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Effects of Different Rootstocks and Storage Temperatures on Postharvest Quality of Eggplant (*Solanum melongena* L. cv. Madonna)

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Abstract: In addition to mitigating biotic and abiotic stress, grafting may influence the fruit quality and postharvest quality of eggplants. Few studies have been published on the influence of grafting on the postharvest performance of eggplant fruit. The current work examined the postharvest behavior of grafted and non-grafted eggplant cv. Madonna at 0 and 10 °C storage. Rootstocks include *Solanum grandiflorum* × *Solanum melongena* (SH), *Solanum torvum* (ST), *Solanum melongena* × *Solanum integrifolium* (SI), *Solanum integrifolium* (A), and *Solanum lycopersicum* cv. Optifort (O) and Emperador (E). The values for soluble solids, L^*, and b^* of pulp declined throughout storage. The pH of the fruit pulp decreased during storage at 10 °C. The lowest firmness was observed in fruit grafted onto E and O. The oxidation potential (OP) value decreased for fruit harvested from the O rootstock. At 0 °C, the oxidation potential (OP) value increased in fruit harvested from the A rootstock. Fruit firmness reduction at the end of storage in fruit grafted onto SH was less than in the other rootstocks and control plants. Overall, we found that the storage temperature had a more significant effect than the applied rootstock on the studied parameters of the eggplant fruits.

Keywords: browning; storage; postharvest; grafting; eggplant

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1. Introduction

Eggplant (*Solanum melongena* L.), a member of the *Solanaceae* family, is a non-climacteric fruit grown in many countries worldwide. China, India, Egypt, Turkey, and Iran are the largest eggplant producers in the world [1,2]. Worldwide annual production of eggplant was around 55 million tons in 2021. In terms of antioxidants, eggplant ranks in the top ten vegetables that are rich in minerals, antioxidants, flavonoids, phenolics, and vitamins.

The quality characteristics of eggplants include a bright white, green, violet, or variegated surface free of flaws, a dark green calyx, and the absence of seed or pulp browning. However, the quick moisture loss after harvest results in peel shrinkage, sepal and pedicel browning, and the loss of surface glossiness, thus restricting the marketability of this fruit under ambient storage conditions. Eggplants have a three-day maximum shelf life when stored at room temperature [3]. Various technologies such as cold storage, modified atmospheric storage, and gamma irradiation are frequently used to maintain eggplant quality and shelf life [4,5]. Low-temperature storage is a common technique for extending the shelf life of postharvest crops, as it preserves quality and nutritional value. However, because eggplant is a tropical fruit, it is susceptible to chilling when stored at temperatures below 7–10 °C for an extended period of time [2,6]. Pitting and scalding of the skin, pulp browning, seed darkening, and off-flavor development are typical signs of chilling injury in eggplant fruit [6]. Besides the sensitivity of eggplant to cold storage, other alternative techniques have extremely high handling and operating costs. Consequently, developing a low-cost, safe, and environmentally friendly technology for dealing with eggplant losses is essential.

Nowadays, vegetable grafting is widely used in agricultural production to prevent soil-borne diseases and abiotic and biotic stressors and to enhance the growth of scion and production [7]. Grafting vegetable can affect their fruit appearance, texture, flavor, and health-related components (such as minerals, vitamins, and carotenoids). Grafting eggplant has been practiced by several researchers such as Mozafarian et al. [8], Gisbert et al. [9], Moncada et al. [10], Maršic et al. [11], Sabatino et al. [12], Passam et al. [13], Khah [14], Pebriana et al. [15], and Rahman et al. [16]. Numerous contradicting accounts regarding changes in fruit quality caused by grafting exist [6], for example, some studies discovered no changes in overall fruit composition. Others found changes in color and taste [8–12]. It would be interesting to examine the various responses of grafted versus non-grafted eggplant fruits in terms of postharvest attributes and fruit longevity since grafting procedures are becoming increasingly popular.

The impact of grafting on the postharvest quality of vegetables is not fully understood. To date, there have been few reports concerning the improvement of postharvest quality by grafting vegetables, especially eggplants. A previous study showed that grafting tomatoes significantly affected fruit quality during storage [17]. Nevertheless, there are a few published reports on the effect of eggplant grafting on the fruit's postharvest performance. According to one of these reports, grafting during storage negatively affected eggplant vitamin C and flesh firmness [18]. Increased customer demand for high-quality vegetable crops necessitates a careful selection of rootstock–scion combinations that produce fruit of acceptable quality and shelf life, also in the case of eggplant. Therefore, this work aims to study the quality changes in eggplant grafted onto different rootstocks during its storage at 0 and 10 °C for nine days.

