



Characterization of Some Mango Cultivars and Sexual Strains

Aiman K.A. Mohamed^{1*}; Karam A. Amein²; Rashad A. Ibrahim¹ and Shamia A. Thabit¹

¹Pomology Department, Faculty of Agriculture, Assiut University, Assiut, Egypt.

²Genetics Department, Faculty of Agriculture, Assiut University, Assiut, Egypt.

*Corresponding author e-mail: aimanmohamed@hotmail.com

DOI: 10.21608/AJAS.2024.289916.1359

© Faculty of Agriculture, Assiut University

Abstract

The study included 7 mango cultivars which are grown in the orchard of Pomology Department at the Faculty of Agriculture, Assiut University during two successive seasons of 2021 and 2022. These cultivars were Zebda, Langra, Maksudy, Heidi, Kent, Naomi, Keitt as well as 5 sexual strains. The study was conducted on five replicates of each cultivar. The objective of the present study was to evaluate and describe the main fruit characteristics of such mango cultivars and strains grown in Assiut Governorate Egypt. The present study also observed that there were variations among the studied cultivars and sexual strains in terms of flowering and harvesting dates. However, there were synchronization on the time of new vegetative growth appearing. The obtained results showed that there were significant differences between Heidi cultivar and the other mango cultivars and strains during the 2nd season of study in term of leaf area. The current study revealed that Zebda and Maksudy followed by Kent mango cultivars recorded the highest values of fruit weight and size (length and diameter) as well as pulp and peel weight. However, the sexual strains exhibited the lowest values. The number of embryos was identical during both seasons. Zebda produced the highest number of embryos (3.8) followed by Maksudy (2) while the other mango cultivars and Strains were mono embryonic seed.

Keywords: *Cultivars, Mango, Leaf area, Sexual strains, Physical properties*

Introduction

The botanical name for mango tree is *Mangifera indica*. Mango belongs to the Anacardiaceae family. The genus *Mangifera* is native to South-East Asia and includes 62 species. Mango has great adaptability and thrives in a wide range soil and climatic conditions. Also, it has relatively hardly nature, low cost of culture and maintenance. Mango is the most popular fruit of the orient. Fruits from the better cultivars have melting yellow flesh, fine aroma and good flavor. Ripe mangoes are eaten in dessert canned or used for making juice, Jam and other preserves.

Mango (*Mangifera indica* L.) is one of the most popular and favorite fruits in Egypt. It contains a high percentage of sugar, protein, fats, salts, vitamins. It

has been considered “the king of fruits” and is widely planted in tropical and subtropical regions. In 2018, the world production of mango was around 50 million tones (FAOSTAT, 2020). It is known to have been cultivated in Egypt since 1825. Currently, mango is one of the main fruit trees in Egypt. It occupies third place after citrus and grapes. According to the Egyptian Ministry of Agriculture Statistics (2022), the fruiting area of mango reached 297189 feddans which produced 1280310 tons.

Because of its nutritious and bioactive properties, global mango consumption has increased significantly (Poovarodom *et al.*, 2010). Many factors influence the growth, yield, maturity and quality of fruits. One of the key factors that can influence the characteristics of grown cultivars is the growing area. Previous studies have shown that growth and fruiting behaviors vary widely between different mango varieties grown under different climatic conditions. Some previously introduced mango cultivars of excellent fruit quality were successfully grown under different climatic conditions of Egypt such as Keitt, Kent, Heidi, Naomi and Tommy Atkins cultivars (Abourayya *et al.*, 2012; Ahmed *et al.*, 2016 and El-Agamy *et al.*, 2018).

The fruit classification is an important part of tracking the success of the studied Cultivars which would help to introduce, select and improve the existing mango cultivars. Mango is the predominant tropical fruit in the world being cultivated in more than one hundred countries and accounting for more than half of global major tropical fruit production. Currently, about 80% of global production is concentrated in nine nations. Mango is sometimes referred to as the king of the fruits, due to its eye-catching color, pleasant taste, the existence of higher concentrations of carotenoids, ascorbic acid and phytochemicals. Accordingly, the aim of the study is to evaluate and characterize some mango cultivars, in addition to some sexual strains, in terms of vegetative and flowering growth, fruit growth and other physical characteristics under the climatic conditions of Assiut Governorate.

