The Effect of Pollen Type on Some Fruit Traits and Production Quantity of Date Palm Trees Phoenix Dactylifera L. For Agricultural Cultivar Al-Ibrahimi

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Summary

The study was conducted during the agricultural season 2019 in one of the orchards of the district of Heat, Al-Hassania (Shamiya) Village in Al-Anbar Governorate, know the effect of different pollen male grains type (Ghanami Ahmar, Ghanamy akhdar, samesmi , Khikri adi) on some fruits traits and the amount of production the date palm of the agricultural cultivar AL-Ibrahimi, The results indicated that the best pollen used to pollinate the agricultural cultivar Ibrahimi it is for grains of the vaccine Khikri adi, characterized by giving the best qualitative qualities of fruits Average weight fruits and diameter in the Khalal stage and average diameter and weight stromal layer in the stage dates (11.59 g , 2.36 cm , 1.77 cm , 9.96 g) respectively , the Ghanami Ahmar vaccine was distinguished by giving the best quantitative fruit qualities the average of percentage for fruits contract and raceme weight (86.60 % , 16.87 Kg) respectivel .

Introduction

That the date palm phoenix dactylifera L is an important species in the Areacaceae palm family, it is believed that most of the date palm cultivars originated from seed and were selected for their finest flower and fruits qualities and they multiplied by the seedlings and that over the long ages, humans helped to choose the best and the best from date palm [(1)] .

Iraq has many agricultural varieties of date palm their number is estimated at more than 600 agricultural varieties at the local and commercial levels [(2)] Several research results indicated that the type of vaccine affects the chemical, physical, and an appointment Maturity The pollen also affects the characteristics of endosperm and the fetus, and certain stallions are elected to pollinate the different date palm trees, The direct effects of pollen on the characteristics of the fetus and endosperm are known as Xeni this phenomenon has a clear impact on the fetus and the endosperm [(3)] the vaccine has an effect outside the endosperm and the fetus, which was named by Swingle as Metaxenia it is the effect of pollen grains on the covers of the ovary, which leads to influence the natural characteristics of the fruits Therefore, for each of the areas where the date palm is grown, For each of the areas where the date palm is grown, a limited number of male species are preferred, pollinating them because of their importance in improving the fruit characteristics thus improving yield the crop [(4)], the study aims to conduct pollination of two cultivars of date palm cultivars spread in Heat district with four types of males present in the region to determine of the best in giving Qualitative qualities and quantitative fruits characteristics .

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Methods of work

The study was conducted during the agricultural season 2019 in one of the orchards of the district of Heat, Al-Hassania village (Al-Shamiya) in Al-Anbar Governorate to see the effect of male pollen type

(Ghanami Ahmar, Ghanamy akhdar, samesmi and Khikri adi) on some fruits traits and the amount of production the date palm of the agricultural cultivar AL-Ibrahimi which are spread in the region and was selected four palm trees variety are identified as similar as possible in growth and age, to conduct experiments on it where date palm was pollinated with one of the types of pollen male used in the study.

Pollination of the cultivar began from 6/4/2019 anumber was chosen of active sorties (eight sorties), after the pollination process the bagging process was carried out immediately with special bags of 30 x 80 cm to avoid the transmission of pollen of unknown origin from neighboring trees, bags were raised 15 days after the inoculation.

Studied traits . 1-Average percentage of the fruit contract (%)

The average percentage of the contract was calculated one and a half months after the pollination process (Kimri stage) was extracted according to the following formula [5].

$$\text{Percentage percentage of fruiting fruits} = \frac{fruiting\ fruits\ number)}{fallen\ flowers\ number + Shees\ fruits\ number + The\ number\ of\ fallen\ fruits} \times 100$$

2- Measurement of some fruits traits .

Ten fruits were randomly cut from each **raceme** of a single palm, and the following fruit traits were studied .

a-Average fruit weight (g)

The average fruit weight was calculated using Sensitive electronic balance .

b- Average volume of fruits (ml)

The average volume of fruits was measured using a method of measuring the volume of displaced water and the cylinder was used for this process .

c- Average fruit length and diameter (cm)

The average length and diameter of fruits were measured by (vernier)..

d- Average weight of the stromal layer and seed weight (g)

Took ten ripe and healthy fruits randomly, the stromal layer of each fruit was separated from the seed and the stromal layer and the nucleus were weighed separately with using Sensitive electronic balance.

3- raceme weight (Kg)

After fully ripening the fruits of each date palm of each variety, the cutting process is done raceme in an accurate way and the fruits that were collected during the cutting were collected and the racemes were weighed individually using the Sensitive Electronic field.

