


2017 Career Development Event Rules and Regulations

Entomology

		
Maximum Number of Team Members	4	
Number of Team Members Scored	3	
Scantron	Multi Purpose B – Form Number -	
Committee: Kathy Duffield Mary Phillips Lisa Moreland Steve Tennant John Workman		

The contests will consist of identifying correctly from specimens, **twenty-five (25) to thirty (30)** common economic insects or insect relatives which will be selected from the following list. Specimens will be numbered and contestants will identify the common name, host, scientific order and ONE control measure for each insect. Students will select the appropriate corresponding number for each insect, host, scientific order and control measure from the lists provided and enter those appropriate numbers on the scantron sheet provided.

THE SCORE WILL BE DETERMINED AS FOLLOWS:

1. Each correctly identified **insect** or **insect relative** will count **3 points**.
2. Each correctly identified **order** will count **1 point**.
3. Each correctly identified **host** will count **1 point**
4. Correctly identifying one of the **control measures** for each will count **3 points**

Bulletins illustrating and describing economic insects or their relatives are occasionally issued by the Agricultural Experiment Stations of various states-- usually the supply of these bulletins is so quickly exhausted that their listing here is not worthwhile.

List of Insects

<i>Host:</i>	<i>Insect:</i>	<i>Order:</i>	<i>• Control:</i>
Alfalfa	Alfalfa Weevil	Coleoptera	<ul style="list-style-type: none"> • Parasitoids and/or pathogens • Early harvest • Pyrethroids
	Leafhopper	Homoptera	<ul style="list-style-type: none"> • Resistant plant varieties • Early harvest • Pyrethroids
Apple	Apple Maggot	Diptera	<ul style="list-style-type: none"> • Sticky balls • Kaolin clay (Surround) • Carbaryl (Sevin)

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Host:	Insect:	Order:	• Control:
	Codling Moth	Lepidoptera	<ul style="list-style-type: none"> • Pheromone traps • CM granulovirus (Cyd-X) • Spinetoram (Delegate) • Acetamiprid (Assail)
	San Jose Scale	Homoptera	<ul style="list-style-type: none"> • Prune and destroy infested plant parts • Dormant horticultural oil • Pyriproxyfen (Esteem) • Pyrethroids
Bean	Mexican Bean Beetle	Coleoptera	<ul style="list-style-type: none"> • Plant early and/or fall plantings • Acephate (Orthene) • Pyrethroids
	Spider Mites	Acari	<ul style="list-style-type: none"> • Predators • Dormant horticultural oil • Abamectin • Bifenthrin
Beneficial Insects	Dragon Fly and Damselfly	Odonata	<ul style="list-style-type: none"> • Insect predator
	Syrphid Fly	Diptera	<ul style="list-style-type: none"> • Insect predator
	Honey Bee	Hymenoptera	<ul style="list-style-type: none"> • Plant pollination • Useful product
	Bumble Bee	Hymenoptera	<ul style="list-style-type: none"> • Plant pollination
	Lady Bug	Coleoptera	<ul style="list-style-type: none"> • Insect predator
	Lace Wing	Neuroptera	<ul style="list-style-type: none"> • Insect predator
	Praying Mantis	Mantodea	<ul style="list-style-type: none"> • Insect predator
Corn	Corn Earworm	Lepidoptera	<ul style="list-style-type: none"> • Resistant plant varieties • Plant early • Bt (<i>Bacillus thuringiensis</i>) • Carbaryl (Sevin) • Pyrethroids
	Flea Beetles	Coleoptera	<ul style="list-style-type: none"> • Carbaryl (Sevin) • Pyrethroids
	European Corn Borer	Lepidoptera	<ul style="list-style-type: none"> • Resistant plant varieties • Plant early • Bt (<i>Bacillus thuringiensis</i>) • Carbaryl (Sevin) • Pyrethroids
	Corn Seed Maggot	Diptera	<ul style="list-style-type: none"> • Insecticidal seed treatment or soil insecticide at planting
	Wireworm	Coleoptera	<ul style="list-style-type: none"> • Crop rotation • Soil insecticide at planting
	Armyworm	Lepidoptera	<ul style="list-style-type: none"> • Bt (<i>Bacillus thuringiensis</i>) • Carbaryl (Sevin)

