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Offseason Production of Cucumber Genotypes in Response to Salicylic Acid in Anti-Insect Walk-In Tunnel

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Abstract
A field study was carried out on the "Offseason production of cucumber genotypes in response to salicylic acid in anti-insect tunnel" at Agriculture research farm Malakandhir, The University of Agriculture Peshawar, during August-December, 2024. Research study was formulated in Randomized complete block design (RCBD) with two factors. Factor A was cucumber genotypes SV8552 and SV8047 and Factor B was Salicylic acid concentrations: (0, 0.5, 1, 1.5, and 2 mM). The findings indicated that salicylic acid and genotypes had significantly affected almost all the parameters and the interaction between salicylic acid and genotypes was non-significant. Means data referring to salicylic acid concentrations revealed that salicylic acid sprayed at 2 mM concentrations resulted in maximum leaves plant-1 (63.33), vine length (308.3 cm), branches plant-1 (5.0), minimum days to 1st flowering (28.5), days to 1st fruit set (34.5), maximum fruits plant-1 (16.5), single fruit weight (130.6 g), fruit diameter (36.7 mm), fruit volume (202.5 cm3) and yield (104.2 tons' ha-^{1}). Mean data referring cucumber genotypes revealed that genotype SV8552 resulted in maximum leaves plant-1 (56.99), vine length (276 cm), branches plant-1 (4.2), days to 1st flowering (29.5), days to 1st fruit set (36.54), fruits plant-1 (13.5), single fruit weight (125.9 g), fruit diameter (35.5 mm), fruit volume (186.5 cm3) and yield (83.3 tons' ha^{-1}). While genotype SV8047 resulted in minimum leaves plant-1 (51.33), vine length (257.3 cm), branches plant-1 (3.2), days to 1st flowering (29.3), days to 1st fruit set (36.46), fruits plant-1 (12.4), single fruit weight (124.5 g), fruit diameter (35.2 mm), fruit volume (182.7 cm3) and yield (74.2 tons' ha-1). It is concluded from the results that salicylic acid at 1.5 and 2 mM was most effective while cucumber genotype SV8552 is recommended for better off-season production in anti-insect walk-in tunnel.

Key Words: Cucumis sativas L., plant bio stimulant, protected cultivation, growth regulator, yield components, abiotic stress, phenology.

Introduction
The summer vegetable cucumber (Cucumis sativas L.), which is mainly grown in tropical and subtropical areas, is a member of the Cucurbitaceous family. It is recognized locally as khira. Additionally, it can be cultivated in tunnels, open fields, and private gardens (Siddique et al.,

2017). Despite a crucial vine crop, Pakistan produces a very low amount of cucumbers. The planted area can be expanded, or better cultivars and techniques can be used, to maximize productivity. One of the simplest and fastest ways to raise production is the use of proper fertilizer. Although cucumber is normally a summer crop, it is commonly planted in plastic tunnels to increase yield and provide early harvests (El-Amir et al., 2001). After tomato, cabbage and onion cucumber is ranked the 4th most useful crop in Asia. Its color ranges from light to dark green, and it can be determined by its thin skin, juicy meat, and tiny seeds. It goes well with salads, sandwiches, and refreshing juices. It can also be pickled. Its tasty, delicate fruits are the main reason of its cultivation. In addition to yogurt, immature fruits are used to make "Rayata." Cucumber seed oils can be consumed, and green cucumber leaves are utilized as herbal remedies (Hazara et al., 2011). Due to the fact that the development of flowers and fruits is influenced by soil water constraints, cucumbers are extremely sensitive to shortage of water (Kaya et al., 2005). Differences in water stress puts on all of the body's physiological functions, and prolonged drought may kill a whole crop. Similarly, watering too much leads to an oxygen shortage, which damages growth of entire plants (Kirnak and Demirtas, 2006).

