**15.09.2021**

# TRIAL RESULT REPORT DETERMINING THE EFFECTS OF THE APPLICATIONS OF THREE DIFFERENT SOLUTIONS (FARMOXYN 1, 2, 3) PRODUCED BY SONOFARMA İLAC KİMYA SANAYİ TİC. LTD. ŞTİ ON THE PRODUCTIVITY AND QUALITY OF LETTUCE AND TOMATO PLANTS

The purpose of the experiment; The aim is to determine the effects of three different solutions (FARMOXYN 1, 2 and 3) on the yield and quality of plants in the investigation of their use in agriculture. In this trial, it was investigated whether FARMOXYN 1, 2 and 3 solution applications made during cultivation on lettuce and tomato plants, which are widely grown in our region, were effective on yield and quality criteria by comparing them with control plants.

## MATERIALS AND METHODS

This research was conducted between February 2021 and June 2021 at Bursa Uludağ University Faculty of Agriculture, Department of Horticulture, Application and Research Greenhouse and Post-Harvest Physiology Laboratory.

### 1. Material

In this research, two different tomato varieties (Nazlı F1 and Atakan F1) and lettuce (Lactuca sativa) belonging to the tomato (Lycopersicon esculentum L.) species were used as plant materials.

### 2. Method

In the trial, Three different solutions (Farmoxyn 1, 2 and 3) produced by Sonofarma İlac Kimya Sanayi Tic. Ltd. Şti were used. These doses; FARMOXYN 1 (1), 0.2%; Grouped as FARMOXYN 2 (2), 0.2% and FARMOXYN 3 (3), 10%. Seedlings without treatment were considered as the control group. Control group plants were treated with a large amount of water at the same time as other treatments.

### 2.1. Liposome Application

The solutions grouped just before planting tomato and curly lettuce seedlings in the greenhouse were 1 (0.2%); 2 (0.2%) and 3 (10%) were submerged. Application was made 5 times on tomato plants from planting to the beginning of harvest. Two applications were

made to curly lettuce plants. Applications continued with 15-day intervals in both plant groups. It was done as a foliar spray of 100 mL (for each variety, for each application dose) until flowering on tomatoes, and 200 mL for each application (for each variety, for each application dose) from fruit setting to harvest. In curly lettuce, 100 mL (for each application dose) was applied as foliar spray in each application.

**2.2. Analysis and measurements made on tomatoes**

Fruit length (cm), fruit diameter (cm), color determination, water soluble dry matter (WSS), titratable acid (TA) and yield per plant (kg) were analyzed and measured from the samples taken from the beginning of harvest.

**2.3. Analysis and measurements made on curly leaf salad**

Leaf length, root length, number of marketable leaves, number of non-marketable leaves, root length, root fresh weight, root dry weight, leaf fresh weight, leaf dry weight, leaf relative water content, color determination, chlorophyll determination were measured in the samples taken after harvest of curly lettuce. .

**3.1. Tomato Results**

**3.1.1. Fruit Size and Diameter**

The best result for the Nazlı variety was obtained from application number 1 and was statistically different from the other groups.

When the data of the Atakan variety were evaluated, the best results in terms of fruit size were obtained from application groups 1 and 2 and they were statistically in the same group. All treatment groups gave better results than the control group in terms of fruit diameter and were statistically in the same group.

