

# **Biopesticide Market and Opportunities in North American.**

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## Market Characterization

- **Publicly available data**
- **Shared private reports**
- **IR-4 Biopesticide database survey-  
Label database**



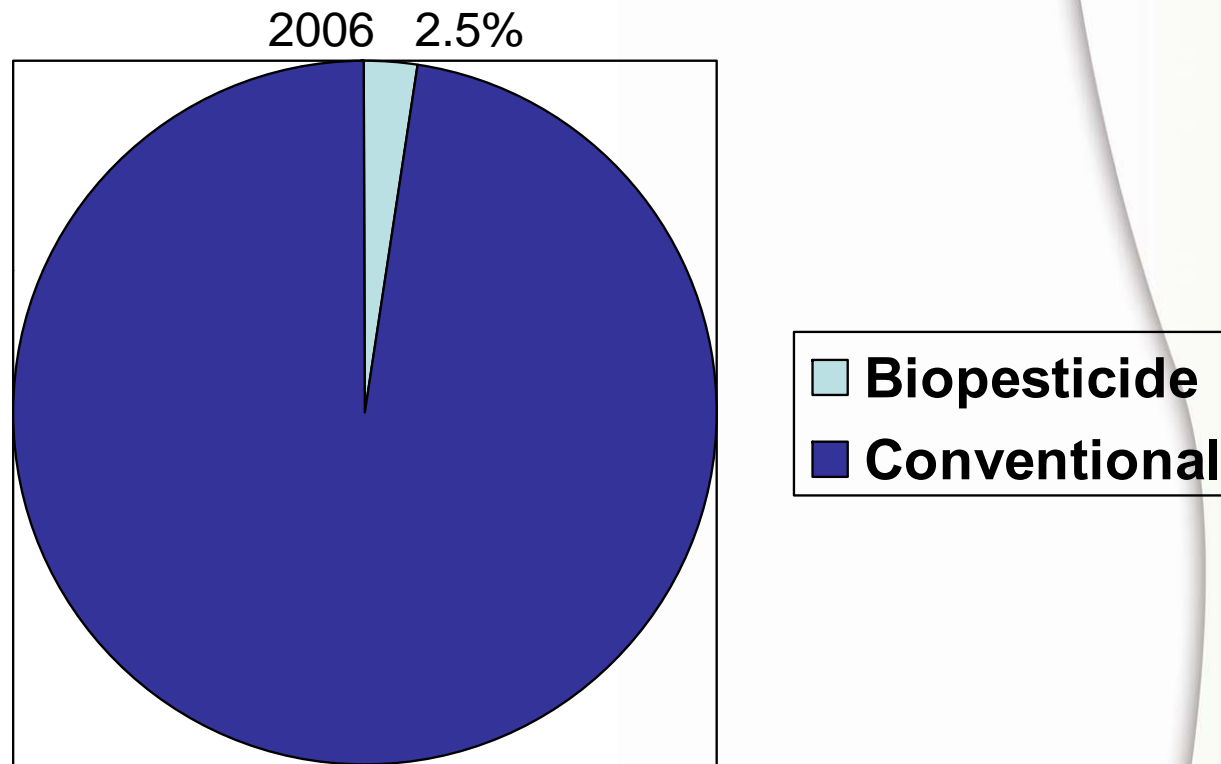
## Regulatory Definition

### What is a biopesticide in North America ?

- **Microbial**- Fungi, bacteria, virus, Not inoculants
- **Biochemical** – Pheromones, plant extracts-  
Canada new set regulations same as U.S.
- **Transgenic** (Plant incorporated Bt's) Canada  
under Seeds Act – Not included in data  
presented today
- Doesn't include beneficial insects or nematodes



