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CARNET'ADAPT



Natural Approaches to Crop Protection



PO Box 755, Roseau,
Commonwealth of Dominica
Phone: 767-277-5353
phytosolplus@gmail.com

Natural Approaches to Crop Protection



Nelson Laville
Plant Pathologist
Phyto-Sol Plus Inc.
Dominica

Outline



- Introduction
- Defining plant health
- Common pest for in Caribbean Farm
- Understanding Plant and pest interaction
- Integrated Crop Management
- Natural Approaches to crop protection
- Discussion

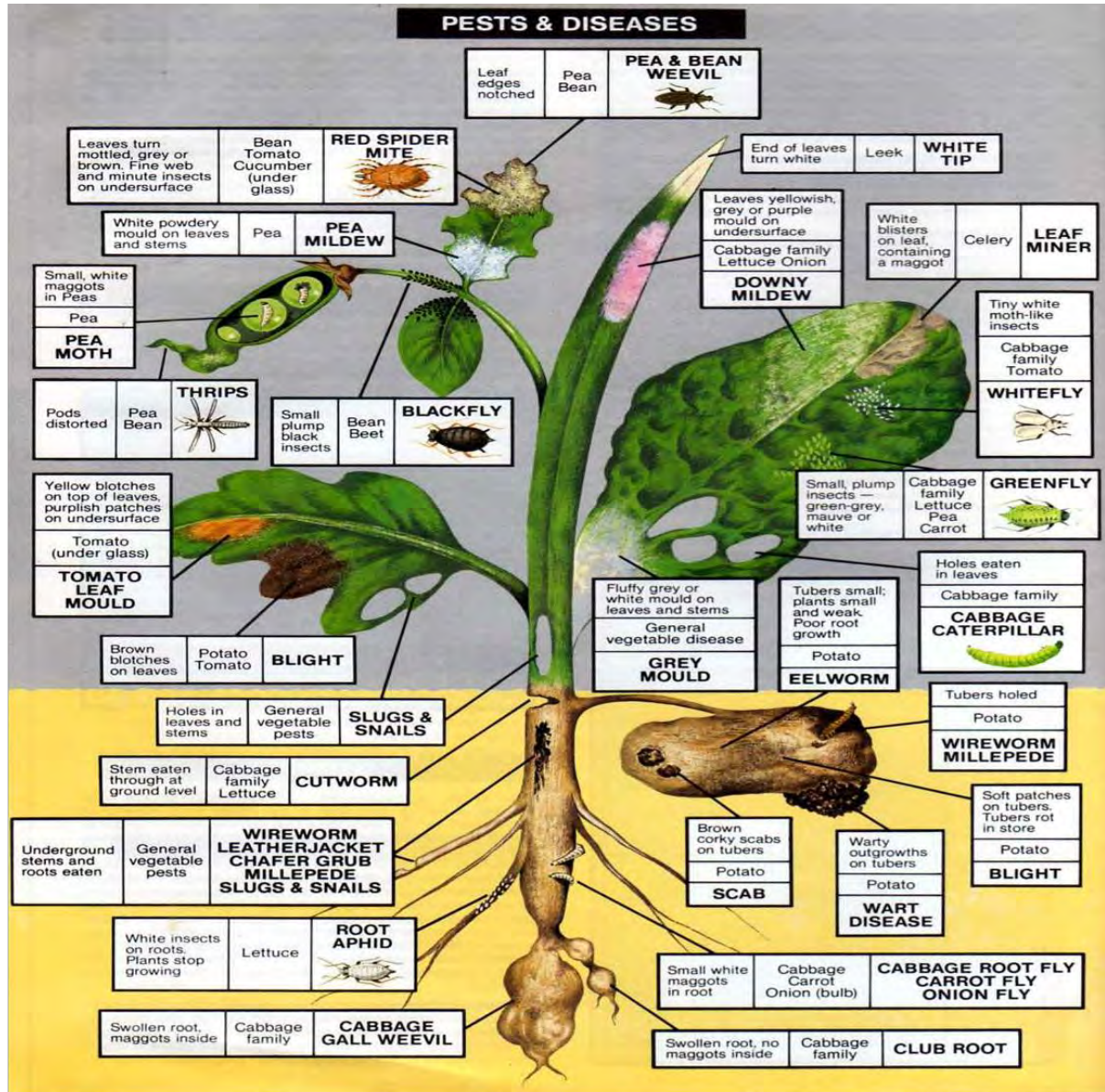
Plant Health and Crop Protection



- Crop protection is the general method or the practice of protecting the crop yields from different agents including pests, weeds, plant diseases, and other organisms that cause damage to the agricultural crops.
- Plant health is an overarching term for emerging risks which may influence the health of a plant and the ecosystem in which it resides. It has the potential to contribute to the wider goal of ensuring the sustainability of primary production on an economic, ecological and social level