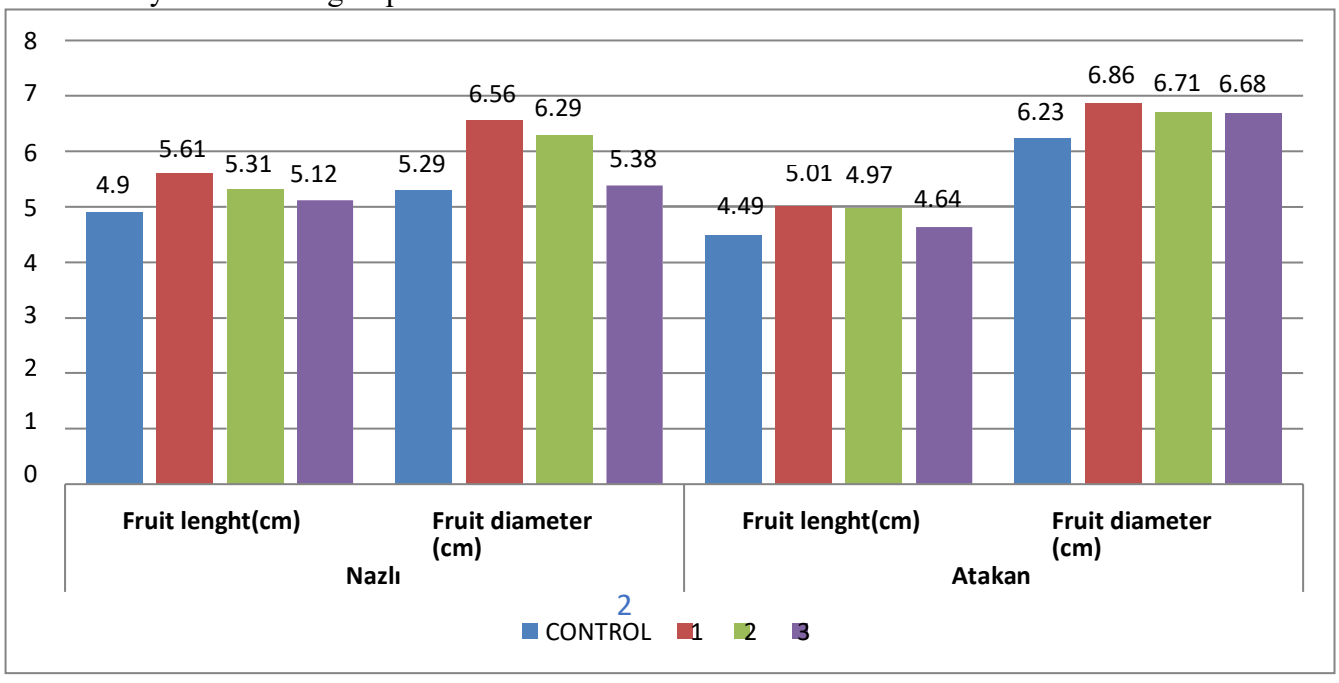

**Figure 1.** Fruit length and diameter measurements in tomatoes

### 3.1.2. Color Determination in Fruit

When looking at the brightness values for Nazlı F1 and Atakan F1 varieties, the application group number 1 is statistically different from the other groups and gives the best results. The intensity of red color in tomato fruits is one of the most important criteria in determining quality. When a value was evaluated, better results were obtained for Nazlı variety in applications 1 and 3 compared to other application groups and a statistical difference was determined. For Atakan variety, application number 1 gave the best results. This application is followed by application groups 2 and 3, and both are in the same statistical group. The lowest α values for both Nazlı and Atakan varieties were obtained from the control group. When b values are examined, the lowest value for Nazlı variety was obtained from application number 1. This value represents the yellow color. While the control group has the highest value, applications number 2 and 3 fall into the same statistical group. Although the lowest numerical value for the Atakan variety was obtained from application group number 1, no statistical difference was determined.