2. Materials and Methods

2.1. Plant Material, Treatments, and Storage

The experiment was carried out in an unheated plastic house at the Experimental and Research Farm, Department of Vegetable and Mushroom Growing, Hungarian University of Agriculture and Life Sciences, Budapest, (47°23′49′′ N, 19°09′10′′ E, 120 m a.s.l.). Eggplant cv. Madonna was used as a scion. The cultivar Madonna was purchased from Monsanto/Bayer Seed Company. Madonna is a purple eggplant hybrid, ideal for growers looking for a vigorous and open plant habit with a high-yield potential for indoor and outdoor cultivation. Its fruits are half long violet, with excellent quality both in shape and color, and they typically grow to a medium size. For grafting, six different rootstocks were used, including *Solanum grandiflorum* × *Solanum melongena* (SH), *Solanum torvum* (ST), *Solanum melongena* × *Solanum integrifolium* (SI), and *Solanum integrifolium* (A) as well as tomato rootstocks (*Solanum lycopersicum*), including cv. Optifort (O) and cv. Emperador (E), with the self-rooted (SR) rootstock as control. SH is a Japanese rootstock cultivar developed by Takii Seeds (Japan). It is resistant to *verticillium* wilt and *Fusarium* wilt and remains vigorous until later eggplant production. ST is produced by Kaneko (Japan) and is characterized as a vigorous cultivar. It shows high resistance to bacterial wilt, *Verticillium* spp., *Fusarium* spp., and nematodes. SI is developed by Kaneko (Japan). It has intermediate resistance to *Verticillium* wilt and *Fusarium* wilt. This rootstock is recommended for cooler areas or for planting in early spring. Optifort, developed by De Ruiter (The Netherlands), is suitable for the production of many varieties with extra vigor and is relatively cold resistant. It shows endurance and, under most circumstances, generates high production. It is highly resistant to the Tomato Mosaic Virus, *Fusarium* spp., *Pyrenochaeta lycopersici*, *Verticillium* spp., and has medium resistance to nematodes. The advantage of using this rootstock is that it can balance the crop, increase security in cold months, provide extra endurance, and give maximum production until the end of the crop. **Emperador** is developed by Rijk Zwaan (The Netherlands). This rootstock is suitable for producing tomatoes and eggplants and performs well in low temperatures. This rootstock has high resistance to *Verticillium* spp., *Fusarium* spp., *Pyrenochaeta lycopersici*, and *Dydimella lycopersici*, and it has intermediate-resistance nematodes.

The tube grafting method was used to graft eggplant seedlings (with an adequate diameter and 4–5 leaves) onto the rootstocks. Three weeks after grafting, all seedlings were transplanted into 10 L pots containing peat substrate placed in an unheated polyethylene greenhouse. The research was carried out as a factorial experiment using a completely randomized design (CRD). Mature fruits were harvested weekly based on their size, color, and glossiness. Harvested fruits were 15–17 cm long, weighing between 250–300 g each. For the storage experiment, undamaged and marketable fruits were selected five times during the harvesting period, delivered to the lab, and divided into two groups (48 fruits per rootstock in each temperature). Then, the fruits were packed in a low-density polyethylene bag and placed in temperature-controlled stores at 0 and 10 °C as well as with 80–85% relative humidity. Measuring was performed on the starting day and after 3, 6, and 9 days of storage to evaluate pulp color, firmness, pH, and soluble solids (Brix) values. On each sampling day, 12 fruits from each storage treatment were used.

2.2. Analysis of Fruit Quality during Storage

The color space was divided into three dimensions (L^*, a^*, b^*), namely L^* (lightness; 0 black and 100 white), a^* (red to green), and b^* (blue to yellow). The oxidation potential (OP) of the fruit pulp was measured using a Minolta Chroma CR-400 colorimeter (Minolta Corporation, Ltd., Osaka, Japan). Two fruits from each replication were sliced lengthwise with a straight-edged plastic knife. The pulp was measured immediately after cutting (L^*_0) and for 30 min (L^*_{30}) in the central and lateral zones. The oxidation potential (OP) was measured using the following formula [19]: $OP = L^*_{30} - L^*_0$.

The pH of the fruit was measured on two sides of each fruit in all combinations using a pH meter (HI-98128 pocket PHEP5 water resistant pH tester, Hanna Instruments Inc., Woonsocket, RI, USA). The firmness of each fruit was measured with a manual penetrometer (9643-4 Fruit Hardness Tester-Insize Co., Ltd., Suzhou, China), with a probe diameter of 0.5 cm and an insertion depth of 1.5 cm on the external surface of the fruit. The pressure value was expressed in kg/cm^3. In each treatment, the eggplant fruit flesh tissue was blended and then filtered through four layers of cotton gauze. Soluble solids were analyzed by placing a drop from the filter onto the prism glass of the refractometer (PAL-1 Brix 0–53 percent Digital Hand).

2.3. Data Analysis

The experiment was designed as a three-factor factorial: fruit harvested from grafted and non-grafted plants, two storage temperatures, and storage day. Statistix 8 software was used to statistically analyze the data (Tallahassee, FL, USA). Three-way analysis of variance was used to analyze the data, and means were separated using Tukey's test at a significance level of 0.05. Principal component analysis was carried out using R software.