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<i>Host:</i>	<i>Insect:</i>	<i>Order:</i>	<i>Control:</i>
			<ul style="list-style-type: none"> • Pyrethroids
	Corn Leaf Aphid	Homoptera	<ul style="list-style-type: none"> • Predators and/or parasitoids • Pyrethroids
	Corn Rootworm	Coleoptera	<ul style="list-style-type: none"> • Crop rotation • Pyrethroids
Crucifers	Cabbage Maggot	Diptera	<ul style="list-style-type: none"> • Row covers • Insecticidal seed treatment or soil insecticide at planting
	Cabbage Looper	Lepidoptera	<ul style="list-style-type: none"> • Parasitoids • Bt (<i>Bacillus thuringiensis</i>) • Pyrethroids
Cucurbits	Striped Cucumber Beetle	Coleoptera	<ul style="list-style-type: none"> • Kaolin clay (Surround) • Imidacloprid
	Squash Vine Borer	Lepidoptera	<ul style="list-style-type: none"> • Kaolin clay (Surround) • Pyrethroids
	Squash Bug	Hemiptera	<ul style="list-style-type: none"> • Hand removal and destruction • Removal of plant debris after harvest • Imidacloprid
	Cutworm	Lepidoptera	<ul style="list-style-type: none"> • Collars placed around plants • Carbaryl (Sevin) • Pyrethroids
Domestic Animals	Face Fly	Diptera	<ul style="list-style-type: none"> • Insecticide impregnated ear tags • Self treatment dust bags and oilers • Feed additive insecticides • Animal sprays
	Horse and Deer Fly	Diptera	<ul style="list-style-type: none"> • CO2 baited traps • Animal sprays
	Stable Fly	Diptera	<ul style="list-style-type: none"> • Sanitization around stable or corral • Residual surface sprays
	Horn Fly	Diptera	<ul style="list-style-type: none"> • Walk-through trap • Insecticide impregnated ear tags • Self treatment dust bags and oilers • Feed additive insecticides • Pour-on insecticides • Animal sprays
	Cattle Grub (Dairy)	Diptera	<ul style="list-style-type: none"> • Pour-on insecticides for non-lactating cattle • Injectable insecticides for non-lactating cattle
	Cattle Grub (Beef)	Diptera	<ul style="list-style-type: none"> • Pour-on insecticides • Injectable insecticides
	Sheep Ked	Diptera	<ul style="list-style-type: none"> • Spring sheering

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<i>Host:</i>	<i>Insect:</i>	<i>Order:</i>	<i>• Control:</i>
			<ul style="list-style-type: none"> • Pour-on insecticides • Animal sprays and dusts
	Chewing Lice (Dairy)	Phthiraptera (suborder Mallophaga)	<ul style="list-style-type: none"> • Check and treat new animals before adding to herd • Self treatment dust bags and oilers • Pour-on insecticides • Animal sprays and dusts
	Chewing Lice (Beef)	Phthiraptera (suborder Mallophaga)	<ul style="list-style-type: none"> • Check and treat new animals before adding to herd • Self treatment dust bags and oilers • Pour-on insecticides • Animal sprays and dusts
	Sucking Lice	Phthiraptera (suborder Anoplura)	<ul style="list-style-type: none"> • Check and treat new animals before adding to herd • Self treatment dust bags and oilers • Pour-on insecticides • Animal sprays and dusts
	Bot Fly	Diptera	<ul style="list-style-type: none"> • Bath with warm H2O • Feed additive insecticides
	Tick	Acari	<ul style="list-style-type: none"> • Check and remove by hand • Animal sprays
	Flea	Siphonaptera	<ul style="list-style-type: none"> • Insecticide treated collars • Animal sprays and dusts
	Northern Fowl Mite (Poultry)	Acari	<ul style="list-style-type: none"> • Animal sprays and dusts
Forest and Shade Tree	Tent Caterpillar	Lepidoptera	<ul style="list-style-type: none"> • Remove and destroy egg cases • Remove nests from branches • Bt (<i>Bacillus thuringiensis</i>) • Carbaryl (Sevin)
	Locust Borer	Coleoptera	<ul style="list-style-type: none"> • Promote tree vitality • Prune and destroy infested plant parts • Carbaryl (Sevin)
	Poplar leaf weevil	Coleoptera	<ul style="list-style-type: none"> • Imidacloprid • Carbaryl (Sevin) • Acephate (Orthene)
	Gypsy Moth	Lepidoptera	<ul style="list-style-type: none"> • Remove and destroy egg cases • Pheromone traps • Bt (<i>Bacillus thuringiensis</i>) • Nucleopolyhedrosis virus (NPV) • Carbaryl (Sevin)

