

The Value of Neonicotinoids in Turf and Ornamentals

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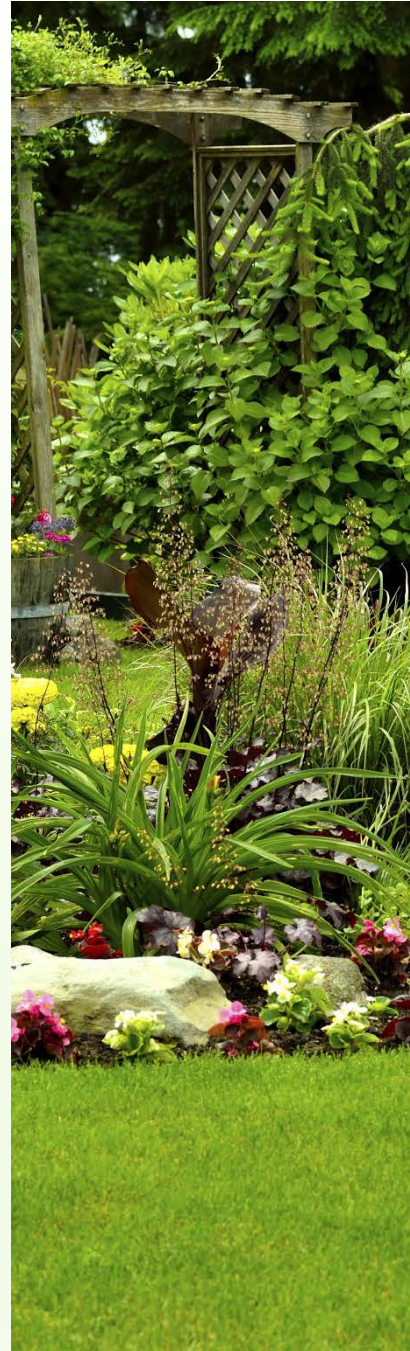
Objectives

1. Explain why establishing the value of neonicotinoids is important.
2. Briefly describe our comprehensive effort to establish value.
3. Highlight key values of neonicotinoids in the turf and ornamental industry.
4. Speculate on next steps.



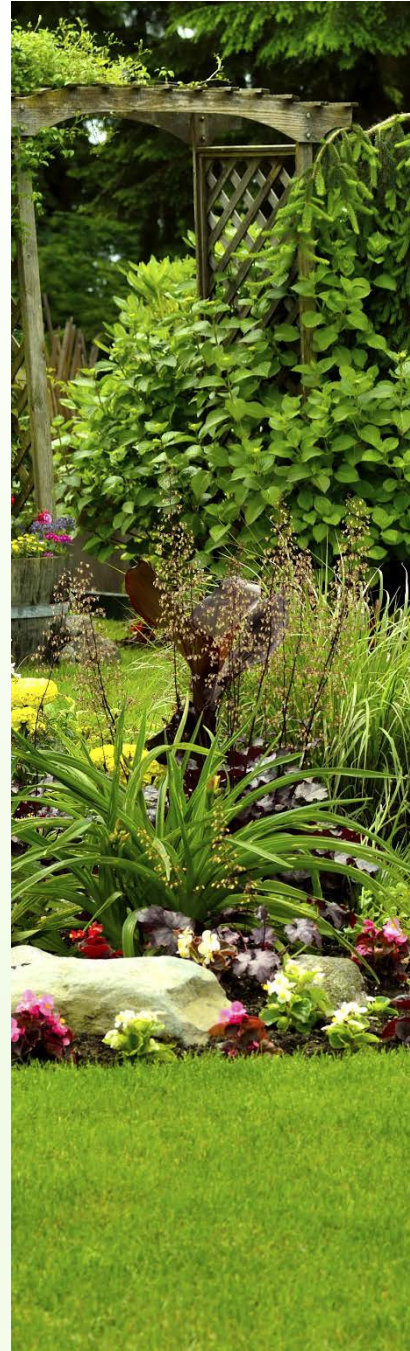
Establishing the Value of Neonicotinoids

1. Public policy – a guide to future action to achieve specified objectives – should consider both costs and benefits.
2. Media accounts have largely been on costs (perceived or real), while scientific assessments have provided mixed messages regarding costs.
3. A robust assessment of the value of neonicotinoids is lacking thereby hindering a rational discussion on how to optimize the public good.

