

IMPACT OF REDUCED FERTIGATION ON FIG YIELD AND QUALITY

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INTRODUCTION AND OBJECTIVE

It is becoming increasingly necessary to look for alternative crops to conventional horticultural crops under greenhouse in order to diversify crops and agricultural products. The protected cultivation of figs can be an interesting alternative crop as consumers increasingly demand products and fruits of all life, with great taste and that are grown in an organic and natural way. On the other hand, most fig crops are cultivated with a traditional dry farming system, although in recent years the irrigated cultivation area for the fresh and export market is increasing.

The objective of this work is to know if the reduction of the fertigation volume in the fig tree cultivation in a semi-intensive organic system, with the consequent saving of water and fertilizers, affects the production and quality of fruit.

MATERIALS AND METHODS

The trial is being carried out at the IFAPA La Mojonera Center, in an organic greenhouse with mesh cover (10x20 threads cm⁻²), with a planting frame of 4m x 4m and an irrigation system with 4 drippers of 3 l h⁻¹ per tree. Evaluating fig cultivar “San Antonio”. The trees were transplanted on March 4, 2021, using 1 year old trees (before transplanting they had had a harvesting period: first green). After each green, in January, the fig trees were pruned by cutting all the stems to two buds leaving, in spring, 8 stems to sprout. Therefore, our harvest is always figs (production of new branches).

The cultural techniques and phytosanitary control of pests and diseases (with a preference for biological control) complied with the guidelines of organic production, fertigation of the crop with organic fertilizers authorized in organic agriculture (Annex II of the implementing regulation (EU) 2021/1165).

Two treatments have been established, depending on the volume of fertigation provided.

T1: 100% fertigation (fertigation normal)

T2: 50% fertigation (fertigation reduced to half the fertigation time of T1)

To evaluate the production of the crop, each harvest was weighed and to determine the quality of the fruit, physical, chemical and nutritional parameters were evaluated in the fruit obtained in each of the treatments.

