SOURSOP

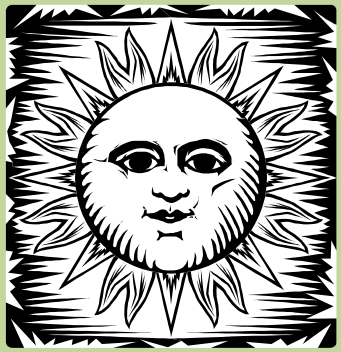
(Annona muricata)

IN GRENADA

NOV, 2023

High productivity and profitability depend on knowledge on soursop genetic, floral biology and cultural management

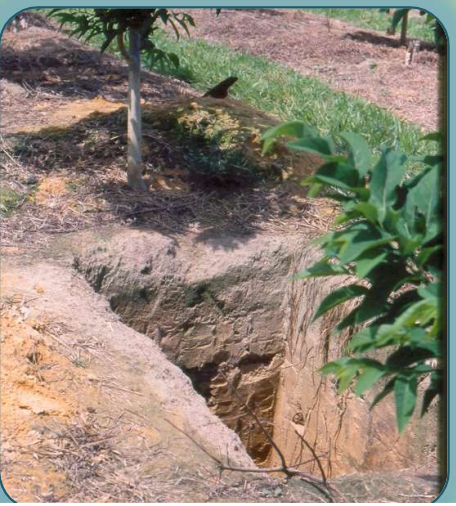
Knowing the climate, physics and chemistry of the soil…..



LUMINOSITY, PHOTOPERIOD TEMPERATURE

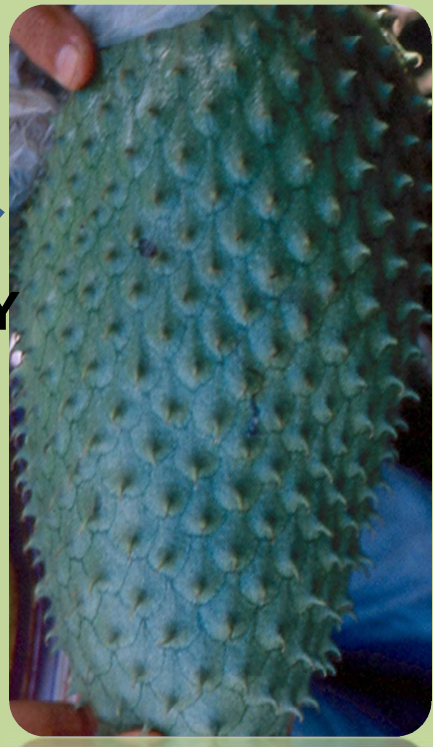
YIELD AND FRUIT QUALITY

SOIL



CULTURAL MANAGEMENT

VARIETY

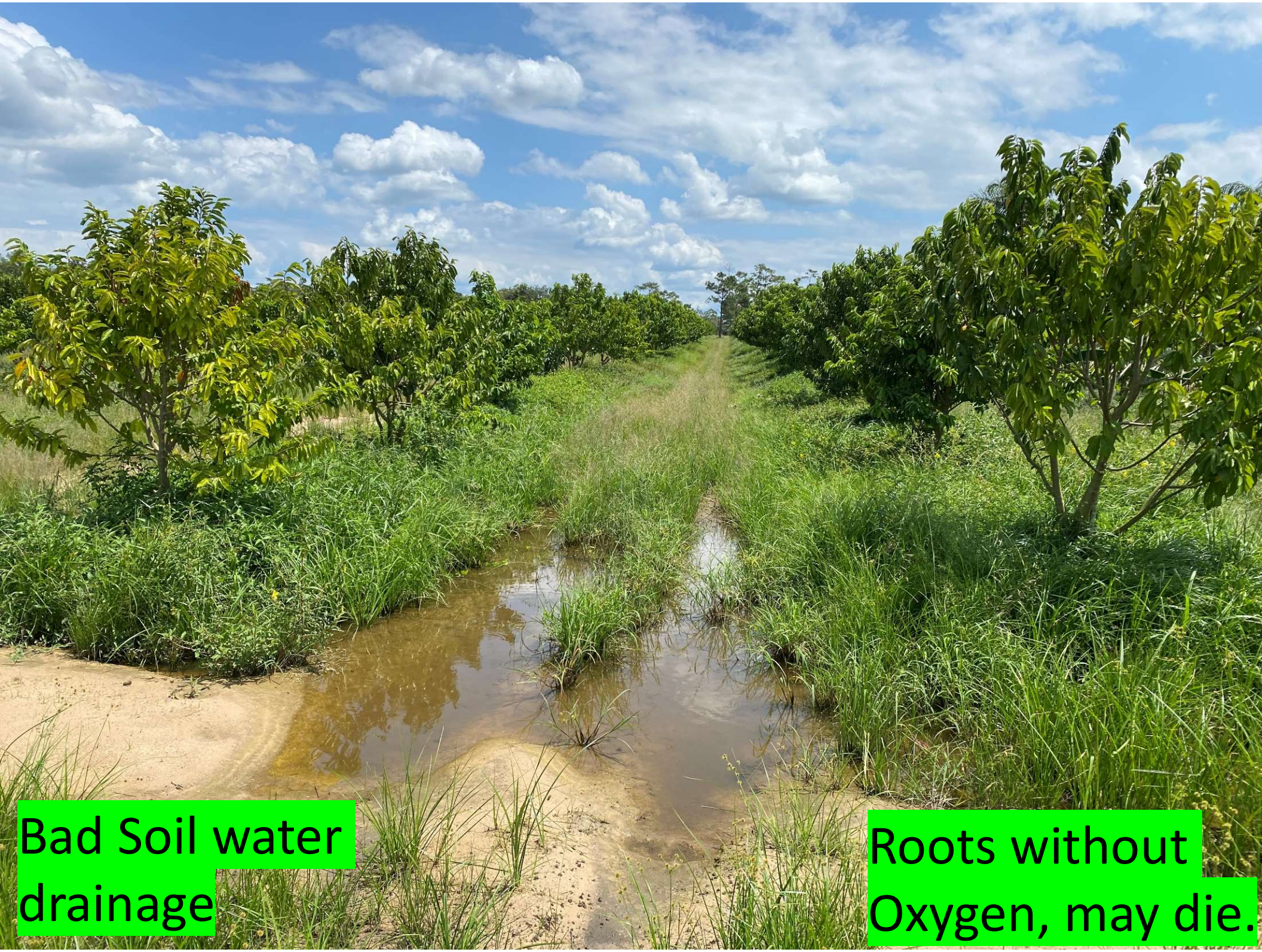


GENETIC
VARIETIES: MARKET DESTINATION

SOIL REQUIREMENTS

Soil water drainage

Well drained and at least 18 inches (45cm) deep


Bad Soil water drainage
Roots without Oxygen, may die.

PROPAGATION:

YIELD AND QUALITY DEPEND ON GENETICS OF MOTHER PLANTS

Seedling quality

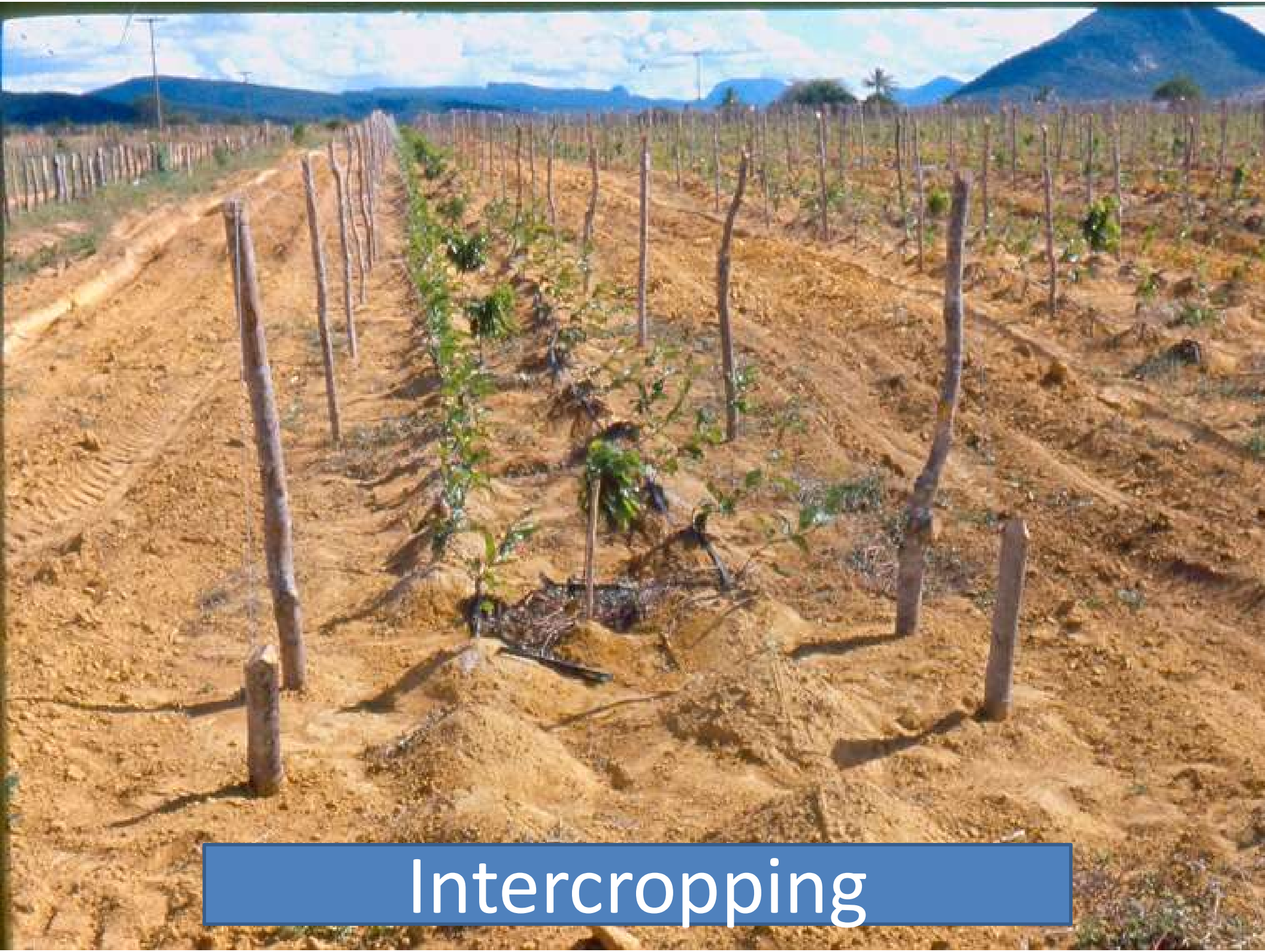
The key of success

Grafted Soursop


13-15 ft
20 -22 ft

DIG LARGE HOLES 16X16X16 OR 17X17X17 inches

Poor, light, shallow or heavy soils can be improved with bulky organic composts and manures to improve depth, structure, moisture retention/drainage and fertility.


Intercropping

PRUNING: A fairly dense **canopy (Undesirable)**

Pruning (standing under the tree)

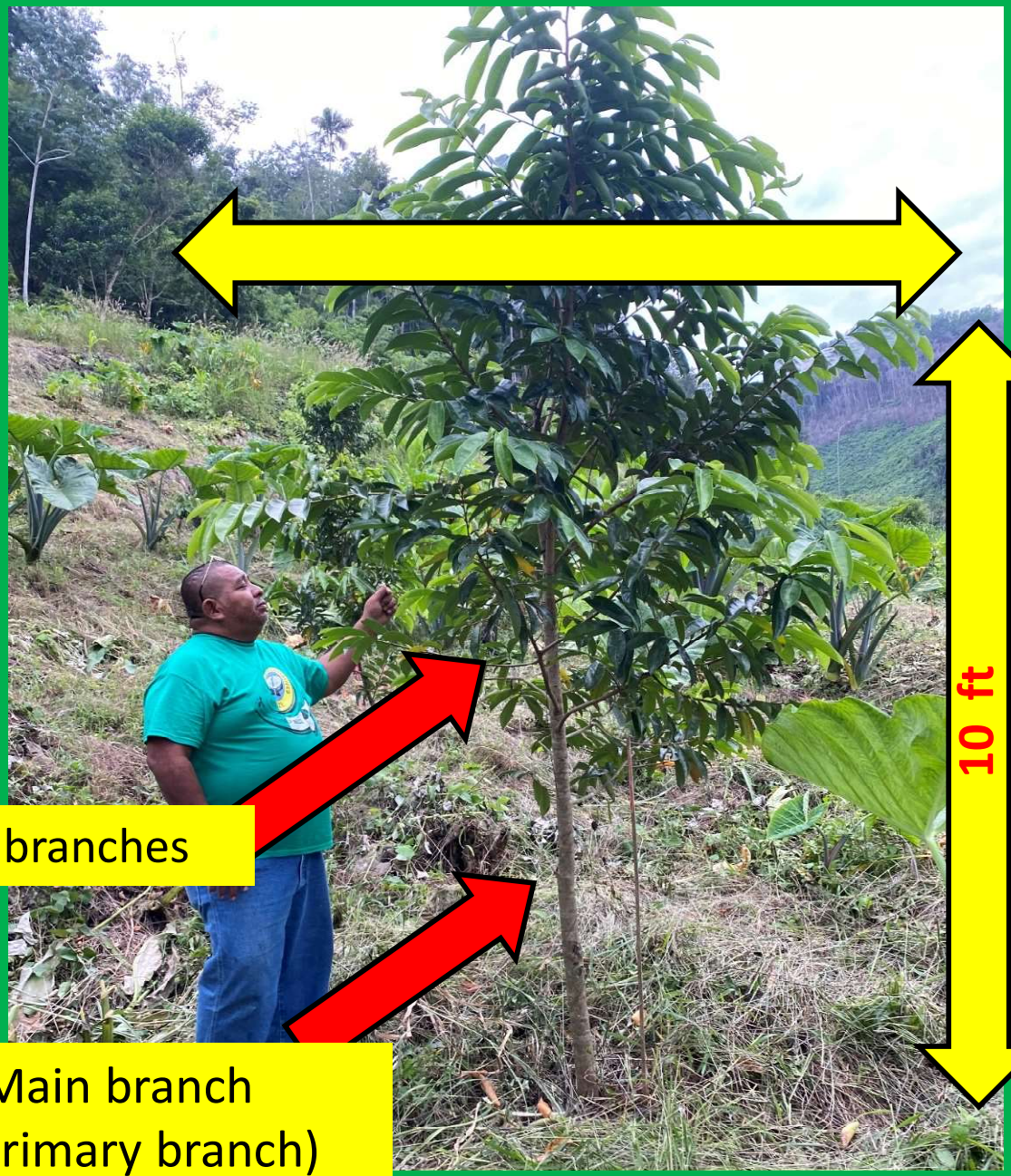

20 inches


8– 12 inches
Side branches (secondary branches)