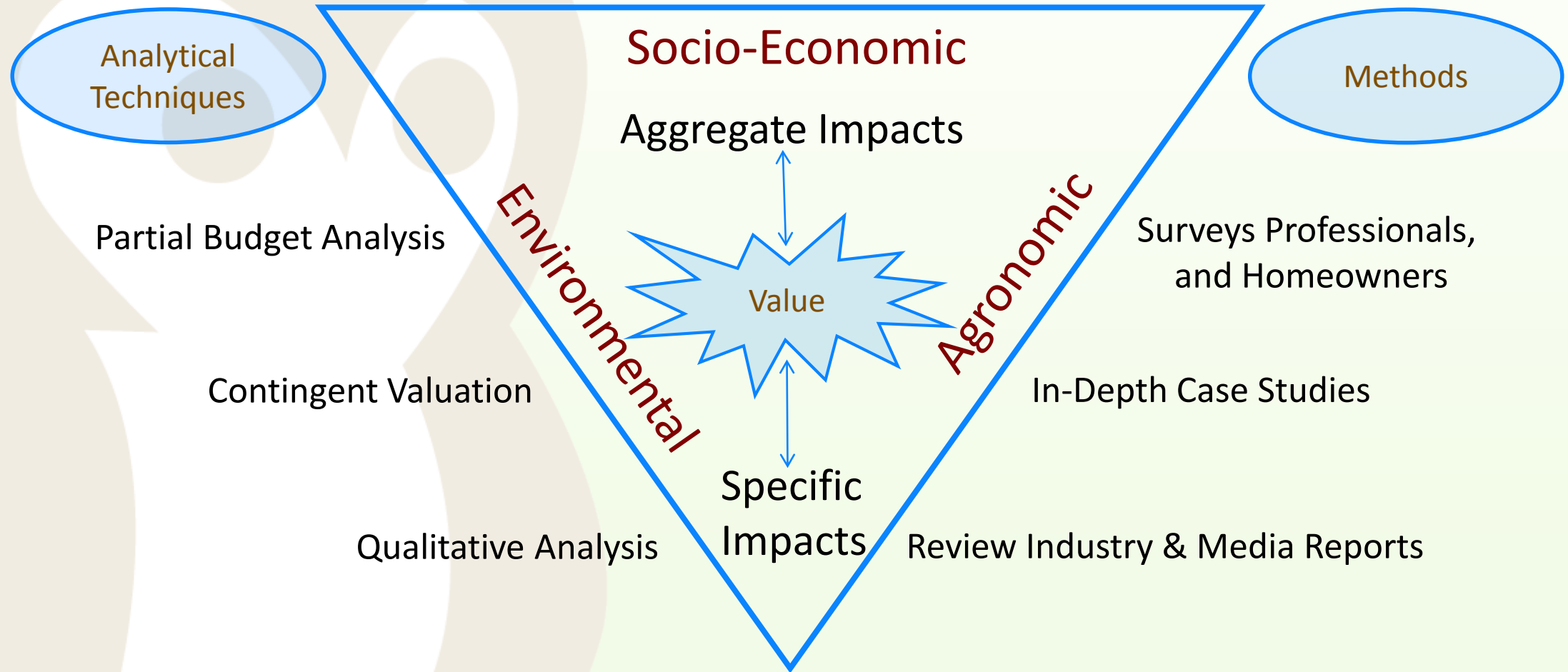


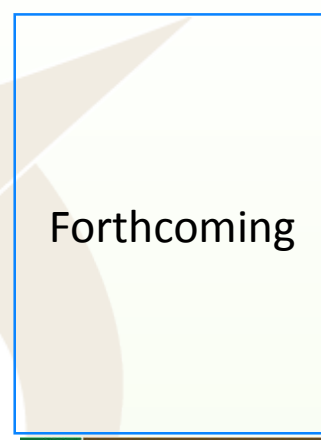
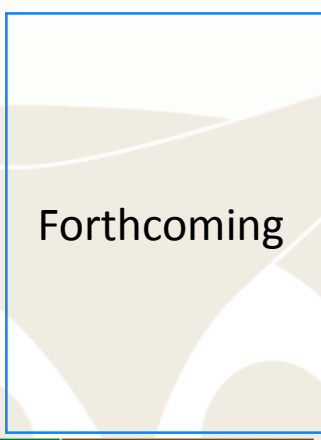
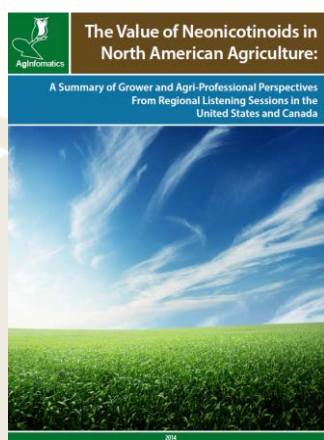
Establishing the Value of Neonicotinoids

4. A counterfactual analysis makes value apparent by asking the question, “what would happen if neonicotinoids were no longer available?”
5. Value is established by identifying, describing, and quantifying impacts, substitutions, and unanticipated consequences.
6. A comprehensive effort is required to disclose these values as part of a counterfactual analysis.



