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THE EFFECT OF ORGANIC FERTILIZATION ON THE FENNEL CROP

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ABSTRACT

The use of organic fertilisers in agricultural systems has positive effects on the environment, and as a result, the use of organic inputs has become a safer alternative.
In this situation, the aim of the present study was to assess the effect of ecological inputs' application on the production components of the fennel culture.
Foliar fertilization during the vegetation period with Cropmax and nettle maceration was included in the field of experience.
The obtained results indicated that both applied fertilizers showed a tendency to increase production at higher levels than those identified for the control variant.
On the basis of the achieved data, it was found that the application of Cropmax was more effective than nettle maceration and stimulated formation of seeds.

INTRODUCTION

The main objective of ecological agriculture is to offer consumers healthy and safe agricultural products, taking into account the environment (Toncea I. 2002).

In creating a farm, strict compliance with the laws of the biosphere is necessary, taking into account the synthetic indicator of good management, which is the increase and preservation of soil fertility (Munteanu et al., 2008).

The application of fertilizers is carried out following a program related to long-term soil fertility and only after carrying out chemical analysis of the soil (Dinu et al., 2015).

MATERIAL AND METHODS

A monofactorial experiment with fennel was placed in the experimental teaching field of the Faculty of Natural Sciences and Agricultural Sciences, Ovidius University of Constanța, on the chernozem soil.

The experiment concerned the effect of foliar fertilizers on the fennel crop.

The experimental variables were:

V1 The control crop – unfertilized;

V2 Cropmax foliar fertilizer;

V3 Macerated nettle.

Two foliar fertilizers were tested in two phases of vegetation presented in table 1.

Table 1

Foliar fertilizezers tested

No	Foliar fertilizer	Apication period
1	Cropmax	10 days after the plants sprout 40 days after the plants sprout
2	Nettle macerate	10 days after the plants sprout 40 days after the plants sprout

Macerated nettle, organic fertilizer obtained by macerating nettle ratio 1/3, and the application dose of the product is 1 liter macerated nettle to 10 liters of water.

Cropmax commercial organic fertilizer, containing vitamins and growth stimulants.

Foliar fertilization was carried out during the vegetation period, avoiding the flowering period.

Figure 1 Fennel culture – Ecological sector, Constanta 2021

The variety of fennel experienced was Românesc, seeded directly in the field, early spring, at a distance of 70 cm between rows and at a depth of 2,5-3 cm.

During the two years the research took place, observations, measurements and determinations were made as follows: plant height, stem diameter, number of branches per plant, number of inflorescences per plant, number of seeds per plant, number of seeds per inflorescence and stem weight.

RESULTS AND DISCUSSIONS

The need for nutrients in the fennel crop can be met, first of all, on account of the soil resources, and to supplement them, ecological fertilizers can be applied (Roman et al. 2009).

In the fennel crop, the growth and development of the plants were determined by the level of fertilization, as well as by the fertilizing elements. As a rule, there is a close relationship between the level of the fennel harvest and the state of providing the soil with nutritious elements.

The "fertilization" factor, in turn, influenced the height of the fennel plants, the best results being recorded in the version fertilized with Cropmax. The difference in height from the control crop was 17,2 cm.

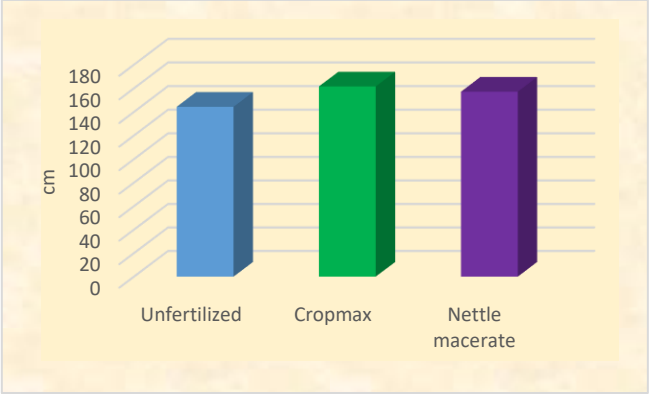

Figure 2 The evolution of the waist of fennel plants

In the framework of the experimental research, in the present work, the influence of fertilizers applied in vegetation on the stem diameter of fennel plants was observed. Analyzing the results obtained during the study period, it is found that the highest value was obtained in the plot fertilized with Cropmax.

