FACULTY OF AGRICULTURE

Minia J. of Agric. Res. & Develop.
Vol. (42), No.3, pp 383- 393, 2022

EFFECT OF NUMBER OF BUNCHES AND LEAF : BUNCH RATION ON FRUTING OF SAIEDY DATE PALMS

Farouk H. Abdelaziz* - Faisal F.A. Hassan * - Mohamed A.A. Hosain
*Fac. of Agric., Minia University.

Received: 3 Jan. 2023 Accepted: 13 February 2023

ABSTRACT

Date palm cultivar selected for this trial was "Saiedy" of the same age 10 years old and size at El-Dakhla Oasis, New Valley Governorate, Egypt. The experiment was repeated for two successive years (2019 and 2020). Palms in good physical condition, devoid of pest damage and diseases grown on sandy loam soil and drip irrigation were selected for each treatment. The trials were set up in a three-replication with randomized complete block statistical design (one palm tree for each replication). Both leaves and bunches were pruned to achieve a specific bunch/palm and leaves /bunch ratio, and date palms were randomly assigned to 7 different treatments as follows; Control (only the dead leaves were discarded), 9 bunch/palm + 8 leaves/bunch, 9 bunch/palm + 9 leaves/bunch, 9 bunch/palm + 10 leaves/bunch,10 bunch/palm + 8 leaves/bunch, 10 bunch/palm + 9 leaves / bunch and 10 bunch/palm + 10 leaves/bunch. Results indicated that; fruit physical parameters as (bunch weight, fruit weight (g), flesh weight (g), seed weight (g), fruit size and dimensions (length, diameter (cm) and fruit shape as well as fruit volume (cm^3). Generally, all applied leaf/bunch ratios had a positive effect on the measured physical properties of "Saiedy" date palm fruits in comparison with control. The ratio 10 bunch/palm + 9 leaves / bunch gave the best results regarding the tested characteristics of 'Saiedy date palms under the studied region.

Key words: Saiedy, date palm, physical parameters and bunch/palm and leaves /bunch ratio

INTRODUCTION

The date palm (*Phoenix dactylifera* L.) is one of the world's oldest cultivated fruits and considered one of the most widely grown horticulture crops In Arab countries. It is regarded a symbol of life in Egypt's desert and plays an essential part in the people's economic and social lives (**El-Salhy *et al.* 2017**). In Egypt, date palm ranked the third crop after orange and grape, according to the latest statistics from the **Ministry of Agriculture and Land Reclamation (2015**), the total area represented in 2015 was (12,827,235) female trees in many restricts all over Egyptian lands generated (1,465,030) tonnes. The date palm can grow and produce in a variety of soil types, from light sandy to deep clay. It also has a great tolerance for stress, since it can withstand excessive salinity, drought, and harsh weather (**Daillo, 2005 and El-Salhy *et al.* 2017**).

In 2018, the government established a countrywide project to cultivate date palms. The goal of the initiative is to grow a million palms from various date palm cultivars. The initiative will produce more date palm fruits than are consumed in the local market. As a result, excess dates must be allocated to foreign markets, which obviously demand high-quality dates. Despite Egypt is ranked the top date producer in the world, Egypt export contribution to the international date market is low due to a lack of international quality standards (**FAO, 2019**).

For commercial reasons and to compete with the international market, date palm growers are currently experiencing numerous challenges in producing high-quality date fruits. Fruit thinning is one of the most critical factors impacting date palm fruit quality and yield. So, in order to maximize the quantitative, qualitative, and economic output of date production in palm growth, the optimum thinning procedures must be discovered (**El-Salhy *et al.* 2010 and Iqbal *et al.* 2010**).

