

# Evaluation and selection of progenies from wild species for late blight resistance and agronomic traits

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# Outline

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- Results:
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  - Agronomic traits
  - *B. cockerelli* antibiosis
- Conclusion





# Introduction

- Potato is one of the main crops
- LB and PPT are the most important diseases
- Pesticides is the common method of control
- Use of wild species as source of resistance is a valuable option for breeding potato





# Objective

To evaluate and select 4X CWR pre-breeding progenies with LB resistance and agronomic characteristics

# Material and Methods

- LB resistant 4 x CWR pre-breeding progenies (TPS) were imported from CIP, it was consisted of 29 families, 150 seeds per family.
- They were planted in nurseries under greenhouse and later transplanted to field conditions.
- LB resistance (AUDPC) and agronomic characteristics (yield, number of tubers/plant, shape, skin and flesh color) were evaluated.
- Antibiosis for *B. cockerelli* in a selected progenies were evaluated.



# Results

**LB Resistance**

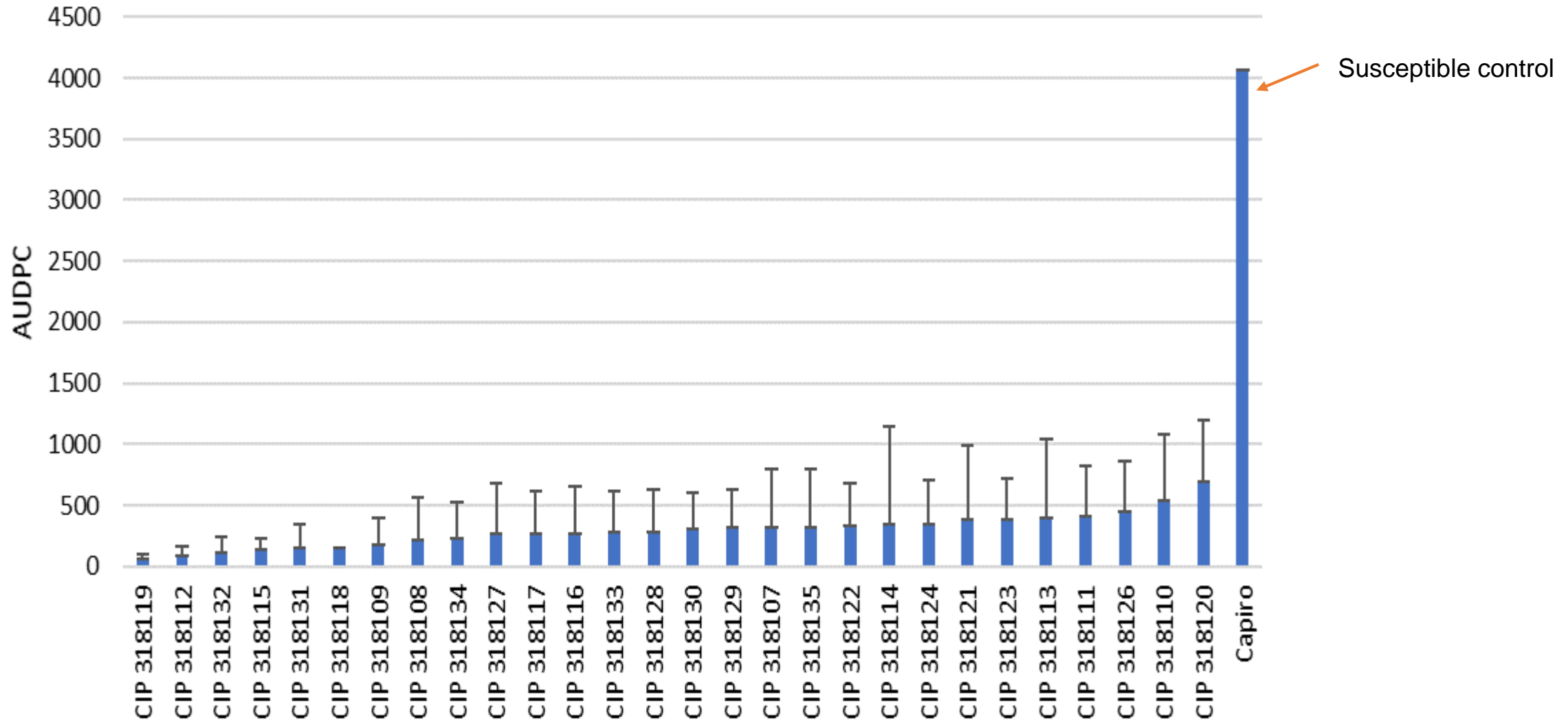


Figure 1. AUDPC values for 4 x CWR pre-breeding progenies evaluated under field conditions Santa Catalina, 2023