Numerous biotic and abiotic factors are currently limiting crop productivity and production, which has an adverse effect on the amount and quality of crop yield. Numerous pests, both insect and non-insect target cucurbits (Dhillon et al., 2005). Attacks on crop can take many different forms, such as defoliation of the leaves, damage to the roots and blossoms, deterioration of the crop stand, and finally a decrease in the crops economic value (Kumar et al., 2024). Many pests, including flies and mites, can infest cucumber plants, causing growth inhibition, delayed flowering, sucking in juice, leaf destruction, and the spread of viral infections, among other effects that can reduce production (Hegab et al., 2016).

The most common vegetables grown in protected cultures are tomatoes, green vegetables, cucumbers, red cabbage, yellow and red bell peppers, broccoli, and radish. In the northern plains of the nation, most vegetable types are cultivated in two growing seasons—the summer and the rainy season—and are open-pollinated. In India, the main method for growing vegetables is open-field farming. Crop grown in open regions are commonly affected by a range of pests and illnesses, which affects productivity and develops food of poor quality. The most popular type of tunnel for growing vegetables in the off-season is the high tunnel, though there are several others that are used all over the world. High tunnels are being utilized as an inexpensive method to grow vegetables during the off-season and prolong the season (Lamont et al., 2002).

Cucumbers are monocious, meaning that only one plant produces both the male and female flowers; however, certain plants might be having bisexual blooms (Perl-Treves, 2004). This suggests that factors such as temperature, plant hormones, and photoperiod influence how sex is expressed (Yamasaki et al., 2005). Every cucurbit is well recognized for its sexual expressions. Typically, male flowers emerge first, and then female or bisexual blooms. Numerous factors, including genetic, hormonal, and environmental ones, can affect a flower's specific sex type. Gibberellin, ethylene, and auxin have all been the subject of several studies due to their significant impact on the sex phenology of various cucurbit species. Since ethylene has been shown to have a major role in the induction of female flowers in many cucurbit plants, more endogenous ethylene will be needed in this circumstance to produce more female flowers. As ethrel is applied to plants, endogenous ethylene is released. In this situation, ethrel is linked to the synthesis of endogenous ethylene. Salicylic acid is crucial plant hormone for protecting plants from biotic and abiotic stress through physiological, morphological, and biochemical processes. Salicylic acid's functions in transpiration, photosynthesis, iron transport and uptake, as well as plant growth and development (Abbas et al., 2025).

Considering the demonstrated role of cucumber genotypes in response to salicylic acid in anti-insect tunnel enhancing production of cucumber (Cucumis sativas L.), this study was designed with the following objectives:

- To find out the best genotypes of cucumber for off season production in anti-insect tunnel.
- To find appropriate level of salicylic acid for better growth and production of cucumber.
- To study the interaction between the cucumber genotypes and salicylic acid on the performance of off season production of cucumber in anti-insect tunnel.

Materials and Methods

Experimental Site and Design

The experiment on “offseason production of cucumber genotypes in response to salicylic acid in anti-insect tunnel” was performed at the Agriculture research farm Malakandir, The University of Agriculture Peshawar during August-December, 2024. Experimental trail was accomplished in randomized complete block design (RCBD) with two factors. i.e., cucumber genotypes and salicylic acid levels.

Anti-insect tunnel is that tunnel which is used to protect plants from insects and crop is not affected by insect and it allow air and light to pass through. Anti-insect tunnel is well-known for their usage as physical control against insects like as trips, whiteflies, and leaf miners in vegetable farming. By growing crop in anti-insect tunnel once can earn good profit of his crop especially during off season. The experiment was carried out in anti-insect walk-in tunnel. The length of anti-insect tunnel was 100 ft while width was kept 12 ft. Sowing of seeds were carried out in 15^{th} of August 2024. Plant to plant distance were 1 ft while row to row distance were 1.5 ft. Vertical training were done in anti-insect tunnel on wires to grow cucumber plant upward for better growth and yield. All cultural techniques, such as weeding, irrigation, hoeing, and fertilizer application, were executed consistently. The performance of cucumber genotypes (parthenocarpic in nature having gynoecious flowers) was tested in anti-insect tunnel in response to foliar application of salicylic acid. Plants that produce exclusively female flowers or flowers that are predominantly female are referred to as gynoecious flowers. These flowers do not generate both ovules (female reproductive structures) and pollen (male reproductive structures), indicating that they are not bisexual.

