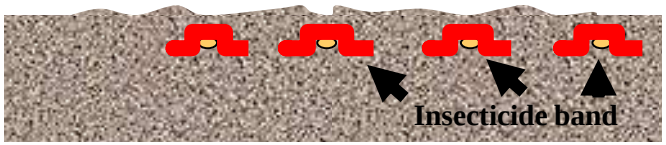
Colorado potato beetle

- Alternatives: Foliar insecticides cryolite (potatoes, washes off readily), Rimon (potatoes, timing issue – smallest larvae in June; 24(c)), possibly azadirachtin (timing); imidacloprid also controls leafhoppers, aphids
- Partial control: spinetoram, spinosad, abamectin, acetamiprid, indoxacarb+PBO (potatoes)
- Trench traps, flamers (spring, field borders)
- Imidacloprid seedpiece trt, foliar application
  - Shorter residual
- Limit use: area, amount, frequency

Critical or Significant Uses

Food Crops – Cucurbits (soil trt)

- **Cucumber beetle/wilt** – emergence, early growth
  - Alternatives: foliar application of acetamiprid, pyrethroids, carbaryl, methomyl
- **Aphids** – early growth
  - Alternatives: foliar application of Assail, pyrethroids, Sevin, Lannate (not pumpkin or winter squash), Beleaf, Fulfill, (Closer/sulfoxaflor not yet reg. NY)
  - Limit use: area, amount, frequency; precision band vs continuous in-furrow application; 'planthouse' application to flats for early growth protection



Critical or Significant Uses

Food Crops – Greenhouse Tomato/Cucumber Production (soil trt)

(not currently common use on LI)

Whiteflies

- Alternatives: foliar application of others less effective incl products with outdoor-use labels (e.g. Portal, Assail)
  - [Exirel ($$, tomato) & Closer (both, SPWF only) if approved in NY]

Aphids

- Alternatives: foliar application of flonicamid (cuke); others less effective incl. products with outdoor-use labels (Portal, Assail)
  - [Exirel ($$, tomato) & Closer (both, SPWF only) if approved in NY]

  - Biocontrols (*Aphidius*, *Aphidoletes*, *Encarsia*, *Eretmocerus*, …) - preventive
  - Limit use: amount, area, frequency; containment?

Critical or Significant Uses

Greenhouse Ornamental Crops

Whiteflies (drench)- esp long-term pot crops (1° poinsettia), SPWF

Alternatives

- Safari [24(c) restr.], Kontos (some sensitive plants) (drench)
- Foliar treatments (Judo; others generally less effective)
- Biocontrols (*Encarsia, Eretmocerus,* others)
  - Early stage use only

- Limit use: area, amount, frequency; closed systems (ebb-and-flood)

Critical or Significant Uses

Greenhouse Ornamental Crops

Aphids (drench) – esp. hanging basket spring crops, long-term pot crops, root aphids in perennials

Alternatives

- Safari [24(c) restr.], Kontos (some sensitive plants) (drench)
- Foliar treatments (several effective)
- Biocontrols (*Aphidius, Aphidoletes,* others)
  - Early stage use only, parasitoids not for all aphids, not for root aphids

- Limit area, amount, frequency; closed systems (ebb-and-flood)

Critical or Significant Uses

Nursery Ornamental Crops

Oriental beetle grubs (drench) – esp. certain container plants

- Alternatives
  - Chlorpyrifos (not highly effective, high tox), bifenthrin in media (preventive)
  - Oriental Beetle MD (mating disruption)
    areas ≥5A mainly
  - Biocontrol (nematodes) not v. effective

Critical or Significant Uses

Nursery Ornamental Crops

Lacebugs, aphids, whiteflies

Lacebugs, aphids, whiteflies - drench

Uncommon (high cost)

Alternative

Kontos (some sensitive plants)

Lacebugs, aphids, whiteflies - foliar spray

Alternatives

- Acephate/Orthene, TriStar, pyrethroids, Aria, some others less effective

- Limit frequency, total use, timing, app. method

Critical or Significant Uses

Nursery Ornamental Crops

Boxwood leafminer

Boxwood leafminer - drench

- Uncommon (high cost), no alternative

Boxwood leafminer - foliar spray

Alternatives

- TriStar, Avid/generic
  - Timing can be difficult (esp Avid)
- Resistant varieties best, not widely grown

Critical or Significant Uses

Landscapes
(woody and herbaceous ornamentals)
Mainly soil application

- Borers – flatheaded esp. (bronze birch, emerald ash, others)
- Hemlock woolly adelgid
- Asian longhorned beetle (trunk inj. only)
  - 2ee labels
- Boxwood leafminer
- Holly leafminers
- Lacebugs
- Aphids, phylloxera
- Scale insects
- Leafhoppers (esp. potato)
- Leaf beetles (viburnum, elm leaf)
- Japanese beetle
- Psyllids
- Sawflies

Difficult situations for sprays/drift

- Property line treatments
- Children nearby
- Public areas
- Decks
- Pools, ponds, aquatic areas
- Perception issues
- Tall/large trees, shrubs
- Neighbor Notification

Critical or Significant Uses

Landscapes

Hemlock woolly adelgid

Imidacloprid applied as soil drench*, foliar spray, basal trunk spray (2ee)*, trunk injection*

Alternatives

- TriStar basal trunkspray, trunk injection
- Safari basal trunk spray [24(c) label]
- Foliar spray with hort. oil, M-Pede, Mavrik

- Basal trunk spray or injection rather than drench?
- Biocontrol not available/reliable

Critical or Significant Uses

Turf

Oriental beetle & other white grubs – esp. residential

Alternatives

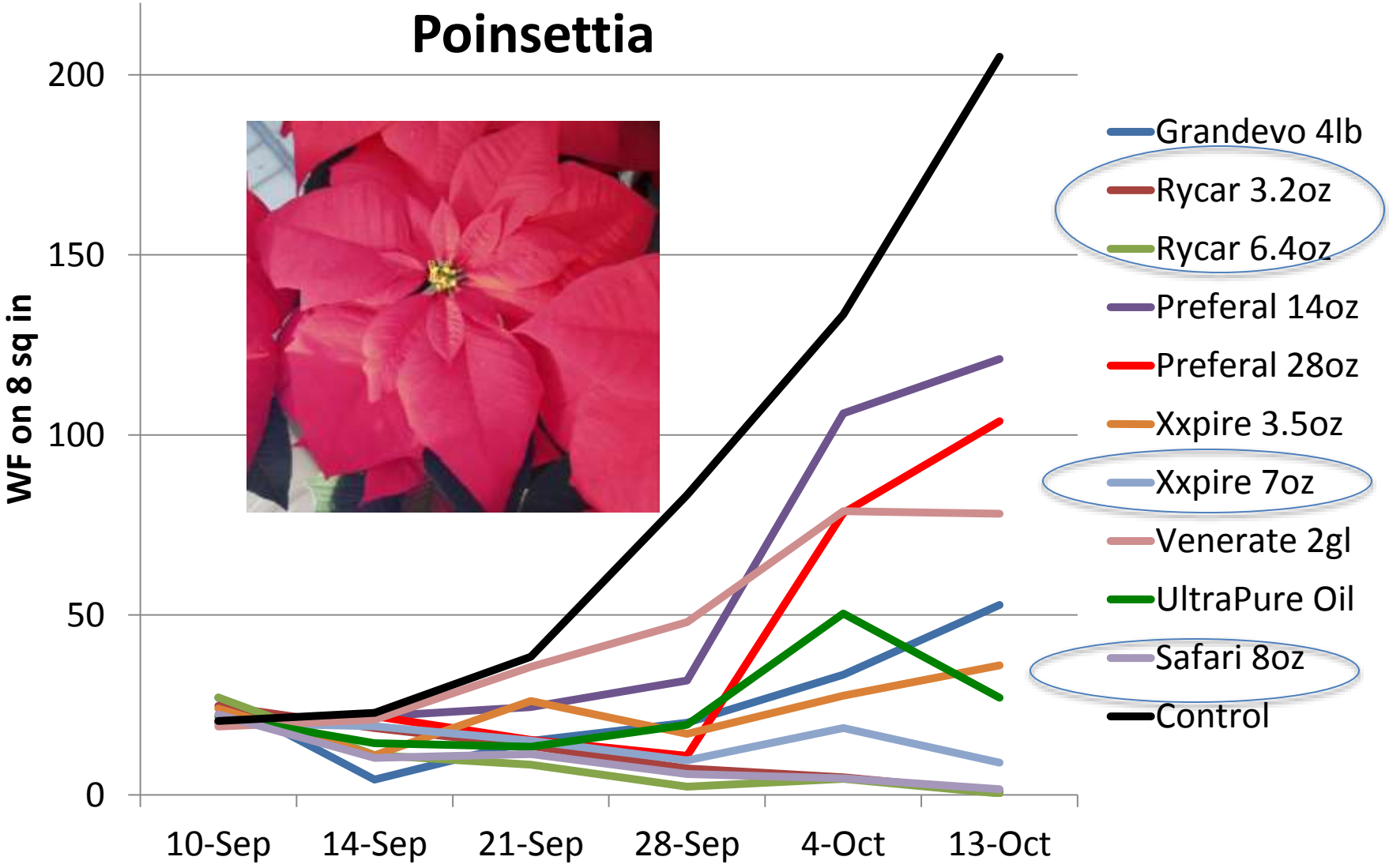
- Dylox (granular mostly)
- Oriental MD not tested (landscapes), mainly for areas ≥5A, OB only
- Possible Bt material coming (EPA reg.) but efficacy unclear
- Acelepryn not allowed on LI
- Biocontrol: nematode performance highly variable, only for warmer soil late summer

