

An- Najah National University

The Effect Of Salicylic Acid On Cucumber



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Introduction

- Cucumber "*Cucumis sativus*" is one of the famous and a widely cultivated vegetable plant in Palestine and in worldwide, it belongs to the ground family of "*Cucurbitaceae*" genus of "*Cucumis*".
- Salicylic acid is a phenolic phytohormone and is found in plants with roles in plant growth and development, photosynthesis, transpiration, ion uptake and transport. SA has the formula $C_6H_4(OH)COOH$.

Specific Objectives of this Study Included:

- 1-To show the effect of SA different concentrations (0.00, 0.5,1.00 mM).
- 2-How it affects the plant in general , specifically on plant growth and production.
- 3-To determine the part of the plant that provides a better response to add SA.



Material & Methods

- This study was conducted to determine the effect of salicylic acid (SA) applications on growth and yield of cucumber under greenhouse conditions.
- In the study fruit weight, fresh weight, dry weight, number of nodes, number of leaves, number of fruits and plant height.
- Available form of SA applications at different concentrations (0.00, 0.5, 1.00 mM). SA was applied with spraying in the first week of planting.
- We divided the experiment into 3 plots for each one of the concentrations we applied and in the plots of (0.5 & 1 mM) we divided that to a small plots one of it the SA added on upper and lower of plants and the another SA added only on lower.



NOTES

We arranged the pots randomly so that there was no effect of the direction of the sun or the movement of air inside the greenhouse on the results.



- **Data were collected periodically and analyzed using ANOVA. Significant means were separated using Tukey's HSD test.**



Results and Discussion

The Effect of SA on The Height

Source	DF	Type I SS	Mean Square	F Value	Pr > F
rep	2	450.533333	225.266667	0.98	0.4149
treatment	4	1816.933333	454.233333	1.98	0.1900

No significant difference

The Effect of SA on The Number of Nodes

Source	DF	Type I SS	Mean Square	F Value	Pr > F
rep	2	4.80000000	2.40000000	0.40	0.6857
treatment	4	21.06666667	5.26666667	0.87	0.5227

No significant difference

The Effect of SA on The Number of Leaves

Source	DF	Type I SS	Mean Square	F Value	Pr > F
rep	2	2.80000000	1.40000000	0.22	0.8082
treatment	4	19.60000000	4.90000000	0.77	0.5763

No significant difference

The Effect of SA on The Number of Fruits

Source	DF	Type I SS	Mean Square	F Value	Pr > F
rep	2	10.53333333	5.26666667	0.21	0.8177
treatment	4	59.06666667	14.76666667	0.58	0.6866

No significant difference

The Effect of SA on Fresh Weight Without Fruits

Source	DF	Type I SS	Mean Square	F Value	Pr > F
rep	2	1657.317333	828.658667	1.89	0.2126
treatment	4	3284.909333	821.227333	1.87	0.2085

No significant difference



The Effect of SA on Dry Weight

Source	DF	Type I SS	Mean Square	F Value	Pr > F
rep	2	7.689333333	3.844666667	0.88	0.4521
treatment	4	12.577333333	3.144333333	0.72	0.6029