Factor A: Cucumber genotypes
G1= SV 8552
G2= SV 8047
Factor B: Salicylic acid concentrations (mM)
C1= 0
C2 = 0.5
C3 = 1.0
C4 = 1.5
C5 = 2.0

Data will be collected of the following parameters:

Number of leaves plant^{-1}

The number of leaves plant-1 was calculated from a selected plant from every treatment in each replication. Then the average no. of leaves was computed.

Vine length (cm)

Five plants were selected randomly from every treatment of each replication and their vine length were noted through measuring tap, then their average was worked out.

Number of branches plant^{-1}

Five plants were selected randomly from every treatment of each replication and their branched were noted, then average no. of branches were computed.

Days to 1st flowering

Days from seed sowing to the 1st flowering were recorded for every treatment in each replication and their average was calculated.

Days to 1st fruit set

Days from seed sowing to the 1st fruit set were determined for every treatment in each replication and their average was computed.

Number of fruits plant^{-1}

Number of fruits plant^{-1} were coming in from randomly choose five plants from every treatment in each replication. Then average number of fruits were calculated.

Single fruit weight (g)

Five randomly picked fruits from each treatment and replication were weighed using a digital balance. Then average fruit weight was calculated**.**

Fruit diameter (mm)

Five fruits were randomly picked from each treatment in each replication and their diameter were measured using Vernier caliper. The average diameter for each fruit were calculated.

Fruit volume (cm^3)

Five fruits were randomly picked from every treatment in each replication and their volume were measured using water displacement method. The average volume for each fruit were computed.

Yield (tons ha^{-1})

The yield in tons' ha^{-1} was determined using the following formula;

$$\text{Yield tons ha}^{-1} = \frac{\text{Yield per plot (kg)}}{\text{Area of plot m}^2} \times \frac{10000 \text{ m}^2}{1000}$$

Statistical Analysis

For the analyzing the data (statistical software) STATISTIX 8.1 was used. Analysis of variance (ANOVA) was performed on all the data under the experimental design of RCBD two factors with spilt plot arrangements. Means were separated by the least significant difference (LSD) test at 1 and 5% level of significance, where needed (Khan et al., 2025).

Result and Discussion

Number of leaves plant^{-1}

Data on the number of leaves plant^{-1} of cucumber genotypes in response to salicylic acid are assigned in the **Table.1**, The analyzed statistics showed that salicylic acid (SA) concentrations and genotypes had significantly influenced the no. of leaves plant^{-1} while interaction between SA and genotype had non-significant influenced. Data regarding SA levels (Table 4.1) showed that no. of leaves plant^{-1} were raised to the maximum (63.33) in plants treated with SA at 2 mM, that was statistically similar to no. of leaves (57.50) that were noted in plants treated with SA at 1.5 mM Minimum no. of leaves plant^{-1} (47.50) were point out in plants dusted with distilled water (control). Among genotypes; highest no. of leaves plant^{-1} (56.99) were noted in cucumber genotype SV8552), while least no. of leaves plant^{-1} (51.33) were noted in genotype SV8047. The findings showed that the plants treated with SA resulted in more leaves than the control. SA can stimulate cell division and expansion, which might increase the area and no. of the leaves (Riyas-San Vicente and Plasencia., 2011). In many types of vegetable crops, including tomatoes, SA treatment increased leaf area (Souri and Tohidloo., 2019). SA treatments improve lettuce's leaf area (Kiremit., 2024). Antioxidants like peroxidase and superoxide dismutase are produced when SA is present, protecting leaves from oxidative damage (Chao et al., 2019). SA regulates hormones like auxin and cytokinin, which are essential for cell division and growth, it may have a positive impact on the no. of leaves on cucumber plants (Khan et al., 2025).