8 – 12 inc
8 – 12 inc

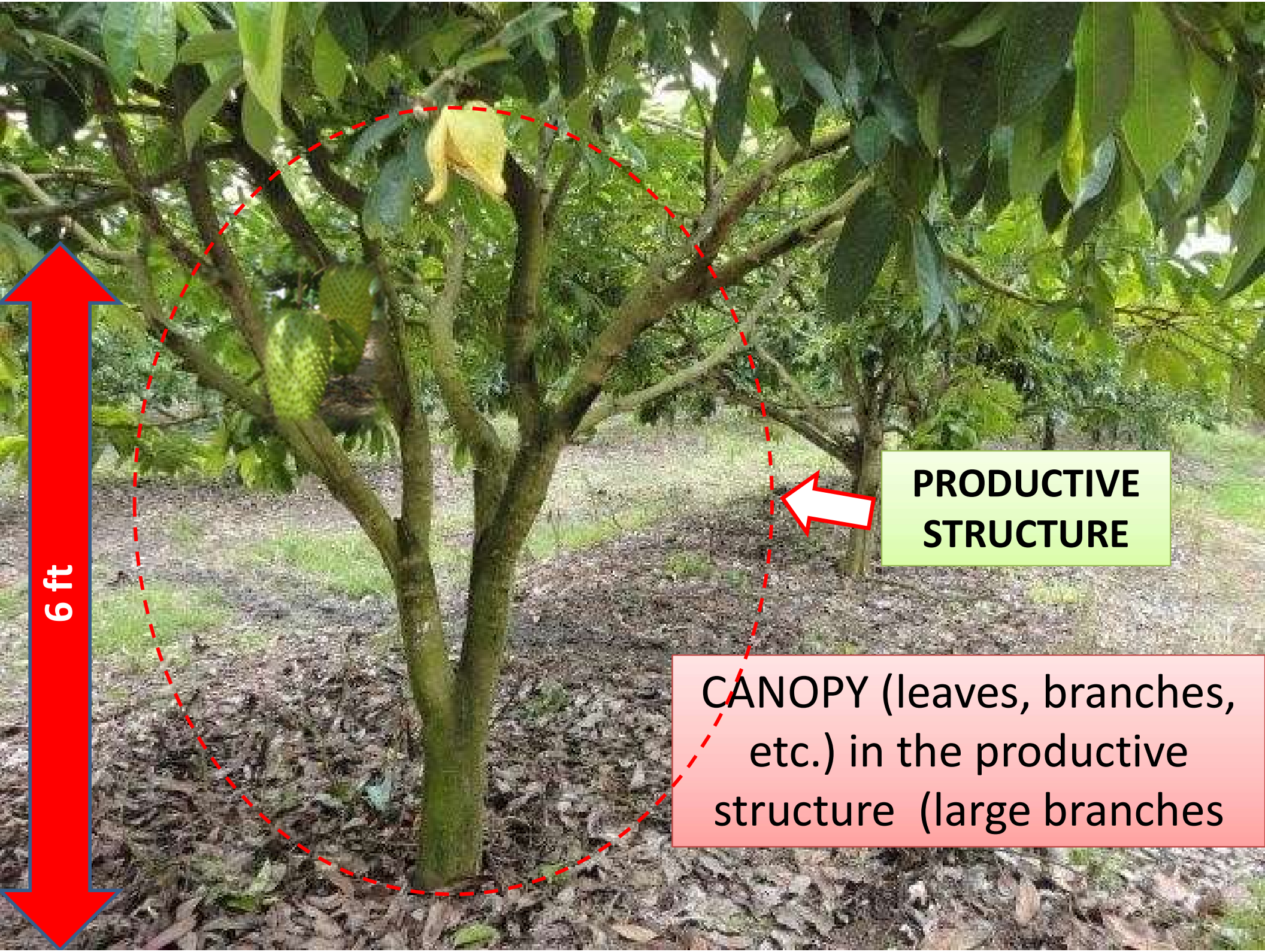
Free growth

FORM THE PLANT PRODUCTION STRUCTURE



Side branches

Main branch
(Primary branch)

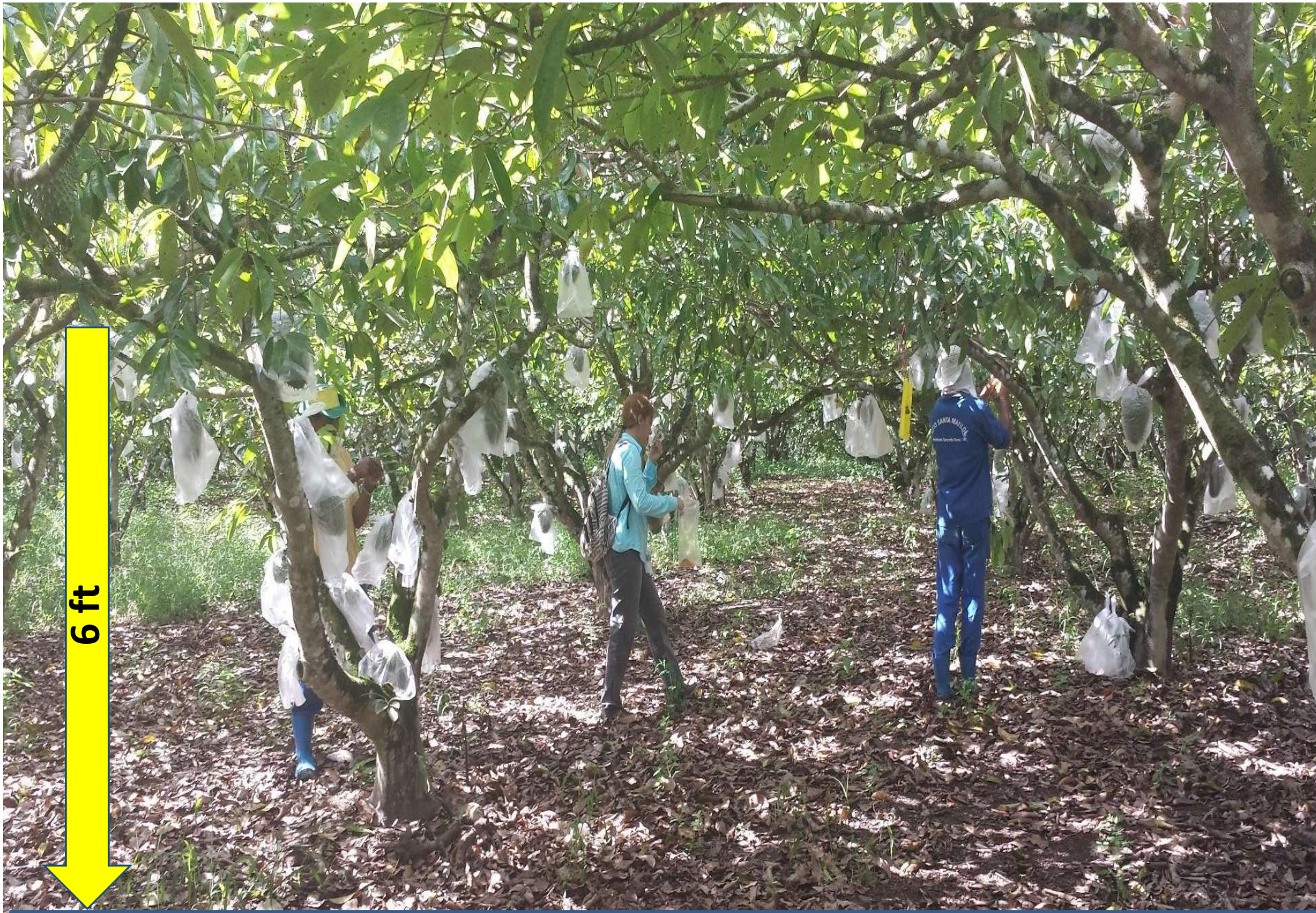

6 ft
PRODUCTIVE STRUCTURE
CANOPY (leaves, branches, etc.) in the productive structure (large branches


DESIRABLE
STRUCTURE OF

PRUNING OLD TREES

Pruning the canopy from the bottom

GRENADA: ADULT SOURSOP TREE BEFORE PRUNING (LEFT SIDE) AND AFTER PRUNING (RIGHT SIDE)

