



USAID
FROM THE AMERICAN PEOPLE

SAFE PESTICIDE USE

REDUCE HARM

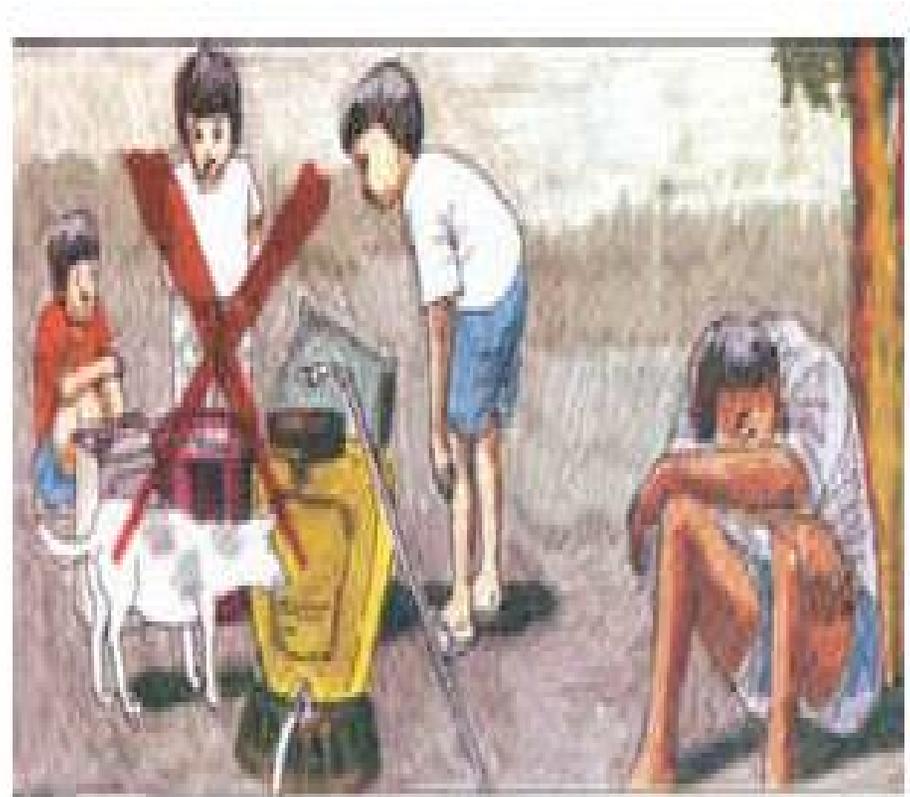
NABEEL MAROUN



Every time you apply pesticides

You have two major responsibilities:

- 1-protecting yourself, others, and the environment,**
- 2-making sure that the pesticide is applied correctly**



For each pesticide application

Take the time to determine

- **how much you need to apply**
- **Then be sure that you apply the correct amount.**



Pesticides can harm all types of environments if they are not used correctly.



**Responsible pesticide users ;
know and follow good practices that achieve effective pest control with very little risk of environmental damage .**

Slide 4

n2 nmaroun, 5/18/2005

n3 nmaroun, 5/18/2005

- Some sources report up to 25,000,000 cases of poisoning per year worldwide (Knirsch, 1994, as in Friedrich, 1996).
- WHO reports 500,000 cases of acute poisoning every year. With a mortality rate of only 2% this would mean there are 10,000 fatalities every year, which mostly take place in developing countries.

"Any substance or mixture of substances intended for preventing, destroying or controlling any pest, including vectors of human and animal disease,

PESTICIDE



The suffix "cide" literally means kill.

The term pesticide refers to a chemical substance that will kill pests.

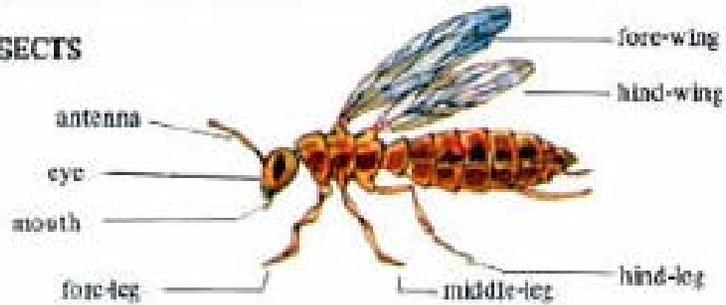
Pests

A pest is anything that:

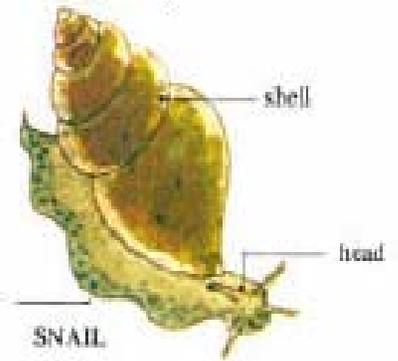
- **Competes** with humans, domestic animals, or desirable plants for food or water,
- **Injures** humans, animals, desirable plants, structures, or possessions,
- **Spreads** disease to humans, domestic animals, wildlife, or desirable plants,
- **Annoys** humans or domestic animals

Examples of common pests are:

INSECTS

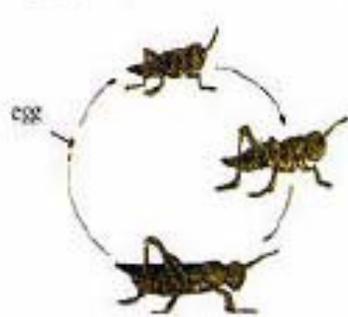


MITE

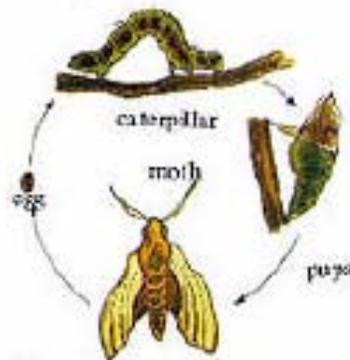


SNAIL

SNAILS AND SLUGS



Life cycle of a locust.



Life-cycle of an army worm.



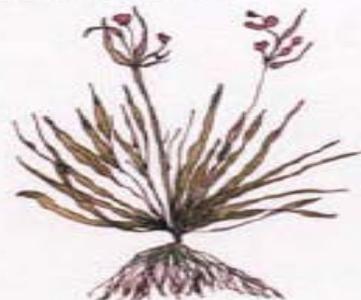
NEMATODE (many times enlarged)



FIELD RAT

There are two types of weeds:

- Grass weeds;
- Broad-leaved weeds.



grass weed



broad-leaved weed

DISEASES



black spot, brown spot, yellow spot



A 69-day old sedge plant showing a network of tubers.

Types of Pests

Types of pests include:

1-Insects such as roaches, termites, mosquitoes, aphids, beetles, fleas, and caterpillars,

2-Insect-like organisms, such as mites, ticks, and spiders,

3-Microbial organisms, such as bacteria, fungi, nematodes, viruses, and mycoplasmas,

4-Weeds, which are any plants growing where they are not wanted,

5-Mollusks, such as snails, slugs, and shipworms,

6-Vertebrates, such as rats, mice, other rodents, birds, fish, and snakes



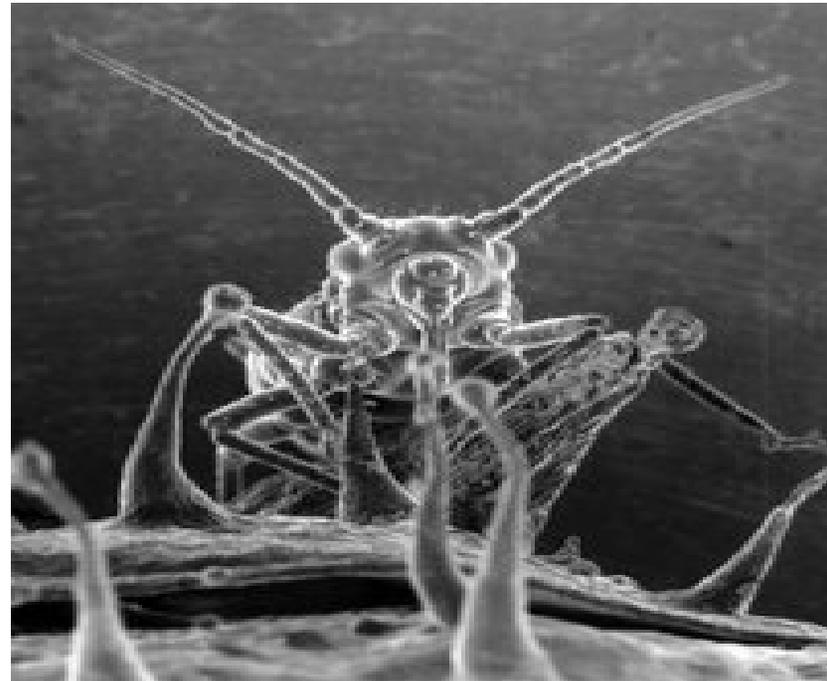
30.0 μm



120 μm

Types and functions of pesticides include the following

- 1. Insecticide- control insect**
- 2. Acaricides - control mites, ticks, and spiders**
- 3. Nematicides - control nematodes**
- 4. Fungicides - control fungi**
- 5. Bactericides - control bacteria**
- 6. Herbicides - control plants (herbicides kill plants, not just weeds)**