Statistical Analysis

Statistical analysis conducted one way analysis the trend included the influence of types male or female species on the studied traits, By model general linear model Using SAS Statistical Ready Edition 9.0 [6], Significant differences were tested between the averages using a test Duncan Polynomial [7] at the level of significance ($P \leq 0.05$) .

Results and Discussion

Effect of pollen type on the fruits traits s of the Agricultural cultivar AL-Ibrahimi Percentage of fruit contract (%)

The results shown in Table.1 indicate that there were significant differences ($P \leq 0.05$) in the percentage percentage of the fruits contract between palm trees cultivar agricultural AL-Ibrahimi pollinated with the pollen grains male used in the study, As the percentage of the fruit contract significantly increased in the date pollinated by the pollen grains of the Ghanami Ahmar, Ghanamy akhdar and samesmi pollen the highest values

were recorded (86.60% , 84.70% , 83.20%) respectively, Comparison with the average percentage of the fruits contract pollinated by the grain of the Khikri adi which recorded the lowest value (80.70%), The reason may be due to the difference in the vitality of the different males pollen used in the study and their ability to be pollinated and fertilization, and therefore an effect on the trait studied, [8] stated that the date palm of pollination and the sources of different pollen grains for the male (Al-Ramadi, Al-Aswd, Al-Asfar, Ghanami Ahmar) affected the percentage of the fruits contract and the total yield for the cultivar Asharsy in the regions of Mandali and Baladruz. , showed the results [4] that different male pollen pills differ in their qualitative and quantitative content of hormones, which in turn affects the characteristics of the fruits.

The average weight of the fruit during the stage Khalal and the average weight of the stromal layer and the seed for the dates stage .

The results showed that there were clear significant differences in the average weight of fruits in stage Khalal and the average weight of the stromal layer and the seed average weight in the dates stage between dates of the cultivar agricultural AL-Ibrahimi Pollinated with the male vaccine pills used in the study , as in Table.1

The average weight of the fruit significantly increased during the stage Khalal of the date pollinated palm Khikri adi and recorded the highest value (11.59 g) record lowest value of average fruits weight in the fruits of the dates pollinated by the Ghanami Ahmar vaccine (9.01 g), The weight of the fleshy layer significantly increased in the dates of the date of the pollinated palm by the Khikri adi and recorded the highest value (9.96 g), lowest value of the average weight of the stromal layer recorded in the fruits of the date pollinated by the Ghanamy akhdar vaccine reached (6.15 g) , lowest value of the average weight of the stromal layer recorded in the fruits of the dates pollinated by the Ghanamy akhdar vaccine reached (6.15 g) ,average weight of the seeds significantly exceeded in the date pollinated palm tree with the Khikri adi the highest value was record (0.92 g), The lowest value of the average seeds weight in the date palm trees pollinated with the Ghanamy akhdar vaccine reached (0.63 g), The reason may be due to the compatibility between pollen grains and studied traits, or the reason may be due to the vitality of the different male pollen grains used in the study and thus affected these characteristics, A study was conducted by [9] to see the effect of different vaccine sources for nine male species (M1 to M9) on the physical properties of the agricultural variety Daki and the results showed that the type of vaccine did not significantly affect the weight of the seeds , Showed the results of [10] a significant effect of the Khikri adi pollen grains on the weight of the fruits, their size, length, diameter, seed weight, and pulp weight in the fruits of the Halawi cultivar compared to the Ghanamy akhdar vaccine, which did not score any significant difference for these characteristics .

Average fruit size, length, and diameter for the stage Khalal and the length and diameter in the dates stage

The results showed in Table.1 that there were no significant differences in the average size of the fruits and the average length in the stage Khalal and the presence of significant differences in the average diameter of the fruits in the stage Khalal and dates among the palms of the cultivar agricultural AL-Ibrahimi, pollinated with pollen males used in the study.

The average fruits diameter significantly increased in the stage Khalal of the date palm pollinated by the Khikri adi and samesmi fever vaccine and recorded the highest values (2.36 cm, 2.30 cm) respectively, Compared with the average diameter fruits of the date palm pollinated by the Ghanami Ahmar pollen, which recorded the lowest value (2.08 cm), The average fruits diameter significantly exceeded in the pollinated palm trees the Ghanami Ahmar pollen grains, samesmi and Khikri adi pollen recorded the highest values (1.85 cm, 1.78 cm, 1.77 cm) respectively, lowest average diameter of the fruits was in the fruits of the dates pollinated by the Ghanamy akhdar vaccine (1.62 cm), The reason that some fruits traits may not be affected and other fruits traits effect in this category may be due to the genetic factors of the different pollen grains,[11] explained the effect of pollen grains of 24 male cultivars on indicators of the ripening of palm fruits for the two cultivar Al-Sayer and Halawi where the results showed significant superiority in the Fruit size, weight, pulp, seed length, weight, diameter, and size, in stage Khalal and al-rtab in the Halawi cultivar , The results obtained by [12] showed

that the Ghanami akhdar vaccine was significantly superior to the rest of the treatments in the length, diameter and weight of the fruits during the phase during the use of two types of pollen grains (Ghanami akhdar and Khikri adi, and their mixture) to pollinate two types of agricultural varieties (Al-Khidrawi and Al-Birim).

