

# Pumped Up For Pumpkins

2020



## Lesson 6: Pests

*the virtual pumpkin project*

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**Acknowledgement:** Jeff Dahlberg, Tracy Newton, Katie Wortman, Gwenn Conville, and Keith Byrum



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# Zoom Etiquettes



**Mute yourself**  
**Be Ready to Unmute your mic**



**How to Turn off your camera if needed**

# Kerman Pumpkin Pickers

What is a  
pest?

What did your  
team find?

Where did you  
find it?



# PESTS

*Can impact  
human or animal  
health*



*Organisms that damage or interfere with desirable plants in our fields and orchards, landscapes, or wildlands, or damage homes or other structures.*

**PLANT**

**VERTEBRATE**

**INVERTEBRATE**

**PATHOGEN**



**What is  
Integrated  
Pest  
Management?**

***PUMKINATORS***

**What did your  
team find?**

**Where did you  
find it?**



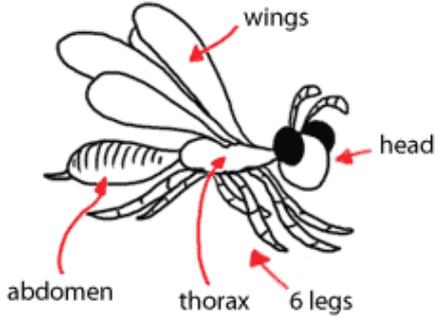
# Integrated Pest Management



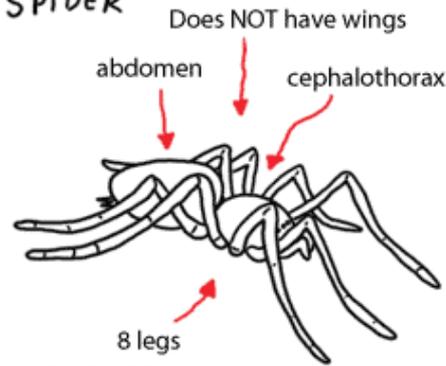
The study of how multiple systems work together to control problematic pest in agriculture, or Urban areas