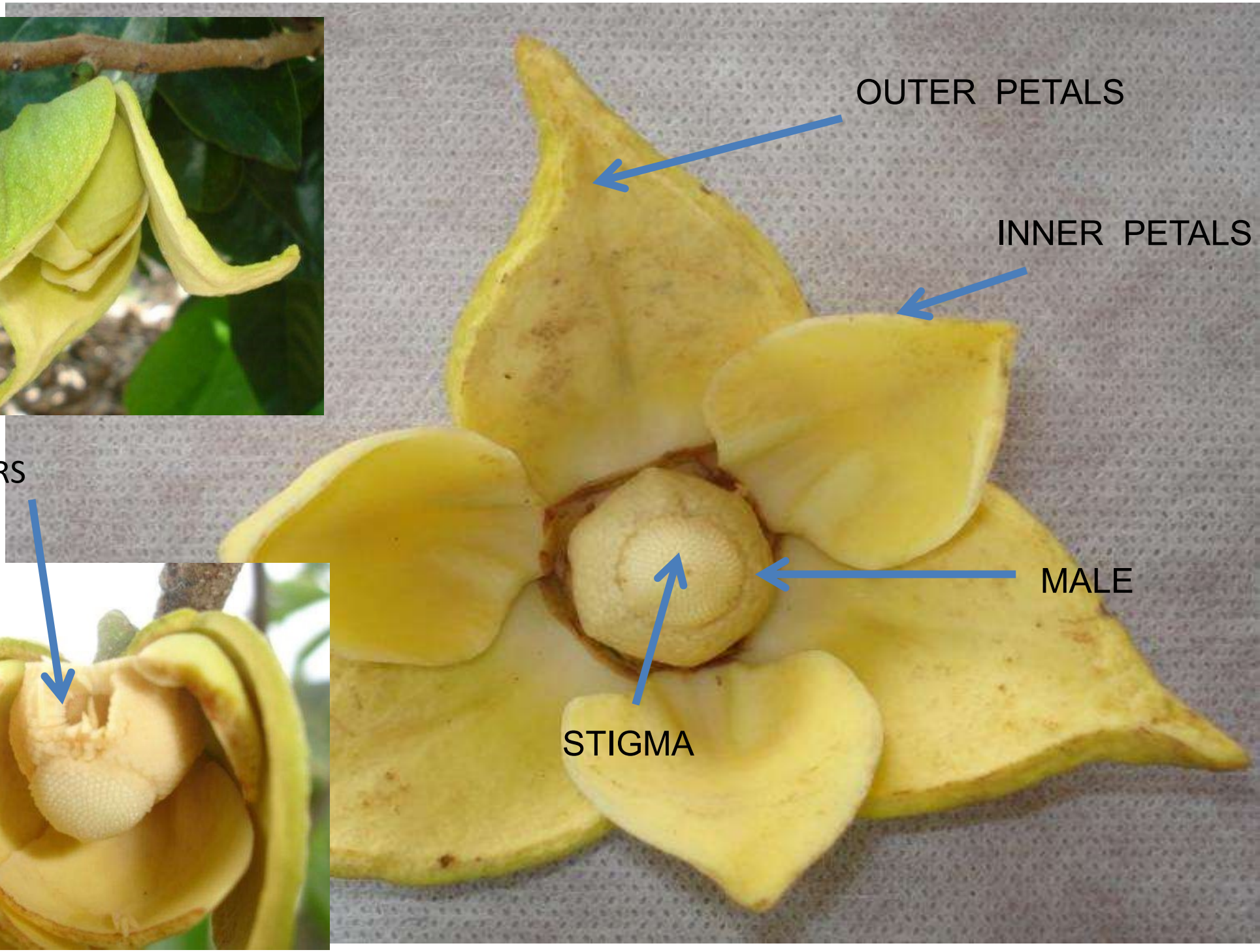


Leaves, shoots and branches eliminated throughout the year

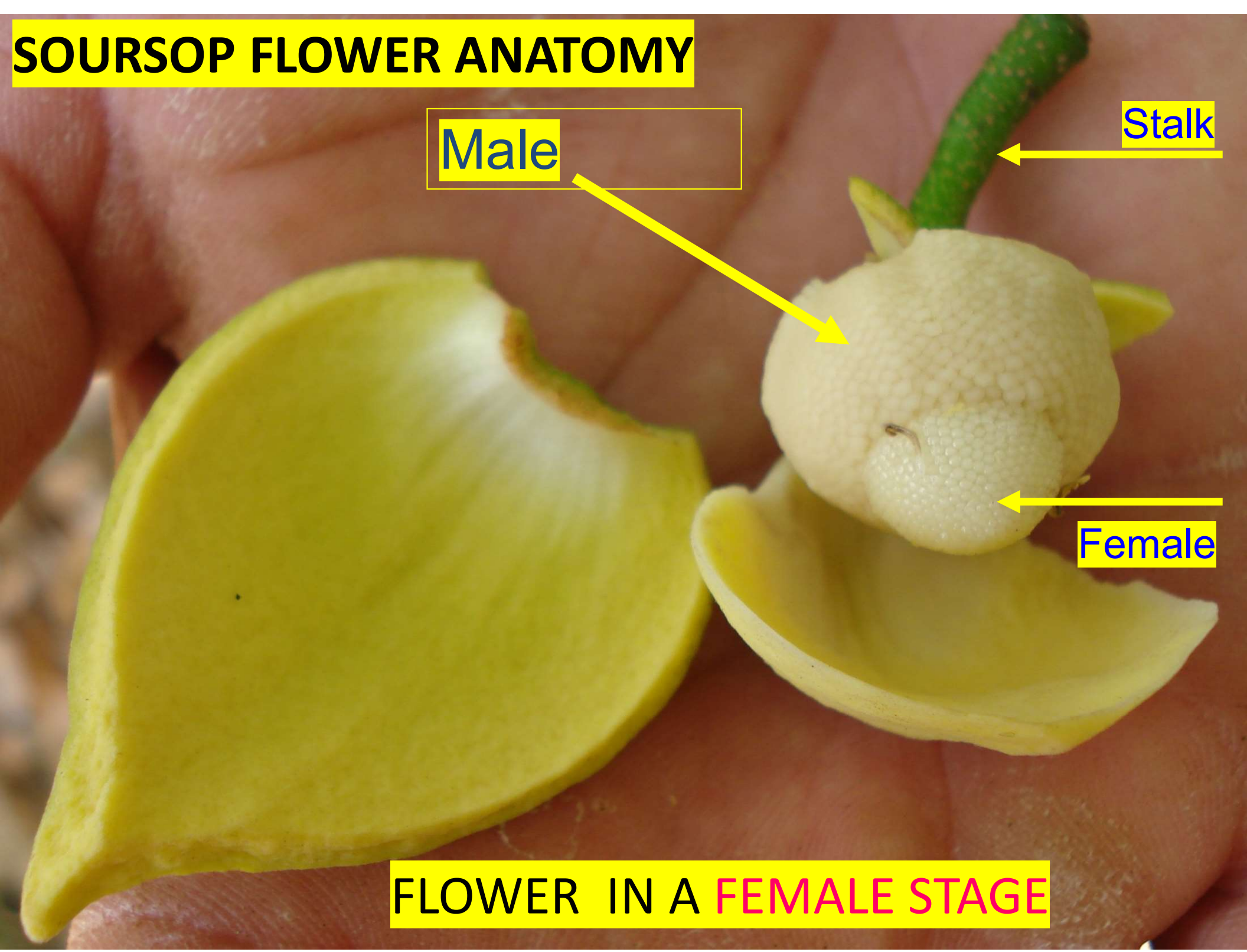
WEED CONTROL

WEED CONTROL

THE FLOWERS ARE HERMAPHRODITES



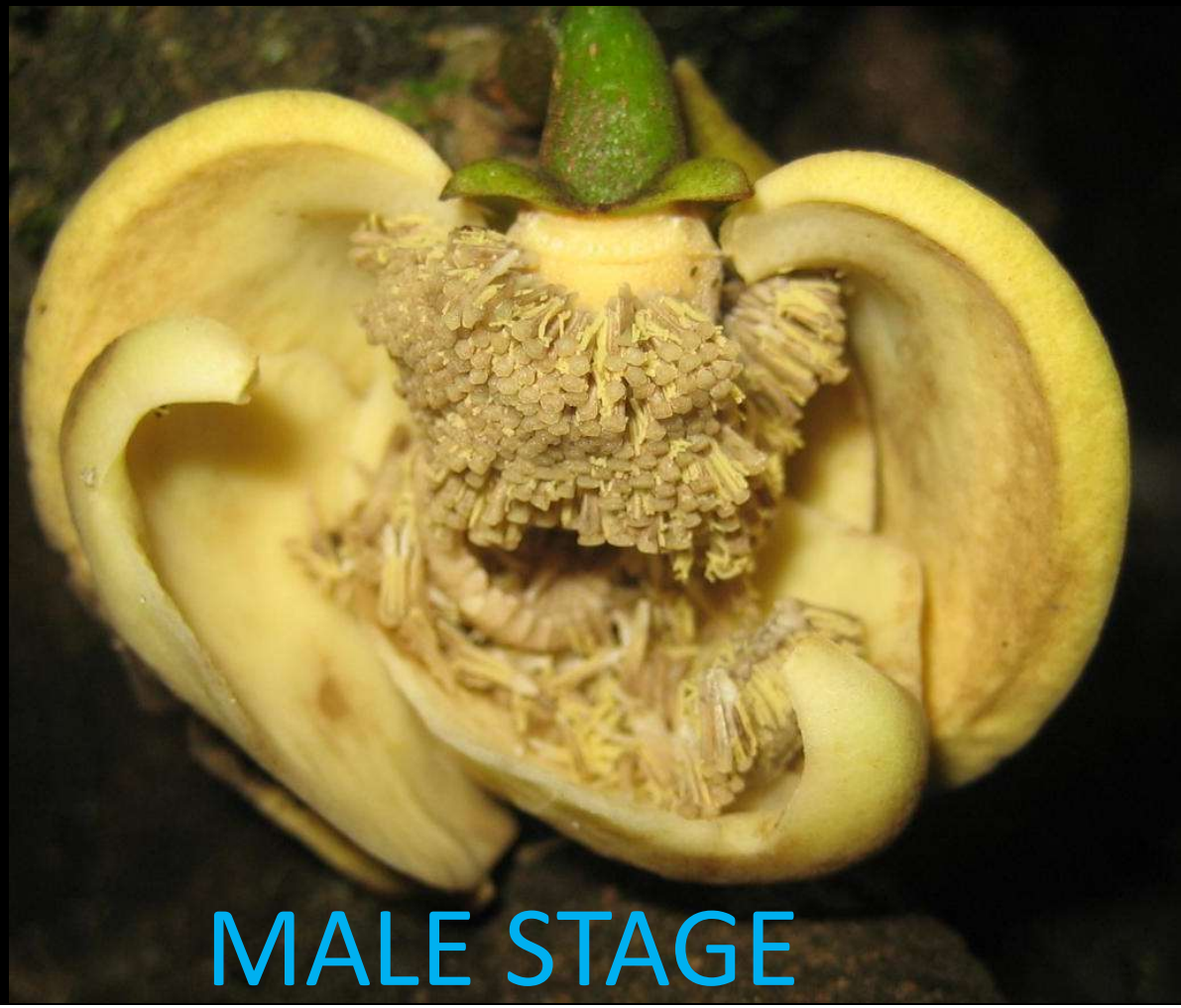
ANTHERS


SOURSOP FLOWER ANATOMY
Male
Stalk
Female
FLOWER IN A FEMALE STAGE