Materials and methods

The study included Seven mango cultivars namely Zebda, Langra, Maksudy, Heidi, Kent, Naomi, Keitt as well as five sexual strains,

which are grown in the orchard of Pomology Department at the Faculty of Agriculture, Assiut University during two successive seasons 2021 and 2022. The study was conducted on 5 replicates of each cultivar.

This experiment was arranged in a complete randomized block design to study the performance of cultivars and strains regarding vegetative, floral and fruit growth. Moreover, physical properties of fruits were also studied.

The Following measurements were executed on each tree:

1-Leaf area and dates of growth

- Flowering date
- Date of emergence of new vegetative growth.
- Leaf area for each cultivar was estimated.

Leaves from the apical growing point was used to determine the leaf area. Leaf length and width was measured and then leaf area was determined according to the following equation described by Ahmed and Morsy (1999).

$$\text{Leaf area} = 0.70 (\text{Leaf length} \times \text{Leaf width}) - 1.06$$

2-The physical properties

- Fruit weight (g) and its length (L) and width (W) in cm.
- Pulp weight (g).
- Peel weight (g).
- Number of embryos.

Statistical analysis

experiment was designed as a complete randomized Block design The differences were tested by analysis of variance (ANOVA) according to Snedecor and Cochran, 1990

Means were compared using the least significant difference (LSD) values at 5 % level of the probability.

Results

Data concerning the parameters of studied mango cultivars and sexual strains are presented in Tables 1-7.

1- Leaf area (cm²)

Data concerning leaf area (cm²) are found in (Table 1) The obtained results revealed that in the 1st season most of the sexual strains surpassed the mango cultivars. In detail, mango strains S4 and S2 significantly surpassed all mango cultivars and S3. They recorded 100.59 and 98.43 cm², respectively. Strains S5 and S1 also recorded higher leaf area (81.70 and 78.36 cm², respectively), with no significant differences between them and the other strains or the mango cultivars Zebda, Maksudy and Langra. On the other side, mango cultivars Heidi recorded the lowest value of leaf area (38.06 cm²) In the 2nd season of study, mango cultivars Maksudy and Langra represented the highest values of leaf area (76.35 and 75.34 cm², respectively) followed by Strains 1, 4 and 5 (69.31, 64.44 and 64.32 cm², respectively). The differences between the previous cultivars and strains were not significant. Strain 2 recorded also a higher leaf area (62.22 cm²), however, the other cultivars and strains showed lower values Compared to the higher ones.

Strain 3 recorded the lowest value followed by Naomi cultivar. The present study also observed that there were variations between the studied cultivars and sexual strains in terms of flowering and harvesting date (Table 2). However, there were synchronization on the time of new vegetative growth appearing

Table 1. Leaf area of mango cultivars and sexual strains during 2021 and 2022 seasons.

Cultivar	Leaf area index (cm ²)		Mean
	2021	2022	
Zebda	57.84 BCDE	60.72BC	59.28 CD
Maksudy	68.46 BCDE	76.35A	72.38 AB
Langra	57.72 BCDE	75.34A	66.53 BC
Heidi	38.06 E	46.61D	42.34 E
Kent	53.65 CDE	49.71CD	51.67 DE
Naomi	51.67 DE	38.31DE	44.99 E
Keitt	50.35 DE	48.70D	49.53 DE
SS 1	78.36 ABC	69.31AB	73.83 AB
SS 2	98.43 A	62.22B	80.33 A
SS 3	69.23 BCD	33.22E	51.22 DE
SS 4	100.59 A	64.44AB	82.51 A
SS 5	81.17 AB	64.32AB	72.75 AB

A, B, C and D: values sharing different superscripts in the same column are significantly different at P<0.05.

