

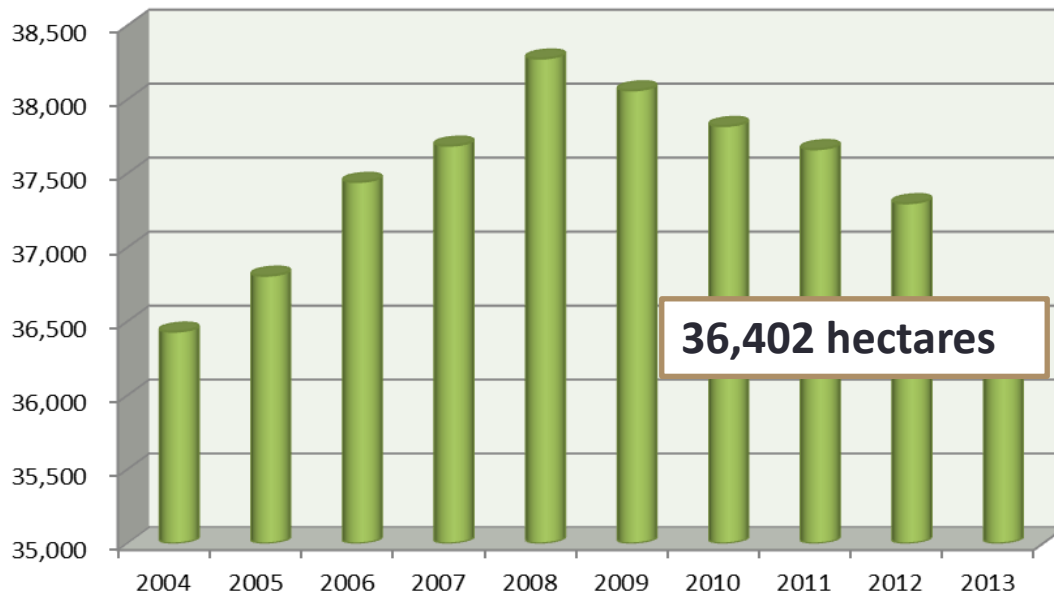
The background of the slide features a vibrant collage of citrus-related elements. On the left, there are green leaves and white blossoms of an orange tree, some with water droplets. In the center and right, there are several ripe, orange-colored fruits. On the far right, a glass is shown being filled with bright orange juice, with a stream of liquid captured mid-pour. The overall color palette is warm, dominated by yellows, oranges, and greens.

CHARACTERIZATION AND EVALUATION OF CITRUS FOR COMMERCIAL PRODUCTION (Phase II)

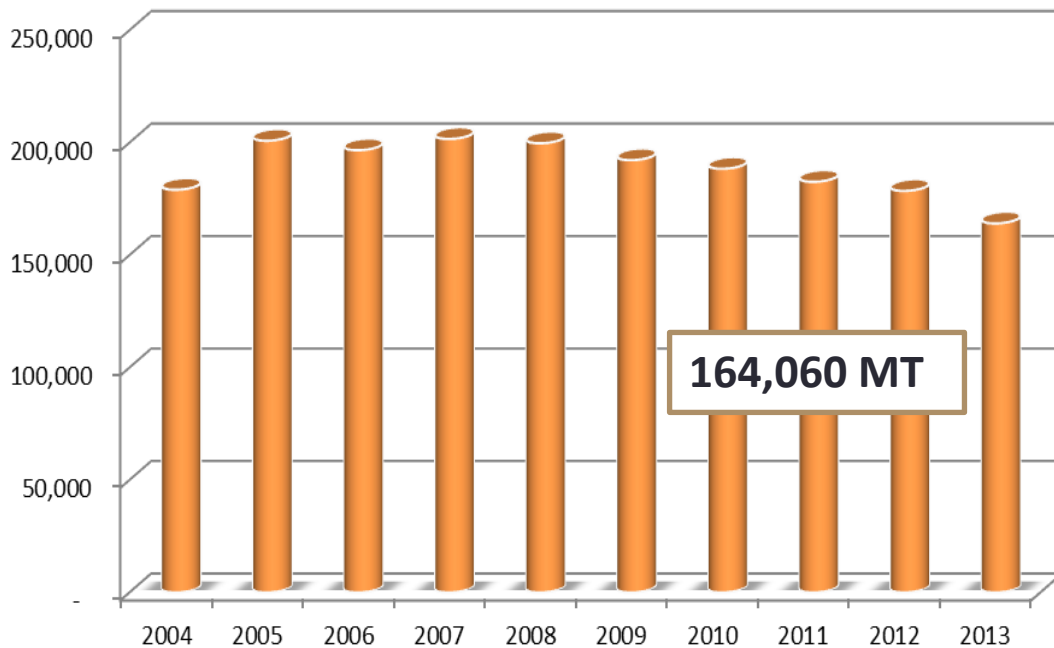
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Rationale

