

## 2016 Curriculum Vitae



**NAME:** Elson J. Shields  
**DEPARTMENT/UNIT:** Entomology  
**TITLE:** Professor  
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## **BACKGROUND**

### **EDUCATION**

<b><u>Year</u></b>	<b><u>Degree</u></b>	<b><u>Institution</u></b>
1984	Ph.D.	University of Wisconsin - Madison
1979	M.S.	University of Arizona
1974	B.S.	University of Arizona

### **ACADEMIC RANKS (year achieved)**

Professor:	Jan 2000
Associate Professor:	Nov 1992
Assistant Professor:	Sept 1986
Senior Extension Associate:	1978-1986

### **PRIMARY DEPARTMENTAL/Unit PROGRAM AREA**

Biological Control, 50% research and 50% extension

**AREAS OF EXPERTISE (key words)** Biological Control, Aerobiology, Management of Soil Insects, Management of Field Crop Insects, IPM, Computer Modeling

### **PROFESSIONAL EXPERIENCE**

<b><u>Year</u></b>	<b><u>Experience</u></b>
1986-present	Entomology Faculty Member – Cornell University
1980 – 1986	Extension IPM Specialist and IPM Coordinator – University of Wisconsin
1978-1980	Extension IPM Specialists – Oregon State University

## SABBATICALS AND STUDY LEAVES

2005-2006     Developing Flexible Remote Piloted Vehicles for Aerobiological Research.  
Cornell University.

## ACADEMIC RESPONSIBILITIES

### RESEARCH RESPONSIBILITIES

- **Active Grants/Contracts/Gifts**

<b>Shields, E. J.</b> NNYADP Impact of alfalfa snout beetle biocontrol nematodes on corn rootworm during corn rotation.	4/1/16-3/31/17 \$9,912	5%
<b>Shields, E. J. &amp; L. McDermott</b> NY Farm Viability Institute Managing root weevil populations for improved profitability and sustainability on Eastern NY berry farms.	12/1/15-11/30/17 \$49,236	10%
Coudron, T., B. Hibbard and K. Shelby ( <b>E. J. Shields</b> , Additional Investigator). Monsanto Insect Knowledge Research Program Entomopathogenic nematodes as part of Corn Rootworm Resistance Management.	6/1/2015-5/30/2017 \$449,000	5%
<b>Shields, E. J.</b> NNYADP Biological Control of Alfalfa Snout Beetle.	4/1/15 – 3/30/16 \$85,000	10%
<b>Shields, E. J.</b> NY Farm Viability Institute Biological Control of the Black Vine-Strawberry root weevil complex: The whole farm approach.	4/1/14 – 3/30/16 \$48,804	5%
<b>Shields, E. J.</b> USDA-Hatch Biological Control of Soil Insects in Organic Forage Production.	10/1/13-9/30/16 \$69,000	5%
<b>Shields, E. J.</b> USDA-Hatch-Multi-State Breeding Clover Root Curculio Resistant Alfalfa: Development of a greenhouse evaluation/screening technique.	10/1/12-9/30/17 \$135,000	5%

**Shields, E. J.** 10/1/14-9/30/17 10%  
 Smith-Lever \$60,000  
 Biological Control of root weevils in berry production: Extending NNY successes to the rest of NY.

**Shields, E. J.** 4/1/15-4/1/16 5%  
 Area-wide ASB Bio-control Program. \$45,410  
 Farmer-financed

- **Pending Grants/Contracts/Gifts**

Viands, D. R., J. L. Hansen, M. H. Hall, D. A. Samac, and **E. J. Shields.**  
 USDA-NIFA 9/1/16-8/30/18 \$150,721 – 2 years 5%  
 Pest Resistant Alfalfa and Phytoestrogens.

Agnello, A, P. Jentsch and **E. J. Shields** 4/1/16-3/31/18 10%  
 NY Farm Viability Institute \$101,152  
 Optimizing Use of Native Persistent Nematodes for Biological Control of Plum Curculio in Organic and Conventional Apple Production

Nielsen, A, T. Leskey, D. Shapiro-Ilan, A. Zhang, K. Garbach and K. Sullivan.  
 USDA-SCRI \$3,912,615 – 5 years  
 Shields' Budget - \$132.210, 5% effort  
 Development and adoption of ecologically-based strategies for weevil pests of fruit crops.

Kettering, Q, M. Laba and **E. J. Shields** 4/1/16-3/31/18 10%  
 NY Farm Viability Institute \$149,000  
 Potential of Unmanned Aircraft and their Aerial Systems as a Tool for Nitrogen Management in Field Corn.

**Shields, E. J.,** Q. Kettering and M. Laba 10/1/2016-9/30/19  
 USDA-Hatch \$135,000  
 Drone Mounted Crop Sensors: Applications in Precision Agriculture.

- **Grants ending in 2015**

Agnello, A. M, W. H. Reissig and **E. J. Shields.** 10/1/12-9/30/15 5%  
 Federal Formula Funds Initiative Program, 2011. \$66,848  
 Biological Control of Plum Curculio in Apples with Persistent Nematodes.

- **Completed Grants (last 5 years)**

**Shields, E. J. and A. Testa** 4/1/14-12/31/14 5%  
 NNYADP \$24,960  
 Biological Control of Alfalfa Snout Beetle: Selling the concept to skeptical alfalfa producers inflicted with ASB.

