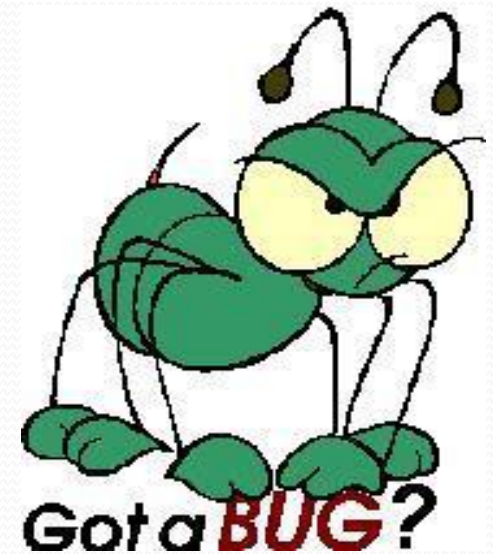


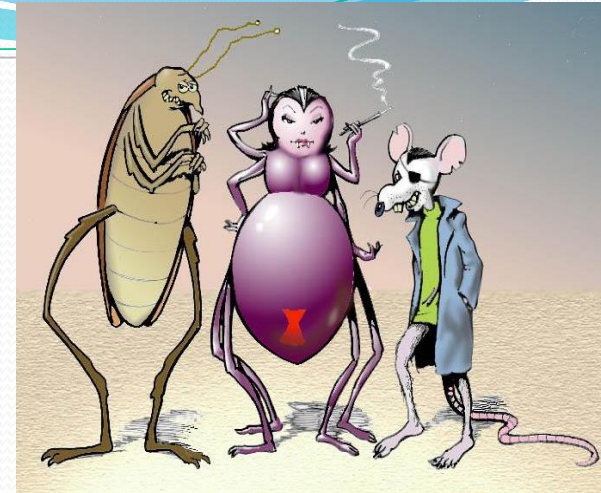
WHAT ARE PESTS????

- Anything humans believe it to be **UNDESIRABLE** (looks, competing for resources, spread of disease)



What Are Pesticides

- Chemicals used to kill pests.



1. FIRST-GENERATION pesticides

- Where it comes from: Naturally found in the environment
- Examples: Arsenic and lead
- Problem: Found to kill animals



2. SECOND-GENERATION pesticides

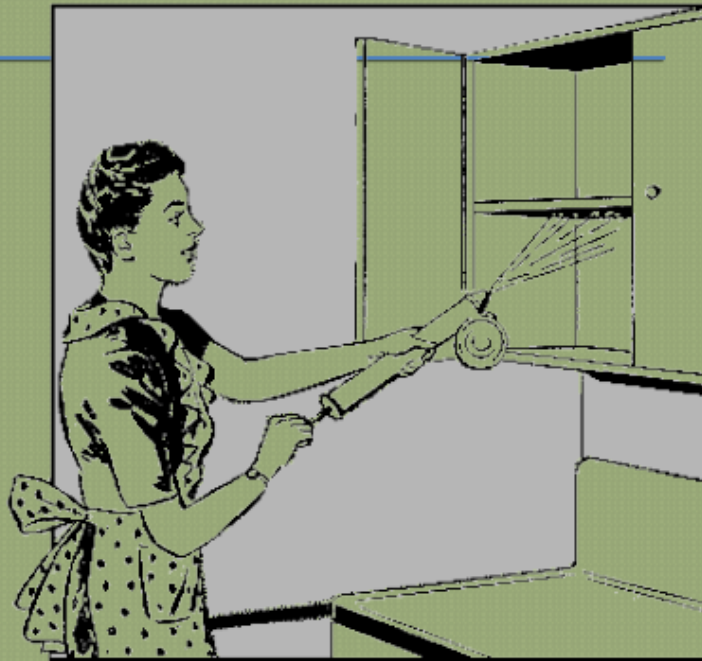
- Where it comes from: Man made
- Examples: DDT used to kill insects
- Problem: Binds to our fat and stays there forever