3. Results

Pulp lightness (L^*) was significantly affected by storage day, rootstock, the interaction of storage day × rootstock, and temperature × rootstocks ($p < 0.01$). The results indicate that L^* significantly decreased on days 3 and 6 and then increased after 9 days of storage. The lowest L^* value was obtained on fruit from the E rootstock (Table 1).

As shown in Table 2, fruit from grafted plants showed an almost similar L^* value to fruit from self-rooted plants during all storage days, except for the L^* value of fruit from the O rootstock, which decreased on day 6 as compared to SR, and also the E rootstock on days 3 and 6 as compared to the same rootstock on day 0.

Table 1. Main effects of storage temperature, storage days, and rootstocks on eggplant fruit cv. Madonna.

Treatments		*L**	*a**	*b**	Oxidation Potential (OP)	pH	Firmness (kg/cm^3)	Soluble Solids (Brix)
Storage day	0	84.70 a	−3.98 a	29.59 a	7.72 a	5.50 a	4.17 a	5.10 a
	3	83.80 b	−3.56 a	28.55 ab	7.61 ab	5.29 c	3.75 b	4.90 b
	6	83.45 b	−3.96 a	27.75 b	5.86 c	5.37 b	3.53 bc	-
	9	85.15 a	−3.70 a	25.39 c	6.83 bc	5.42 b	3.58 c	-
Storage temperature	10 °C	84.30 a	−3.70 a	27.27 b	7.14 a	5.34 b	3.78 a	5.08 a
	0 °C	84.07 a	−3.94 a	28.09 a	7.08 a	5.44 a	3.68 a	4.92 a
Rootstock	SR	85.22 a	−4.13 a	26.33 b	7.57 a	5.39 ab	3.99 a	4.74 ab
	ST	84.71 a	−3.65 a	27.68 ab	7.63 a	5.37 b	3.88 a	5.06 ab
	SI	84.65 a	−3.62 a	28.19 a	7.20 ab	5.38 b	3.77 a	4.85 b
	SH	84.61 a	−3.75 a	27.61 ab	7.97 a	5.36 b	4.04 a	5.38 a
	O	83.37 ab	−3.97 a	27.87 ab	6.16 b	5.41 ab	3.42 b	4.59 b
	E	83.01 b	−3.86 a	28.00 ab	6.8 ab	5.43 ab	3.41 b	4.89 ab
	A	84.45 ab	−3.65 a	27.88 ab	7.37 ab	5.36 b	3.88 a	5.32 a
F value								
Storage day		**	ns	**	**	**	**	**
Temperature		ns	*	**	ns	**	ns	ns
Rootstocks		**	ns	ns	**	*	**	**
Storage day × Temperature		ns	ns	**	ns	**	ns	ns
Storage day × Rootstock		**	**	**	**	**	**	**
Temperature × Rootstock		**	ns	ns	**	ns	ns	ns
Storage day × Temperature × Rootstock		ns	*	ns	*	**	**	ns
Coefficient of variation (%)		2.74	17.96	8.43	19.12	1.62	14.95	9.46

Means in columns with the same letter do not differ according to Tukey's test at $p < 0.05$. ns, not significant, * significant at $p < 0.05$, ** significant at $p < 0.001$, SR = self-root; ST = *S. torvum*; SI = *S. melongena* × *S. integrifolium*; SH = *S. grandiflorum* × *S. melongena*; O = Optifort; E = Emperador; A = *S. integrifolium*. *L** (lightness; 0 black and 100 white); *a** (red to green); *b** (blue to yellow).

Table 2. Interaction effects of storage day and rootstocks on eggplant fruit cv. Madonna.

Storage Day	Rootstock	*L**	*a**	*b**	Oxidation Potential (OP)	pH	Firmness (kg/cm^3)
0	SR	84.89 a-d	−4.1 a–d	29.08 a–c	9.97 a	5.55 ab	4.93 a
	ST	84.03 a-d	−2.86 a–c	30.14 ab	9.67 a	5.53 a–c	3.51 c–f
	SI	85.26 a-c	−4.56 cd	29.05 a–c	7.13 a–c	5.44 a–f	3.56 c–f
	SH	84.62 a–d	−4.01 a–d	29.15 a–c	8.82 ab	5.46 a–e	4.56 ab
	O	83.91 a–d	−3.69 a–d	31.39 a	5.81 a–c	5.53 a	2.43 g
	E	86.36 ab	−4.71 d	27.69 a–e	5.81 a–c	5.56 a	2.77 fg
	A	84.65 a–d	−4.24 a–d	28.82 a–c	7.90 a–c	5.38 c–h	4.04 a–d
3	SR	82.76 b–e	−3.42 a–d	28.76 a–c	6.43 a–c	5.27 gh	4.04 a–d
	ST	83.84 a–d	−3.80 a–d	28.22 a–e	7.25 a–c	5.26 h	4.18 a–d
	SI	85.40 a–c	−3.72 a–d	29.06 a–c	5.68 a–c	5.29 f–h	4.28 a–d
	SH	84.19 a–d	−3.62 a–d	27.45 b–e	8.26 a–c	5.30 f–h	4.14 a–d
	O	85.33 a–c	−4.42 b–d	27.66 b–e	4.68 bc	5.31 f–h	4.21 a–c
	E	79.30 e	−2.70 ab	30.05 ab	3.80 c	5.33 e–h	4.16 a–d
	A	84.15 a–d	−2.60 a	29.33 ab	6.08 a–c	5.29 f–h	4.15 a–d

