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An Introduction to Insects of Regulatory Concern

Robert Phillips

University of Nebraska-Lincoln

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An Introduction to Insects of Regulatory Concern



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An Introduction to Insects of Regulatory Concern



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National and International Obligations



- **IPPC:**
International Plant Protection Convention
- **NPPO:**
National Plant Protection Organization
- **PPQ:**
Plant Protection and Quarantine
- **APHIS:**
Animal Health and Inspection Services
- **MOU:**
Memorandum of Understanding

Protecting Missouri's Resources



International Cooperation



Nursery Inspections

- **Nursery Grower:**
 - **Nursery Dealer:**
 - **Quarantined material:**
 - **Control recommendations:**



Ash/Lilac Clearwing Borer

Podosesia syringae

Sesiidae



- **DDB50:**
275-500

- **Phenology:**
Spiraea × vanhouttei- full bloom

Larvae				Pupae								
				Adults								
				Eggs								
					Larvae							
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	



Daniel Herms, Ohio State University bugwood.org



Mark H Shour, Iowa State University



Missouri Botanical Garden

bloom

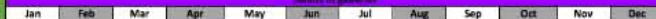


Larvae											
				Pupae							
				Adults							
					Eggs						
					Larvae						
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Scolytidae



@ 120





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J.R. Baker & S.B. Bambara, North Carolina State University, Bugwood.org **UGA5154055**



				Larvae									
				Pupae									
				Eggs									
						Adult Flight							
Adults in galleries													
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		

Beech Borer

Goes pulverulentus

Cerambycidae



- **DDB50:**
800-1000
- **Phenology:**

Catalpa Early Blooming

Mature Larvae													
			Pupae										
				Adults									
					Eggs								
						First Season Larvae							
						Second and Third Season Larvae							
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		



James B. Hanson, USDA Forest Service, Bugwood.org

UGA1394032



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Mature Larvae											
			Pupae								
				Adults							
						Eggs					
						First Season Larvae					
Second and Third Season Larvae											
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Diaspididae



- **DDB50:**
500-700
- **Phenology**
Catalpa Early Bloom





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Fertilized Adult Females											
			Eggs								
				Nymphs							
						Adults					
							Eggs				
							Nymphs				
								Adults			
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Roundheaded
Appletree Borer
Saperda candida
Cerambycidae



- **DDB50:**
500-600
- **Phenology:**
Mock Orange Blooming





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Life Cycle of a Woodpecker



Greater Peachtree Borer *Synanthedon exitiosa* Sesiidae



- **DDB50:**
2700-2900
- **Phenology:**
Mock orange bloom-
panicle hydrangea
blooming pink





Joseph Berger, Budwood.org

5498689



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panicle hydra

blooming pin

Larvae											
					Pupae						
					Adults						
					Eggs						
					First Season Larvae						
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Pine Bark Adelgid

Pineus strobi

Phylloxeridae



- **DDB50:**
0-30

- **Phenology:**
Silver Maple-
blooming before
leaf buds break

Immature Nymphs			Egg		Second Generation		Third Generation		Fourth Generation		
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec



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blooming leaf buds

Immature Nymphs												
			Eggs									
				Second Generation								
							Third Generation					
									Fourth Generation			
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	