# Results

LB Resistance

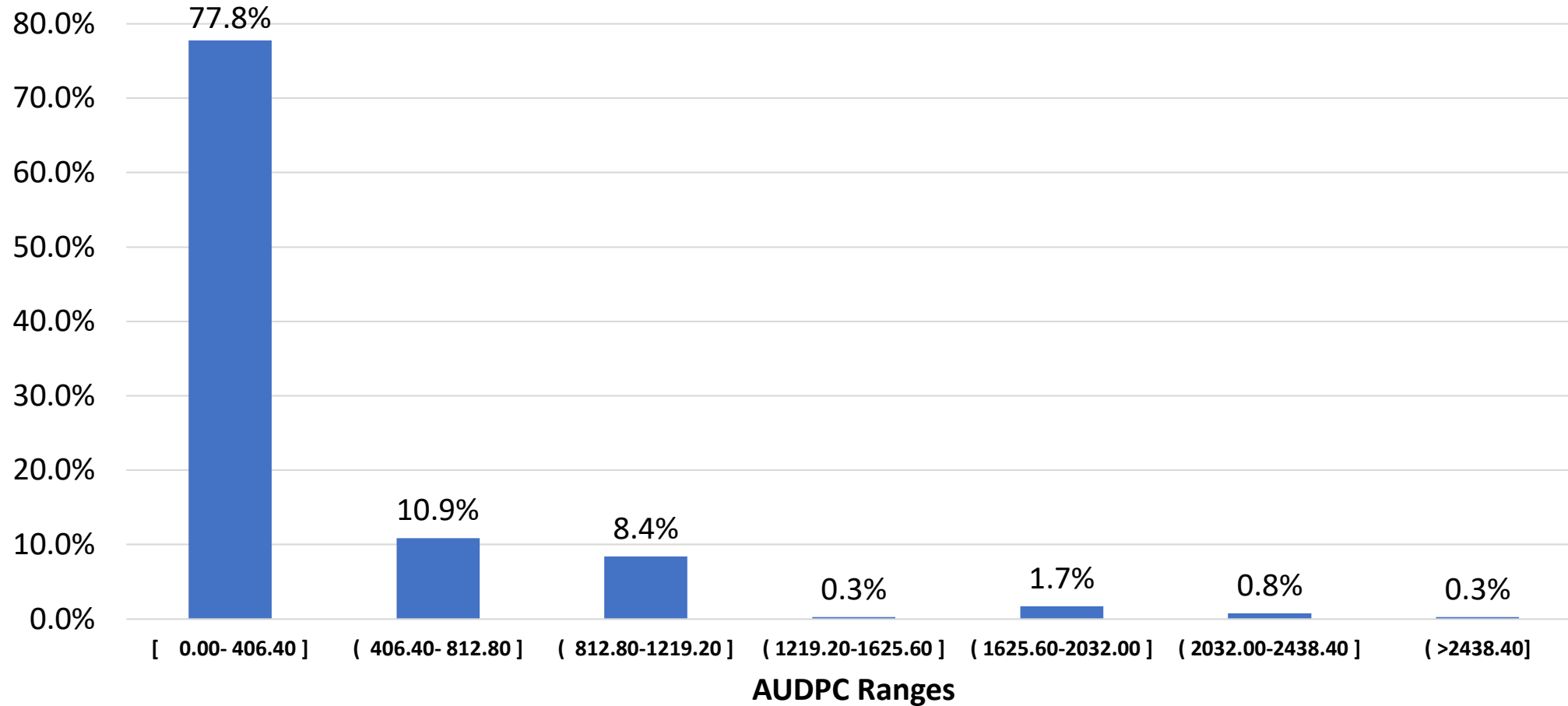


Figure 2. AUDPC Frequency (%) for LB resistant 4 x CWR pre-breeding progenies, Santa Catalina 2023





Resistant response of CWR progenies

Photo: N. Panchi



Susceptible control (DIACOL-Capiro)

Photo: N. Panchi



# Results

Yield (kg/plant)

