

Entomology CDE

(February, 2025)



PURPOSE

The Entomology Career Development Event is designed to create an interest in career preparation in the entomology field. Students will develop skills in identifying common insects and their significance to people and agriculture.

ELIGIBILITY

The participant must be an active member of a chartered West Virginia FFA Chapter and enrolled in grades 9, 10, 11, or 12. Each chapter may enter one team.

EVENT PROCEDURE V

The event will be a team event consisting of four students. Only the top 3 scores will be calculated in the team total. A team may compete with less than 4 members. FFA members will wear official dress.

Under no circumstances will any participants be allowed to handle any of the items in the identification portion of the practicums. Any infraction of this rule will result in team elimination from the event.

No FFA advisors/coaches will be allowed in the area of the contest, but arrangements will be made to view the specimens following the contest.

The use of approved magnifying glasses brought by competitors is encouraged and allowed.

EVENT MATERIALS

MATERIALS STUDENTS MUST PROVIDE

- Pencils
- Clipboards

INDIVIDUAL PRACTICUMS

IDENTIFICATION PRACTICUM

Participants will complete a 25 question ID test of common economic insects or insect relatives. Specimens will be numbered and contestants will identify common name, host, scientific order and ONE control measure for each insect. LIVE INSECTS MAY BE USED IF AVAILABLE!

SCORING

Practicum	Activity	Individual	Team
Insect Identification	ID	50	150
Order Identification	ID	50	150
Host Identification	ID	50	150
Control Identification	ID	50	150
TOTAL		200	600

TIE BREAKERS

In the event of a tie in individual scores, the following events will be used in order to determine award recipients:

INDIVIDUAL

- 1) Insect ID
- 2) Control ID

TEAM

1. TOTAL TEAM SCORE (ALL 4 SCORES COUNTED)
2. Total Team Insect ID Score

INSECT

001. Alfalfa Weevil
002. Apple Maggot
003. Armyworm
004. Bagworm
005. Bark Beetles
006. Bed Bug
007. Black Vine Weevil
008. Bot Fly
009. Boxelder Bug
010. Buffalo Gnat
011. Bumble Bee
012. Cabbage Looper
013. Cabbage Maggot
014. Carpenter Ant
015. Carpenter Bee
016. Carpet Beetle
017. Cattle Grub (Beef)
018. Cattle Grub (Dairy)
019. Cereal Leaf Beetle
020. Chewing Lice (Beef)
021. Chewing Lice (Dairy)
022. Chinch Bug
023. Clothes Moth
024. Clover Mite
025. Cluster Fly
026. Cockroach
027. Codling Moth
028. Colorado Potato Beetle
029. Corn Earworm
030. Corn Leaf Aphid
031. Corn Rootworm
032. Corn Seed Maggot
033. Cutworm
034. Dragon Fly and Damselfly
035. Elm Leaf Beetle
036. European Corn Borer
037. Face Fly

038. Flea
039. Flea Beetle
040. Flea Beetles
041. Gypsy Moth
042. Honey Bee
043. Horn Fly
044. Horse and Deer Fly
045. House Fly
046. Indian Meal Moth
047. Japanese Beetle
048. Lace Bug
049. Lace Wing
050. Lady Bug
051. Leafhopper
052. Lice (Human)
053. Locust Borer
054. Mexican Bean Beetle
055. Millipede
056. Mosquito
057. Moth Drain Fly
058. Northern Fowl Mite (Poultry)
059. Oriental Fruit Moth
060. Peach Tree Borer
061. Periodical Cicada
062. Plum Curculio
063. Poplar leaf weevil
064. Potato Aphid
065. Potato Leafhopper
066. Powder Post Beetle
067. Praying Mantis
068. San Jose Scale
069. Saw-toothed grain beetle
070. Scale Insects
071. Sheep Ked
072. Silverfish
073. Sod Webworm
074. Sowbug
075. Spider

INSECT

076. Spider Mites
077. Squash Bug
078. Squash Vine Borer
079. Stable Fly
080. Striped Cucumber Beetle
081. Sucking Lice
082. Syrphid Fly
083. Tent Caterpillar
084. Termites
085. Thrips
086. Tick
087. Tick (Deer and American Dog
088. Tobacco Budworm
089. Tobacco Hornworm
090. Tomato Fruitworm
091. Tomato Hornworm
092. Wasp, Hornet, Yellow Jacket
093. White Grub
094. Wireworm