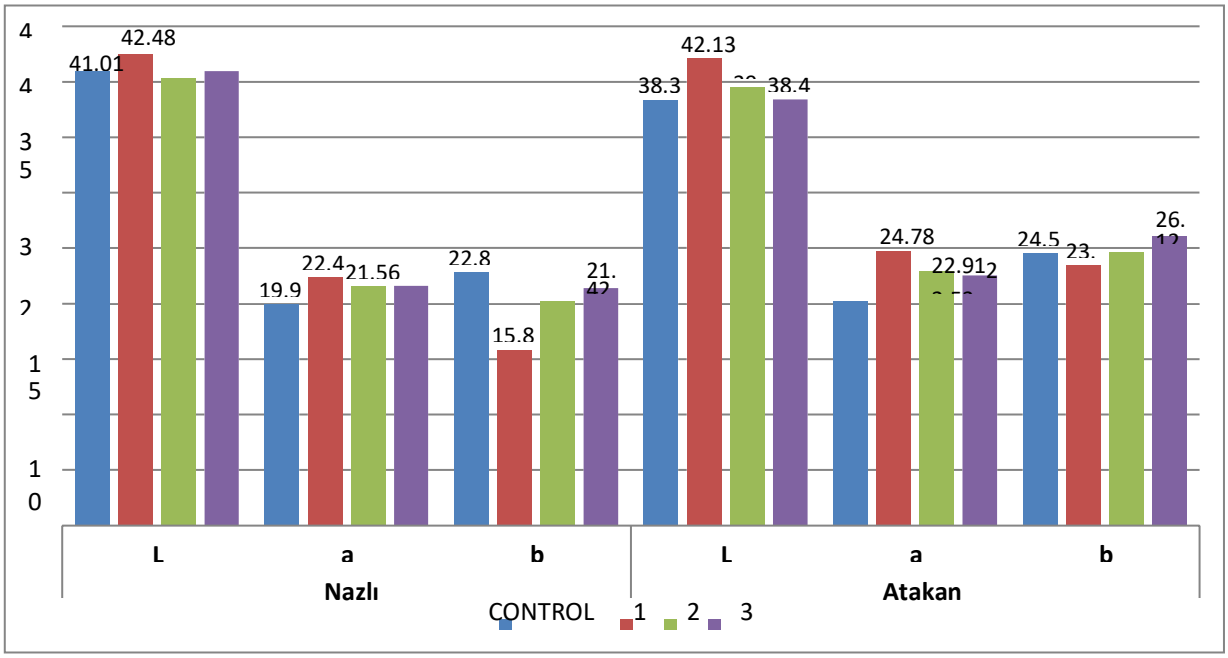


**Figure 2.** Color determination in tomatoes

### 3.1.3. WSDC Amount

While the statistically different and best result in terms of WSDC (Water Soluble Dry Matter) in Nazlı variety was obtained from application number 1, in Atakan variety application groups number 1 and 3 gave the best results and fell into the same statistical group.

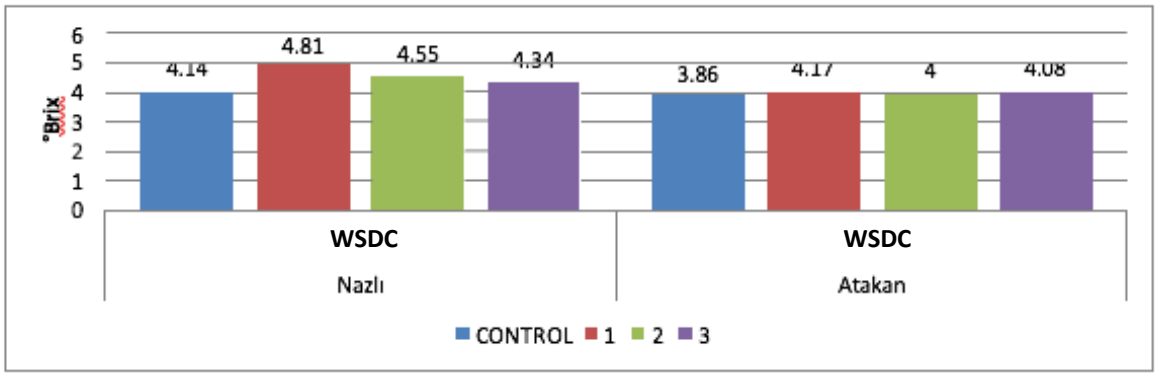


**Figure 3.** TSS values in tomato

### 3.1.4. TA Amount

When TA (Titratable acid) values were evaluated on a variety basis, it was determined that the best result was found in application number 3 and the lowest result was in application number 1. There was no statistical difference in the Atakan variety.

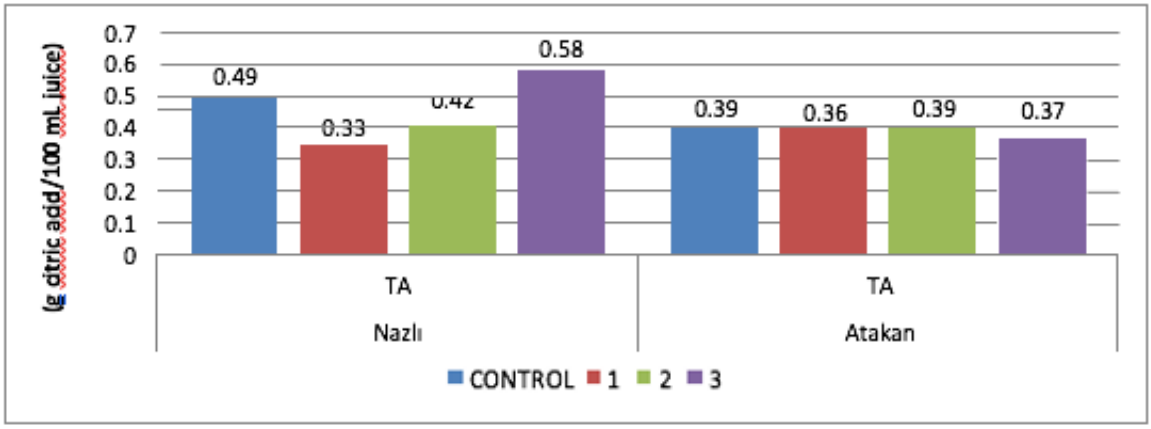


**Figure 4.** TA values in tomatoes

### 3.1.5. Yield per Plant (Kg)

Average yield was found by dividing by the number of fruits per plant. The best result of the Nazlı variety was obtained from application group number 1 with an average of 7.84 kg and a statistical difference was determined. The control and application groups number 2 are in the same statistical group and it was determined that the efficiency obtained from number 1 was lower than the efficiency obtained. In the Atakan variety, although application number 1 seems numerically superior with 6.68 kg, application number 2 falls into the same statistical group with 6.48 kg. The control and application groups number 3 gave lower results than application groups number 1 and 2.