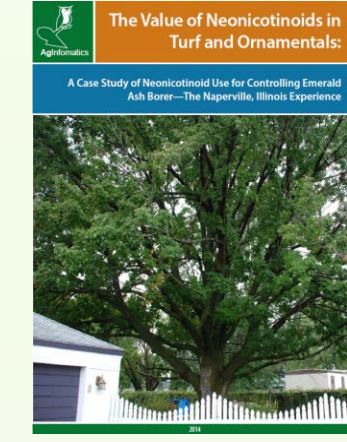
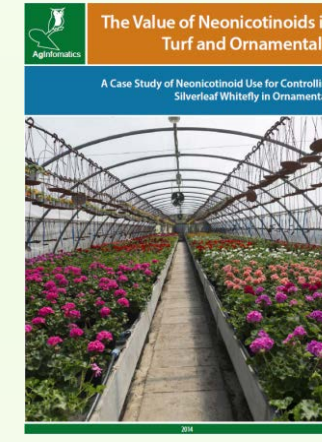
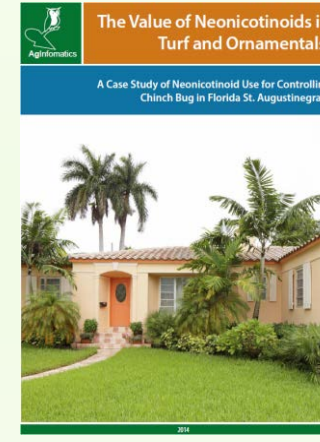
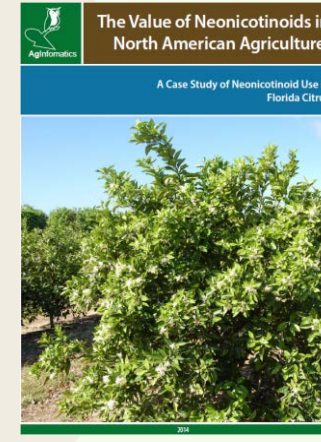
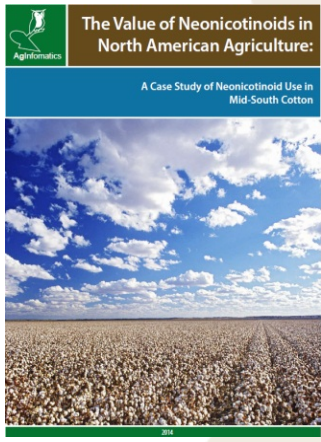
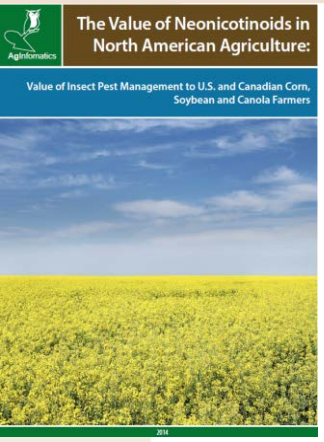
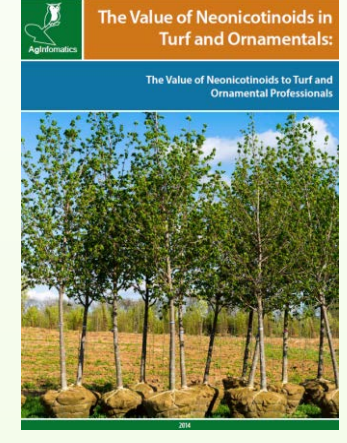
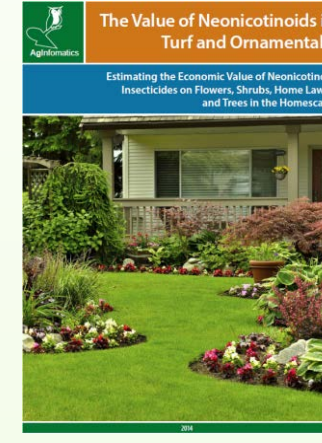
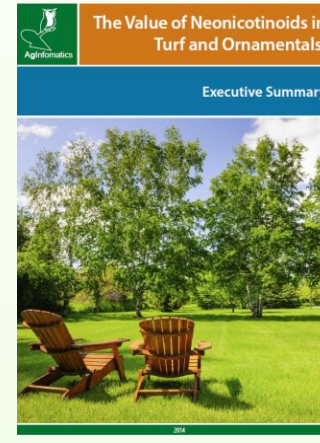
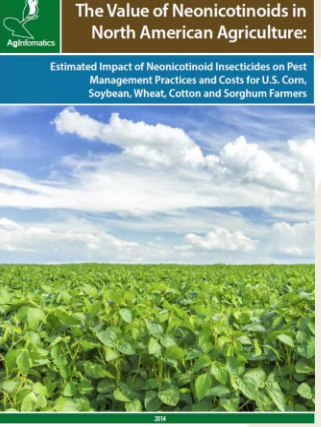
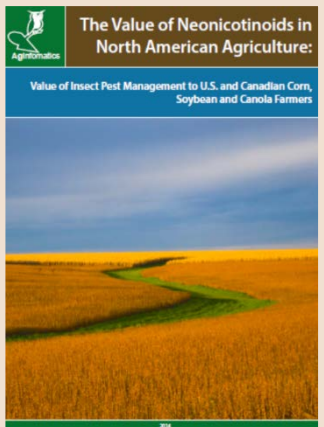
A Comprehensive Effort to a Counterfactual Analysis