Fruit thinning, strand thinning, chemical thinning, and spathe removal are all examples of thinning techniques. Removal of spathes is the simplest of the treatments, but strand thinning produces the finest fruit quality. Many previous findings imply that the plant responds differently depending on the leaf: bunch ratio, notably in terms of fruit and yield characteristics, and that a higher number of productive leaves results in superior performance (**Harhash *et al.* 1998; Al-Salman *et al.* 2012 and Omar *et al.* 2013**). The date palm's bearing capacity and fruit quality appear to be proportional to the green leaf surface. Too much fruit for the tree's leaf area diminishes fruit size and quality, and alternating bearing occurs (**El-Salhy, 2001 and Hegazi *et al.* 2008**). One of the most important behaviors determining fruit quality is the leaf/bunch ratio (**Hussein and Abdalla, 1973**). Because old palm leaves do not provide the same nutritional value to palm trees (**Khalifa *et al.* 1987**). As a result, removing some of the old leaves and examining the number of leaves in relation to bunches on the palm is an important procedure. The proper leaf/bunch ratio in different date palm varieties resulted in large bunches and high-quality dates. According to various studies, On Barhi, as indicated by **Omar *et al.* (2013**). The

leaf/bunch ratios vary by cultivar, with 8:1 in 'Khalas' and 'Sewy' (**Al-Salman *et al.* 2012 and El-Salhy *et al*. 2017**), 9:1 in Sakkoti and 'Samany' and 'Barhi' (**Shaaban et al., 2006 and Omar et al., 2013**), and 12:1 in 'Gondaila' and 'Dagana' (**Soliman and Osman, 2001**).

Therefore, the main objective of the current study is to investigate the effect of different methods of thinning on yield and fruit quality of Saiedy date palms; such practices might be very essential and of great importance for palm growers. So, the purpose of the study to determine the proper leaf/bunch ratio and its effect on the productivity and fruit quality of Saiedy cultivars grown under El- Oasis, New Valley conditions.

MATERIAL AND METHODS

Data palm cultivar selected for this trial was "Saiedy" of the same age 10 years old and size at El-Dakhla Oasis, New Valley Governorate, Egypt. The experiment was repeated for two successive years (2019 and 2020).

Palms in good physical condition, devoid of pest damage and diseases grown on sandy loam soil and drip irrigation were selected for each treatment. Analysis of some physical and chemical properties of the soil was done according to **Wilde *et al.* (1985**). The soil described as; 7.89 pH, 0.65 EC/dsm^{-1} and 0.80 $g.kg^{-1}$ organic matter, 2.25% $CaCO_3$ and total N was 1.82%

Each palm was fertilized with 25 Kg FYM contain (9% OM, 0.32% N, 1.2 % P_2O_5 and 1.55% K_2O) and 1.0 kg calcium superphosphate once a year in the winter (15.5 % P_2O_5). At 1.0 and 3.0 kg/palm, potassium sulphate and ammonium nitrate, respectively, were administered. Ammonium nitrate was added in three equal batches before spathes bursting, immediately after fruit setting, and 45 days later, while potassium sulphate was treated twice before fruit setting and before coloring began. Other agricultural procedures were used as usual, including irrigation, hoeing, and fungal and insect management. Throughout the two experimental seasons, the tested palms were pollinated by a known high activity pollen grain source from the same male.

The trials were set up in a three-replication with randomized complete block statistical design (one palm tree for each replication). Both leaves and bunches were pruned to achieve a specific bunch/palm and leaves /bunch ratio, and date palms were randomly assigned to 7 different treatments as follows:

1. Control (only the dead leaves were discarded) (T1).
2. 9 bunch/palm + 8 leaves / bunch (T2).
3. 9 bunch/palm + 9 leaves / bunch (T3).
4. 9 bunch/palm + 10 leaves / bunch (T4).
5. 10 bunch/palm + 8 leaves / bunch (T5).
6. 10 bunch/palm + 9 leaves / bunch (T6).
7. 10 bunch/palm + 10 leaves / bunch (T7).

During the first half of September, the yield of experimental trees was gathered. The average bunch weight was measured in kg/ palm. The physical parameters of 10 date fruits were determined using a random sampling method.

Fruit Physical Characters: Fruit weight (g), flesh weight (g), seed weight (g), fruit size and dimensions (length, diameter (cm) and fruit shape as well as fruit volume (cm^3).

The collected data from the two seasons were statistically analyzed using

the analysis of variance technique (ANOVA). According to **Gomez and Gomez (1984**), **Mstate** computer software program was employed to examine differences among mean of various treatment combinations using the LSD test at (P > 0.05) levels.