## INSECT



## SPIDER



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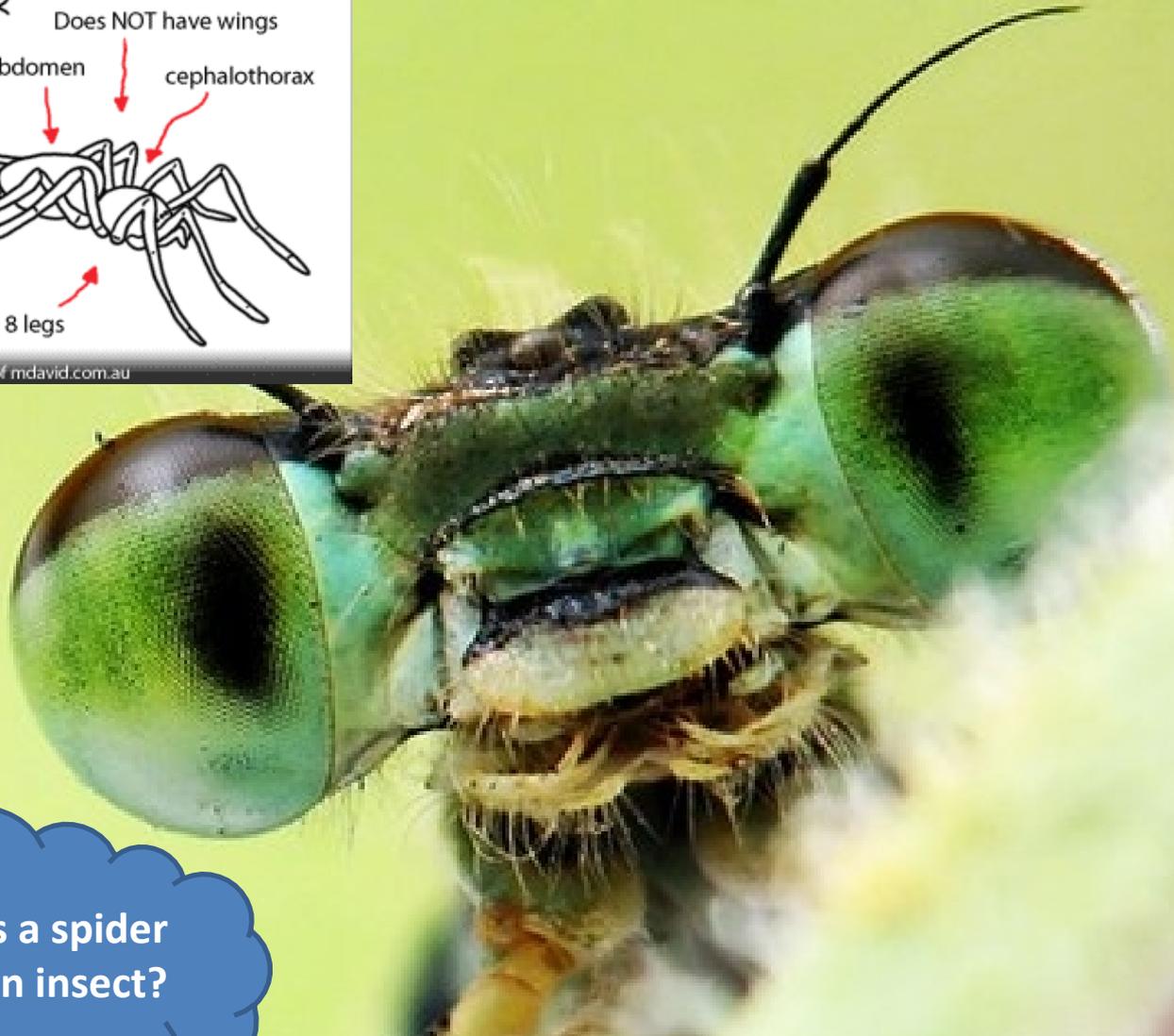
## What are insects?

A species with six legs, generally a pair of wings and Three body segments: head, thorax and abdomen.

Is a spider an insect?



No, it is an Arachnid! It has 8 legs, no wings, a cephalothorax, and an abdomen.