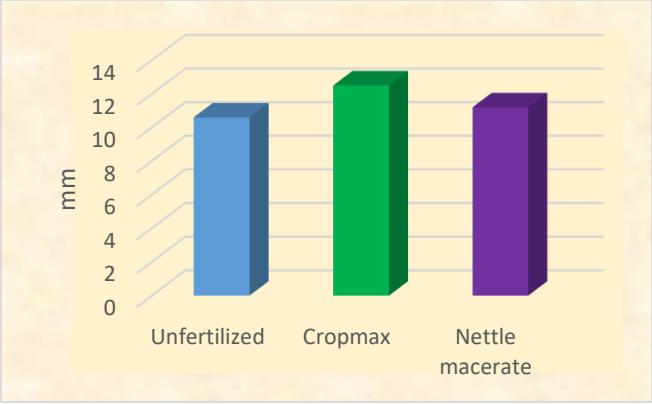

Figure 3 Evolution of fennel stem diameter

Following the analysis of the data obtained, it is noted that the application of organic fertilizers increases the number of branches per plant, where the highest values were obtained compared to the control variant.

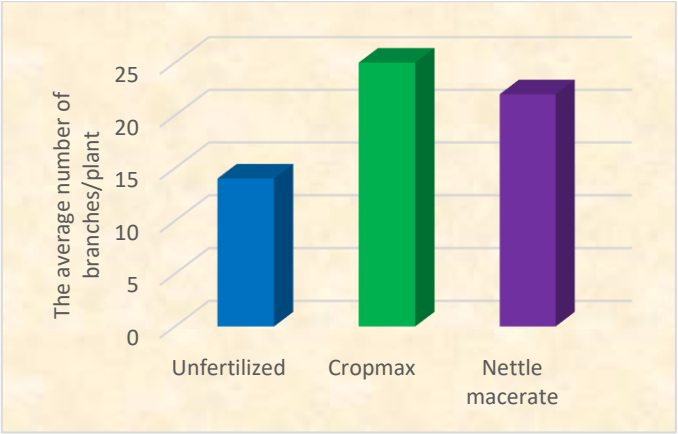

Figure 4 Evolution of the number of branches per plant

Analyzing the mode of action of the fertilization factor on the number of inflorescences per plant, in the fennel crop, it was found that the control variant was surpassed in all situations.

Thus, the version fertilized with Cropmax exceeded the control with 216 inflorescences, and the version fertilized with nettle maceration exceeded the control crop with 207 inflorescences.

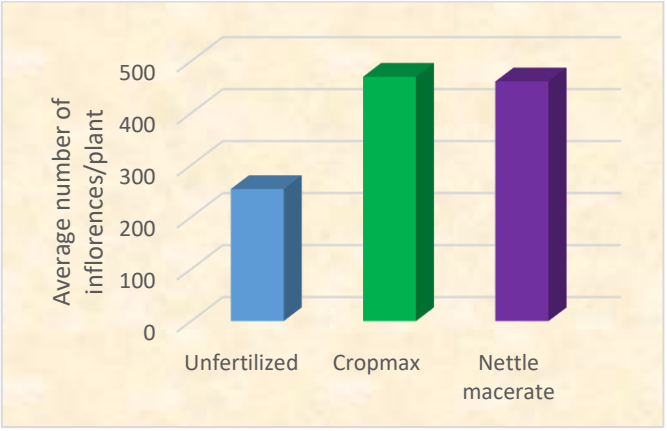

Figure 5 Evolution of the number of inflorescences per plant

From the figure 6, it appears that each variant had a different evolution of the weight of the fennel stems. We observe that the samples taken from the plots fertilized with Cropmax and macerated nettle register higher values compared to the control crop.

