



# EFFECT OF SOME ORGANIC AND MINERALS AGRICULTURAL PROGRAMS ON THREE VARIETIES OF *FRAGARIA ANANASSA* DUCH. PRODUCTIVITY IN COMPARISON WITH CHEMICAL FERTILIZATION

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## Abstract

The experiment was carried out to study the effect of four organic programs on *Fragaria ananassa* Duch productivity in compare with chemical fertilization of three varieties Ruby Gem, Albion and Festival. First factor: five programs first program chemical fertilization (compare) with four organic agriculture programs. Second factors contain three varieties of strawberry plant are Ruby Gem, Albion and Festival. The experiment done according to Split Plot Design according to lowest significant differences test between means at level of probability 5% . The third organic program (P3) characterized by percentage of mixture flower with significant differences and reached 94.18% on all other organic programs and chemical program (P1) (compare) and the fourth organic program (P4) characterized by number of flower and reached 14.40 flower.plant<sup>-1</sup> with significant differences on other organic programs and chemical program. While in vegetative growth parameters the fifth organic program (P5) characterized by parameter of number of leaf on all other organic programs and chemical program (P1) with significant differences reached 34.11 leaf.plant<sup>-1</sup>.

**Key words:** Leaf; plants; harvesting; flowers.

## Introduction

Strawberry considered from small fruit plants and grass constant plant not elevated than 30 cm characterized by white flower homosexual or monosexual according to variety its diameter 2.5 – 4 cm with red fruit have special smell and shape with complex leaf consist of three or more leaf part according to variety and be round or oval with pointed edge, strawberry plant have short main bloated shank, fibrous roots generated from the lower end of short shank near to the soil surface. And mostly diffused at the first 15cm of soil and reached 50cm depth, in Arabic called Faraola and freaz (Habeab and al firaun, 2013). All variety of strawberry in markets returns to *Fragaria virginiana* L. and *Fragaria chiloensis* L. that be not form fruit (Crespo, 2010) but due to mixing between these varies the strawberry has been obtained with fruit characterized by thick meat similar to medulla of pineapple fruit and from that the name come from.

The strawberry plant returns to *Fragaria X ananassa* and returns to family of Rosaceae and its one of constant plant adapted to environmental condition, the strawberry plant growing wildly in original home north America and returned to small size fruit at the fourth rank according to global consumption after apple, orange and banana (Masny, 2004) and (Derkowska, 2015). At the 2016 year the strawberry harvest the third expensive fruit that reached 2.3 billion dollars (USDA NASS 2017). Although the United States considered of largest country producing strawberry fruit but it was imported fresh fruit due to increase demands (USDA ERS, 2017), strawberry fruit considered source of many of essential compounds for human health that the nutritional scientists it the foreword of nutritional list in compare with fruit and grain due to its high nutritional benefits and its positive effect on human health and its content of polyphenol that help on resistance many of disease like atherosclerosis, heart diseases, neural disturbance, type two diabetes mellitus, cancer and fatness (Giampieri *et al.*, 2015) the strawberry

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multiplication done by using seeds and use the extension and its mostly used in compare with seeding while tissue culture considered the up-to-date and most efficient (Habeab and Al feroun, 2013).

The organic culture considered of programs that aimed to producing of materials fit to environment, healthy, social, economic and industry by using methods and non-chemical inlet and prevent using of industrial mater and modified hereditary as fertilizer and chemical destructive and preserving matter and agriculture drugs and the organic agriculture activate rules and legislation to facilities propagation organic products and its considered way of agriculture production of faithful environmentally and healthy (Alhakem, 2012).

The variety considered of important factors due to varieties difference in it vegetative growth and fruit and productivity and it adaptation to environment and resistance to diseases and insect and the strawberry varieties consist according to production and flowers to: shot day variety or spring production, constant production variety, long day variety, neutral day variety (Taylor, 2002). So that this research aimed to evaluate the organic programs and some varieties in its production and type of fruit of strawberry.

