Application Techniques of Bio-botanical products to achieve effective pest control

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General Consideration for Pesticide Application

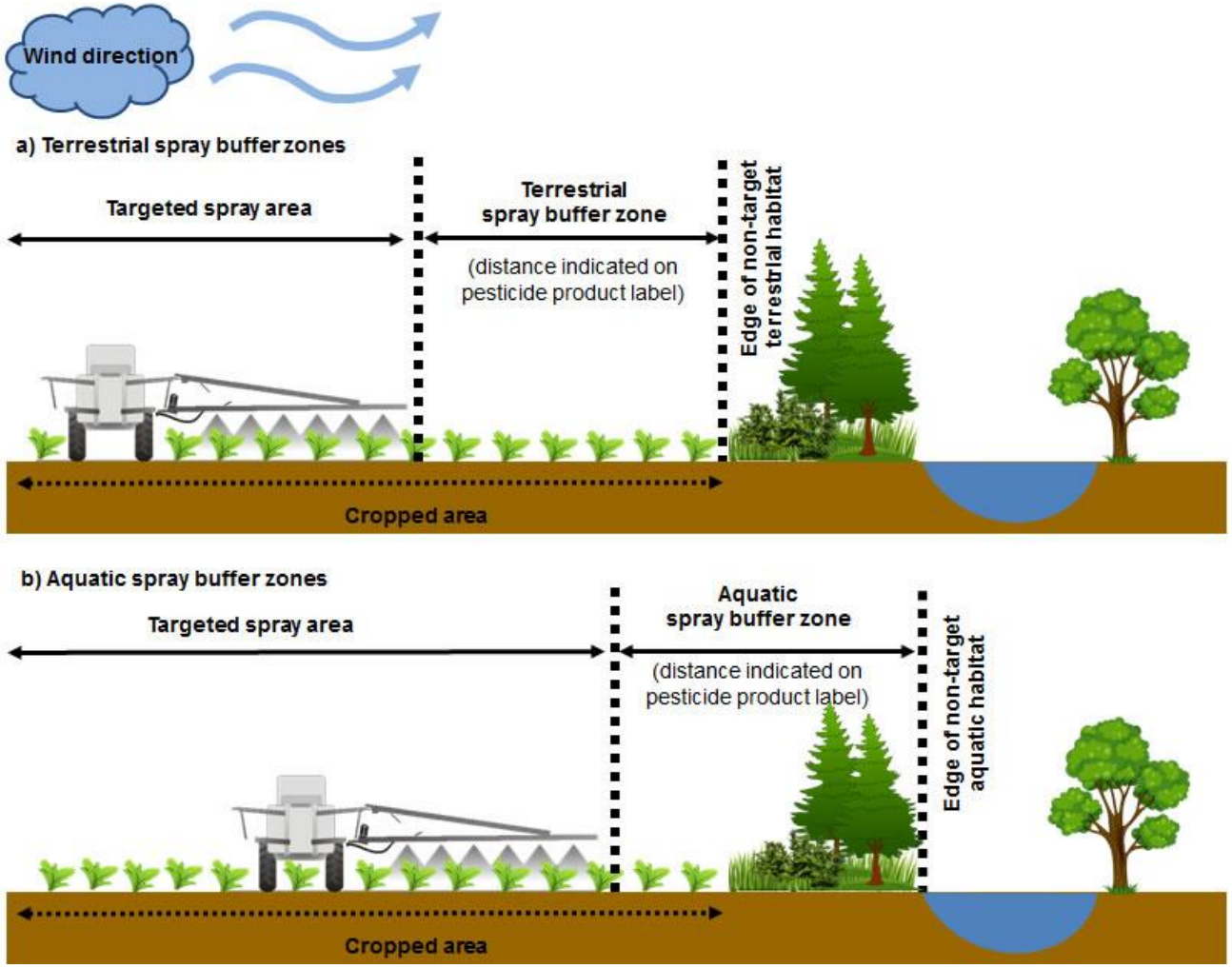
Use Protective Clothing

Apply pesticides during the cooler part of the day, such as the early morning or evening.