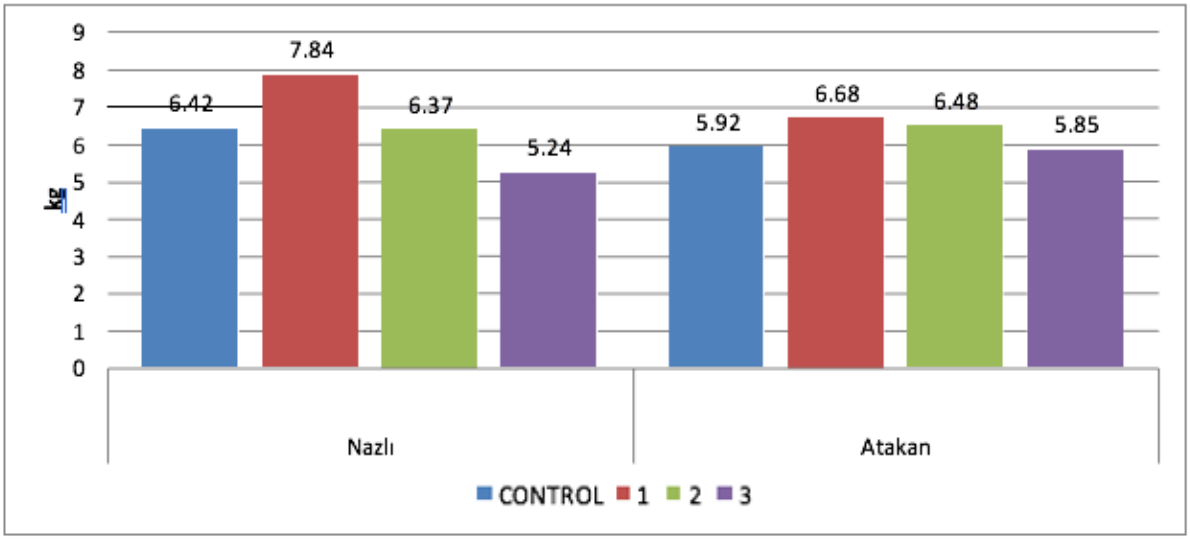


**Figure 5.** Yield per Plant in Tomato

## 3.2. Curly Leaf Salad Results

### 3.2.1. Leaf and Root Lengths

When all application groups are compared, the application group that gives the best results in terms of leaf and root length is number 1 and was found to be statistically different from the other groups. Applications 2 and 3 were in the same statistical group. The control group gave the lowest application result.