HOST

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

ORDER

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

Controls

001	Abamectin	059	Organophosphates
002	Acephate (Orthene)	060	Paint exposed wood surfaces
003	Acetamiprid (Assail)	061	Paint, seal, or varnish exposed wood surfaces
004	Aerosol sprays	062	Paradichlorobenzene
005	Aerosol sprays (treatment of nest)	063	Parasitoids
006	Animal sprays	064	Parasitoids and/or pathogens
007	Animal sprays and dusts	065	Perimeter spray with miticide
008	Avoid walking through tall grass & weeds	066	Periodic dry cleaning or laundering
009	Baits	067	Pheromone traps
010	Baits/Gels	068	Phosmet (Imidan)
011	Bath with warm H2O	069	Plant early
012	Bifenthrin	070	Plant early and/or fall plantings
013	Boric acid	071	Plant pollination
014	Bt (Bacillus thuringiensis)	072	Plug entrance holes
015	Carbaryl (Sevin)	073	Pour-on insecticides
016	Check and remove by hand	074	Pour-on insecticides for non-lactating cattle
017	Check and treat new animals before	075	Predators and/or parasitoids
018	Clean drain pipes and traps	076	Predators
019	CM granulovirus (Cyd-X)	077	Promote plant vitality
020	CO2 baited traps	078	Promote tree vitality
021	Collars placed around plants	079	Prune and destroy infested plant parts
022	Contact a reliable pest control operator	080	Pyrethroids
023	Cover young trees with netting or other materials	081	Pyriproxyfen (Esteem)
024	Crop rotation	082	Removal and destruction of infested items
025	Discard infested materials	083	Removal of plant debris after harvest
026	Dormant horticultural oil	084	Removal of plant refuse/debris
027	Early harvest	085	Remove and destroy bags
028	Eliminate breeding sites	086	Remove and destroy egg cases
029	Eliminate high moisture conditions	087	Remove flagging damage & destroy clippings
030	Establish tall fescue turf	088	Remove grass growing next to foundation of homes
031	Feed additive insecticides	089	Remove nests from branches
032	Fly swatter	090	Remove seed bearing boxelder
033	Fumigation	091	Remove sheltering sites adjacent to the home
034	Hand removal and destruction	092	Replace moisture-damaged wood

035	Horticultural oil	093	Residual surface sprays
036	Imidacloprid	094	Resistant plant varieties
037	Imidacloprid (Merit)	095	Row covers
038	Injectable insecticides	096	Sanitation/Clean-up
039	Injectable insecticides for non-lactating cattle	097	Sanitization around stable or corral
040	Insect parasitic nematodes	098	Seal cracks and other openings
041	Insect predator	099	Self-treatment dust bags and oilers
042	Insect repellants	100	Soil insecticide at planting
043	Insecticidal seed treatment or soil insecticide at planting	101	Spinetoram (Delegate)
044	Insecticidal shampoos and lotions	102	Spinosad
045	Insecticidal soap	103	Spinosad (Entrust)
046	Insecticide impregnated ear tags	104	Spinosad (Tracer)
047	Insecticide treated collars	105	Spring sheering
048	Kaolin clay (Surround)	106	Sticky balls
049	Keep infested areas clean and dry	107	Store dry foods in tightly sealed containers
050	Keep thatch to a minimum	108	Store dry foods, woolens, furs in containers
051	Lavandin oil	109	Thiamethoxam (Actara, Endigo)
052	Limit exposure during dawn and dusk	110	Use nit combs to remove lice and their eggs
053	Maintain tight fitting screens	111	Use properly stored and dried wood
054	Milky spore disease	112	Useful product
055	Naphthalene	113	Vacuum/wipe up with damp cloth
056	Neonicotinoids	114	Walk-through trap
057	Nucleopolyhedrosis virus (NPV)	115	Wash and dry clothes and bed linens at high temperature
058	OFM sprayable pheromone	116	NONE CURRENTLY AVAILABLE