<b>Shields, E. J. and A. Testa</b> NNYADP Biological Control of Black Vine Weevil/Strawberry Root Weevil complex in NNY Strawberries and other berries with NY native persistent biocontrol nematodes.	4/1/14-12/31/14 \$19,745	5%
<b>Shields, E. J., W. H. Reissig, and A. M. Agnello.</b> NYS-USDA Speciality Block Grant Biological control of plum curculio in organic apple production systems.	9/30/11-9/29/14 \$77,200	10%
Loeb, G. M., <b>E. J. Shields</b> , and T. Weigle. NYS-USDA Speciality Block Grant Managing Japanese Beetle In Eastern Vineyards By Reducing Grub Populations In Sod Row Middles With Persistent Entomopathogenic Nematodes.	9/30/11-9/29/14 \$79,998	10%
B. Nault (PI), M. Fuchs and <b>E. J. Shields.</b> Federal Formula Funds Initiative Program, 2010 Dispersal of onion thrips in onion.	10/1/11-9/30/14 \$90,000	10%
Loeb, G. M. and <b>E. J. Shields.</b> Federal Formula Funds Initiative Program, 2010 Managing Japanese Beetle in Eastern Vineyards with Persistent Entomopathogenic Nematodes.	10/1/11-9/30/14 \$90,000	10%
<b>Shields, E. J.</b> Smith-Lever On-farm Rearing and Application of Biocontrol Nematodes for Control of Alfalfa Snout Beetle.	10/1/11-9/30/14 \$34,800	5%
<b>Shields, E. J., A. Testa and M. Keller</b> NNYADP On-Farm ASB Bio-Control - ASB Demonstration Plots as Educational Tools and Validating Establishment for Producer-Applied Fields.	2/1/13-12/31/13 \$25,000	5%
<b>Shields, E. J.</b> Pioneer Evaluating Effectiveness of Optimum(tm) AcreMax(r) Corn Rootworm Refuge under NY Conditions.	5/1/12-4/30/13 \$16,000	5%
<b>Shields, E. J. and A. Testa</b> NY Farm Viability Institute Biological Control of Alfalfa Snout Beetle: On farm rearing and application of biocontrol nematodes.	2/11-1/13 \$87,000	10%
<b>Shields, E. J.</b> USDA-Hatch	10/1/10-9/30/13 \$72,000	10%

Entomopathogenic nematode persistence across crop rotation.

**Shields, E. J.** and A. Testa 10/1/11-3/31/12 2%  
NNYADP \$7,500  
On-farm Rearing of Biocontrol Nematodes for Alfalfa Snout Beetle: Improving outreach communications with multimedia approaches.

**Shields, E. J.** 10/09-9/12 5%  
USDA-Hatch-Multi-State \$60,000  
Breeding Clover Root Curculio Resistant Alfalfa: Development of a greenhouse evaluation/screening technique.

**Shields, E. J.** 5/1/11-4/30/12 5%  
Monsanto \$12,000  
Evaluating Aphid Resistant Soybeans under NY Conditions.

**Shields, E. J.** 5/1/11-4/30/12 5%  
Pioneer \$15,900  
Evaluating Effectiveness of Optimum(tm) AcreMax(r) Corn Rootworm Refuge under NY Conditions.

Schmale, D. G., **E. J. Shields** & D. E. Aylor. 11/15/07-11/14/11 25%  
USDA-NRI-Plant Biosecurity \$960,767  
Development of an Integrated System to Detect, Monitor, and Forecast the Spread of *Phytophthora infestans* in the Lower Atmosphere.

**Shields, E. J.** 4/09-3/11 3%  
Pioneer Seed Co. \$55,275  
Evaluating Effectiveness of Optimum(tm) AcreMax(r) Corn Rootworm Refuge under Diverse Conditions

- **Postdoctoral Associates**

Dr. Melissa Keller 2012-13  
Dr. Erik Smith 2016 - ?

- **Other Current Research Professionals Supervised**

Antonio Testa  
John Cianchetti  
Lindsey Pashow  
Jeffery Teague

## **EXTENSION/OUTREACH RESPONSIBILITIES**



12/14-16/03 Monsanto – St. Louis, MO - Research-Extension roundtable discussion

## **2004**

1/21/04 Vermont Certified Pesticide Applicators Training – Audience = 56  
1/23/04 Field Crop Producer Meeting – Tompkins Co. - Audience = 127  
2/5/04 NNY Research Update – Plattsburg NY - Audience = 35  
2/10/04 Field Crop Producer Meeting – Onondaga Co. – Audience = 57  
2/13/04 NNY Research Update – Plattsburg NY - Audience = 42  
2/24/04 Field Crop Producer Meeting – Steuben Co. - Audience = 62  
3/3/04 Field Crop Producer Meeting – Oneida Co. - Audience = 68  
3/4/04 Field Crop Producer Meeting – Miner’s Institute – Clinton Co.  
Audience = 77  
3/9/04 Field Crop Producer Meeting – Carovale – Utica – Audience = 35  
3/18/04 Field Crop Producer Meeting – St Lawrence Co. - Audience = 48  
3/19/04 Field Crop Producer Meeting – Jefferson Co. - Audience = 67  
11/04 Agent Training – Audience = 18  
11/30-12/02/04 Certified Crop Consultant Training - Basic & Advanced sessions  
Audience = 93

## **2005**

1/19-20/05 Western NY Corn Congress – Batavia & Waterloo – Audience = 450  
2/08/05 Otsego Co. Corn Congress – Cooperstown – Audience = 33  
2/18/05 NNY Video Conference  
3/3-4/05 WNY Forage Conference - Audience = 85  
3/15/05 Steuben-Chemung Co. Corn Congress – Audience = 70  
3/24/05 Albany Co. Pesticide Applicator Training – Audience = 50

11/1/05-4/30/06 On Sabbatic leave – no extension presentations

## **2006**

3/28/06 Franklin Co. Growers Meeting, Audience = 23.  
3/29/06 Lewis Co. Growers Meeting, Audience = 68.  
7/20/06 Aurora Field Day Tour Stop, Soybean aphid in NY. Audience = 60.  
10/24-27/06 Agribusiness Dealer tour, Clifton Park, NY, New Hartford, NY,  
Batavia, NY, Auburn, NY, Two talks/ location,  
Audience = 655  
11/10/06 Extension Agent In service Training, Audience = 27  
11/30/06 Cornell Seed Conference. Audience = 55  
12/5/06 Certified Crop Consultant Advanced Training, Audience = 65  
12/7/06 Certified Crop Consultant Basic Training, Field crop insects:  
Audience = 15

## **2007**

1/16/07 Pennsylvania Agronomic Education Conference, Invited Speaker,  
Audience=375.  
1/17/07 WNY Corn Congress, Batavia, NY, Audience = 328  
1/18/07 WNY Corn Congress, Waterloo, NY, Audience = 155

1/24/07 Madison Co Corn Congress. Audience = 75  
 2/13/07 Herkimer Co. Corn Congress: Audience = 66  
 2/27/07 Stuben Co. Corn Congress: Audience = 85  
 3/13/07 Cayuga Co. Corn Congress: Audience = 55  
 3/22/07 Albany Co. Pesticide Applicator Training: Audience = 76  
 11/15/07 Extension Agent In service Training, Audience = 27  
 12/4/07 Certified Crop Advisor Advance Topic. Audience = 110  
 12/06/07 Certified Crop Advisor Basic Training. Audience = 35

