ACCUMULATION OF MACRONUTRIENTS IN LEAVES OF Capsicum annuum SUSCEPTIBLE AND RESISTANT TO Xanthomonas euvesicatoria

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Contextualization

• This work is a part of my master degree.
• I worked together with Sthefanny Neto at UENF.
• I studied the metals in the pepper *leaves* in genotypes resistant and susceptible to bacterial spot, which has a natural occurrence in fruit and leaf, *mainly in the leaves*.
• Hence study this interaction plant, pathogen and nutrient, but in this work only nutrient and plant.
• Diversity Center
• Consumer
• Producer
• *C. annuum*
  • The largest producer and consumer
The aim of this work was to analyze the macronutrient content in two genotypes of *Capsicum annuum* var. *annuum*, one resistant (UENF 1381) and another susceptible (L11) to *Xanthomonas euvesicatoria*. 
Irrigation control: Once a day with deionized H₂O

Luminosity control: 16:8 hours - day/night

Humidity control: 80% RH

Temperature control: 28 °C

Local control: Growth chamber
Material and methods

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UENF 1381 (Resistant)

L11 (Susceptible)

Hoagland

Sand and vermiculite 2:1

Until the appearance of definitive leaves

Greenhouse located at UENF, Campos dos Goytacazes, RJ, Brazil.

Randomized

2 collects

2 treatments

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Vegetative (23 DAT)

Reproductive (94-104 DAT)

2\textsuperscript{nd} - 4\textsuperscript{th} nodes

Material and methods

Freeze drying (Rijke et al., 2015)

0.10 g of dry leaves + 10 mL HNO\textsubscript{3} conc.

Digestion: 140°C, 2h (Rodushkin et al., 1998)

Dilution 1: 2.5 with deionized water (Ko et al., 2014)
ICP OES

External calibration

- P
- Ca
- Mg
- K
- S

0.1 mg L\(^{-1}\) to 50 mg L\(^{-1}\) for P, Ca, Mg and S

1 mg L\(^{-1}\) to 200 mg L\(^{-1}\) for K
Vegetative stage (23 DAT)

Results

- Resistant
- Susceptible
Reproductive stage (94-104 DAT)

Results and discussion
Vegetative stage

- **L 11**
  - Susceptible

- **UENF 1381**
  - Resistant

**Enzymatic activation**
- Cell wall
- Permeability

**Structural**
- Open and close of stomata
- Synthesis and stability of proteins
- Osmotic relations
- Synthesis of carbohydrates
Results and discussion

• Reproductive stage

• L 11 Susceptible

• UENF 1381 Resistant

Active group of enzymes and coenzymes

Storage and transfer of energy (P)
Enzymatic activation, stability of ribosomes and photosynthesis (Mg)
Conclusions

• In the vegetative stage the genotypes differed as regards potassium. This one with higher content in resistant plants.

• The reproductive stage is ideal to differentiate all the macronutrients among the studied genotypes.

• The mineral profile can be used as a tool to differentiate these two genotypes (UENF 1381 and L11).

• Further studies should be carried out to investigate the influence of these elements as players in bacterial spot genetic resistance expression.
Acknowledgment