Plant Health and Crop Protection

- Fungus
- Bacteria
- Nematodes
- Insects
- Mites
- Slugs and Snails



Thrips



Nematodes



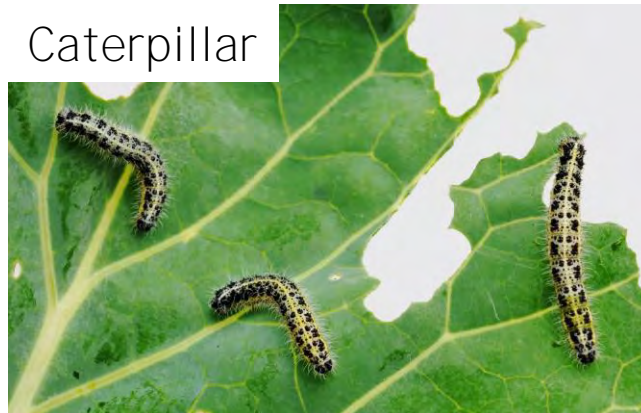
Aphids



Mites



Caterpillar



Slugs

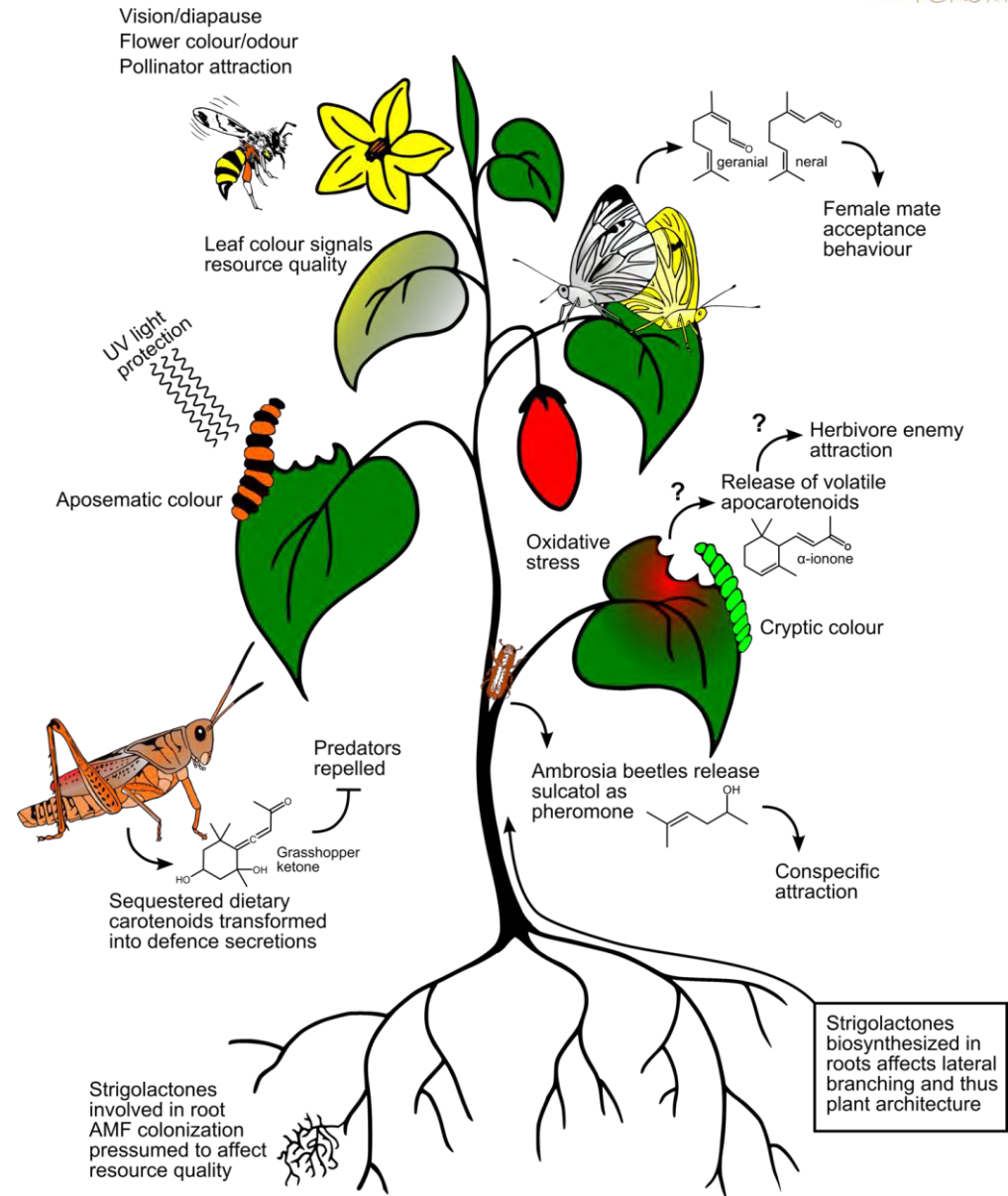


Fungus

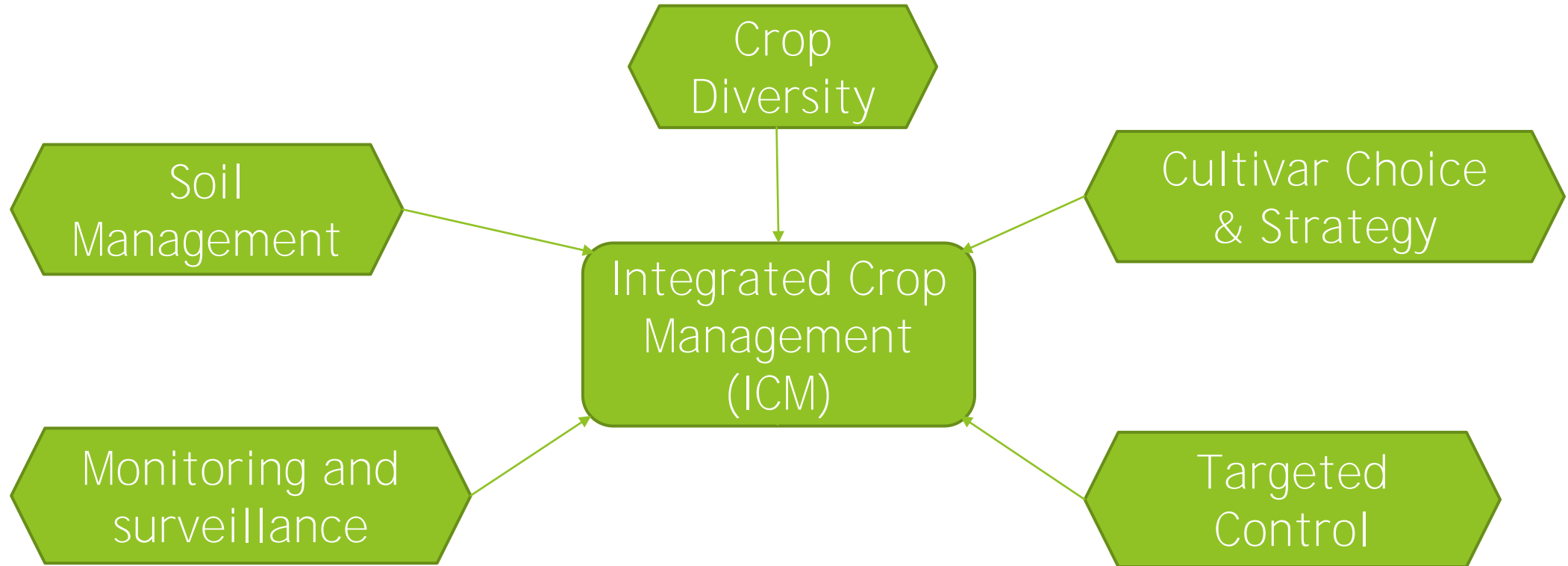


Some Factors Which Influences Plant Health

- Nutrition
- Soil pH
- Temperature
- Humidity
- Water
- Genetics
- Habitat
- Organisms



Integrated Crop Management (ICM)



The ICM involves different crop management practices and technologies to increase crop yields, reduce environmental damage, and sustain crop production. The ICM is a whole-systems approach based on knowledge and stresses the importance of understanding local ecosystems and changing management practices to be better suited to these ecosystems.