More Alternatives, Issues

- Best Management Practices – review, update
- “Education with purchase”
- Environmental monitoring with use
- Foliar/bark/injection vs soil uses
- ‘Planthouse’ (transplants) vs field (soil) use?
- Containment (ebb-and-flood in greenhouses) – cost/retrofit, production issues
- Guidance: uses of greatest interest/risk?
- Reduce treatment area (precision banding, e.g.)
- Relative toxicity, environmental risks
- Invasive species – options needed, future?
- Will consumers accept some level of pest infestation/damage?

2012 Whitefly (*B. tabaci*) Control Trial

Poinsettia



Most trts applied 9/10, 24, 10/9. Grandevo & venerate also 9/17, 10/1. Safari 9/10, 10/1 only
Control water spray only, weekly

Supported by IR-4 Project

Greenhouse bench washer

Non-chemical control for mealybugs

SCWA Occurrence Data for Imidacloprid

Kevin Durk

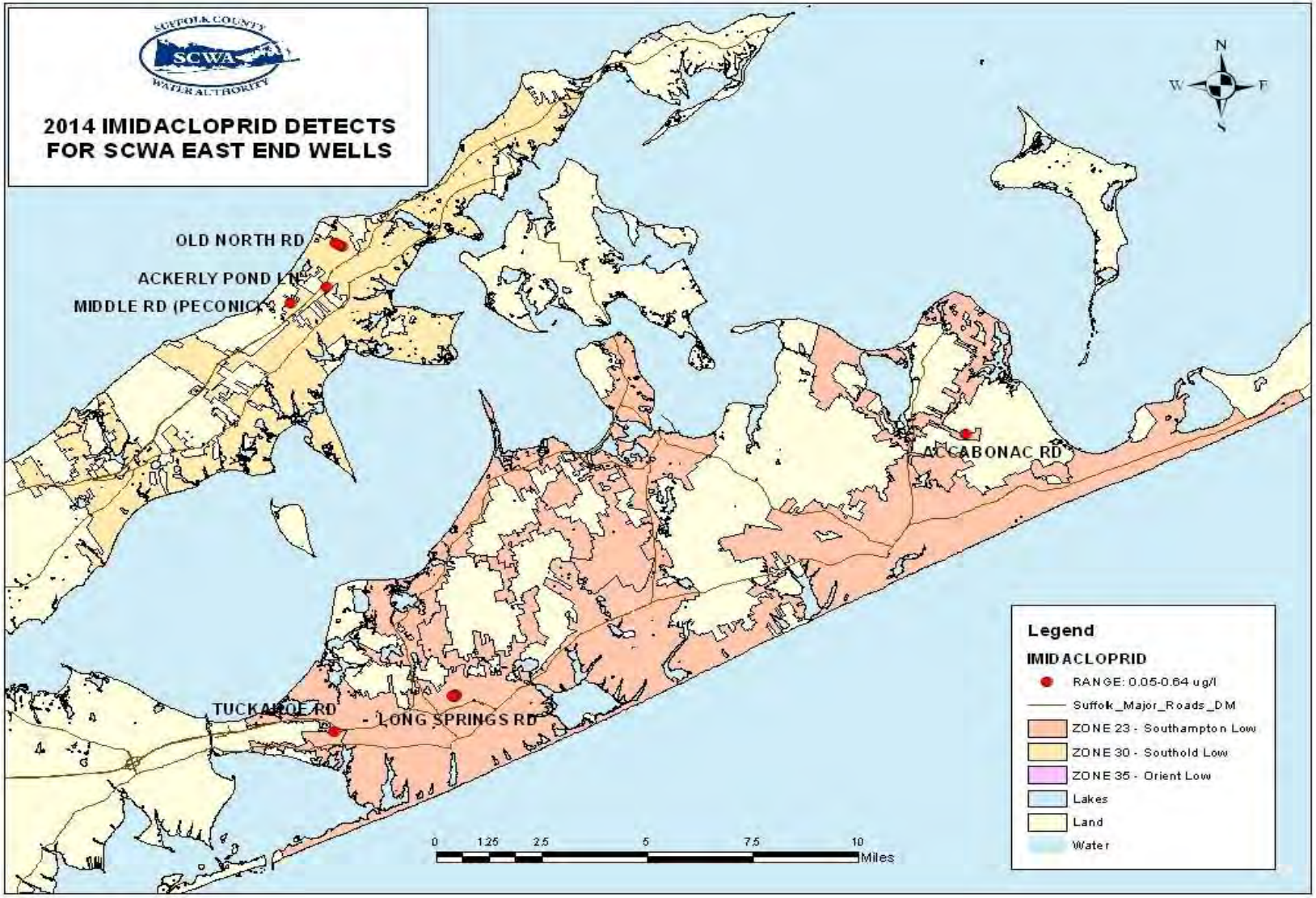
Imidacloprid

- Used as a pesticide
- SCWA has monitored for Imidacloprid since July 2011
- Currently analyze using SCWA PPCP Method
- Reporting Limit = 0.050 ppb
- MCL = 50.0 ppb

SCWA Wells with Imidacloprid Detects

Well	Range (ppb)	Well Depth (ft.)	Aquifer
ACCABONAC RD #2	0.06-0.12	163	Glacial
ACKERLY POND LN #1	0.05-0.06	88	Glacial
LONG SPRINGS RD #1A	0.05-0.06	105	Glacial
LONG SPRINGS RD #3B	0.06-0.08	102	Glacial
LONG SPRINGS RD #4B	0.23-0.40	112	Glacial
LONG SPRINGS RD #5B	0.17-0.64	102	Glacial
MIDDLE RD (PECONIC) #5	0.06	73	Glacial
OLD NORTH RD #1	0.15-0.29	94	Glacial
OLD NORTH RD #2	0.25-0.35	80	Glacial
OLD NORTH RD #3	0.07-0.31	92	Glacial
TUCKAHOE RD #2	0.05-0.47	125	Glacial

