

SUMMARY AND CONCLUSION

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The present investigation was carried out at the experimental farm of faculty of agriculture at Moshtohor, Zigzag University, during seasons, 1997/98 and 1998/99 .

This investigation consists of two experiments :

- I- In this part or experiment investigated the effect of foliar spraying with magnesium, iron, manganese and boron on growth and chemical analysis of leaves of *Digitalis lanata*., Ehrh.**

The nutrient elements used were: magnesium, iron, manganese and boron by these concentrations:

- 1- Magnesium at rates of (100, 125and 150) ppm.
- 2- Iron at rates of (100, 125and 150) ppm.
- 3- Manganese at rates of (75 , 100 and125) ppm
- 4- Boron at rates of (50, 75and 100) ppm.

The important results obtained can be summarized as follows:

A- Effect on vegetative growth:

1- Number of leaves /plant:

A significant effect was on the number of leaves shown due to the application of all concentrations of the element used in most cases except of the high level of magnesium.

2- Mean length of leaf(mean length of fourth, fifth and sixth leaves from the base of plant):

The leaf length exhibited a significant difference due to the applied concentrations in the first and the second season, the higher value was found in plants treated with the high level of magnesium.

3- Mean width of leaf (mean width of fourth, fifth and sixth leaves from the base of plant):

The nutrient applied increased significantly leaf width in both seasons. Also the higher value was found in plants treated with the high level of magnesium.

4- Fresh weight /plant:

Fresh weight increased significantly with nutrient applied in most concentration, the medium concentration of Fe produced the heaviest weight in the first season, In the second season also fresh weight increased with the concentration applied, but the highest value was obtained with the highest level of Mn.

5- Dry weight/plant:

Dry weight increased significantly due to the application of elements in both seasons. The heaviest dry weight was obtained from medium level of Fe at 125ppm in both seasons.

B – Effect on the chemical analysis:

1- Nitrogen (%):

All B treatment increased nitrogen percent, medium level of Fe , high level of magnesium, as well as, low level of Mn increase nitrogen percentage in digitalis leaves compared with control.

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2 – Phosphorus (%):

The different concentrations of B, Fe and Mg increased P% in most cases, the except of high and low level of iron and high level of Mn which only decreased P% compared with control.

3 – Potassium (%):

All concentration of Fe and the medium one of B increased K% in digitalis leaves in comparison with control, However different levels of Mn as well as low and high levels of B decreased K% in comparison with control, the most effective elements were medium and low levels of Fe as well as the medium level of B.

4 – Magnesium (ppm):

The results shows that high level of B and as well as medium level of Mn decreased Mg content in plant leaves compared with the control, the best results were obtained from the low level of B and Mn.

5 – Iron (ppm):

The different levels of B, Fe, Mg and Mn significantly increased Fe in most cases, the exception was found with the high level of B, which decreased significantly such character.

6 – Manganese (ppm):

Using the different levels of B, Fe, Mg and Mn in comparison with the control increased Mn content in plant leaves.

7 – Boron (ppm):

Using the different levels of B, Fe, Mg and Mn in comparison with the control increased B content in plant leaves.

8 – Chlorophyll A (%):

The low levels of B, Fe and Mn as well as medium levels of Fe and Mg and the high levels of Mg, Fe and Mn increased chlorophyll A in comparing with control.

9 – Chlorophyll B (%):

Using different levels of B and Mg, medium and high levels of Fe and Mn, increased Chlorophyll B content.

10 – Carotenoides (%):

The obtained data showed that all concentrations of applied elements increased carotenoides content with the exception of low level of Fe and medium level of Mn in compared to the control.

11 – Total carbohydrates (%):

All treatments of Fe, Mg, Mn and B increased total carbohydrate content comparing with the control.

12 – Total glycosides content (%):

Data of the total glycosides that calculated as digitoxin showed significant differences between concentration of Mg, Fe, Mn and B such constituents was increased due to the applied treatments compared to the control.

II-The second experiment aimed to study the effect of irrigation intervals on growth and chemical composition in leaves of *Digitalis lanata*, Ehrh.

The irrigation treatments were at three intervals (7, 14, 21 days).

A – Effect on vegetative growth:

1 – Number of leaves /plant:

Data indicated that irrigation at 14 days, intervals resulted in a significant increase on the number of leaves compared with the other treatments.

2 – Leaf length (mean length of fourth, fifth and sixth leave from the base of plant):

Significant difference among the treatment, but the best treatment could be obtained at 14 days irrigation intervals in the two seasons.

3 – Leaf width (mean width of fourth, fifth and sixth leave from the base of plant):

Significant difference among the treatment but best treatment could be obtained at 14 days irrigation intervals in the two seasons.

4 – Fresh weight/plant:

Significant difference among the treatment but best treatment could be obtained at 14 days irrigation intervals in the two seasons.

5 – Dry weight/plant:

In the first and the second seasons irrigation at 14days intervals resulted in a significant increase in comparison with the other treatments.

B – Effect on chemical analysis:

1 – Nitrogen (%):

No significant differences among irrigation treatments and irrigation at 7 days gave higher content of nitrogen % in comparison with other treatments.

2 – Phosphorus (%):

No significant differences among irrigation treatments and irrigation at 14 days gave higher content of phosphorus % in comparison with other treatments.

3 – Potassium (%):

No significant differences among irrigation treatments and irrigation at 14 days gave higher content of potassium % in comparison with other treatments.

4- Chlorophyll A (%):

A significant difference among irrigation treatments and irrigation at 14 days gave higher content of chlorophyll A % in comparison with other treatments.

5- Chlorophyll B (%):

A significant difference among irrigation treatments and irrigation at 14 days gave higher content of chlorophyll B % in comparison with other treatments.

5- Caroteroides (%):

A significant difference among irrigation treatments and irrigation at 14 days gave higher content of caroteroides % in comparison with other treatments.

6- Total carbohydrate (%):

A significant difference among irrigation treatments was found and irrigation at 14 days gave higher content of total carbohydrate % in comparison with other treatments.

7- Total glycosides content (%):

No significant differences among irrigation treatments and irrigation at 14 days gave higher content of total glycosides % in comparison with other treatments.

Conclusion:

It could be concluded that:

- 1- Using foliar fertilization with magnesium, iron, manganese and boron improve the vegetative growth and chemical composition in leaves of *Digitalis lanata*, Ehrh.
- 2- Irrigation at 14days intervals improves growth and chemical composition in leaves of *Digitalis lanata*, Ehrh.