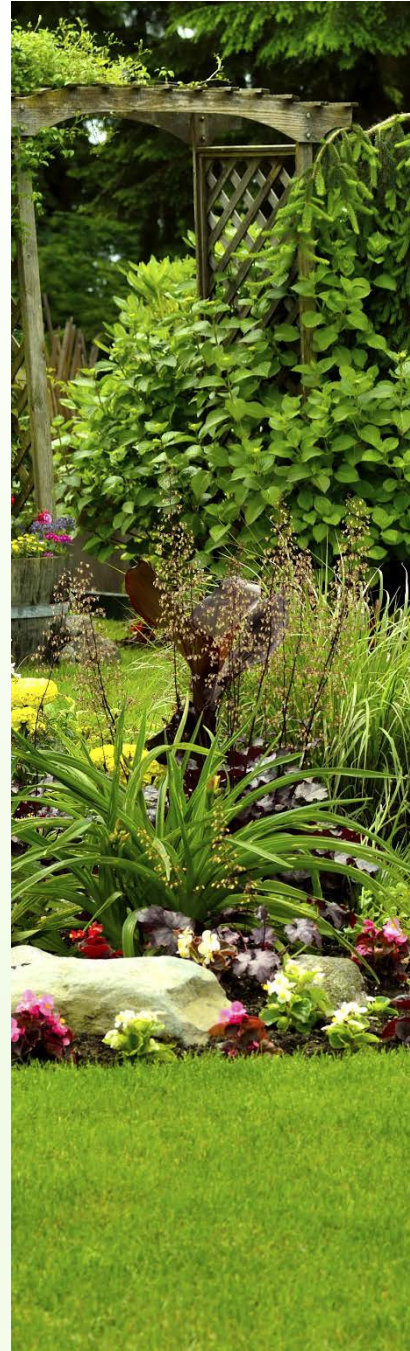
Reports on the Value of Neonicotinoids

GrowingMatters.org



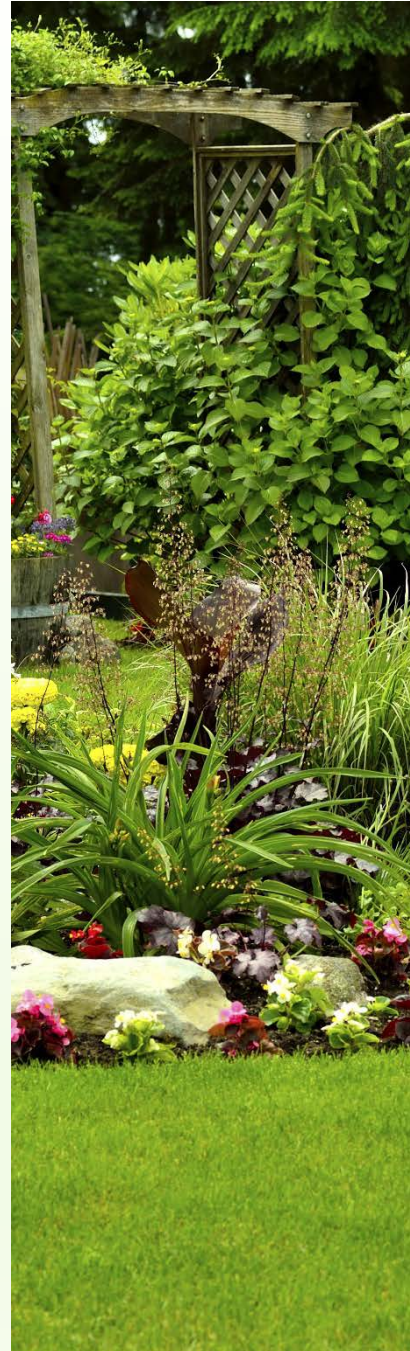
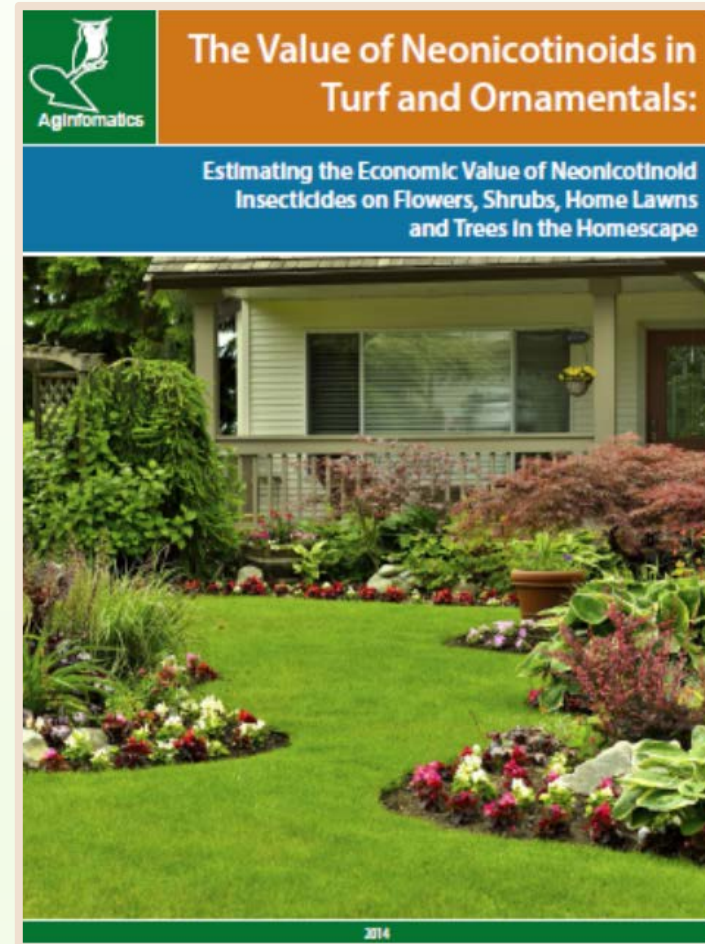
A Synopsis of Findings

- A brief description of the objectives, methods, and findings associated with the Turf and Ornamental reports.
- Those wanting more detailed data are encouraged to visit the GrowingMatters.org website.