SCWA Wells with Imidacloprid Detects

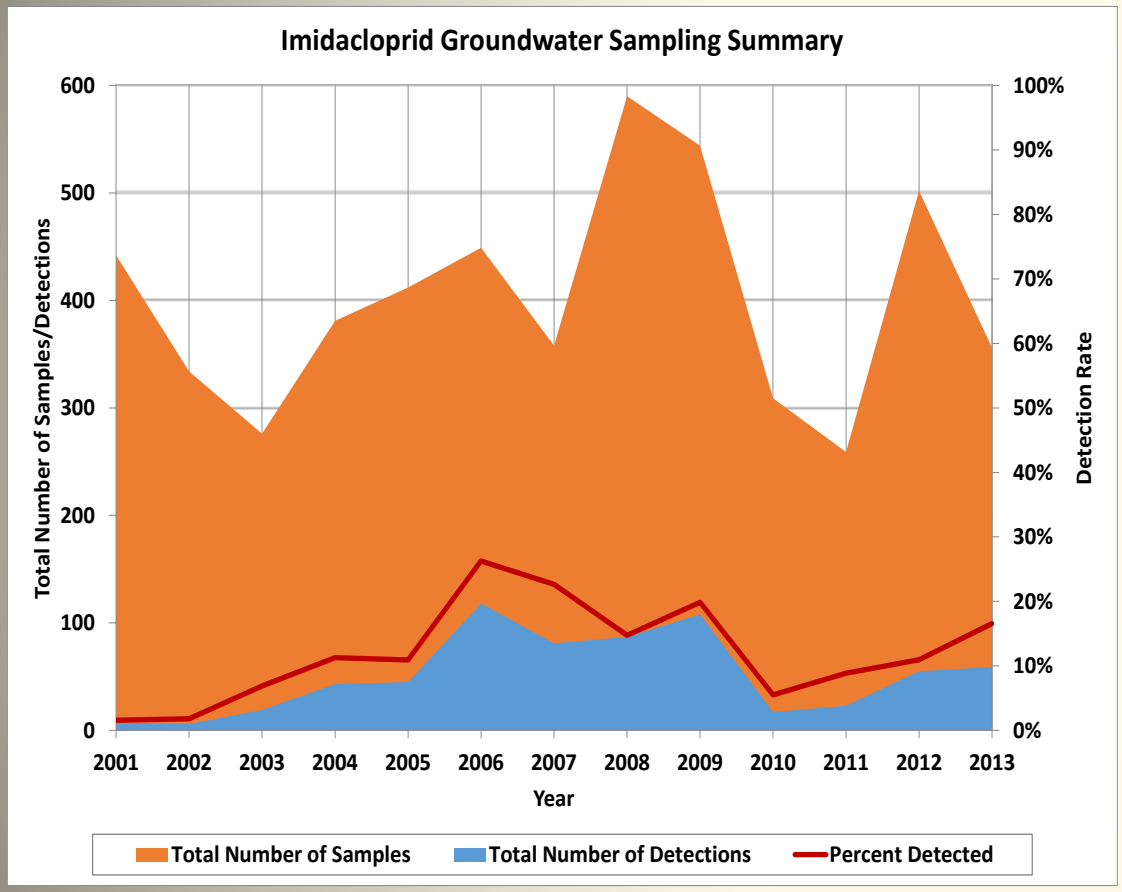


Imidacloprid Trends Observed in Groundwater and Drinking Water Wells

Jonathan Wanlass
Suffolk County Department of Health Services
Office of Water Resources

October 30, 2014

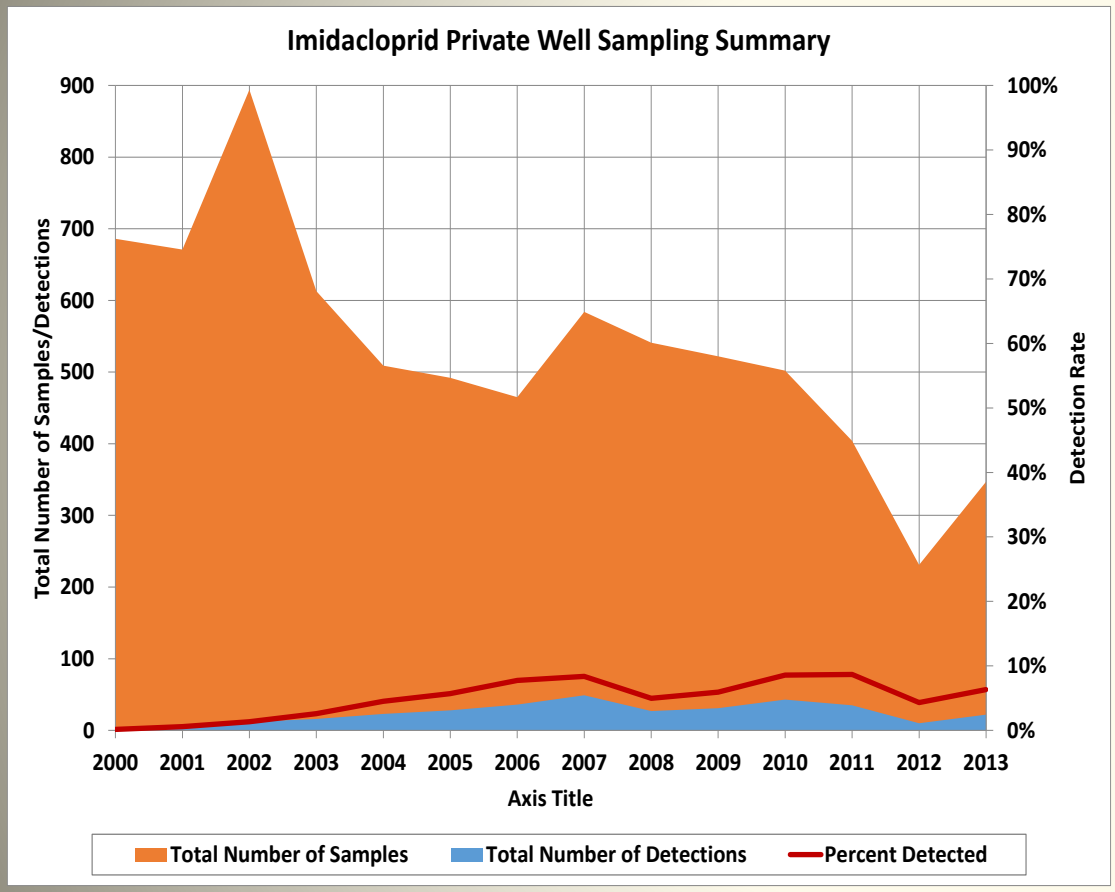
Groundwater Sampling Summary



Year	Total Number of Detections	Total Number of Samples	Percent Detected	Minimum Concentration Detected (ppb)	Maximum Concentration Detected (ppb)	MCL (ppb)	Frequency Exceeding MCL
Groundwater Monitoring and Profile Well Samples							
2001	7	442	1.58%	0.24	1.8	50	0 of 442
2002	6	334	1.80%	0.21	4.46	50	0 of 334
2003	19	276	6.88%	0.22	3.39	50	0 of 276
2004	43	381	11.29%	0.21	21.4	50	0 of 381
2005	45	412	10.92%	0.21	215	50	3 of 412
2006	118	449	26.28%	0.2	407	50	3 of 449
2007	81	358	22.63%	0.2	84	50	3 of 358
2008	87	590	14.75%	0.2	67.7	50	1 of 590
2009	108	544	19.85%	0.2	59	50	3 of 544
2010	17	309	5.50%	0.2	2.8	50	0 of 309
2011	23	259	8.88%	0.3	8.6	50	0 of 259
2012	55	502	10.96%	0.3	7	50	0 of 502
2013	59	356	16.57%	0.3	6.2	50	0 of 356

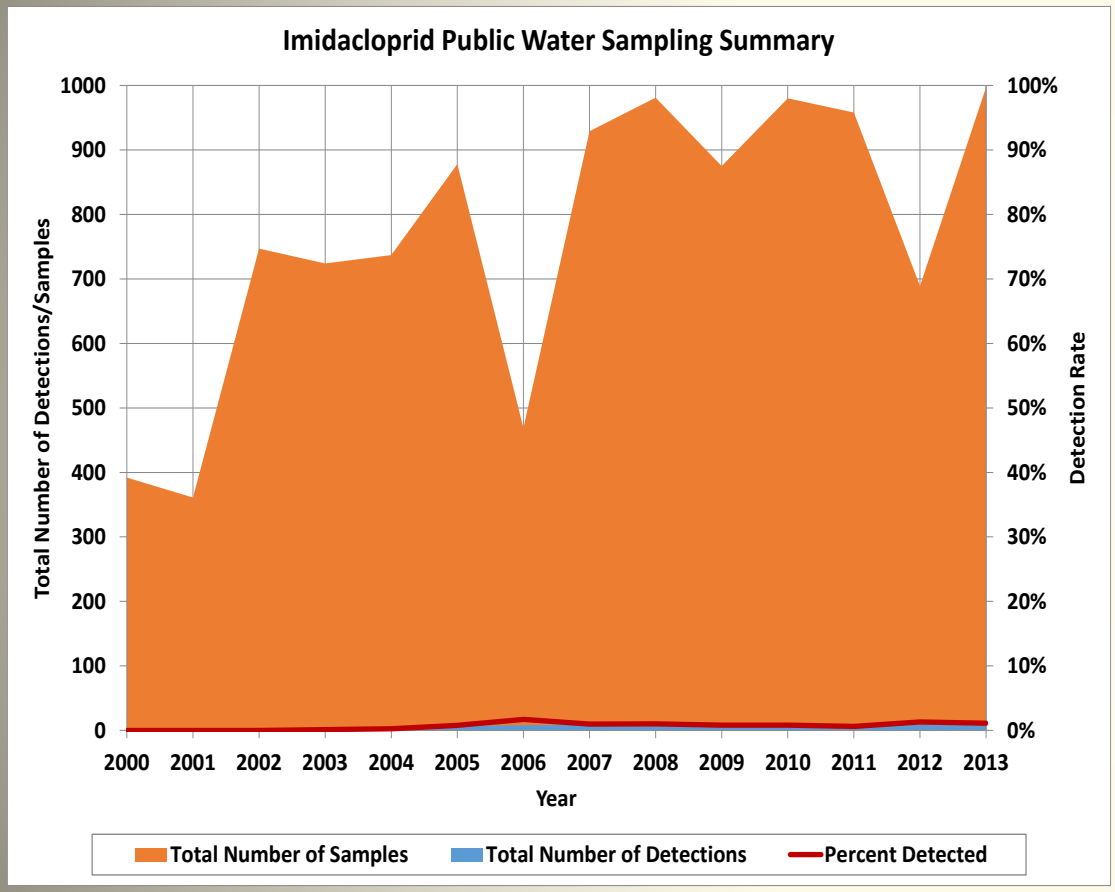
- 2005-2009 sampling statistics includes investigations where pesticide mishandling took place.