Table 2. Time of vegetative growth, flowering and harvest of mango cultivars and sexual strains during 2021 and 2022 seasons

Cultivar	Time of flowering		Onset of vegetative growth		Harvest date	
	2021	2022	2021	2022	2021	2022
Zebda	23/1/2021	25/2/2022	1 st week of April	1 st week of May	1 st week of July	3 rd week of July
Maksudy	3/1/2021	18/2/2022				
Langra	14/1/2021	21/2/2022				
Heidi	11/1/2021	5/3/2022	2 nd week of April	2 nd week of May	3 rd week of August	2 nd week of August
Kent	11/1/2021	7/3/2022				
Naomi	9/1/2021	11/3/2022				
Keitt	31/1/2021	25/3/2022	1 st week of April	1 st week of May	1 st week of July	3 rd week of July
Sexual Strains	19/1/2021	23/2/2022				

2- Physical characteristics of fruit

Fruit weight (g)

The average fruit weight (g) of studied mango cultivars and strains was presented in Table 3. Generally, fruit weight of mango cultivars surpassed the sexual strains during the 1st season of study. The presented data showed that mango cultivars Zebda and Maksudy recorded the highest value of fruit weight (369.02 and 344. g, respectively). The differences between such cultivars and other cultivars and strains were significant.

The rest of mango cultivars showed significant differences compared to mango strains, however, the differences between them were not significant Strain 3 recorded the lowest fruit weight (143.74 g) among all studies cultivars and strains. During the 2nd season of study, Kent and Zebda cultivars recorded the

highest fruit weight (302.85 and 300.05 g, respectively), followed by Naomi and Maksudy which gave fruit weight of 293.06 and 289.67 g, respectively.

On the other side, the sexual strains represented a lower fruit weight compared to the cultivars. The average of the two seasons of study in Table (2) revealed that Zebda and Maksudy recorded the highest fruit weight (334.54 and 316.87g, respectively).

The differences between these two cultivars and the rest of cultivars strains were significant. However, the sexual strains gave lower fruit weight compared to the cultivars.

Table 3. Fruit weight of mango cultivars and sexual strains during 2021 and 2022 seasons

Cultivar	Weight of fruit (g)		Mean
	2021	2022	
Zebda	369.02 A	300.05 A	334.54 A
Maksudy	344.08 A	289.67 B	316.87 A
Langra	286.065 B	258.64 BC	272.21 B
Heidi	265.29 B	229.95 C	247.62 B
Kent	269.67 B	302.85 A	286.26 B
Naomi	274.39 B	293.06 B	283.72 B
Keitt	263.43 B	271.60 B	267.58 B
SS 1	160.52 C	180.17 D	170.90 C
SS 2	195.72 C	187.27 D	191.50 B
SS 3	143.74 C	155.73 D	149.73 C
SS 4	150.21 C	178.66 D	164.44 C
SS 5	164.95 C	159.77 D	162.36 C

A, B, C and D: values sharing different superscripts in the same column are significantly different at $P < 0.05$.

Fruit dimensions (Length and Width cm)

Data of fruit length and diameter (cm) of mango cultivars and sexual strains were presented in Table 4.

Fruit length (cm)

Data presented in Table 4 showed the fruit length of studied mango cultivars and strains. The obtained results revealed that both cultivars Zebda and Maksudy fruit length significantly exceeded the rest of cultivars and strains during the two seasons of study. During the 1st season, Maksudy and Zebda recorded 12.92 and 12.4 cm while in the 2nd season they recorded 11.98 and 12.34 cm, respectively. On the other side, the sexual strains mostly represented lower values of fruit length. The results were identical during the two seasons of study. The same observed in the two seasons average data where Maksudy and Zebda showed the highest value of fruit length (12.45 and 12.37 cm respectively) with significant differences with the other cultivars and strains.

Fruit diameter (cm)

Table 4 showed the results concerning the average fruit diameter of studied mango cultivars and strains. During the 1st season of study Zebda and Maksudy

represented the highest fruit diameter which recorded 8.67 and 8.28 cm, respectively. Such cultivars significantly exceeded the other cultivars and strains. On the other side, the sexual strains represented the lower values with significant differences compared to the mango cultivars. In the 2nd season of study sexual strains 2, 5 and 1 and mango cultivar kent recorded the highest fruit diameter. The values of them were 7.95 cm, 7.83 and 7.92, respectively. The average of the two seasons showed that, the mango cultivars Kent, Zebda and Maksudy gave the highest fruit diameter with significant differences with other cultivars and strains. They recorded 7.82, 7.73 and 7.53 cm, respectively.