Pine Needle Scale

Chionaspis pinifoliae

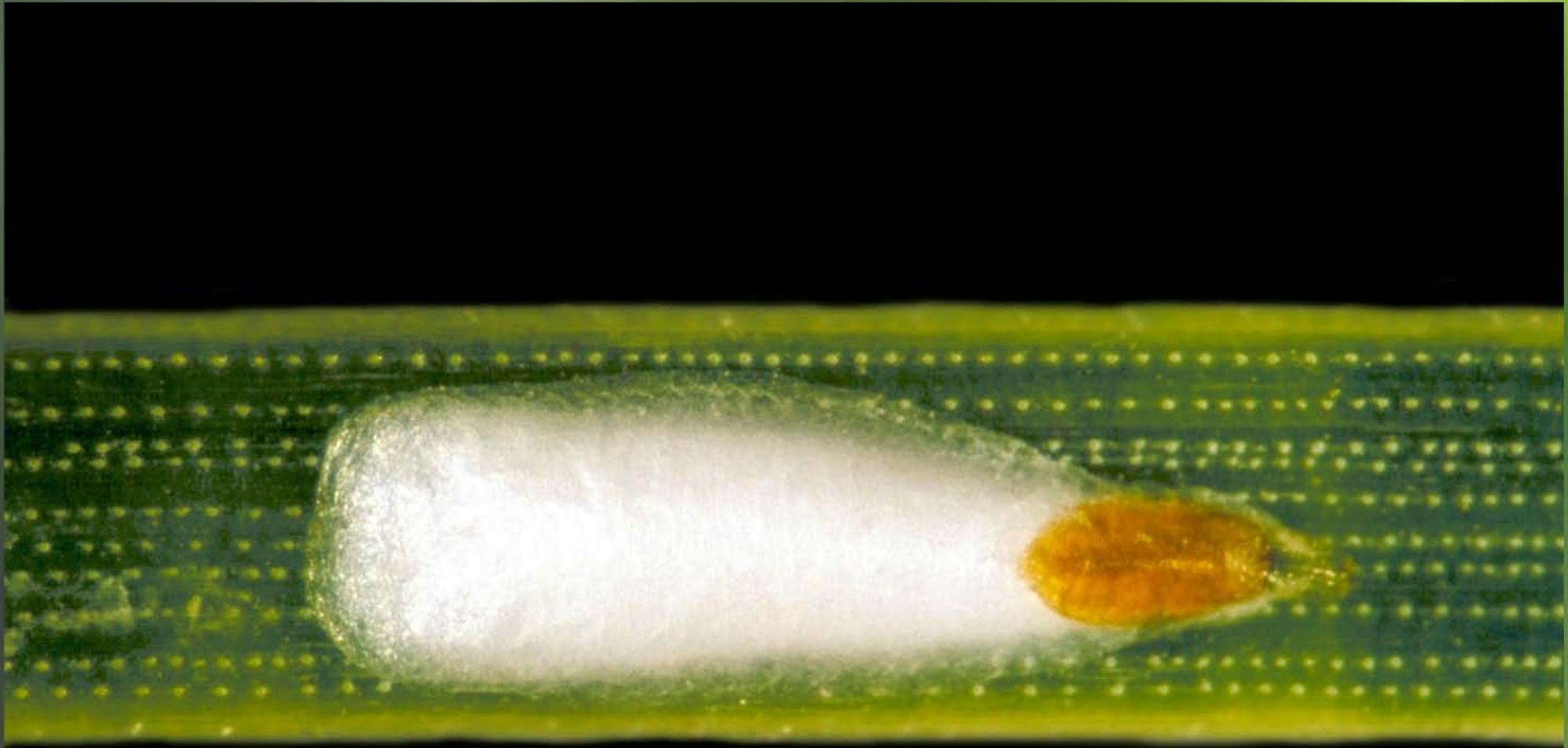
Diaspididae



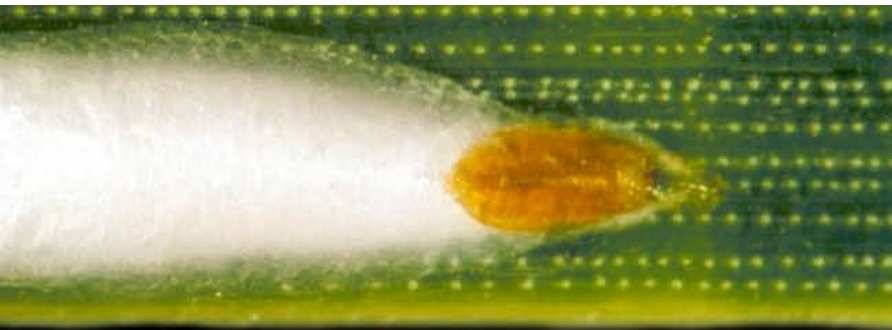
Eggs				Eggs				Eggs			
				Crawlers		Crawlers					
				Nymphs		Nymphs					
				Adult Females							
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec



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Robert J. Bauernfeind, Kansas State University, Bugwood.org **5511475**



Dr. J. Bauernfeind, Kansas State University, Bugwood.org 5511475



Zimmerman Pine Moth

Dioryctria zimmermani

Pyralidae



- **DDB50:**
100-200

- **Phenology:**
Saucer Magnolia- Pink bud -
early bloom

****Larvae in Hibernaculum												
			Larvae move into Phloem									
							Pupae					
							Adults					
							Eggs					
								Immature Larvae				*****
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	



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Whiteny Cranshaw, Colorado State University, Bugwood.org

UGA1246008



W. Colorado State University, Bugwood.org UGA1246008

- **Phenology:**
Saucer Magnolia- Pin
early bloom

****Larvae in Hibernaculum											
			Larvae move into Phloem								
							Pupae				
							Adults				
							Eggs				
								Immature Larvae *****			
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Iris Borer

Macronoctua onusta

Noctuidae



- **DDB50:**
220-320



Eggs													
			Larvae										
						L. in rhizomes							
						Pupae							
								Adults					
									Eggs				
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		

No



Michelle Grabowski



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Eggs											
				Larvae							
							L. in rhizomes				
							Pupae				
									Adults		
									Eggs		
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Obscure Scale