RESULTS AND DISCUSSION

Effect of number of bunches and leaf: bunches ration on fruit physical parameters of Saiedy cultivar grown under El-Dakhla Oasis, New Valley conditions during 2019 and 2020 seasons.

Fruit weight:

Data presented in Table (1) revealed the effect of bunches and leaf: bunches ration on fruit weight (g) during 2019 and 2020. Fruit weight was significantly increased with increasing bunches and leaf: bunches ration during both seasons. The lowest mean value was recorded with the control as (11.62 and 12.34 g) for 2019 and 2020, respectively, while the highest values scored with T5 (10 bunch/palm + 9 leaves / bunch) as (17.08 and 17.04 g). It's possible that the rise in average fruit weight attained by thinning is related to a reduction in fruit compactness, which prevents them from accumulating within the bunch. As a result, such fruits take advantage of natural growth opportunities. The obtained results are similar to those obtained by (**Al-Wasfy and Mostafa, 2008**; **Mostafa and El Akkad 2011**; **Bashir *et al.* 2014**; **El-Salhy *et al.* 2017 and Ahmed *et al*. 2019**)

Flesh weight:

Concerning the effect of bunches and leaf: bunches ration on flesh weight (g), data in the same Table resulted that flesh weight exhibited a similar pattern and significant increased as the level of bunches and leaf: bunches ration increased during the two studied seasons. With increasing of bunches and leaf: bunches ration gave heaviest flesh weight. Highest flesh weight (15.35 and 15.67 g) for both seasons were recorded on palm that pruned to T5 (10 bunch/palm + 9 leaves / bunch) comparing to the control (10.16 and 10.37 g) which recorded the lowest value. The results are in line with those obtained by **(Soliman *et al.* 2011; Soliman and Harhash 2012**; **Radwan, 2017** and **Ahmed *et al*. 2019**).

Seed weight:

Seed wight presented in Table (1), results indicated that the seed weight was not significantly affected by bunches and leaf: bunches ration treatments during both seasons. These findings are in partial agreement with those obtained by (**Soliman *et al.* 2011**; **Soliman and Harhash, 2012** and **Madani *et al*. 2021).**

Data presented in Table (2) showed that the bunches and leaf: bunches ration treatments significantly increased the average bunch weight as compared to the control. The highest value of bunch weight recorded with T5 (10 bunch/palm + 9 leaves / bunch) as (16.30 and 18.34 kg) for both seasons then decreased with increasing number of bunches with (9 bunch/palm) with any number of leaves treatments, while the lowest mean value recorded with the control as (10.12 and 11.42 kg) during both seasons 2019 and 2020, respectively. These results can be attributed to increased fruit retention on bunches and fruit weight as a result of increased food materials supply to each individual fruit, resulting in heavy bunch

weight at harvest. Because developing fruits are generally a high sink for nutrition sources from trees **(Leopold, 1964**). Several studies have shown that trees with fewer date fruits have a greater probability of increasing size, weight, and other fruit quality factors **(El-Hamady *et al.*, 1983; El-Gassas, 1986).** This is owing to a surplus of photosynthates in the remaining fruits **(Ali-Dinar *et al.* 2002).** On the contrary of **(Mostafa and El Akkad 2011**; **Alam El-Dein and Omar 2014** and **Radwan 2017**) they mentioned that increased leaf : bunch ratio significantly increased bunch weight.

Fruit volume (cm^3):

The Saiedy cultivar fruit volume was significantly affected by bunches and leaf: bunches ration treatments during both seasons as presented in Table (2). Treatment contain (10 bunch/palm + 9 leaves / bunch) gave the highest fruit volume and scored (16.81 and 16.11 cm^3) comparing to the control and other studied treatment in both seasons. The increase in fruit volume due to thinning were reported by other investigators on several date cultivars (**Soliman *et al.* 2011 and Soliman and Harhash 2012**).