- 7. Rodenticides - control rodents**
- 8. Avicides - control birds**
- 9. Piscicides - control fish**
- 10. Molluscicides - control mollusks, such as slugs and snails**
- 11. Repellents - keep pests away**
- 12. Attractants - lure pests**
- 13. Growth Regulators - stop, speed up, or otherwise change normal plant processes .**

Pesticides can be grouped according to how they work. Many work in more than one way

- 1- Contact poisons: - kill pests simply by touching them.
- 2- Stomach poisons: - kill when swallowed.
- 3- Systemics: - kill best by being taken into the blood of the animal or sap of the plant upon which the pest is feeding.
- 4- Translocated herbicides: - move from the point of initial application to circulate throughout the plant. The circulation of toxin ensures the kill of the entire plant







The word "use" means

- Application
- Mixing and loading
- Transporting, storing, or handling pesticides after the manufacturer's seal is broken
- Care and maintenance of application and handling equipment
- Disposal of pesticides and their containers

Certified Pesticide Applicators---in USA.

- Only a certified pesticide applicator may use or supervise the use of restricted-use pesticides
 - **Certification requires training or testing for competency in the safe and effective handling and use of restricted-use pesticides.**
- 1-Private applicators** use or supervise the use of restricted-use pesticides to produce an agricultural commodity on property owned or rented by themselves or their employer, or on the property of another person with whom they trade services.
- 2-Commercial applicators** use or supervise the use of restricted-use pesticides on any property or for any purpose other than that listed for private applicators.

Restricted-Use Pesticides

Is classified as restricted if it could cause harm to humans (pesticide handlers or other persons) or to the environment unless it is applied by certified applicators who have the knowledge to use these pesticides safely and effectively.



Farmers may use pesticides to:

- protect crops from insect pests, weeds and fungal diseases while they are growing;
- prevent rats, mice, flies and other insects from contaminating foods whilst they are being stored;
- safeguard human health, by stopping food crops being contaminated by fungi .

Pesticides can be dangerous.

The hazards are:

1- Poisoning of people and animals

2- Pollution of the environment

- Users must be informed about the potential hazards of the different products and need training in taking precautions to avoid accidents.
- Storekeepers and retailers must advise their customers on the safe use of pesticides.

Hazard = Toxicity x Exposure

- **Hazard** is the risk of harmful effects from pesticides. Hazard depends on both the **toxicity** of the pesticide and your **exposure**
- **Exposure:**

When a pesticide contacts a surface or organism, that contact is called a pesticide exposure.

- For humans, a pesticide exposure means getting pesticides in or on the body.
- The toxic effect of a pesticide exposure depends on how much pesticide is involved and how long it remains there

Types of Exposures

- Oral exposure (when you swallow a pesticide),
- Inhalation exposure (when you inhale a pesticide),
- Ocular exposure (when you get a pesticide in your eyes), or
- Dermal exposure (when you get a pesticide on your skin).