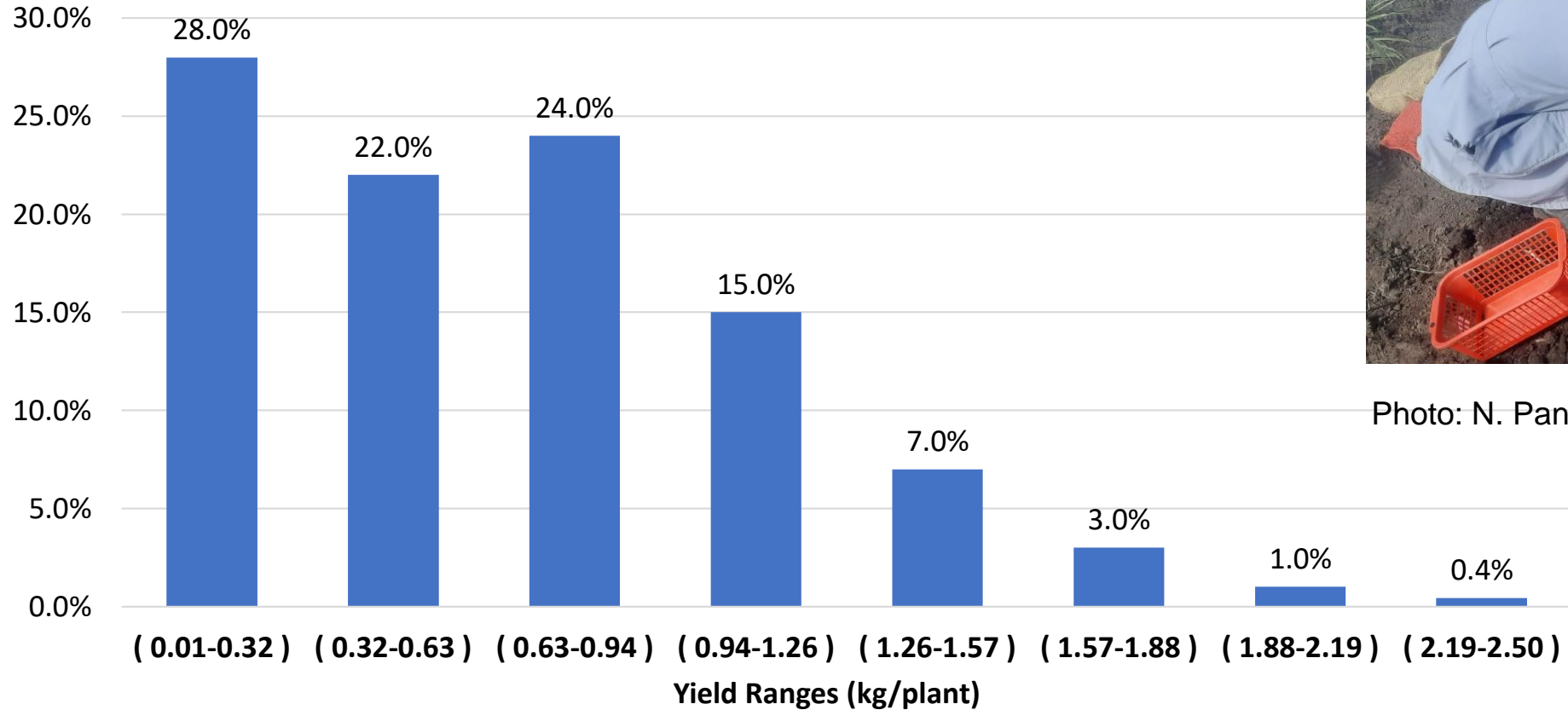