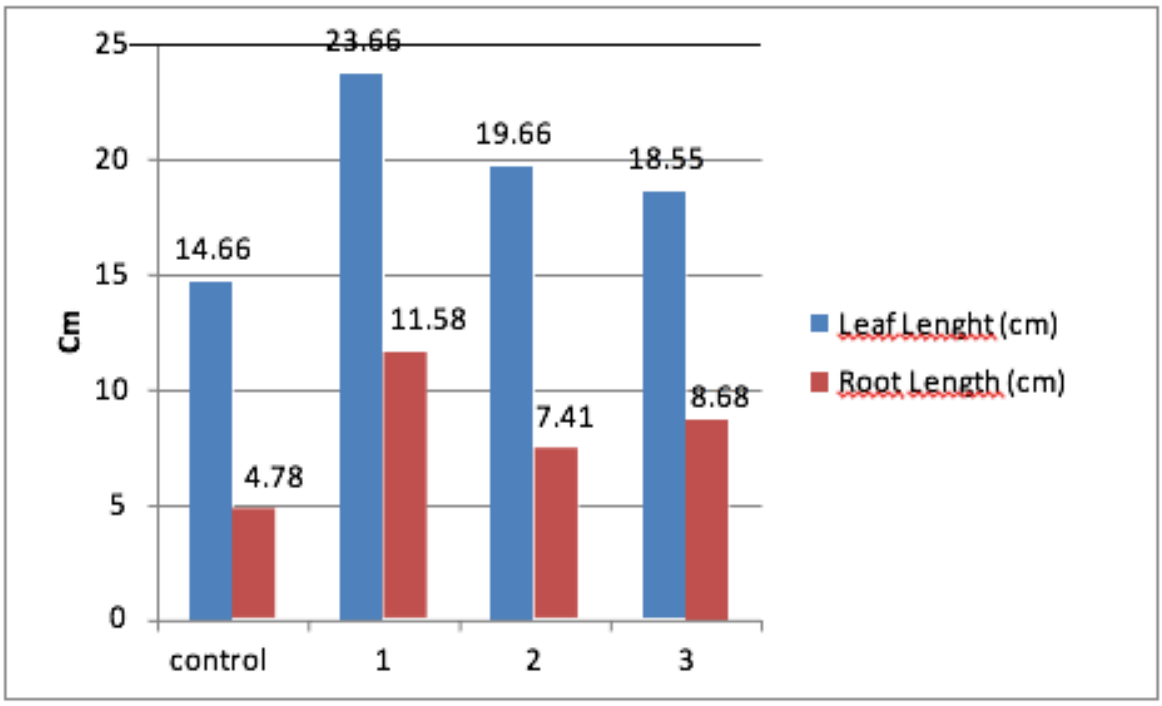


**Figure 6.** Leaf and Root Lengths in Curly Leaf Salad

### 3.2.2. Wet and Dry weights

Considering all weight parameters, application group number 1 is statistically different from all groups and the best result was obtained.