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<i>Host:</i>	<i>Insect:</i>	<i>Order:</i>	<i>Control:</i>
	Bark Beetles	Coleoptera	<ul style="list-style-type: none"> • Promote tree vitality • Prune and destroy infested plant parts
	Periodical Cicada	Homoptera	<ul style="list-style-type: none"> • Cover young trees with netting or other materials • Remove flagging damage and destroy clippings
	Elm Leaf Beetle	Coleoptera	<ul style="list-style-type: none"> • Imidacloprid • Carbaryl (Sevin)
Household	Indian Meal Moth	Lepidoptera	<ul style="list-style-type: none"> • Discard infested materials • Store dry foods in tightly sealed containers • Sanitation/Clean-up
	Clothes Moth	Lepidoptera	<ul style="list-style-type: none"> • Periodic dry cleaning or laundering • Lavandin oil • Naphthalene • Paradichlorobenzene
	Saw-toothed grain beetle	Coleoptera	<ul style="list-style-type: none"> • Discard infested materials • Store dry foods in tightly sealed containers • Sanitation/Clean-up
	Millipede	Julida	<ul style="list-style-type: none"> • Removal of plant refuse/debris • Seal cracks and other openings • Hand removal and destruction
	Silverfish	Thysanura	<ul style="list-style-type: none"> • Keep infested areas clean and dry • Boric acid • Pyrethroids
	Moth Drain Fly	Diptera	<ul style="list-style-type: none"> • Clean drain pipes and traps • Pyrethroids
	Termites	Isoptera	<ul style="list-style-type: none"> • Contact a reliable pest control operator
	Clover Mite	Acari	<ul style="list-style-type: none"> • Remove grass growing next to foundation of homes • Perimeter spray with miticide • Vacuum/wipe up with damp cloth
	Carpet Beetle	Coleoptera	<ul style="list-style-type: none"> • Sanitation/Clean-up • Periodic dry cleaning or laundering • Store dry foods, woolens, furs in tightly sealed containers • Pyrethroids
	Carpenter Ant	Hymenoptera	<ul style="list-style-type: none"> • Eliminate high moisture conditions • Replace moisture-damaged wood • Baits • Pyrethroids

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<i>Host:</i>	<i>Insect:</i>	<i>Order:</i>	<i>Control:</i>
	Cockroach	Blattaria	<ul style="list-style-type: none"> • Sanitation/Clean-up • Boric Acid • Baits/Gels
	Sowbug	Isopoda	<ul style="list-style-type: none"> • Removal of plant refuse/debris • Seal cracks and other openings • Hand removal and destruction
	Carpenter Bee	Hymenoptera	<ul style="list-style-type: none"> • Paint exposed wood surfaces • Plug entrance holes • Carbaryl (Sevin) • Pyrethroids
	Powder Post Beetle	Coleoptera	<ul style="list-style-type: none"> • Use properly stored and dried wood • Paint, seal, or varnish exposed wood surfaces • Removal and destruction of infested items • Fumigation
	Boxelder Bug	Hemiptera	<ul style="list-style-type: none"> • Remove seed bearing boxelder • Seal cracks and other openings • Maintain tight fitting screens • Carbaryl (Sevin)
	Cluster Fly	Diptera	<ul style="list-style-type: none"> • Seal cracks and other openings • Maintain tight fitting screens • Fly swatter • Aerosol sprays
Insects of Annoyance and Public Health	Mosquito	Diptera	<ul style="list-style-type: none"> • Eliminate breeding sites • Limit exposure during dawn and dusk • Insect repellants
	Tick (Deer and American Dog)	Acari	<ul style="list-style-type: none"> • Insect repellants • Avoid walking through tall grass and weeds • Check and remove by hand
	Buffalo Gnat	Diptera	<ul style="list-style-type: none"> • Insect repellants
	Bed Bug	Hemiptera	<ul style="list-style-type: none"> • Sanitation/Clean-up • Wash and dry clothes and bed linens at high temperature • Pyrethroids • Contact a reliable pest control operator

