

# THE INFLUENCE OF NUTRITION ON THE MAIN PRODUCTION OF BROCCOLI

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## **Abstract**

*The research was realized in the unheated greenhouse of Horting Institute Bucharest, in 2012 year. It have aimed the influence of one phase of fertilization with ammonium nitrate ( $NH_4NO_3$ ) on inflorescences of broccoli, at a hybrid  $F_1$  - Ironman. The fertilizer was used before the formation of main inflorescences, in different doses (100 kg/ha, 150 kg/ha, without fertilizer). Harvesting was done in 4 stages. A phase of fertilization with ammonium nitrate has influenced the main production of broccoli: the variant with fertilization 150 kg/ha has obtained the highest percentage of inflorescences formed, the average weight/inflorescence largest and superior production compared with other variants. Were obtained direct linear correlations between the doses of ammonium nitrate ( $NH_4NO_3$ ) and the production aspects followed (percentage of main inflorescences harvested, average weight/inflorescence, total production), significances of the correlations very high.*

*Keywords: Brassicaceae, fertilization, greenhouse*

## **1. INTRODUCTION**

Broccoli is a vegetable with a high content of vitamins A, B<sub>2</sub>, C, folic acid, iron, potassium, calcium, selenium (wikipedia.org); sulfur compounds with antioxidant and anticancer significant effects (Zăvoianu R.C, 2010).

Also, contains a phytochemical compound (sulforaphane), which together with indoles have anticancer significant properties; sinigrin with role in inhibiting of multiplication of the tumor cells; carotenoid antioxidants with role in protecting of the body (wikipedia.org).

The broccoli culture is appreciated of the vegetable growers and the finished product is purchased increasingly more by consumers.

## **2. MATERIAL AND METHOD**

The biological material used was Ironman  $F_1$  hybrid (Seminis) of broccoli.

The broccoli seedlings were obtained in period June 18 - August 5, 2012, in nutrient substrate - peat with structure 0-6 mm, pH = 6 and medium fertilization.

The autumn culture of broccoli, with a density of 40000 plants/ha, was established in the greenhouse of the Horting Institute Bucharest.

The experimental lot was composed of 240 plants; planting was performed on August 6, 2012.

After planting, the broccoli culture was maintained according the production technology of the cabbage (figure 1).

The number of days from planting until the first harvest was 84 days (October 29, 2012).

The harvest period was 30 days (October 29 to November 28, 2012).

The main inflorescences were collected in 4 harvests, then were formed the secondary inflorescences, which did not have optimal weight for marketing due to low temperatures, characteristic of the last decade of November.

Were weighed inflorescences at each harvest.

The experience was realized as follows: control variant ( $V_0$ ), 80 plants - without fertilization, variant 1 ( $V_1$ ), 80 plants - fertilization, before forming the inflorescences, with 100 kg/ha of ammonium nitrate and variant 2 ( $V_2$ ), 80 plants - fertilization before forming the inflorescences, with 150 kg/ha of ammonium nitrate.



Figure 1. Culture of broccoli

### 3. RESULTS AND DISCUSSIONS

The influence of phasial fertilization with ammonium nitrate on the total percentage of the main inflorescences harvested is shown in figure 2.

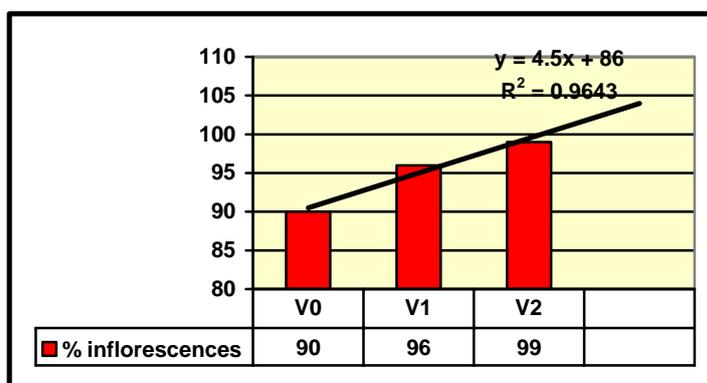


Figure 2. The influence of phasial fertilization with ammonium nitrate on the percentage of main inflorescence harvested