MALE STAGE

FEMALE STAGE

AT MALE STAGE: PETALS AND SEPALS DROP OFF (UNDER THE CANOPY)

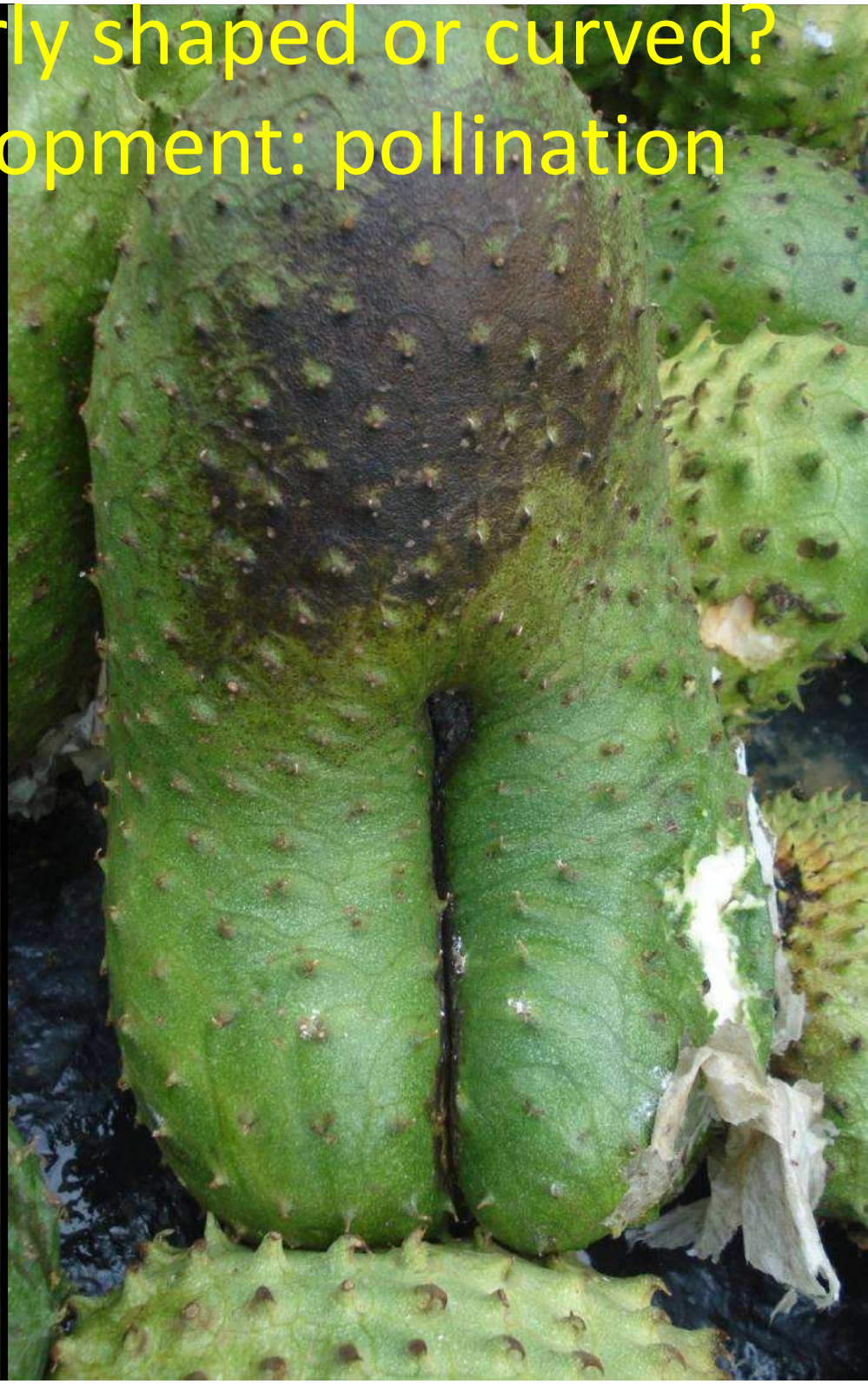


MALE STAGE

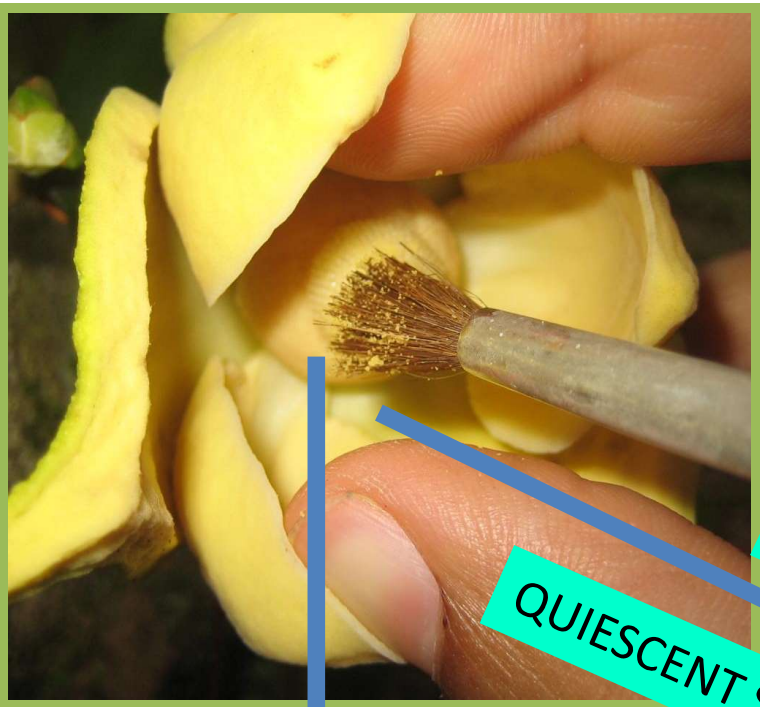
NATURAL POLLINATION

By a beetle of genus *Cyclocephala*

Why are fruits irregularly shaped or curved?
Improper carpel development: pollination



