I-323 - **Quantitative response of greenhouse tomato yield to different drip fertigation regimens**

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**Introduction**

- An estimation area of the protected cultivation in Paraguay is 50 ha, and is expected to grow over the years.
- The tomato and green peppers are grown mainly outdoors and under solar shade, but the surface under protected environment in greenhouse is emergent.
- The careless application of NPK has led to soil deterioration or salinization caused by the deficiency of appropriate guides.
- In Paraguay there is very little research in the fields of fertigation systems.

**Objective**

This study aimed to evaluate the effects of traditional fertilization and two schemes of fertigation systems on the production of greenhouse tomato (*Solanum lycopersicon* L.).

**Methodology**

After the tomato seedlings were transplanted to the field, on March 8, 2018 the traditional fertilization treatment was applied as a compound fertilizer with the formula 15:15:15 at 2000 kg $ha^{-1}$, in six times every 20 days . The fertigation treatments consisted in two different dosages of a fertilizer mixture injected into the drip irrigation tubes. The first fertigation treatment, (F100%), $(NO_3)_2$ Ca; $KNO_3$; $NH_4H_2PO_4$ and $MgSO_4$ were applied every two days, and the doses were 1; 0.8; 0.15 and 0.5 g $plant^{-1}$, respectively. For the second fertigation treatment (F50%), the same regimes was used but the fertilization rate was reduced to 50%.

**Photo 1. Venturi system installation**

**Photo 2. Experimental plot site**

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## Results

The fertigation treatments have improved tomato productivity compared to traditional fertilization method. The tomato yield was 18.6 % and 10.5% higher in the first and second fertigation treatments (39.6 and 36.0 Mg ha−1), respectively, over traditional fertilization method (32.2 Mg ha−1). There was not significant differences between the two-fertigation treatments; however, the F100 % treatment recorded significantly higher non marketable yields. Thus, tomato yield productivity can be improved by applying the weaker fertigation regime.

**Photo 2. Weighting tomato samples at farmer field**

**Photo 3. Experimental plot soil sampling**

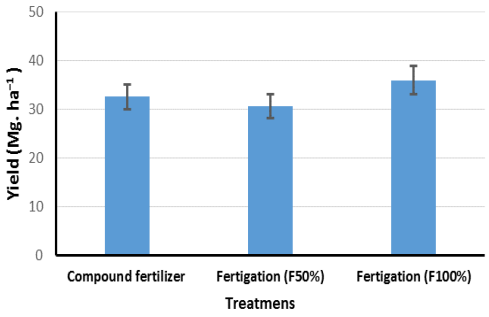


Fig. 1. Tomate yield levels as influece by fertilizer type or concentartions. Vertical bars show the ± SE (n=5)

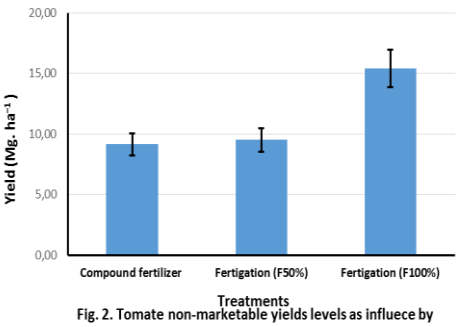


Fig. 2. Tomate non-marketable yields levels as influece by fertilizer type or concentartions. Vertical bars show the ± SE (n=5)

## Conclusions

- Tomato yield productivity can be improved by applying the weaker fertigation regime
- As a result of the present study, it was shown to be effective the application of fertilizer through the fertigation system.
- The improvement of tomato marketable yield should be investigated to avoid product losses.

## References


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