General Consideration

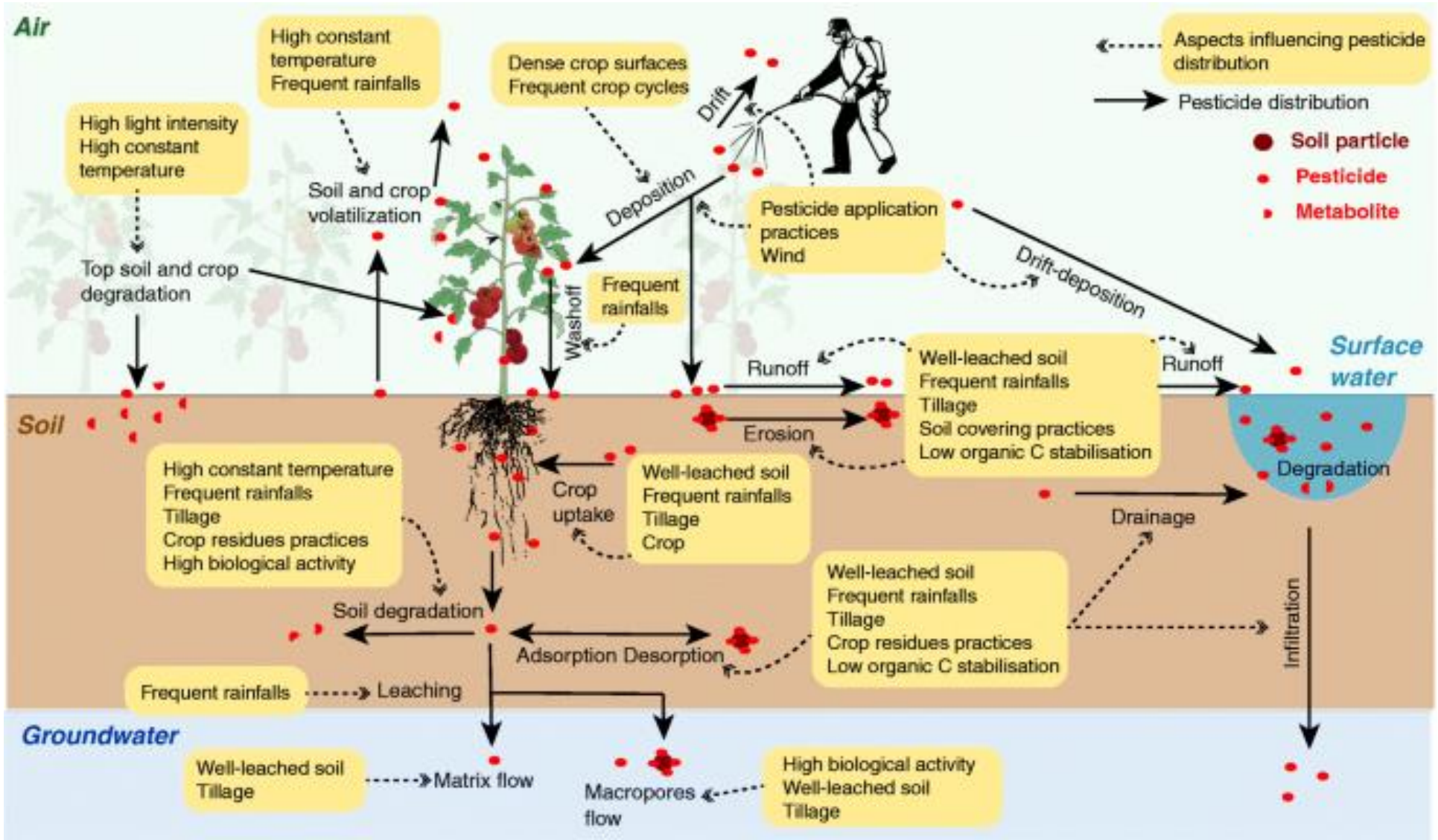
Be careful about Wind Speed and Direction. Do not spray against the wind direction. It will cause pesticide exposure and inhalation toxicity to the operator.

Precautions



Hazards due to Chemical Pesticides

Distribution of Pesticides in Environment



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Bio-botanicals: A Safer Alternative

- Plant/microbial products possessing **insecticidal/ pesticidal** as well as repellent properties have come up as a better **alternative** to **synthetics.**
- They are ecologically **safe**, **biodegradable** and easily available at **low cost**.
- Extensive use of synthetic pesticides has led to development of **resistance** in several pest species along with vast **destruction** of beneficial organisms.

- The concept of **“bio-pesticides”** refers to products obtained from natural sources such as **animals, plants**, and **microorganisms**, including "natural ingredient pesticides," "microorganism pesticides," and "biochemical pesticides” that can help reduce pest populations and increase food production.