Fruit size and dimensions:

Fruit length:

In Table (3), the results of fruit length were statistically differed due to the bunches and leaf: bunches ration during the both seasons 2019 and 2020. In general, all pruning procedures lengthened "Saiedy" dates' fruit more than the control. The highest average of fruit length was 4.01 and 3.97 cm resulted from the application of 10 bunch/palm + 9 leaves / bunch in the two seasons, respectively. While, the lowest average values were 3.57 and 3.64 cm, respectively in 2019 and 2020.

Fruit diameter:

Data obtained during both seasons revealed obviously that the response to bunches and leaf: bunches ration on fruit diameter was significantly as presented in Table (3). Results revealed obviously that the fruit diameter increased significantly by increasing bunches and leaf: bunches ration and treatment of 10 bunch/palm + 9 leaves / bunch (T5) gave statistically the highest values of fruit diameter during two seasons of study. Meanwhile, increased 10 bunch/palm + 10 leaves / bunch decreased fruit diameter, while the lowest mean values recorded the lowest mean value of fruit diameters during both seasons.

Fruit Shape Index:

With respect to the bunches and leaf: bunches ration in the same table data obtained during both seasons declared that fruit shape index of "Saiedy" variety date palm followed typically the same trend previously detected with the average fruit diameter and length. Such trend was true during 2019 and 2020 seasons. Similar effects of fruit thinning on fruit dimensions (length, diameter and fruit shape index) were reported by other investigators on several date cultivars. The results of these studies (**Soliman *et al.* 2011; Soliman and Harhash 2012**; **Omer *et al.* 2013; El-Salhy *et al.* 2017** and **Ibrahim and Mohamed 2021**) are in agreement with this result.

Generally, these results could be due to a decrease in the number of bunches per palm or the number of fruits per bunch, resulting in an increase in the ratio of leaves to fruits and a greater supply of food materials (carbohydrates)

generated in the leaves. Such fruit thinning techniques are critical in the production of dates because increasing fruit weight and size is more significant than increasing overall yield since increasing fruit weight increases packable yield. In this respect, **Al-Salman *et al.* (2012**), the yield and total production of dates increased dramatically when the leaf/bunch ratio increased. **Omer *et al.* (2013)** indicated that the same treatment (10 leaves/bunch, 1st week in May) led in most physical parameters as (bunch weight, fruit and seed weight (g), size (cm^3), height (cm), and diameter (cm). Additionally, **El-Salhy *et al.* (2017**) found that leaf/bunch ratio from 10:1 increased fruit weight, pulp, length and diameter. Also, **Ibrahim and Mohamed (2021**), the leaf/bunch ratio of 10:1 produced the highest physical features included yield, bunch weight, fruit and fruit flesh, fruit length and diameter, and dry weight of flesh of date fruits.

In regard of the previously mentioned results, it can be recommended that 10 bunch/palm and 9 leaves / bunch was the most suitable pruning treatment for Saiedy data palm fruit measurements studied under El-Dakhla Oaisis, New valley Governorate.

Table (1): Effect of bunches and leaf: bunches ration on fruit, flesh and seed weight of "Saiedy" data palm fruit during 2019 and 2020.

Treatments	Fruit weight (g)		Flesh weight (g)		Seed weight (g)	
	2019	2020	2019	2020	2019	2020
Control (T1)	11.62	12.34	10.16	10.37	1.61	1.68
T2	12.76	13.37	11.19	11.43	1.63	1.70
T3	14.64	15.41	12.96	13.23	1.65	1.72
T4	13.27	13.99	11.77	12.01	1.66	1.76
T5	15.66	15.82	14.01	14.30	1.68	1.78
T6	17.08	17.04	15.35	15.67	1.71	1.79
T7	16.08	16.30	14.39	14.68	1.65	1.74
LSD at 0.05	**2.14**	**2.88**	**1.92**	**2.66**	**n.s**	**n.s**

T1: control
T2: 9 bunch/palm + 8 leaves / bunch.
T3: 9 bunch/palm + 9 leaves / bunch.
T4: 9 bunch/palm + 10 leaves / bunch.
T5: 10 bunch/palm + 8 leaves / bunch.
T6: 10 bunch/palm + 9 leaves / bunch.
T7: 10 bunch/palm + 10 leaves / bunch.