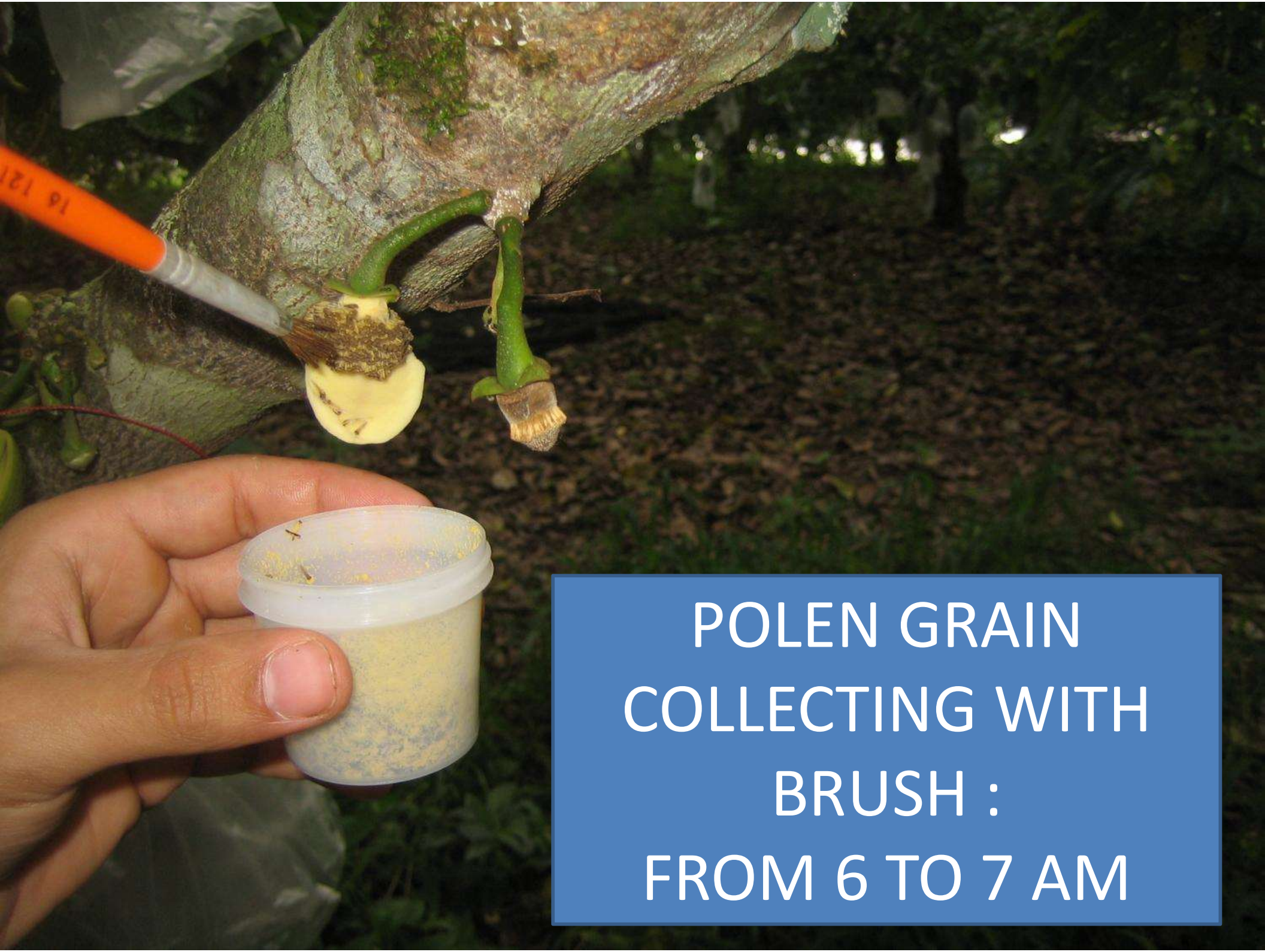
FRUIT DEVELOPMENT



45-75 DAYS

QUIESCENT STATE

BEGGINIING OF DEVELOPING STAGE


POLEN GRAIN
COLLECTING WITH
BRUSH :
FROM 6 TO 7 AM

Transfer pollen to the stigma, and LIGHTLY TOUCH the stigma with the tip of the brush. Do not cause injury to the stigma surface


Pollen grain sticks to the brush
Asepsis: VERY IMPORTANT AFTER POLLINATION
Alcohol 70%
Neutral Detergent

FRUIT DEVELOPMENT

90 to 140 days after quiescent state

TOTAL NUMBER OF DAYS FROM POLLINATION: 145-215 DAYS. AVERAGE: 180 DAYS

Results

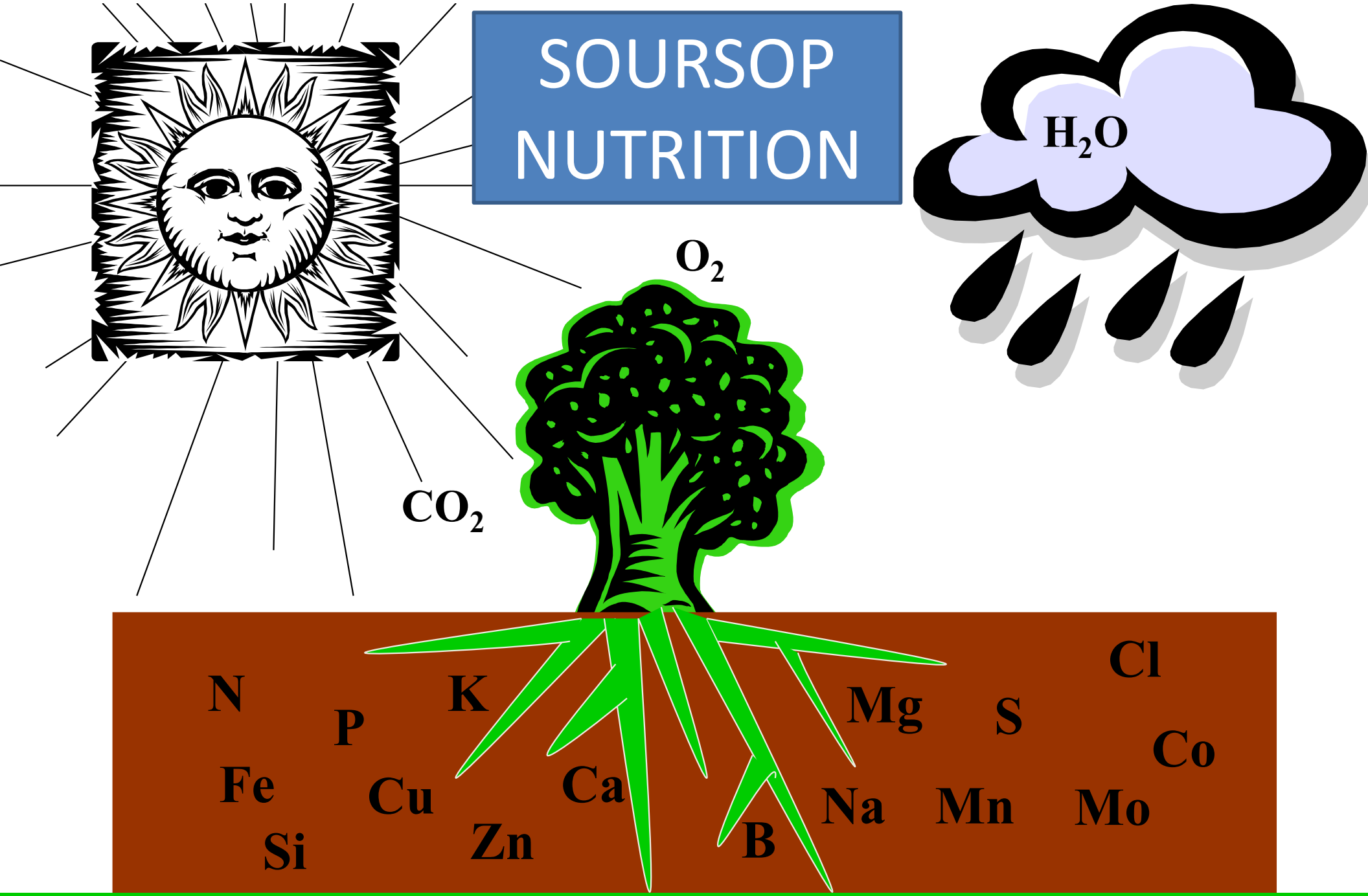
Table 3 – General average of soursop fruit set in function of natural and artificial pollination in many scientific papers