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Host:	Insect:	Order:	• Control:
	Lice (Human)	Phthiraptera (suborder Anoplura)	<ul style="list-style-type: none"> • Use nit combs to remove lice and their eggs • Wash and dry clothes and bed linens at high temperature • Insecticidal shampoos and lotions
	House Fly	Diptera	<ul style="list-style-type: none"> • Sanitation/Clean-up • Fly swatter • Aerosol sprays
	Wasp, Hornet, Yellow Jacket	Hymenoptera	<ul style="list-style-type: none"> • Fly swatter • Aerosol sprays (treatment of nest)
	Spider	Araneae	<ul style="list-style-type: none"> • Seal cracks and other openings • Maintain tight fitting screens • Remove sheltering sites adjacent to the home • Aerosol sprays
Lawn	Chinch Bug	Hemiptera	<ul style="list-style-type: none"> • Keep thatch to a minimum • Predators • Carbaryl (Sevin) • Imidacloprid (Merit)
	White Grub	Coleoptera	<ul style="list-style-type: none"> • Establish tall fescue turf • Insect parasitic nematodes • Milky spore disease • Imidacloprid (Merit)
	Sod Webworm	Lepidoptera	<ul style="list-style-type: none"> • Establish tall fescue turf • Insect parasitic nematodes • Bt (<i>Bacillus thuringiensis</i>) • Carbaryl (Sevin)
Oats	Cereal Leaf Beetle	Coleoptera	<ul style="list-style-type: none"> • Predators and/or parasitoids • Carbaryl (Sevin) • Pyrethroids
Ornamental	Bagworm	Lepidoptera	<ul style="list-style-type: none"> • Remove and destroy bags • Bt (<i>Bacillus thuringiensis</i>) • Carbaryl (Sevin)
	Lace Bug	Hemiptera	<ul style="list-style-type: none"> • Promote tree vitality • Insecticidal soap • Horticultural oil • Carbaryl (Sevin)
	Scale Insects	Homoptera	<ul style="list-style-type: none"> • Prune and destroy infested plant parts • Dormant horticultural oil • Imidacloprid
	Black Vine Weevil	Coleoptera	<ul style="list-style-type: none"> • Insect parasitic nematodes

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<i>Host:</i>	<i>Insect:</i>	<i>Order:</i>	<i>Control:</i>
			<ul style="list-style-type: none"> • Imidacloprid • Pyrethroids
	Thrips	Thysanoptera	<ul style="list-style-type: none"> • Predators • Spinosad • Imidacloprid • Pyrethroids
	Japanese Beetle	Coleoptera	<ul style="list-style-type: none"> • Milky spore disease • Carbaryl (Sevin) • Pyrethroids
	Spider Mites	Acari	<ul style="list-style-type: none"> • Predators • Dormant horticultural oil • Insecticidal soap • Abamectin
Peach	Plum Curculio	Coleoptera	<ul style="list-style-type: none"> • Thiamethoxam (Actara, Endigo) • Phosmet (Imidan)
	Peach Tree Borer	Lepidoptera	<ul style="list-style-type: none"> • Pheromone traps • Organophosphates • Pyrethroids
	Oriental Fruit Moth	Lepidoptera	<ul style="list-style-type: none"> • Pheromone traps • OFM sprayable pheromone • Spinetoram (Delegate) • Pyrethroids
Potato	Potato Leafhopper	Homoptera	<ul style="list-style-type: none"> • Promote plant vitality • Neonicotinoids • Pyrethroids
	Colorado Potato Beetle	Coleoptera	<ul style="list-style-type: none"> • Crop rotation • Spinosad (Entrust) • Neonicotinoids
	Potato Aphid	Homoptera	<ul style="list-style-type: none"> • Predators and/or parasitoids • Neonicotinoids
Tobacco	Tobacco Hornworm	Lepidoptera	<ul style="list-style-type: none"> • Hand removal and destruction • Predators and/or parasitoids • Bt (<i>Bacillus thuringiensis</i>) • Bifenthrin
	Tobacco Budworm	Lepidoptera	<ul style="list-style-type: none"> • Predators and/or parasitoids • Spinosad (Tracer) • Imidacloprid
Tomato	Tomato Hornworm	Lepidoptera	<ul style="list-style-type: none"> • Hand removal and destruction • Predators and/or parasitoids • Bt (<i>Bacillus thuringiensis</i>) • Bifenthrin
	Tomato Fruitworm	Lepidoptera	<ul style="list-style-type: none"> • Parasitoids • Bt (<i>Bacillus thuringiensis</i>)