## Comparison – Biopesticide to total N.A. Market



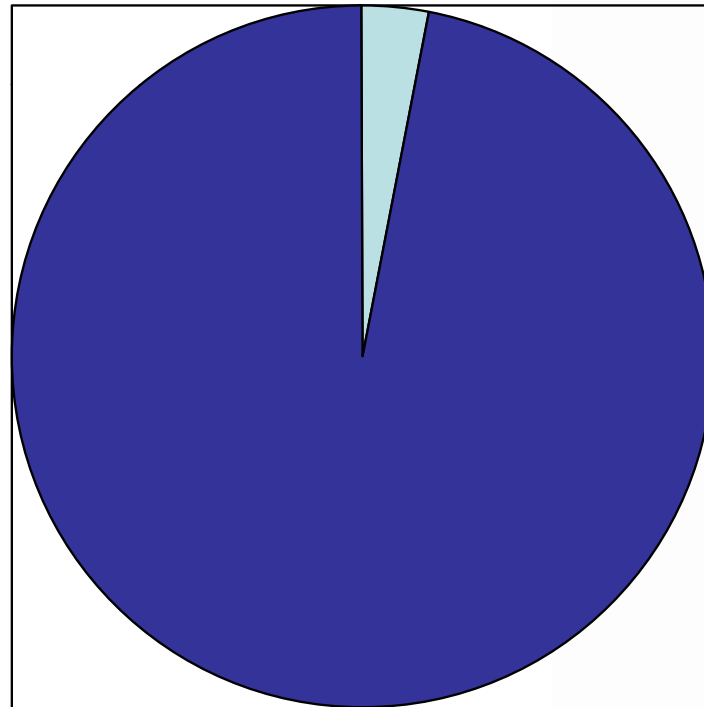
2.5% = 260 Million

Predicted 4% by 2010



## Comparison – Biopesticide use in N.A. Market

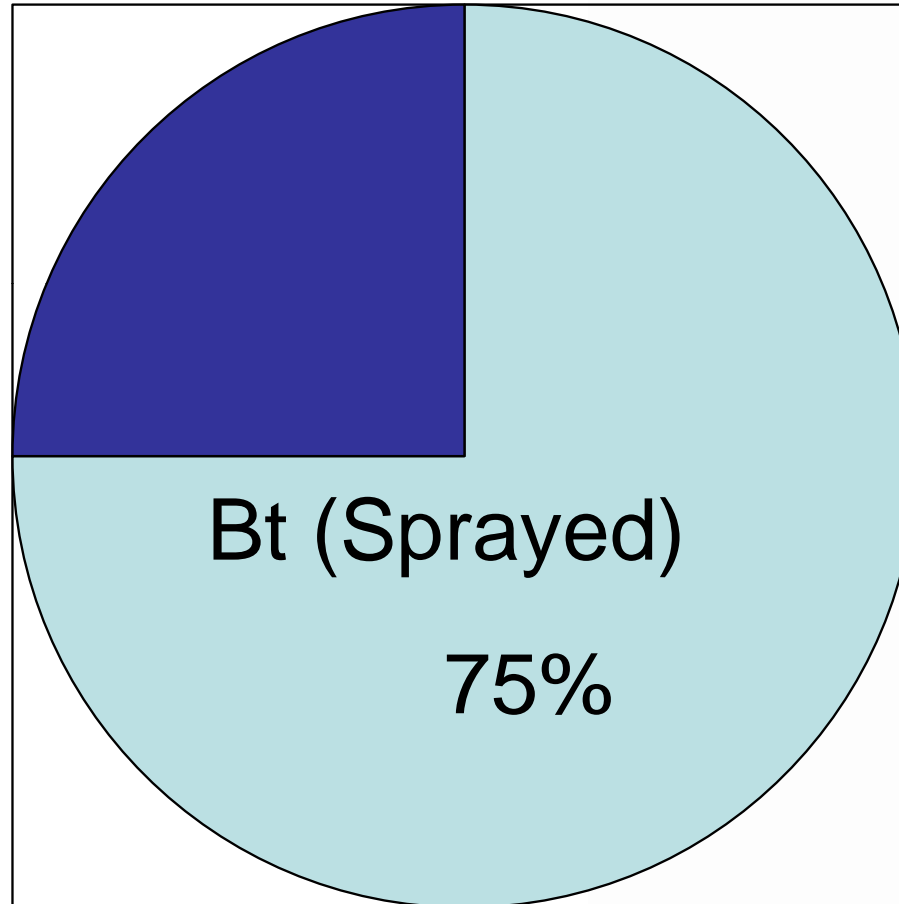
3% used in organic agriculture



 **Organic**  
 **Conventional**



## Bt to the total Biopesticide use N.A. Market



## Label Database Search Criteria

- **Crop** (Commercial/Residential, Food /Non-Food)
- **Pest**
- **State**
- **Option- Limit to Organic products**



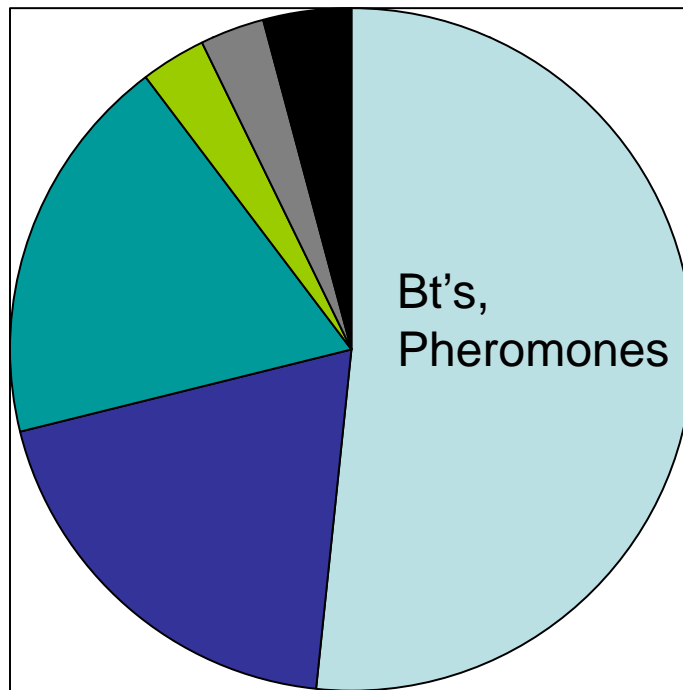
## Label Database Output

- **Trade names**
- **Labels- PDF or link**
- **EPA Registration Number**
- **Company name, contact person, email, phone, website.**
- **REI, PHI**
- **Organic status**
- **Active ingredient**
- **Efficacy (blank-New Grant)**