Melanaspis obscure

Diaspididae



- **DDB50:**
1100-1500

Second Instar Nymphs													
					Mature Females								
							Eggs & Crawlers						
								Second Instar Nymphs					
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		



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Second Instar Nymphs											
					Mature Females						
							Eggs & Crawlers				
								Second Instar Nymphs			
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Fall Webworm

Hyphantria cunea

Arctiidae



- **DDB50:**
1800-2100

- **Phenology:**
Panicle hydrangea-
blooming white

Pupae				1st Adult								
				1st Larvae								
				1st Pupae								
				2nd Adult								
							2nd Larvae					
								Pupae				
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	



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Panicale hydrant blooming white

Pupae				1st Adult							
				1st Larvae							
					1st Pupae						
					2nd Adult						
							2nd Larvae				
								Pupae			
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Eastern Tent Caterpillar

Malacosoma americanum

Lasiocampidae



- **DDB50:**
100-200

- **Phenology:**
Saucer Magnolia Pink
bud-early bloom

Egg Masses													
			Larvae										
					Pupae								
					Adults								
					Egg Masses								
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		



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bud-early bloom



Egg Masses											
			Larvae								
					Pupae						
					Adults						
						Egg Masses					
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Daylily leafminer

Ophiomyia kwansonis

Agromyzidae



- **DDB50:**
Information not available



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Dr. D Jurc, (SFI) Slovenia

Hawthorn Mealybug

Phenacoccus dearnessi

Pseudococcidae



- **DDB50:**
100-200
- **Phenology:**
Saucer Magnolia-
dropping petals

Late Stage Nymphs												
		Female Nymphs										
			Males emerge									
			Adults									
				Eggs								
								Overwintering Nymphs				
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	



Todd Voss, Iowa Department of Agriculture



Todd Voss, Iowa Department of Agriculture

- **Phenology:**
Saucer Magnolia
dropping petals

Late Stage Nymphs											
			Female Nymphs								
				Males emerge							
				Adults							
					Eggs						
								Overwintering Nymphs			
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

European Chafer

Rhizotrogus majalis

Scarabaeidae



- **DDB50:**
800-1000



Japanese Beetle Harmonization Plan: <http://nationalplantboard.org/wp-content/uploads/docs/jbcolumn.pdf>





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Bruce Watt, University of Maine, Bugwood.org

5507089



[Nationalplant
content/uploa
jbcolumn.pdf](#)

Third instar larvae												
				Prepupae								
				Pupae								
					Adults							
					Eggs							
						First Instar Larvae						
						Second Instar Larvae						
						Third Instar Larvae						
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	

Flatheaded Appletree Borer

Chrysobothris femorata

Buprestidae



- **DDB50:**
500-600

- **Phenology:**
Mock orange begins
blooming





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blooming



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Larvae											
				Pupae							
					Adults						
					Eggs						
					Larvae						
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Bronze Birch Borer

Agrilus anxius

Buprestidae



- **DDB50:**
400-500

- **Phenology:**
Vanhoutte Spires-
finishes blooming

Larvae												
				Pupae								
				Adults								
				Eggs								
					Larvae							
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	



UGA1398266







vann
finish

Larvae											
				Pupae							
					Adults						
					Eggs						
						Larvae					
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Woolly Apple Aphid

Eriosoma lanigerum

Aphididae



- **DDB50:**
2900-3100
- **Phenology:**
Hydrangea arborescens
'Grandiflora'

Nymphs											
Winged & Wingless Adults											
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Apni



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University of Georgia Plant Pathology, University of Georgia, Bugwood.org **UGA1496447**



gy, University of Georgia, Bugwood.org **UGA1496447**

Nymphs											
			Winged & Wingless Adults								
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Oystershell Scale

Lepidosaphes ulmi

Diaspididae



- **DDB50:**
275-500 (brown)
400-600 (gray)
- **Phenology:**
Spiraea × vanhouttei- full bloom (brown)
Spiraea × vanhouttei- finished bloom (gray)

Eggs							Eggs				
					Crawlers		Crawlers				
					Adults		Adults				
									Eggs		
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec



Todd Voss, Iowa Department Agriculture



Spiraea × vanhoutt
 bloom (brown)
 Spiraea × vanhoutt
 finished bloom (gr

Eggs								Eggs				
					Crawlers			Crawlers				
					Adults				Adults			
										Eggs		
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	