- ◉ Citrus is one of the important commercial fruit crops grown in the country.
- ◉ It ranks fourth to banana, mango and pineapple in terms of area and production.
- ◉ It is an important source of income for many small farmers.
- ◉ Has a wide range of adaptability.
- ◉ It is rich in vitamins.
- ◉ It has many products and by-products



**Area harvested on
citrus (has) from
2004-2013)**



**Prod volume of
citrus (MT) from
2004-2013)**

Rationale....

- The local citrus industry faces the challenge of competing with imported citrus in terms of:
 - volume of production
 - quality of production
- Advantages of local fruits:
 - freshness
 - absence of preservatives to prolong shelf life
- Challenge for local citrus production:
 - for new and emerging varieties with better eating quality
 - varieties with different maturity periods to extend availability of local citrus fruits.


Objectives

General Objective: To characterize and evaluate promising citrus varieties under local conditions for commercial production.

- Specific Objectives:
 - To validate the morphological characteristics of the different citrus varieties under germplasm collection.
 - To evaluate their performance under local conditions.
 - To identify promising varieties for commercial production.

PROCEDURE/METHODOLOGY

PROJECT FRAMEWORK

- 
- Collection and maintenance in FB.
 - Disease indexing prior to inclusion in FB
 - Preliminary eval. and characterization
 - Propagation

- **Field Evaluation (Baguio City)**
 - Tree characters
 - Fruit characters
 - Fruit quality (3 years)
 - Reaction to pests and diseases

- Registration to NSIC
- Mass production of plant materials (budwoods and budded plants)

- Commercial Fruit Production (growers)

Citrus Groups/Varieties Evaluated:

- Clementine (*Citrus clementina* Hort. ex Tanaka) group: Caffin, Fina, Monreal, Oroval
- Mandarin (*Citrus reticulata* Blanco): Honey, Fairchild, Fremont, Nova, Gayunan (Check variety)
- Lemon ((*Citrus limon* L. Burm. f.): Taylor, Verna, Meyer (*Citrus meyeri* Y. Tan.)

TREE AND FRUIT CHARACTERISTICS

Clementines



Caffin

Growth habit: Spreading
Fruiting season: Oct - Nov

Fruit Weight (g): 113.45^b
Peel thickness (mm): 3.78
Seed number: 14.70
°Brix: 11.01
Edible Portion (%P): 68.34
Fruit Shape: Obloid
Peel color: Orange
Peel Texture: Rough
Flesh Color: Orange
Juiciness: Very Juicy

