Pollution from Agricultural Activities

Agricultural Pollution

- Contamination of the soil, air and water environments resulting from farming activities
- The primary agricultural nonpoint source pollutants:
  - nutrients (particularly nitrogen and phosphorus)
  - sediment
  - wastes
  - pesticides
  - salts.



Fertilizers

TYPES OF FERTILIZERS

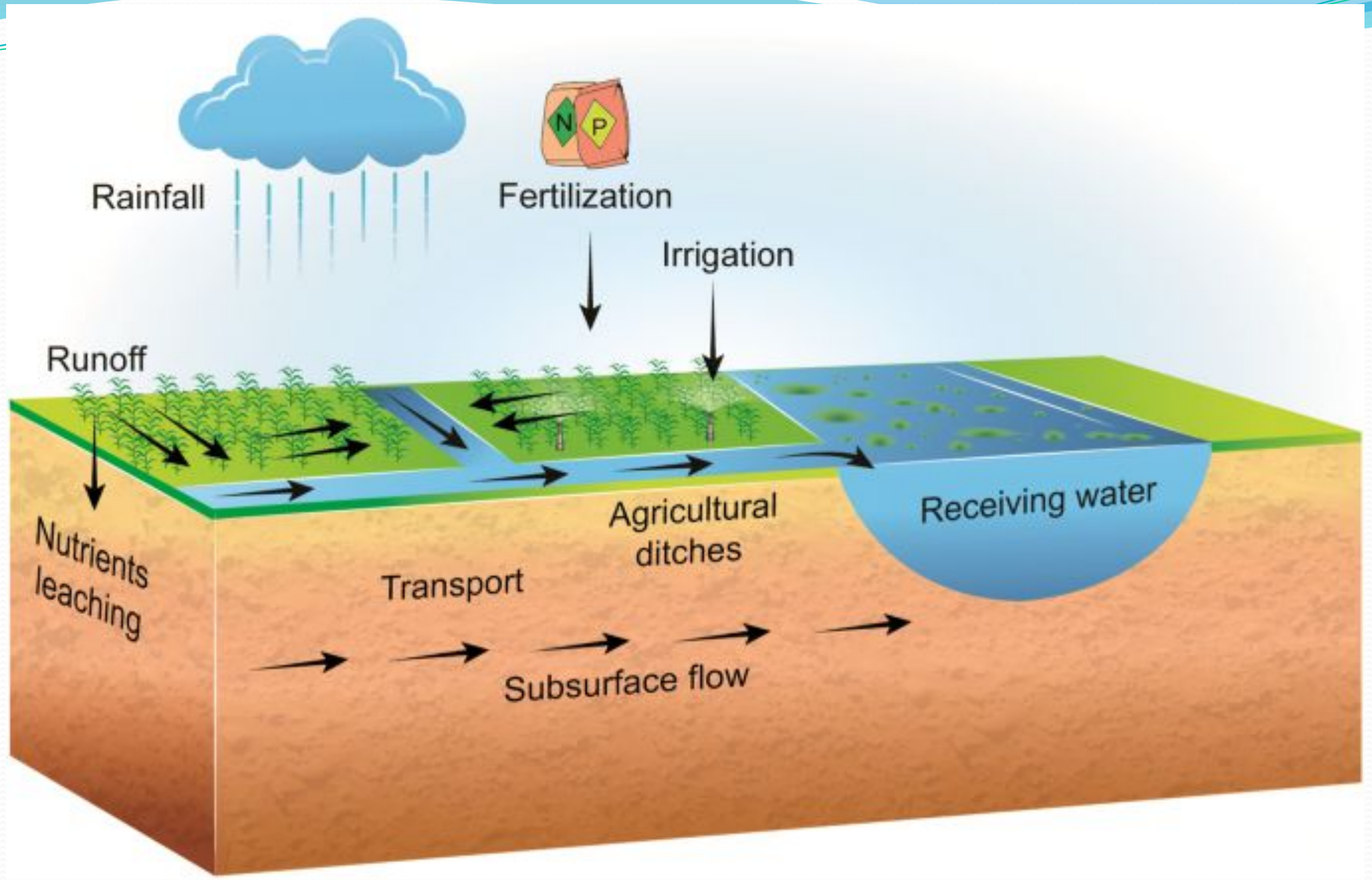
Inorganic fertilizers

Liquid fertilizers *Nitrosol and African Violet Food*

Slow-release fertilizers

Fertilizer with insecticides

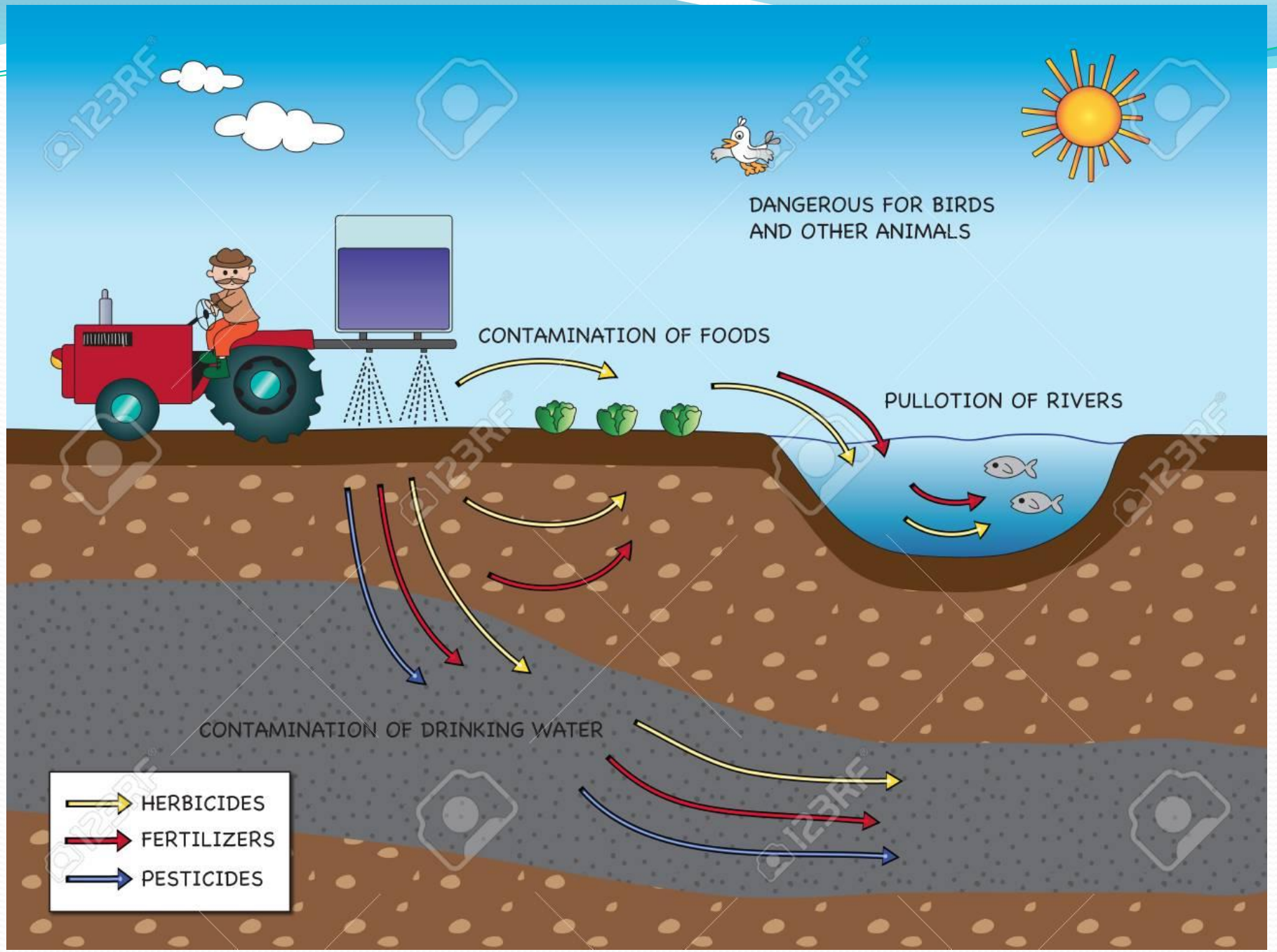



Rainfall
N
P
Fertilization
Irrigation
Runoff
Nutrients leaching
Transport
Agricultural ditches
Receiving water
Subsurface flow