Table 2. *Cont.*

Storage Day	Rootstock	*L**	*a**	*b**	Oxidation Potential (OP)	pH	Firmness (kg/cm^3)
6	SR	85.56 a–c	−4.24 a–d	24.97 de	7.25 a–c	5.41 b–f	3.52 d–f
	ST	84.31 a–d	−4.21 a–d	28.20 bc	8.05 a–c	5.35 e–h	3.87 b–d
	SI	83.88 a–d	−3.57 a–d	28.96 ab	7.05 a–c	5.37 c–h	3.93 b–d
	SH	84.13 a–d	−3.54 a–d	27.80 a–d	8.43 a–c	5.35 d–h	3.58 c–f
	O	81.86 de	−4.19 a–d	27.83 bc	7.16 a–c	5.36 e–h	3.52 d–f
	E	82.56 c–e	−3.72 a–d	28.16 bc	8.73 a	5.38 d–h	3.11 e–g
	A	83.70 a–d	−3.85 a–d	28.59 a–c	8.07 a–c	5.36 d–h	3.60 c–f
9	SR	86.91 a	−4.54 cd	24.36 de	7.06 a–c	5.32 e–h	3.97 b–d
	ST	86.05 ab	−3.37 a–d	25.38 c–e	6.20 a–c	5.37 d–h	3.94 b–d
	SI	84.65 a–d	−3.07 a–d	26.44 b–e	8.25 a	5.41 b–g	3.45 c–f
	SH	85.74 a–c	−3.95 a–d	25.93 b–e	6.14 a–c	5.34 d–h	4.13 a–d
	O	83.88 a–d	−3.35 a–d	24.64 e	6.01 a–c	5.50 a–f	3.43 c–f
	E	84.04 a–d	−4.33 a–d	26.35 b–e	6.90 a–c	5.51 a–d	3.78 b–e
	A	85.55 a–c	−3.98 a–d	24.77 de	7.32 a–c	5.43 a–h	3.85 b–e

Means in columns with the same letter do not differ according to Tukey's test at $p < 0.05$. SR = self-root; ST = *S. torvum*; SI = *S. melongena* × *S. integrifolium*; SH = *S. grandiflorum* × *S. melongena*; O = Optifort; E = Emperador; A = *S. integrifolium*. *L** (lightness; 0 black and 100 white); *a** (red to green); *b** (blue to yellow).

The *L** of fruit from different rootstocks reacted differently to the temperature (Figure 1A). The *a** color value of fruit pulp ranged from −4.56 to −2.60 in SI × day 0 and A × day 3, respectively. The results show that the *b** value significantly decreased from 29.59 to 25.39 at the end of the storage day. Lower temperatures showed a higher *b** value for the fruit. Furthermore, according to the *b** value data, fruit from the O rootstock on harvesting day (day 0) had a more yellowish pulp color. The *b** value of fruit harvested from the O rootstock significantly decreased by storage day relative to day 0 as well as fruit from SR on days 6 and 9 as compared to day 0 and 3. All the fruit harvested from grafted plants had higher *b** values than the fruit from SR on storge day 6.

On day 6 of storage, the fruits had the lowest oxidation potential. The lowest oxidation potential (OP) values were observed in fruits obtained from the O rootstock (Figure 2; Table 1). The data analysis revealed that storage day × rootstock, temperature × rootstock, and storage day ×temperature × rootstock had a significant effect on fruit oxidation potential values (Table 1). On day 3, the fruit of the O rootstock had the lowest oxidation potential values as compared to SR on day 0 (Table 2). The interaction effect of rootstock and temperature showed that oxidation potential significantly increased in the fruit harvested from the A rootstock at 0 °C relative to 10 °C (Figure 1B). The highest oxidation potential value was observed in the SR, ST, and A rootstocks' fruits at 0 °C on day 0 (Figure 3C).

On day 3, the pH value of the fruits declined dramatically ($p < 0.01$), and then increased and remained steady on day 9. The fruits stored at 0 °C had a higher pH value than fruits stored at 10 °C (Table 1). The interaction effect of storage day and temperature was significant ($p < 0.01$). The pH value of fruit harvested from E was higher than that of SR on day 9 (Table 2). The interaction results of temperature, storage day, and different rootstocks indicate that the pH value of fruit from SR, ST, SH, O, and A significantly declined on day 9 at 10 °C as compared to fruits stored at 0 °C (Figure 3B). Similar results were obtained on day 6 for fruits harvested from the SR, ST, SI, E, and A rootstocks.