TREE AND FRUIT CHARACTERISTICS



Fina

Growth habit: Erect

Fruiting season: Nov - Dec

Fruit Weight (g): 97.12^b

Peel thickness (mm): 1.42

Seed number: 8.75

°Brix: 11.40

Edible Portion (%P): 80.26

Fruit Shape: Obloid

Peel color: Orange

Peel Texture: Smooth

Flesh Color: Orange

Juiciness: Juicy

TREE AND FRUIT CHARACTERISTICS



Monreal

Growth habit: Spreading

Fruiting season: Oct - Nov



Fruit Weight (g): 102.91^b

Peel thickness (mm): 2.94

Seed number: 18

°Brix: 11.46

Edible Portion (%P): 64.86

Fruit Shape: Obloid

Peel color: Orange

Peel Texture: Smooth

Flesh Color: Orange

Juiciness: Juicy

TREE AND FRUIT CHARACTERISTICS



Oroval

Growth habit: Spreading

Fruiting season: Nov - Dec

Fruit Shape: Obloid

Peel color: Orange

Peel Texture: Rough

Flesh Color: Orange

Juiciness: Juicy



Fruit Weight (g): 177.52^a

Peel thickness (mm): 2.38

Seed number: 9

°Brix: 10.36

Edible Portion (%P): 78.80

TREE AND FRUIT CHARACTERISTICS

Mandarins



Fairchild

Growth habit: Spreading

Fruiting season: Nov-Dec

Fruit Shape: Obloid

Peel color: Red Orange

Peel Texture: Smooth

Flesh Color: Orange red

Juiciness: Juicy

Fruit Weight (g): 105.08

Peel thickness (mm): 1.61

Seed number: 3.38^b

°Brix: 11.0

Edible Portion (%P): 70.91



Fremont

Growth habit:

Erect

Fruiting season:

Oct-Dec



Fruit Weight (g): 102.16

Peel thickness (mm): 1.93

Seed number: 3.88^b

°Brix: 11.41

Edible Portion (%P): 73.65

Fruit Shape: Obloid

Peel color: Red Orange

Peel Texture: Smooth

Flesh Color: Orange red

Juiciness: Juicy

TREE AND FRUIT CHARACTERISTICS

Honey

Growth habit:

Erect

**Fruiting
season:**

Dec-Jan



Fruit Shape: Spheroid

Peel color: Orange

Peel Texture: Smooth

Flesh Color: Orange

Juiciness: Very juicy

Fruit Weight (g): 69.82^a

PD (mm): 50.12; ED (mm): 55.10

Peel Weight (g): 8.23^a

Peel thickness (mm): 1.00

Seed number: 12.85^a

Seed Weight (g): 1.06^a

Flesh Weight (g): 60.53^a

°Brix: 11.28^a

Edible Portion (%P): 81.15

TREE AND FRUIT CHARACTERISTICS

Nova

Growth habit:
Spreading
Fruiting
season:
Dec-Jan

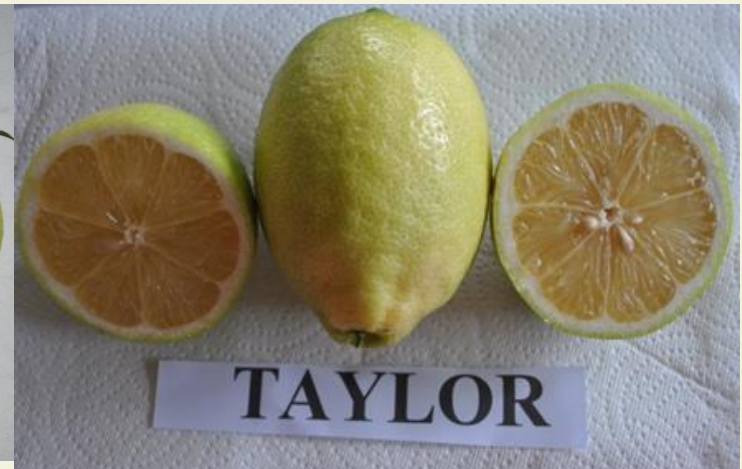


Fruit Shape: Spheroid
Peel color: Red Orange
Peel Texture: Smooth
Flesh Color: Orange red
Juiciness: Moderately juicy

Fruit Weight (g): 136.04^a
Peel thickness (mm): 1.30
Seed number: 1.78^b
°Brix: 9.00^a
Edible Portion (%P): 81.05

TREE AND FRUIT CHARACTERISTICS

Lemons



Fruit Weight (g): 278.75^{ab}

Peel thickness (mm): 3.05

Seed number: 3.25^a

°Brix: 3.27

Edible Portion (%P): 63.00

Fruit Shape: Ellipsoid

Peel color: Yellow

Peel Texture: Smooth

Flesh Color: Yellow

Juiciness: Juicy

Growth habit:

Spreading

Fruiting season:

Nov - Dec

TREE AND FRUIT CHARACTERISTICS

Meyer (Citrus meyeri Y. Tan.)