Pesticides

- Pesticide covers a wide range of compounds - insecticides,fungicides,herbicides,rodenticides, molluscicides, nematicides, plant growth regulators


DANGEROUS FOR BIRDS
AND OTHER ANIMALS
CONTAMINATION OF FOODS
PULLOTION OF RIVERS
CONTAMINATION OF DRINKING WATER
HERBICIDES
FERTILIZERS
PESTICIDES

How can Agricultural Pollution harm our environment?

How do different agricultural activities contribute to pollution, and how does this affect our ground and surface waters??





Agricultural impacts on water quality



Agricultural activity

Tillage/ploughing

Impacts

Surface water **Groundwater**

Sediment/turbidity: sediments carry phosphorus and pesticides adsorbed to sediment particles; siltation of river beds and loss of habitat,etc.



Surface water pollution

- Direct surface runoff
- Seepage to ground water that discharges to a surface water outlet
- Various farming activities - erosion of soil particles Sediment produced by erosion - damage fish habitat wetlands , transports excess agricultural chemicals resulting in contaminated runoff
- Excess nutrients from nonpoint sources cause eutrophication



Agricultural activity

Fertilizers

Impacts

Surface water

Runoff of nutrients, especially phosphorus, leading to eutrophication causing taste and odour in public water supply, excess algae growth leading to deoxygenating of water and fish kills.

Groundwater

Leaching of nitrate to groundwater; excessive levels are a threat to public health.



Agricultural activity

Manure spreading



Impacts

Surface water

Carried out as a fertilizer activity;
Results in high levels of contamination of receiving waters by pathogens, metals, phosphorus and nitrogen leading to eutrophication and potential contamination.

Groundwater

Contamination of groundwater, especially by nitrogen

Agricultural activity

Irrigation



Impacts

Surface water

Runoff of salts leading to salinization of surface waters; runoff of fertilizers and pesticides to surface waters with ecological damage, bioaccumulation in edible fish species, etc. High levels of trace elements such as selenium can occur with serious ecological damage and potential human health impacts.

Groundwater

Enrichment of groundwater with
salts, nutrients (especially nitrate).

Agricultural activity

Aquaculture



Impacts

Surface water

Release of high levels of nutrients to surface water and groundwater through feed and faeces, leading to serious eutrophication.

Groundwater



Air Pollution from Agricultural Activities

Fumes from nitrogen-rich fertilizers and animal waste combine in the **air** with combustion emissions to form solid particles in the **air**.

Agricultural air pollution comes mainly in the form of ammonia, which enters the air as a gas from heavily fertilized fields and livestock waste.

It then combines with pollutants from combustion—mainly nitrogen oxides and sulfates from vehicles, power plants and industrial processes—to create tiny solid particles, or aerosols, no more than 2.5 micrometers.

Soil Pollution from Agricultural Activities

- Increase in nitrate levels of soils.
- Damage natural make up of soil.
- Alters the pH.
- Decrease soil quality.
- Kills soil organisms.
- Toxic to microbes.
- Toxicity availability of nutrients.
- Kills earthworms.
- Growth regulators:
- Residual effect.
- Toxic to soil organisms.

Health problems

- Handling, storage and disposal of chemical agricultural inputs - cause cancer ,negatively influence reproduction ,disrupt the endocrine system etc.
- Pesticide residues in food and drinking water - cause similar adverse health effects



Management measures

- Sediment/erosion control
- Confined animal facility
- Nutrient management
- Livestock grazing
- Effective irrigation system
- Control of phosphorus from point and diffuse sources
- Integrated Pest Management