## Label Database facts- US

**Initial 469 labels- EPA Registered.  
230 products actively marketed**



- Insecticides
- Fungicides
- Plant Growth Regulators
- Herbicides
- Nematode
- Animal



## Database-Crops with the most labeled products

<b>Crop</b>	<b>Number of biopesticide labels registered</b>
<b>Grapes</b>	<b>27</b>
<b>Tomato</b>	<b>25</b>
<b>Pepper</b>	<b>22</b>
<b>Potato</b>	<b>22</b>
<b>Lettuce</b>	<b>14</b>



## Database Statistics

- **User statistics - Crop, Pest, State**  
**Front end - Sample size >8,000**

**Survey Statistics- Farm size,  
Conventional product replacement,  
intention of using database output**  
**Back end Sample size = 49**



## Database Statistics

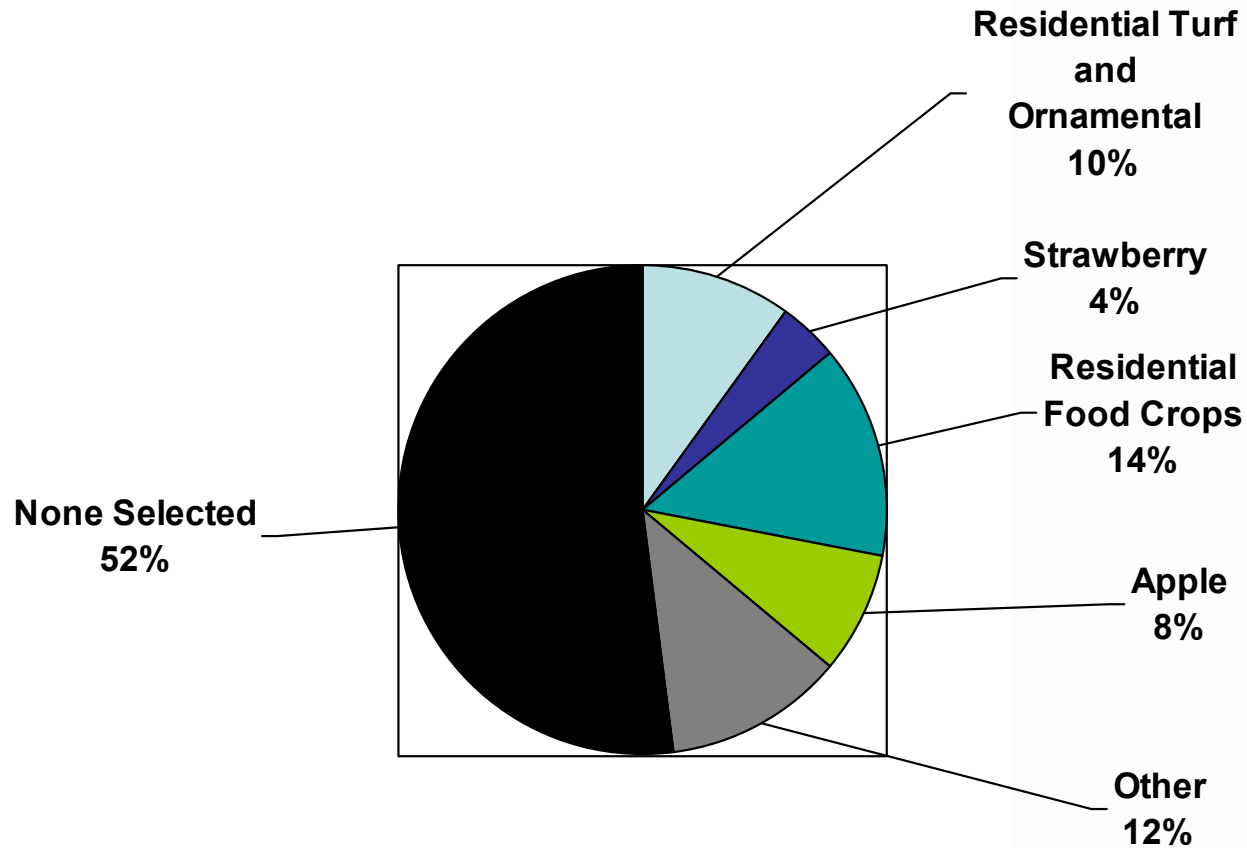
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## Use Statistics by Crop