**2008**

2/19/08 Western Northern New York Agricultural Development Program Steering Committee. Research/Extension update on the Biological Control of Alfalfa Snout Beetle and the Development of a Snout Beetle Resistant Alfalfa Variety. Audience = 42  
 2/20/08 Seneca Co.Corn Congress: Management of insect pests of Corn and Alfalfa. Audience = 37  
 3/6/08 Chemung Co. Corn Congress: Management of insect pests of Corn and Alfalfa. Audience = 56  
 3/11/08 Eastern Northern New York Agricultural Development Program Steering Committee. Research/Extension update on the Biological Control of Alfalfa Snout Beetle and the Development of a Snout Beetle Resistant Alfalfa Variety. Audience = 36  
 3/12/08 St Lawrence Co.: Biological control of alfalfa snout beetle and management of corn pests. Audience = 48  
 3/13/08 Jefferson Co.: Biological control of alfalfa snout beetle and management of corn pests. Audience = 57  
 3/20/08 Field Crops Program Work Team: Audience = 22  
 3/25/08 Albany Co. Pesticide Applicator Training. Audience = 78  
 10/28-31/09 Agribusiness Dealer tour, Clifton Park, NY, New Hartford, NY, Batavia, NY, Auburn, NY, One talk/ location, Audience = 240  
 11/13/08 Extension Agent In service Training. Audience = 27  
 12/9/08 Certified Crop Advisor Advance Topic. Things that float in the air and why we should care. Audience = 55  
 12/11/08 Certified Crop Advisor Basic Training. Insect identification and management. Audience = 35

**2009**

1/22/09 South Central NY Winter Crop Meeting. Management of Field Crop Insects with the Latest Technology: Is GMO, Chemical or Host Plant Resistance the best option? Audience = 155  
 1/23/09 Delaware Co. Field Crop Variety Selection Meeting. Management of Field Crop Insects with the Latest Technology: Is GMO, Chemical or Host Plant Resistance the best option? Audience = 21  
 1/30/09 Western Northern New York Agricultural Development Program Steering Committee. Research/Extension update on the Biological Control of



- Alfalfa Snout Beetle and the Development of a Snout Beetle Resistant Alfalfa Variety. Audience = 53
- 2/11/09 Madison Co. Crop Congress. IPM techniques for corn and soybeans. Audience = 28
- 2/20/09 Eastern Northern New York Agricultural Development Program Steering Committee. Research/Extension update on the Biological Control of Alfalfa Snout Beetle and the Development of a Snout Beetle Resistant Alfalfa Variety. Audience = 47
- 3/3-5/09 North Country Crop Meeting Tour. Stops at Miner's Institute, St Lawrence Co. and Jefferson Co. Audience at 3 locations = 255
- 3/16/09 17th meeting of the committee on Science, Technology and Law, Nation Academy of Science, Washington DC, Industry Policies governing Research on Genetically Engineered Seeds
- 11/11/09 CCE Field Crops Inservice, Cornell CCE, Ithaca, Field Crop Entomology Insect Management in Field Crops. Audience = 15
- 12/19/09 Certified Crop Advisor Annual Training Session, NE CCA, Waterloo, NY, Insect management - Basic Training Module. Audience = 35
- 2010**
- 1/25/10 WNY Northern NY Agricultural Develop Program Steering Committee, NNYADP, NY, Biological Control of Alfalfa Snout Beetle, Audience= 25
- 2/3/10 ENY Northern NY Agricultural Development Program Steering Committee, NNYADP, Plattsburgh, NY, Biological Control of Alfalfa Snout Beetle, Audience = 30
- 3/18/10 Cayuga Co. Corn Congress, Cayuga CCE, Auburn, NY, Management of Corn and Alfalfa insects in 2010. Audience = 100
- 7/22/10 Aurora Field Day, Cornell University CALS, Aurora, GM Corn Extension Field Trial. Audience = 45
- 7/26/10 Northeastern Student Weed Competition, NE Weed Society, Freeville, NY, Weed Control Problem – Horseweed. Audience = 50
- 10/19/10 Field Crop Dealer Meetings, Cornell University CALS, Across the state in 4 locations, Managing GMO Resistance to Western Corn Rootworm. Audience = 276
- 11/17/10 CCE Field Crops Inservice, Cornell CCE, Ithaca, Managing GMO Resistance to Western Corn Rootworm. Audience = 15.
- 12/1/10 CCA Training, NE CCA, Waterloo, NY, Managing GMO Resistance to Western Corn Rootworm. Audience = 85.
- 12/2/10 CCA Training, NE CCA, Waterloo, NY, Insect Management - Basic Training Module. Audience = 35.
- 2011**
- 1/21/11 WNY Northern NY Agricultural Develop Program Steering Committee, NNYADP, NY, Biological Control of Alfalfa Snout Beetle, Audience=35
- 2/4/11 ENY Northern NY Agricultural Development Program Steering Committee, NNYADP, Plattsburgh, NY, Biological Control of Alfalfa Snout Beetle, Audience = 30

- 2/8/11 Herkimer Co. Corn Day, Herkimer CCE, Cooperstown, NY. How to utilize resistand/stacked hybrids effectively for insect control. Audience = 161.
- 2/16/11 Delaware Co. Crop School, Delaware CCE, Hamden, NY. How to utilize resistand/stacked hybrids effectively for insect control. Audience = 35.
- 3/3/11 Stuben Co. Field Crop Conference, Horseheads, NY. Field Crop Insect Management: Taking a new look for 2011. Audience = 76.
- 7/22/11 Cornell Aurora Field Day, Tour Stop: Management of Soybean Aphid. Audience = 55
- 11/30/11 CCA Training, NE CCA, Waterloo, NY, Field Crop Insect Management in the NE: What is on tap for 2012. Audience = 97.
- 12/1/11 CCA Training, NE CCA, Waterloo, NY, Insect Management - Basic Training Module. Audience = 33.

