



FUTURECO
BIOSCIENCE



ECOLETTER

Yield increase in Criolla potato crop
(*Solanum phureja*) with Botamisol 45

#39

Periodic publication on the efficacy and characteristics of Futureco Bioscience products.

ECO LETTER #39

YIELD INCREASE IN CRIOLLA POTATO CROP (*SOLANUM PHUREJA*) WITH BOTAMISOL 45

INTRODUCTION

The potato, native to Lake Titicaca in the Andes (FAOSTAT, 2007), is one of the most relevant foods in the world, after corn, wheat, and rice. It is now grown in 150 countries, with 359 million tons of production in 2020 (XI World Potato Congress, 2022).

The main factor limiting potato production is temperature. Average daytime temperatures of 18° to 20°C are optimal to harvest. For tuber formation to begin, nighttime temperatures below 15°C are required (FAOSTAT, 2007).

Regarding fertilization, they need well-drained and ventilated soil. As well as added foliar fertilizers to help tuber formation and weight gain.

The exogenous supply of nitrogen and amino acids promotes the synthesis of proteins, vitamins, and chlorophyll, thus improving the photosynthetic rate, development, growth, and coloration of potato plants (INPOFOS, 1997) (Coraspe, 2000).

The objective is to evaluate the efficacy of the biostimulant Botamisol 45 in the cultivation of creole potato (*Solanum phureja*).

MATERIALS AND METHODS

The study was on a 60-day-old criolla potato crop, the Yema de Huevo variety. Two trials

took place in Sibaté and Subachoque (Cundinamarca, Colombia) at an altitude of 2600 m and an average temperature of 12°C. In each case, the trials followed a randomized complete block design with five treatments and four replicates. The experimental unit was 20m² plots.

The study evaluated Botamisol 45 (biostimulant based on amino acids) at different doses. Two applications were made by foliar spraying at the beginning of tuber formation and during filling. The treatments, at a total water application volume of 600 l/ha, were:

1. Edaphic fertilization + Control without Botamisol 45 application.
2. Soil fertilization + Botamisol 45 0.8 (kg/ha)
3. Soil fertilization + Botamisol 45 1.0 (kg/ha)
4. Soil fertilization + Botamisol 45 1,2 (kg/ha)
5. Soil fertilization + Botamisol 45 1.4 (kg/ha)

After 25 days after the second application - at harvest time - yield and its components were evaluated: number of tubers/plant (10 random plants per plot), tuber size (average of 5 tubers, on 3 three plants per plot). The percentage of first and second-grade and riche tubers were also calculated, according to the quality parameters established for commercialization.

ECO LETTER #39

RESULTS

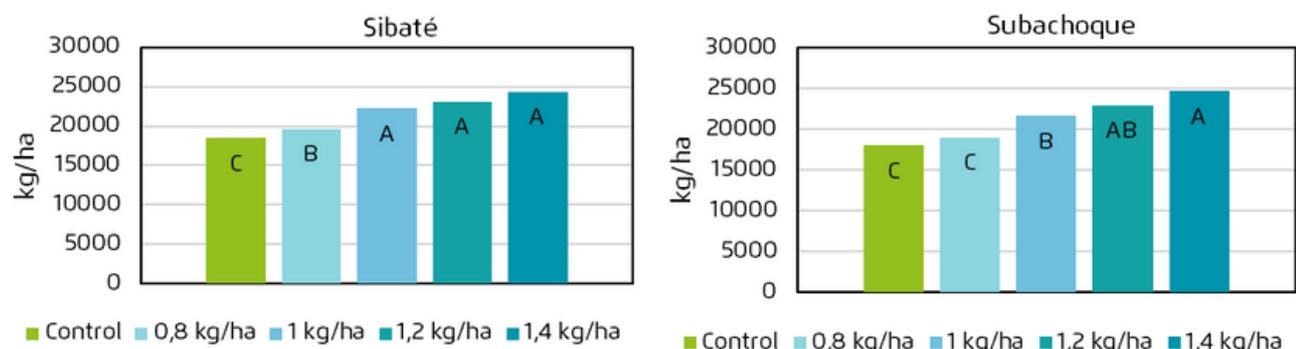


Figure 1. Yields obtained in the two study locations.

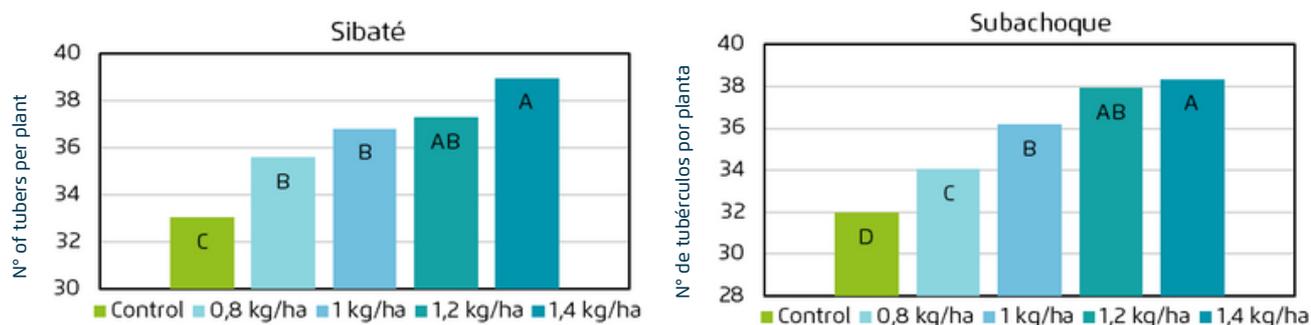


Figure 2. Number of tubers per plant obtained in the two study locations.

