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FROM THE AMERICAN PEOPLE

IPM Overview

Smart pest control tactics you can use

In The Past..

- Farmers planted many crops together
- Many pests in the fields were controlled by predators and parasites
- Weeds near the field provided refuge for natural enemies of pests
- Farmers controlled pests by: changing planting dates, hand destruction of pests, use of repellent & resistant plants, and by crop residue destruction

More Recently...

- Farmers planted crops separately in increasingly larger “monoculture” fields
- As pests increased, they used pesticides
- As resistance developed, they used more pesticides
- As pesticides killed predators and parasites, secondary pests developed into primary pests
- More & more pesticides were needed....

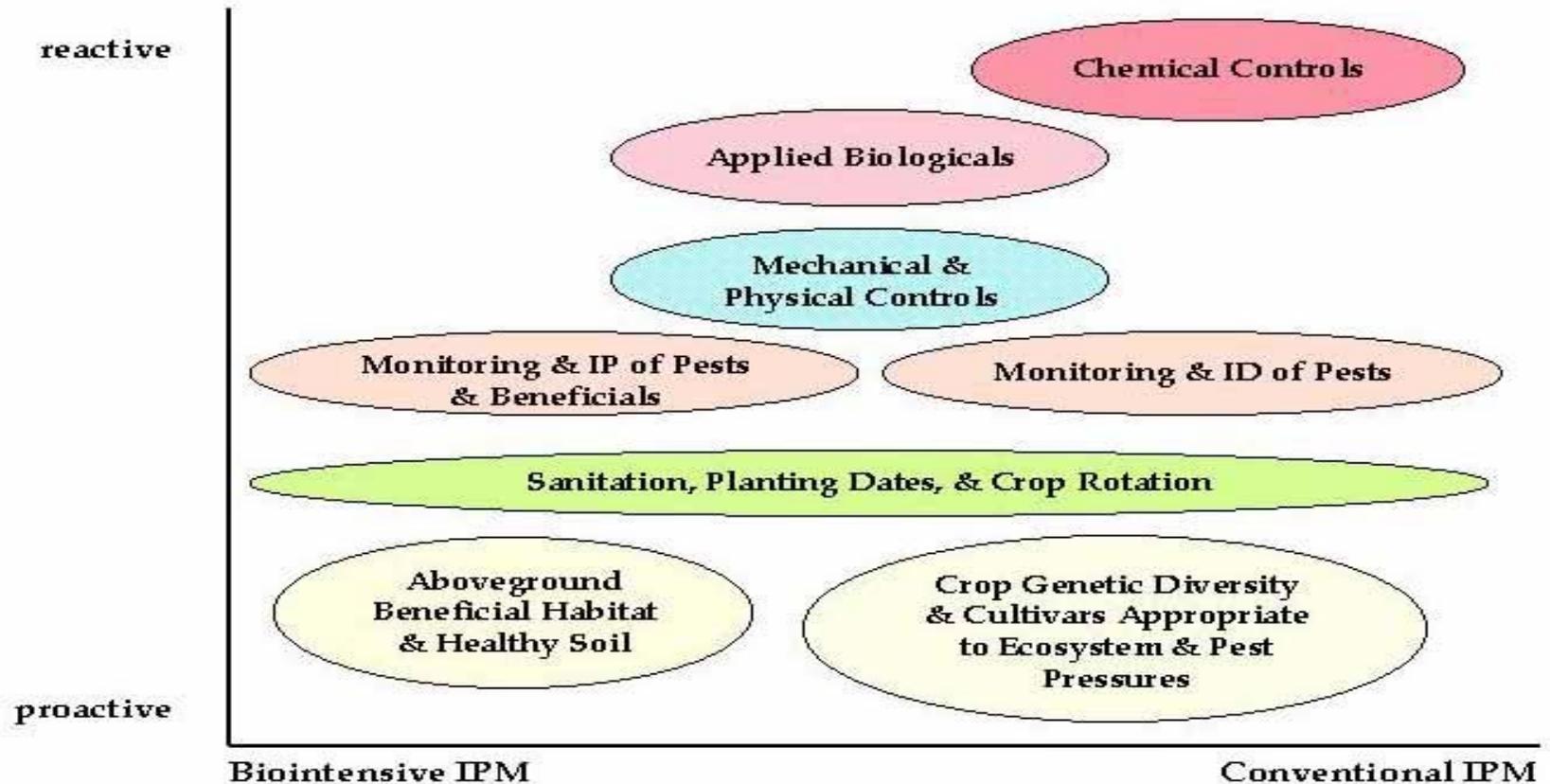
Pesticide use stays high because of..

- Market aesthetics for perfect-looking produce
- Pesticide companies strong marketing
- Government & bank credit policies
- Extension agents are trained to favor pesticides
- Researchers get more money for testing pesticides than for doing IPM work

Tools: Cultural & Agronomic

- Plants & animals with genes to resist pests
- Crop rotation
- Crop refuse destruction
- Vary planting or harvesting time
- Interplanting (mixed crop)
- Trap crops
- Repellent inter-planting

Biointensive & Conventional IPM



“Farmscaping” with “insectary plants” hedgerow planted to encourage parasites of pests



Intercrop French beans & insect-repellant cilantro



Monitor for whiteflies & aphids



Pigeon pea green manure to till back into the soil



Crop rotation: corn to beans



Transplanting tomatoes in a green manure vetch planting



More IPM tools

- Biological control with parasites or predators
- Plant extracts like neem
- Microbes like fungus, bacteria, virus
- Traps using pheromones & pesticides
- Plant resistance to pests by leaf hairs, spines, plant chemicals, tough tissue, bad taste

Fly parasitizing moth egg



Anaphes parasitic wasp on cereal leaf beetle egg



***Peristenus* wasp parasitizing an aphid**



***Lysiphlebus* wasp emerging from aphid mummy**



Minute Trichogramma wasps attacking corn borer eggs



***Trissolcus* wasp parasitizing stink bug eggs**



Ladybug eating cabbage aphid



Mealybug destroyer ladybeetle



Big-eyed bug eats corn earworm egg



Spined soldier bug eats potato beetle larva



Lacewings eat aphids



Mantids eat pests and are killed by pesticide overuse



White grub attacked by *Bacillus* bacteria



NPV Virus kills a moth larva



Cabbageworm infected by virus



Fly attacked by *Entomophthora* fungus



Hairy & sticky potato variety that traps aphids



Wheat resistance to salty soil



***Phytophthora* root & stem rot susceptible and resistant plants**



Pheromone bait trap controls fruit flies in Bangladesh



Grinding Neem leaves in Mali



Neem extract



Spraying Neem leaf extracts to control bean pests in Mali