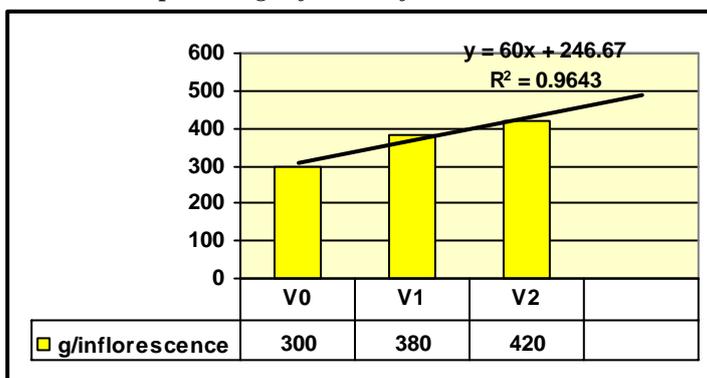


Figure 3. The influence of phasial fertilization with of ammonium nitrate on the average weight/inflorescence harvested

In figure 2, is observed that there is a direct linear correlation between the size of the ammonium nitrate doses and the percentage of inflorescences formed (harvested). The value of the determination coefficient shows that at the percentage of inflorescences harvested, the significance of the correlation is very significant ( $R^2 = 0.9643$ ).

The average weight at which were harvested the main inflorescences was according to market demand from that moment (300-500 g/inflorescence).

The influence of phasial fertilization with ammonium nitrate on the average weight/inflorescence harvested is shown in figure 3.

In figure 3, is observed that there is a direct linear correlation between the ammonium nitrate doses and average weight/inflorescence recolted. The value of the determination coefficient shows that la the average weight/inflorescence, the significance of the correlation is very significant ( $R^2 = 0,9643$ ).

The influence of phasial fertilization with ammonium nitrate on main production of broccoli is shown in figure 4.

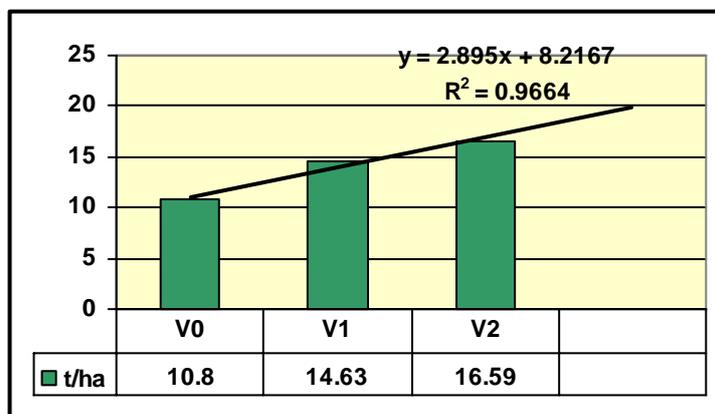


Figure 4. The influence of phasial fertilization with of ammonium nitrate on the main production of broccoli

A direct linear correlation is observed between the ammonium nitrate doses and the main production of broccoli. The value of the determination coefficient shows that at the main production, the significance of the correlation is very significant ( $R^2 = 0,9664$ ).

The secondary production did not meet optimal conditions of marketing; the small weight (50-100g/inflorescence) of the secondary inflorescences was due to unfavorable climatic conditions, unheated space; the low temperatures in the second half of November has imposed harvest completion.

#### 4. CONCLUSIONS

The phasial fertilization with ammonium nitrate before formation of the inflorescence has influenced the main production of broccoli.

The percentage of inflorescences formed was the lowest at the control variant, without fertigation (96%), then at the variant with 100 kg/ha  $NH_4NO_3$  (99%) and highest at the variant with 150 kg/ha  $NH_4NO_3$  (100%).

The ammonium nitrate doses have influenced average weight/main inflorescence, the average weight had a maximum value at  $V_2$  (420 g), an intermediary value at  $V_1$  (380 g) and a minimum value at  $V_0$  (300 g).

The quantity of broccoli harvested has increased proportionally with the dose of fertilizer; were obtained 10,8 t/ha broccoli at the control variant -  $V_0$ , 14,63 t/ha broccoli -  $V_1$  and 16,59 t/ha broccoli -  $V_2$ .

The secondary production did not meet optimal conditions of marketing - small weight (50-100g/inflorescence) of the secondary inflorescences.

#### 6. REFERENCES

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\*\*\* [www.wikipedia.org](http://www.wikipedia.org)