Private Well Sampling Summary



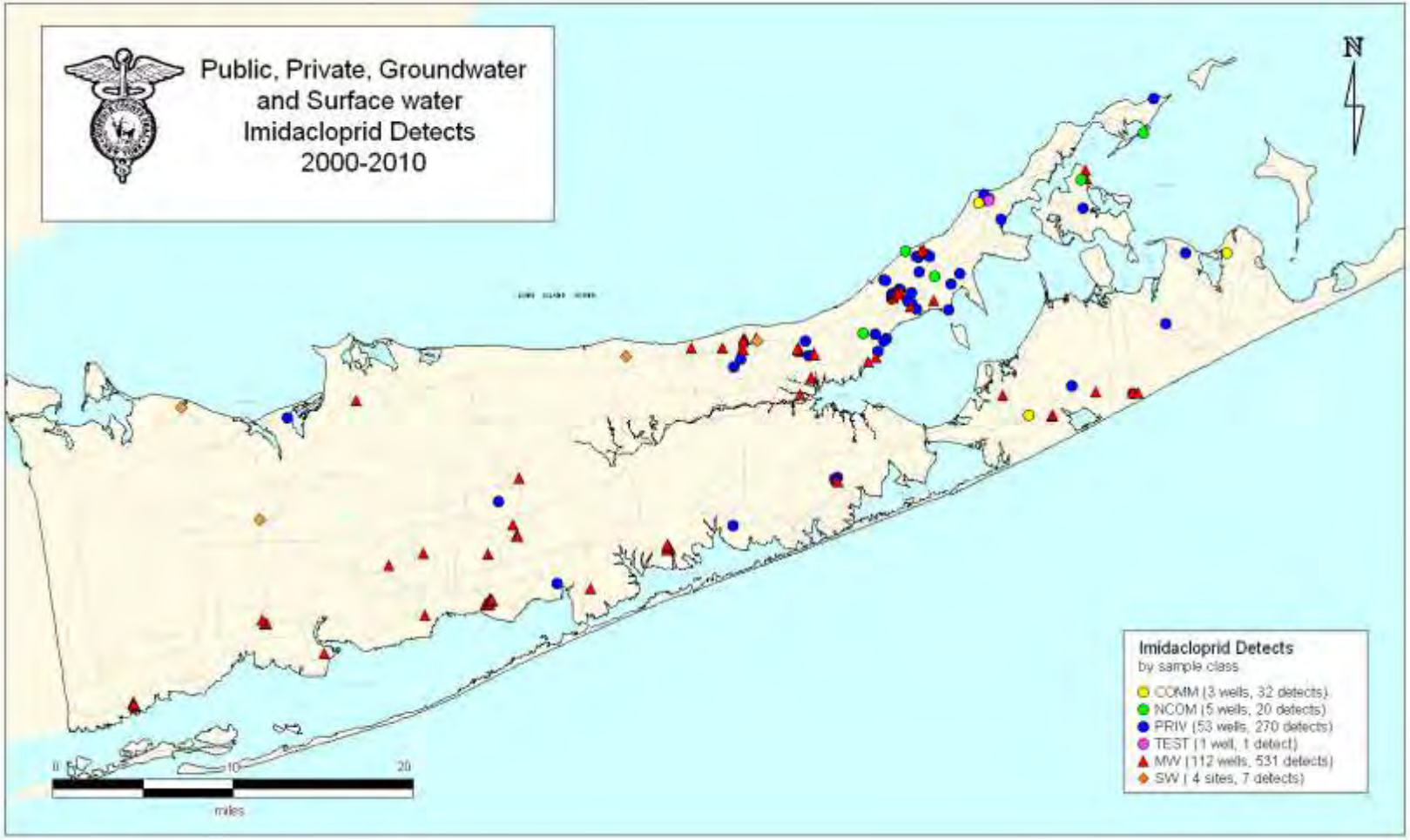
Year	Total Number of Detections	Total Number of Samples	Percent Detected	Minimum Concentration Detected (ppb)	Maximum Concentration Detected (ppb)	MCL (ppb)	Frequency Exceeding MCL
Private Well Samples							
2000	1	686	0.15%	0.42	0.42	50	0 of 686
2001	4	671	0.60%	0.2	0.82	50	0 of 671
2002	12	894	1.34%	0.2	0.2	50	0 of 894
2003	16	613	2.61%	0.2	0.2	50	0 of 613
2004	23	509	4.52%	0.2	0.2	50	0 of 509
2005	28	492	5.69%	0.2	0.2	50	0 of 492
2006	36	465	7.74%	0.2	0.2	50	0 of 465
2007	49	584	8.39%	0.2	0.42	50	0 of 584
2008	27	541	4.99%	0.2	0.2	50	0 of 541
2009	31	522	5.94%	0.2	0.2	50	0 of 522
2010	43	502	8.57%	0.2	0.2	50	0 of 502
2011	35	404	8.66%	0.2	0.2	50	0 of 404
2012	10	231	4.33%	0.2	0.2	50	0 of 231
2013	22	347	6.34%	0.2	0.2	50	0 of 347