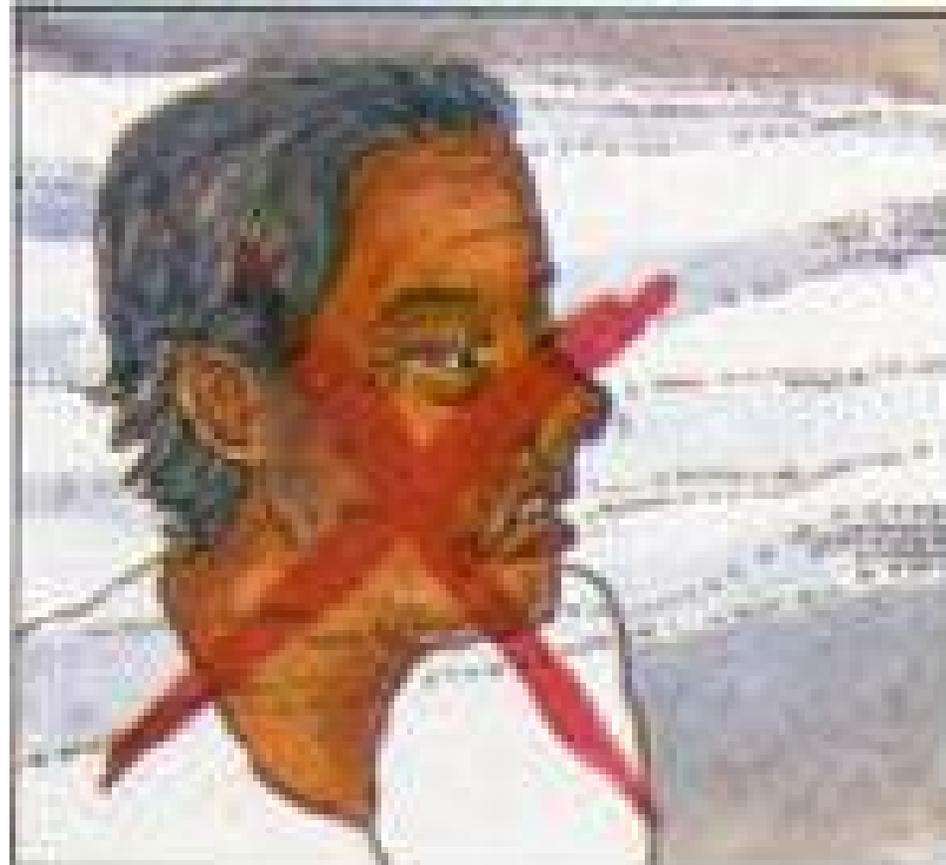
Oral exposures

- Not washing hands before eating, drinking, smoking, or chewing,
- Mistaking the pesticide for food or drink,
- Accidentally applying pesticides to food, or
- Splashing pesticide into the mouth through carelessness or accident



Inhalation exposures

- Prolonged contact with pesticides in closed or poorly ventilated spaces,
- Breathing vapors from fumigants and other toxic pesticides,
- Breathing vapors, dust, or mist while handling pesticides without appropriate protective equipment,
- Inhaling vapors immediately after a pesticide is applied; for example, from [drift](#) or from reentering the area too soon, and
- Using a respirator that fits poorly or using an old or inadequate filter, cartridge, or canister.



Dermal exposures

- **Not washing hands after handling pesticides or their containers,**
- **Splashing or spraying pesticides on unprotected skin or eyes,**
- **Wearing pesticide-contaminated clothing (including boots and gloves),**
- **Applying pesticides (or flagging) in windy weather,**
- **Wearing inadequate personal protective equipment while handling pesticides, and**
- **Touching pesticide-treated surfaces.**



Eye exposures

- Splashing or spraying pesticides in eyes,
- Applying pesticides in windy weather without eye protection,
- Rubbing eyes or forehead with contaminated gloves or hands, and
- Pouring dust, granule, or powder formulations without eye protection.

Toxicity

Toxicity is a measure of the ability of a pesticide to cause harmful effects.

Toxicity depends on:

- **Type and amount of active ingredient(s),**
- **Type and amount of carrier or solvent ingredient(s),**
- **Type and amount of inert ingredient(s),**
- **Type of formulation, such as dust, granule, powder, or emulsifiable concentrate.**

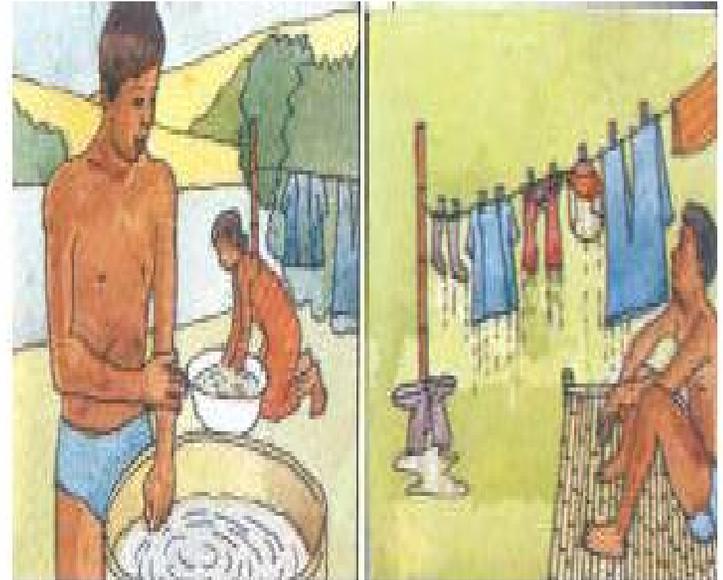
The term LD50

LD50 is used to give an indication of toxicity. LD50 stands for lethal dosage necessary to kill 50% of a test population of animals