HOST	INSECT	ORDER	CONTROL
Alfalfa	Alfalfa Weevil	Coleoptera	Parasitoids and/or pathogens Early harvest Pyrethroids
	Leafhopper	Homoptera	Resistant plant varieties Early harvest
			Pyrethroids Sticky balls Kaolin clay (Surround) Carbaryl (Sevin)
Apple	Apple Maggot	Diptera	
	Codling Moth	Lepidoptera	Pheromone traps CM granulovirus (Cyd-X) Spinetoram (Delegate) Acetamiprid (Assail)
	San Jose Scale	Homoptera	Prune and destroy infested plant parts Dormant horticultural oil Pyriproxyfen (Esteem) Pyrethroids
Bean	Mexican Bean Beetle	Coleoptera	Plant early and/or fall plantings Acephate (Orthene) Pyrethroids
	Spider Mites	Acari	Predators Dormant horticultural oil Abamectin Bifenthrin
Beneficial Insects	Dragon Fly and Damsel Fly	Odonata	Insect predator
	Syrphid Fly	Diptera	Insect predator
	Honey Bee	Hymenoptera	Plant pollination Useful product
	Bumble Bee	Hymenoptera	Plant pollination
	Lady Bug	Coleoptera	Insect predator
	Lace Wing	Neuroptera	Insect predator
	Praying Mantis	Mantodea	Insect predator
Corn	Corn Earworm	Lepidoptera	Resistant plant varieties Plant early Bt (Bacillus thuringiensis) Carbaryl (Sevin) Pyrethroids
	Flea Beetles	Coleoptera	Carbaryl (Sevin) Pyrethroids
	European Corn Borer	Lepidoptera	Resistant plant varieties Plant early Bt (Bacillus thuringiensis) Carbaryl (Sevin) Pyrethroids
	Corn Seed Maggot	Diptera	Insecticidal seed treatment or soil insecticide at planting

HOST	INSECT	ORDER	CONTROL
	Wireworm	Coleoptera	Crop rotation Soil insecticide at planting
	Armyworm	Lepidoptera	Bt (Bacillus thuringiensis) Carbaryl (Sevin) Pyrethroids
	Corn Leaf Aphid	Homoptera	Predators and/or parasitoids Pyrethroids
	Corn Rootworm	Coleoptera	Crop rotation Pyrethroids
Crucifers	Cabbage Maggot	Diptera	Row covers Insecticidal seed treatment or soil insecticide at planting
	Cabbage Looper	Lepidoptera	Parasitoids Bt (Bacillus thuringiensis) Pyrethroids
Cucurbits	Striped Cucumber Beetle	Coleoptera	Kaolin clay (Surround) Imidacloprid
	Squash Vine Borer	Lepidoptera	Kaolin clay (Surround) Pyrethroids
	Squash Bug	Hemiptera	Hand removal and destruction Removal of plant debris after harvest Imidacloprid
	Cutworm	Lepidoptera	Collars placed around plants Carbaryl (Sevin) Pyrethroids
Domestic Animals	Face Fly	Diptera	Insecticide impregnated ear tags Self-treatment dust bags and oilers Feed additive insecticides Animal sprays
	Horse and Deer Fly	Diptera	CO2 baited traps Animal sprays
	Stable Fly	Diptera	Sanitization around stable or corral Residual surface sprays
	Horn Fly	Diptera	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	Pour-on insecticides for non- lactating cattle
			Injectable insecticides for non- lactating cattle

HOST	INSECT	ORDER	CONTROL
	Cattle Grub (Beef)	Diptera	Pour-on insecticides Injectible insecticides
	Sheep Ked	Diptera	Spring sheering Pour-on insecticides Animal sprays and dusts
	Chewing Lice (Dairy)	Phthiraptera (suborder Mallophaga)	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)	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)	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	Bath with warm H2O Feed additive insecticides
	Tick	Acari	Check and remove by hand Animal sprays
	Flea	Siphonaptera	Insecticide treated collars Animal sprays and dusts
	Northern Fowl Mite (Poultry)	Acari	Animal sprays and dusts
Forest and Shade Tree	Tent Caterpillar	Lepidoptera	Remove and destroy egg cases Remove nests from branches Bt (Bacillus thuringiensis) Carbaryl (Sevin)
	Locust Borer	Coleoptera	Promote tree vitality Prune and destroy infested plant parts Carbaryl (Sevin)
	Poplar leaf weevil	Coleoptera	Imidacloprid Carbaryl (Sevin) Acephate (Orthene)
	Gypsy Moth	Lepidoptera	Remove and destroy egg cases Pheromone traps Bt (Bacillus thuringiensis) Nucleopolyhedrosis virus (NPV) Carbaryl (Sevin)
	Bark Beetles	Coleoptera	Promote tree vitality Prune and destroy infested plant parts
	Periodical Cicada	Homoptera	Cover young trees with netting or other materials Remove flagging damage and destroy clippings
	Elm Leaf Beetle	Coleoptera	Imidacloprid Carbaryl (Sevin)