Growth habit:
Spreading
Fruiting
season:
All year-round



Fruit Shape: Ellipsoid
Peel color: Yellow
Peel Texture: Smooth
Flesh Color: Yellow
Juiciness: Very juicy

Fruit Weight (g): 255.23^a
PD (mm): 68.76; **ED (mm):** 80.52
Peel Weight (g): 86.25^b
Peel thickness (mm): 2.43
Seed number: 4.55^a
Seed Weight (g): 0.91^a
Flesh Weight (g): 168.07^a
°Brix: 3.73
Edible Portion (%P): 65.85

TREE AND FRUIT CHARACTERISTICS

Verna

Growth habit:
Spreading
Fruiting
season:
Nov –Dec



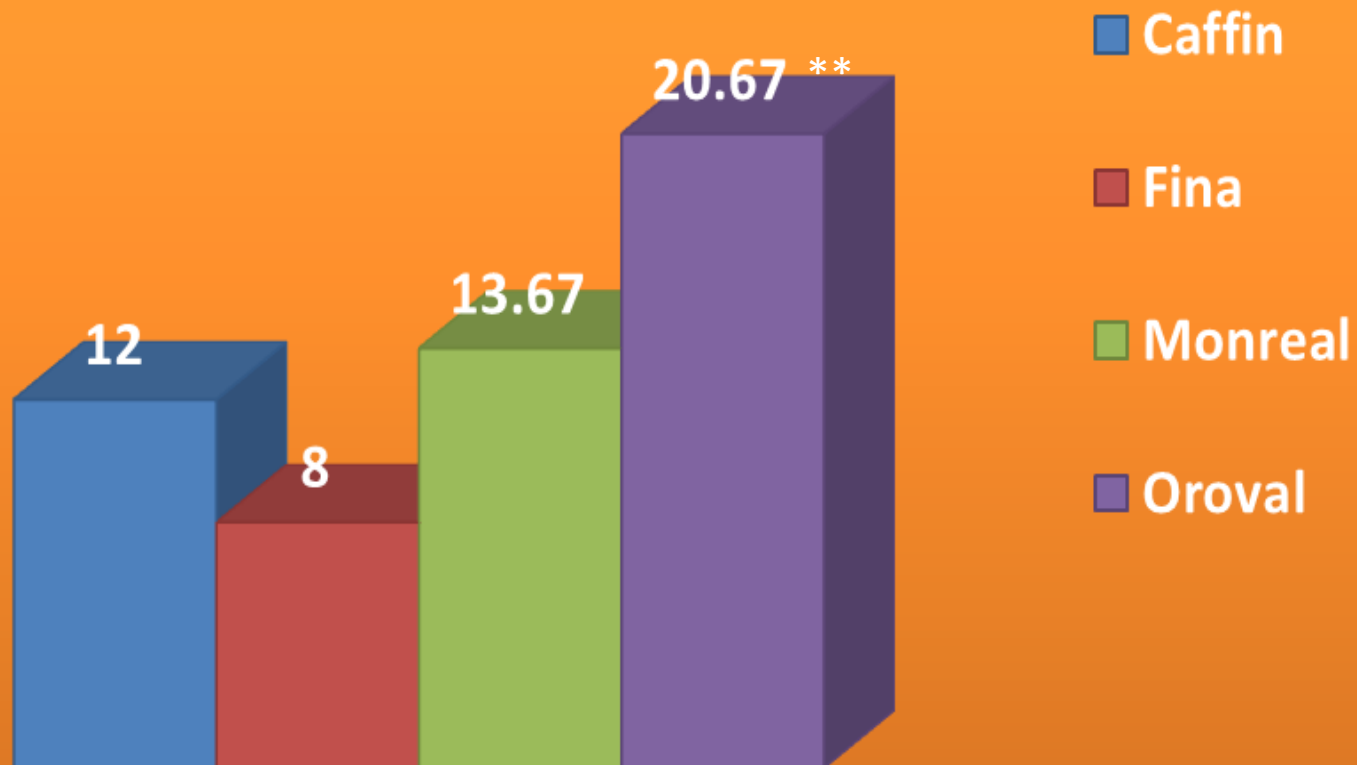
Fruit Shape: Ellipsoid
Peel color: Yellow
Peel Texture: Smooth
Flesh Color: Yellow
Juiciness: Juicy



Fruit Weight (g): 318.75^a
PD (mm): 85.17; ED (mm): 90.67
Peel Weight (g): 136.25^a
Peel thickness (mm): 3.67
Seed number: 3.00^a
Seed Weight (g): 0.68^a
Flesh Weight (g): 181.80^a
°Brix: 3.36
Edible Portion (%P): 57.00