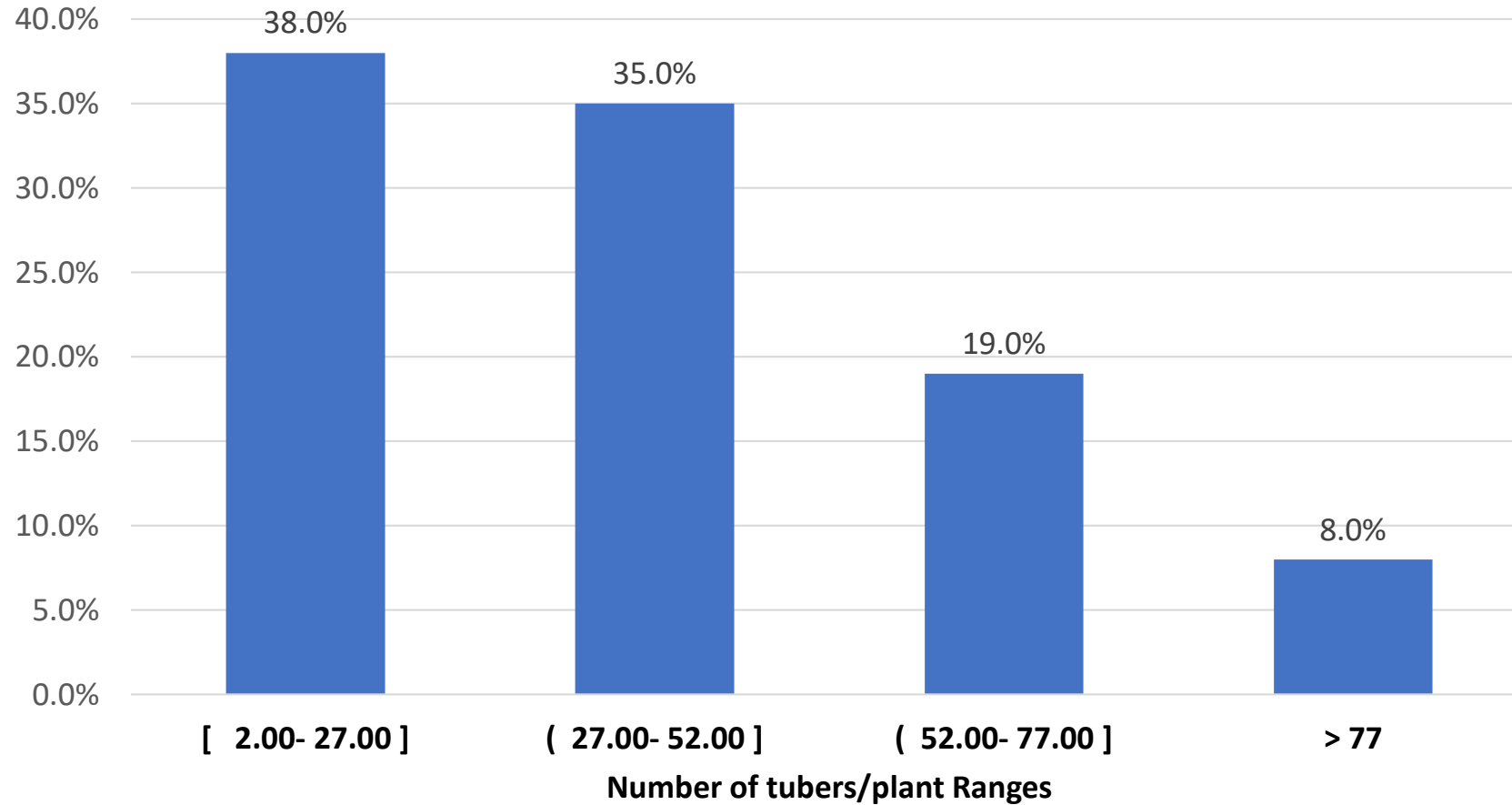