Table (2): Effect of bunches and leaf: bunches ration on bunch weight and fruit volum of "Saiedy" data palm fruit during 2019 and 2020.

Treatments	Bunch weight (g)		Fruit volume (cm^3)	
	2019	2020	2019	2020
Control (T1)	10.12	11.42	11.14	11.56
T2	11.06	12.19	12.66	12.51
T3	11.19	12.58	14.36	14.21
T4	11.43	14.57	13.23	13.27
T5	14.96	16.99	15.87	14.78
T6	16.30	18.34	16.81	16.11
T7	12.60	14.90	15.88	15.55
$LSD_{at\ 0.05}$	**0.11**	**0.14**	**1.60**	**1.63**

T1: control
T2: 9 bunch/palm + 8 leaves / bunch.
T3: 9 bunch/palm + 9 leaves / bunch.
T4: 9 bunch/palm + 10 leaves / bunch.
T5: 10 bunch/palm + 8 leaves / bunch.
T6: 10 bunch/palm + 9 leaves / bunch.
T7: 10 bunch/palm + 10 leaves / bunch.

Table (3): Effect of bunches and leaf: bunches ration on fruit dimensions of "Saiedy" data palm fruit during 2019 and 2020.

Treatments	Fruit length (cm)		Fruit diameter (cm)		Fruit shape index	
	2019	2020	2019	2020	2019	2020
Control (T1)	3.57	3.64	2.10	2.11	1.70	1.73
T2	3.68	3.73	2.13	2.17	1.73	1.72
T3	3.79	3.82	2.15	2.19	1.76	1.74
T4	3.90	3.91	2.21	2.27	1.76	1.72
T5	3.96	3.94	2.29	2.33	1.73	1.69
T6	4.01	3.97	2.35	2.38	1.71	1.67
T7	3.84	3.87	2.19	2.22	1.75	1.74
$LSD_{at\ 0.05}$	**0.09**	**0.08**	**0.06**	**0.05**	**0.03**	**0.03**

T1: control
T2: 9 bunch/palm + 8 leaves / bunch.
T3: 9 bunch/palm + 9 leaves / bunch.
T4: 9 bunch/palm + 10 leaves / bunch.
T5: 10 bunch/palm + 8 leaves / bunch.
T6: 10 bunch/palm + 9 leaves / bunch.
T7: 10 bunch/palm + 10 leaves / bunch.

REFERENCES

Ahmed, B. H.; S. A. Mehana; O. A. Zagzog and E. M. Qauod (2019). Improvements of yield and fruit quality of Zaghlool date palm by using the different thinning treatments. J. Productivity and Development, 24(4): 743-756.

Alam El-Ddein, S. M and A. E. K. Omar (2014). Effect of strand thinning on yield and fruit quality of Egyptian dry date palm (*Phoenix dactylifera* L.) cv. Sulatani. J. the American Pomological Society., 68 (3): 135-140.

Ali-Dinar, H. M.; A. A. Alkhateeb; I. Al-Abdulhadi; A. Alkhateeb; K. A. Abugulia and G. R. Abdulla (2002). Bunch thinning improves yield and fruit quality of date palm (*Phoenix dactylifera* L.). Egypt. J. Applied Sci., 17: 228-238.

Al-Salman, H.; N. Al-Wusaibai; M. Al-Husseini; H. I. Al-Hajji; I. A. AlAbdulhadi and A. Abdallah (2012). The Effect of Different Leaf/Bunch Ratios on Yield and Fruit Physical Characteristics of Khlass Date Palm Cultivar," Ind. J. Sci. Technol., 5(3): 2287.

Al-Wasfy, M. M. and R. A. A. Mostafa (2008). Effect of different methods of fruit thinning on Zaghloul date palm production and fruit quality. Assiut J. of Agric. Sci., 39(1): 97-106.

Bashir, M. A.; M. Ahmad; F. Altaf and K. Shabir (2014). Fruit Quality and Yield of date palm (*Phoenix dactylifera* L.) as affected by strand thinning. J. Anim. Plant Sci., 24 (3): 951-954.