## **2012**

- 1/18/12 WNY Corn Congress, Batavia, NY, BT Resistance in Corn Rootworm: Is it real, how did it happen and is it a NY issue? Audience = 393.
- 1/18/12 Vermont Pesticide Conference (via Skype from Batavia, NY). BT resistant rootworms, western bean cutworm and alfalfa snout beetle: Update for 2012. Audience = 37.
- 1/19/12 WNY Corn Congress, Waterloo, NY, BT Resistance in Corn Rootworm: Is it real, how did it happen and is it a NY issue? Audience = 239.
- 1/27/12 Tompkins Co. Precision Agriculture Congress. Field Crop Insect Management for 2012. Audience = 343.
- 2/21/12 Stuben Co. Field Crop Conference, Bath NY. Field Crop Insect Management for 2012. Audience = 131
- 2/29/12 WNY Crop Management Association Annual Meeting. Western corn rootworm resistance to GMO and alfalfa snout beetle biological control. Audience = 196
- 3/16/12 Cayuga Co. Grain Meetings, Auburn, NY. BT Resistance in Corn Rootworm: Is it real, how did it happen and is it a NY issue? Audience = 57
- 7/12/12 Alfalfa improvement conference tour stop. Alfalfa Snout Beetle and Clover Root Curculio: Screening techniques for selecting alfalfa for resistance. Audience = 79.
- 11/13/12 CCE agent update. Field Crops Entomology Update. Audience = 19.
- 11/29/12 Basic CCA training session: Insects and their management. Audience = 53.

## **2013**

- 2/26/2013 NNYADP WNNY Conference, Watertown, NY. Biological Control of Alfalfa Snout Beetle: Progress in 2012. Audience = 58
- 3/8/2013 NNYADP ENNY Conference, Miner Institute, Chazy, NY. Biological Control of Alfalfa Snout Beetle: Progress in 2012. Audience = 46

- 3/13/2013 Southern Jefferson Co Field Crop Producer Meeting: 1) Managing Alfalfa Snout Beetle in Alfalfa with Biocontrol Nematodes. 2) Managing Potato Leafhopper in Alfalfa with Various Management Tools. Audience = 25
- 10/22/13 Alfalfa Snout Beetle: Larval feeding symptoms in the field. Adams, NY. Audience = 30.
- 11/19/13 CCE Inservice, Ithaca, NY, BT Resistance in Corn Rootworm in NY: Managing the resistance and limiting the spread. Audience = 26.
- 12/4/13 Certified Crop Advisor Training, Syracuse, NY. Advanced topic: Entomopathogenic Nematodes: Viable biological control for a wide array of soil insects. Audience = 86
- 12/5/13 Certified Crop Advisor Training, Syracuse, NY. Basic Entomology Module. Audience = 39
- 12/05/13 NY Seed Trade Association Conference, Geneva, NY. Managing Alfalfa Snout Beetle in Alfalfa: Utilizing native biocontrol nematodes to enhance moderate alfalfa resistance. Audience = 48.
- 12/11/13 Agri-business Dealer Conference, Syracuse NY. 2013 BT-Corn Rootworm Failure in NY: Is it a harbinger of things to come? Audience = 67

## **2014**

- 1/15/14 Western NY Corn Congress, Batavia, NY. Emerging BT Resistance in Corn Rootworm in NY: Managing the resistance. Audience = 357
- 1/16/14 Western NY Corn Congress, Waterloo, NY. Emerging BT Resistance in Corn Rootworm in NY: Managing the resistance. Audience = 245/
- 1/17/14 Winter Crop Meeting 2014, Ithaca, NY. The Corn Rootworm Pickle. Audience=105.
- 1/28/14 Seedway Field Crop Conference, Lowville, NY. 1) Managing Alfalfa Snout Beetle: Biological control and resistant varieties, 2) Corn Rootworm Challenges: Resistance to BT and resistance management strategies. Audience= 64.
- 1/31/14 Seedway Field Crop Conference, Tully, NY. Corn Rootworm Challenges: Resistance to BT and resistance management strategies. Audience= 47
- 1/31/14 NNYADP WNNY Conference, Watertown, NY. Biological Control of Alfalfa Snout Beetle: Progress in 2013. Audience = 53
- 2/11/14 Otsego Co. Crop Congress, Cooperstown, NY. Emerging BT Resistance in Corn Rootworm in NY: Managing the resistance. Audience = 177
- 2/28/14 NNYADP ENNY Conference, Chazy, NY. Biological Control of Alfalfa Snout Beetle: Progress in 2013. Audience = 37
- 3/4/14 Strawberry Producers Meeting. Plattsburgh, NY. Biological Control of Black Vine/Strawberry Root Weevils with Native Persistent Entomopathogenic Nematodes. Audience = 13
- 3/5/14 Strawberry Producers Meeting. Gouvenour, NY. Biological Control of Black Vine/Strawberry Root Weevils with Native Persistent Entomopathogenic Nematodes. Audience = 7

- 3/12/14 Cayuga Co Crop Congress, Auburn, NY. Corn Rootworm Challenges: Resistance to BT and resistance management strategies. Audience = 57
- 3/31/14 Oswego Co. Crop Congress, Mexico, NY. Corn Rootworm Challenges: Resistance to BT and resistance management strategies. Audience = 83
- 11/12/14 Agri-business Dealer Conference, Syracuse NY. Neonic in groundwater, bee decline and CRW-BT resistance: The double whammy for corn production. Audience = 87
- 11/20/14 CCE agent training, Campus: Field crops research and extension updates. Audience = 19
- 11/24/14 NY Farm Viability Institute Annual Meeting, Albany, NY. Biological Control: An innovative solution that saved upstate NY's alfalfa fields. Audience = 137
- 12/4/14 Certified Crop Advisor Training, Syracuse, NY. Advanced topic: BT-CRW resistance, Neonics implicated in bee decline and in ground water: A storm cloud on the horizon. Audience = 35
- 12/4/14 Certified Crop Advisor Training, Syracuse, NY. Basic Entomology Module. Audience = 28