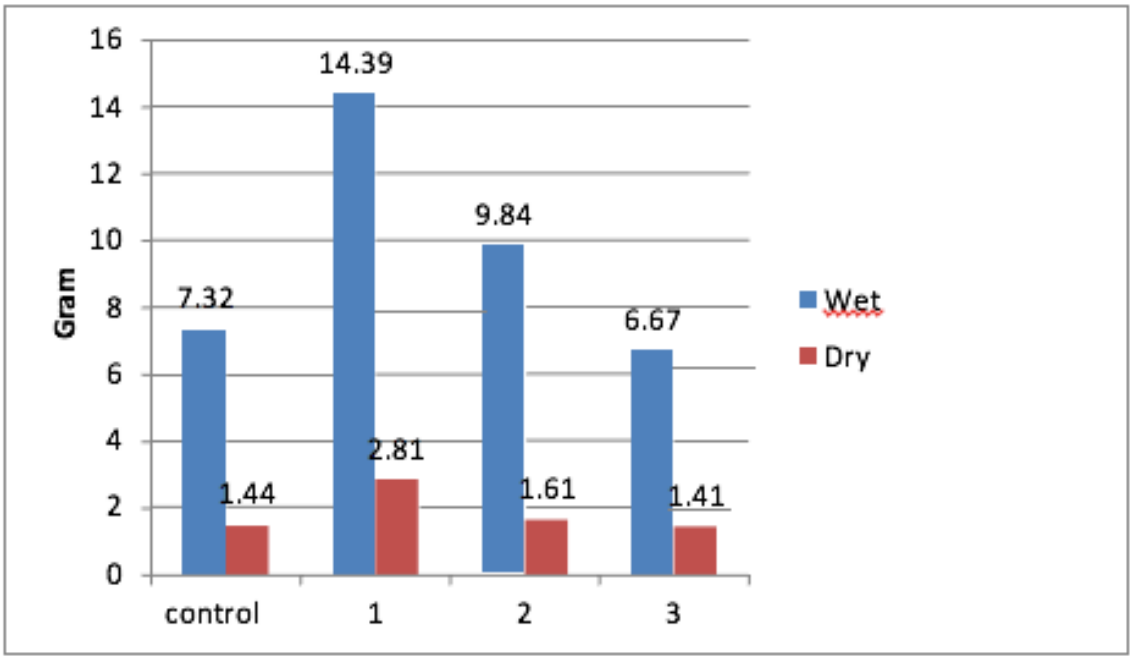


**Figure 7.** Fresh and Dry Weights of Roots in Curly Leaf Salad

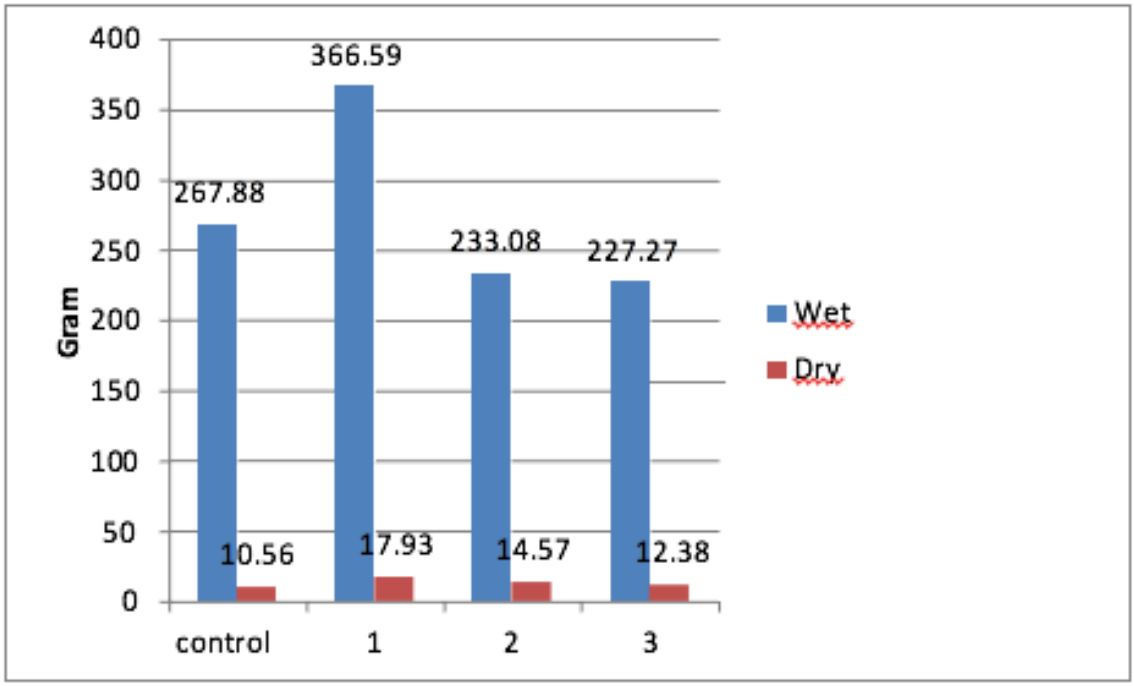


**Figure 8.** Fresh and Dry Weights of Curly Leaf Salad

### 3.2.3. Number of Marketable and Non-Marketable Sheets

The application that gave the best results in the study was 1 (33.55 pieces) and was found to be statistically different from the other groups. Considering the number of unmarketable leaves, the lowest result was again obtained from application number 1 (3.04 pieces). As a result, there are more marketable and fewer non-marketable leaves in application number 1 compared to the other application groups.