Vine length (cm)

Vine length (cm) of cucumber genotypes in response to salicylic acid data are given in the **Table 1**. ANOVA showed that salicylic acid concentrations and cucumber genotypes had significant impact on the vine length. While their relationship was found non-significant. Among genotypes, maximum vine length (276.0 cm) was obtained from cucumber genotype SV8552 plants, while minimum vine length (257.3 cm) was noted in genotype SV8047. Data regarding salicylic acid levels, showed that maximum vine length (308.3 cm) was noted in plants that were sprayed with SA at 2 mM, followed by vine length (291.7 cm) in genotypes that were treated with SA at 1.5 mM Minimum vine length (216.7 cm) was found in plants that were treated with distilled water (control). Cucumber plants treated with SA levels grow taller as compared to control. SA is crucial for plant growth and helps it tolerate stress (Yang et al., 2011). Zamaninejad et al. (2013), observed that a salicylic acid directly resulted in taller plants in corn. Youssef et al. (2017), also reported that a plants of lettuce sprayed with foliar application of SA attained maximum height as compared to control. In current study SA produced more no. of leaves as compared to control which might have resulted in efficient photosynthesis and hence caused significant increase in vine length of cucumber genotypes. Similarly, SV 8552 produced taller plants that might be due to its genetic make-up and its better response to the prevailing microclimate condition in anti-insect tunnel.

Number of branches plant^{-1}

Data concerning number of branches plant^{-1} in cucumber genotypes are displayed in **Table 1.** Salicylic acid concentrations and genotypes had significantly affected number of branches in cucumber genotypes while relationship among SA and genotypes had no significant effect on number of branches in cucumber genotypes. Mean data of SA revealed that highest no. of branches plant^{-1} (5.0) were observed in plants misted with SA at 2 mM that seemed statistically similar to no. of branches (4.1) in plants applied with SA at 1.5 mM and least branches (2.8) were recorded in plants that were misted with distilled water (control). Among cucumber genotypes; highest no. of branches plant^{-1} (4.2) were observed in genotype SV8552 while least branches (3.2) were recorded in plants of genotype SV8047. The study showed that plants sprayed with salicylic acid produced more branches as compared to control. The result could be due to the fact that salicylic acid is a plant hormone that regulates a number of crop physiological processes and changes how plants react to diseases, pathogens, drought, salt, chilling, and heat stresses (Bastias et al., 2018; Hasanuzzaman et al., 2017). The current result is in agreement with that of Mady (2009), they reported that plant treated with SA produced branches in greater numbers in comparison to control.

Days to 1st flowering

Days to 1st flowering in cucumber genotypes are displayed in **Table 1.** The statistics indicated that salicylic acid had significantly influenced days to 1st flowering of cucumber genotypes while genotypes and its interaction with salicylic acid had no significant influence on days to 1st flowering. Among cucumber genotypes findings indicated that more days to 1st flowering (29.5) were observed in cucumber genotype SV8552, while less days to 1st flower appearance (29.3) were noted in cucumber genotype SV8047. Data regarding days to 1st flowering in response to salicylic acid levels shows that more days to 1st flowering (30.1) were noted in plants spraying with distilled water that seemed statistically equivalent to days to 1st flowering (29.8) noted in plant treated with SA at 0.5 mM Less days to 1st flowering (28.5) were recorded in in plant sprayed with SA at 2 mM It is clear from the mean values of days to 1st flowering that salicylic acid levels induced early blooming of cucumber in comparison to control. It could be for the reason that salicylic acid induce flowering (Shabanian et al., 2019). The balance of plant hormones, such as auxins, gibberellins, and ethylene, is influenced by SA. These hormones are essential to the flowering process. Gibberellins, which induce flowering, are synthesized more readily when SA is present (Pigoley et al., 2023). SA encourages the growth and division of cells in the shoot apical meristem, which results in the development of flower buds. Plant under stress prolong flowering. SA encourages flowering by decreasing stress (Luo et al., 2022).