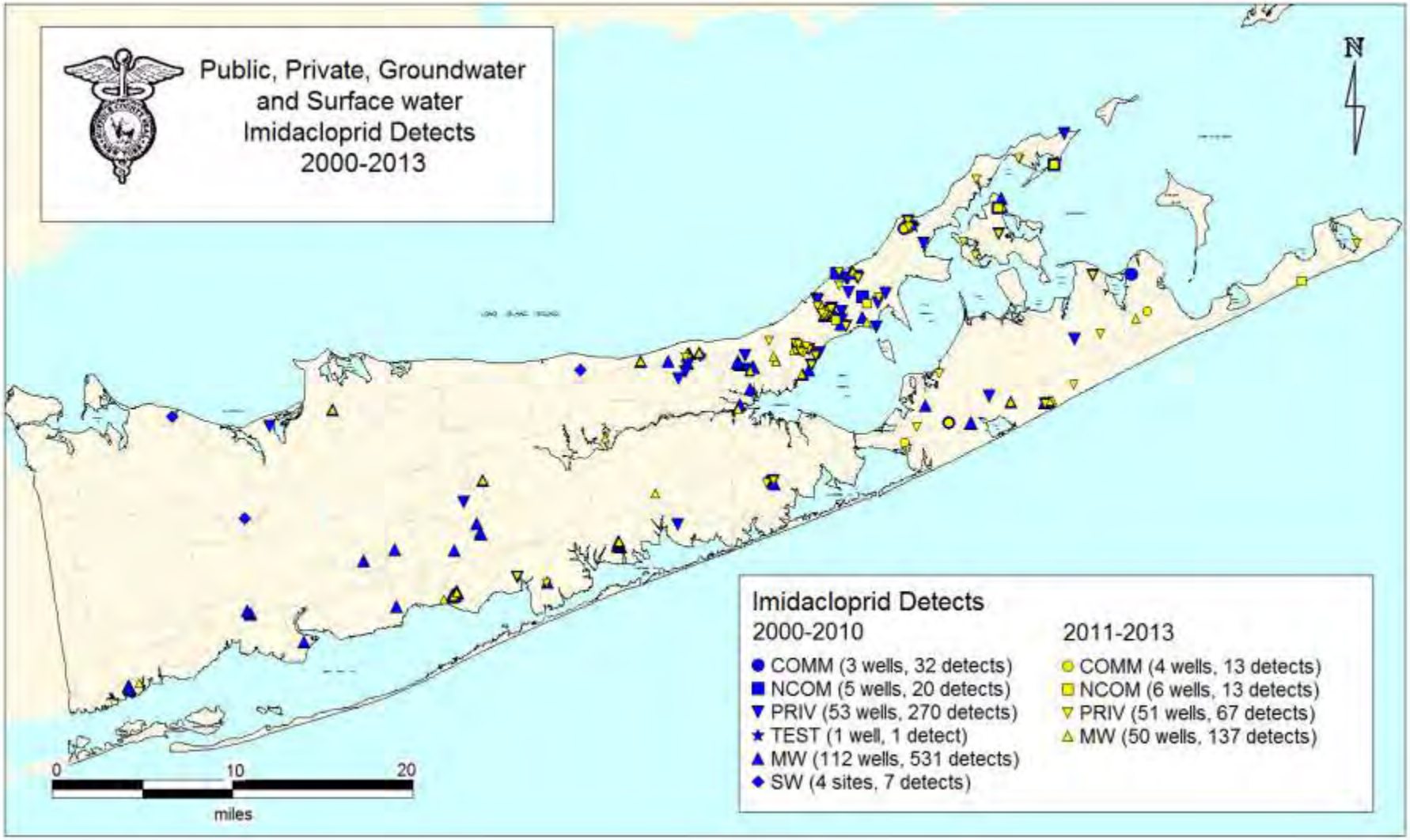
Public Well Sampling Summary



Year	Total Number of Detections	Total Number of Samples	Percent Detected	Minimum Concentration Detected (ppb)	Maximum Concentration Detected (ppb)	MCL (ppb)	Frequency Exceeding MCL
Public and Non-Community Water Supply Wells							
2000	0	392	0.00%	0	0	50	0 of 392
2001	0	361	0.00%	0	0	50	0 of 361
2002	0	747	0.00%	0	0	50	0 of 747
2003	1	724	0.14%	0.2	0.2	50	0 of 724
2004	2	737	0.27%	0.11	0.36	50	0 of 737
2005	7	878	0.80%	0.2	0.4	50	0 of 878
2006	8	469	1.71%	0.2	0.28	50	0 of 469
2007	9	929	0.97%	0.3	0.4	50	0 of 929
2008	10	981	1.02%	0.2	0.4	50	0 of 981
2009	7	875	0.80%	0.2	0.5	50	0 of 875
2010	8	980	0.82%	0.2	0.3	50	0 of 980
2011	6	958	0.63%	0.2	0.6	50	0 of 958
2012	9	689	1.31%	0.3	0.5	50	0 of 689
2013	11	997	1.10%	0.2	0.7	50	0 of 997

Previous Imidacloprid Detections





- 2 new community supply well detections
- 4 new non-community supply well detections
- 37 new private well detections
- 14 new monitoring well detections

Summary

- Over the past 4 years imidacloprid in monitoring wells have seen a slight increase in frequency of detections.
- Private and Public well concentrations and frequency of detections have remained constant over the years.
- The most recent data (2011-2013) shows 57 new locations that have imidacloprid detections

Imidacloprid

Jim Leach (NYSDOH)

- Human Health Concerns

Imidacloprid
Open Discussion

- Pollution Prevention Measures
- Best Management Practices

Potential Pollution Prevention Measures

Pollution Prevention Measure	Applies to Imidacloprid	Does Not Apply to Imidacloprid
Trench Trapping		
Propane Flame Treatment		
Row Covers on Young Plants		
Reflective Mulch		
Mating Disruption		
Post Harvest Crop Destruction		
Biological Control		
Reduction in Application Rates		
Limit Frequency of Use		
Better Storage and Handling		
Crop Rotation		

Pollution Prevention Measure	Applies to Imidacloprid	Does Not Apply to Imdiacloprid
Spill Clean-up and Proper Disposal		
Improved Calibration of Equipment		
Buffer Zones		
Modified Applications		
Restrictions on the Timing of Applications due to Rain		
Restrictions on use in Shallow GW Areas		
Alternative Crops		
Conservation Tillage		
Banding or Incorporation		
Integrated Pest Management		
Filter Strips		

Metalaxyl/Mefenoxam

Jeanine Broughel
Chief
Bureau of Pest Management

- Usage and Regulatory History

Metalaxyl

- Registered in NYS since the mid-80's
- Used on potatoes, mixed vegetables and small fruits
- Important for disease management
  - Pythium leak and Phytophthora blight

Mefenoxam

- Registered in NYS September 1996
- Considered a “Reduced Risk Pesticide”
  - Is a more purified form and can use less than the older Metalaxyl form
- Metalaxyl and Mefenoxam cannot be distinguished in water samples
  - Too similar

Mefenoxam/Metalaxyl

- Mefenoxam replaced Metalaxyl for all uses
- Metalaxyl was scheduled to be EPA cancelled
  - Currently registered in NYS for seed treatment only

SCWA Occurrence Data for Metalaxyl

Kevin Durk

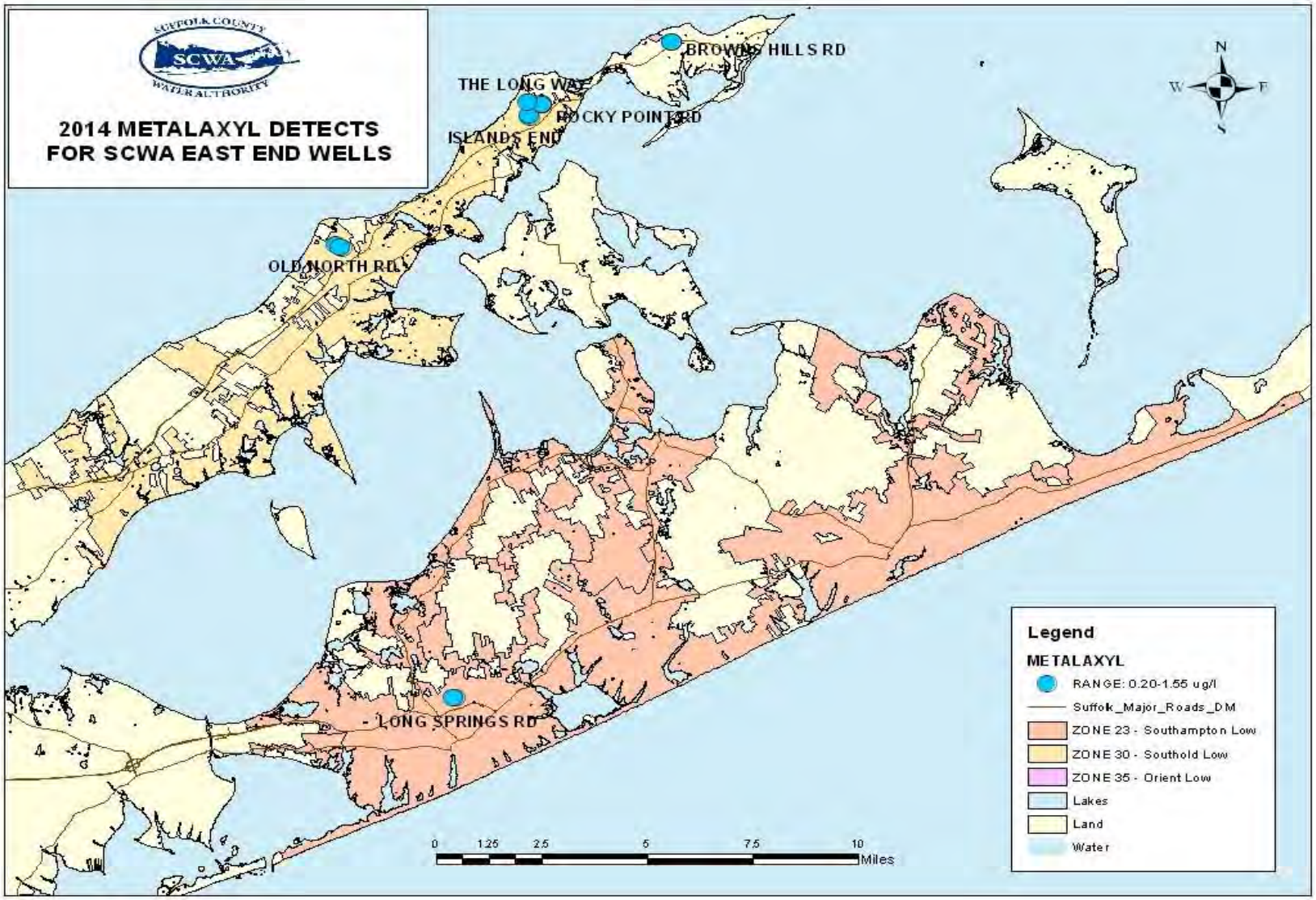
Metalaxyl

- Used as a fungicide
- SCWA has monitored for Metalaxyl since January 2002
- Analyze using EPA Method 525.2
- Reporting Limit = 0.20 ppb
- MCL = 50.0 ppb