- The LD50 values are measured from 0 up
- The numbers after the 50 represent the milligrams of the substance per kilograms of body weight necessary to kill 50% of the test population.
- The lower the LD50 value the more poisonous a pesticide is, for example an LD50 of 5 is more poisonous than an LD50 of 20 because only 5 milligrams per kilograms of body weight are necessary to kill 50% of the test population

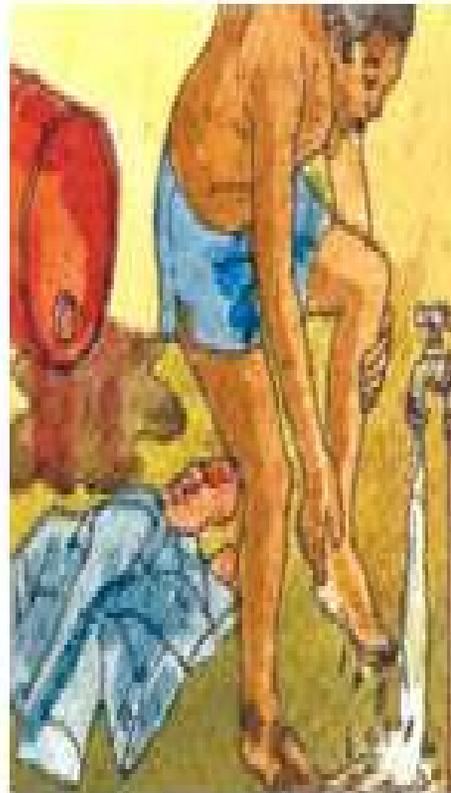
Pesticide on skin

- Drench skin and clothing with plenty of water
- Remove personal protective equipment and contaminated clothing.
- Wash skin and hair thoroughly with a mild liquid detergent and water
- Dry victim and wrap in blanket or any clean clothing at hand. Do not allow to become chilled or overheated.
- If skin is burned or otherwise injured, cover immediately with loose, clean, dry, soft cloth or bandage
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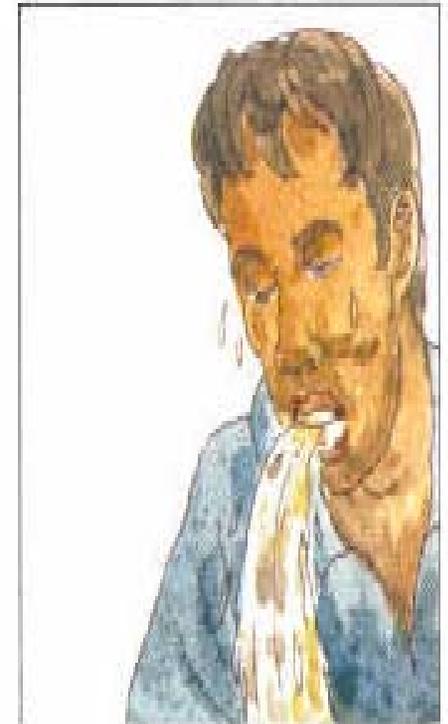
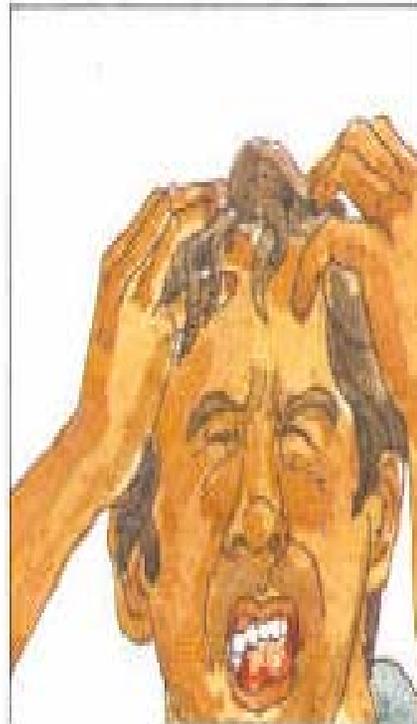
Pesticide in eye:

- Use an eyewash dispenser, if available. Otherwise, hold eyelid open and wash with a gentle drip of clean running water positioned so that it flows across the eye rather than directly into the eye.
- Rinse eye for 15 minutes or more.
- Do not use chemicals or drugs in the rinse water. They may increase the injury.
- Wash eye quickly but gently. Wash eye quickly but gently.