TREATMENTS	FRUIT SET (%)
Natural Pollination	1.0 to 5.0
Artificial Pollination	30 to 60

Harvested soursop fruits from Nayarit (natural pollination – 100% deformed fruits, affecting $$$)

The more we pollinate the more we increase fruits per branch/tree and yield

SOURSOP NUTRITION



NUTRIENTS REQUIREMENTS

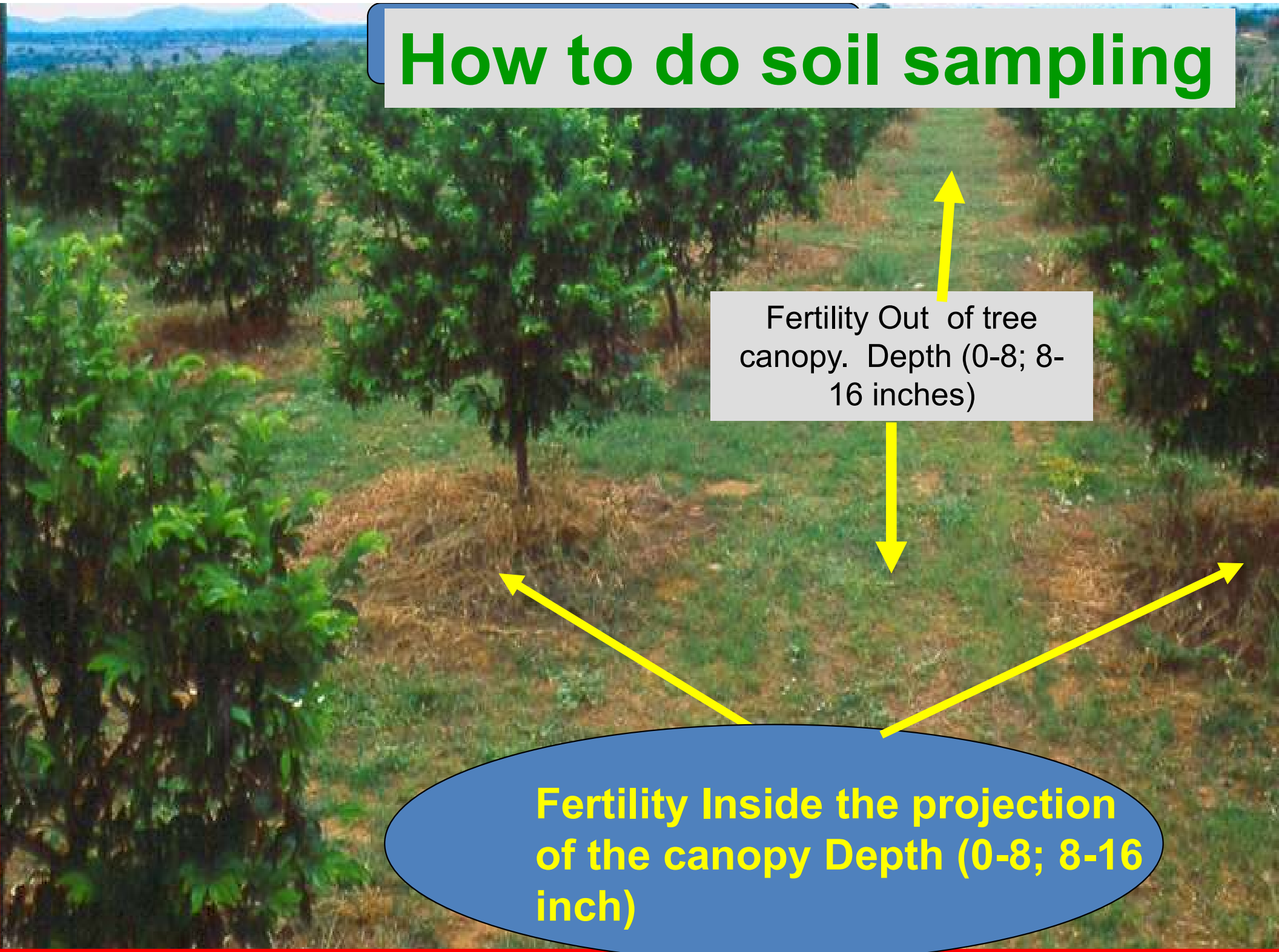
HOW SHOULD WE FERTILIZE SOURSOP TREES

- 1. Natural mineral in the soil
- 2. Rainfall : H2O, **N**
- 3. Natural Organic Matter in the soil + adding manure etc. Other source of **N** and other nutrients
- 4. Chemical Fertilization **N**PK + Ca + Mg + Micronutrients
- 5. Nutrients cycling (pruning, weed): **N** and other nutrients
- 6. Beneficial Microrganisms (indirect effect)

Rainfall: N incorporation into the soil (50 to 75 pounds/acre)

Excess of N: Antracnosis (high losses)

How to do soil sampling

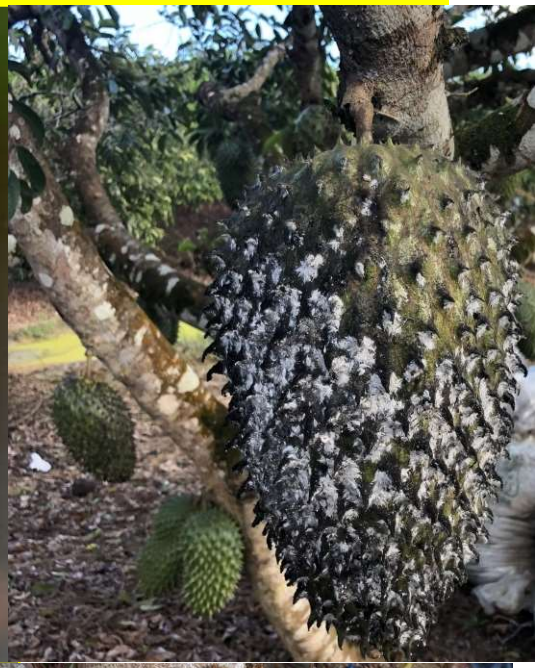


RECENTLY MOST USED NPK FERTILIZER

- NPK 05-20-15
- NPK 02-20-20 + micronutrients
- NPK 00-20-20 + micronutrients

- **N (ALWAYS POOR UNDER GRENADA CLIMATE CONDITIONS, ESPECIALLY FROM MAY TO JANUARY)**

Soursop: Pests and Diseases



Bephratelloides pomorum

Main pests

Fruit borer

Cerconota annonela

TRUNK BORER :*Heilipus catagraphus*

INSECTICIDES

Beta-cipermetrina (piretroide)