## **2015**

- 1/9/15 Allegany Co. Corn Congress, Belmont, NY. Bt-corn rootworm failure in NY and PA: A canary in the coal mine? Audience = 79
- 1/22/15 2015 Empire State Producers Expo, Syracuse, NY. Berry Section: Strawberry root insect research. Audience = 68
- 1/23/15 South Central NY Winter Crop Meetings, Ithaca, NY. The rub with neonicotinoid pesticides. Audience = 123
- 1/30/15 NNYADP-West Annual Meeting, Watertown, NY. Biological Control of soil insects with entomopathogenic nematodes: Moving the ASB success to other cropping systems. Audience = 47
- 2/4/15 2015 Soybean/Small Grains Congress, Batavia, NY. Neonics implicated in bee decline and in ground water: A storm cloud on the horizon? Audience = 220
- 2/5/15 2015 Soybean/Small Grains Congress, Waterloo, NY. Neonics implicated in bee decline and in ground water: A storm cloud on the horizon? Audience = 140
- 2/12/15 2015 Central NY Crop Congress, Little Falls, NY. Neonics implicated in bee decline and in ground water: A storm cloud on the horizon? Audience = 67
- 2/13/15 2015 Central NY Crop Congress, Sherburne, NY. Neonics implicated in bee decline and in ground water: A storm cloud on the horizon? Audience = 59
- 2/16/15 On Farm Implementation of ASB Biological Control. Malone, NY. Two Hour Discussion - 14 farmers.
- 2/17/15 NNY Regional Crop Meeting, Miner's Institute, Chazy, NY. Alfalfa talk, Corn Talk, Drones in Agriculture. Audience = 69

- 2/18/15 NNY Regional Crop Meeting, Miner's Institute, Chazy, NY. Alfalfa talk, Corn Talk, Drones in Agriculture. Audience = 77
- 2/27/15 NNYADP-East Annual Meeting, Watertown, NY. Biological Control of soil insects with entomopathogenic nematodes: Moving the ASB success to other cropping systems. Audience = 47
- 3/5/15 Syngenta Crop meetings, Batavia, NY. Updates: Western Bean Cutworm, BT resistance in CRW and the Neonic controversy. Audience = 165
- 3/17/15 Madison Co. Corn Congress, Cazenovia, NY. Neonics in groundwater, bee decline and CRW-BT resistance: The double whammy for corn production. Audience = 79
- 3/25/15 Delaware Co. Crop Congress, Delhi, NY. Neonics in groundwater, bee decline and CRW-BT resistance: The double whammy for corn production. Audience = 45.
- 5/15/15 NuAir tour for Commissioner Ball, Ag & Markets, Rome, NY. Future of drones in precision agriculture. Audience = 15.
- 5/19/15 Town and Gown Investment Club, Ithaca, NY. Drones, their application and investment potential. Audience = 43.
- 6/10/15 NOFA – Organic Apple Production Field Day, Geneva, NY. Biocontrol nematodes to control Plum Curculio. Audience = 85.
- 6/17/15 Seedway Field Day, Lowville, NY. On-Farm rearing of ASB Biocontrol nematodes. Audience = 45.
- 9/23/15 NuAir 2<sup>nd</sup> Annual Trade Conference, Verona, NY. Future of drones in precision agriculture. Audience = 223.
- 11/5/15 CCE agent training, Campus: Field crops research and extension updates. Audience = 19
- 12/3/15 CCA Advanced Topic: Potential of drones and remote sensing in precision agriculture. Audience = 57.  
Certified Crop Advisor Training, Syracuse, NY. Basic Entomology Module. Audience = 39
- 2016**
- 1/13/16 WNY Corn, Batavia, NY. Droning on about drones: Update on applications and regulations. Audience = 350.
- 1/14/16 WNY Corn, Waterloo, NY. Droning on about drones: Update on applications and regulations. Audience = 280.
- 2/18/16 Kingston Berry School, Kingston, NY. Biological control of the root weevil complex attacking berries. Audience =
- 3/31 DeBeer Spray Service Crop Meeting, Malone, NY. Updates on corn rootworm, western bean cutworm and alfalfa snout beetle biological control. Audience =

## **GRADUATE FIELD MEMBERSHIPS**

Entomology, Pest Management

## GRADUATE MAJORS

- **Current**

Tessa Lessord M.S. – 2016 (committee member)

- **Total Completed (past 10 years)**

Gabor Neumann M.S. – 2003 Ph.D - 2007

Amelia Sidumo M.S. – 2004

Elizabeth Goulet Ph.D – 2008

Erik Smith (committee member) Ph.D. - 2015

## OTHER CURRENT PROFESSIONAL ACTIVITIES

## PROFESSIONAL SOCIETIES

Entomological Society of America

New York State Agribusiness Association

## EDITORIAL BOARDS

Reviewer – 6 manuscripts in 2004

3 manuscripts in 2005

2 manuscripts in 2006

6 manuscripts in 2006

6 manuscripts in 2008

3 manuscripts in 2009

4 manuscripts in 2010

5 manuscripts in 2011

3 manuscripts in 2012

4 manuscripts in 2013

5 manuscripts in 2014

6 manuscripts in 2015

## COMMITTEE ASSIGNMENTS

- **International/National:**

Regional Research Projects:

NCR-46 Management of Corn Rootworm. (Secretary 2007, Chair 2008)

NCR-148 Long-ranged movement of Biota in the lower atmosphere

Research Panels:

USDA-Plant Biosecurity Panel – 10/05

- **Commodity and Other Stakeholder:**

NYSABA board of directors (New York Agri-Business Association 2004-10)

- **Cornell University**

University FACTA committee (2015-2017)

- **College**
  - IPM Field Crop Commodity Committee
  - Field Crops Project Work Team
  - CALS Consolidated Farms Committee
- **Department:**
  - Mentoring committee for Kyle Wickings (2014 – present)
  - Promotion and Mentoring committee 7/10-6/13
  - Entomology Executive committee 11/1999-7/2005
  - Admissions committee – Entomology Graduate Field – chair 11/1999-7/2005

## **OTHER CURRENT PROFESSIONAL CONTRIBUTIONS**

### **CONFERENCES/WORKSHOPS/IN-SERVICE PARTICIPATION**

Aerobiology 2007: Invited Planetary Talk: Sampling the lower atmosphere for biota: The challenge, tools and successes.

Pollen-Mediated Gene Flow in the Environment: Research Workshop. USEPA. July 23-24, 2007.

Entomological Society of America Symposium: Blowing in the Wind: The merging of 5 hobbies and calling it science. 12/2009

ESA-Eastern Branch, Harrisburg, Pa. Student Sponsored Symposium “Tools of the Trade: Technology in Entomology. Title: Chasing that Aerial Biota: The challenge and how to succeed. 3/2011

ESA Annual Meeting – Austin, Tx. Inoculative Releases of Entomopathogenic Nematodes and Multi-year Persistence across Crop Rotation 11/2013.

