

# EFFECT OF ELECTRICITY ON GROWTH AND DEVELOPMENT OF SEVERAL PLANT SPECIES

Viktor Novak, Mislav Bjeliš

Supervisor: Romana Halapir Franković

V Gymnasium, Zagreb, Croatia, tajnistvo@petagimnazija.hr

## 1. The purpose of the investigation

In this research we wanted to examine the effect of direct current and voltage on germination and growth of several plant species. This area is not much explored in biology therefore we could not find much information on this subject. Our assumption was that this kind of treatment impacts plant growth in positive way and therefore could increase production in agriculture which is vital for future of mankind.

## 2. Materials and working methods

Our project is consisting of two experiments. As materials we used seeds of bean, spinach and radish, sources of direct current with different voltage, copper electrodes and few more aids.

In first experiment, we observed germination of different seeds where growth has been stimulated using direct current every day for 5 minutes. We wanted to see if they will grow and germinate faster. Comparison has been done with control group which has been growing naturally.

In the second one, we had groups of bean stems of the same height. Through every group was passed current of different voltage for three hours every day. We wanted to determine if different voltage makes difference on growth. Here, we also had control group which has been growing naturally without treatment with direct current.

## 3. Results

The results of the first experiment (Fig. 1, 2, 3) are leading to conclusion that direct current had positive impact on plant germination and growth. As shown in attached charts, plants treated with direct current (red lines) for 5 minutes every day germinated earlier and have been growing faster.

In the second experiment (Fig. 4) we had four groups with different voltages. Group treated with lowest voltage 1,5V (green line) developed faster than control group (orange line), but slower than other two groups; group treated with 4,5V (violet line) and group treated with 9V (blue line). This leads to conclusion that direct current has positive impact on plant growth but voltages have to be limited.

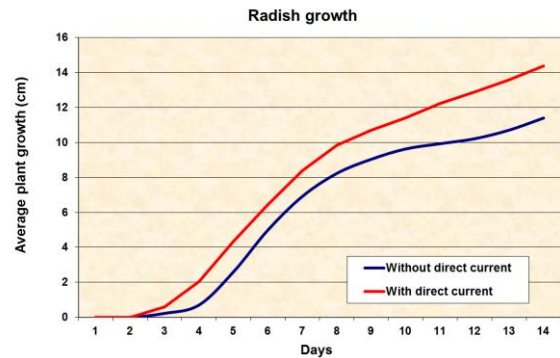


Figure 1. First experiment: Growth of radish

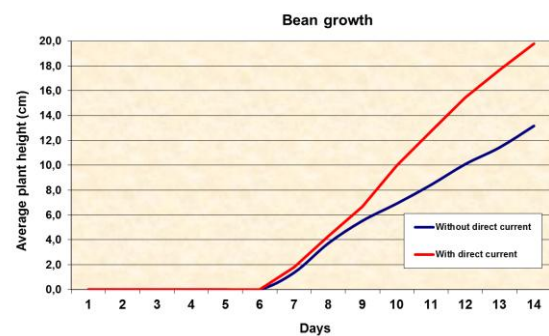


Figure 2. First experiment: Growth of bean

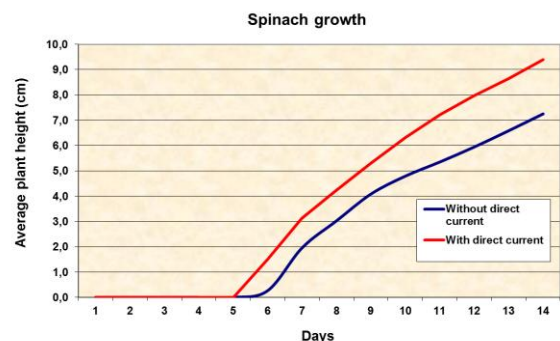


Figure 3. First experiment: Growth of spinach

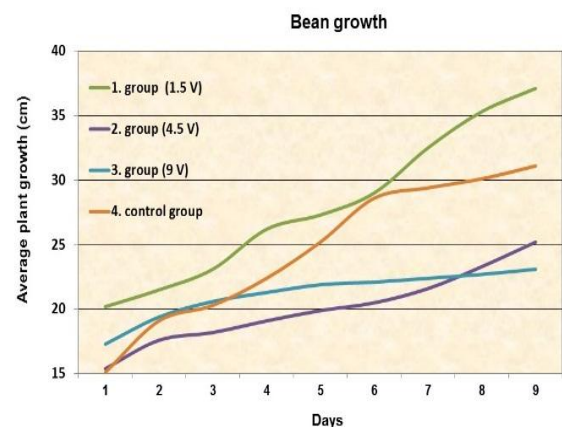


Figure 4. Second experiment: Growth of bean treated with direct current of different voltage

## 4. Conclusion

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Plant germination and growth can be positively stimulated with direct current, but treatment with too high voltage or too long time can have negative impact. In order to determine voltage and time of treatment with direct current which is most optimal for plant growth further experiments need to be performed.

## 5. References

1. <http://www.rexresearch.com/articles/elcultur.htm#ECelstatix>
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3. Denffer D., Ziegler H. 1982. Botanika, Školska knjiga, Zagreb