Pesticide in mouth or swallowed:

- Rinse mouth with plenty of water
- Give victim large amounts (up to 1 quart) of milk or water to drink.
- Induce vomiting only if instructions to do so are on the labeling



Harmful Effects

Pesticides can cause three types of harmful effects:

- Acute effects,
- Delayed effects,
- Allergic effects.



G57-34



G251-16



G249-20





G124-29

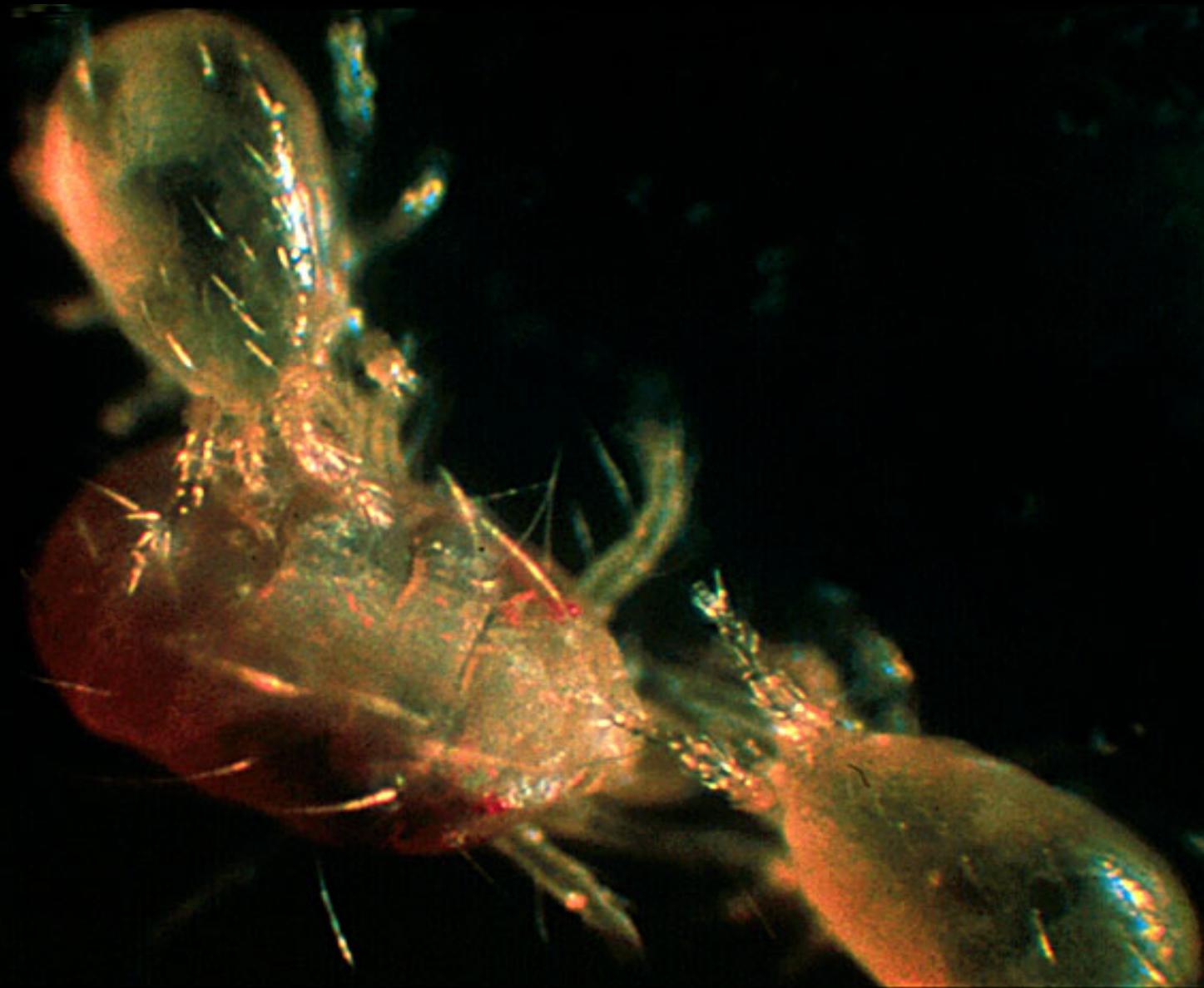


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G254-37









G130-17