Table 4. Fruit size (length and diameter) of mango cultivars and sexual strains during 2021 and 2022 seasons

Cultivar	Fruit length (cm)		Mean	Fruit diameter (cm)		Mean
	2021	2022		2021	2022	
Zebda	12.40 A	12.34 A	12.37 A	8.67 A	6.78 B	7.73 A
Maksudy	12.92 A	11.98A	12.45 A	8.28 A	6.78 B	7.53 AB
Langra	10.25 B	9.94B	10.11 C	7.62 B	6.14C	6.88 C
Heidi	10.82 B	8.68C	9.75 C	7.30 B	5.62CD	6.46 D
Kent	10.78 B	10.58B	10.68 B	7.72 B	7.92A	7.82 A
Naomi	10.66 B	10.64B	10.65 B	7.60 B	7.06B	7.33 B
Keitt	10.86 B	10.48B	10.67 B	7.56 B	6.8 B	7.18 BC
SS 1	8.24 C	10.5 B	9.37 C	6.07 D	7.82 A	6.95 C
SS 2	8.59 C	9.68 B	9.14 C	6.66 C	7.95 A	7.30 B
SS 3	7.86 C	8.98 C	8.42 D	5.86 D	6.50 B	6.18 D
SS 4	8.06 C	9.50 B	8.78 D	5.84 D	7.45 B	6.65 C
SS 5	8.04 C	9.79 B	8.92 D	6.64 C	7.83 A	7.23 B

A, B, C and D: values sharing different superscripts in the same column are significantly different at $P < 0.05$.

Fruit pulp and peel weight (g)

Data presented in Table 5 showed the differences between mango cultivars and sexual strains concerning the pulp and peel weight of mango fruits.

Pulp weight (g)

The obtained results suggested that, during the 1st season of study Maksudy cultivar recorded the highest pulp weight followed by Zebda They recorded 256.91 and 195.25 g, respectively. Both cultivars showed significant differences with other cultivars and strains.

During the 2nd season Kent and Naomi mango cultivars represented the highest values followed by Zebda, Maksudy and Keitt. Fruit pulp weight of these cultivars recorded 197.63, 182.22, 179.35, 172.80 and 172.70 g, respectively. The average of the two seasons

Table (5) revealed that Maksudy cultivar showed the highest value of pulp weight with a significant difference with other studied cultivars and strains. Kent and Zebda showed also higher pulp weight. The values of these cultivars were 214.86, 187.85 and 187.30g, respectively. These cultivars showed significant differences with other cultivars and strains.

Peel weight (g)

Data found in Table 5 showed that the highest weight of fruit peel was taken from Zebda and Maksudy mango cultivars during the two seasons of study. They recorded 85.69 and 77.76 g in the 1st season, and 87.86 and 76.77 g in the second one for both cultivars, respectively. The two cultivars showed a significant difference with other cultivars and strains during both seasons of study. The average of the two seasons of study took the same trend of both seasons of study where, Zebda and Maksudy recorded the highest and significant values comparing with the rest of cultivars and strains. They gave 86.78 and 77.26 g of peel weight, respectively.

Table 5. Pulp and peel weight of mango cultivars and sexual strains during 2021 and 2022 seasons

Cultivar	Pulp weight (g)		Mean	peel weight (g)		Mean
	2021	2022		2021	2022	
Zebda	195.25 B	179.35 BC	187.30 B	85.69 A	87.86 A	86.78 A
Maksudy	246.91 A	172.80 BC	214.86 A	77.76 A	76.77A	77.26 A
Langra	160.47 D	154.50 CD	160.29 C	35.93 B	34.94F	35.44 B
Heidi	161.53 D	140.90CD	156.52 C	53.74 B	40.99E	48.47 B
Kent	178.06 C	197.63A	187.85 B	45.15 B	62.97 BC	54.06 B
Naomi	148.69 E	182.22AB	165.45 C	52.27 B	56.96CD	54.61 B
Keitt	160.97 D	172.70 BC	167.83 C	52.27 B	55.03 D	53.65 B
SS 1	78.59 GH	78.80E	78.70 D	51.16 B	30.18FG	40.67 B
SS 2	102.44 F	80.28E	91.37 D	38.61 B	30.36FG	34.49 B
SS 3	75.74 GH	61.46F	68.60 D	28.07 C	26.60G	27.34 C
SS 4	74.63 H	79.10 E	76.86 D	32.08 B	28.30 FG	30.19 B
SS 5	85.79 G	73.34EF	79.57 D	44.70 B	26.39G	35.55 B

A, B, C and D: values sharing different superscripts in the same column are significantly different at $P < 0.05$.