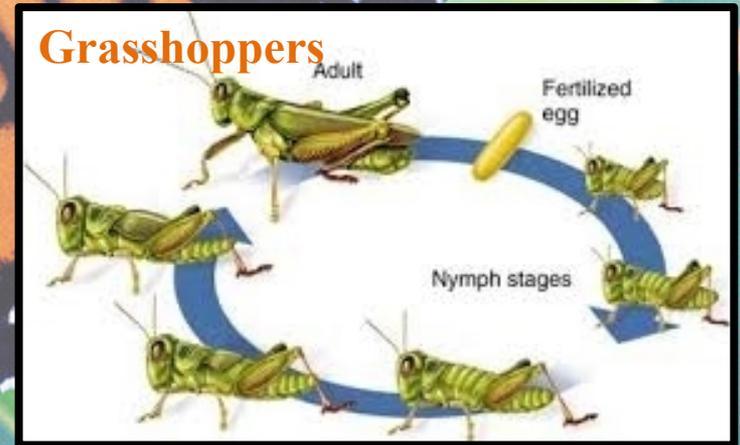
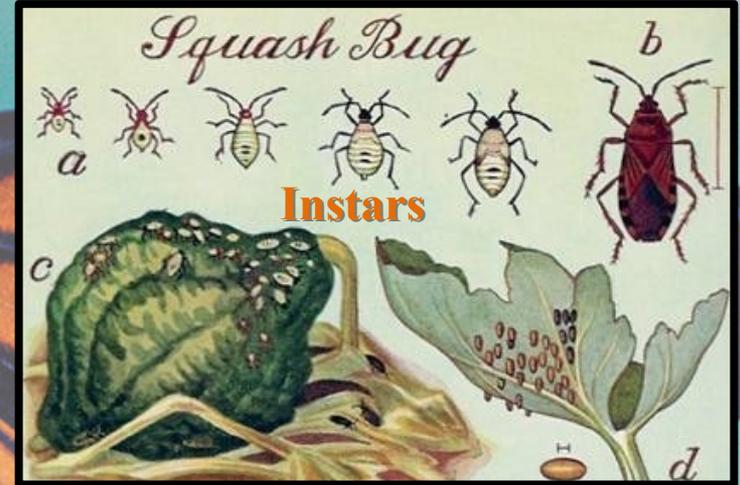
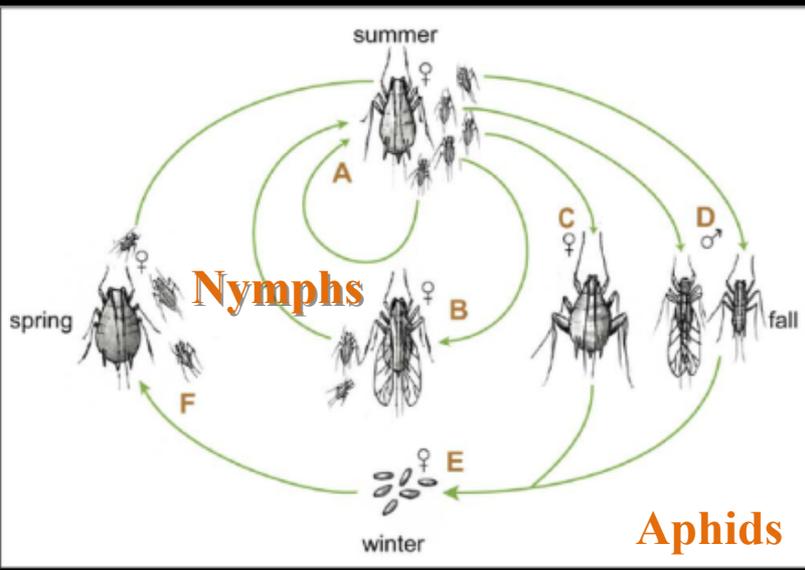
What is an instar?



What did your team find?

Where did you find it?

# Insect Lifecycle



# Goal

Name two types  
of insect feeding  
behavior.

What did your  
team find?

Where did you  
find it?

# Diggers

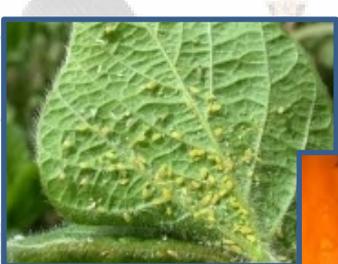


# Main Types of Insect Feeding in Pumpkins

## Piercing Sucking

## Chewing

## Mesophyll Feeding



mmm...  
pumpkins



I Love  
Orange!

What are squash  
bugs?

Where did you  
find it?



What did your  
team find?



**Name two ways to  
remove squash  
bugs without  
pesticides.**



**What did your  
team find?**



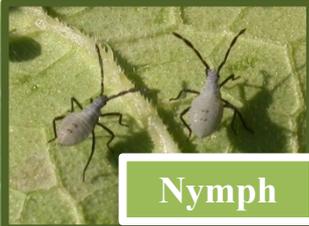
# ★ Team Constellation



**Where did you  
find it?**



# Squash Bugs



Nymph



Lifecycle

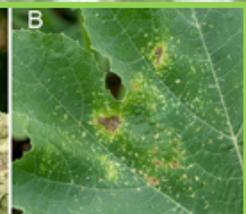
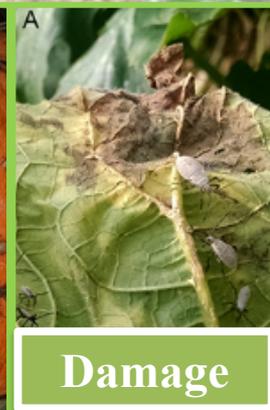