ESA Annual Meeting – Minneapolis, Mn. Using Drones before Drones were Cool: Perspectives on monitoring using drone technology. 11/2015

### **INVITED/DEPARTMENTAL SEMINARS**

10/06 University of Maryland, Department of Entomology. “The development and use of large Radio Controlled Airplanes to study the long ranged movement of aerial biota (insects, plant pathogens, pollens and weed seeds).

1/07 Cornell University, Department of Entomology. “The development and use of large Radio Controlled Airplanes to study the long ranged movement of aerial biota

(insects, plant pathogens, pollens and weed seeds).

2/07 Canisius College, Department of Biology, Buffalo, NY. “The development and use of large Radio Controlled Airplanes to study the long ranged movement of aerial biota (insects, plant pathogens, pollens and weed seeds).

3/09 National Academy of Science Committee on Science, Technology and Law. “Research restrictions imposed on public scientists by companies with GM products”.

9/09 National ESCOP Annual Meeting: “Research restrictions imposed on public scientists by companies with GM products”.

10/09 Virginia Tech, Department of Entomology, Blacksburg, Va. “Sampling the lower atmosphere for biota: The challenges and the successes.

2/11 Cornell University, Department of Entomology. Alfalfa Snout Beetle: Is management an oxymoron?

3/16 University of Missouri. Drones and Aerobiology: Uses in research to change the conversation.

#### **BOOK CHAPTERS:**

Hower, A. A. and **E. J. Shields**. Weevils and Root Borers. In: Lamp, W.O., R. Berberet, L. Higley, and C. Baird (eds.). 2007. Handbook of Forage and Rangeland Insects. Entomological Society of America, Lanham, MD.

**Shields, E. J.** and A. A. Hower. Rootweevils of Alfalfa. In: Lamp, W.O (ed). 2012 Alfalfa Compendium. American Phytopathological Society.

**Shields, E. J.** Ch 6 - Utilizing persistent EPNs in a conservation or a more classical biological control approach. In: R. Campos-Herrera (ed). Nematode pathogenesis of insects and other pests – ecology and applied technologies for sustainable plant and crop protection, Series: Sustainability in Plant and Crop Protection, Vol. 1 (R. Campos-Herrera ed). Springer. 2015. Pp. 165-184.

**Shields, E. J.** and A. M. Testa. Ch 11 - New York Case Study: Biological Control of *O. ligustici* with native persistent EPNs using a more classical approach. In: R. Campos-Herrera (ed). Nematode pathogenesis of insects and other pests – ecology and applied technologies for sustainable plant and crop protection, Series: Sustainability in Plant and Crop Protection, Vol. 1 (R. Campos-Herrera ed). Springer. 2015. pp 285-307.

#### **RESOURCE FOR MEDIA**



Frequent phone interviews for newspapers and trade magazines statewide on field crop related insect topics.

News Releases:

5/21/2007: Cornell Researchers and Farmer Report More Progress Against Pest Peculiar to Northern New York.

2/22/2008: Cornell Insect Specialist to Speak at March 12-13 Crop Congresses: Will Report First Success with Alfalfa Snout Beetle, How to Manage Other Crop Pests

3/27/2008: Insect-killing worms found to control beetle that has plagued upstate New York farms. AP news release published in multiple papers across the US.

2/19/09: Crop scientists say Biotechnology seed companies are thwarting research. New York Times.

Since 09, too many to list.

## **PUBLICATIONS (past 10 years)**

### **Research:**

Testa, A. M. and **E. J. Shields**. 2016. Low Labor “in vivo” Mass Rearing Method for Entomopathogenic Nematodes. *Biocontrol* (submitted)

Taylor, R.A.J., and **E. J. Shields**. 2016. Revisiting Potato Leafhopper, *Empoasca fabae*, Migration: Implications in a world where invasive insects are all too common. *American Entomologist*. (submitted).

Smith, E. A., **E. J. Shields** and B. A. Nault. 2016. Impact of adjacent habitat on colonization of onion fields by adult onion thrips (Thysanoptera: Thripidae). *J. Econ Entomol.* (submitted).

Smith, E. A., **E. J. Shields** and B. A. Nault. 2016. Impact of abiotic factors on onion thrips (Thysanoptera: Thripidae) dispersal activity in an onion ecosystem. *Environ. Entomol.* (submitted)

Smith, E. A., M. Fuchs, **E. J. Shields** and B. A. Nault. 2015. Long-distance dispersal potential for onion thrips (Thysanoptera: Thripidae) and Iris yellow spot virus (Bunyaviridae: Tospovirus) in an onion ecosystem. *Environ. Entomol.* 44: 921-930.