Average raceme weight (Kg).

The results of Table,1 showed that there were significant differences ($P \leq 0.05$) in the average racemes weight between the date palm of the cultivar agricultural AL-Ibrahimi pollinated pollen males used in the study, As the average weight of raceme increased in pollinated date palm trees the Ghanami Ahmar , Ghanamy akhdar and samesmi, and the highest values were recorded (16.87 kg, 15.55 kg, 15.45 kg), Compared to the average weight of raceme in a date pollinated palm tree with the Khikri adi vaccine the lowest value was recorded (13.05 Kg), The reason may be due to the difference in the viability of the different sage pollen grains and their hormonal content which affected the fruits contract percentage and on the studied fruits traits and consequently the effect on the weight of the racemes, The study conducted by [13] showed of the methazine effect five sources of pollen grains two cultivars, Nabot Ali and Sabaka where the results showed a significant increase in the average weight of raceme in the agricultural variety Nabot Ali when pollinated with the Hada-8 vaccine, mentioned[4] that different male pollen grains differ in their qualitative and quantitative content of hormones, and this, in turn, affects the fruits characteristics of the date palm.

Table.1 The effect of percentage to hold fruit sand Some fruit traits of agricultural class AL-Ibrahimi

adjectives		Male species				Level of significance
		Ghannami Ahmar	Ghanamy Akhdar	samasmi	Khikri Adi	
percentage to hold fruits (%)		0.225 ± 86.60 a	0.335 ± 84.70 b	0.485 ± 83.20 c	0.457 ± 80.70 d	0.0001
Fruits stage khalal	weight (g)	0.224 ± 9.01 b	0.258 ± 10.49 ab	1.092 ± 10.75 ab	0.320 ± 11.59 a	0.0363
	size (ml)	0.389 ± 15.97 a	0.360 ± 12.90 a	1.69 ± 16.70 a	1.26 ± 13.70 a	G.M.
	Length (cm)	0.028 ± 3.77 a	0.025 ± 3.39 a	0.206 ± 3.61 a	0.180 ± 3.53 a	G.M.
	Diameter (cm)	0.085 ± 2.08 b	0.016 ± 2.18 ab	0.087 ± 2.30 a	0.030 ± 2.36 a	0.0158
Fruits Tamar stage	Length (cm)	0.092 ± 2.94 a	0.023 ± 3.04 a	0.188 ± 2.78 a	0.209 ± 2.67 a	G.M.
	Diameter (cm)	0.018 ± 1.62 b	0.035 ± 1.85 a	0.052 ± 1.78 a	0.071 ± 1.77 a	0.0165
	Weight of stromal layer (g)	0.185 ± 8.06 b	0.217 ± 6.15 c	0.117 ± 7.60 b	0.122 ± 9.96 a	0.0001
	Seed weight (g)	0.025 ± 0.74 b	0.013 ± 0.63 c	0.008 ± 0.71 b	0.014 ± 0.92 a	0.0001
	raceme weight (Kg)	0.235 ± 16.87 a	0.518 ± 15.55 b	0.525± 15.45 b	0.254 ± 13.05 c	0.0001

*The values Rate ± standard error ; **G.M Not significant at the level .($P \leq 0.05$).; *** a , b, c, d ; Different letters within a single row indicate that there are significant differences between types at a level .($P \leq 0.05$).

Conclusions

From analyzing the results obtained from this study to see the effect of different types of males on the qualitative and quantitative fruits characteristics the Agricultural cultivar AL-Ibrahimi, we conclude, Different males in the amount of pollen grains their viability and their ability to pollinate and fertilization, and that Agricultural cultivar AL-Ibrahimi also differ in their acceptance of the different pollen grains, that environment has an important role in the pollention and fertilization process and the percentage for fruits contract while giving good fruits qualities in addition to the type of vaccine .

Ethical Clearance: The Research Ethical Committee at scientific research by ethical approval of both MOH and MOHSER in Iraq

Conflict of Interest: Non

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