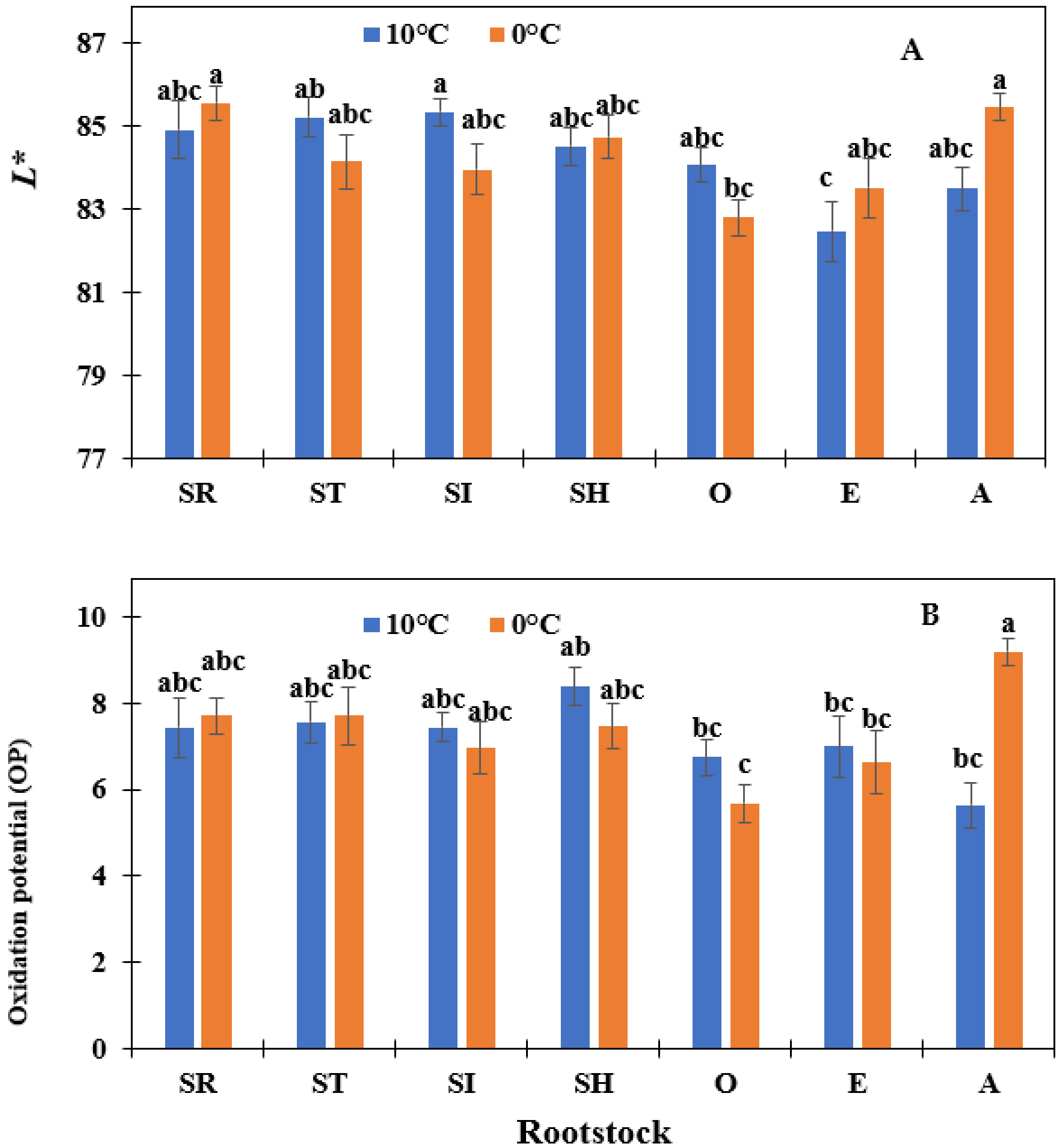

Figure 1. Effects of temperature storage and rootstock on the *L** value (**A**) and oxidation potential (**B**) of eggplant cv. Madonna. The means indicated with the same letter vertically were not significant according to Tukey's test at $p < 0.05$. SR = self-root; ST = *S. torvum*; SI = *S. melongena* × *S. integrifolium*; SH = *S. grandiflorum* × *S. melongena*; O = Optifort; E = Emperador; A = *S. integrifolium*.

Figure 2. Effect of different rootstocks on oxidation potential of eggplant cv. Madonna after harvesting. SR = self-root; ST = *S. torvum*; SI = *S. melongena* × *S. integrifolium*; SH = *S. grandiflorum* × *S. melongena*; O = Optifort; E = Emperador; A = *S. integrifolium*.