HOST	INSECT	ORDER	CONTROL
Household	Indian Meal Moth	Lepidoptera	Discard infested materials Store dry foods in tightly sealed containers Sanitation/Clean-up
	Clothes Moth	Lepidoptera	Periodic dry cleaning or laundering Lavandin oil Naphthalene Paradichlorobenzene
	Saw-toothed grain beetle	Coleoptera	Discard infested materials Store dry foods in tightly sealed containers Sanitation/Clean-up
	Millipede	Julida	Removal of plant refuse/debris Seal cracks and other openings Hand removal and destruction
	Silverfish	Thysanura	Keep infested areas clean and dry Boric acid Pyrethroids
	Moth Drain Fly	Diptera	Clean drain pipes and traps Pyrethroids
	Termites	Isoptera	Contact a reliable pest control operator
	Clover Mite	Acari	Remove grass growing next to foundation of homes Perimeter spray with miticide Vacuum/wipe up with damp cloth
	Carpet Beetle	Coleoptera	Sanitation/Clean-up Periodic dry cleaning or laundering Store dry foods, woolens, furs in tightly sealed containers Pyrethroids
	Carpenter Ant	Hymenoptera	Eliminate high moisture conditions Replace moisture-damaged wood Baits Pyrethroids
	Cockroach	Blattaria	Sanitation/Clean-up Boric Acid Baits/Gels
	Sowbug	Isopoda	Removal of plant refuse/debris Seal cracks and other openings Hand removal and destruction
	Carpenter Bee	Hymenoptera	Paint exposed wood surfaces Plug entrance holes Carbaryl (Sevin) Pyrethroids
	Powder Post Beetle	Coleoptera	Use properly stored and dried wood Paint, seal, or varnish exposed wood surfaces Removal and destruction of infested items Fumigation
	Boxelder Bug	Hemiptera	Remove seed bearing boxelder Seal cracks and other openings Maintain tight fitting screens Carbaryl (Sevin)
	Cluster Fly	Diptera	Seal cracks and other openings Maintain tight fitting screens Fly swatter Aerosol sprays

HOST	INSECT	ORDER	CONTROL
Insects of Annoyance and Public Health	Mosquito	Diptera	Eliminate breeding sites Limit exposure during dawn and dusk Insect repellants
	Tick (Deer and American Dog)	Acari	Insect repellants Avoid walking through tall grass and weeds Check and remove by hand
	Buffalo Gnat	Diptera	Insect repellants
	Bed Bug	Hemiptera	Sanitation/Clean-up
			Wash and dry clothes and bed linens at high temperature Pyrethroids Contact a reliable pest control operator
	Lice (Human)	Phthiraptera (suborder Anoplura)	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	Sanitation/Clean-up Fly swatter Aerosol sprays
	Wasp, Hornet, Yellow Jacket	Hymenoptera	Fly swatter Aerosol sprays (treatment of nest)
	Spider	Araneae	Seal cracks and other openings Maintain tight fitting screens Remove sheltering sites adjacent to the home Aerosol sprays
Lawn	Chinch Bug	Hemiptera	Keep thatch to a minimum Predators Carbaryl (Sevin) Imidacloprid (Merit)
	White Grub	Coleoptera	Establish tall fescue turf Insect parasitic nematodes Milky spore disease Imidacloprid (Merit)
	Sod Webworm	Lepidoptera	Establish tall fescue turf Insect parasitic nematodes Bt (<i>Bacillus thuringiensis</i>) Carbaryl (Sevin)
Oats	Cereal Leaf Beetle	Coleoptera	Predators and/or parasitoids Carbaryl (Sevin) Pyrethroids
Ornamental	Bagworm	Lepidoptera	Remove and destroy bags Bt (<i>Bacillus thuringiensis</i>) Carbaryl (Sevin)
	Lace Bug	Hemiptera	Promote tree vitality Insecticidal soap Horticultural oil Carbaryl (Sevin)