## Tips for Controlling Squash Bugs

- Keep gardens clean
- Rotate crops
- Avoid wood mulch
- Plant resistant varieties
- Use companion plants
- Remove infestations early
- Hand pick on young plants
- Use neem oil & diatomaceous earth on large infestations



## Control



Damage



Piercing Sucking



# ROYAL KIDS

How do aphids feed?

What did your team find?

Where did you find it?



Spring Valley 4-H

# Squash Squad

How do aphids  
cause sooty  
mold?

Where did you  
find it?

What did your  
team find?



# Aphids: Lifecycle, Feeding, and Damage



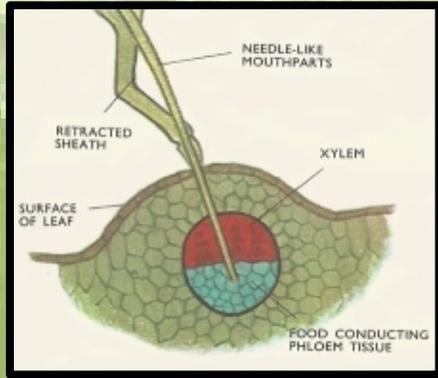
I can have wings too!

Slurp! Slurp!  
I eat through my own straw called a proboscis and stylet!



Damages

Rapid Reproducers



Honeydew causes an environment for Sooty Mold

# Beneficials, Parasitoids and Ant Farming of Aphids

Laying egg inside an aphid



Wasp coming out of mummy aphid



**Parasitoid Wasp**  
**MUMMY APHIDS**

Mummy Aphid



Where is my Mummy's aphids at?



**Predators**  
**Beneficial Pest Control**



Collecting Honeydew



Ant Farming



Honeydew



# Pumpkin

What is a parasitoid?

What did your team find?

Kingsburg  
4-H



Where did you find it?

# Smash!

18 USC 707

# Parasitoids

## Natural Enemies of Insects: Parasitoids

ICRISAT International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Patancheru 502 324, Telangana, India. Email: s.bharma@icrisat.org



*Trichogramma*



*Chelonus blackburni*



*Telenomus remus*



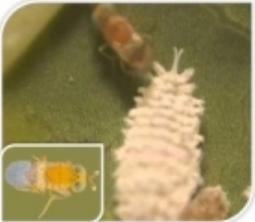
*Microplitis* sp.



*Campoletis chloridese*



*Aphidius colemani*



*Acerophagus papayae*



*Ormyrus orientalis*



*Eucelatoria bryani*



*Epicranium melanoletica*



*Tetrastichus setifer*



*Copidomopsis floridanum*



Egg parasitoids



Larva parasitoids



What is  
pollination?

Where did you  
find it?



What did your  
team find?

PIKMIN SQUAD

Fairmont 4-H



Name the different types of pollinators.



What did your team find?

# The Butterballs!

Where did you find it?



# Pollination

Pollination is the transfer of pollen to the female flower.