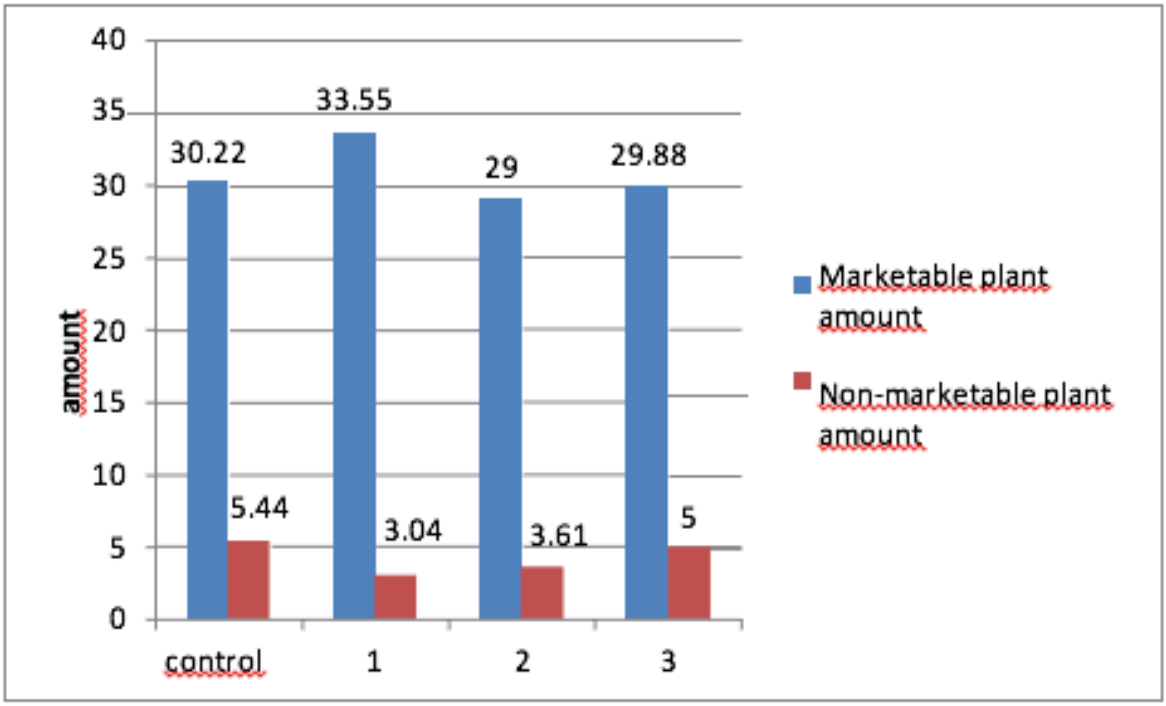


**Figure 9.** Number of Marketable and Non-Marketable Leaves in Curly Leaf Salad

### 3.2.4. Leaf Proportional Water Coverage (%)

When LPWC (%) is examined, application groups 1 and 3 gave the best results and fell into the same statistical group. Application number 2 and the control group were in different application groups than application groups number 1 and 3, and the lowest result was obtained from the control group. Thus, it was observed that application groups 1 and 3 were found to be more resistant to stress conditions.

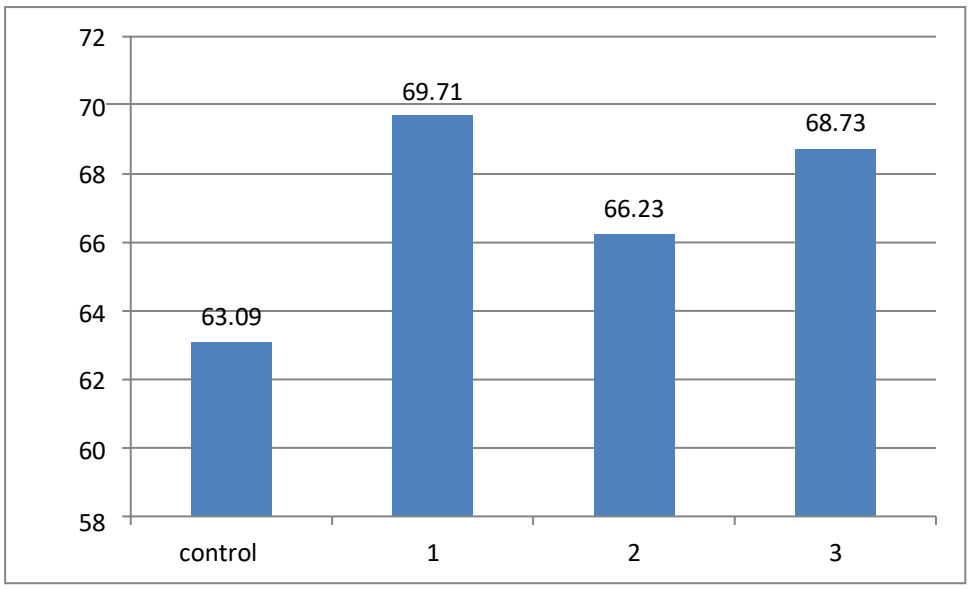

**Figure 10.** Proportional Water Content of Leaf in Curly Leaf Salad

### 3.2.5. Leaf Total Chlorophyll (µmol/m2) Amount

When the results of the leaf chlorophyll amount were evaluated in the study, it was determined that the best application was number 1, followed by applications in the 2, 3 and control groups.

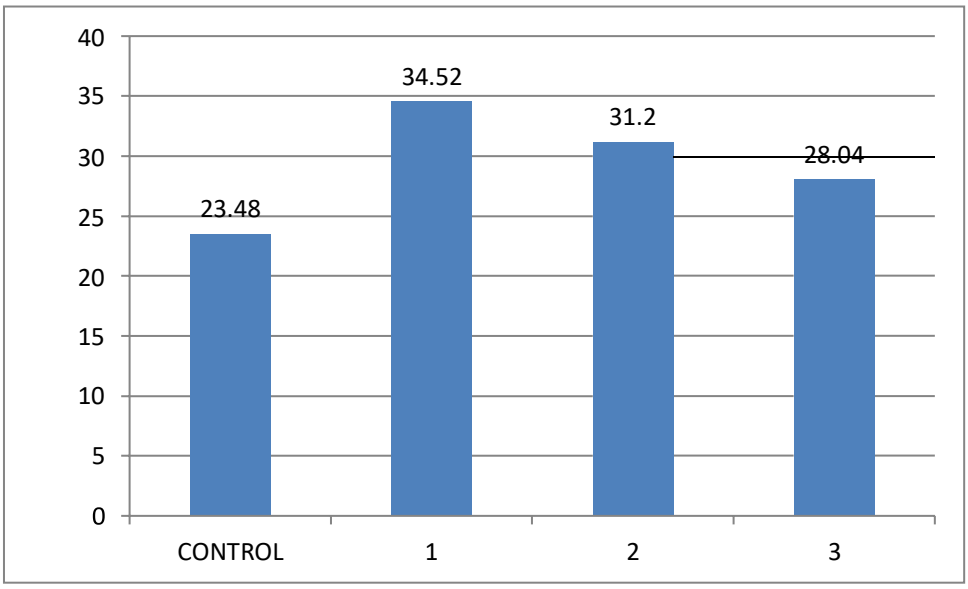


**Figure 11.** Total Amount of Chlorophyll in Curly Leaf Salad

### 3.2.6. Leaf Color

As a result of the applications, it was determined that the best application in terms of brightness was the number 1 application and it was found to be statistically different. In the study, it was determined that the best result numerically was application number 1 with a value of -19.14.

