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**Morphological and Physiological studies on some
pomegranate cultivars grown in new reclaimed soils
under Minia Governorate conditions.**

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V- SUMMARY AND CONCLUSION

This study was conducted during 2016 & 2017 & 2018 seasons in a private orchard namely El- Salam El- Dawlia located at West Salamout, Samalout district , Minia Governorate on uniform in vigour trees of five pomegranate cv namely Wonderful Manfalouty , Akka, H116 and H118 where the texture of the soil is sandy (1500 ppm salinity). All cultivars had 5 years old and planted at 3x4 meters apart. Drip irrigation system was followed. Water salinity was 850 ppm. The trees of the five pomegranate cvs received common and usual agricultural and horticultural practices that already applied in the orchard.

The object of this study was evaluating growth, nutritional status of the pomegranate trees, yield, as well as physical and chemical characteristics of fruits of five pomegranate namely cvs Wonderful, Manfalouty, H116, H118 and Akka grown under Minia region conditions.

During the investigated three seasons, the following measurements were recorded:

- 1- Date of start and end of bud burst.
- 2- Some vegetative growth aspects namely circumference of tree trunk (cm) and canopy (m) , tree height (m) , leaf area (cm)² , length and diameter of shoot (cm.) and number of internodes and leaves/ shoot.

- 3- Photosynthetic pigments in the leaves (mg/ 100 g F.W.) namely chlorophylls a & b and carotenoids.
- 4- Percentages of N, P , K and Ca in the leaves.
- 5- Behaviour of flowers include dates of start and end of blooming, number and percentages of perfect and male flowers/ tree and total number of flowers/ tree.
- 6- Behaviour of fruit setting namely dates of setting start as well as percentages of initial fruit setting and fruit retention.
- 7- Dates of maturation and harvesting
- 8- Yield per tree expressed in total weight of fruits (kg.), number of fruits/ tree and marketable yield (tree).
- 9- Percentages of cracked and sunburned fruits.
- 10- Some physical properties of the fruits namely weight (g.), height volume and diameter of fruit (cm) , number of rooms fruit weight and percentages of aril weight, fruit juice per., Juice volume (ml.) and fruit peel thickness (cm).
- 11- Some chemical properties of the fruits namely, T.S.S. per. , total acidity per., T.S.S./ acid ratio, vitamin C (mg/ 100 ml juice), anthocyanins and total phenols and total soluble tannins in the peel and aril as well as total and reducing sugars.

Complete randomized block design (CRBD) was followed where this experiment included five treatments from five

pomegranate cvs and each replicated three times, five fruits per each.

During the three seasons, the obtained results could be summarized as follows:

1- Dates of start and end of bud bursting.

Dates of start and end of bud bursting were advanced in pomegranate cv. Askka followed by H116 and were the same in cvs Wonderful, Manfalouty and H118.

2- Vegetative growth aspects:

Pomegranate cv. Wonderful was superior in maximizing all growth aspects except tree height compared with the other cvs.

3- Leaf chemical components:

Pomegranate cv. Wonderful gave the highest photosynthetic pigments in the leaves namely chlorophylls a & b , caroetnoid and percentages of N, P, K an Ca, while pomegranate cv. Akka recorded the minimum values.

4-Behavioru of flowering:

Dates of start and end of bloom were greatly hastened in cv. H116 and the vice versa was observed in Manfalouty cv. Wonderful cv. occupied the top in number of perfect and male flowers and total number of flowers / tree. The highest percentage of perfect flowers and the lowest percentage of male flowers were observed in Manfalouty cv.

5- Behaviour of fruit setting;

Dates of fruit setting was obviously advanced in cvs H116 and Akka and delayed in Manfalouty cv. the highest values of initial fruit setting and fruit retention were observed in Manfalouty cv. and the minimum values were recorded in cv. H116.

6- Dates of maturation and harvesting:

Pomegranate cv Akka was early in maturation and harvesting followed by H116 and the vice versa was obtained in cv. Wonderful.

7- Yield/ tree:

Pomegranate cv. Wonderful recorded the highest total yield and number of fruits/ tree. Pomegranate cv. H116 recorded the lowest values of total yield and number of fruits/ tree. Pomegranate cv. H116 recorded the lowest values of marketable yield.

8- Percentages of cracked and sun burned fruits:

Pomegranate cv. Wonderful recorded the lowest percentages of cracked and sunburned fruits. The highest percentages of cracked fruits was detected ion pomegranate cv Manfalouty, while the greatest percentages of sunburned fruits was recorded in cv. H118.

9- Physical properties of fruits:

The highest values of weight, height , diameter and size of fruit, number of rooms/ fruit, fruit peel weight, aril weight and

fruit peel thickness were observed on pomegranate cv Wonderful, while the highest percentages of aril and juice volume were recorded on cv. Manfalouty. Pomegranate cv. Akka recorded the highest fruit peel percentage.

10- Chemical characteristics of the fruits

Pomegranate cv. Manfalouty recorded the greatest T.S.S. per., T.S.S./ acid ratio, vitamin C, anthocyanins in the arils, total phenols in the peel, total and reducing sugars and the lowest values of total acidity while pomegranate cv H116 recorded the lowest values of T.S.S., T.S.S./ acid ratio, vitamin C, anthocyanins in the arils besides total and reducing sugars as well as the highest values of total acidity and total soluble tannins in the fruit peel weight.

Conclusion:

According to the obtained data in regard with the yield, it is recommended to plant pomegranate cvs Wonderful, Manfalouty, H118 Akka, H116, in descending order under Minia region conditions, while for fruit quality parameter, it is preferable to plant cvs Manfalouty Akka, H118, Wonderful and H116, in descending order. While it is recommended to cultivate wonderful and H116 pomegranate cultivars for exporting.