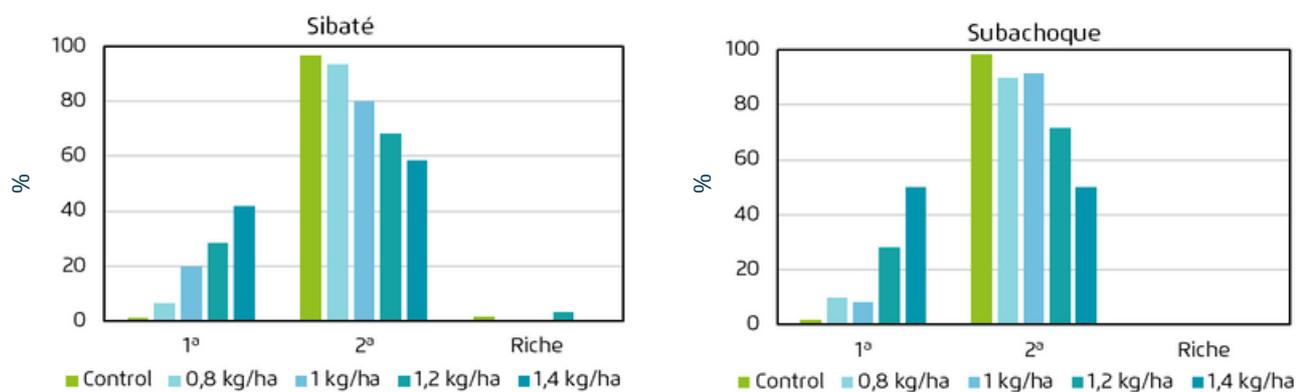


Figure 3. Percentage of tuber numbers obtained in each category, according to the doses of Botamisol 45 applied and in each location.

ECO LETTER #39

RESULTS

The various treatments ranged from 17963 kg/ha for the control to 24604 kg/ha yield for treatment 5 in Subachoque. Figure 1 shows that from a dose of 1 kg/ha of Botamisol 45, yields were statistically higher than those of the other treatments.

The result was more relevant thanks to the increase in all its components. The number of tubers per plant ranged from 31 to 38, with a homogeneous distribution throughout the experimental area. The treatment of 1.4 kg/ha of Botamisol 45 showed an increase, although differences were already observed with any application rate of Botamisol 45 (Figure 2).

Starting from the 1 kg/ha dose of Botamisol 45, the tuber size obtained was 3.5 to 4 cm per tuber (result not shown). According to their classification in commercial categories, the increase in tuber size in the first category was 40-48% in treatment 5 (1.4 kg/ha) (depending on location) (Figure 3), 8-20% (depending on location) in treatment 3 (1kg/ha) and 28% in treatment 4 (1.2kg/ha).

The first category achieves higher values in the market than the rest. Therefore, the increase in yield from the treatment applied translates into better results for the producer.

In addition, a study in an annex plot treated with double the highest dose to be evaluated (2.8 kg/ha) probed the absence of phytotoxicity.



Field assembly. Location 1.



Field assembly. Location 1.



Field assembly. Location 2.

CONCLUSIONS

- Plants not treated with Botamisol 45 showed small tubers, mainly second-grade, and low yield compared to treated plants.
- High product doses (1.2kg/ha and 1.4kg/ha) promoted higher growth, crop development, and more tubers per plant.
- Following the results obtained in this study, foliar spray application of Botamisol 45 at 1.2kg/ha is recommended in potato crops.
- Botamisol does not represent a phytotoxicity risk for the crop when applying up to twice the highest dose (2.8 kg/ha) recommended between each application.

REFERENCES

- Coraspe. (2000). Aspectos de la producción de semilla de papa. FONAIAP N° 65.
- FAOSTAT. (2007). Obtenido de <http://faostat.fao.org/site/340/default.aspx>
- INPOFOS. (1997). Manual Internacional de fertilidad de suelos. Mosaic. PPI. PPIC
- XI Congreso Mundial de la Papa. (30 de 05 de 2022). Obtenido de FAO: <https://www.fao.org/newsroom/detail/doubling-global-potato-production-in-10-years-is-possible/es>



FUTURECO
BIOSCIENCE

To receive more information contact
info@futurecobioscience.com

Visit our website
www.futurecobioscience.com

SUBSCRIBE TO OUR NEWSLETTER