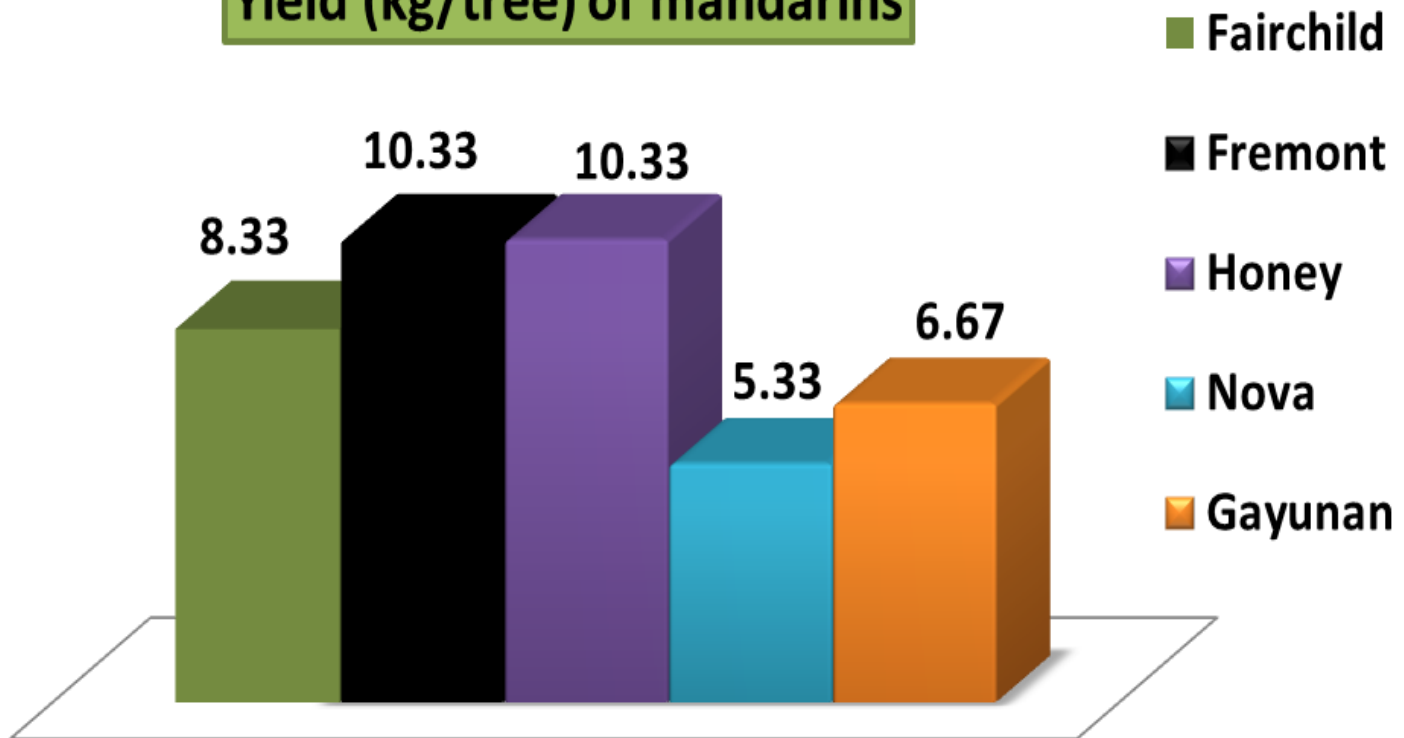
YIELD

Yield (kg/tree) of clementine varieties



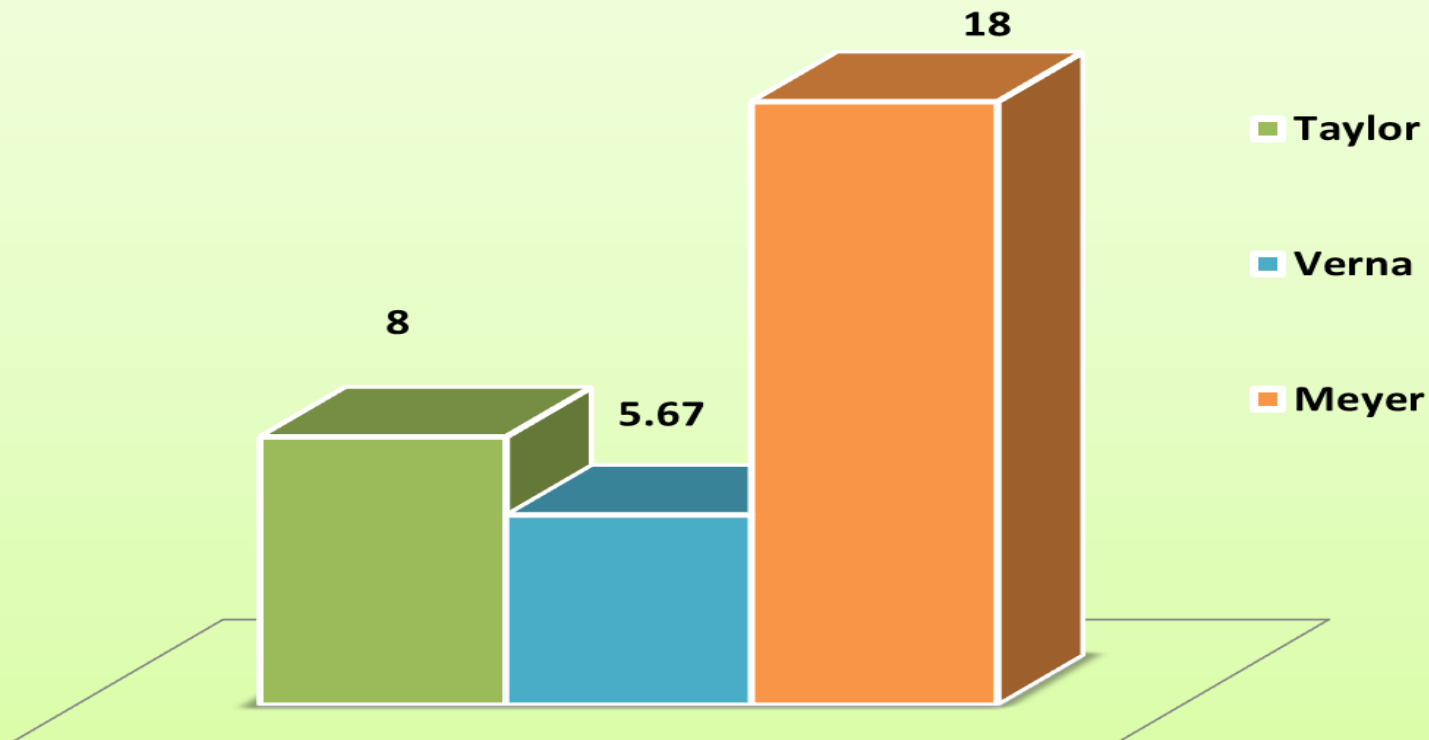
YIELD

Yield (kg/tree) of mandarins

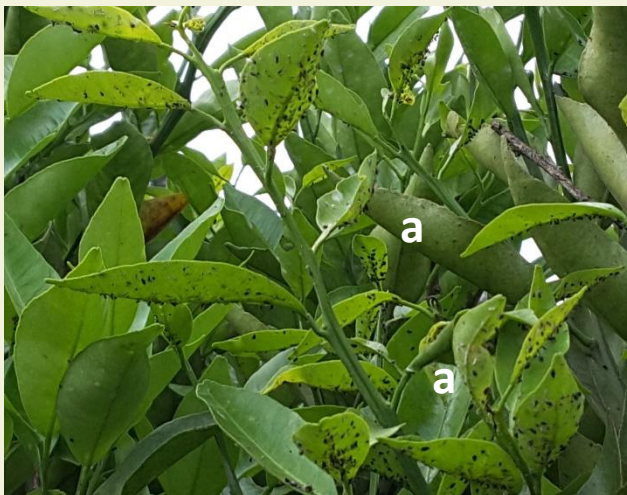


YIELD

Yield (kg/tree) of lemons



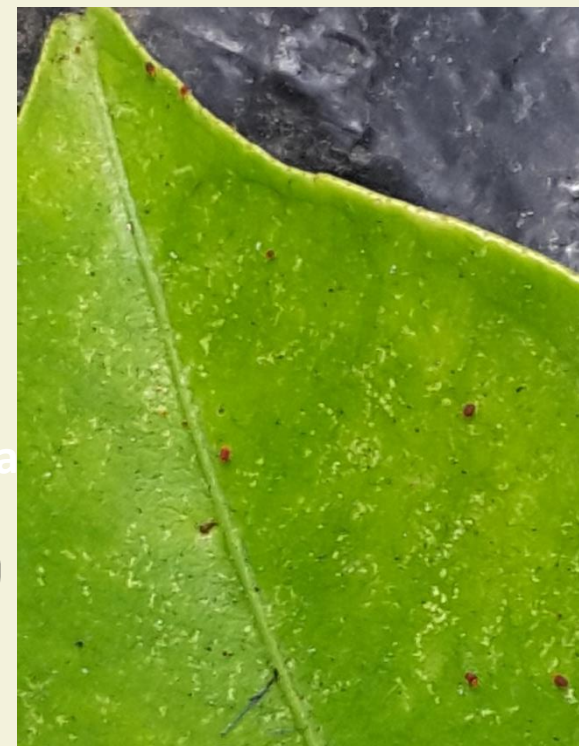
REACTION TO PESTS AND DISEASES



Brown citrus aphids
(*Toxoptera citricidus*)
- Nova and lemons have low susceptibility, Honey and Monreal are highly susceptible



Snow scale (*Unaspis citri*)
- Clementines are highly susceptible; lemons – low susceptibility



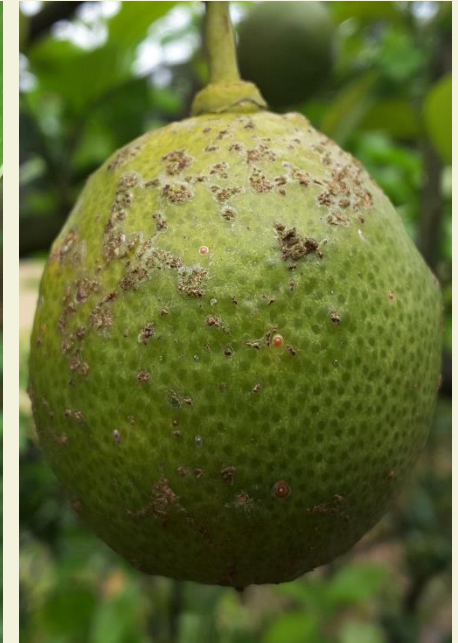
Red mites
(*Panonychus citri*),
- Most varieties have intermediate susceptibility

REACTION TO PESTS AND DISEASES



Powdery mildew

- Gayunan (check) is highly susceptible; lemons low susceptibility



Scab

- Gayunan (check) is highly susceptible; clementines low susceptibility