Days to 1st fruit set

Days to 1st fruit set of cucumber genotypes in response to salicylic acid are shown in the **Table 1**. The analyzed data showed that salicylic acid had highly significantly affected days to 1st fruit set of cucumber genotypes while genotypes and its interaction with salicylic acid had non-significant effect on days to 1st fruit set**.** Mean data showed that days to 1st fruit set (37.70) were noted in plants spraying with distilled water (control) that was statistically equivalent to days to 1st fruit set (37.30) that were recorded in genotypes treated with SA at 0.5 mM Minimum days to 1st fruit set (34.50) were noted in plants treated with SA at 2.0 mM In case of cucumber genotypes maximum days to 1st fruit set (36.54) were noted in cucumber genotype SV8552, while minimum days to 1st fruit set (36.46) were recorded in cucumber genotype SV8047. It might be due to the fact that SA promotes the expression of genes related to the growth of flowers and fruits. Auxins, gibberellins, and ethylene are among the plant hormones that are influenced by SA. These hormones are essential for fruit set and subsequent growth. SA encourages an earlier fruit development by decreasing various stresses though biotic or abiotic (Luo et al., 2022). SA can increase photosynthetic activity, providing more energy for fruit development and leading to earlier fruit set. SA increases the amount of chlorophyll, which improves photosynthetic efficiency and speeds up the accumulation of nutrients and energy required in the production of flowers and fruit (Oliveira et al., 2023). By stimulating antioxidant enzymes, SA reduces the negative effects of stresses and hence causes early fruit set (Song et al., 2023).

Number of fruits plant^{-1}

Number of fruits plant^{-1} of cucumber genotypes in response to salicylic acid are stated in the **Table 2**. The ANOVA revealed that salicylic acid concentrations had significantly altered the fruits plant^{-1} in cucumber genotypes. While genotypes and interaction between salicylic acid and genotypes had non-significant effect on fruits plant^{-1} in cucumber genotypes. Data regarding SA levels showed that more fruits plant^{-1} (16.5) were noted when the plants was sprayed with SA at 2 mM, followed by fruits plant^{-1} (14.3) that was noted in plants that are treated with SA at 1.5 mM Least fruits plant^{-1} (8.3) were recorded in plants that are sprayed with distilled water (control). Among genotypes; more fruits plant^{-1} (13.5) were obtained from cucumber genotype SV8552, while least fruits plant^{-1} (12.4) were observed from cucumber genotype SV8047. It might be due to the reason that the formation of flowers is stimulated by salicylic acid, which increases fruit set. described the mechanism of SA and came to the conclusion that salicylic acid acted as a chelating agent to initiate flowering. SA-treated tomatoes produced more fruit than non-treated plants because there were more clusters per plant (Javaheri et al. 2012). Our outcomes are in agreement with Naeem et al. (2020); they noted that foliar spraying of SA improved number of fruits plant^{-1} in tomato. Genotype SV 8552 resulted in maximum no. of fruits that might be its superior genetic make-up as compared to other tested genotype in relation this particular trait of fruit set.

Single fruit weight (g)

Single fruit weight (g) of cucumber genotypes in response to salicylic acid are stated in **Table 2**. The results of the analysis demonstrated non-significant difference of SA, genotypes and interaction between SA and genotypes on single fruit weight of cucumber genotypes. The findings concerning single fruit weight (g) showed that there was no significant variation in single fruit weight (g) in response to SA, genotypes and their interaction. It is evident from the findings that non-significant variation might be due to the genetic make-up of plants and varietal characteristics of this self-pollinated genotypes and hence were not significantly affected by salicylic acid genotypes. Our result is in contrast with Nada and Abd El-Hady (2019), they found that foliar application of SA improved weight of fruit in cucumber.