## Pollinating *Insects & Animals*



Pollinator is any thing that can carry the pollen to the female flower



Hummingbirds



Butterflies



Bees



Wasps



Flies



Moths



Beetles



Lacewings



Bats

### Insects as Pollinators

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Honey bee



Bumble bee



Butterfly



Green fly



Honey bees



Soldier beetle



Chaffer beetles



Dipteran fly



Wasp



Blister beetle



Coccinellid beetle



Bumble bee



# Insect Ecology



Pollinators



Parasitoid



Predator



Primary Pest



Secondary Pest



# There Are All Kinds of Insects in Pumpkins!



Lepidoptera



Pollinator



Hymenoptera



Diptera



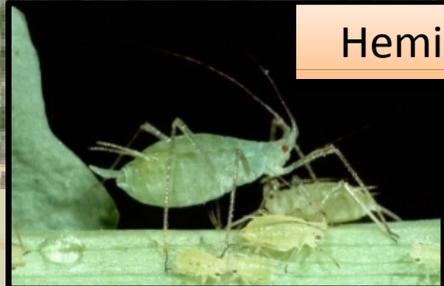
Coleoptera



Beneficial



Orthoptera



Hemiptera



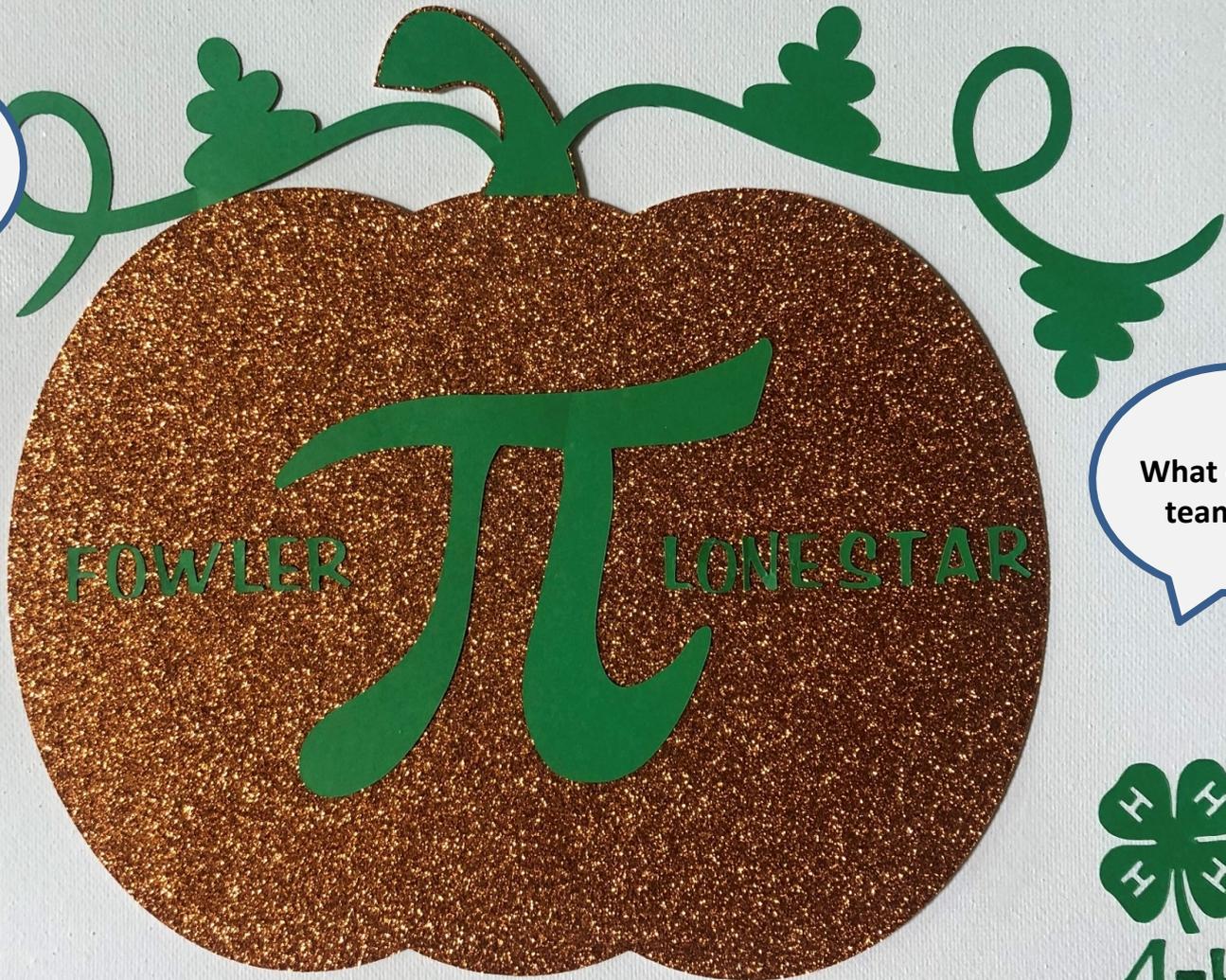
Hemiptera



# PUMPKIN 3.14

What are commercial pesticides?

Where did you find it?



What did your team find?





What are organic pesticides?

What did your team find?

Where did you find it?

Reedley 4-H  
Pumpkinology