### Materials and Methods

The research was done in unheated plastic house related to related to institutions of horticulture and landscape design department collage of agriculture, Tikrit university, during the season 2018-2019 to evaluate different organic culturing programs compare with metallic fertilization program in productivity of strawberry

**Table 1:** Showed some chemical and physical parameters of plastic house soil

Reading before experiment done	Chemical and physical parameters of soil
37	Sand%
26	Silt %
37	Clay%
Sandy, Mixture, Clay	Soil tissue%
7.18	Soil pH
3.45	Electrical Conductivity (EC) (decimeter -1.25 °C)
1.14	Organic matter (g. Kg)
11.8	Nitrate (NO <sub>3</sub> ) (mg. Kg-1)
13.3	Ammonium (NH <sub>4</sub> ) (mg; kg-1)
14.2	Phosphorus (mg. Kg-1)
3.09	Potassium (mg. Kg-1)

Laboratories of soil and water department agriculture college Tikrit University

plant farm soil sample collected from different site and depth (0–30 cm) to do chemical and physical analysis of soil that analyzed in laboratory soil and water department related to collage of agriculture, Tikrit university (Table 1)

**Table 2:** Showed chemical analysis of chicken waste and fungi fertilizer

Mushroom Fertilizer SMC	Poultry Fertilizer	Measurements
1.96 %	2.58 %	Total Nitrogen
0.41 %	1.27 %	Total phosphorus
2.35 %	2.06 %	Total potassium
30.20 %	34.10 %	Total Carbon
7.23	6.91	Ph

The chemical analysis of chicken waste and fungi fertilizer done at laboratory of department of soil and water resource

At the day 1/7/2018 the soil was prepared of plastic house that by doing agriculture process cleaning from thickets and grass and plowing of the farm soil shallow by using ripple then flooded with water and sterilized with sun light (Abo Garbia, 2000), the nylon removed after 60 days after covering then the plastic house land divided into five lines three medial lines selected and the length of lines 26.5 m contain 10 experimental unit each unit contain 10 plants and was the distance between plant and other 25 cm and let 1 meter between experimental unit and other between lines, thin cotton cloth used to cover the doors to prevent entrance of insect inside of plastic house the seedling was implanted as triangle shape on the both sides of line, and the black nylon used to cover the lines to prevent growth of grass and thickets also to save the humidity (Singh *et al.*, 2005) and closed tightly by fixing its edge by soil. The strawberry seedling prepared Festival, Albion and Ruby gem varieties that proliferated histologically that obtained from Jana ALNakheel Company in Baghdad governorate that was implanted in plastic plate.

The seedling was implanted at the early morning at one day at 15/11/2018 then the flower removed for two weeks to stimulate the vegetative growth and roots of seedling and use the spring harvesting to take the sample and make measurement.

The experimental treatments and experimental design

The design that used for this experiment is random section design (RCBD) according to SPLIT PLOT program within three sections the research included study the effect of two factors:

First factor: five programs denoted by (P) symbol first program traditional chemical denoted by (P1) while

**Table 3:** application of agriculture programs

Second programs: varieties of plants three varieties was used of strawberry plant (Festival, Ruby Gem and Albion).

Second Factor Sub plot( Product)	The first factor Main plot( program )	Transactions	No.
Product Festival	Chemical program	T1	1
Product Albion	Chemical program	T2	2
Product Ruby gem	Chemical program	T3	3
Product Festival	Second Organic Program 10%	T4	4
Product Albion	Second Organic Program 10%	T5	5
Product Ruby gem	Second Organic Program 10%	T6	6
Product Festival	Third Organic Program 20%	T7	7
Product Albion	Third Organic Program 20%	T8	8
Product Ruby gem	Third Organic Program 20%	T9	9
Product Festival	Forth Organic Program 10%	T10	10
Product Albion	Forth Organic Program 10%	T11	11
Product Ruby gem	Forth Organic Program 10%	T12	12
Product Festival	Fifth Organic Program 20%	T13	13
Product Albion	Fifth Organic Program 20%	T14	14
Product Ruby gem	Fifth Organic Program 20%	T15	15

the other four program was applied according to organic program and denoted by (P2, P3, P4 and P5) was added to the experimental units in the in the soil before plantation that divided randomly into experimental units with percentage 10% and 20% and added as extract to plant.