Fruit diameter (mm)

Fruit diameter (mm) in cucumber genotypes are presented in **Table 2.** Salicylic acid levels significantly affected fruit diameter (mm) in cucumber while genotypes and interaction between salicylic acid and genotypes had no significant influence on fruit diameter in cucumber. Among genotypes; maximum fruit diameter (35.5 mm) was recorded in cucumber genotype SV8552. Minimum fruit diameter (35.2 mm) was noted in cucumber genotype SV8047. Data regarding fruit diameter response to salicylic acid shows that maximum fruit diameter (36.7 mm) was recorded in plant sprayed with SA at 2 mM. While minimum fruit diameter (34.6 mm) was noted in distilled water (control).SA can increase cell wall loosening, allowing for cell expansion and growth leading to increase fruit growth and diameter. Abd et al., (2024) also found a significant increase in fruit diameter with the application of SA in comparison to control. The foliar spraying of salicylic acid resulted in increase in bulb diameter of garlic (Khan et al., 2024). Fruit diameter in peaches was considerably increased with foliar application of SA (Ali et al., 2021). Our result is in agreement with Naeem et al. (2020), they also noted that the foliar spraying of salicylic acid increased fruit diameter in tomato. There was no significant variation in fruit diameter (mm) among cucumber genotypes, which was uniformly attributed to both environmental conditions and the genotypes' inherent varietal characteristics, indicating that these factors may stabilize fruit size across varieties.

Fruit volume (cm^3)

Fruit volume in cucumber genotypes are introduced in **Table 2.** Salicylic acid levels significantly influence fruit volume (cm^3) in cucumber while genotypes and interaction between salicylic acid and genotypes had no significant effect on fruit volume (cm^3) in cucumber. Among genotypes; maximum fruit volume (186.5 cm^3) was recorded in cucumber genotype SV8552. Minimum fruit volume (182.7 cm^3) was noted in cucumber genotype SV8047. Data regarding fruit volume in response to salicylic acid demonstrated that maximum fruit volume (202.5 cm^3) was observed in plants spraying with SA at 2 mM, followed by (186.9 cm^3) was noted in plant spraying with SA at 1.5 mM While minimum fruit volume (171.6 cm^3) was noted in plant treated with distilled water (control). SA can have increased fruit weight and diameter, and hence resulted in an increase in the volume of the fruit. SA has the ability of delaying the ripening process in fruits, thereby extending their growth time and maybe increasing their size. SA may help plants become more resistant to a number of abiotic stresses, which can have a beneficial effect on fruit development and growth and resulted in larger fruits (Tucuch-Haas et al., 2017). The findings revealed that there was no significant variation in fruit volume within the analysed cucumber genotypes, indicating that fruit volume is mainly determined by varietal traits, and that both genotypes responded similarly to the current environmental conditions.

Yield (tons ha^{-1})

Total yield (tons ha^{-1}) of cucumber genotypes in response to salicylic acid are demonstrated in the **Table 2.** The data analysis indicated that salicylic acid had significant influenced on yield (tons ha^{-1}), while genotypes and their interaction with salicylic acid had non-significant effect on yield. Mean data demonstrated that maximum yield (104.2 tons' ha^{-1}) was observed in plants spraying with SA at 2 mM, that seemed statistically similar to yield (88.5 tons' ha^{-1}) that was noted in plants spraying with SA at 1.5 mM Minimum yield (49.4 tons' ha^{-1}) was observed in plants treated with distilled water (control). In case of genotypes; maximum yield (83.3 tons' ha^{-1}) was noted in cucumber genotype SV8552, while minimum yield (74.2 tons' ha^{-1}) was noted in cucumber genotype SV8047. SA resulted enhance vegetative and reproductive attributes including fruit weight, number and diameter and hence accused higher yield as compared to untreated plants. SA increases resistance to biotic stresses like disease and abiotic stresses such as drought etc., protecting plants and increasing yields. Plants sprayed with SA had maximum yield as compared to control plants. SA may improve a plant's ability to use water, particularly under stressful situations, increasing production (Abbas et al., 2025). Our result is in agreement with Metwally et al. (2013), they stated that the foliar spraying of SA increased total yield of strawberry. Similarly, genotype SV8552 produced high yield as compared to genotype SV8047 that might be due to its superior inheritance and its responses to the specific micro climate condition in anti-insect tunnel during offseason. Genotype SV8552 enhanced no. of leaves, vine length, no. of branches (Table 1) and therefore resulted in higher yield in comparison to other tested genotype under certain specific agro-climatic environments.