Photo: N. Panchi

Figure 3. Frequency of yield (%) for LB resistant 4 x CWR pre-breeding progenies under field conditions, Santa Catalina 2023



# Results



**Tubers/plant**



Photo: X. Cuesta

Figure 4. Number of tubers per plant Frequency (%) in LB resistant 4 x CWR pre-breeding progenies under field conditions, Santa Catalina, 2023



# Results

## Tuber shape

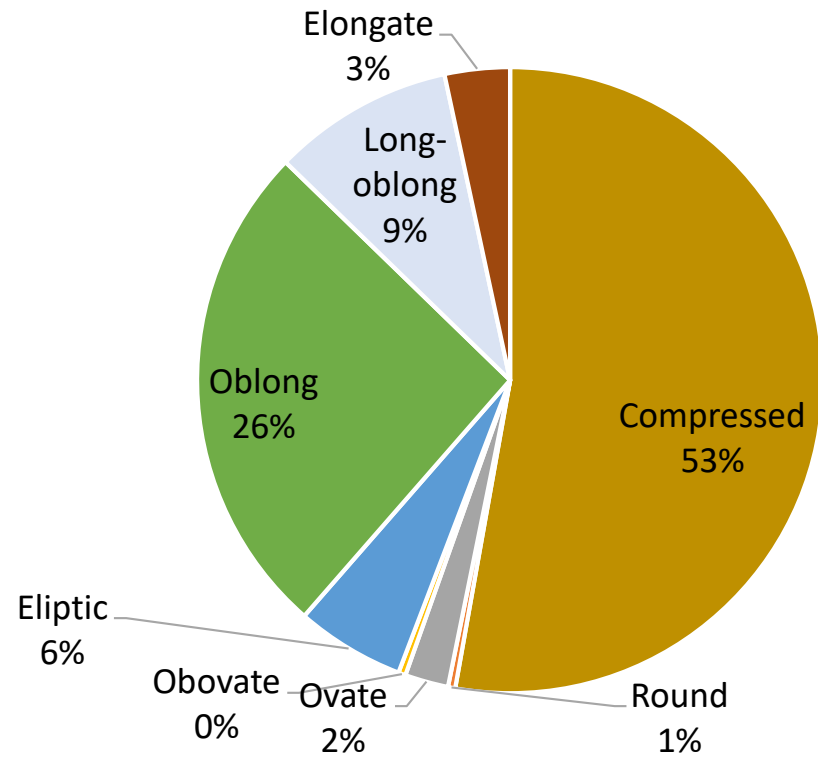


Photo: N. Panchi

Figure 5. Tuber shape frequency in LB resistant 4 x CWR pre-breeding progenies under field conditions, Santa Catalina, 2023