### Vegetative parameters

#### Studied Parameters

#### Mean of leaf number leaf.plant<sup>-1</sup>

Number of leaf was counted of each plant of five plants that selected at the end of experimental seasons then collected and divided into five to calculate mean of leaf number of each plant.

One leaf surface area (cm<sup>2</sup>):

Leaf surface area was measured according to morcy *et al.*, (1968) at the end of experiment season five leaves was obtained of each experimental unit then weighted

after separated of the neck to measure the mean of the one leaf weight then take the number of known surface area disc of five leaves and extract the weight of amputee disc then the leaf surface area measured according to the equation whole

$$\frac{\text{surface of amputee disc from leaf (cm}^2\text{)} \times \text{mean of whole leaf (g)}}{\text{mean of weight of amputee disc fro leaf (g)}}$$

Mean of leaf surface area (cm<sup>2</sup>.plant<sup>-1</sup>):

Measured according to following equation:

Leaf surface area = Mean of one leaf surface area × total leaf number of plant

#### Parameter of harvesting content

#### Mean of total flower number (flower.plant<sup>-1</sup>):

The number of flower was measured after flower removal stopped till the end of flowering of the five plants that selected to each experimental unit, then was measure mean of total flower number of one plant as the following:

Mean of the flower number .plant<sup>-1</sup> =

$$\frac{\text{total number of the five plant flower}}{5}$$

#### Percentage of mixture flower %

Percentage of the mixture flower measured according to the following equation:

Percentage of mixture flower % = summation mixture fruit \ summation total flower x 100

#### One plant harvesting

One plant harvesting measured by calculates harvesting of five plants and divided on five

#### Total harvesting according to the plastic house (kg.house<sup>-1</sup>)

Production of the plastic house measured according to the house length that reached 52m with 6 lines and measure done according following equation:

**Total house harvesting = one seedling harvesting x 2500**

By considering that the plastic house contained 2500 seedling and the distance between plant and other 25 cm.

#### Mean of the fruit weight (g):

The total weight of the five marked plant was

**Table 4:** showed treatments of farm experiment

Other composting and preventive additives	Fertilization by spraying fertilization	Basic ground	Program	No.
Use Crosade Ec pesticide 4 times sprayed on leaves every 30 days	NPK was added 6 times sprayed on leaves 1 g: 1 liter every 15 days after 45 days of planting	Balanced triple fertilizer NPK 20:20:20 Add to soil before planting	Chemical program P1	1
Bio-Fertilization was carried out using Trichoderma mushroom 4 times 50 ml / L spray on leaves Mineral fertilization using agricultural sulfur and ash 4 times every 30 days. Spray Eucalyptus extract 10: 1 once on 15/12	Preparation of poultry residue 9: 1 was sprayed to the leaves six times every 15 days after 45 days of planting	Poultry waste 10% was added to soil before planting	Second Organic Program P2	2
Bio-fertilization was carried out with 4 times 50 ml / l trichoderma mushroom. Mineral fertilization using agricultural sulfur and ash by 4 times every 30 days Eucalyptus 10: 1 extract was sprayed once on 15/12	Preparation of poultry residue 8: 2 was applied on leaves six times every 15 days after 45 days of planting	Poultry waste 20% was added to soil before planting	Third Organic Program P3	3
Bio-fertilization was carried out with 4 times 50 ml / l trichoderma mushroom. Mineral fertilization using agricultural sulfur and ash 4 times every 30 days. Eucalyptus 10: 1 extract was sprayed once on 15/12	Preparation of mushroom residue 9: 1 was applied to the leaves six times every 15 days after 45 days of planting	Mushroom residue 10% added to soil before planting	Forth Organic Program P4	4
Bio-fertilization was carried out with 4 times 50 ml / l trichoderma mushroom. Mineral fertilization using agricultural sulfur and ash 4 times every 30 days. Eucalyptus 10: 1 extract was sprayed once on 15/12	Preparation of mushroom residue 8: 2 was applied on leaves six times every 15 days after 45 days of planting	Mushroom residue 20% was added to soil before planting	Fifth Organic Program P5	5

measured then divided on the total fruit number to calculate mean of the fruit weight as the following:

Mean of fruit weight =

$$\frac{\text{summation of total fruit weight of the five marked plant}}{\text{summation of the fruit number of the five marked plant}}$$

#### Mean of fruit number (fruit.plant<sup>-1</sup>)

The data was taken from the beginning of fruit harvesting till the last harvesting of the five plant of each experimental unit then calculate the mean of one plant fruit number as following:

Mean of fruit number .plant = summation of five plant fruit number / 5

### Results and discussion

Effect of agriculture programs and varieties and interaction between them in mean of leaf number

(leaf.plant<sup>-1</sup>) of strawberry plant

Results of table 5 elevation of fifth organic program (P5) in mean of leaf number on each of third organic program and first program (P1) that reached 34.11, 29.00 and 27.22 leaf.plant<sup>-1</sup> respectively. While according to the varieties Ruby gem and Festival elevated in mean of leaf number that reached 32.53 and 31.53 leaf.plant<sup>-1</sup> on Albion variety. But the interaction between agriculture programs and varieties there are no significant differences recorded.

#### Effect of agriculture programs and varieties and interaction between them on one leaf surface area (cm<sup>2</sup>) of strawberry plant

From the data of table 6 in parameter of one leaf surface area agriculture programs and varieties and interaction between them there are no significant differences recorded although there are differences in

**Table 5:** Effect of agriculture programs and varieties and interaction between them in mean of leaf number (leaf.plant<sup>-1</sup>) of strawberry plant

Average Program	Average number of leaves ( Leaf plant -1)			Product Program
	Festival	Albion	Ruby gem	
27.22	29.00	22.33	30.33	P1
31.56	31.33	30.33	33.00	P2
29.00	31.33	26.00	29.67	P3
32.56	32.33	31.67	33.67	P4
34.11	33.67	32.67	36.00	P5
	31.53	28.60	32.53	Average Product
Overlap between programs and product	Agricultural programs		Product	L.S.D
n. s	2.787		1.774	

**Table 6:** Effect of agriculture programs and varieties and interaction between them on one leaf surface area (cm<sup>2</sup>) of strawberry plant

Average Program	Area of the one leave			Product Program
	Festival	Albion	Ruby gem	
32.78	32.33	33.67	32.33	P1
34.78	34.67	35.00	34.67	P2
35.11	35.33	35.33	34.67	P3
37.11	36.00	38.67	36.67	P4
35.56	37.33	34.33	35.00	P5
	35.13	35.40	34.67	Average Product
	Agricultural programs		Product	L.S.D
n.s	n.s		n.s	

**Table 7:** Effect of agriculture programs and varieties and interaction between them on leaf surface area (cm<sup>2</sup>.plant<sup>-1</sup>) of strawberry plant

Average Program	Leaves Area ( 2 cm plant -1)			Product Program
	Festival	Albion	Ruby gem	
991	1065	844	1063	P1
1038	1028	983	1103	P2
1025	1097	939	1037	P3
1200	1196	1154	1250	P4
1318	1304	1281	1369	P5
	1138	1040	1165	Average Product
Overlap between programs and product	Agricultural programs		Product	L.S.D
n.s	119.8		66.7	

its value but not reached to the significance.

**Effect of agriculture programs and varieties and interaction between them on leaf surface area (cm<sup>2</sup>.plant<sup>-1</sup>) of strawberry plant**

The results of table 7 showed elevation of fifth organic program (P5) and fourth organic program (P4) significantly on other programs in parameters of leaf surface area that reached 1318 and 1200 cm<sup>2</sup>. plant<sup>-1</sup> respectively while the effect of varieties Ruby gem elevated and Festival elevated significantly on Albino variety that gave highest leaf surface area reached 1165, 1138 and 1040 cm<sup>2</sup>.plant<sup>-1</sup> respectively while the values of interaction between agriculture programs and varieties did not record any significant differences between them.