SCWA Wells with Metalaxyl Detects

Well	Range (ppb)	Well Depth (ft.)	Aquifer
BROWNS HILLS RD #2A	0.39 – 0.85	52	Glacial
BROWNS HILLS RD #3A	0.25 – 0.37	49	Glacial
BROWNS HILLS RD #4	0.53 – 0.68	66	Glacial
ISLANDS END #6A	0.25 – 0.39	77	Glacial
ISLANDS END #7A	0.41 – 0.87	81	Glacial
ISLANDS END #9	0.31 – 0.54	79	Glacial
LONG SPRINGS RD #4B	0.22 – 0.39	112	Glacial
LONG SPRINGS RD #5B	0.21 – 1.55	102	Glacial
OLD NORTH RD #1	0.57 – 0.91	94	Glacial
OLD NORTH RD #2	0.20 – 0.30	80	Glacial
OLD NORTH RD #3	0.20 – 0.46	92	Glacial
ROCKY PT RD #1A	0.23 – 0.72	73	Glacial
ROCKY PT RD #3	0.31 – 0.61	70	Glacial
ROCKY PT RD #6	0.38 – 0.75	75	Glacial
THE LONGWAY RD #1	1.29 – 4.94	76	Glacial

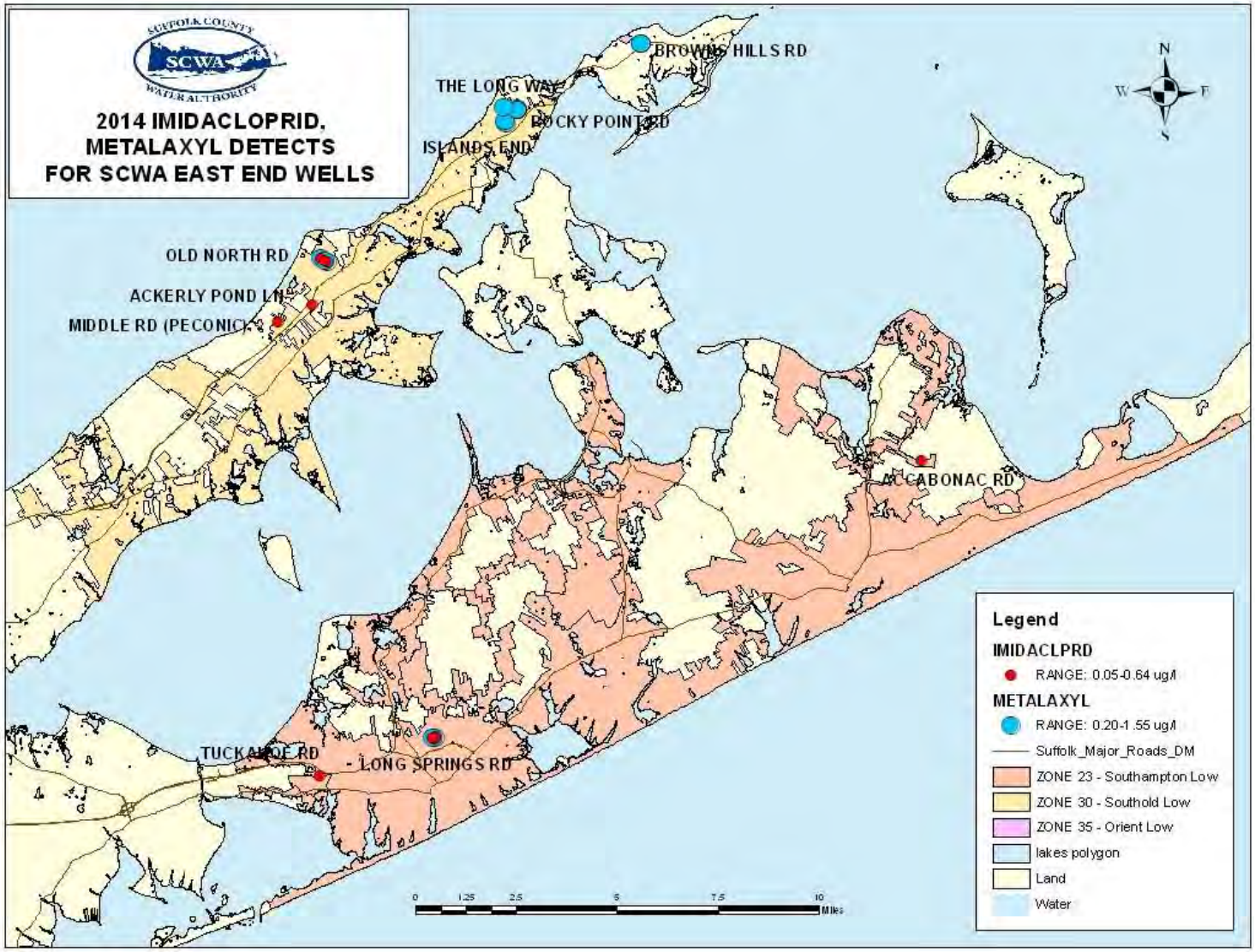
SCWA Wells with Metalaxyl Detects



SCWA Wells with Imidacloprid and Metalaxyl Detects

Well	Imidacloprid Range (ppb)	Metalaxyl Range (ppb)	Well Depth (ft.)	Aquifer
LONG SPRINGS RD #4B	0.23-0.40	0.22 – 0.39	112	Glacial
LONG SPRINGS RD #5B	0.17-0.64	0.21 – 1.55	102	Glacial
OLD NORTH RD #1	0.15-0.29	0.57 – 0.91	94	Glacial
OLD NORTH RD #2	0.25-0.35	0.20 – 0.30	80	Glacial
OLD NORTH RD #3	0.07-0.31	0.20 – 0.46	92	Glacial

SCWA Wells with Imidacloprid and Metalaxyl Detects



ANY QUESTIONS ?

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Metalaxyl Trends Observed in Groundwater Monitoring Wells

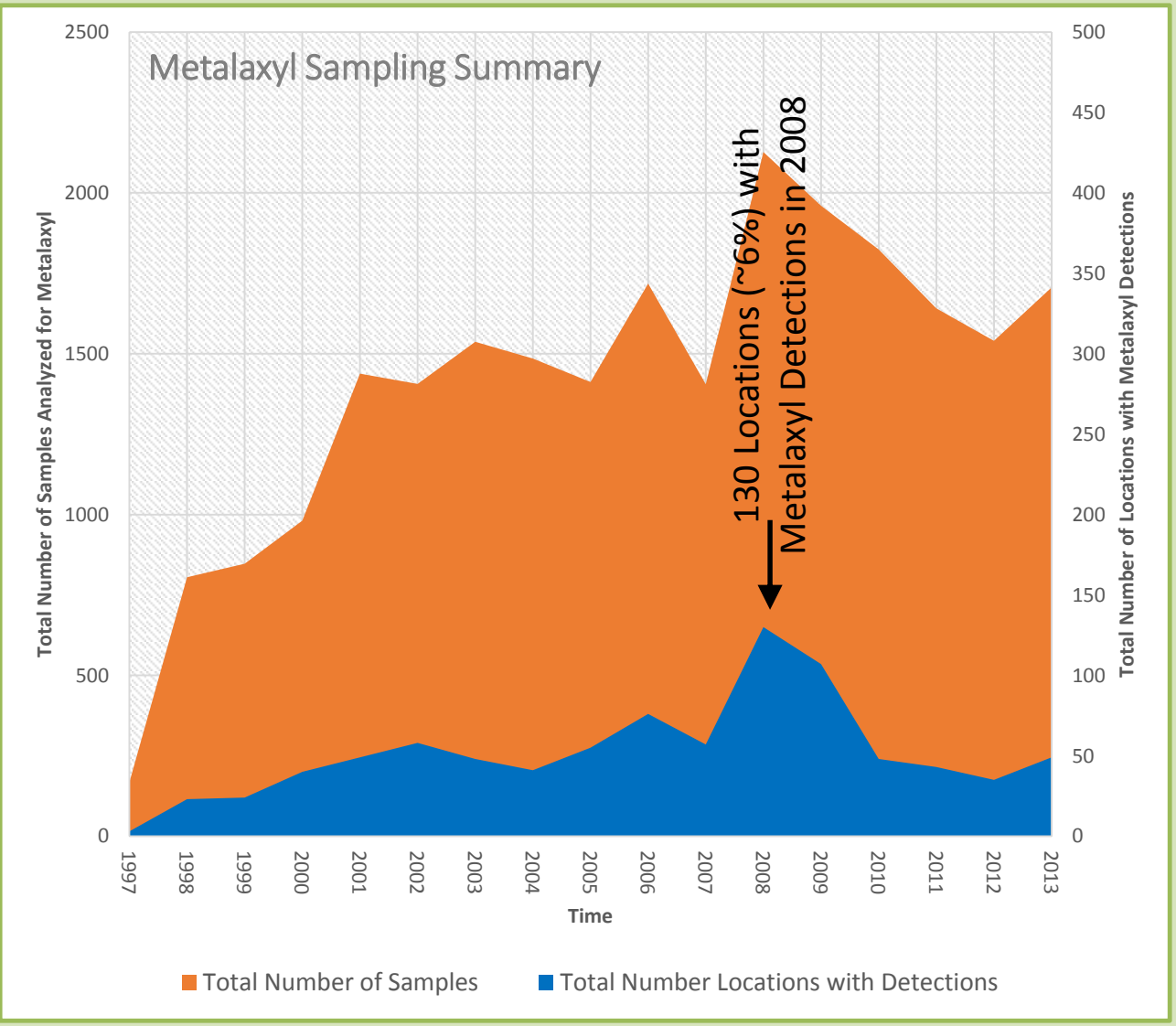
Jason Pelton
Engineering Geologist
Bureau of Pest Management
NYSDEC