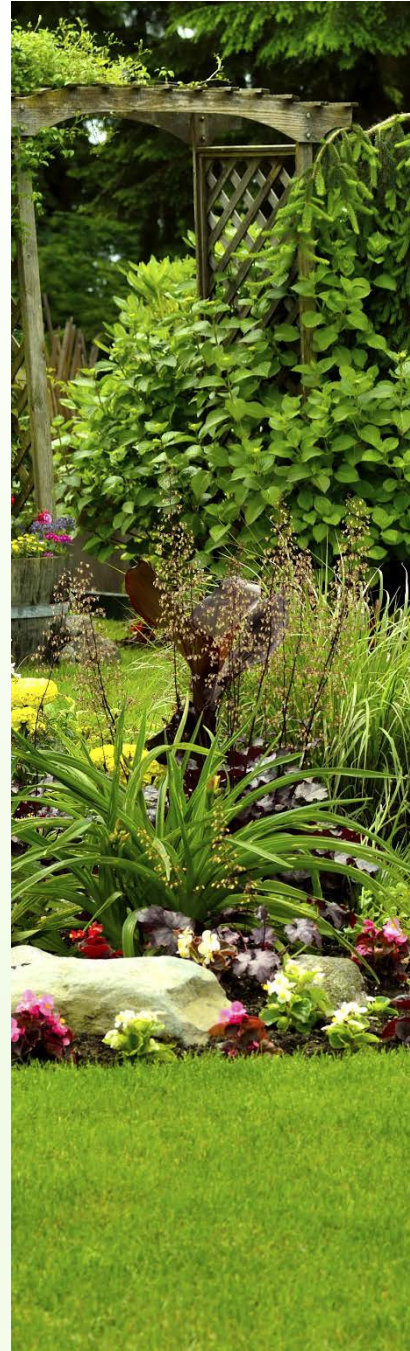
A National Survey of Homeowners

- Use Choice Experiment methods to measure homeowner attribute preferences and willingness to pay for nine different attributes of insecticides used to manage pests in the homescape.
- Respondents were asked to choose between “bundles” of attributes at different levels where price is one of the attributes.
- This method allows for determination (i.e., ranking) of the important attributes, and the dollar value associated with them.



Sampling Statistics

- Flowers & Shrubs – 6,086 contacted, 5,866 willing to participate, 5,800 with flowers or shrubs in yard, 2,837 applied insecticides, and 2,698 completed survey.
- Lawn – 4,882 contacted, 4,664 willing to participate, 4,624 had lawns, 2,678 applied insecticides, and 2,268 completed survey.
- Tree – 8,731 contacted, 8,530 willing to participate, 8,461 with trees in yard, 3,041 applied insecticides, and 2,506 completed survey



Attributes of Insecticides

- Effectiveness of control (very high, high and medium)
- Number of applications required (1 time, 2 to 3 times, 4 or more times)
- Safety to humans, pets and wildlife (excellent, very good, or good)
- Safety to bees (high, medium, or low)
- Prevention or curative control, or both
- Sold in combination with fertilizer (yes and no)
- Flexibility in application methods (soil, foliar spray, or both)
- Speed of control (fast (in hours), medium (in days), or slow (in weeks))
- Cost per year.



Summary of Values for Attributes

Top 3 Attributes

Most Important

Flowers & Shrubs
Prevents & cures
insect pest problems

DIY Both Pros
\$40 \$69 \$142

2nd Most
Important

Very good safety to
humans, pets &
wildlife

DIY Both Pros
\$35 \$85 \$81

3rd Most
Important

Medium safety to
bees

DIY Both Pros
\$27 \$35 \$64

Lawn

Very high level of
effectiveness

DIY Both Pros
\$54 \$135 \$266

Very good safety to
humans, pets &
wildlife

DIY Both Pros
\$51 \$118 \$174

Prevents & cures
problems

DIY Both Pros
\$49 \$116 \$160

Trees

Very high level of
effectiveness

DIY Both Pros
\$51 \$119 \$195

One application
required

DIY Both Pros
\$43 \$53 \$76

Very good safety
to humans, pets &
wildlife

DIY Both Pros
\$42 \$83 \$146



DIY = Do It Yourself, Pro = Professional, Both = DIY and Pro methods of application

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Neonicotinoids Versus Other Insecticides on the Market

