Review 5. E2 Pesticides in the Environment

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Pesticide potential negative impacts on the environment and non-target species.

- **Contamination of ground water and surface water**

- **Reduction of bee, other pollinator, and bird populations**

- **Damage to aquatic organisms**

Pesticides in the Environment

Pesticide potential negative impacts on the environment and non-target species.

- **Persistent pesticide causing long term soil contamination.**
- **Some pesticides may be potential carcinogens.**
- **Potential harm to non-target species, organisms not intended to be managed**

Pesticides in the Environment

Runoff the movement of water and associated materials over the top of the soil or impervious surfaces.

Misapplication causes pesticide pollutants and sediments can be carried offsite to streams, rivers, lakes, or wetlands.

Leaching is the downward movement of particles and nutrients through the soil.

Pesticides in the Environment

Pesticide particle drift the air movement of pesticide droplets off the site of application.

Temperature inversions occur when warmer upper air traps cooler air at ground level. An inversion acts like a lid and traps airborne particles such as pesticide droplets at the surface.

Pesticides in the Environment

Esters herbicides formulated for broadleaf weeds have a greater volatilization than amine.

Ab*sorption* **causes the uptake of the pesticide into plant tissues. Once ab****sorbed, most pesticides are broken down into by-products within the plant.**

Ad*sorption* **causes the binding of the material to the surface.**

Pesticides in the Environment

Photodecomposition sunlight breaking down pesticides thereby altering the chemical characteristics of the pesticide frequently resulting in less toxic breakdown products.

Microbial decomposition soil microorganisms utilize pesticides as food source and thereby degrade the pesticides.

Pesticides in the Environment

Impact is a change in the chemical, physical including habitat, or biological quality or condition caused by external forces.

Pesticides are formulated containing a mixture of one or more active ingredients AI, carriers inert ingredients, and other additives diluted for safety and ease of application.

Pesticides in the Environment

Impacts to non-target species shared root zones, pollinators, aquatic or other species, weather impacts.

A pesticide is considered *rainfast* after it has been absorbed by plant tissues so that it will still be effective after rainfall or irrigation

Pesticides in the Environment

High temperatures and low humidity may result in pesticide volatilization.

Organic matter contains carbon formed from living plants and organisms.

Chemigation the injection of fertilizers and or pesticides through an irrigation system

Pesticides in the Environment

Pesticides are registered for specific crops/sites.

Adjuvant an additive to a pesticide that enhances pesticide effectiveness.

Review Safety Data Sheets SDS formerly known as Material Safety Data Sheets MSDS.

Pesticides in the Environment

Sandy soils are more likely to leach thereby contaminating ground water.

Avoid applying pesticides in drainage areas where they may be transported by groundwaters.

Never directly or indirectly apply pesticides and fertilizers on to surface waters or hard surfaces which drain into surface waters.

Pesticides in the Environment

Select herbicides with short half-lives. The amount of time it takes for ½ of the original material to be broken down or removed.

Consider *spot treatment* instead of a blanket application

Misapplication is illegal and can cause contamination of surface water.

Pesticides in the Environment

Colony Collapse Disorder CCD is the phenomenon that occurs when the majority of worker bees in a colony disappear and leave behind a queen, plenty of food and a few nurse bees to care for the remaining immature bees and the queen.

Pesticides in the Environment

The class neonicotinoids (major insecticide group) is more harmful to bees than other pesticide classes.

60-70% of native bees dig burrows in the ground. They prefer dry sandy soil devoid of vegetation.

Pesticide residues can be present in nectar and pollen ingested by bees.