Glenbow Archives NA-5600-6671a



DID'T... FOR CONTROL OF HOUSEHOLD PESTS



Prepared by the
Bureau of Entomology and Plant Quarantine
Agricultural Research Administration
United States Department of Agriculture, and
the United States Public Health Service
Federal Security Agency
Washington, D. C. • Issued March 1947



Newer pesticides

- Binds to water in animals when ingested so they can be flushed out through urine
- Not so dangerous





- <http://www.youtube.com/watch?v=upH6wJx-oHA&safe=active>

4 SUBCATEGORIES OF PESTICIDES:

- 1. INSECTICIDE: kills INSECTS**
- 2. HERBICIDE: kills plants**
- 3. FUNGICIDE: kills mould/fungi**
- 4. BACTERICIDE: kills bacteria**

OLDER VS NEWER PESTICIDES.

1. Older pesticides

- **FAT-SOLUBLE**

- When ingested by an organism, these pesticides attach to fat cells.

- This was highly effective as they

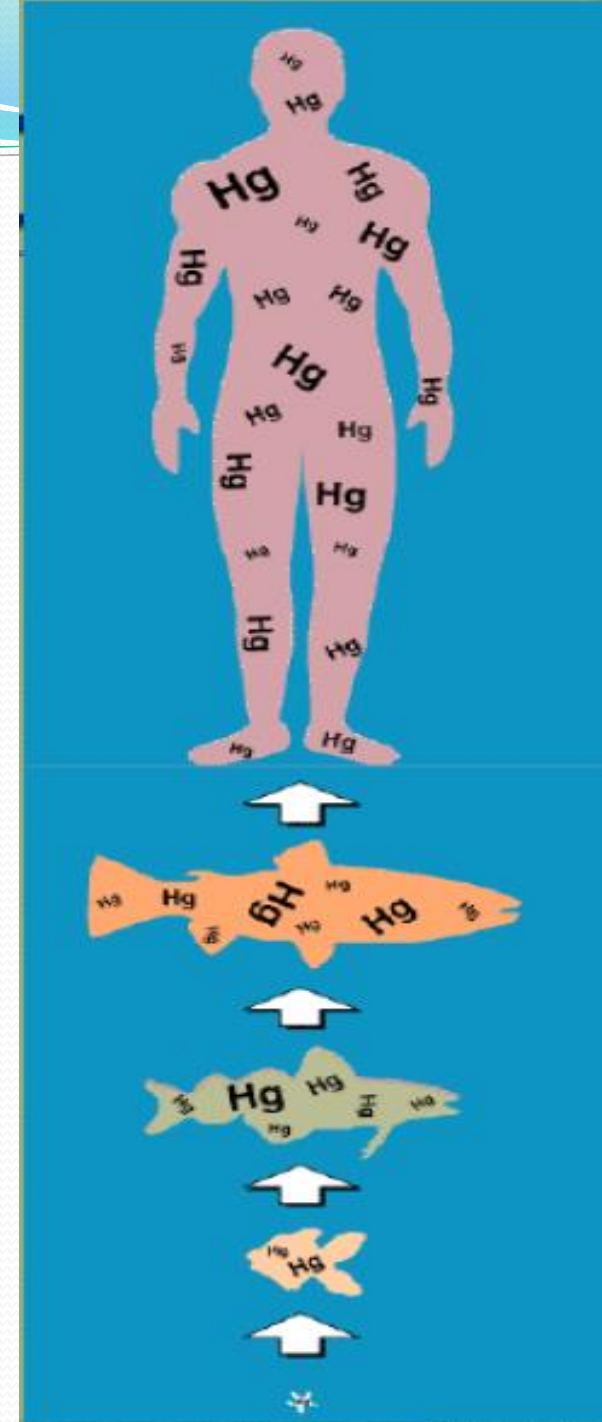
- **PERMANENTLY remain in the organism.**

Bioaccumulation

Also known as

BIOAMPLIFICATION or
BIOMAGNIFICATION

A phenomenon in food chains whereby **FAT-SOLUBLE PESTICIDES** build up in the fat cells of consumers at higher trophic levels.