# Organic Pesticide

Pesticides derived from naturally occurring sources such as minerals, plants, or animals. These chemicals are broken down relatively quickly by weather or soil microbes. Ex: Diatomaceous earth (fossilized water microbes), neem oil (a tree oil extract), or pyrethrins (an extract from chrysanthemums).

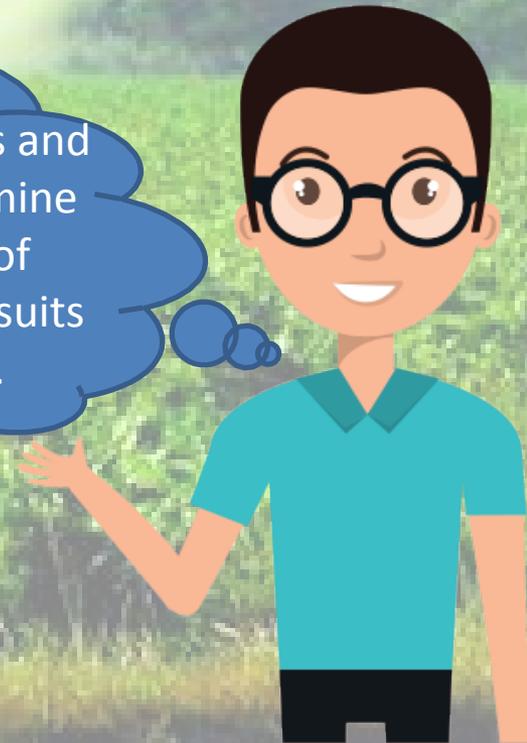


How do you choose?

# Conventional Pesticide

Pesticides manufactured by a chemical process or by a process that chemically changes a substance extracted from naturally occurring plant, animal, or mineral sources. Synthetic pesticides are often referred to as conventional pesticides. Ex: Sivanto, Ortho 3-in-1.

Weigh the pros and cons to determine which type of pesticide best suits your goals.





How do  
gophers harm  
pumpkins?

What did your  
team find?

Where did you  
find it?

# Sierra Shadow

## Spooky Shadow

## Other Vertebrate Pests



Gophers can eat and displace the roots. Sometimes they will eat the pumpkin too!



# Plant Disease Scavenger Hunt

Why are pumpkins inspected by the CDFA?

What is a disease?

How does the USDA grade pumpkins in general?

Who is the USDA?

Who is the CDFA?

Name one insect that spreads diseases in pumpkins.

What is a pathogen?

What is a fungi?

What is powdery mildew?