October 30, 2014

Groundwater Sampling Program

- 24,000 Suffolk County Groundwater Samples Analyzed for Metalaxyl Since 1997
- Combination of Monitoring Wells, Private Wells, and Public Wells
- 340 USGS Groundwater Samples Since 1997

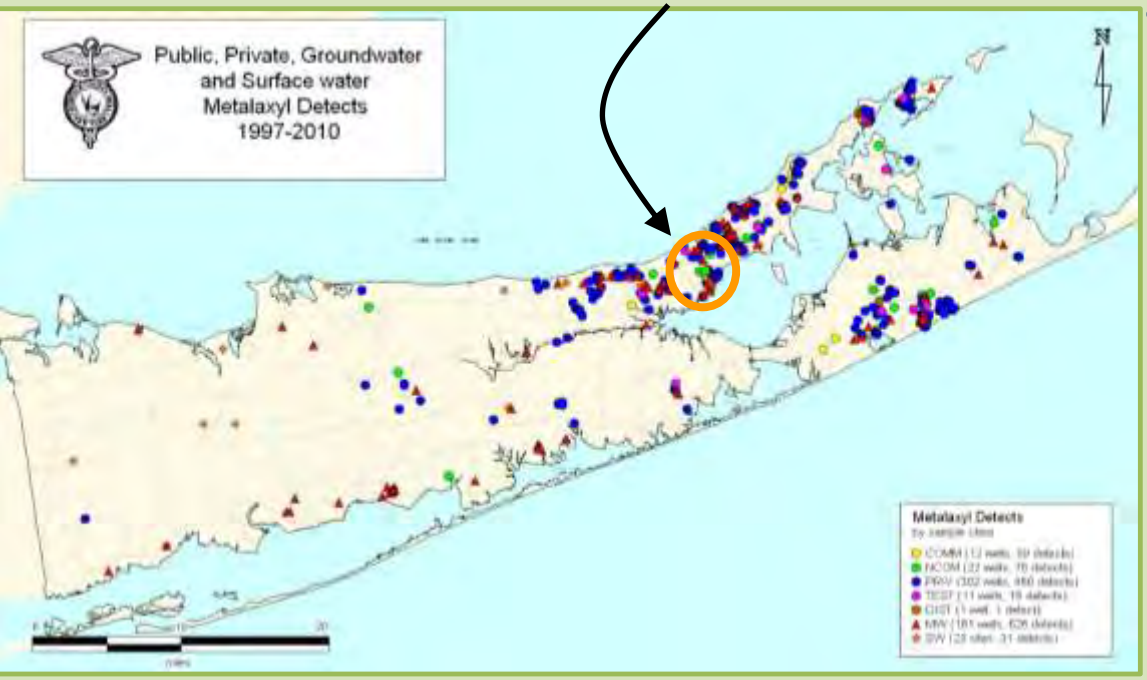
Metalaxyl Groundwater Data Summary – Suffolk County



- ~1,600 samples collected/year since 2000
- Maximum locations with detections = 130 in 2008
- Typically detected in 2% - 6% of samples
- Highest percentage of detection in monitoring wells

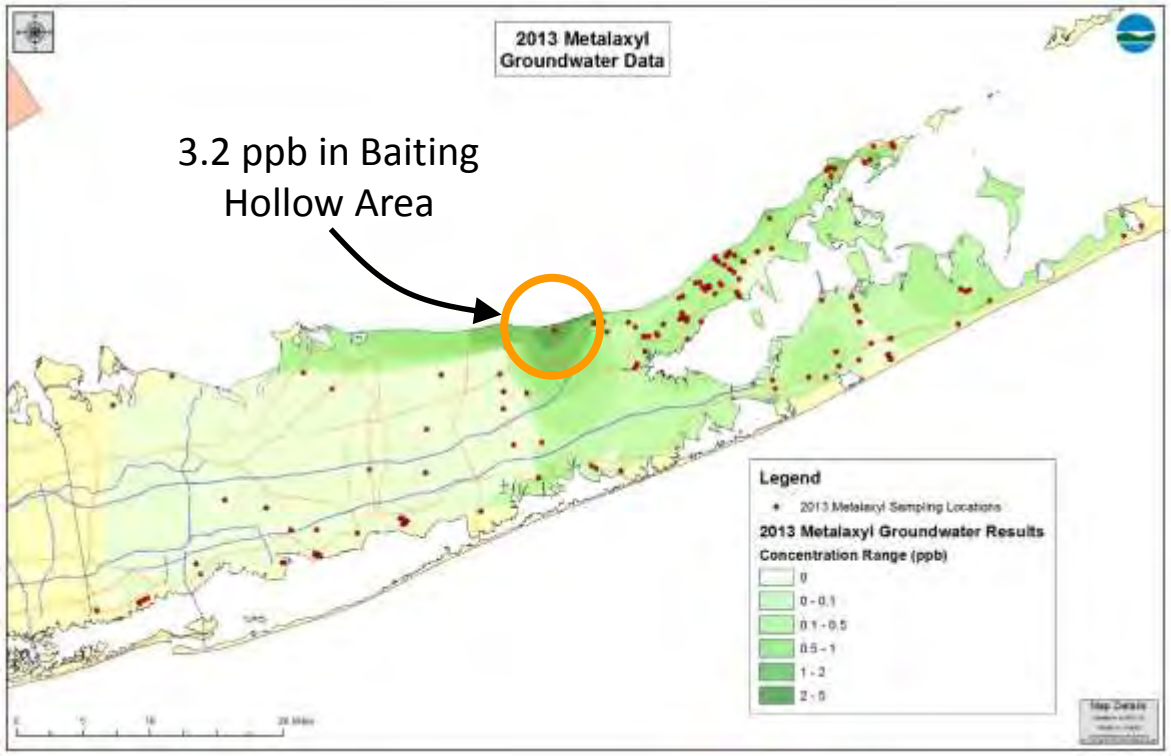
1997 – 2010 Detection Locations – Suffolk County