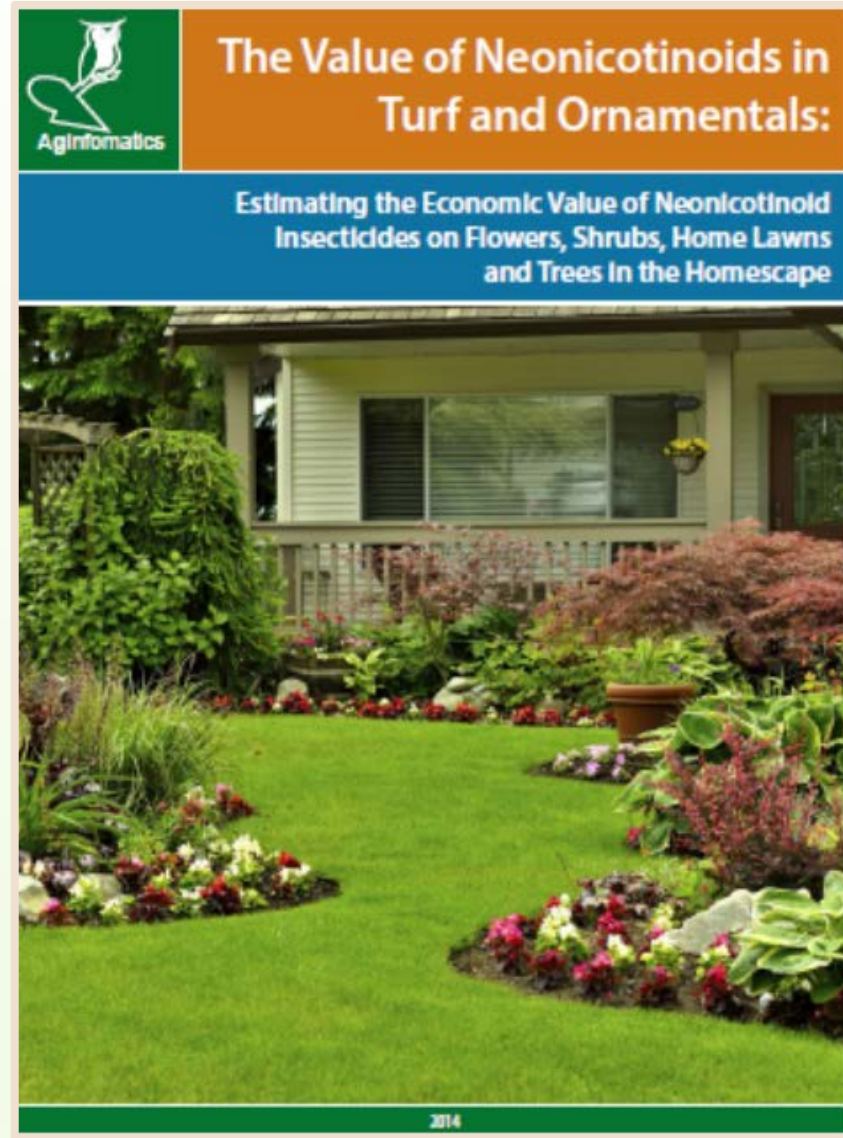
- \$105 per year more on average for neonicotinoid insecticides than other insecticides for flowers or shrubs.
- \$136 per year more on average for neonicotinoid insecticides than other insecticides for home lawns (except for chlorantraniliprole).
- \$84 per year more on average for neonicotinoid insecticides than other insecticides for trees (except for emamectin).

One can think of these as premiums the homeowner is willing to pay for an insecticide's effectiveness, safety to humans, pets and wildlife, and with curative and preventive properties.



The Assessment of Professionals

- Survey of members of four professional associations.
- Measure current insecticide use and changes without neonicotinoids.
- Probable impacts on business without neonicotinoids



The Survey

- Members of AmericanHORT, PLANET, Society of American Florists, and the Tree Care Industry Association were asked to participate in a on-line survey.
- There were 750 viable responses across the three week period the survey was “open” for participation.
- The main area of business for respondents was trees (25%), greenhouse (24%), lawn (19%), nursery (15.5%), and landscape ornamentals (15.5%).



Importance of Factors in Insecticide Selection

| Factor | Not Important | Somewhat Important | Important | Very Important |
|---------------------------------|---------------|--------------------|-----------|----------------|
| Insecticide cost | 6.4% | 42.7% | 37.7% | 13.2% |
| Protecting quality of the plant | 0.5% | 1.6% | 20.3% | 77.7% |
| Consistent pest control | 0.7% | 3.4% | 22.0% | 73.9% |
| Convenience | 3.0% | 25.5% | 47.6% | 23.9% |
| Time and labor | 2.1% | 15.3% | 50.2% | 32.4% |
| Safety to applicator | 0.5% | 4.3% | 21.6% | 73.9% |
| Safety to customer | 1.8% | 4.1% | 22.0% | 72.8% |
| Pollinator safety | 6.6% | 18.1% | 36.1% | 39.2% |



Acceptable Alternatives to Neonicotinoids

- 14% said there were no acceptable alternatives to neonicotinoids.
- 59% said that there are not enough acceptable alternatives to neonicotinoids.
- 27% said there was enough or more than enough acceptable alternatives to neonicotinoids.

These percentages varied by industry with lawn care more likely to see no alternatives while greenhouse is more likely to see alternatives.



Impact on Company Income

| Impact | Greenhouse | Nursery | Lawn | Landscape Ornamentals | Trees |
|------------------------------|------------|---------|------|--------------------------|-------|
| Loss would reduce income | 50% | 65% | 68% | 43% | 52% |
| Loss would not impact income | 42% | 27% | 21% | 44% | 31% |
| Loss would increase income | 8% | 8% | 11% | 13% | 16% |