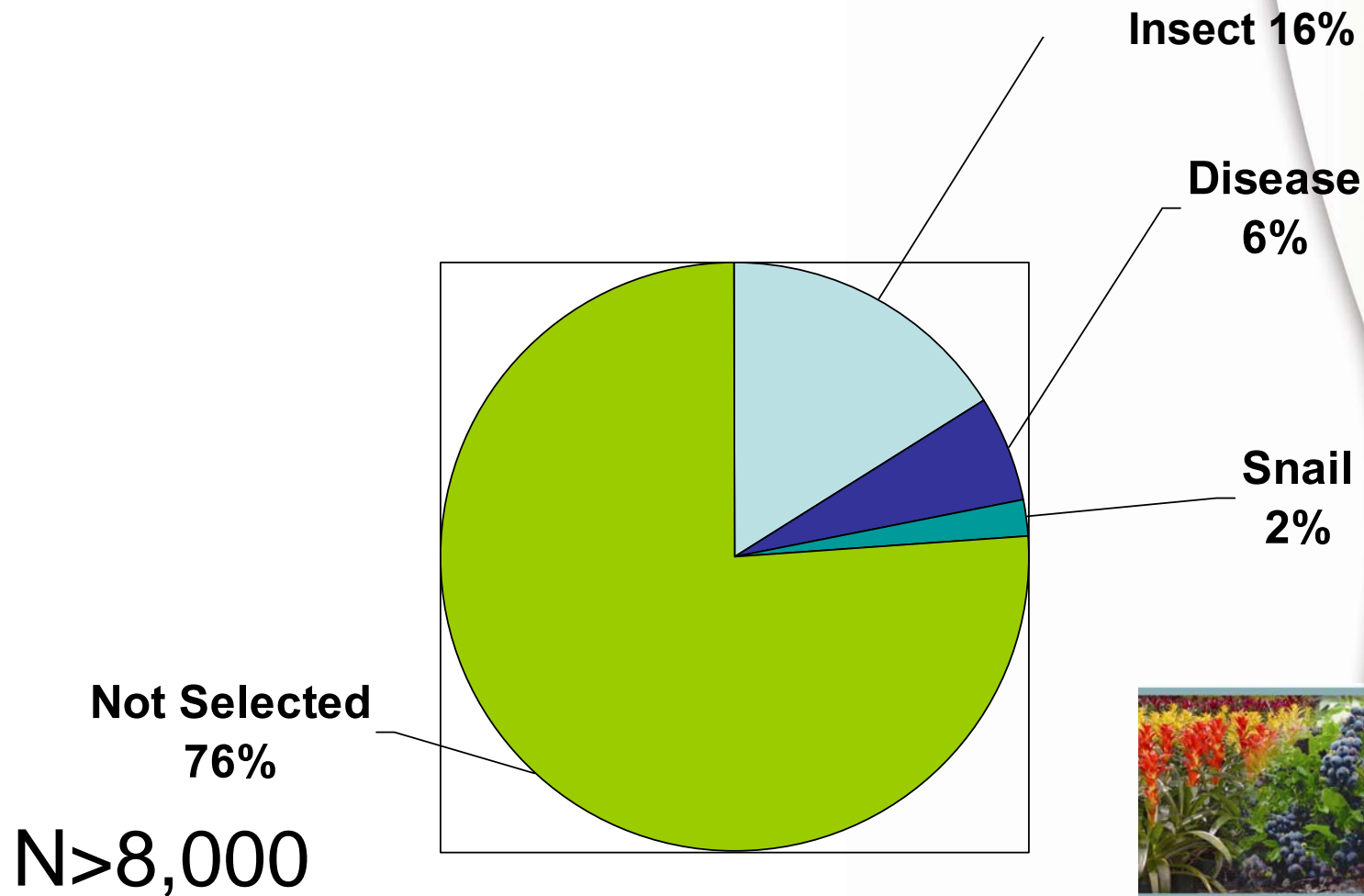
Residential total = 24%



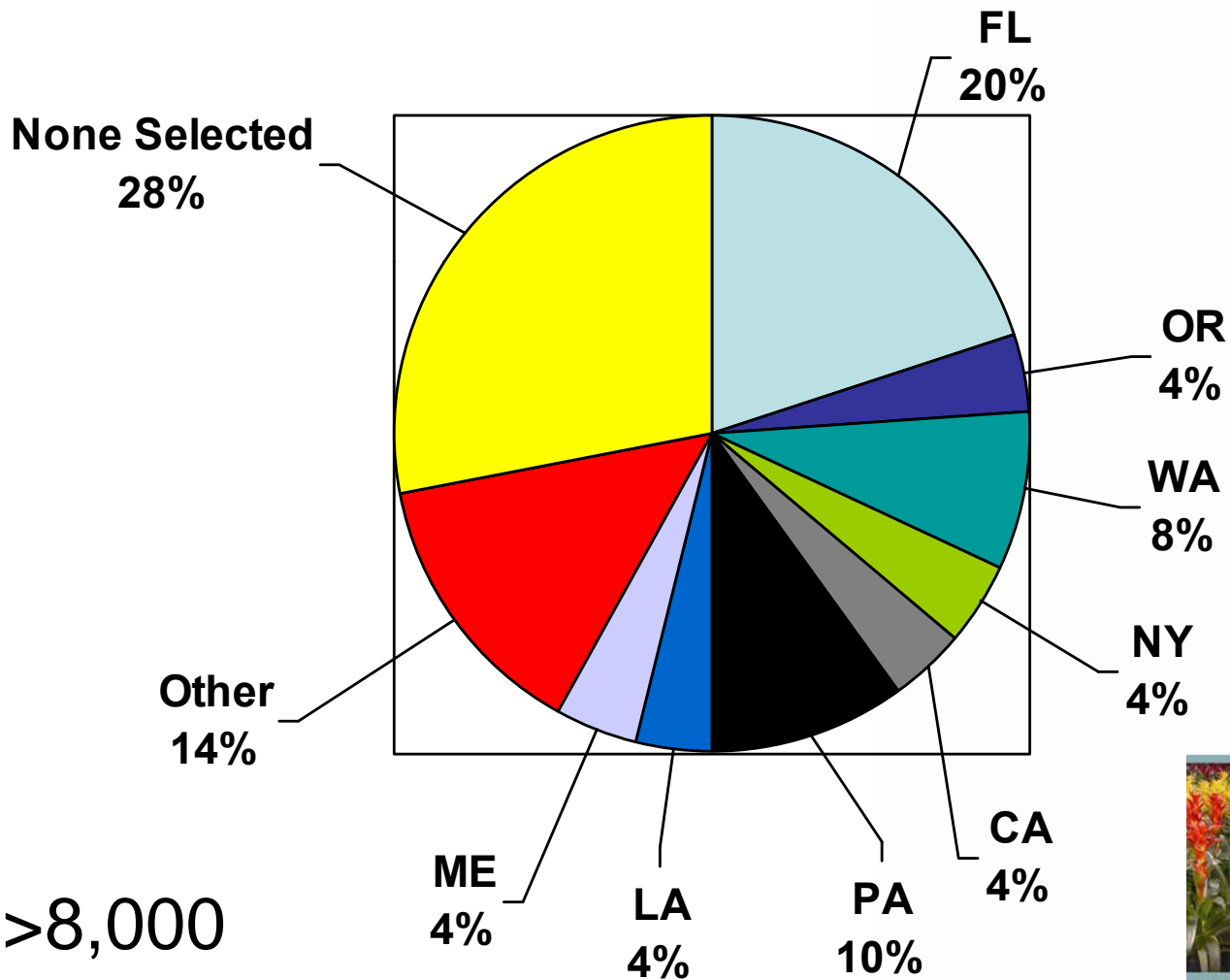
N>8,000



## Use Statistics by Pest