10.9 ppb in Non-Community Well in Laurel Area in 2007



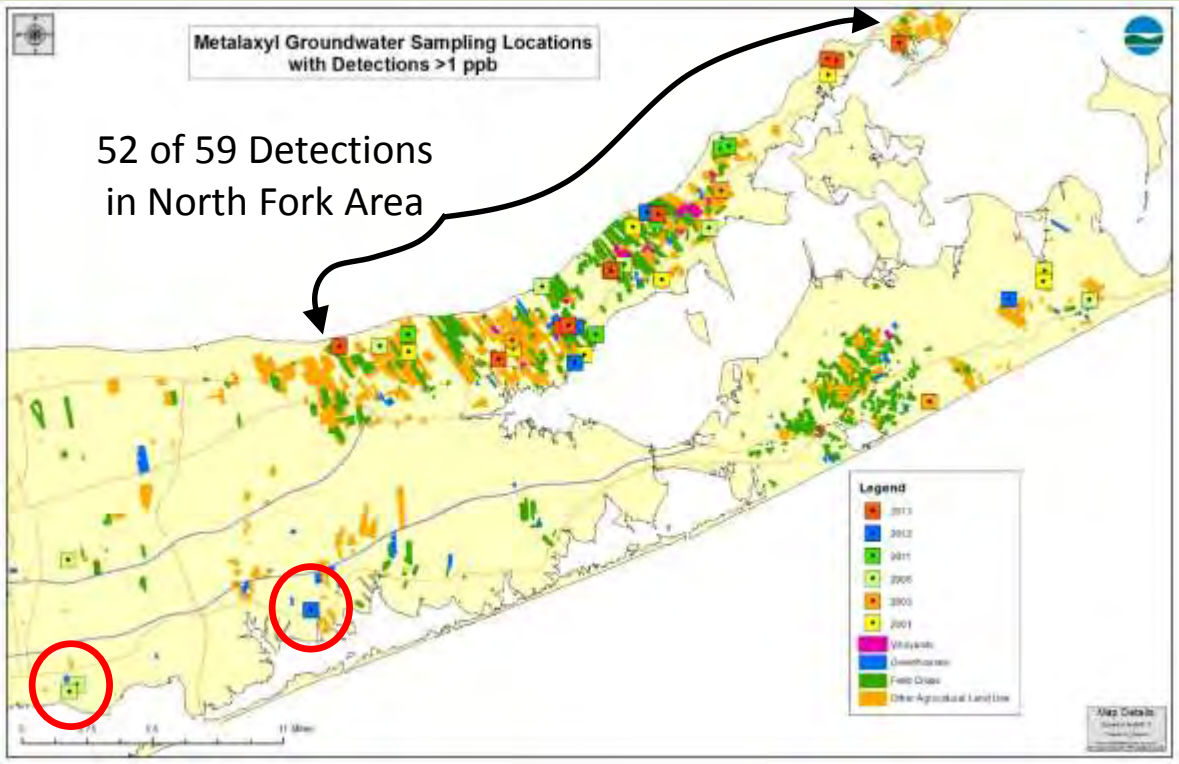
- 509 Individual Locations
- Primarily Detected in Monitoring and Private Wells – 463 of 509 Locations
- Most Detections in North and South Fork Areas
- No MCL Exceedances (50 ppb)
- Max. Conc. = 10.9 ppb

2013 Metalaxyl Groundwater Data – Suffolk County



- Highest Concentration = 3.2 ppb
- Monitoring Well Installed Near Greenhouse
- Continued Detections Occurring in North and South Fork Areas

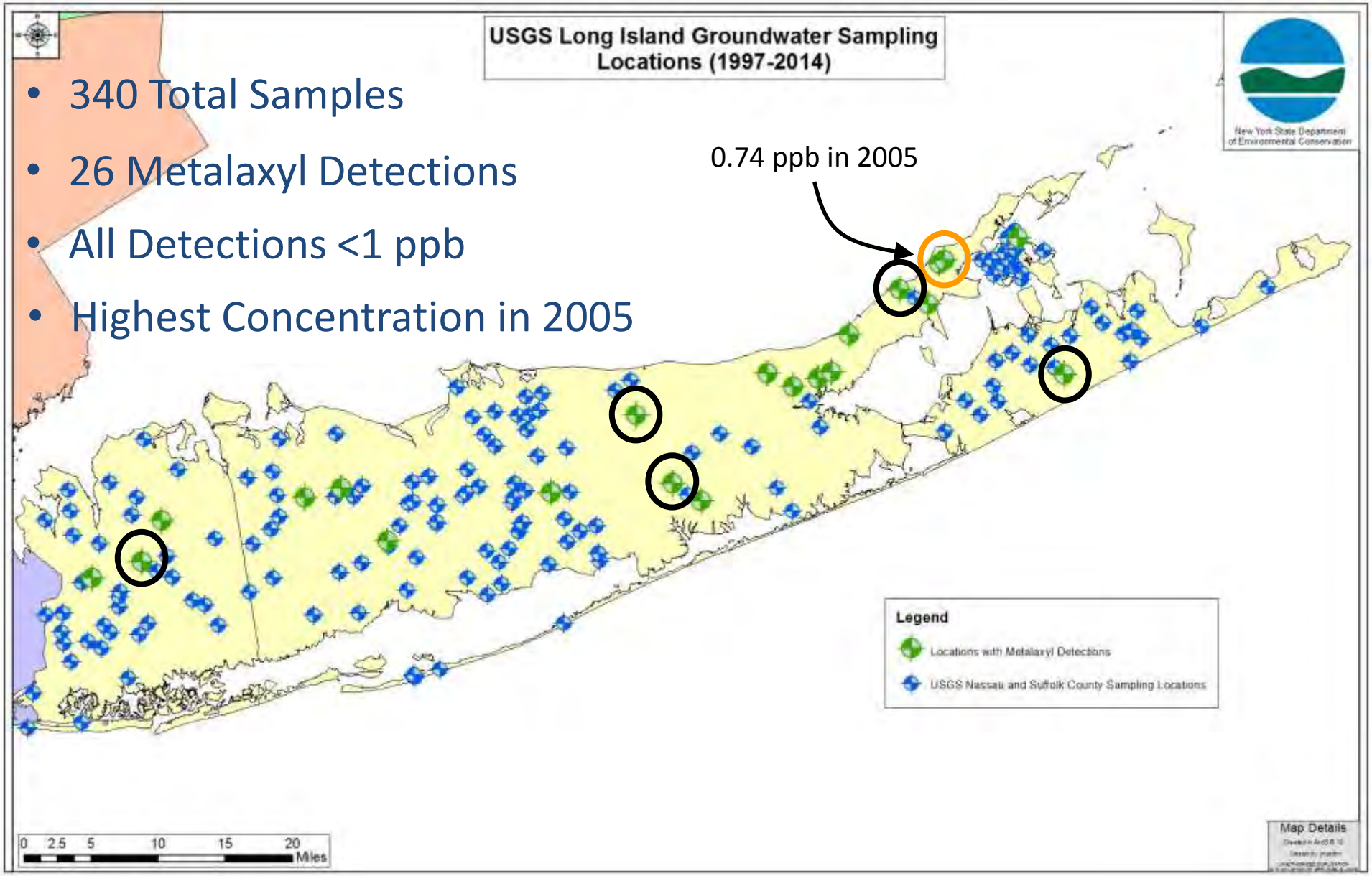
Metalaxyl Groundwater Locations with Detections > 1 ppb



- 63 Detections > 1 ppb
- 59 of 63 Detections Occurring in North and South Fork Areas
- Areas of Dense Agricultural Land Use
- 3 of 4 Detections Outside of Forks Associated with Mis-Use/Investigations

1997 – 2014 Detection Locations – USGS

- 340 Total Samples
- 26 Metalaxyl Detections
- All Detections <1 ppb
- Highest Concentration in 2005



Conclusions

1) No detections exceeded 50 ppb MCL

2) Maximum concentrations ranged from 1.1 ppb to 3.2 ppb between 2011-2013 with most detections below 1 ppb

3) Majority of higher metalaxyl detections occurring in area of north and south forks

Groundwater Follow-Up

- Assessment of Temporal Trends
- Evaluation of Metalaxyl Degradates
- Evaluation of Co-Occurrences
- Current Usage Relative to Groundwater Quality

Metalaxyl/Mefenoxam

Jim Leach (NYSDOH)

- Human Health Concerns

Metalaxyl/Mefenoxam

Margaret Kelly (NYS Ag&Mkts.)

- Implications of Reduced Availability

Metalaxyl/Mefenoxam

Open Discussion

- Pollution Prevention Measures
- Best Management Practices

Potential Pollution Prevention Measures

Pollution Prevention Measure	Applies to Metalaxyl	Does Not Apply to Metalaxyl
Resistant Cultivars		
Certified Seeds		
Raised Beds		
Crowned Nursery Beds		
Adequate Spacing Between Plants		
Biological Control		
Reduction in Application Rates		
Limit Frequency of Use		
Better Storage and Handling		
Crop Rotation		

Pollution Prevention Measure	Applies to Metalaxyl	Does Not Apply to Metlaxyl
Spill Clean-up and Proper Disposal		
Improved Calibration of Equipment		
Buffer Zones		
Modified Applications		
Restrictions on the Timing of Applications due to Rain		
Restrictions on use in Shallow GW Areas		
Alternative Crops		
Conservation Tillage		
Banding or Incorporation		
Integrated Pest Management		
Filter Strips		

Discussions/Thoughts/Next Steps