RESULTS

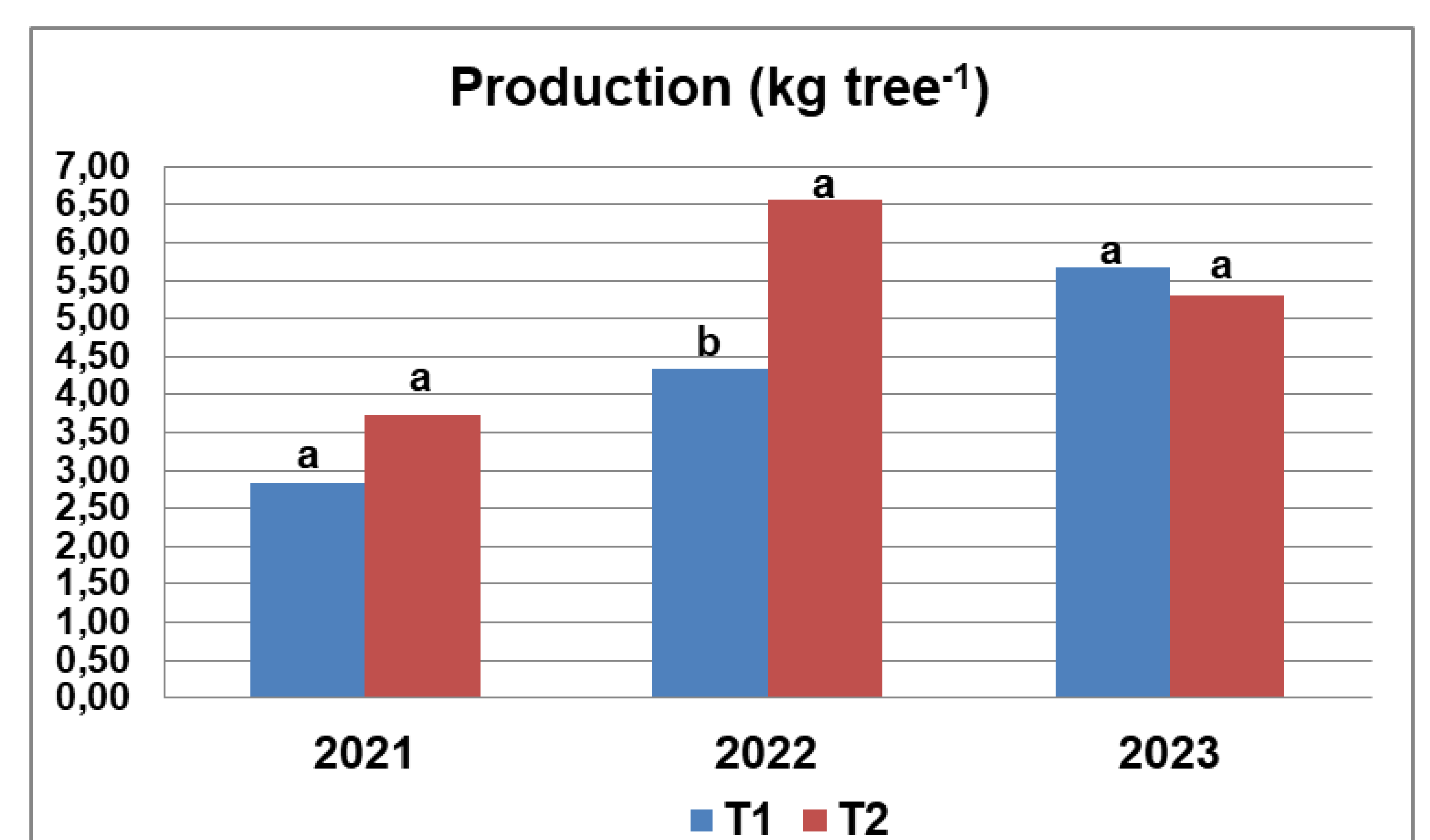


Figure 1. Total production (kg tree⁻¹) obtained in each year. Different letters indicate significant differences (P<0.05, LSD test).

Table 1. Physical parameters of fruit (width, height, weight, hue angle (h) and chroma (C) of skin and flesh). Values (mean ± standard deviation; n=3). Different letters in the same column indicate significant differences (P<0.05, LSD test).

TREATMENT	Width (cm)	Height (cm)	Weight (g)	Hue angle (h) skin	Chroma (C) skin	Hue angle (h) flesh	Chroma (C) flesh
T1	4,56 a ± 0,056	4,38 a ± 0,330	45,76 a ± 1,643	51,71 a ± 9,104	20,83 a ± 2,299	77,40 a ± 2,066	24,95 a ± 0,453
T2	4,42 a ± 0,091	4,48 a ± 0,280	39,77 b ± 1,558	38,25 a ± 3,270	16,16 a ± 1,071	78,07 a ± 3,165	23,10 a ± 0,202

Table 2. Chemical and nutritional parameters of fruit (soluble solids (°Brix), pH, citric acid, vitamin C, carotenes, phenolics y antioxidants). Values (mean ± standard deviation; n=3). Different letters in the same column indicate significant differences (P<0.05, LSD test).

TREATMENT	Soluble solids (°Brix)	pH	Citric acid (%)	Vitamin C (mg/100 g FW)	Carotenes	Phenolics	Antioxidants
T1	20,97 b ± 0,134	5,79 a ± 0,072	0,23 a ± 0,021	0,35 a ± 0,015	0,32 a ± 0,035	0,23 a ± 0,017	0,76 a ± 0,040
T2	23,05 a ± 1,071	5,77 a ± 0,080	0,23 a ± 0,021	0,44 a ± 0,067	0,34 a ± 0,052	0,26 a ± 0,035	0,81 a ± 0,021

CONCLUSIONS

The reduction of fertigation volume has no effect on fig production in organic greenhouse with semi-intensive growing system.

However, there is an effect of fertigation volume on fruit weight, with a lower weight obtained in the reduced fertigation treatment. And on the soluble solids content of the figs, obtaining a higher sugar concentration (°Brix) in the fruit obtained with lower fertigation volume.

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