REACTION TO PESTS AND DISEASES



Phytophthora foot rot – observed on varieties Monreal, Fina, Oroval were infected



Pink Disease – observed on Monreal

HUANGLONGBING (HLB) DISEASE



Observed on
Fremont, Oroval
and Caffin



CONCLUSIONS

- The tree and fruit characters of the different varieties tested, as reported from their place of origin, are fairly consistent with the observations under local conditions. On mandarins particularly, the varieties tested are better in most of the parameters evaluated than the local check variety, Gayunan.
- The different varieties of clementines, mandarins and lemons performed fairly well under local conditions, particularly in Baguio City with elevations of 1330masl.
- All of the different varieties have the potential for commercial production under Baguio conditions and similar conditions, considering that each of the variety have a unique character of its own.

RECOMMENDATIONS

- **Clementines – Caffin, Monreal, Oroval and Fina. All are medium fruited, except Fina, which is a small-fruited clementine, but has an attractive rind and flesh color, sweet and high edible portion. Yields are acceptable, with Oroval as the highest yielder.**
- **Mandarin – Fairchild, Fremont and Honey. Fairchild and Fremont are medium-fruited mandarins, while Honey is small-fruited mandarin but with thin rind but high edible portion. All three varieties have attractive rind and flesh color.**
- **Lemons – all three lemons are recommended, although in terms of yield, Meyer is the highest yielder and bears fruit all year round. On the other hand, Verna and lemon have better lemon aroma.**
- **Further evaluation should be done in other locations.**



**Thank you for your
attention.....**