# Results

## Eye depth

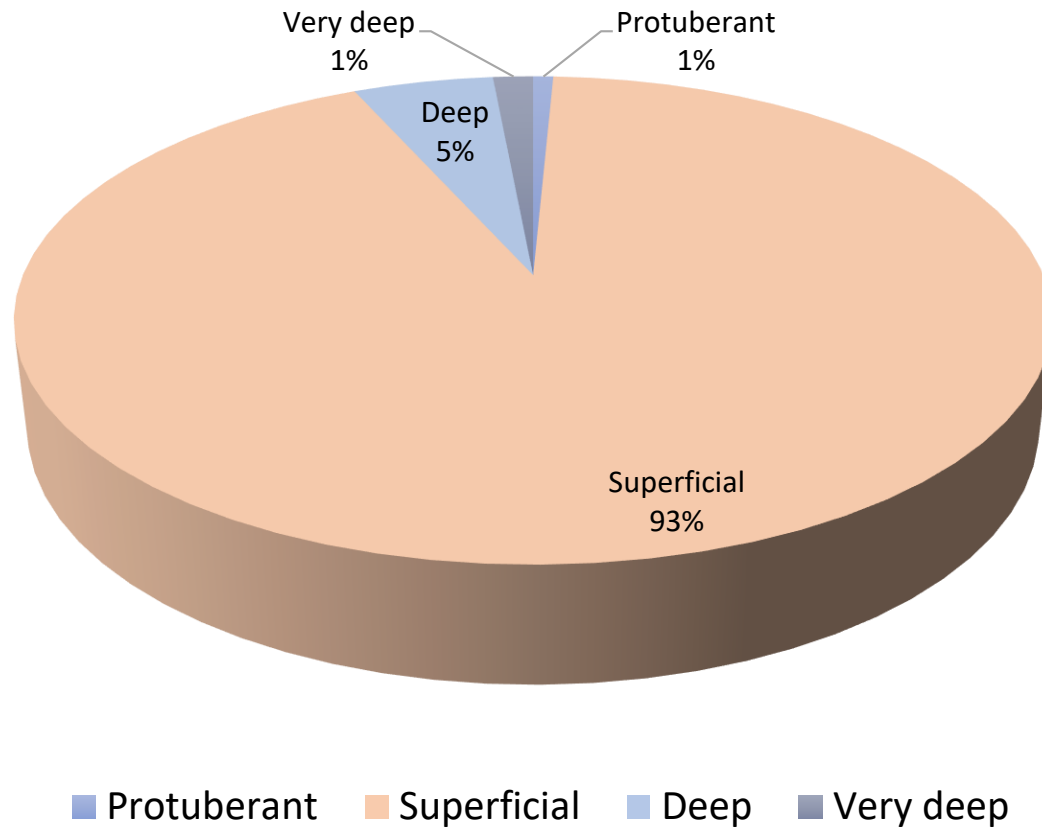


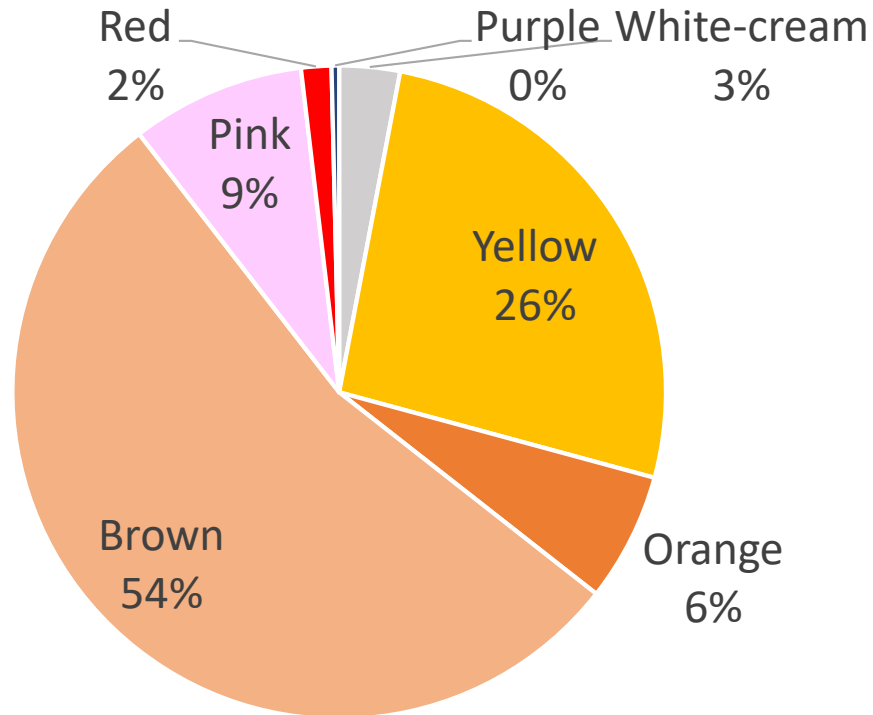
Photo: N. Panchi

Figure 6. Eye depth frequency in LB resistant 4 x CWR pre-breeding progenies under field conditions, Santa Catalina, 2023



# Results

## Skin color



## Flesh color

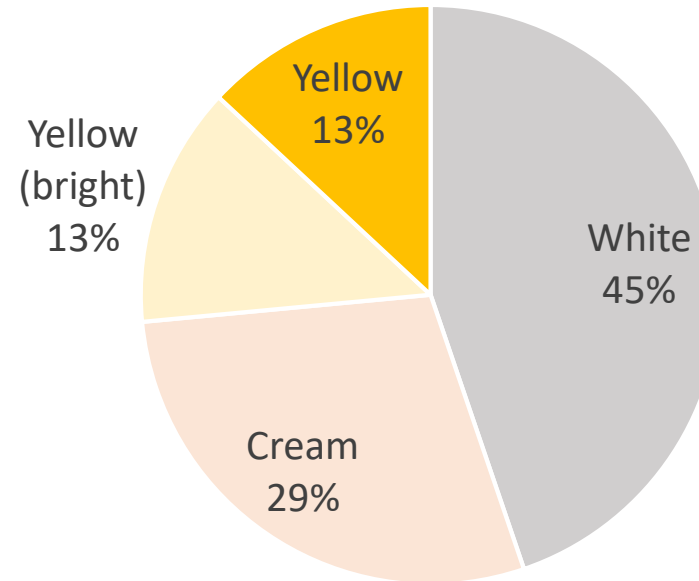


Photo: N. Panchi

Figure 7. Skin and flesh color frequency in LB resistant 4 x CWR pre-breeding progenies under field conditions, Santa Catalina, 2023

# Genotypes selected

## Criteria of selection

- AUDPC < 700
- Yield > 1.0 kg

Total 129 progenies were selected

Family	Progenies #
CIP 318117	1
CIP 318121	1
CIP 318123	1
CIP318133	1
CIP 318112	2
CIP 318113	2
CIP 318114	2
CIP 318126	3
CIP318120	4
CIP 318122	4
CIP 318132	4
CIP 318108	5
CIP 318124	7
CIP 318127	7
CIP 318131	7
CIP 318109	8
CIP 318116	11
CIP318111	12
CIP 318118	14
CIP 318130	16
CIP 318107	17
<b>TOTAL</b>	<b>129</b>



Photo: X. Cuesta



Photo: N. Panchi



Photo: X. Cuesta



# *B. cockerelli* antibiosis experiment

Table 1. Mean of *B. cockerelli* eggs per potato leaves based on 4 evaluations from 3 replicates

<b>Genotype</b>	<b>Mean</b>
INIAP-Gabriela (Susceptible)	121.3 a*
INIAP-CIP-Libertad (Tolerant)	30.3 b
CIP 318112-3	16.1 bc
CIP 318132-11	12.9 bc
CIP 318130-5	12.1 bc
CIP 318107-30	9.5 bc
CIP 318116-16	9.1 bc
CIP 318107-10	8.6 bc
CIP 318116-2	8.0 bc
CIP 318127-13	3.9 c



Photo: X. Cuesta

\*Tukey test at 5%

# Conclusions

- Large variation for LB resistance, yield, number of tubers and quality traits was observed.
- Most of the progenies showed LB resistance characteristics.
- Tuber quality traits suit the Ecuadorian consumer preferences (tuber shape, skin and flesh color).
- Some progenies showed characteristics of resistance against *B. cockerelli*.



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