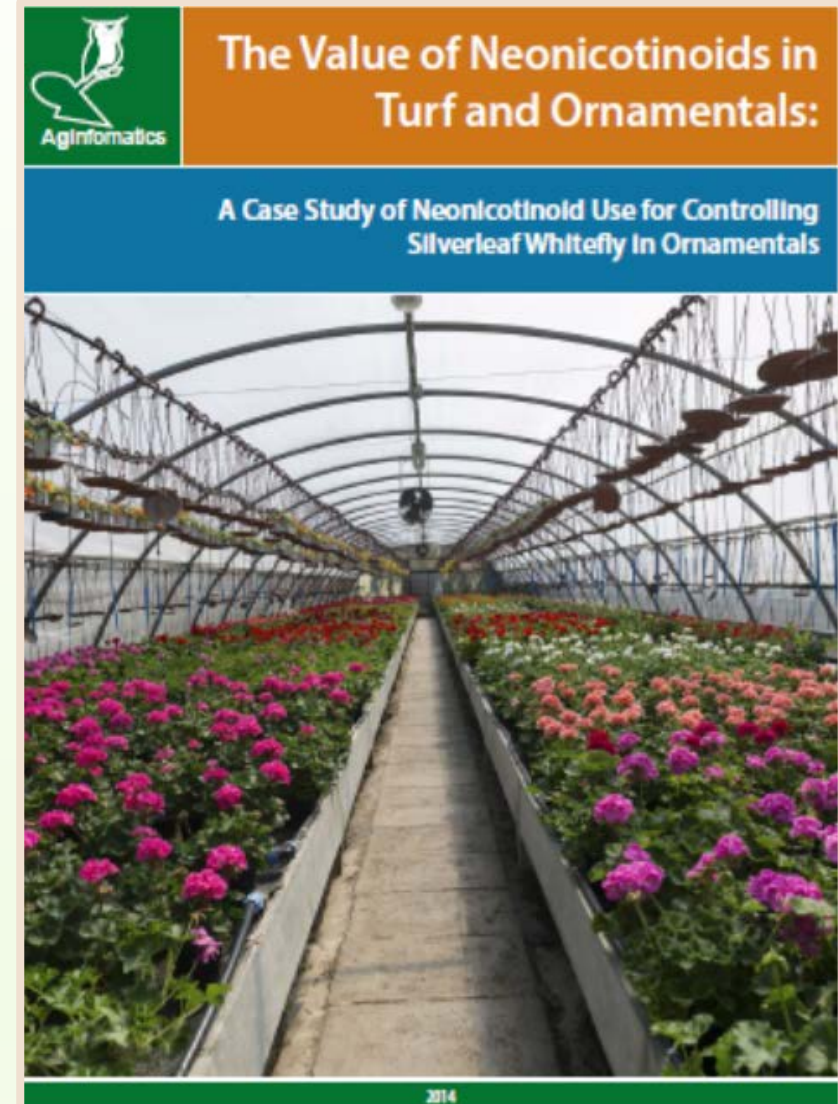
Anticipated Business Impacts

| Business Factor | Large Decrease | Decrease | Stay the Same | Increase | Large Increase | Don't Know |
|--|----------------|----------|---------------|----------|----------------|------------|
| Labor (records, training, applications) | 0.3% | 0.5% | 28.2% | 41.4% | 25.5% | 4.1% |
| More frequent applications of alternatives | 0.3% | 1.9% | 15.6% | 39.1% | 38.5% | 4.6% |
| Customer satisfaction with product or services | 9.9% | 36.6% | 31.7% | 6.3% | 3.6% | 11.8% |
| Ability to manage pest resistance | 9.5% | 34.4% | 29.3% | 9.5% | 4.5% | 12.8% |
| Ability to practice IPM | 5.8% | 26.3% | 39.5% | 13.4% | 7.9% | 7.1% |



Case Study - Whitefly

- Neonicotinoids are critical for managing the silverleaf whitefly in greenhouse/nursery crops.
- Neonicotinoids used in resistance management.
- Major tool to prevent spread invasive and quarantine pests.
- Systemic property of neonicotinoids very beneficial to grower operations.



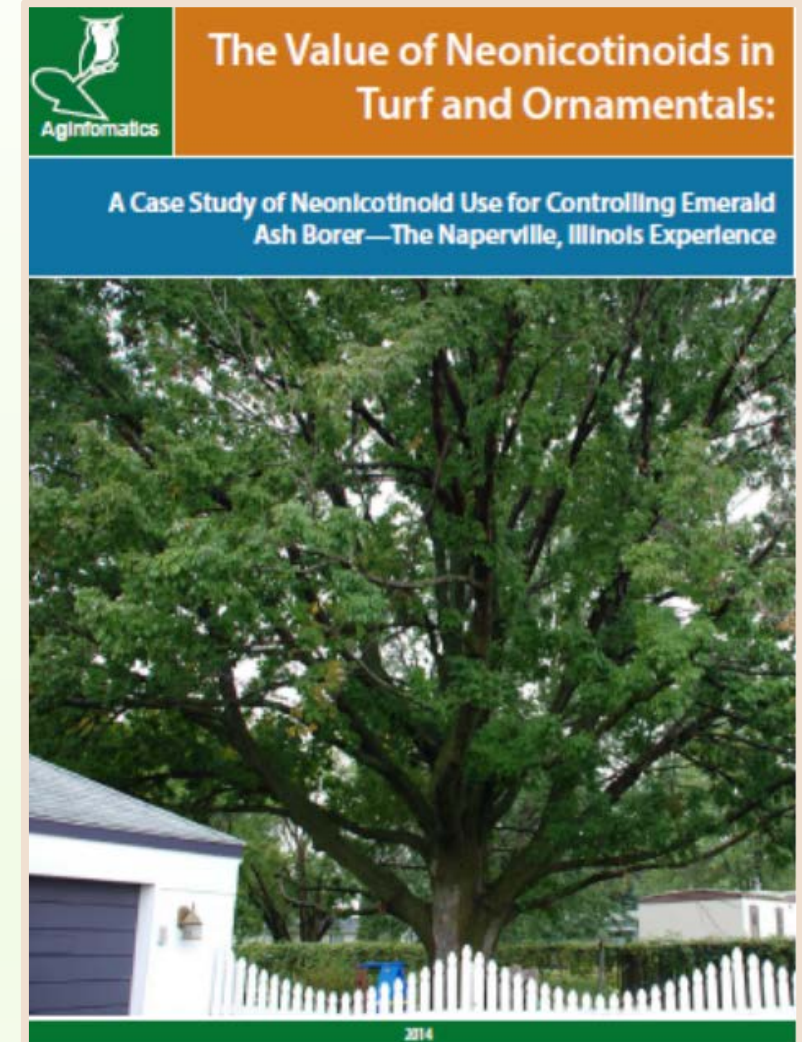
Impacts of Neonicotinoid Loss on Greenhouse/Nursery Industries.