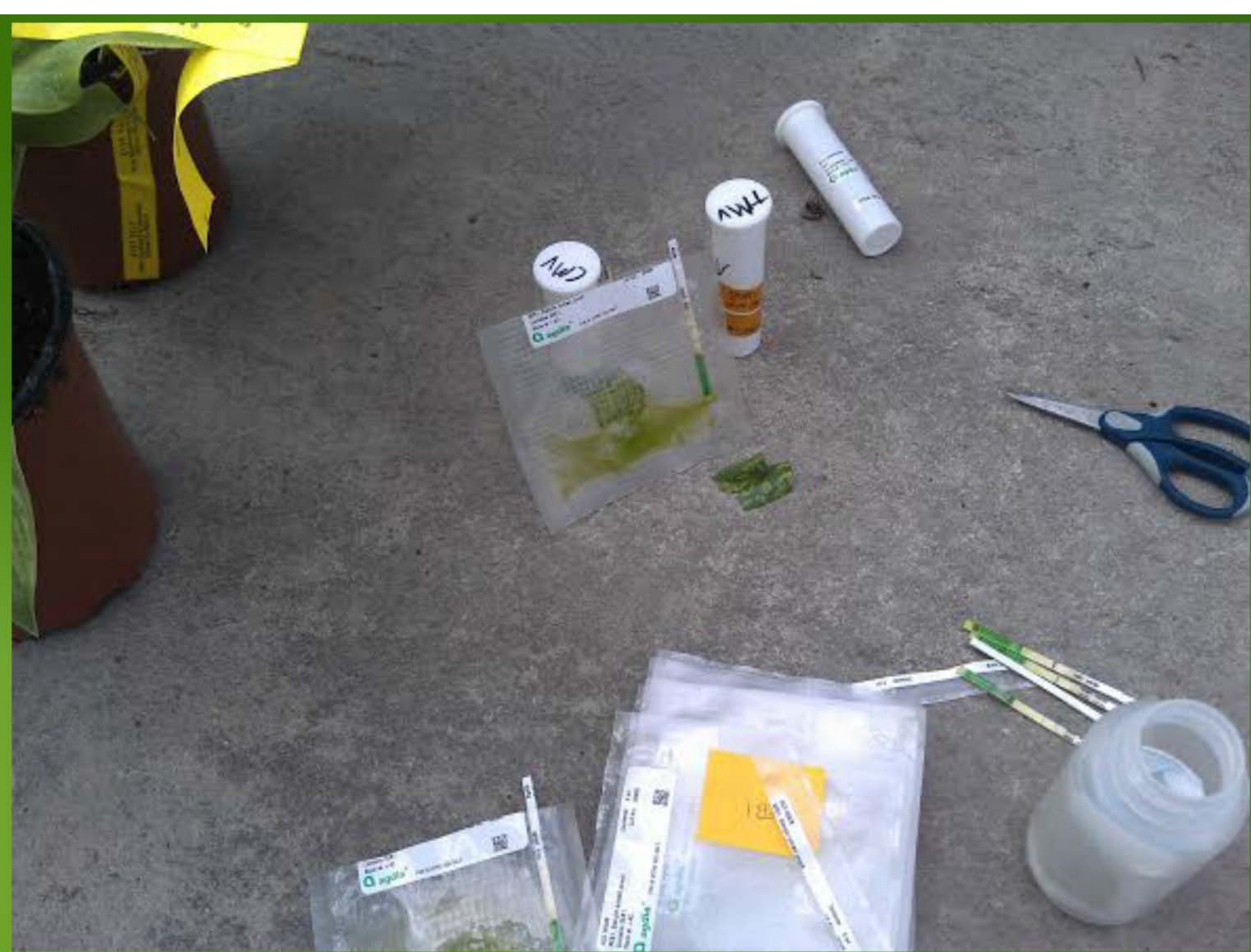
Thrips and Aphids











Linden Borer

Saperda vestita

Cerambycidae



Linden borer frass

Konnie Jerabek DATCP



Linden borer

Konnie Jerabek DATCP

- **DDB50:**
500-600
- **Phenology:**
Mock Orange-
Blooming

Mature Larvae				Pupae		Adults		Eggs		First Season Larvae		Second Season Larvae	
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		



Pennsylvania Dept. of conservation and Natural Resources-
Forestry, Bugwood.org

UGA5017051



Linden borer frass

Konnie Jerabek DATCP



Linden borer

Konnie Jerabek DATCP



Linden borer

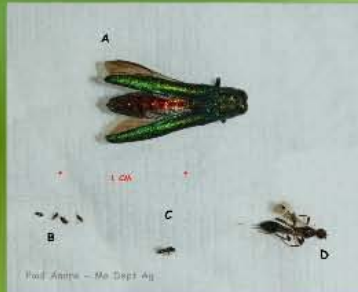
Konnie Jerabek DATCP

Blooming



Emerald Ash Borer

Agrilus planipennis
Buprestidae



A



+

1 CM

+



B

C



D

Paul Andre - Mo Dept Ag









Fire Ant

Solenopsis spp.

Formicidae











YouTube

Thousand Canker Disease

Pityophthorus juglandis

Geosmithia morbida





Robert Phillips 2010/08/26 10:11





Robert Phillips 2010/08/26 09:13

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