

# The Effect of Eggshell Extract on Tomato Growth in Muscat

Al Zahraa Primary School (1-9)

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## Resources

- Alwalsi, Muzaffar. (1971). Alkamel in fertilizers and fertilization. (Lebanon Dar Al Kotob Al Ilmiyah)
- Ministry of Education. Science book (8th Grade), Edition of 2017-2018.
- Al Shammari, Aziz. (2013). The Effect of spraying by organic nutrients. Agricultural Sciences Journal, (238-294).
- Environment GLOBE Program. Soil research. Teacher's guide (GLOBE).

## Research questions

- What is the effectiveness of eggshells in soil fertilization?
- How are the properties of the soil, to which eggshells are added, affected compared to the soil to which eggshells are not added?

## Abstract

We have concluded that when adding extract to the soil, it has contributed to the growth of tomato plant increasing its branches and number of leaves. The highest growth rate has been 36.92 cm in the soil containing the extract, while the same has been 17.57 cm in the soil not containing the extract.

We also have found some differences in properties of the soil containing the extract and the soil not containing the extract in . We have found that the soil containing the extract is less acidic, saline and conductive than the soil not containing the extract.

## Research method

- Collect information and external sources of research subject from LRC and the International Network as well as assist the supervisor of research.
- Specify the devices and tools suitable for conducting the study.
- Take samples from the soil in the study site and transfer them to the school for applying Soil Protocol.
- Collect and dry eggshells, grind them with a pestle and keep them in glassware to start work.
- Mix the eggshells extract in the first soil sample and plant tomato in that soil. In the other soil, the tomato has been planted without adding the extract.
- Apply Soil & Water Protocol to the samples recording data.
- Measure the length of tomato plants, regulate and record these measurements in a table.
- Insert data of Soil & Water Protocol at the site of the GLOBE
- Analyze and make charts for data.
- Reach and discuss results.
- Do interviews.
- Write recommendations



## Results

Data of difference in growth rate of tomato plant stalk in the soil containing eggshell extract and the soil not containing that extract:

Type of Soil / Period of Time	16-Dec	23-Dec	30-Dec	06-Jan	13-Jan	10-Feb	17-Feb
Soil containing Eggshells	cm8.27	cm9.88	cm12.1	cm15.2	cm17.9	cm34.4	cm36.9
Soil not containing Eggshells	cm8.84	cm8.9	cm10.1	cm11.8	cm12.5	cm16.8	cm17.5

Data indicates the differences in properties of the soil containing the extract and the soil not containing the extract .

Comparison	Acidity	Salinity	Conductivity
Soil with eggshells	6.8	360	594
Soil without Eggshells	5.8	538	711

## Conclusion

The eggshell extract has positively affected the growth of tomato plant increasing its length and the number of branches and leaves. It also has positively affected soil properties, such as acidity, salinity and conductivity.

We can also apply the Atmosphere Protocol due to the effect of temperature on plant growth as well as the Soil and land cover Protocol.

Through our good results, we encourage and urge farmers and workers in agriculture to use food waste as natural fertilizer instead of chemical fertilizers because chemical fertilizers cause negative environmental damages for being accumulated in the soil.