HOST	INSECT	ORDER	CONTROL
	Scale Insects	Homoptera	Prune and destroy infested plant parts Dormant horticultural oil Imidacloprid
	Black Vine Weevil	Coleoptera	Insect parasitic nematodes Imidacloprid Pyrethroids
	Thrips	Thysanoptera	Predators Spinosad Imidacloprid Pyrethroids
	Japanese Beetle	Coleoptera	Milky spore disease Carbaryl (Sevin) Pyrethroids
	Spider Mites	Acari	Predators Dormant horticultural oil Insecticidal soap Abamectin
Peach	Plum Curculio	Coleoptera	Thiamethoxam (Actara, Endigo) Phosmet (Imidan)
	Peach Tree Borer	Lepidoptera	Pheromone traps Organophosphates Pyrethroids
	Oriental Fruit Moth	Lepidoptera	Pheromone traps OFM sprayable pheromone Spinetoram (Delegate) Pyrethroids
Potato	Potato Leafhopper	Homoptera	Promote plant vitality Neonicotinoids Pyrethroids
	Colorado Potato Beetle	Coleoptera	Crop rotation Spinosad (Entrust) Neonicotinoids
	Potato Aphid	Homoptera	Predators and/or parasitoids Neonicotinoids
Tobacco	Tobacco Hornworm	Lepidoptera	Hand removal and destruction Predators and/or parasitoids Bt (Bacillus thuringiensis) Bifenthrin
	Tobacco Budworm	Lepidoptera	Predators and/or parasitoids Spinosad (Tracer) Imidacloprid
Tomato	Tomato Hornworm	Lepidoptera	Hand removal and destruction Predators and/or parasitoids Bt (Bacillus thuringiensis) Bifenthrin
	Tomato Fruitworm	Lepidoptera	Parasitoids Bt (Bacillus thuringiensis) Spinosad (Entrust) Bifenthrin
	Flea Beetle	Coleoptera	Carbaryl (Sevin)



HORTICULTURE

CDE# 105482

Incorrect Mark: Correct Mark:

Team Name

This sheet is for demonstration and practice only. You must use a real scan sheet for actual competition.

Team Number
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State	Last Name	First Name
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Place	Class									Place	
	1	2	3	4	5	6	7	8	9		
1	1234									1234	1
2	1243									1243	2
3	1324									1324	3
4	1342									1342	4
5	1423									1423	5
6	1432									1432	6
7	2134									2134	7
8	2143									2143	8
9	2314									2314	9
10	2341									2341	10
11	2413									2413	11
12	2431									2431	12
13	3124									3124	13
14	3142									3142	14
15	3214									3214	15
16	3241									3241	16
17	3412									3412	17
18	3421									3421	18
19	4123									4123	19
20	4132									4132	20
21	4213									4213	21
22	4231									4231	22
23	4312									4312	23
24	4321									4321	24

Team Activity
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Procedures (Judges)					
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1	1	1	1	1	1
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5	5	5	5	5	5
6	6	6	6	6	6
7	7	7	7	7	7
8	8	8	8	8	8
9	9	9	9	9	9
10	10	10	10	10	10
11	11	11	11	11	11
12	12	12	12	12	12
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15	15	15	15	15	15
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Exam	
1	A B C D
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16	A B C D
17	A B C D
18	A B C D
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21	A B C D
22	A B C D
23	A B C D
24	A B C D
25	A B C D

Exam 2/Team	
1	A B C D
2	A B C D
3	A B C D
4	A B C D
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9	A B C D
10	A B C D
11	A B C D
12	A B C D
13	A B C D
14	A B C D
15	A B C D
16	A B C D
17	A B C D
18	A B C D
19	A B C D
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21	A B C D
22	A B C D
23	A B C D
24	A B C D
25	A B C D

Assessment and Solution					
1	A B C D	6	A B C D	11	A B C D
2	A B C D	7	A B C D	12	A B C D
3	A B C D	8	A B C D	13	A B C D
4	A B C D	9	A B C D	14	A B C D
5	A B C D	10	A B C D	15	A B C D

West Virginia FFA Competitive Event Guide