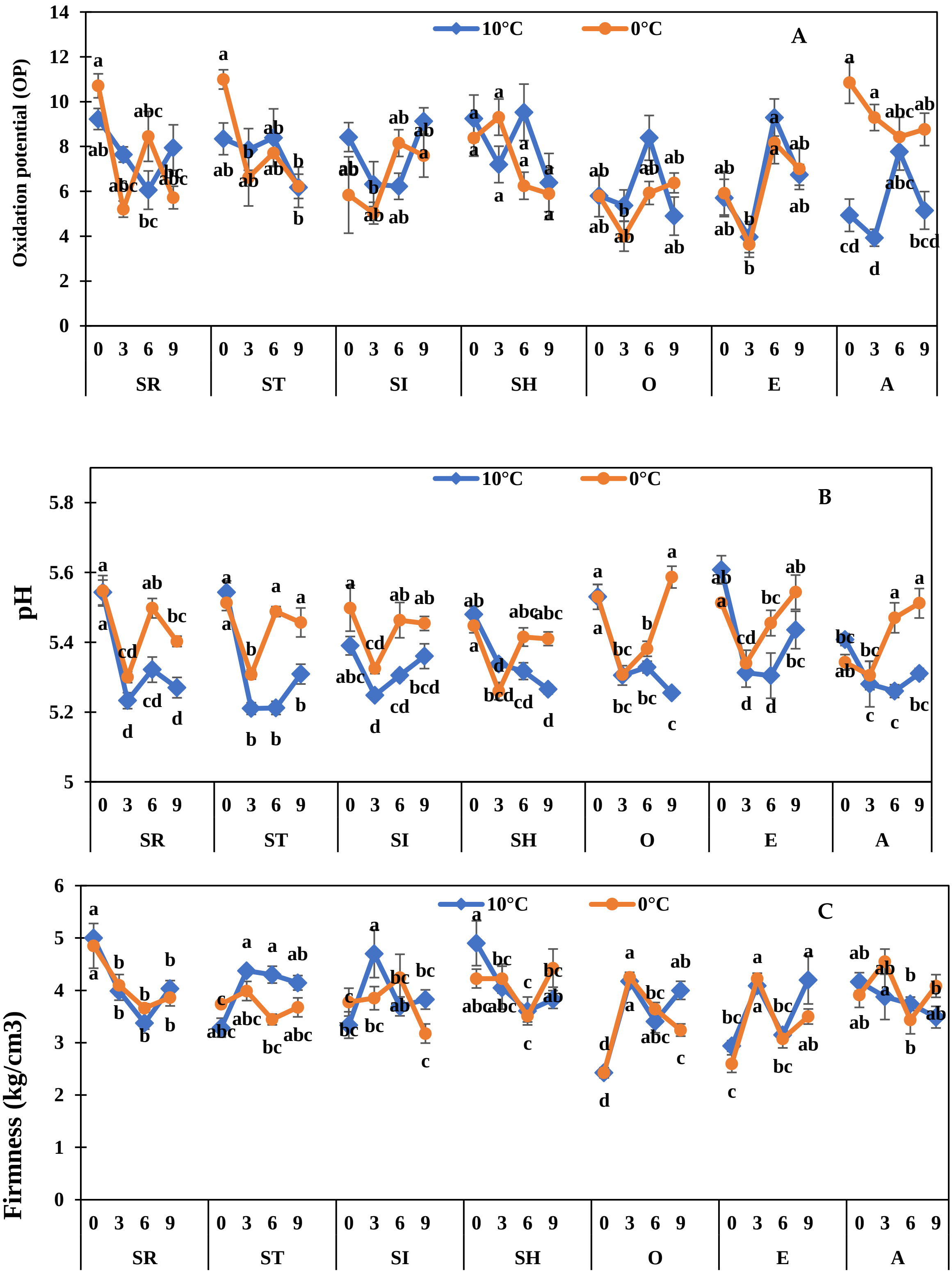

Figure 3. Effects of temperature, storage day, and rootstock on the oxidation potential (OP) (**A**), pH (**B**), and firmness (**C**) of the eggplant. The means indicated with the same letter vertically were not significant according to Tukey's test at $p < 0.05$. SR = self-root; ST = *S. torvum*; SI = *S. melongena* × *S. integrifolium*; SH = *S. grandiflorum* × *S. melongena*; O = Optifort; E = Emperador; A = *S. integrifolium*. The numbers 0 3 6 9 represent the following: 0 = day of harvest, 3 6 9 = days of storage.

As shown in Table 1, fruit firmness significantly decreased with storage day ($p < 0.01$). Lower fruit firmness values were obtained from O and E as compared to fruit harvested from SR and the rest of the rootstocks (Table 1). The effect of the rootstock × storage day interaction on firmness was also significant ($p < 0.01$). By the end of the storage day, fruit firmness decreased significantly, and this reduction in plants grafted onto SH was slightly less than that in non-grafted plants on day 9 (Table 2). As shown in Figure 3C, on day 0, the highest firmness value was observed in the fruit of non-grafted plants. The firmness change in the examined rootstocks was almost similar at both temperatures on days 0, 3, and 6 (except for ST and SI on day 3 and O on day 9).