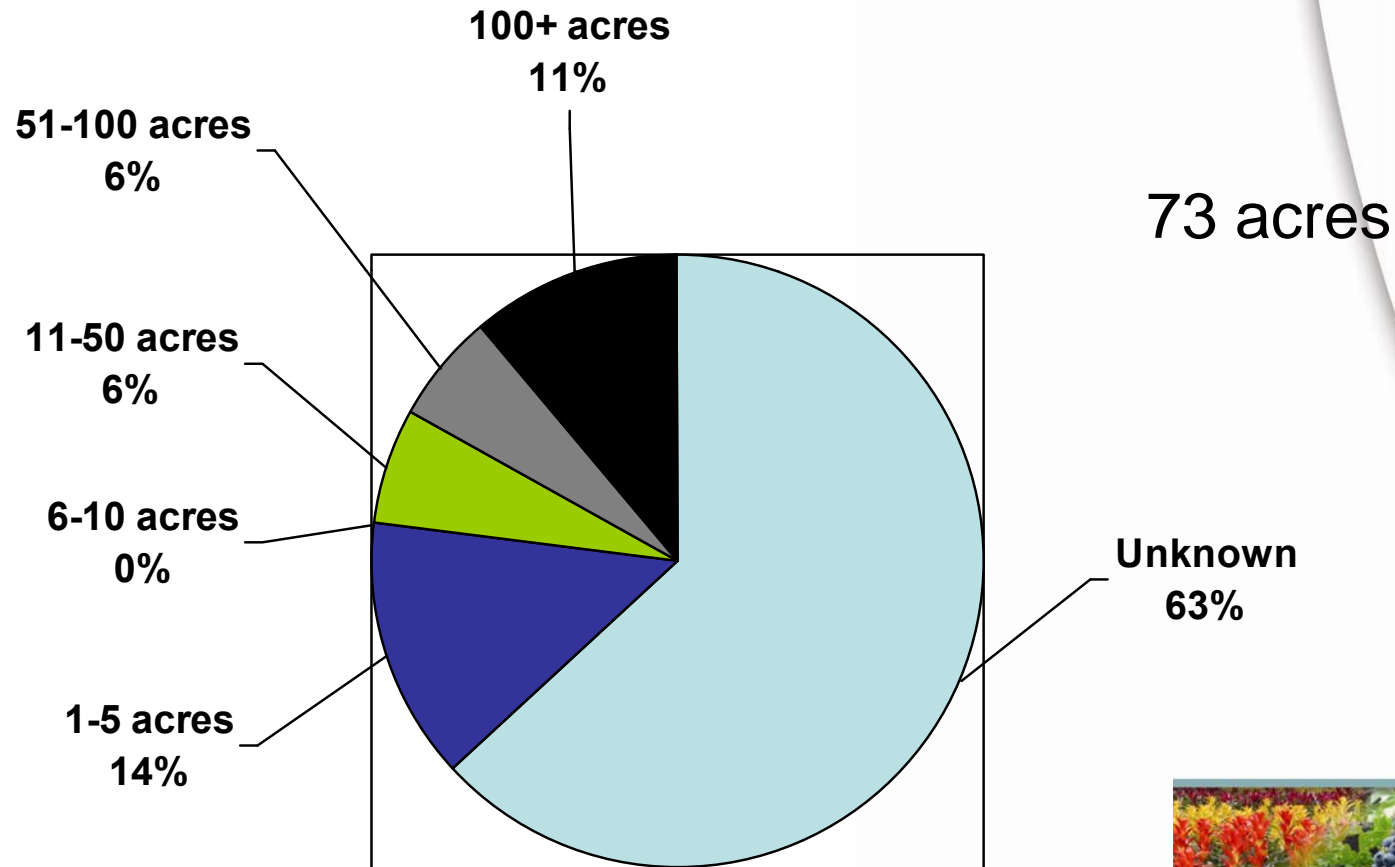
## User Statistics by State



N>8,000



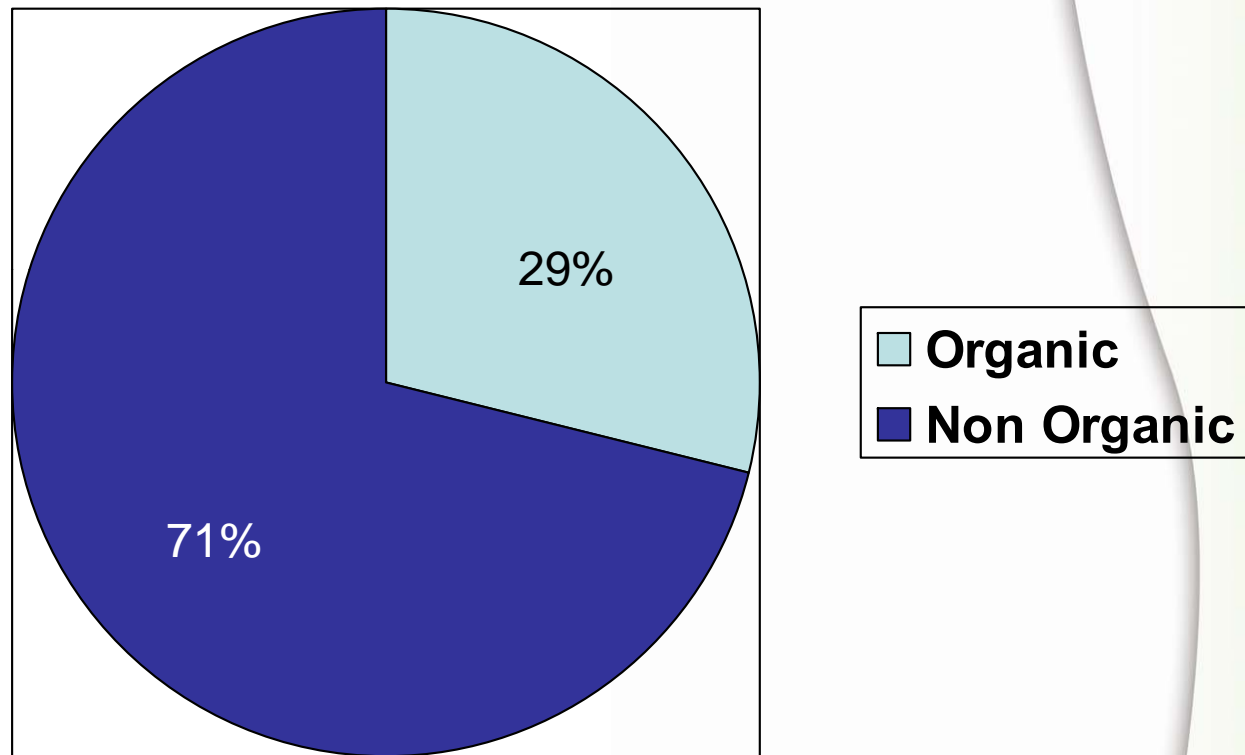