Daillo, H. (2005). The role of date palm in combat desertification. In: The date palm: from traditional resource to green wealth. Pp. 13-19 UAE Center of Studies and Strategy Researches, Abu Dhabi, UAE.

El-Gassas, S. E. (1986). Manual bunch and chemical thinning of Zaghloul dates. Proceedings of the 2nd Symposium on the Date Palm, Date Palm Research Center, March 3-6, 1986, King Faisal University, Kingdom of Saudi Arabia, pp: 187-196.

El-Hamady, M. M.; A. S. Khalifa and A. M. El-Hamady (1983). Fruit thinning in date palm with ethaphone. Proceedings of the 1st Symposium on Date Palm, March 23-25, 1982, Saudi Arabia, pp: 284-295.

El-Salhy, A. M. (2001). The relation between leaf/bunch ratio and Zaghloul date productivity. Egyptian Journal of Horticulture, 28 (2): 149-158.

El-Salhy, A. M.; M. M. El-Akaad; E. Z. El-Deen and M. M. Ahmed (2017). Effect of magnesium fertilization and leaf/bunch ratio on growth and fruiting of Sewy date palm. Assiut J. Agric. Sci., 48 (4): 132- 144.

El-Salhy, A.; H. A. Abdel-Galil; A. A. El-Bana and E. F. Ahmed (2010). Effect of pollen grains suspensions spraying on yield and fruit quality of Saiedy date palm cultivar. Acta Hort. 882: 329-336. Pro. of 4th Iner. Date Palm Con.

FAO, (2019). Data for Crop Production in 2017. – http:// www.fao.org/faostat/en/#data.

Gomez, K. N. and A. A. Gomez (1984). Statistical procedures for agricultural research. John Wiley and Sons, New York, 2nd ed., 68 p.

Harhash, M. M.; M. A. Husein and S. E. El-Kassas (1998). Effect of Bunch/Leaf ratio on the yield and quality of Zaghloul date palm. Proceedings of First International Conference on Date palms, Al-Ain, UAE, March 8-10, pp 365-378.

Hegazi, A. M.; E. F. El-Dengawy and Marwa H. Hamama (2008). Leaf/bunch ration for Oreabi date palm cultivar groen at the North Delta of Egypt. J. Agric. Sci. Mansoura Univ., 33 (1): 419-424.

Hussein, F. and K. M. Abdallah (1973). Leaf/bunch ratio in relation to yield, fruit quality and ripening of 'Sakkoti' dates. High Polytechnical Institute. Moshtohor, Egypt, Bull., 33: 1-12.

Ibrahim, M. M. and A. R. M. A. W. Mohamed, (2021). Influence of Leaf/Bunch Ratio on Yield and Fruit Quality of "Zaghloul" Dates. Egyptian Journal of Horticulture, 48(2), 157-163.

Iqbal, M.; M. Q. Khan; M. Munir; S. Rehman; H. Rehman and M. Niamatullah (2010). Effect of different pollination techniques on fruit set pomological characters and yield of Dhakki date palm (*Phoenix dactylifera* L) in Dera Ismail Khan, KP. Sarhad. J. Agric., 26 (4): 515-51.

Khalifa, A. S.; A. I. El-Kady; K. M. Abdalla and A. M. ElHamdy (1987). Influence of thinning patterns and leaf/bunch ratio on 'Zaghloul' dates. Ann. Agric. Sci. Fac. Agric. Ain Shams Univ. Cairo, Egypt, 32: 637-647.

Leopold, A. C. (1964). Plant Growth and Development. McGraw-Hill Book Co., Inc. N.Y., pp: 466.

Madani, B.; A. M. Dastjerdy and A. Shahriyar (2021). Improving 'Piyarom' date palm fruit quality with fruit thinning and bunch covering treatments. Advances in Horti. Sci., 35(1): 11-19.

Ministry of Agriculture and Land Reclamation (2015). Total area yield and production for palm dates. Economic Affairs, Stats Sector. 352.

Mostafa, R. A. A. and M. M. El Akkad (2011). Effect of fruit thinning rate on yield and fruit quality of Zaghloul and Haiany date palms. Australian J. of Basic and Appl. Sci., 5(12): 3233-3239.