The analysis of variance revealed that storage day, rootstock, and their interaction all affected the soluble solids value of the fruit (Table 1). The soluble solids value significantly decreased from the harvesting day to the third day of storage. The value for soluble solids did not differ between the grafted and the self-rooted plants, but fruit harvested from the A and SH rootstocks had higher soluble solids values than fruit harvested from SI (Table 1).

According to the principal component analysis (PCA) test in Figure 4, the first two components constituted 55.1% of the total variation. The first component accounted for 33.7% of the changes, while the second component accounted for 21.4%. It was revealed that the pH and oxidation potential levels were placed in the II coordinate zone and shared the highest resemblance, but *b** was positioned in the first zone; the soluble solids were located on the boundary of these two zones, acting as a mediator between the pH changes and the b changes. Additionally, the L_0 pulp was in the third region and firmness was in the fourth region, which were the opposite of the changes in pH and oxidation potential. It was also discovered that *a** was situated between the changes in *b** and firmness. The findings of the distribution associated with the storage temperature treatment also indicate that the distribution of the 0 °C temperature treatment was greater in the second zone, whereas the distribution of the 10 °C treatment was greater in the third and fourth zones. It is evident that the third and fourth zones are for storage circumstances at a temperature of 10 °C, and that the characteristics included in these sections are more closely associated with this temperature (Figure 4A). The rootstock distribution results also reveal that most of these values were placed in the middle of the coordinates and did not differ much from one another, with the exception of SI (Figure 4B).