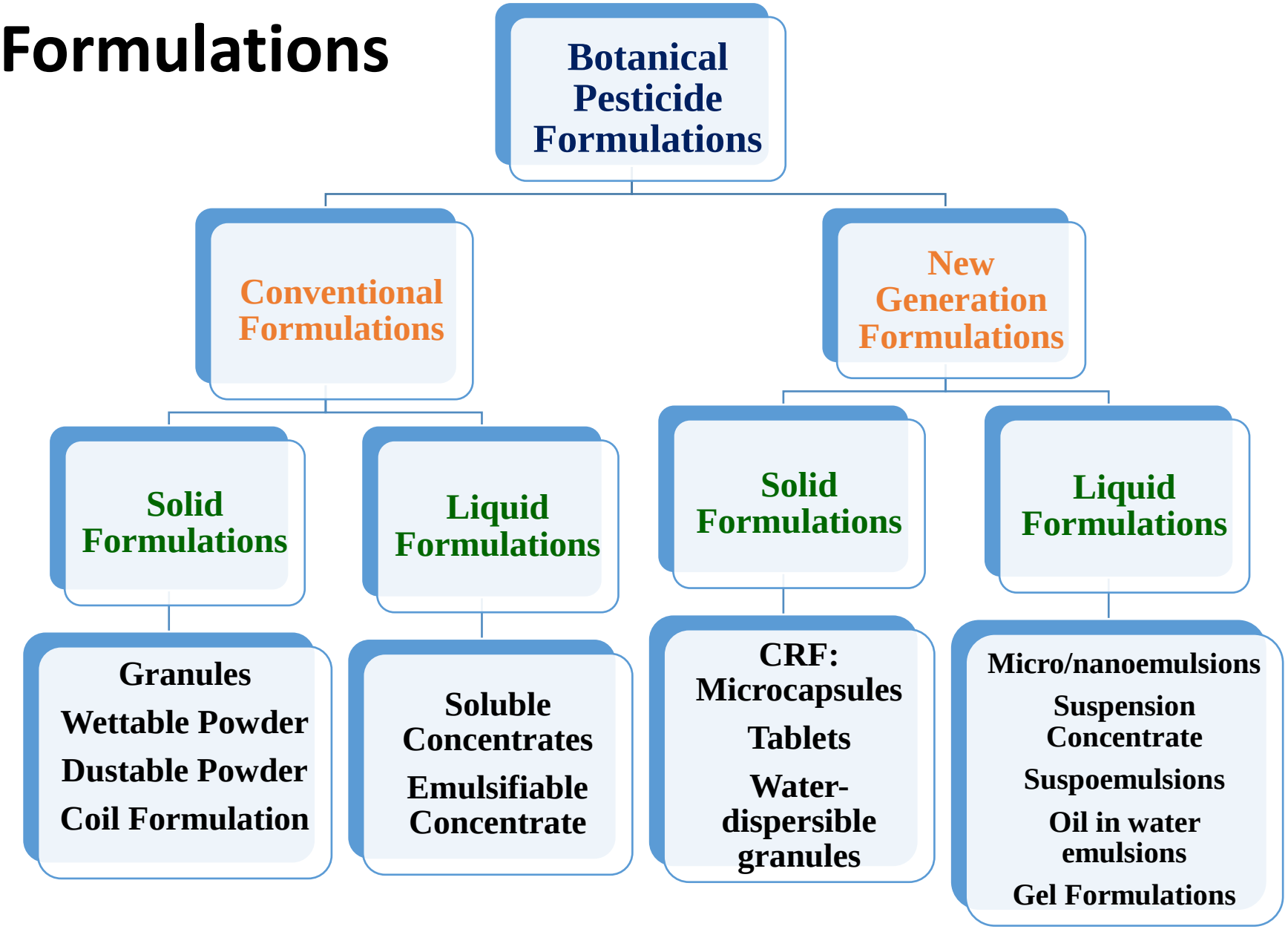
Biopesticidal v/s Synthetic Chemical Pesticide Formulations

Synthetic Chemical Pesticide	Bio-botanical pesticide
Highly persistent and toxic	Biodegradable
Contaminate the environment and hazardous to the users	Eco-friendly formulations/products
Mammalian toxicity and phytotoxicity	Target specificity and safety to mammals
Insects develop resistance, pest resurgence	Biopesticides (Microbial, Biochemical or botanicals) have a number of components responsible for insecticidal activity, esp. botanicals, so the chances of pest developing resistance are minimised.
Some chemicals are not available easily	Easy and locally available ingredients
Expensive, high equipment cost	Low cost and economic feasibility