Integrated crop management is a whole farm approach

- It is site specific
- includes crop rotations;
- appropriate cultivation techniques;
- careful choice of appropriate crop varieties
- use of input with minimum reliance on artificial inputs



Crop Diversity



Survey and monitor your plants

- Step 1: get in close
- Step 2: look at the whole plant (including roots)
- Step 3: examine groups of plants
- STEP 4: consult your record (know the history of your field)



Approaches to Natural Crop Protection



- Nutrition
- Planting time
- Early Harvest
- Use resistant crop varieties
- Removal of infested plants
- Habitat and Crop diversity
- Oil preparation
- Traps (Sticky trap and Light traps)
- Grease barriers/Trail interruption
- Homemade remedies

Recipe for oil and soap preparation

- 1 cup of vegetable oil
- 1 tablespoon of mild liquid soap.
- Add 2-8 teaspoons of this mixture to 1 quart of water and spray your plants.
- The oil in this spray smothers the insects so it is effective on aphids, thrips, mites, and scale.



Recipe for oil and soap preparation

- 1 Gallon of Water
- 1 tablespoon of mild liquid soap.
- 1 tablespoon of vegetable oil
- 1 tablespoon of baking soda

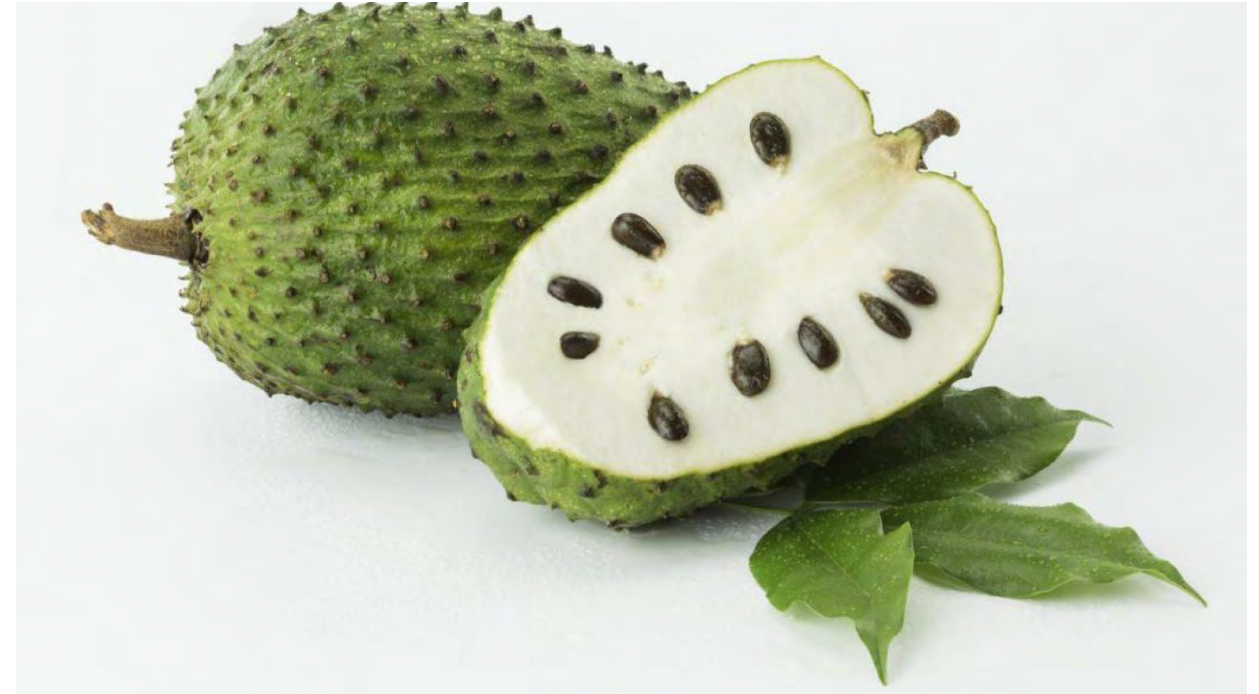


* The addition of baking soda to the mixture help control some plant pathogens.