Teflubenzurom (benzoilureia) – Fruit borer

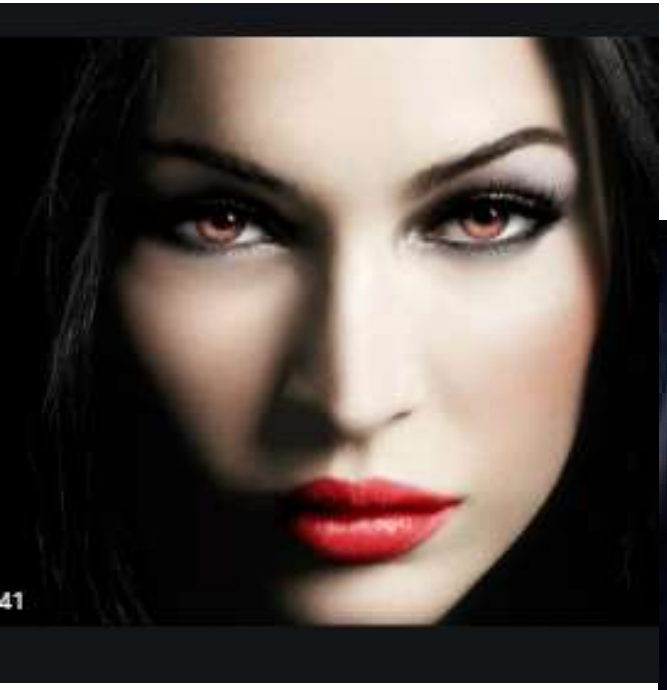
Lambda-cialotrina (Piretroide)- bedbugs

Buprofezina - scales, mites,

Fenpiroximato (pirazol)- White mite and red mite

Others: Thiamethoxam, Clorpiriphos, abamectin

ANTRACNOSE



***Colletotrichum* sp.**

ANTHRACNOSE

- ***Colletotrichum gloeosporioides***
- **Favorable conditions: excess humidity, mild temperature (wet winters), strong winds**
- **Dissemination: winds and splashes of rain**

Excess of N: Anthracnose (huge losses)

CHEMICALS FUNGICIDES

Piraclostrobina (systemic) – Anthracnose

Piraclostrobina e Fluxapiroxade- (contact and systemic

Flutriafol (systemic)

Copper (contact)

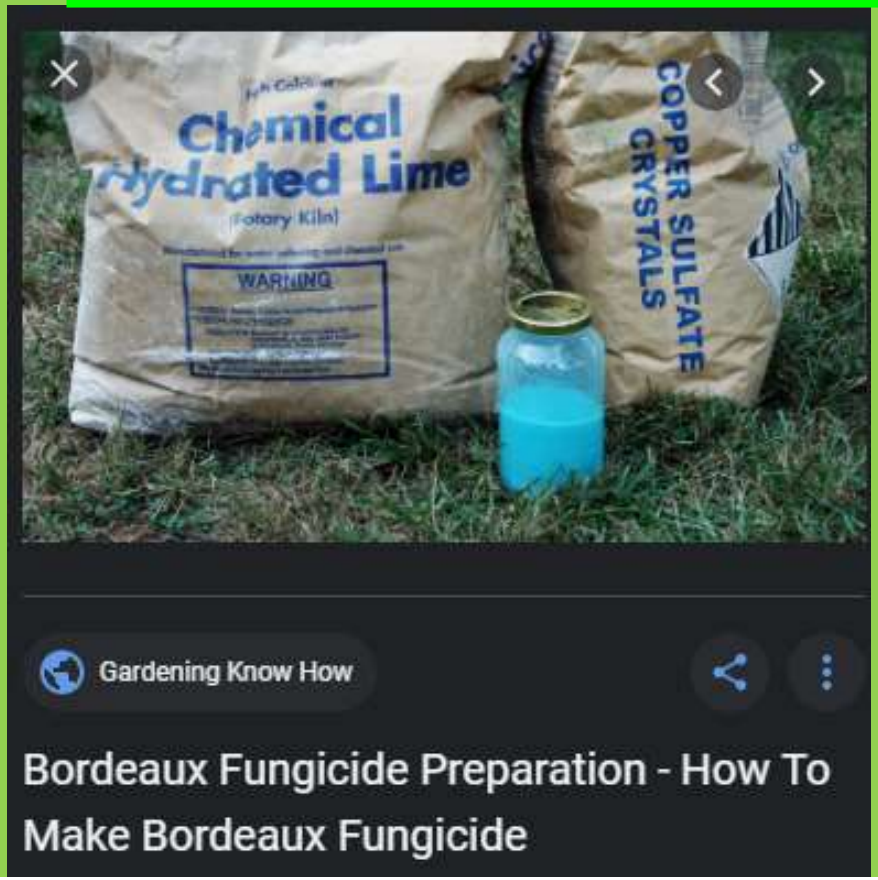
Azoxistrobina (systemic)

Copper oxicloride

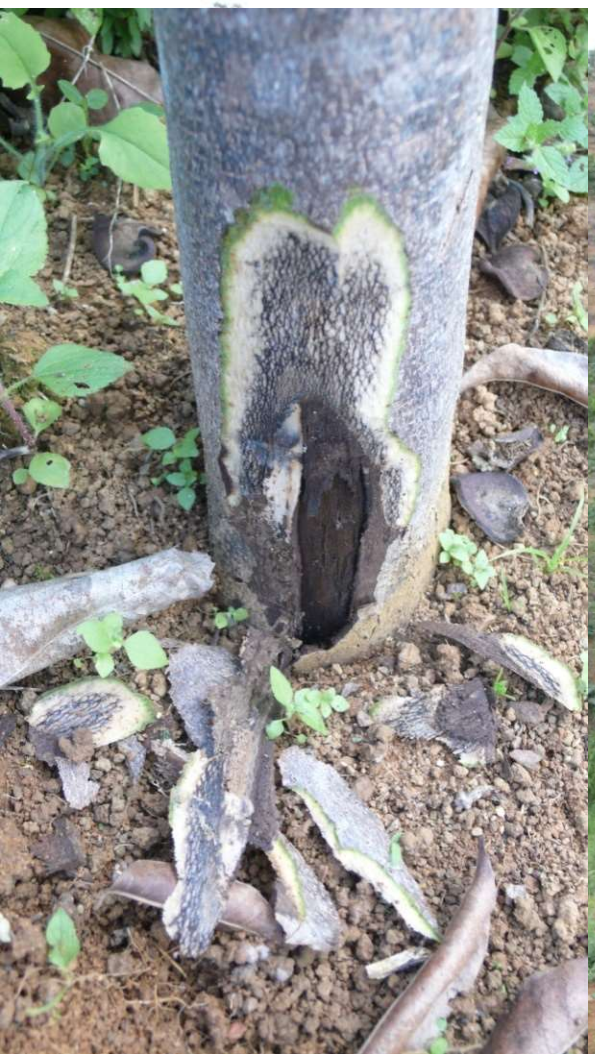
Bordeaux misture

Sulfocalcic broth

BORDEAUX MIXTURE (also called Bordo Mix) is a **mixture** of copper(II) sulphate ($CuSO_4$) and slaked lime ($Ca(OH)_2$) used as a fungicide. It is used in fruit-farms to prevent fungi infestations.



Phytophthora x water drainage



ROOT ROT - *Phytophthora*

Chemical control

- Fungicides:
- Metalaxyl
- Fosetyl –Al
- Potassium Phosphite

Doses of Potassium Phosphite 40-20: 0.8 to 1.6 L/acre

Applied through irrigation or spraying

Harvest and flower bud protection
The rigth way

FLOWER BUD PROTECTION AND PRUNING

PRODUCTIVE POTENTIAL

FLOWER BUD PROTECTION AND PRUNING

THANKS!!!!!

abeljose3@gmail.com