- Loss of plant material
- Increased use of older insecticides & worker exposure
- Faster development of pest resistance
- Inability to control whitefly with spread to other crops
- Disruption of plant trade
- Higher production costs



Case Study - EAB

- The Emerald Ash Borer (EAB) is a destructive invasive that is destroying ash trees.
- There are three options; 1) remove trees now, 2) remove dead trees, or 3) treat to control EAB.
- Local governments and homeowners face high costs with options 1 & 2 (e.g., \$1500 per tree).
- Naperville, IL has demonstrated that EAB can be managed in cost-effective way with citizens.



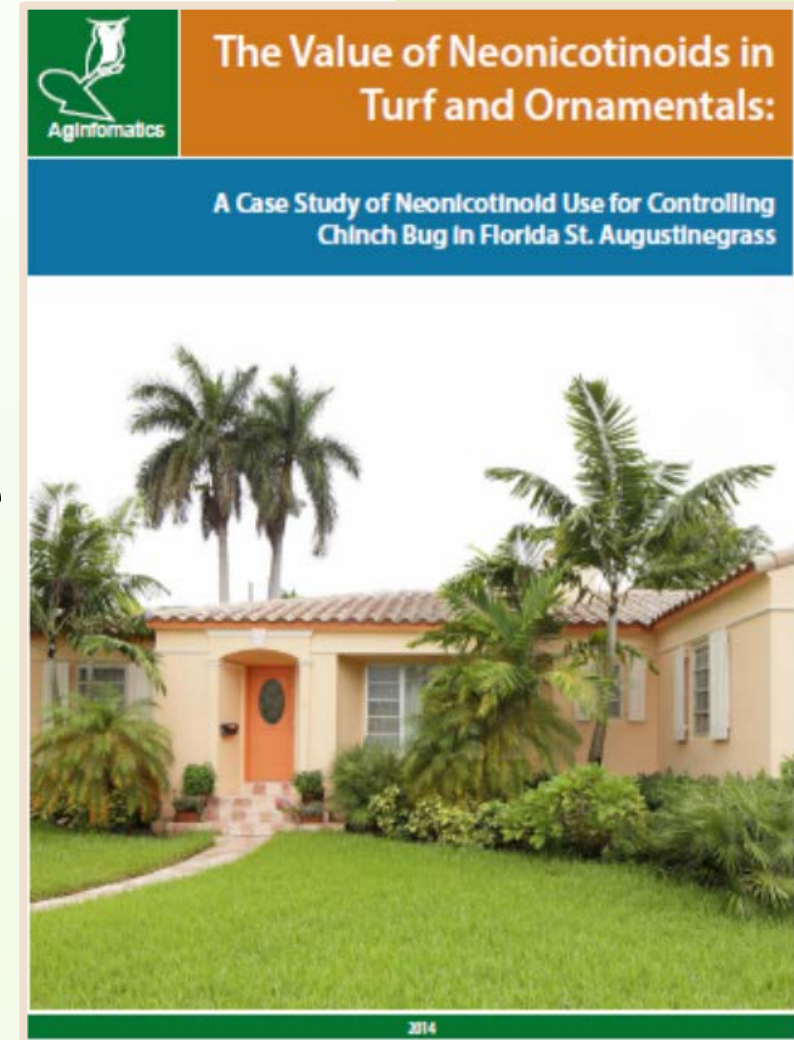
Lessons From Naperville

- Without neonicotinoids the removable option would have been followed because alternatives tend to be more expensive and may require certified applicators.
- Involving citizen groups in learning about the options was critical to the final decisions by elected leaders.
- The citizens have maintained property values and the environmental amenities associated with a urban forest.



Case Study – Chinch Bug

- Chinch bugs destroy St. Augustinegrass in Florida and southern U.S., and they have developed resistance to other insecticides.
- There are few if any other options for controlling this pest, and significant costs would accrue to the lawn care industry and homeowners.
- There are safety concerns for both customers and applicators if neonicotinoids are lost.



Summary

- The Green Industry is an important part of our economy, and professionals, homeowners, and local citizens have informed us of the vital value of neonicotinoids to that industry.
- The Green Industry is a service industry and is dependent on customer satisfaction. Contributing to this relation is one of the highest values of neonicotinoids.
- Neonicotinoids have multi-dimensional value.



Questions?