**Effect of agriculture programs and varieties and interaction between them on mean of the flower number (flower.plant<sup>-1</sup>) of strawberry plant**

From the data of table 8 elevation of fourth organic program (P4) in parameter of mean of flower number on other agriculture programs (organic and chemical) that reached 14.40 flower.plant<sup>-1</sup> while the variety the Festival and Ruby gem was elevated on Albino that recorded 14.85, 12.30 and 10.89 flower.plant<sup>-1</sup> respectively and the interaction between organic programs and varieties the data of the table showed elevation of fourth program (P4) for Festival variety in this parameter highest value reached 17.44 flower.plant<sup>-1</sup> in compare with other data of interaction except the interaction between chemical program (P1) and Festival that reached 16.44 flower.plant<sup>-1</sup>.

**Effect of agriculture programs and varieties and interaction between them on percentage of mixture flower % of strawberry plant**

Data of table 9 in parameter of mixture flower showed elevation of

**Table 8:** Effect of agriculture programs and varieties and interaction between them on mean of the flower number (flower.plant<sup>-1</sup>) of strawberry plant

Average Program	Average number of flowers (Flower plant <sup>-1</sup> )			Product Program
	Festival	Albion	Ruby gem	
13.30	16.00	11.00	12.90	P1
11.47	13.00	10.57	10.67	P2
12.22	15.00	10.50	11.17	P3
14.40	17.44	11.75	14.00	P4
12.00	12.80	10.43	12.78	P5
	14.85	10.89	12.30	Average Product
Overlap between programs and product	Agricultural programs		Product	L.S.D
1.785	1.431		0.681	

**Table 9:** Effect of agriculture programs and varieties and interaction between them on percentage of mixture flower % of strawberry plant

Average Program	Percentage of flowering %			Product Program
	Festival	Albion	Ruby gem	
76.96	73.51	70.74	86.63	P1
88.99	97.62	74.41	94.96	P2
94.18	98.33	85.67	98.53	P3
78.22	79.33	73.67	81.67	P4
90.78	94.67	87.67	90.00	P5
	88.69	78.43	90.36	Average Product
Overlap between programs and product	Agricultural programs		Product	L.S.D
3.940	1.818		1.997	

**Table 10:** Effect of agriculture programs and varieties and interaction between them on one plant harvesting (g) of strawberry plant

Average program	One plant product gm			Product Program
	Festival	Albion	Ruby gem	
192.4	196.1	172.4	208.8	P1
191.3	203.6	159.8	210.7	P2
187.8	230.9	133.4	199.0	P3
207.9	242.3	163.5	218.1	P4
199.8	209.3	178.4	211.7	P5
	216.4	161.5	209.7	Average Product
Overlap between programs and product	Agricultural programs		Product	L.S.D
32.57	n.s.		13.47	

third organic program (P3) on other agriculture programs that recorded 94.18% while the varieties was showed elevation of Ruby gem and Festival varieties on Albino variety that reached 90.36, 88.69 and 78.43 % respectively, while the interaction between agriculture programs and varieties was gave the interaction between third organic program (P3) and Ruby gem variety highest value reached 98.53% on other interaction values except the interaction between third organic program (P3) and Festival variety and first organic program and (P2) and Festival variety that reached 98.33 and 97.62 % respectively.

#### **Effect of agriculture programs and varieties and interaction between them on one plant harvesting (g) of strawberry plant**

The data of table 10 showed in parameter of one plant harvesting that the agriculture programs presence of differences but not reached the significance while the varieties showed elevation of Festival and Ruby gem at this parameter that reached 216.4 and 2.9.7 g.plant<sup>-1</sup> respectively and the results of this table in values of interaction between agriculture programs and varieties to elevation of fourth organic program (P4) and third organic program in Festival variety that recorded 242.3 and 230.9 g.plant<sup>-1</sup> respectively.