Omar, A. K.; S. S. Soliman and M. A. Ahmed (2013). Impact of leaf/bunch ratio and time of application on yield and fruit quality of 'Barhi' date palm trees

(*Phoenix dactylifera* L.) under Saudi Arabian conditions. J. Testing and Evaluation, 41: 813–817.

Radwan, E. M. A. (2017). Response of Bent Aisha and Sewy date palm to some fruit thinning treatments. Assiut J. Agric. Sci., 48 (2): 115-126.

Shaaban, S. H. A.; S. S. Soliman and H. A. Hamouda (2006). Nutrient removal and physical, chemical properties in Samany date palm as influenced by different pruning treatments. J. Appl. Sci. Res., 2(12): 1142–1150.

Soliman, S. S. and S. M. Osman (2001). Effect of bunch/leaves ratio on fruit physical and Chemical Characteristics in 'Gondaila' and 'Dagana' date palm cultivars. Minufiya J. Agric. Res., 26: 825– 835.

Soliman, S. S.; R. S. Al-Obeed and M. M. Harhash (2011). Effects of bunch thinning on yield and fruit quality of khalas date palm cultivar. World J. Agric. Sci., 7: 42-46.

Wilde, S. A; R. B. Corey; J. G. Layer and K. Voigt (1985). Soils and Plant Analysis for Tree Culture. Published by Mohan Primlani, Oxford and IBH publishing co, New Delhi. pp 1-142.

.

الملخص العربي

تأثير عدد السوباطات والنسبة بين عدد الأوراق لكل سوباطه على الإثمار فى نخيل البلح الصعيدى 1- الصفات الفيزيائية

فاروق حسن عبد العزيز – فيصل فاضل احمد حسن – محمد عبدالمنعم أمين حسين
كلية الزراعة جامعة المنيا

أجريت هذه الدراسة خلال موسمى 2019 و 2020 بالواحات الداخلة محافظه الوادي الجديد بمصر على نخيل البلح الصعيدى متساو الحجم و الذى يصل عمره الى 10 أعوام خاليه من الأمراض و الحشرات مزروعة فى ارض رمليه سلتيه بنظام الرى بالتنقيط. وتهدف التجربة الى دراسة تأثر عدد السوباطات لكل نخله و النسبة بين عدد الأوراق لكل سوباطه على الاثمار والخصائص الفيزيائية لثمار البلح. صممت التجربة فى قطاعات كاملة العشوائية حيث تحتوى كل معامله على نخله واحده كررت 3 مرات. تم تقليم السوباطات و الأوراق الى نسبه محدده لكل نخله حيث اشتملت التجربة على 7 معاملات كالتالي: كنترول (تم إزالة الأوراق الميته فقط)، 9 سوباطه/ نخله + 8 أوراق / سوباطه، 9 سوباطه/ نخله + 9 أوراق / سوباطه، 9 سوباطه/ نخله + 10 أوراق / سوباطه، 10 سوباطه/ نخله + 8 أوراق / سوباطه، 10 سوباطه/ نخله + 9 أوراق / سوباطه و 10 سوباطه/ نخله + 10 أوراق/ سوباطه. أوضحت النتائج إلى أن ؛ الصفات الفيزيائية للفاكهة مثل (وزن السوباطه ، وزن الثمره ، وزن اللب (جم) ، وزن البذرة (جم) ، أبعاده الثمره (الطول ، القطر (سم) وشكل الثمرة) وكذلك حجم الثمرة (سم 3)). ، جميع النسب المستخدمة تحت الدراسه عدد السوباطات لكل نخله و النسبة بين عدد الأوراق لكل سوباطه كان لها تأثير إيجابي على الصفات الفيزيائية المدروسة لثمار نخيل البلح "صعيدى" بالمقارنة مع الكنترول ، حيث أعطت النسبة 10 سوباطه / نخله + 9 أوراق / سوباطه أفضل النتائج فيما يتعلق بالخصائص المدروسة لنخيل صعيدى تحت نفس ظروف التجربة.