Bioaccumulation and DDT

DDT = *Dichlorodiphenyltrichloroethane*

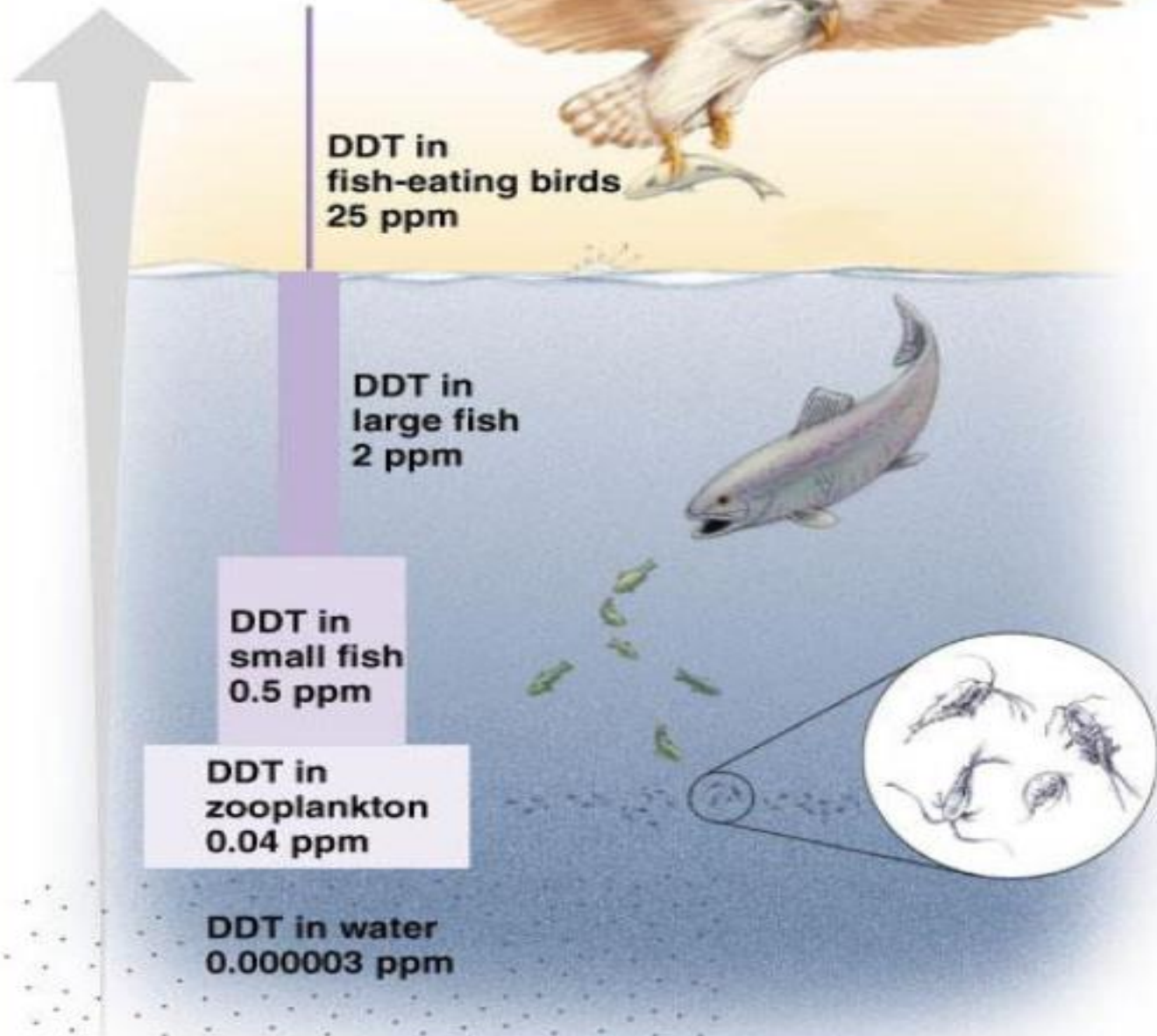
FAT-SOLUBLE insecticide to control insects that:

- *Feed on agricultural crops*
- *Damage forests (ex: spruce budworm)*
- *Carry diseases (ex: malaria)*