#### **Effect of agriculture programs and varieties and interaction between them on total harvesting (kg) of strawberry plant**

The results of table 11 showed in parameter of total harvesting of plastic house in agriculture programs did not record significant differences and the results of the same table showed significant differences between varieties that the Festival and Ruby gem elevated on Albino that reached 541.0, 542.2 and 403.8 kg respectively and the interaction between agriculture

**Table 11:** Effect of agriculture programs and varieties and interaction between them on total harvesting (kg) of strawberry plant

Average program	Total product kg			Product Program
	Festival	Albion	Ruby gem	
481.0	490.1	431.1	522.0	P1
478.4	508.9	399.4	526.8	P2
469.5	577.2	333.6	497.6	P3
519.8	605.7	408.7	545.1	P4
499.5	523.2	446.1	529.3	P5
	541.0	403.8	524.2	Average Product
Overlap between programs and product	Agricultural programs		Product	L.S.D
n.s.	n.s.		33.67	

**Table 12:** Effect of agriculture programs and varieties and interaction between them on mean of fruit weight (g) of strawberry plant

Average program	Average weight of fruit gm			Product Program
	Festival	Albion	Ruby gem	
19.48	17.47	21.99	18.99	P1
18.98	16.13	19.97	20.83	P2
16.22	15.56	15.01	18.10	P3
18.53	17.38	19.09	19.12	P4
18.44	17.50	19.44	18.39	P5
	16.81	19.10	19.09	Average Product
Overlap between programs and product	Agricultural programs		Product	L.S.D
n.s.	n.s.		1.254	

**Table 13:** Effect of agriculture programs and varieties and interaction between them on number of fruit (fruit.plant<sup>-1</sup>) of strawberry plant

Average program	Average number of fruits (fruit; plant -1)			Product program
	Festival	Albion	Ruby gem	
10.27	11.77	7.83	11.21	P1
10.28	12.72	8.00	10.12	P2
11.61	14.83	9.00	11.00	P3
11.33	13.92	8.67	11.42	P4
10.94	12.14	9.17	11.52	P5
	13.08	8.53	11.05	Average Product
Overlap between programs and product	Agricultural programs		Product	L.S.D
n.s.	n.s.		0.982	

program and varieties did not record significant differences although presence of difference between values.

**Effect of agriculture programs and varieties and interaction between them on mean of fruit weight (g) of strawberry plant**

Data of table 12 showed in agriculture programs in parameters of mean of fruit weight g did not record significant differences while the varieties the Albino and Ruby gem was elevated in parameters of mean of fruit weight that recorded 19.10 and 19.09 g respectively on the Festival variety its value reached 16.81 g also results of the table showed that the interaction between agriculture programs and varieties did not recorded any significant differences.

**Effect of agriculture programs and varieties and interaction between them on number of fruit (fruit.plant<sup>-1</sup>) of strawberry plant**

Noticed from the values of table 13 in parameter of number of fruit in agriculture programs did not recorded any significant differences while the varieties showed significant differences in this parameters that the Festival its value reached 13.08 fruit.plant<sup>-1</sup> on other varieties and the data of the same table showed that the interaction between agricultural programs and varieties did not have any significant differences although there are a differences in values that obtained.

A positive correlation between parameter of number of flowers and one leaf surface area as appear in correlation (Table 14). And this number agree with number of flowers that recorded by Sogmany (2017). While the varieties the Festival and Ruby gem was elevated on Albion and this may be due to density of vegetative growth of these varieties that have elevation in mean of leaf number and leaf surface area as appeared in table 10 and 13 also positive correlation between these

parameters and parameter of number of flower that appeared in correlation (Table 14). While at the elevation between fourth organic programs (P4) and Festival variety returned to same causes that mentioned above. In parameter of knot percentage the third organic programs (P3) and its may be due to quality content of this programs effect on the plant and lead to increase percentage of knot and funded from chemical analysis of chicken wastes that used in this program have 2.58 and 1.27 of nitrogen and phosphorus respectively as appear in table number 2 and the percentage of knot agree with that reached by Albiaty (2013) and Althoiny (2018).