Seed attributes

Table 6 showed the average seed length (cm), width (cm) and number of embryos of mango cultivars and strains fruits.

Seed length (cm)

Data presented in Table 6 showed that during the 1st season of study. Zebda and Maksudy produced the highest value of seed length followed by the other mango cultivars, while sexual strains gave lower values. During the 2nd season, most of mango cultivars, with the exception of Heidi and Kent, produced the highest seed length with no significant differences between them. The average of the two seasons also suggested that Maksudy, Zebda, Langra, Naomi, Keitt and Kent recorded the highest length of mango seeds with no significant differences between them, while the sexual strains gave the lowest values.

Seed width (cm)

Table 6 revealed that in the 1st season of study Heidi mango cultivar represented the highest seed Width with significant differences with the other studied mangoes. On the other side Langra mango cultivar showed the least value. During the 2nd season, sexual strain 1 represented the highest value while

Heidi gave the lowest one. The average of the two seasons of study showed that sexual strain 1 had the highest value while keitt cultivar recorded the least one.

Number of embryos

Data presented in Table 6 revealed that the number of embryos was identical during both seasons and the average of them. Zebda produced the highest number of embryos (3.8) followed by Maksudy (2) while the other mango cultivars and Strains seed were mono embryonic.

Table 6. Seed attributes (length, width and number of embryos) of mango cultivars and sexual strains during 2021 and 2022 seasons

Cultivar	Seed length (cm)		Mean	Seed width		Mean	Number of embryos		Mean
	2021	2022		2021	2022		2021	2022	
Zebda	9.80 A	9.8 A	9.80 A	4.98 B	5.02 BC	4.99 BC	3.8 A	3.8 A	3.8 A
Maksudy	9.80 A	9.9A	9.85 A	4.10 DE	4.08 BC	4.09 DE	2 B	2 B	2 B
Langra	8.77 B	9.54 A	9.15 A	3.63 F	4.84 BC	4.24 DE	1 C	1 C	1 C
Heidi	8.29 B	7.36 B	7.83 B	5.73 A	3.56 C	4.64 BCD	1 C	1 C	1 C
Kent	8.51 B	8.94 B	8.7 AB	3.94 DEF	4.40 BC	4.17 DE	1 C	1 C	1 C
Naomi	8.49 B	9.26 A	8.87 AB	3.79 EF	4.34 BC	4.07 DE	1 C	1 C	1 C
Keitt	8.49 B	9.04 A	8.76 AB	3.79 EF	4.0 BC	3.89 E	1 C	1 C	1 C
SS 1	6.80 C	7.54 B	7.17 B	4.64 BC	5.54 A	5.09 A	1 C	1 C	1 C
SS 2	7.06 C	6.75 B	6.91 C	4.82 B	5.14 BC	4.98 BC	1 C	1 C	1 C
SS 3	6.14 D	6.22 B	6.18 C	4.12 DE	4.53 BC	4.32 CDE	1 C	1 C	1 C
SS 4	6.62 CD	7.50 B	7.06 B	4.24 CDE	4.60 BC	4.42 BCDE	1 C	1 C	1 C
SS 5	6.22 D	7.68 B	6.95 C	4.32 CD	5.24 B	4.78 BC	1 C	1 C	1 C

A, B, C and D: values sharing different superscripts in the same column are significantly different at $P < 0.05$.

Discussion

The evaluation of a specific cultivar respecting the vegetative growth, yield and quality is differed from location to another one. However, the performance and differences between the cultivars vary depending upon the genetic makeup and/or the environmental conditions. The total area devoted for mango rapidly increased due to spreading of the new cultivars. Mango cultivars are differed morphologically, physiologically and genetically.