## Survey - Farm Size



Farm size X hits = Impact >600,000 acres



## Use Statistics - Limited to Organic Products

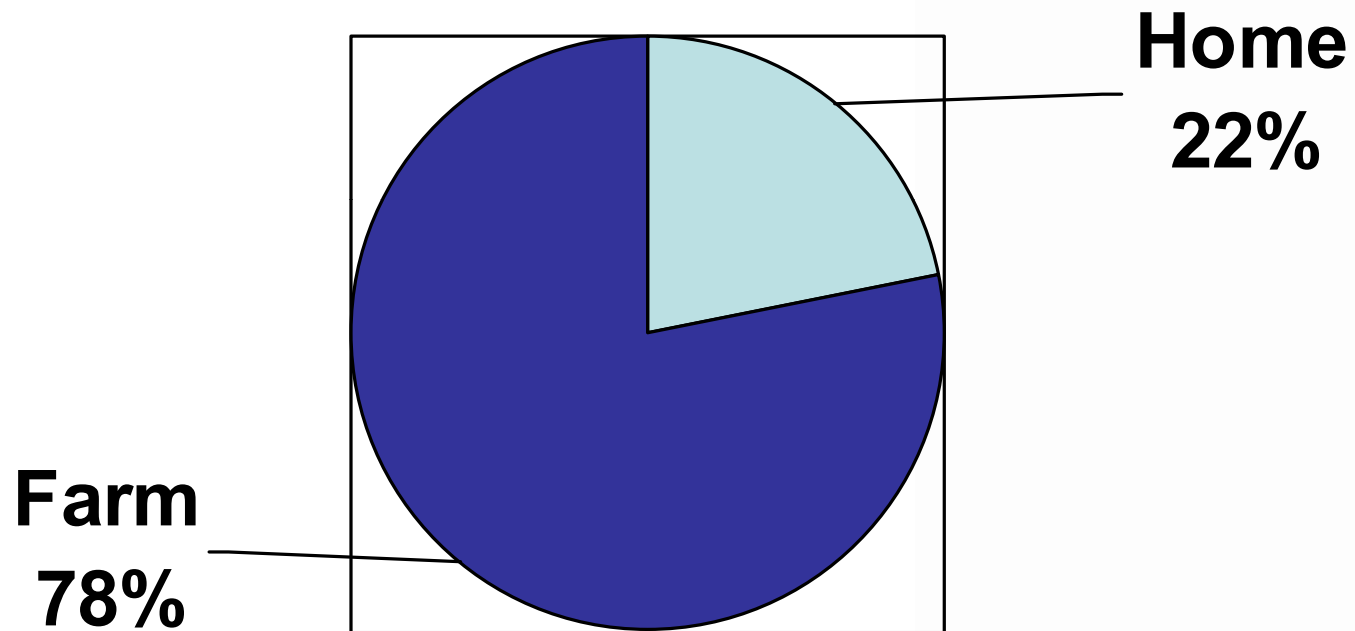