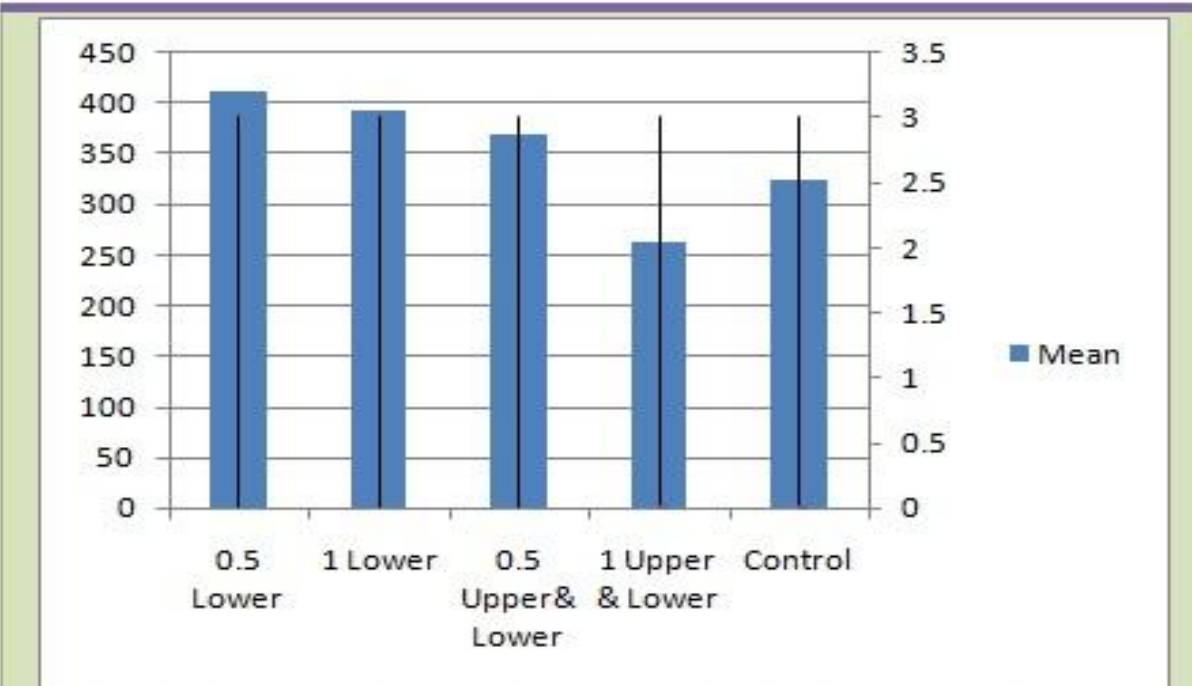
No significant difference

The Effect of SA on The Vegetative Biomass

Source	D F	Type I SS	Mean Square	F Value	Pr > F
rep	2	8527.98533	4263.99267	1.61	0.2590
treatment	4	42657.30267	10664.32567	4.02	0.0447

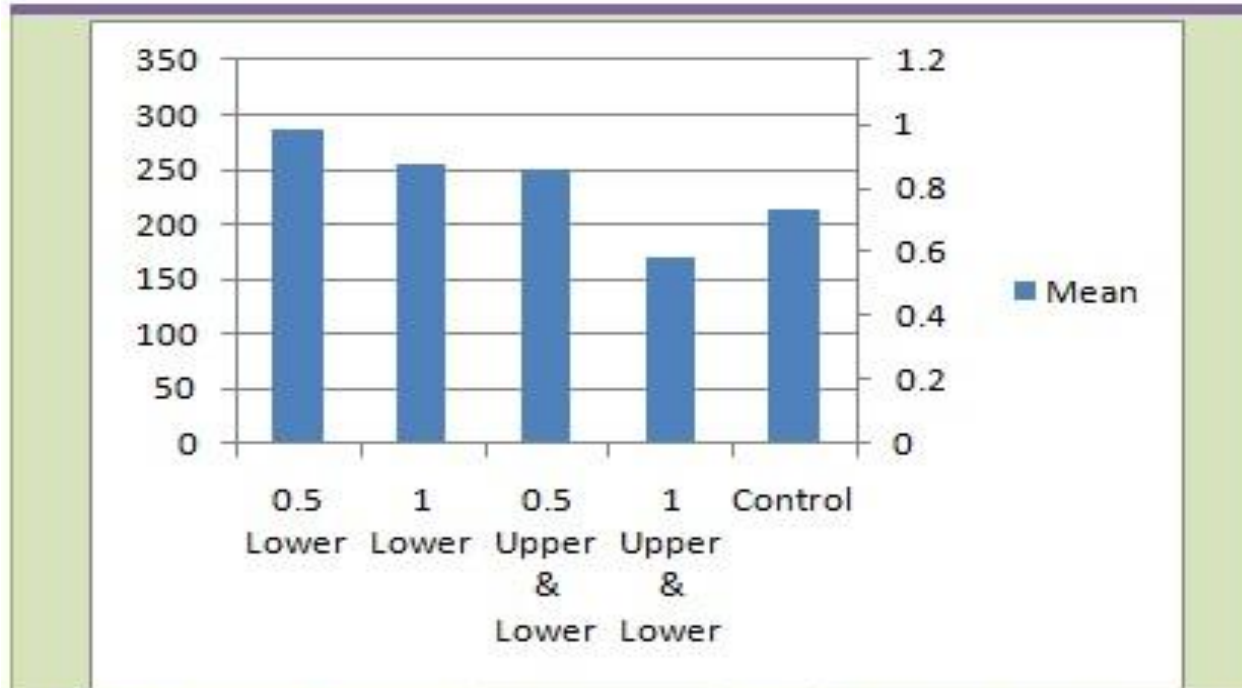


The Effect of SA on The Vegetative Biomass



t Grouping		Mean	N	treatment
A	A	412.13	3	0.5 Lower
A	A			
A	A	393.40	3	1 Lower
A	A			
A	A	368.97	3	0.5 Upper & Lower
A	A			
B	A	323.83	3	Control
B				
B		263.63	3	1 Upper & Lower

The Effect of SA on The Fruits Weight



t Grouping		Mean	N	treatment
	A	288.67	3	0.5 Lower
	A			
B	A	256.70	3	1 Lower
B	A			
B	A	252.67	3	0.5 Upper & Lower
B				
B	C	214.67	3	Control
	C			
	C	171.40	3	1 Upper & Lower

Conclusions

The effect of salicylic acid with concentration “0.5 lower” was clear on fresh weight and after took all results we noted that the reason of this is the difference in fruits weight, this is a good thing because the fruits are the ones we need, but there was no significant difference for the number of leaves, number of fruits, plant length and dry weight of plant.

In some article that show the effect of SA on other crops, they added SA on "lower & upper" parts together of plant but they did not try add SA on lower part only of plant. but we tried to apply the two ways and depending on our results the SA application on the lower part is more influence on plant.

Recommendations

- **We recommend to add salicylic acid on the lower part of plant and with concentrate 0.5mM on cucumber.**
- **SA increases the production of cucumber so should be try it on other crops.**
- **We recommend to do the experiment again but with longer period to see more affects of SA on cucumber.**

Thank You