Challenges in Bio-botanical pesticide application

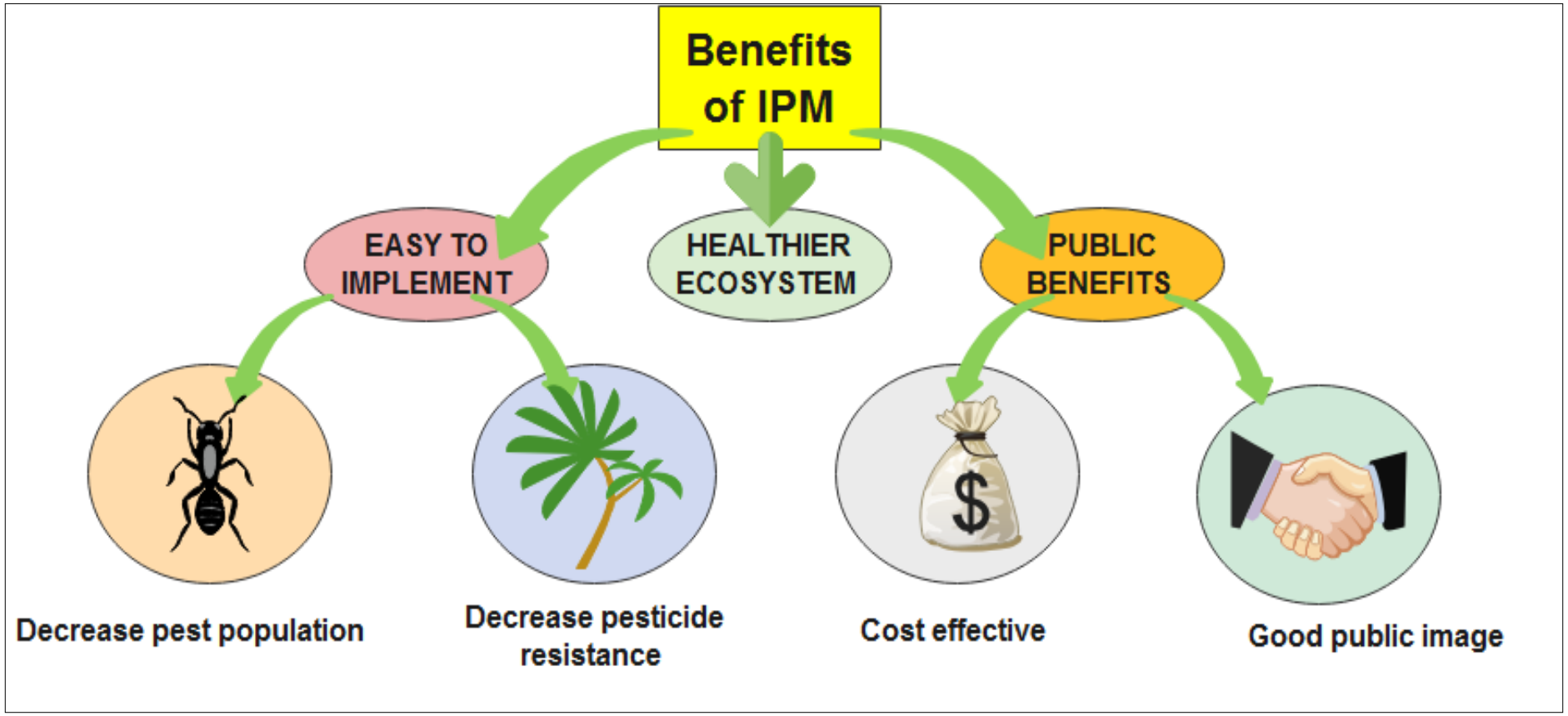
- Biological Agents slow in action, 4-6 days
- Unstable under UV rays of sun light Encapsulation
- Insects with sucking mouth parts like aphids and scale insects are difficult to control with bacterial biological control.
- High specificity: which may require an exact identification of the pest/pathogen and the use of multiple products to be used; although this can also be an advantage in that the biopesticide is less likely to harm species other than the target
- Often slow speed of action (thus making them unsuitable if a pest outbreak is an immediate threat to a crop)
- Often variable efficacy due to the influences of various biotic and abiotic factors (since biopesticides are usually living organisms, which bring about pest/pathogen control by multiplying within the target insect pest/pathogen)

Biopesticidal Formulations



CONCLUSIONS:-

- Bio/botanical because of their availability, effectiveness and biodegradability, can be used as a safe alternative to synthetic chemical pesticides for household as well as crop pest control.
- Depending on the life cycle of target pests, different types of formulations can be developed.
- Bio/botanical synergists can be identified which can enhance the efficacy for promotion of these products for the safety of environment & human kind.
- All the strategies can be utilized for effective control of pest management.


Benefits of IPM
EASY TO IMPLEMENT
HEALTHIER ECOSYSTEM
PUBLIC BENEFITS
Decrease pest population
Decrease pesticide resistance
Cost effective
Good public image

THANK YOU