

Cultivation of two medical plants integrated with common carp (*Cyprinus carpio* L) in aquaponics system



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INTRODUCTION

Aquaponics can rightly be called a technology of the future as it combines the use of wastewater with the production of high-quality and economically viable products—aquatic organisms and plants. Medicinal plants can be used as a source of biologically active substances that can replace antibiotics, which are responsible for bacterial resistance in the treatment of various diseases in humans and animals. To date, aquaponic technology is innovative, and therefore studies addressing the issue related to the combined cultivation of medicinal plants and fish in this innovative technology are severely limited.

THE AIM

The purpose of this study is to compare the effects of cultivating oregano and thyme in an aquaponic system on the growth indicators of fish and plants and the hydrochemical indicators.

MATERIAL AND METHODS

The experiment was conducted in an innovative aquaponic system, located at the Agricultural Faculty of Trakia University in Stara Zagora, Bulgaria. The initial weight of the fish was average 245 ± 18.9 g. The seedlings of oregano and thyme were transferred to aquaponic pots and placed in deep water culture tanks in the specified system. The duration of the experiment was two months.

RESULTS AND DISCUSSION

At the end of the experiment, the weight of the fish was 447.16 ± 15.86 g. The hydrochemical parameters observed during the experiment are presented in Table 1. The growth parameters of oregano and thyme are shown in Figure 1.

Table. 1 Hydrochemical parameters during the experiment

Parameters	Oregano / <i>Origanum vulgare</i> /	Thyme / <i>Thymus vulgaris</i> /
oxygen mg.L-1	7.19 ± 0.03	7.13 ± 0.03
conductivity μ S.cm-1	248.46 ± 1.21	$256.58 \pm 1.38^{***}$
pH	7.63 ± 0.07	$8.47 \pm 0.09^{***}$
ammonium	1.05 ± 0.22	$1.95 \pm 0.42^*$
nitrite	0.023 ± 0.01	0.021 ± 0.005
nitrate	2.14 ± 0.69	1.41 ± 0.35
phosphate	5.33 ± 1.19	4.78 ± 1.18

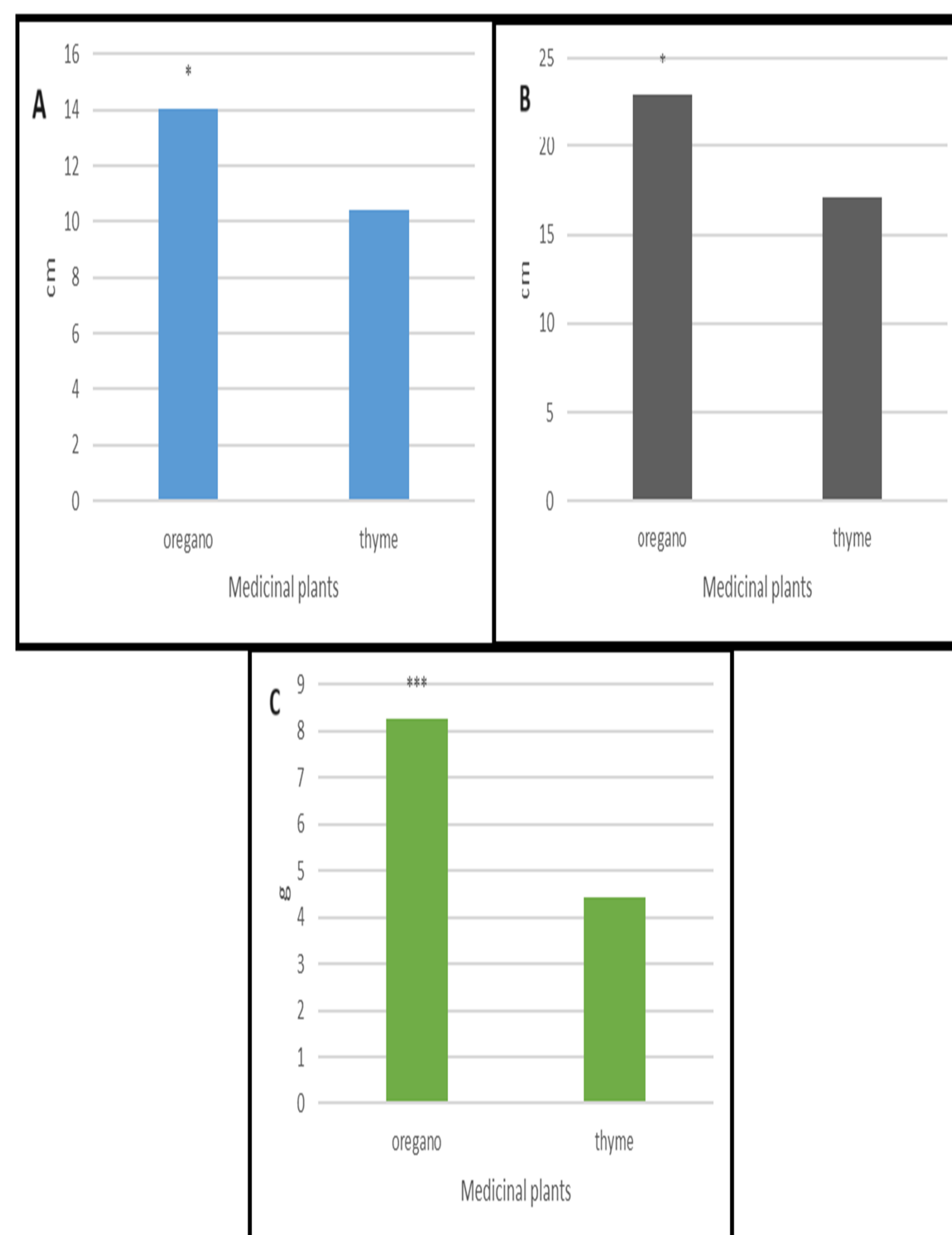


Fig.1 Growth parameters of oregano and thyme during the trial-A) Root's length; B) Stem's length; C) Plant's weight.