- Keller, M. D. and **E. J. Shields**. 2014. Aerobiological sampling efficiency of media-containing Petri plates for use in lower atmosphere spore collection. *Aerobiologia* 30 : 103-109 (Published on line 6/18/13)
- Keller, M. D. G. C. Bergstrom and **E. J. Shields**. 2014. The Aerobiology of *Fusarium graminearum*. *Aerobiologia*. 30: 123-136. (Published on line 11/5/13)
- Goulet, E. J., A. Ditommaso and **E. J. Shields**. 2014. Comparative study of *Mecinus janthinus* (Coleoptera: Curculionidae) attack and simulated mowing for control of *Linaria dalmatica* (Scrophulariaceae). *The Great Lakes Entomologist* 47: 12-22.
- Nansen, C, B. Stokes, J. James, P. Porter, **E. J. Shields**, T. Wheeler, W. G. Meikle. 2013. Biological control agent of larger black flour beetles – a nuisance pest developing in cotton gin trash piles. *J. Econ. Entomol.* 106: 648-652.
- Petzold-Maxwell, J. L. , A. P. Alves , R. E. Estes , M. E. Gray, L. J. Meinke, **E. J. Shields**, S. D. Thompson, N. A. Tinsley and A. J. Gassmann. 2013. Applying an integrated refuge to manage western corn rootworm (Coleoptera: Chrysomelidae): Effects on survival, fitness and selection pressure. *J. Econ. Entomol.* 106: 2195-2207.
- Goulet, E. J., J. Thaler, A. Ditommaso, M. Schwarzlander, **E. J. Shields**. 2013. Impact of *Mecinus janthinus* (Coleoptera: Curculionidae) on the growth and reproduction of *Linaria dalmatica* (Scrophulariaceae). *The Great Lakes Entomologist* 46: 90-98.
- Neumann, G. & **E. J. Shields**. 2011. Long term field persistence and coexistence in three entomopathogenic nematodes, *Steinernema carpocapsae* Weiser, *S. feltiae* Filipjev, and *Heterorhabditis bacteriophora* Poinar. *The Great Lakes Entomologist* 44: 42-52.
- Shields, E. J.**, and A. A. Testa. 2011. Effects of Low Temperature Storage on Fecundity and Adult Mortality for the Alfalfa Snout Beetle, *Otiorhynchus ligustici* (L.) (Coleoptera: Curculionidae). *The Great Lakes Entomologist* 44: 21-31.
- Aylor, D. E, D G. Schmale III, **E. J. Shields**, M. Newcomb and C. J. Nappo. 2011. Tracking the potato late blight pathogen in the atmosphere using unmanned aerial vehicles and Lagrangian modeling. *Agric. For. Meteorol.* 151: 251-260.
- Sappington, T. W., K. R. Ostlie, C. DiFonzo, B. E. Hibbard, C. H. Krupke, P. Porter, S. Pueppke, **E. J. Shields** and J. J. Tollefson. 2010. Conducting public-sector research on commercialized transgenic seed: In search of a paradigm that works. *GM Crops* 1 (2): On line open access article (<http://www.landesbioscience.com/journals/gmcrops/article/10833>)

- Cox, W. J., J. Hanchar and **E. J. Shields**. 2009. Stacked corn hybrids show inconsistent yield and economic responses in New York. *Agronomy J.* 101: 1530-1537.
- Shields, E. J.**, A. Testa, G. Neumann, K. L. Flanders and P. C. Schroeder. 2009. Biological Control of Alfalfa Snout Beetle with a multi-species application of locally-adapted persistent entomopathogenic nematodes: The first success. *American Entomologist* 55: 250-257.
- Dauer, J. T., D. A. Mortensen, E. C. Luschei, S. A. Isard, **E. J. Shields** and M. VanGessel. 2009. *Conyza canadensis* seed ascent in the lower atmosphere. *Agric. For. Meteorol.* 149: 526-534.
- Cox, W. J., **E. J. Shields** and J. H. Cherney. 2008. Planting Date and Seed Treatment Effects on Soybean in the Northeastern United States. *Agronomy J.* 100: 1661-1665.
- Cox, W. J., **E. J. Shields** and J. H. Cherney. 2008. Western Corn Rootworm Damage Subtly Affects Corn Growth under Moderate Environmental Stress. *Crop Sci* 48: 1164-1169.
- Neumann, G. & **E. J. Shields**. 2008. Multiple-species natural enemy approach for the biological control of the alfalfa snout beetle, *Otiorhynchus ligustici* L. (Coleoptera: Curculionidae), using entomopathogenic nematodes. *J. Econ Entomol* 101: 1533-1539.
- Shields, E. J.**, G. Neumann and A. Testa. 2007 (published in 2008). Alfalfa Snout Beetle, *Otiorhynchus ligustici* L. (Coleoptera: Curculionidae): Methods for egg collection and larval rearing. *The Great Lakes Entomologist* 40: 62-67.
- Boehm, M. T., D. E. Aylor, and **E. J. Shields**. 2008. Maize pollen dispersal under convective conditions. *J. Appl. Meteorol. Climatol.* 47: 291-307.
- Cox, W. J., **E. J. Shields**, and J. H. Cherney. 2007. The effect of seed treatments on corn growth following soybean. *Crop Sci.* 47: 2482-2485.
- Cox, W.J., **E. J. Shields**, D. J. R. Cherney, and J. H. Cherney. 2007. Seed-applied insecticides inconsistently affect corn forage in continuous corn. *Agron. J.* 99: 1640-1644.
- Cox, W. J. J. H. Cherney, and **E. J. Shields** . 2007. Clothianidin Seed treatments inconsistently affect corn forage yield when following soybean. *Agron. J.* 99: 543-548.
- Shields, E. J.**, J. T. Dauer, M. J. VanGessel and G. Neumann. 2006. Horseweed (*Conyza canadensis*) seed collected in the planetary boundary layer. *Weed Science* 54: 1063-1067.

Neumann, G. & **E. J. Shields**. 2006. Interspecific interactions among three entomopathogenic nematodes, *Steinernema carpocapsae*, *S. feltiae*, and *Heterorhabditis bacteriophora*, with different foraging strategies for hosts in multi-piece sand columns. *Environ. Entomol.* 35: 1578-1583.

Schmale, David G. III , John F. Leslie , Robert L. Bowden , Kurt A. Zeller, Amgad A.Saleh , **Elson J. Shields**, and Gary C. Bergstrom. 2006. Genetic structure of atmospheric populations of *Gibberella zeae*. *Phytopathology* 96: 1021-1026.

Aylor, D. E., M. T. Boehm, and **E. J. Shields**, 2006: Quantifying aerial concentrations of maize pollen in the atmospheric surface layer using remote-piloted airplanes and lagrangian stochastic simulation modeling. *J. Appl. Meteorol.* 45: 1003-1015

Schmale, D. G., **E. J. Shields** & G. C. Bergstrom. 2006. Night-time spore deposition of the Fusarium head blight pathogen, *Gibberella zea*, in rotational wheat fields. *Canadian Journal of Plant Pathology* 28: 100-108.

#### **Extension Publications:**

Note: What's Cropping Up articles are duplicated and distributed throughout the state in the various county extension news letters to their local producers. As a result, these articles have a very wide distribution.

Shields, E. J. Section 18 Emergency Exemption Granted for Warrior on Alfalfa--Grass Mixed Seedings, Vol. 13, No. 3, May-June, 2003, pp. 4-5.

Shields, E. J. 2003. 2004 Cornell Guide for Integrated Field Crop Management: Insect Management section.

Shields, E. J. Corn Rootworm Technology for the 2004 Growing Season: How do they compare. Vol. 13, No. 5, Sept-Oct, 2003, pp 1-2.