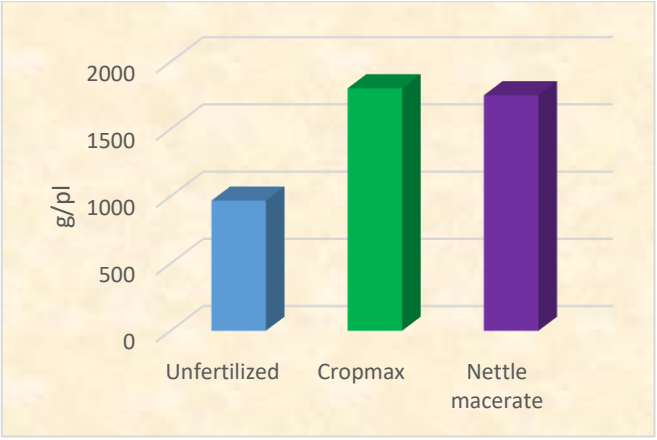

Figure 6 Evolution of strain weight

The analysis of the weight of the seeds on the plant indicates the variant fertilized with Cropmax as the most effective, the average weight of the seeds on the plant being 38,7 g, followed by the fertilized version with nettle macerate, with 34,57 g. The unfertilized fennel crop recorded the lowest value on experience (28,50 g/pl).

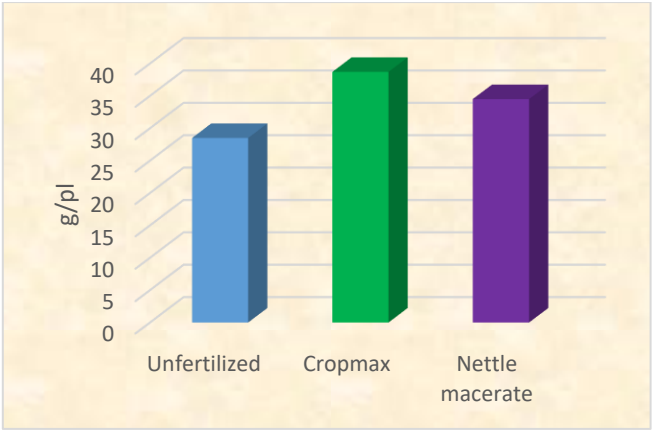

Figure 7 The evolution of seed weight on the plant

Analyzing the figure below, it follows that the highest seed production was recorded in the version fertilized with Cropmax (1350 kg/ha), and the production with the lowest value was recorded in the non-fertilized version (997.5 kg/ha), the the difference being 352,5 kg/ha.

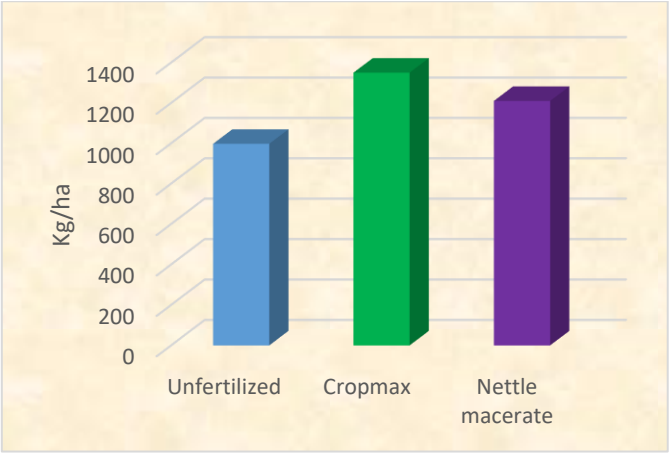

Figure 8 The evolution of seed production

CONCLUSIONS

From the studies and researches carried out, it results that in the conditions of Dobrogea area, the administration of ecological foliar fertilizers proves to be efficient on the production of fennel

The ferilization with Cropmax at fennel, on the chernozem soil, led to obtaining a harvest of 1350 kg/ha, with a harvest increase of 352,5 kg/ha compared to the unferilized.

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