Compare: Organic production specialty crops 3-6%.

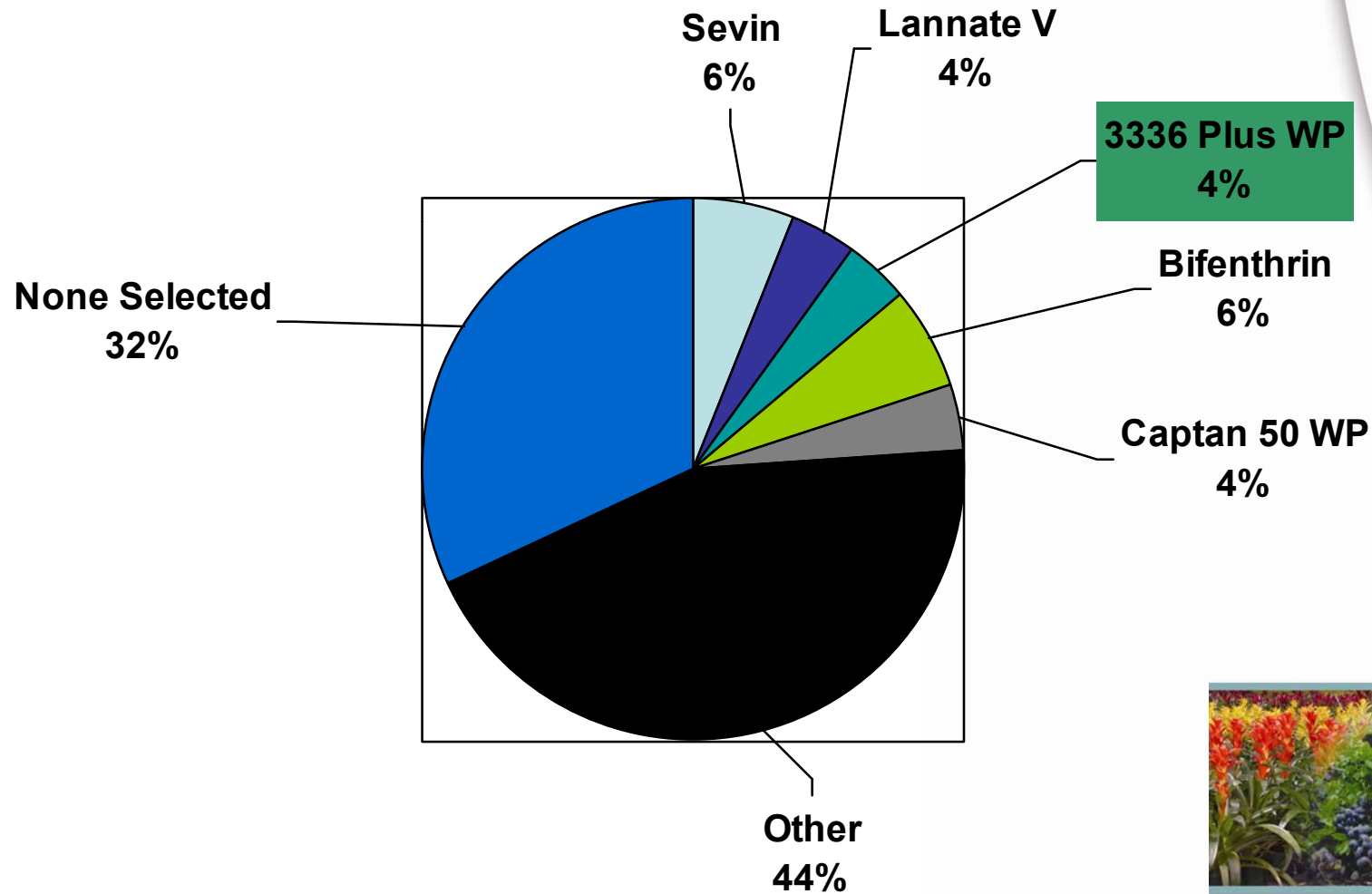
Database fact: 16% of biopesticide products are organic