Botanicals

ANNONA - Soursop (*Annona muricata*)

- Effective Range
 - Contact- and stomach poison insecticidal, larvicidal, repellent, antifeedant
- Target organisms
 - Aphids
 - Brown rice plant hoper
 - Diamondback Moth
 - Chrysanthemum aphid
 - Grasshoppers
 - Green bugs
 - Green rice leaf hopper
 - Potato aphid
 - Red pumpkin beetle



The toxic effect of annona sets in slowly , 2-3 days should be allowed.

CHILLIPEPPER - *Capsicum frutescens*

Fam. Solanaceae

- Effective Range
 - Stomach poison insecticidal, repellent, antifeedant, fumigant
- Target organisms
 - Ants
 - Aphids
 - Caterpillars
 - Colorado beetle
 - Imported cabbage worm
 - Rice weevil
 - Warehouse pests
 - Cucumber mosaic virus



GARLIC - *Allium sativum* Fam. Liliaceae

- Effective Range
 - Insecticidal, repellent, antifeedant, bactericidal, fungicidal, nematocidal and effective against ticks
- Target organisms
 - Aphids
 - Army worms
 - Colorado Beetle
 - False codling moth
 - Khapra beetle
 - Mexican bean beetle
 - Imported cabbage worm



*Garlic has also been found to be effective against fungus such as mildew and bean rust.

*100 g garlic cloves, 0,5 liters of water, 10 gm soap, 2 teaspoons mineral oil. Steep the finely grated garlic for 24 hours in the mineral oil. Dissolve the soap in the water, mix with the infusion of garlic and mineral oil., stir well together and filter through a fine cloth.

NEEM - *Azadirachta indica* Fam. Meliaceae

- Effective Range
 - Insecticidal, repellent, antifeedant, growth-inhibiting, fungicidal
- Neem is effective against numerous pests
 - American bollworm
 - Aphids
 - Diamondback moth
 - Cabbage worm
 - Cutworms
 - Desert locust
 - Fall army worm
 - Flea beetle
 - Large cabbage worm
 - Leaf miner
 - Mediterranean fruitfly
 - Mites



***The effective substances of neem lose their potency in sunny conditions being broken down by ultra-violet radiation. It is therefore best to apply neem preparations in the evening.**

NEEM - *Azadirachta indica* Fam. Meliaceae

Fungicidal Effects

- Neem preparations have shown fungicidal properties against
 - *Fusarium oxysporum*
 - *Rhizictonia solani*
 - *Sclerotium rolfsii* and
 - *Sclerotinia sclerotiorum*



PYRETHRUM - *Chrysanthemum cinerariaefolium* Fam. Compositae

- Effective Range
 - Pure contact poison
 - insecticidal, repellent, antifeedant
- Pyrethrum is effective against
 - Numerous caterpillars
 - Beetles
 - Aphids
 - Mites
 - Locusts
 - Thrips
 - Moths



TOBACCO - *Nicotiana tabacum*, *N. rustica*, *N. glutinosa* Fam. Solanaceae

- Effective Range
 - Contact-, stomach- and respiratory poison,
 - Insecticidal, repellent, fungicidal, acaricidal.
- Target Organisms
 - Aphids
 - Cabbage worms
 - Caterpillars
 - Flea beetles
 - Grain weevils
 - Leaf miners
 - Mites
 - Stem borers
 - Thrips



***Tobacco sprays are more effective when they are used at temperatures above 30°C**

TURMERIC - *Curcuma domestica* Fam. Zingiberaceae

- Effective Range
 - Insecticidal and repellent
- Target organisms
 - Army worms
 - Caterpillars
 - Cowpea beetle
 - Grain borer
 - Lesser grain borer
 - Mites



Careful observations and quick action are crucial to ensuring your plants health and safeguarding your biological resources

Thank You....



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