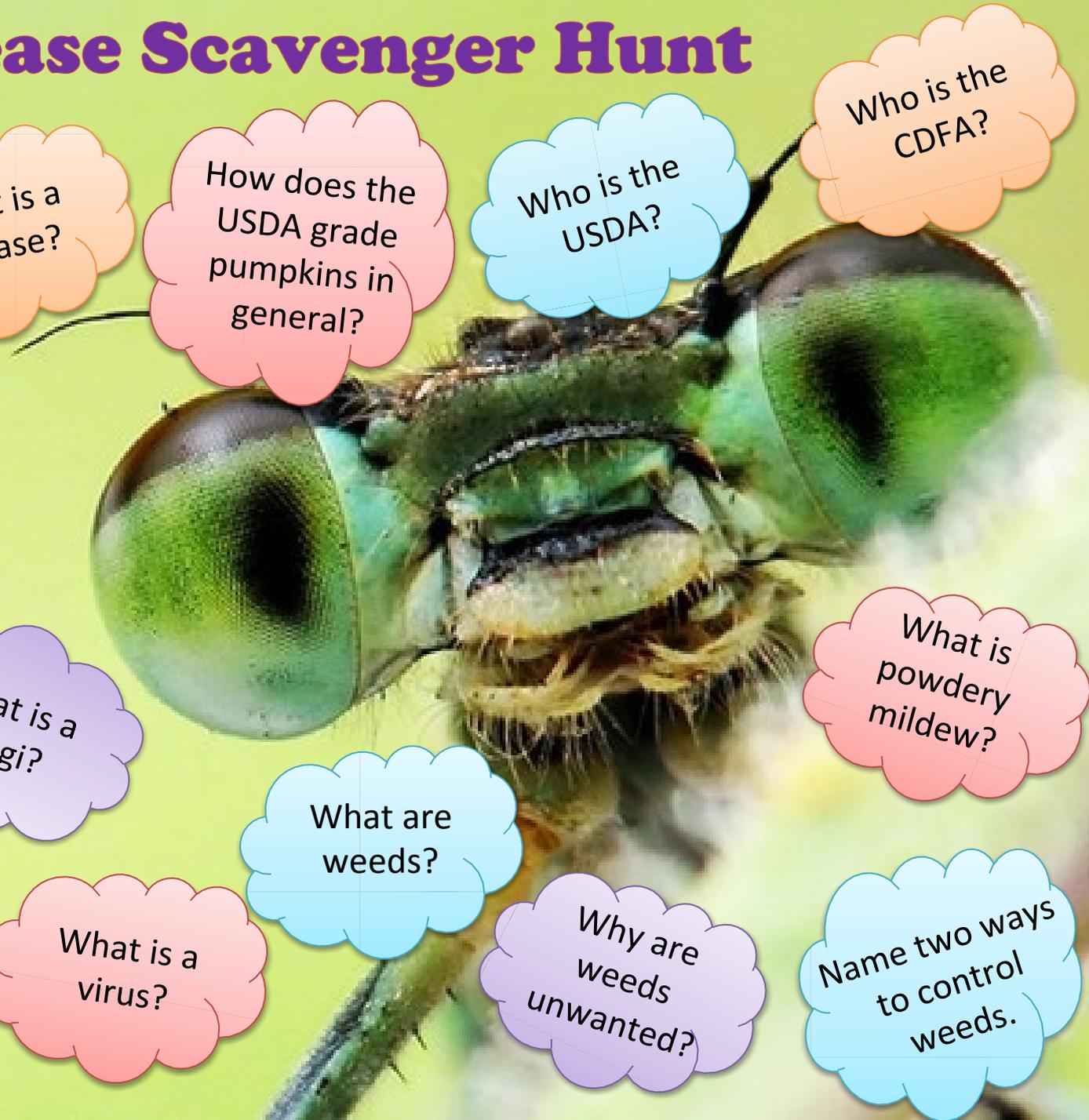
What are weeds?

What is a bacteria?

What is a virus?

Why are weeds unwanted?

Name two ways to control weeds.



# **Special Thanks**

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<b>Jesus Ferreyra</b>	<b>David Rodriguez</b>
<b>Marvin Flores</b>	<b>Alma Romero</b>
<b>Kelsey Galvan</b>	<b>Meuy Saechao</b>
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