## Survey - User Profile

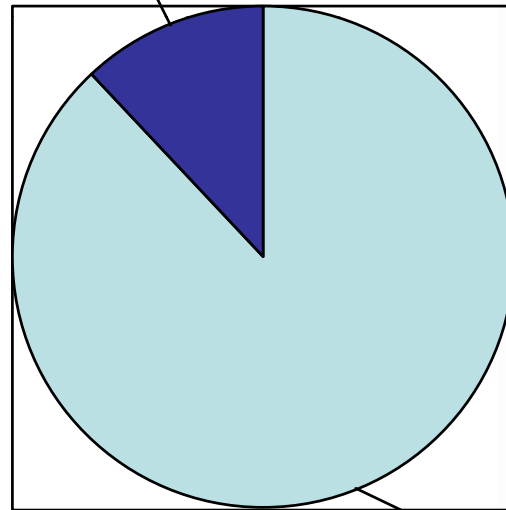


## Survey - Products Normally Used



## Will Use or Recommend Biopesticide

**No**  
**12%**



**Yes**  
**88%**



Thank you !

- **EPA Region 2 –  
Grant funding support project**
- **Registrants – Information and  
letters of support**
- **Student worker - Brian Switek**



## New Product Registrations

- **US Environmental Protection Agency (EPA)**
- **Canada-Pest Management Regulatory Authority (PMRA)**



## 2007 EPA Registrations USA

Active Ingredient	Use	IR-4 submission to EPA	IR-4 funded efficacy studies
ZYMV-WK	Virus	√	
TMGMV EUP	Herbicide <i>S. viarum</i>	√	
Aspergillus flavus AF36	Aflatoxin pistachio	√	√
Chenopodium ambrosioides	insecticide		√
Chitosan hydrolysate	Bactericide fungicide	√	

Green = Pending



## 2007 EPA Registrations USA

Active Ingredient	Use	IR-4 submission to EPA	IR-4 funded efficacy studies
Quillaja extract	Nematicide		√
Aspergillus flavus AF36	Aflatoxin-corn	√	√
Salicylic acid	Bactericide fungicide	√	
Viral coat protein	Plum pox resistance	√	

Green = Pending



## Regulatory support – AAFC Canada

- **Agriphage** **Work underway**
- **BlightBan A506** **Sub. # 2007-1394**
- **BlightBan C9-1** **Reg. # 28392**
- **BioSave** **Work underway**
- **BloomTime** **Reg. # 28436**
- **Botanigard ES / 22WP** **Sub, # 2006-0696 & 0697**
- **Contans WG** **Sub. # 2007-4323 & 4328**
- **Messenger STS** **Work underway**



## Regulatory support – AAFC Canada

- **Met-52** [Sub. # 2006-4033 & 4035](#)
- **Prestop** [Sub. # 2006-2302](#)
- **Rhapsody / Serenade** [Reg # 28626-28629, 28549](#)
- **Root Shield**  
(Label expansion subm.) [Sub. # 2006-7124 & 6806](#)
- **Sonata** **Work underway**
- **Surround** [Reg. # 28436](#)



## Opportunities- Unmet needs

- IR-4 Food Use  
Workshop- National  
prioritization process-  
Growers, Research,  
Extension



## 2008 Grant Priorities

- **Greenhouse grown vegetables - Biopesticides with zero day PHI**
- **All thrips ( especially chilli thrips) management with bioinsecticides**
- ***Phytophthora capsici* control with biofungicides**
- **Citrus canker, greening and *Septoria citri***
- **Potato tuber moth management**
- **Integrated biopesticide systems for replacement of Azinphos-methyl.**
- **Weed management in organically grown crops.**
- **Management of varroa and tracheal mite in honeybees.**
- **Postharvest pest management to solve export residue concerns.**



## 2008 Priorities- Continued

- **Utilization of biopesticides in high profile or environmental concerns(Childhood dietary concerns, urban-farm interface, farm-natural area interface, etc.). *Primarily Demonstration Stage***
- **Black Rot in Eastern grapes that are grown organically.**
- **Ascochyta complex fungal diseases, Sclerotinia or white mold in peas, lentils, and chickpeas.**
- **Downy mildew control on cucurbits and other crops with biofungicides**
- **Whitefly (Q-biotype and others) management with bioinsecticides**
- **Plant bugs- Lygus, Stink bug, etc.**
- **Aquatic weed management with bioherbicides**



## US growers want new effective tools

- **IR-4 has submitted 30% of all new active ingredients to EPA over the last 2 years and had some involvement in about 74% of all new active ingredients.**