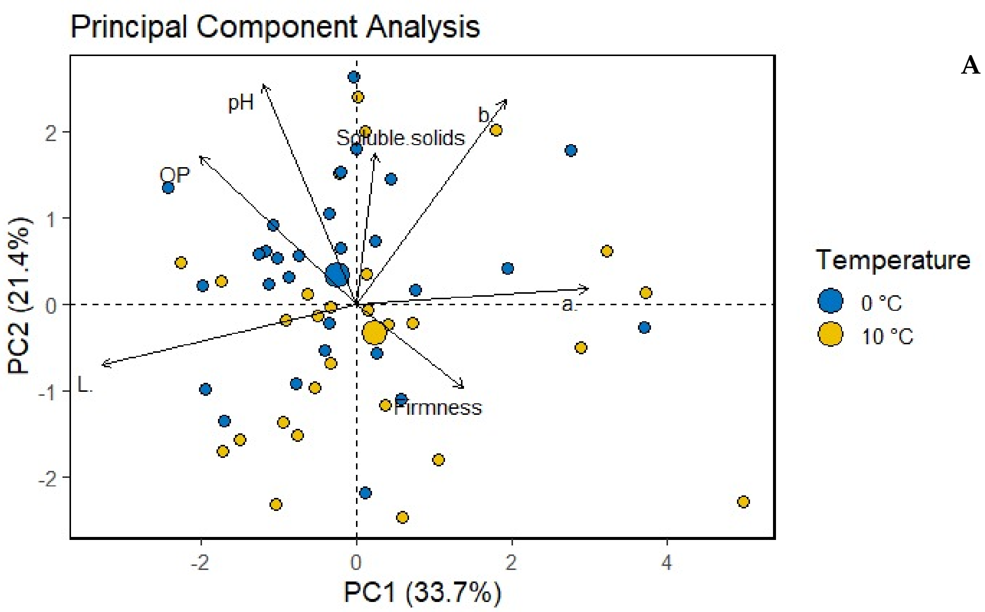

Figure 4. *Cont.*

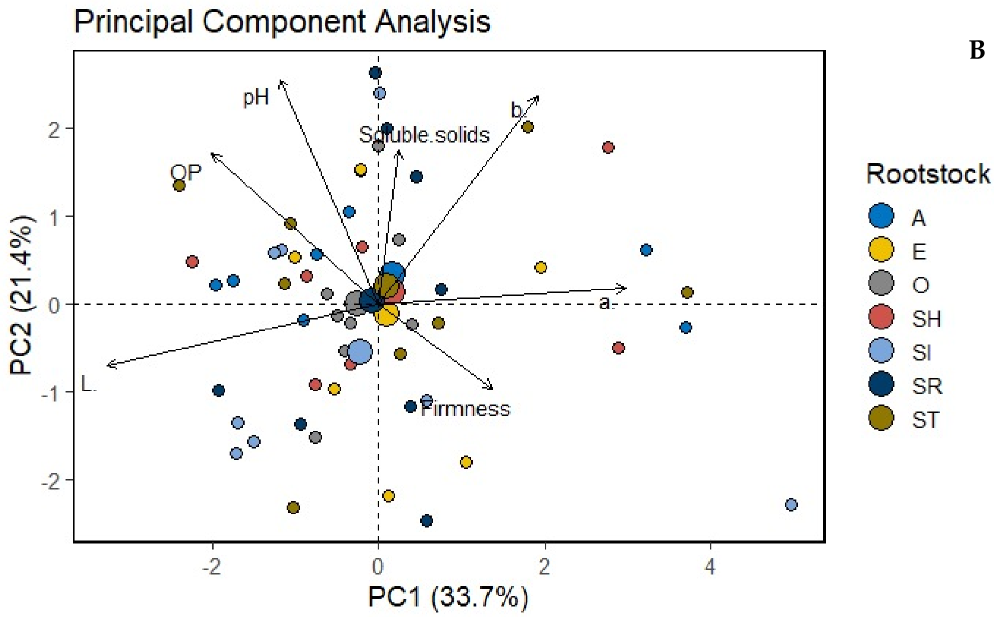

Figure 4. Principal component analysis for all parameter responses of eggplant to storage temperature (**A**) and rootstocks (**B**).

4. Discussion

Color and firmness greatly influence consumer desire, and increased fruit firmness extends the fruit's shelf life. Browning occurs due to reactions between phenolic compounds and oxidative enzymes during storage. It is correlated with long-term storage or chilling damage and significantly affects eggplant fruit quality [20]. The *L** value and fruit oxidation potential significantly decreased on day 3. Additionally, our findings indicate that the *L** and *a** values as well as the oxidation potential index were unaffected by temperature and the interaction of storage day × temperature. This result is contrary to that of Concellon et al. [21], who showed that the *L** value of eggplants remained constant throughout 15 days of storage at 10 °C but gradually decreased while they were stored at 0 °C. Fruit harvested from various rootstock–scion combinations reacted differently, depending on temperature and storage day.

No differences between grafted and non-grafted tomatoes and peppers were observed in fruit juice pH [22,23]. These findings are similar to those of Di Gioia et al. [24] and Nicoletto et al. [25]. In our experiment, a slight reduction was observed in the fruit juice pH of the grafted plants.

During storage, the firmness of fruits and vegetables is reduced owing to the activation of cell wall-destroying enzymes. The firmness of the eggplant fruits was reduced from the harvesting day to day 9 of storage. In agreement with our findings, Jha et al. [26] and Dadzie et al. [27] reported a decrease in the firmness of eggplant after storage, which was related to the eggplant shrinking and the epidermis layer. Moreover, the restriction in metabolic activities is connected with the decreased activity of cell wall destroying enzymes, resulting in firmness retention for a longer period [28]. Our results showed that temperature had no significant effect on fruit firmness. In addition to the effect of the scion genotype on firmness, the type of rootstock can also influence fruit firmness [29]. A reduction in fruit firmness was reported in the eggplant cv. BlackBell grafted onto *Solanum torvum* [30] and the cv. Tsakoniki grafted onto *Solaum torvum* and *Solanum sisymbriifolium* [18]. These results are similar to our findings, in which grafting onto the Emperador and Optifort rootstocks decreased the fruit firmness. On the other hand, the rest of the rootstocks had the same effects on fruit firmness as the fruit harvested from the self-rooted plants. Changes in hormone status as well as water and nutrient intake in grafted vegetables caused by certain rootstocks may cause changes in fruit firmness [31]. The difference could be related to the diverse root systems in different rootstock–scion combinations [18]. The effect of time × rootstock revealed that fruit firmness from different rootstocks was remarkably similar on a given day and decreased with storage. In line with our findings, Ozturk and Ozer [17] found that the fruit firmness of grafted and non-grafted plants was different on the harvest day and during storage.

The improvement of tomato fruit sweetness due to grafting is rarely reported [7]. Similarly to tomatoes, information on the taste components of eggplant fruits in connection with grafting is inconsistent. In line with our results, Lee et al. [32] and Khah [23] discovered that the *Solanum torvum*, *Solanum habrochaites*, and *Solanum lycopersicum* rootstocks did not affect eggplant fruit sugar. The lower concentration of soluble solids in the fruits of the grafted plants as compared to non-grafted plants was probably due to the higher water content in the grafted plants [33,34]. The soluble solids values of fruits harvested from grafted and non-grafted plants slightly decreased on the 3rd day of storage.

5. Conclusions

Our results demonstrated that the rootstock used for grafting, along with the storage temperature, certainly have an influence on the quality of eggplant fruits. Nevertheless, according to our findings, storage temperature had a greater effect on eggplant fruit quality than rootstocks. Our results showed that the pH of fruit pulp decreased at 10 °C storage. The oxidation potential value of fruit produced from plant grafted onto *Solanum grandiflorum* × *Solanum melongena* increased at the storage temperature of 0 °C. Furthermore, fruits grafted onto the *Solanum grandiflorum* × *Solanum melongena* rootstock lost less firmness after storage than fruits grafted onto other rootstocks. When grafting eggplant, it is therefore worth considering the effect of rootstocks on fruit postharvest quality in this regard as well. More studies are required to better comprehend the effect of grafting on the postharvest behavior of grafted eggplants.

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