Conclusions and Recommendations

Salicylic acid sprayed at 2 mM concentrations resulted in maximum leaves plant^{-1}, vine length, branches plant^{-1}, minimum days to 1st flowering, days to 1st fruit set, maximum fruits plant^{-1}, single fruit weight, fruit diameter, fruit volume and yield of cucumber genotypes as compared to other treatments. Cucumber genotype SV8552 resulted in maximum leaves plant^{-1}, vine length, branches plant^{-1}, days to 1st flowering, days to 1st fruit set, fruits plant^{-1}, single fruit weight, fruit diameter, fruit volume and yield as compared to genotype SV8047. Based on the significant findings and subsequent conclusions; the following recommendations are made: Salicylic acid at the rate of 1.5 mM is recommended for better production cucumber genotypes under anti-insect tunnel. Genotype SV8552 is recommended for better production in anti-insect tunnel.

Table 1: Number of leaves plant^{-1} (NLP), Vine length (VL), Number of branches plant^{-1}(NBP), Days to first flowering (DTFF), Days to first fruit set (DTFFS) cucumber genotypes as affected by salicylic acid concentrations.

Salicylic acid concentrations (mM)	NLp^{-1}	VL (cm)	NBp^{-1}	DTFF	DTFFS
0	47.50 C	216.7 E	2.8 C	30.1 A	37.70 A
0.5	49.99 BC	246.7 D	3.1 BC	29.8 AB	37.30 A
1.0	52.50 BC	270.0 C	3.3 BC	29.5 AB	37.00 A
1.5	57.50 AB	291.7 B	4.1 AB	29.0 BC	36.00 B
2.0	63.33 A	308.3 A	5.0 A	28.5 C	34.50 C
LSD P≤ 0.01 LSD P≤ 0.05	8.56	16.40	1.17	0.89	0.74
Cucumber Genotypes					
SV 8552	56.99 a	276.0 A	4.2 A	NS	NS
SV 8047	51.33 b	257.3 B	3.2 B	NS	NS
LSD P≤ 0.01 LSD P≤ 0.05	 5.41	10.37	0.742	NS	NS

NS: Non-significant; Means followed by different lowercase letters differ significantly at p ≤ 0.05, while uppercase letters indicate significance at p ≤ 0.01.

Table 2: Number of fruits plant^{-1}(NFP), Single fruit weight (SFW), Fruit diameter (FD), Fruit volume (FV), Yield cucumber genotypes as affected by salicylic acid concentrations.

Salicylic acid concentrations (mM)	**NFp^{-1}**	**SWF (g)**	**FD (mm)**	**FV (cm^3)**	**Yield (tons ha-1)**
0	8.3 b	NS	34.6 C	171.6 C	49.4 c
0.5	12.2 ab	NS	35.1 BC	178.7 BC	73.3 bc
1.0	13.5 a	NS	35.3 B	183.3 BC	79.3 abc
1.5	14.3 a	NS	35.5 B	186.9 B	88.5 ab
2.0	16.5 a	NS	36.7 A	202.5 A	104.2 a
LSD P≤ 0.01	4.35			12.03	
LSD P≤ 0.05		NS	0.71		31.8
Cucumber Genotypes					
SV 8552	NS	NS	NS	NS	NS
SV 8047	NS	NS	NS	NS	NS
LSD P≤ 0.01 LSD P≤ 0.05	NS	NS	NS	NS	NS

NS: Non-significant; Means followed by different lowercase letters differ significantly at p ≤ 0.05, while uppercase letters indicate significance at p ≤ 0.01.

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