Mango is decidedly one of the most popular fruit in Egypt because of its excellent flavor delicious taste and health fall value. It occupies an advanced position among fruit crops in Egypt and now recognized as one of the best fruit in the world markets. During the last decade, mango growers are moved to grow some promising mango cultivars mainly for exportation aims. Kent, Keitt, Heidi and Naomi are examples of such cultivars which characterized by attractive fruit color with good quality fruit. The present study included seven mango cultivars and five sexual strains planted at the experiment of fruit orchard of Assiut University. The present study observed that there were variations between the studied cultivars and sexual strains in terms of flowering and harvesting date. However, there were synchronization on the time of new vegetative growth

appearing. El-Shiekh and Bur shaid (2009) evaluated some mango cultivars and found some variations between them in the time of flowering and growth habit. They observed that most of cultivars flowered during January.

Kumar (2017) suggested that flowering duration among mango cultivars significantly differed. Also, Hasseeb (2020) found differences between new introduced mango cultivars concerning flowering and harvest date. The current study revealed that Zebda and Maksudy followed by kent mango cultivars recorded the highest values of fruit weight and size (length and diameter as well as pulp and peel weight. However, the sexual strains exhibited the lowest values. Many workers have studied the variations between mango cultivars and strains

For instance, Saleh (2009), Shaban (2009), El-Shiekh and Bur shaid (2009), Serry (2010), Abourayya. (2011), Mishra *et al.* (2014), Ahmed and Mohamed (2015), Bora. (2017), Hussein *et al.* (2019), Saleh and Rai *et al.* (2023), found significant differences between mango cultivars and/or strains concerning various physical and chemical properties.

Conclusion

The present study and the previous studies revealed the important of various mango cultivars and strains for mango breeding to satisfy the local and export market requirements. As well as some many strains makeup of the cultivar and/or the environment conditions. Their differences are correlated with the genetic. Such strains showed reasonable quality, so they need further studies to spread them through vegetative propagation.

References

- Abourayya, M.S, (2011). Fruit physical and chemical characteristics at maturity stage of Tommy Atkins, Keitt and Kent mango cultivars grown under Nubariya conditions. *The Journal of American Science*. 7(3): 228-233.
- Abourayya, M.S., Kassim N.E., El-Sheikh M.H. and Rakha A.M. (2012). Evaluation of vegetative growth of Tomy Atkins, Kent and Keitt mango cultivars grown under Nubariya conditions. *Journal of Applied Sciences Research*. 8(2):887-895.
- Ahmed, T.H.M. and Mohamed Z.M.A. (2015). Diversity of Mango (*Mangifera indica* L.) cultivars in Shendi area: morphological fruit characterization." *International Journal of Research in Agricultural Sciences* 2(4): 2348-3997.
- Ahmed, Y.M., Roshdy, K.A. and Badran, M.A. (2016). Evaluation Study of Some Imported Mango Cultivars Grown under Aswan Governorate Conditions. *Alexandria Science Exchange Journal*, 37(2): 254-259.
- Bora, L., (2017). Characterization of mango (*Mangifera indica* L.) genotypes based on physio-chemical quality attributes. *Journal of Applied and Natural Science* 9(4): 2199-2204.
- Chapman, J.W. and Hasseeb, H. (2020). Thermal management system design for electrified aircraft propulsion concepts. 2020 AIAA/IEEE Electric Aircraft Technologies Symposium (EATS), IEEE.