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<i>Host:</i>	<i>Insect:</i>	<i>Order:</i>	<i>Control:</i>
			<ul style="list-style-type: none">• Spinosad (Entrust)• Bifenthrin
	Flea Beetle	Coleoptera	<ul style="list-style-type: none">• Carbaryl (Sevin)• Pyrethroids

Entomology CDE Code Sheet

Revised 4/4/2017

Host

001. Alfalfa	008. Domestic Animals	014. Ornamental
002. Apple	009. Forest and Shade Tree	015. Peach
003. Bean	010. Household	016. Potato
004. Beneficial Insects	011. Insects of Annoyance and Public Health	017. Tobacco
005. Corn	012. Lawn	018. Tomato
006. Crucifers	013. Oats	
007. Cucurbits		

Insect

001. Alfalfa Weevil	034. Dragon Fly and Damselfly	066. Powder Post Beetle
002. Apple Maggot	035. Elm Leaf Beetle	067. Praying Mantis
003. Armyworm	036. European Corn Borer	068. San Jose Scale
004. Bagworm	037. Face Fly	069. Saw-toothed grain beetle
005. Bark Beetles	038. Flea	070. Scale Insects
006. Bed Bug	039. Flea Beetle	071. Sheep Ked
007. Black Vine Weevil	040. Flea Beetles	072. Silverfish
008. Bot Fly	041. Gypsy Moth	073. Sod Webworm
009. Boxelder Bug	042. Honey Bee	074. Sowbug
010. Buffalo Gnat	043. Horn Fly	075. Spider
011. Bumble Bee	044. Horse and Deer Fly	076. Spider Mites
012. Cabbage Looper	045. House Fly	077. Spider Mites
013. Cabbage Maggot	046. Indian Meal Moth	078. Squash Bug
014. Carpenter Ant	047. Japanese Beetle	079. Squash Vine Borer
015. Carpenter Bee	048. Lace Bug	080. Stable Fly
016. Carpet Beetle	049. Lace Wing	081. Striped Cucumber Beetle
017. Cattle Grub (Beef)	050. Lady Bug	082. Sucking Lice
018. Cattle Grub (Dairy)	051. Leafhopper	083. Syrphid Fly
019. Cereal Leaf Beetle	052. Lice (Human)	084. Tent Caterpillar
020. Chewing Lice (Beef)	053. Locust Borer	085. Termites
021. Chewing Lice (Dairy)	054. Mexican Bean Beetle	086. Thrips
022. Chinch Bug	055. Millipede	087. Tick
023. Clothes Moth	056. Mosquito	088. Tick (Deer and American Dog)
024. Clover Mite	057. Moth Drain Fly	089. Tobacco Budworm
025. Cluster Fly	058. Northern Fowl Mite (Poultry)	090. Tobacco Hornworm
026. Cockroach	059. Oriental Fruit Moth	091. Tomato Fruitworm
027. Codling Moth	060. Peach Tree Borer	092. Tomato Hornworm
028. Colorado Potato Beetle	061. Periodical Cicada	093. Wasp, Hornet, Yellow Jacket
029. Corn Earworm	062. Plum Curculio	094. White Grub
030. Corn Leaf Aphid	063. Poplar leaf weevil	095. Wireworm
031. Corn Rootworm	064. Potato Aphid	
032. Corn Seed Maggot	065. Potato Leafhopper	
033. Cutworm		

