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WHAT IS A VECTOR

VECTOR

A vector is an organism that carries disease causing pathogen or parasites, transmits these organisms and cause infectious diseases among living beings. Few vector species are 'haematophagous', which feed on blood of their specific animal hosts during different stages of their lives. However, many vectors are herbivores, which transmit pathogens or parasites to various plant species during they feed on plants. Thus, vectors introduce a pathogen such as a bacterium or virus or fungi or parasites into a plant or animal to cause an infection.

Phylum Arthropod forms a major group insect vectors which cause disease in animals and plants. The insects which become vectors to many animals including humans are:

- Flies
- Lice,
- Fleas,
- Louses
- Mosquitoes
- bugs, etc, transmits a different type of infectious diseases among humans and domestic animals.

Similarly, many insects become vectors to plants and they include:

- Aphids
- Thrips
- Beetles
- Grasshoppers
- Leafhoppers
- Earwig
- Wasps, etc., which transmit viral, bacterial fungal and mycoplasm diseases in various wild and cultivable plants.

- **Is an insect or any animal that transmits a disease to other animals or humans. Eg. Mosquitoes, tsetse, ticks, lice, fleas, etc.**

Vector is an organism, typically an insect or other arthropod, that can transmit pathogens (such as viruses, bacteria, or parasites) from one host to another. Vectors play a crucial role in the spread of various infectious diseases. They act as carriers for the disease-causing agents and can transfer these agents from an infected host to a susceptible host during feeding or other interactions.

Example:

Vector		Disease Caused	Type of pathogen
Mosquito	*Aedes*	Chikungunya	Virus
		Dengue	Virus
		Lymphatic filariasis	Parasite
		Rift Valley fever	Virus
		Yellow Fever	Virus
		Zika	Virus
	Anopheles	Lymphatic filariasis	Parasite
		Malaria	Parasite
	Culex	Japanese encephalitis	Virus
		Lymphatic filariasis	Parasite
		West Nile fever	Virus
Aquatic snails		Schistosomiasis (bilharziasis)	Parasite
Blackflies		Onchocerciasis (river blindness)	Parasite
Fleas		Plague (transmitted from rats to humans)	Bacteria
		Tungiasis	Ectoparasite
Lice		Typhus	Bacteria
		Louse-borne relapsing fever	Bacteria
Sandflies		Leishmaniasis	Parasite
Tsetse flies		Sleeping sickness (African trypanosomiasis)	Parasite

Vectors	Species/ Genera	Disease	Mode of Transmission
Fly	House fly (*Musca*) 	Typhoid Cholera Dysentery Anthrax Tuberculosis	Mechanical Transmission
Mosquito	*Aedes* 	Chikungunya Dengue fever Rift Valley fever Yellow fever Zika	Infective bite Biological
	Anopheles 	Malaria Lymphatic filariasis	Infective bite Biological
	Culex 	Japanese Encephalitis Lymphatic filariasis West Nile fever	Infective bite Biological
Sandflies	*Phelebotomus* 	Leishmaniasis Sandfly fever (*Phelebotomus* fever)	Infective bite Biological
Blackflies "buffalo gnats" & "turkey gnats,		Onchocerciasis or river blindness Africa, America, Latin and Yemen	Infective bites Biological
Tse tse fly		Sleeping Sickness Africa	Infective bite Biological

Triatomine bugs		Chagas disease (American trypanosomiasis)	Infective bite Biological
Fleas		Plague rickettsiosis	Transmitted by fleas from rats to humans Biological
Lice		Typhus and louse-borne relapsing fever	Infective bite Biological
Ticks (These are arachnids).		Crimean-Congo haemorrhagic fever Tick-borne encephalitis	Infective bite of larval stage Biological

What is a Pest?



- any organism that is detrimental to humans
  - destroys crops & structures
  - poses threats to human health and livestock
  - reduces aesthetic and recreational value



- **Pests** include insects, mites, plant pathogens, weeds, mollusks, fish, birds, and mammals

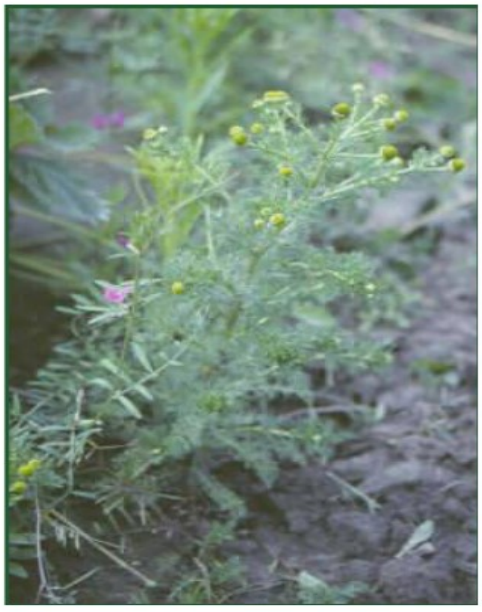


Four Major Pest Categories

#1 - Weeds: undesirable plants







Four Major Pest Categories

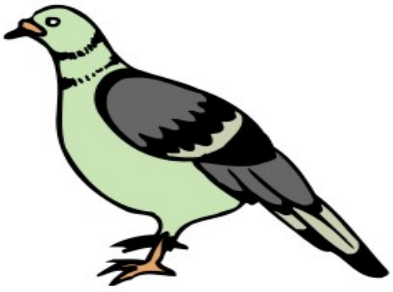
- **#2 - Invertebrates**, such as:
  - Insects
  - Spiders and mites
  - Sowbugs, pillbugs
  - Snails, slugs, and mussels







Four Major Pest Categories



- **#3 – Vertebrates**, such as:
  - Birds
  - Snakes
  - Fish
  - Rodents and other mammals





Four Major Pest Categories

- **#4 - Plant Diseases**
- **Pathogens – living agents**
  - Fungi
  - Bacteria
  - Viruses
  - Nematodes
  - Phytoplasmas
- **Non-living agents:** cold, heat, pollutants, dog urine