Shields, E. J. EPA Required Insect Refuges: Necessary Evil or Needless EPA Meddling? Vol. 13, No. 6, Nov-Dec, 2003, pp 4-5.

Shields, E. J. Potato Leafhopper Resistant Alfalfa and Section 18 Granted for Mixed Grass Seedings Vol 14, No 2 March-April 2004.

Shields, E. J. 2004. 2005 Cornell Guide for Integrated Field Crop Management: Insect Management section.

Shields, E. J. Management of Corn Rootworm in 2005. Vol 14 No. 6 Nov-Dec 2004.

Shields, E. J. Section 18 Emergency Exemption Granted for Warrior on Alfalfa--Grass Mixed Seedings, Vol. 13, No. 3, May-June, 2003, pp. 4-5.

Shields, E. J. Management of Corn Rootworm in 2005. Vol 14 No. 6 Nov-Dec 2004.

Shields, E. J. 2005. 2006 Cornell Guide for Integrated Field Crop Management: Insect Management section.

11/1/05-4/30/06 On Sabbatic leave – no extension publications

- Shields, E. J. 2006. 2007 Cornell Guide for Integrated Field Crop Management: Insect Management section.
- Shields, E. J. 2006. Field crop insect update. What's Cropping Up?. Vol. 16 (3): 1.
- Shields, E. J. 2006. Radio controlled airplanes: Serious research tool or just plane fun? Abstract. Extension Series No. E06-4. page 17.
- Shields, E. J. 2006. Corn rootworm management in 2007: Where does all the new technology fit. Abstract. Extension Series No. E06-4. page 27.
- Shields, E. J. 2006. Poncho-Cruiser seed treatments for corn rootworm. What's Cropping Up? Vol 16 (6): 3.
- Shields, E. J. 2007. 2008 Cornell Guide for Integrated Field Crop Management: Insect Management section.
- Shields, E. J. 2008. Corn Rootworm Choices: Which one is best for you? What's Cropping Up? Vol 18: (1).
- Shields, E. J. 2008. Certified Crop Advisor Basic Course Training Materials (& test questions). 25 pp.
- Shields, E. J. 2008. 2009 Cornell Guide for Integrated Field Crop Management: Insect Management section.
- Shields, E. J. 2009. 2010 Cornell Guide for Integrated Field Crop Management: Insect Management section.
- Cox, W. J., E. J. Shields, P. Atkins, & R. J. Richtmyer. 2009. CruiserMaxx seed treatment on soybeans greatly increases final stands but only marginally improves final yield. What's Cropping Up? Vol 19: (1) 8 pp.
- Cox, W. J., P. Atkins, E. J. Shields, & G. Bergstrom. 2009. Field-scale studies comparing the base genetics of corn hybrids with double and triple stacked hybrids. What's Cropping Up? Vol 19 (3) 20 pp.
- Shields, E. J. 2009. Selecting your corn rootworm control for 2010. What is Cropping Up? Vol 19 (5) 12 pp.
- Shields, E. J. 2010. Research restrictions on public scientists with GM crops: Problems for the agricultural community. What is Cropping Up? Vol 20 (1) 12 pp.
- Cox, W.J, E. J. Shields and P. Atkins. 2010 CruiserMaxx Seed Treatment: To treat or not to treat? What is Cropping Up? Vol 20 (1) 12 pp.
- Testa, A and E. J. Shields. 2010. Rearing & Applying Nematodes to Control Alfalfa Snout Beetle.
- Keller, M. D., A. Testa and E. J. Shields. 2013. Alfalfa Snout Beetle: Analysis of economic impact on alfalfa production. 2 pp
- Keller, M. D., A. Testa and E. J. Shields. 2013: Biological Control of Alfalfa Snout Beetle: A guide. 2 pp
- Keller, M. D., A. Testa and E. J. Shields 2013: Alfalfa Snout Beetle: A guide to the diagnosis and management. 8 pp.
- Shields, E. J. 2013. BT-Corn Rootworm Resistance has been reported. What is Cropping Up? Vol 23 (1) 12 pp.
- Shields, E. J. and A. Testa. 2014. Economic Loss Due to Alfalfa Snout Beetle. 2 pp
- Testa, A. and E. J. Shields. 2015. Rearing My Own Nematodes. 2 pp
- Pashow, L., A. Testa, E. J. Shields. 2015. Identifying Losses in Berry Production. 2 pp.
- Pashow, L., A. Testa, E. J. Shields. 2015. Adopting Biocontrol Program of Rearing-Your-Own Nematodes Against Root Weevil Complex. 2 pp

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- Pashow, L., A. Testa, E. J. Shields. 2015. How Much is Black Vine Weevil and Strawberry Root Weevil Costing? 2 pp.
- Testa, A and E. J. Shields. 2015. Application of Biocontrol Nematodes for Control of Alfalfa Snout Beetle. 2 pp.
- Testa, A. and E. J. Shields. 2016. Management of Alfalfa Snout Beetle. 8 pp.
- Testa, A. and E. J. Shields. 2016. Rearing My Own Nematodes. 2 pp
- Testa, A and E. J. Shields. 2016. Rearing & Applying Nematodes to Control Alfalfa Snout Beetle.

### **PROFESSIONAL OVERVIEW AND OBJECTIVES**

The focus of my extension and research efforts is to reduce the environmental impact of insect management in field crops utilizing the guidelines of IPM (Integrated Pest Management). Major focus is placed on biological control of insect pests, host plant resistance, least dose pesticide usage when required and insect long-ranged migration. These foci are supported with active research projects with the biological control of alfalfa snout beetle, breeding for snout beetle resistant alfalfa (with Don Viands), least dose evaluations with corn rootworm and potato leafhopper and long-ranged movement of potato leafhopper and soybean aphid. Additional foci on aerobiology have included joint projects with the movement of corn pollen (D. Aylor, CT Ag Exp. Stat.), movement of wheat head scab (G. Bergstrom) and dispersal of herbicide resistant weed seed ( D. Mortensen, Penn State). Current aerobiology research is focused on detecting airborne plant pathogens utilizing new mobile PCR technology. Research information is disseminated to the agribusiness audience using extension articles, extension presentations, and interviews with the popular press. With field crops grown in every county in NYS and the field crop commodity planted in over 90% on NYS agricultural land, the audience is large and diverse.