Although there no significant differences between chemical and organic programs to parameter of one plant harvesting and parameter of total harvesting according to plastic house but the results considered positive because it give same production or elevating on traditional agriculture program and this indicate the efficiency this program to produce harvesting comparable the traditional programs. While the varieties Festival and Ruby gem elevated on Albion in parameter of one plant harvesting and total harvesting according to plastic house due to increase flower number and knot number in both of these

varieties and that ensured by strong positive correlation between parameter of flower number and percentage of knot with harvesting of one plant that appeared in correlation table number 14. And it may be returned to hereditary differences between varieties and this agrees what was reached by dawod *et al.*, (2010). While the interaction founded the elevation each of (fourth organic program (P4) and third organic program (P3) with Festival this treatment recorded highest mean of flower number as appear in table number 5 and the correlation table number 14 showed presence of positive correlation between number of flower and one plant harvesting and the mean plant production and total harvesting with Lateef *et al.*, (2016). And the elevation of Festival and Ruby gem in number of fruit is due to increase of flower number that appeared in table number 5. And strong positive correlation appears in correlation table number 14. And the results of parameter of fruit number agree with the results that obtained by Abd Alhafed and AlAli (2018). While the significant elevation of Albion and Ruby gem varieties in mean of fruit weight on the Festival variety returned to low number of fruit that produced by these varieties in compare with Festival variety as appeared in

**Table 14:** correlation factor between harvesting parameter and vegetative parameter

Number of leaves	Leafy area of the plant	Leave Area	Contract ratio	The number of the flowers	Average weight of the fruit	Number of fruits	Seedling yield	Total quotient	Adjective
0.3724 0.0118	0.3617 0.0146	0.093 0.5432	0.3172 0.0338	0.5192 <0.001	-0.0706 0.6449	0.8124 <0.001	1 <0.001		<b>Total quotient</b>
0.3724 0.0118	0.3617 0.0146	0.093 0.5432	0.3172 0.0338	0.5192 <0.001	-0.0706 0.6449	0.8124 <0.001		1 <0.001	<b>Seedling yield</b>
0.3153 0.0349	0.2814 0.0611	0.0157 0.9186	0.4157 0.0045	0.567 <0.001	-0.628 <0.001		0.8124 <0.001	0.8124 <0.001	<b>Number of fruits</b>
-0.1084 0.4783	-0.072 4 0.6367	0.0668 0.663	-0.3377 0.0233	-0.2514 0.0957		-0.628 <0.001	-0.0706 0.6449	-0.0706 0.6449	<b>Average weight of the fruit</b>
0.1882 0.2156	0.2257 0.1361	0.1325 0.3857	-0.0684 0.6551		-0.2514 0.0957	0.567 <0.001	0.5192 <0.001	0.5192 <0.001	<b>The number of the flowers</b>
0.3456 0.0201	0.2324 0.1245	-0.167 4 0.2716		-0.0684 0.6551	-0.3377 0.0233	0.4157 0.0045	0.3172 0.0338	0.3172 0.0338	<b>Contract ratio</b>
0.0382 0.8032	0.4807 <0.001		-0.1674 0.2716	0.1325 0.3857	0.0668 0.663	0.0157 0.9186	0.093 0.5432	0.093 0.5432	<b>Leave Area</b>
0.8938 <0.001		0.4807 <0.001	0.2324 0.1245	0.2257 0.1361	-0.0724 0.6367	0.2814 0.0611	0.3617 0.0146	0.3617 0.0146	<b>Leafy area of the plant</b>
	0.8938 <0.001	0.0382 0.8032	0.3456 0.0201	0.1882 0.2156	-0.1084 0.4783	0.3153 0.0349	0.3724 0.0118	0.3724 0.0118	<b>Number of leaves</b>

table number 9 also the negative correlation between number of fruit and mean fruit weight that appeared in correlation table number 5. And the results that obtained in parameter of leaf number and leaf surface area showed elevation of fifth organic program (p5) and that returned to efficiency of program by its content of nutritional elements that improve the chemical, physical and biological feature as mentioned by pesakovic *et al.*, (2013) and Mengel and Kirkby (2001). While the varieties the difference may be due to hereditary difference between varieties (Dawod *et al.*, 2010) and the values that obtained agree with what reached by Farhan (2015) and the value that reached researcher 25.37 leaf. plant<sup>-1</sup>, 1665cm<sup>2</sup>.

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