

## ***SUMMARY***

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The Study was carried out during two consecutive seasons of 1991 / 1992 and 1992 / 1993 on *viola odorata* at the Experimental Station of the Faculty of Agricultural at Moshtohar, Zagazig university .

This investigation included two parts, the first part, aimed to study the effect of three micro-elements ( Manganes, Zinc and Iron ) on the vegetative growth, flowering and concret oil . The concentrations of Mn and Zn were ( 00, 75, 100 or 125 ppm ). While the concentrations of Fe was ( 00, 100, 125 or 150 ppm ). The second part aimed to study the effect of GA3 at ( 00,200, 250 or 300 ppm ) on the vegetative growth, flowering and concret oil content .

The most important out look of the present investigation were :-

### **The first part :-**

#### **I . Mn element :-**

##### **- A - Winter flush :-**

- 1- MN at 125 ppm gave the best results of growth ( number of leaves per plant, plant high leaf area, number of flowers per plant, mean length of flower peduncle, fresh and dry weights of leaves per plant .
- 2- Also Mn at 125 ppm increased the content of N, P, Mn in dry matter of leaves and concrete oil percent in fresh flowers .
- 3- Mn at 75 ppm increased the content of K in dry matter of leaves and chlorophyll A and B in fresh leaves .

##### **- B - Spring flush :-**

- 1- Mn at 125 ppm increased the number of leaves and flowers per plant and mean length of flower peduncle .
- 2- Mn at 100 ppm produced the maximum leaf area of *viola odorata* .
- 3- Mn at 100 ppm or 125 ppm gave the heaviest fresh and dry weight of leaves per plant .

## **II . Zn element :-**

### **- A - Winter flush :-**

- 1- Znic at 125 ppm produced the better data of number of leaves / plant, leaf area, number of flower per plant and length of flower peduncle .
- 2- Znic at 100 or 125 gave the best results of fresh and dry weight of leaves per plant .
- 3- Zen at 75 ppm increased the content of Mn, N, P, K and Fe on dry leaves .
- 4- Zen at 125 ppm increased the content of Zn, total carbohydrate and concret oil percent .

### **- B - Spring flush :-**

- 1- Generally it can be concluded that 125 ppm gave the best results of vegetative growth and flowering .

## **III . Iron element :-**

### **- A - Winter flush :-**

- 1 - Fe at 100 ppm increased the number of leaves per plant, fresh and dry weights of leaves per plant .
- 2- Fe at 125 ppm gives the maximum height of flower pedicel, also produced the largest leaf area .
- 3- Fe at 150 ppm increased the number of flowers per plant .
- 4- Fe at 100 ppm increased the content of Zn and chlorophyll A and B .
- 5- Fe at 125 ppm increased the total of carbohydrate potassium in violet leaves and concrete oil in violet flowers .
- 6- Fe at 150 ppm increased the content of Fe and Mn in dry matter of leaves .

### **- B - Spring flush :-**

- 1- Fe at 100 ppm increased the fresh and dry weights of leaves .
- 2- Fe at 125 ppm gave the best results of number of leaves per plant and leaf area .
- 3- Fe at 150 ppm gave the highes values for length of flower pedicel and number of flowers per plant .

**The Second part :-****GA<sub>3</sub>****- A - Winter flush :-**

- 1- GA<sub>3</sub> at 300 gave, the maximum number of leaves and flowers per plant, the tallest of flower pedicel, the largest leaf area and the heaviest fresh and dry weights of leaves per plant .
- 2- GA<sub>3</sub> at 300 ppm increased the content of K, total carbohydrates and the concrete oil percent .

**- B - Spring flush :-**

- 1- Generally, GA<sub>3</sub> at 300 ppm gave the best results of vegetative growth and flowering .