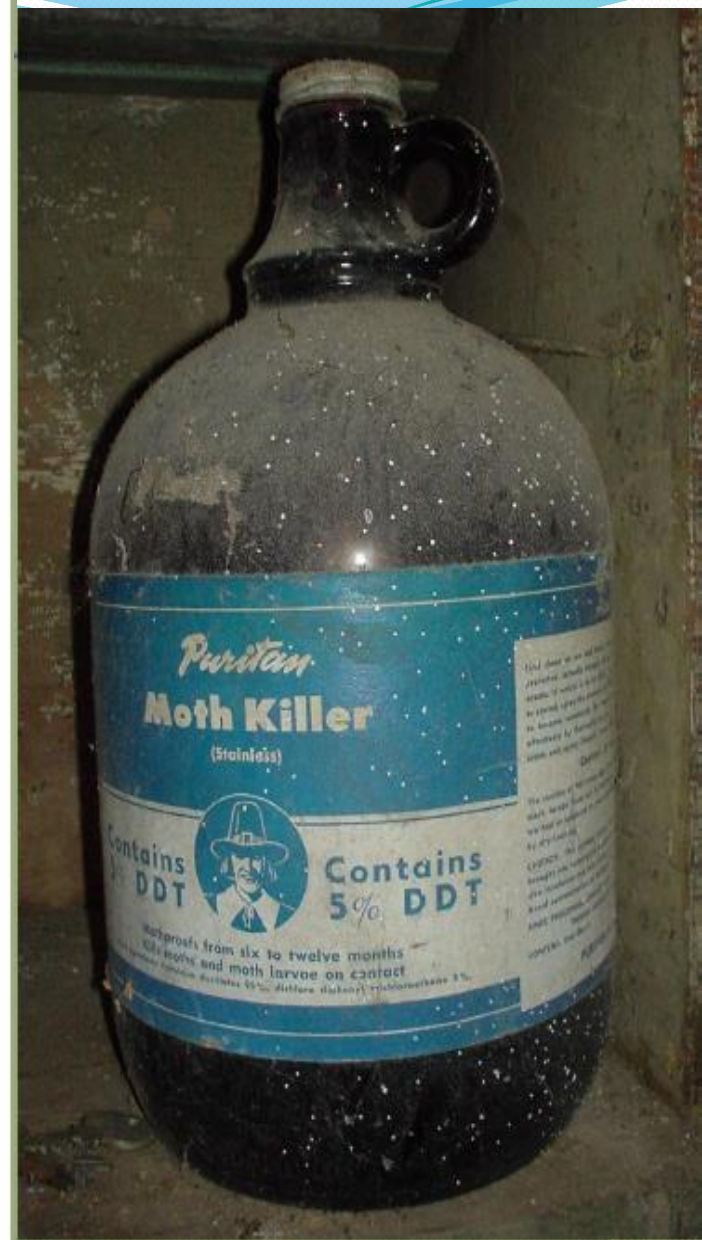
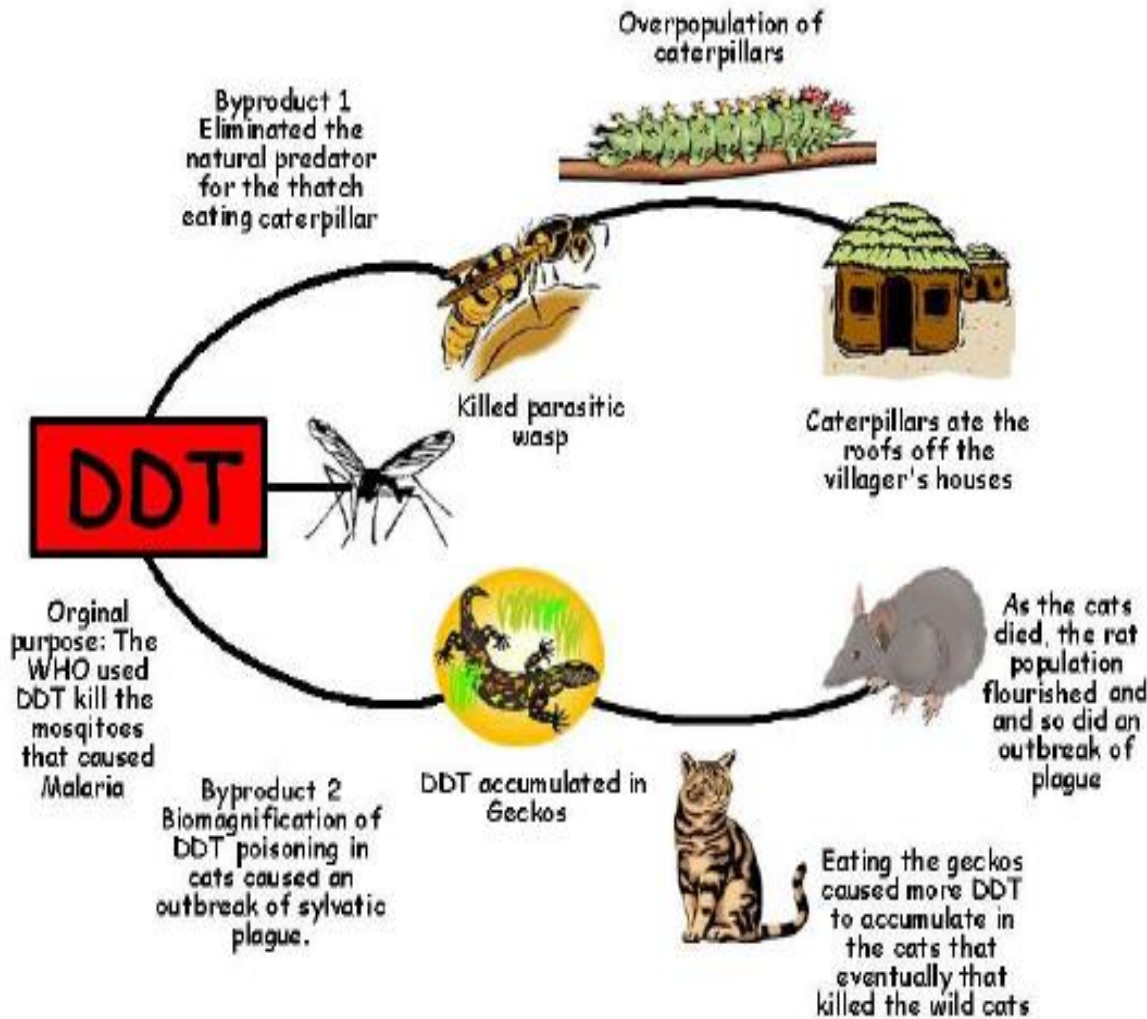
- **It was VERY EFFECTIVE at killing pests**
- **But there was an unknown effect ,*it stayed in the bodies of other organisms . . .***