It was determined that it fell into the same statistical group as application number 3. It was determined that the salads in these application groups were greener compared to other application groups. Considering the b values, although application number 1 gave the best result in terms of numerical values, all of them except the control group fell into the same statistical group.

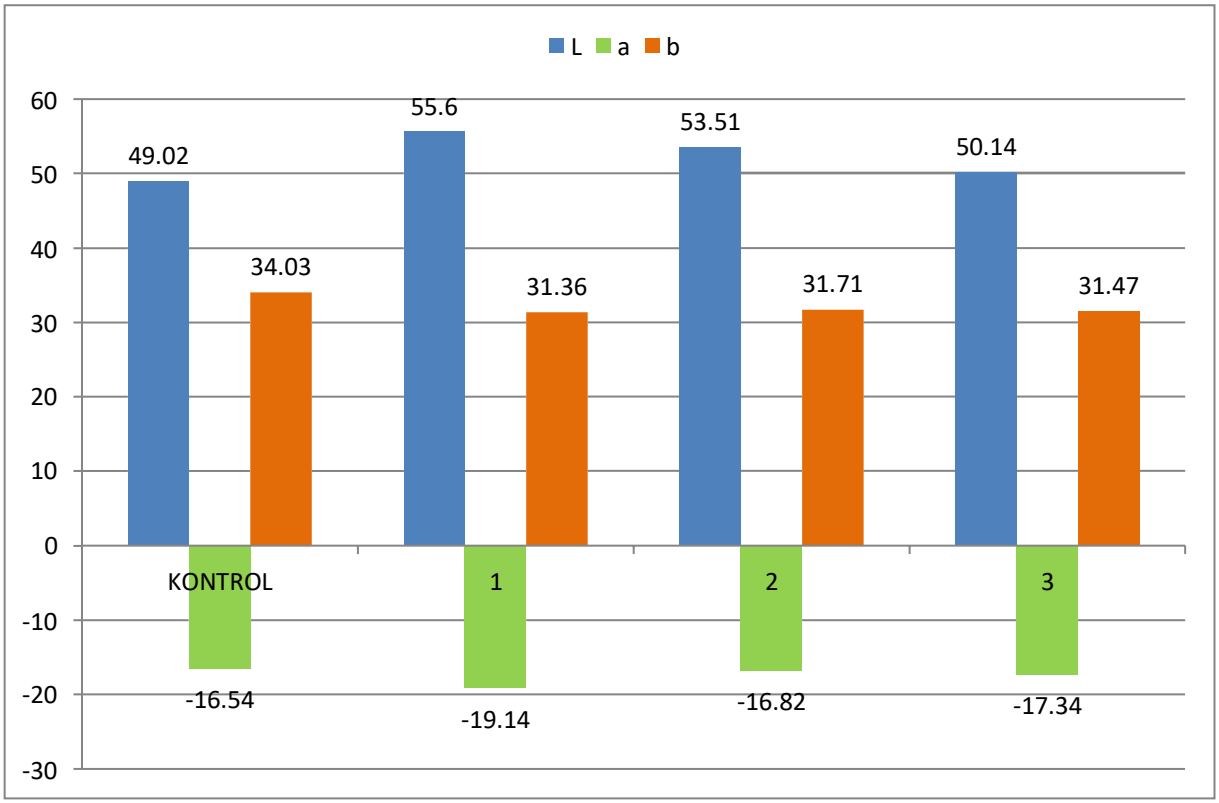


**Figure 12.** Leaf Color in Curly Leaf Salad

**CONCLUSION**

"Sonofarma Pharmaceuticals Chemistry Health Industry Tic. Ltd. Three different solutions requested and tested by Şti were applied to the plants in tomato and curly leaf salad, and the resulting plants were harvested and their quality parameters were examined. After the measurements and analyses, it was determined that the 0.2% concentration of the FARMOXYN 1 formulation had a positive effect on both types of vegetables.

**This report has been prepared as 11 (eleven) pages.**

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The above signature belongs to the Faculty Member of our Faculty.

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