- El-Agamy, M.K., Hoda, H.A. and Samia, S.H. (2018). Flowering and fruiting behavior of some introduced Mango cultivars grown in Giza Governorate conditions. *Middle East Journal of Agriculture Research*, 7(2): 559-568.
- El-Shiekh, A. and Burshaid, R. (2009). Quality evaluation of some local and imported mango cultivars grown in the United Arab Emirates. *Southeast Asia Symposium on Quality and Safety of Fresh and Fresh-Cut Produce* 875.
- FAOSTAT (2020). <http://www.fao.org/faostat/en/#home>.
- Hamad, A. (2021). Evaluation of some mango seed strains grown under Aswan region. *SVU-International Journal of Agricultural Sciences*. 3(2): 58-71.
- Hussein, M.A. and Ali, N.KH.S.M. (2019). Phenotypic, biochemical and molecular characterization of new Egyptian mango genotypes. *Hortscience Journal of Suez Canal University* 8(1): 55-68.
- Kumar, A., (2017). Studies on the growth and flowering of different mango (*Mangifera indica* L.) cultivars under Western Uttar Pradesh conditions. *Journal of Pharmacognosy and Phytochemistry*. 6(6S): 439-442.
- Mishra, P.K. (2014). Evaluation of mango (*Mangifera indica* L.) cultivars for preparation of osmo-dehydrated product. *The Bioscan*. 9(4): 1495-1498.
- Morsy, A.A. and Von Ramm, O.T. (1999). FLASH correlation: A new method for 3-D ultrasound tissue motion tracking and blood velocity estimation." *IEEE transactions on ultrasonics, ferroelectrics, and frequency control*. 46(3): 728-736.
- Poovarodom, S., Haruenkit R., Vearasilp S., Namiesnik J., Cvikrová M., Martincová O. and Gorinstein S. (2010). Comparative characterisation of durian, mango and avocado. *International journal of food science and technology*. 45(5): 921-929.
- Rai, A.K., Sengupta, S., (2023). Study of morphological leaf characters of mango (*Mangifera indica* L.) genotypes under Bihar. *The Pharma Innovation Journal* 2023; 12(3): 4498-4500
- Saleh, M., (2009). Assessment of some mango species by fruit characters and fingerprint. *Australian Journal of Basic and Applied Sciences*. 3(3): 1920-1924.
- Serry, K. (2010). Evaluation of some mango strains growing under Ismailia conditions. *Res. J. Agric. Biol. Sci.* 6(6): 840-845.
- Shaban, A. (2009). Vegetative growth cycles of some mango cultivars in relation to flowering and fruiting. *World Journal of Agricultural Sciences*. 5(6): 751-759.
- Snedecor and Cochran (1972). *Statistical methods* 6th Ed. The Iowa state univ. press, Amers Iowa USA, 593.

توصيف بعض أصناف المانجو والسلالات الجنسية

أيمن كمال أحمد محمد¹، كرم عبد النعيم أمين²، رشاد عبد الوهاب ابراهيم¹، شامية أحمد ثابت¹

¹ قسم الفاكهة، كلية الزراعة، جامعة أسيوط، أسيوط، مصر.

² قسم الوراثة، كلية الزراعة، جامعة أسيوط، أسيوط، مصر.

الملخص

اشتملت التجربة على 7 أصناف من المانجو تمت زراعتها في مزرعة قسم الفاكهة بكلية الزراعة جامعة أسيوط خلال موسمين متتاليين 2021، 2022 وهم أصناف زبده، لانجرا، مقصودي، هايدي، كينت، نعومي، كيت وكذلك 5 سلالات جنسية. أجريت الدراسة على 5 مكررات من كل صنف. كان الهدف من هذه الدراسة هو تقييم ووصف خصائص الثمار الرئيسية لأصناف وسلالات المانجو المختارة للدراسة. أوضحت الدراسة الحالية وجود اختلافات بين الأصناف المدروسة والسلالات الجنسية من حيث مواعيد التزهير والحصاد. وعلى الرغم من ذلك كان هناك تزامن في وقت ظهور النمو الخضري الجديد. أوضحت النتائج المتحصل عليها وجود اختلافات معنوية بين صنف الهايدي وباقي الاصناف والسلالات في صفة مساحة الورقة. أظهرت الدراسة الحالية أن أصناف زبده ومقصودي تليها مانجو كينت سجلت أعلى القيم في وزن الثمرة وحجمها (الطول والعرض) وكذلك وزن اللب والقشرة وقد سجلت السلالات الجنسية أقل القيم في هذا الشأن. بخصوص صفة عدد الاجنة بالبذرة احتوت بذور صنف الذبده على اعلى عدد اجنة (3.4) جنين بالبذرة يليها صنف المقصودي (2) بينما باقي الاصناف وحيدة الجنين.