Order

001. Acari	008. Homoptera	015. Neuroptera	020. Thysanoptera
002. Araneae	009. Hymenoptera	016. Odonata	021. Thysanura
003. Blattaria	010. Isopoda	017. Phthiraptera (suborder Anoplura)	
004. Coleoptera	011. Isoptera	018. Phthiraptera (suborder Mallophaga)	
005. Diptera	012. Julida	019. Siphonaptera	
006. Diptera	013. Lepidoptera		
007. Hemiptera	014. Mantodea		

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Controls

001. Abamectin
002. Acephate (Orthene)
003. Acetamiprid (Assail)
004. Aerosol sprays
005. Aerosol sprays (treatment of nest)
006. Animal sprays
007. Animal sprays and dusts
008. Avoid walking through tall grass and weeds
009. Baits
010. Baits/Gels
011. Bath with warm H₂O
012. Bifenthrin
013. Boric acid
014. Bt (*Bacillus thuringiensis*)
015. Carbaryl (Sevin)
016. Check and remove by hand
017. Check and treat new animals before adding to herd
018. Clean drain pipes and traps
019. CM granulovirus (Cyd-X)
020. CO₂ baited traps
021. Collars placed around plants
022. Contact a reliable pest control operator
023. Cover young trees with netting or other materials
024. Crop rotation
025. Discard infested materials
026. Dormant horticultural oil
027. Early harvest
028. Eliminate breeding sites
029. Eliminate high moisture conditions
030. Establish tall fescue turf
031. Feed additive insecticides
032. Fly swatter
033. Fumigation
034. Hand removal and destruction
035. Horticultural oil
036. Imidacloprid
037. Imidacloprid (Merit)
038. Injectable insecticides
039. Injectable insecticides for non-lactating cattle
040. Insect parasitic nematodes
041. Insect predator
042. Insect repellants
043. Insecticidal seed treatment or soil insecticide at planting
044. Insecticidal shampoos and lotions
045. Insecticidal soap
046. Insecticide impregnated ear tags
047. Insecticide treated collars
048. Kaolin clay (Surround)
049. Keep infested areas clean and dry
050. Keep thatch to a minimum
051. Lavandin oil
052. Limit exposure during dawn and dusk
053. Maintain tight fitting screens
054. Milky spore disease
055. Naphthalene
056. Neonicotinoids
057. Nucleopolyhedrovirus (NPV)
058. OFM sprayable pheromone
059. Organophosphates
060. Paint exposed wood surfaces
061. Paint, seal, or varnish exposed wood surfaces
062. Paradichlorobenzene
063. Parasitoids
064. Parasitoids and/or pathogens
065. Perimeter spray with miticide
066. Periodic dry cleaning or laundering
067. Pheromone traps
068. Phosmet (Imidan)
069. Plant early
070. Plant early and/or fall plantings
071. Plant pollination
072. Plug entrance holes
073. Pour-on insecticides
074. Pour-on insecticides for non-lactating cattle
075. Predators
076. Predators and/or parasitoids
077. Promote plant vitality
078. Promote tree vitality
079. Prune and destroy infested plant parts
080. Pyrethroids
081. Pyriproxyfen (Esteem)
082. Removal and destruction of infested items
083. Removal of plant debris after harvest
084. Removal of plant refuse/debris
085. Remove and destroy bags
086. Remove and destroy egg cases
087. Remove flagging damage and destroy clippings
088. Remove grass growing next to foundation of homes
089. Remove nests from branches
090. Remove seed bearing boxelder
091. Remove sheltering sites adjacent to the home
092. Replace moisture-damaged wood
093. Residual surface sprays
094. Resistant plant varieties
095. Row covers
096. Sanitation/Clean-up
097. Sanitization around stable or corral
098. Seal cracks and other openings
099. Self treatment dust bags and oilers
100. Soil insecticide at planting
101. Spinetoram (Delegate)
102. Spinosad
103. Spinosad (Entrust)
104. Spinosad (Tracer)
105. Spring sheering
106. Sticky balls
107. Store dry foods in tightly sealed containers
108. Store dry foods, woolens, furs in tightly sealed containers
109. Thiamethoxam (Actara, Endigo)
110. Use nit combs to remove lice and their eggs
111. Use properly stored and dried wood
112. Useful product
113. Vacuum/wipe up with damp cloth
114. Walk-through trap
115. Wash and dry clothes and bed linens at high temperature
116. NONE CURRENTLY AVAILABLE