**DDT concentration:
increase of
10 million times**



Effect of DDT Use in Borneo

In the early 1950's the people in Borneo, suffered from Malaria the World Health Organization had a solution, kill the mosquitoes with DDT. This is what happened.



FIRST NOTICED EFFECTS:

- **Egg shell thinning in top carnivore birds, such as Bald Eagle**
- **Thin shells meant HIGH RATES of chick mortality**

It takes about 15y for DDT to break down in the environment.



What do we do?

- Ban DDT and other fat-soluble pesticides.

It is now banned in CANADA and many parts of the world, BUT SOME COUNTRIES are still using it.

- Use water-soluble pesticides instead.
- Use sustainable alternatives to pesticides.

2 MAIN TYPES OF PEST MANAGEMENT

- CHEMICAL CONTROL
- BIOLOGICAL CONTROL



Chemical Control

Although chemicals are highly effective, there are several **DISADVANTAGES** to using them, including:

- *BIOACCUMULATION*
- *Not TARGET-SPECIFIC*
- *Not 100 % EFFECTIVE (some pests will not be killed)*
- *Could lead to PESTICIDE RESISTANCE*

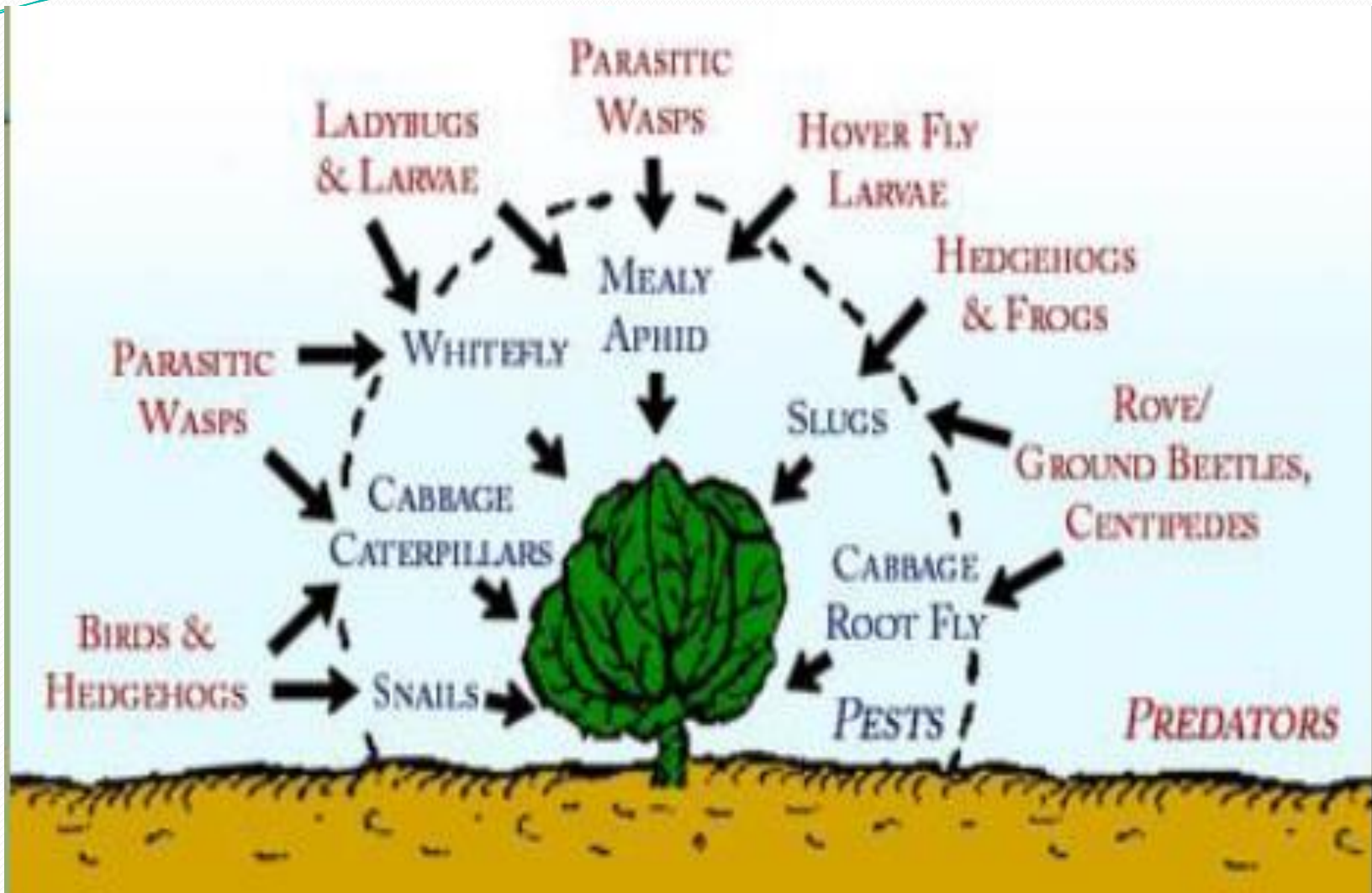
Biological Controls

Although they are more **TARGET-SPECIFIC**, there are several **DISADVANTAGES** including:

- *Expensive*
- *Short-Term Effectiveness*
- *Organisms simply move to another area*

Methods include using:

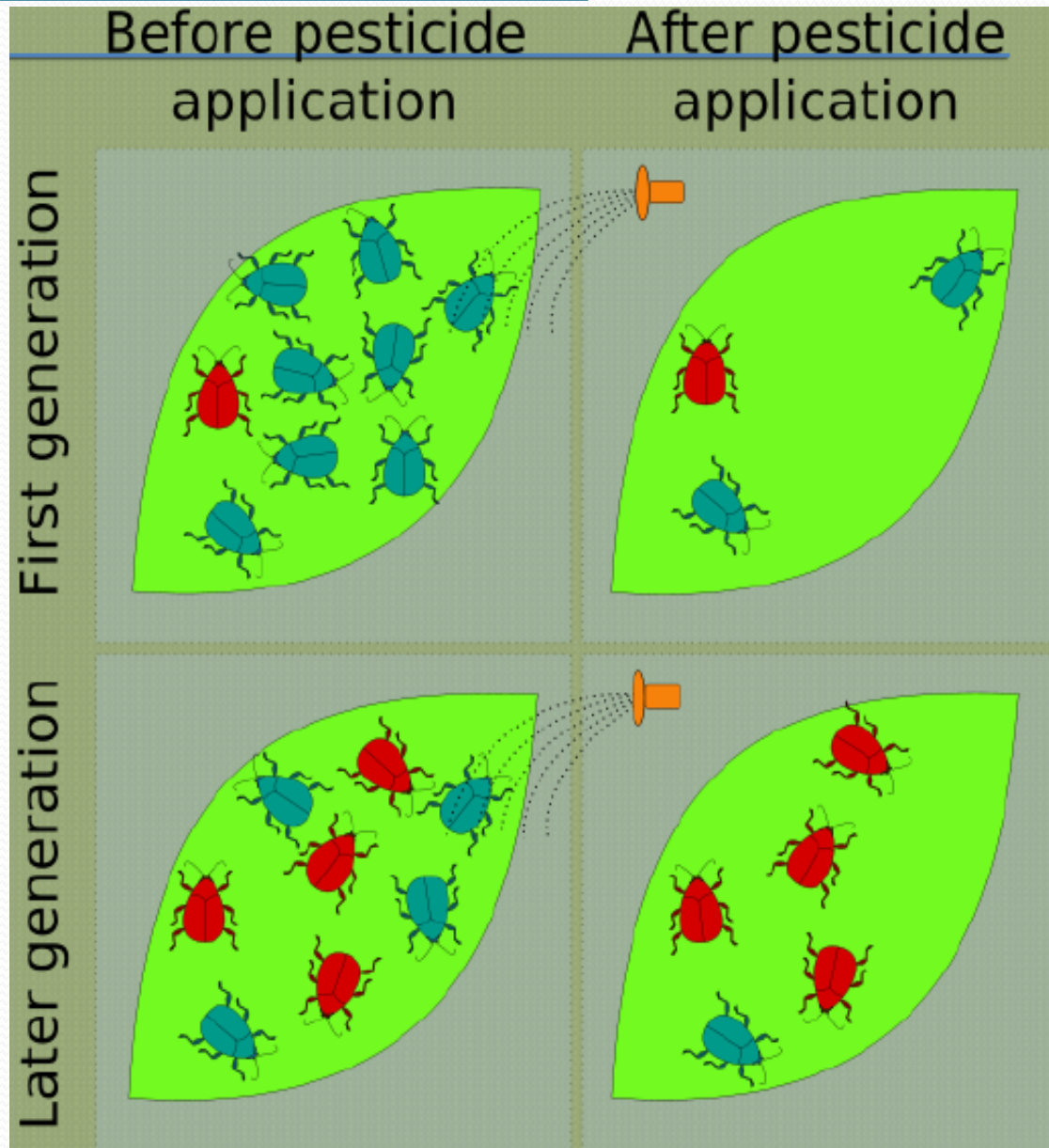
- **NATURAL PREDATORS**
- **DISEASE ORGANISMS**
- **COMPETITORS**
- **PHEROMONES**



Pesticide Resistance

Some pests are naturally immune to pesticides.

Once non-immune pests are killed off, the immune PESTS are left to reproduce a new generation of PESTICIDE RESISTANT PESTS.



How pesticide resistance develops

