Date palm liquid pollination applied on 'Fradh' and 'Gash Boumaan' cultivars in Al Kuwaitet research station in UAE

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Abstract:

Date palm liquid pollination was applied on 'Fardh' and 'Gash Boumaan' cultivars in comparison with traditional hand pollination as control in Al Kuwaited Research Station in Al Ain (UAE) in 2016.

The results showing that the liquid pollination fruit set was less than traditional hand pollination by 15-16 % for the two cultivars. Total yield of the trees pollinated by liquid pollination was also less than others pollinated manually. However, the quality of dates, were better on the treatment than control. The liquid pollination played the rule of early thinning.

1-Introduction:

Date palm trees are dioœcious plant having male and female separate trees. Pollination is essential for the completion of date palm fruit setting for optimum production. The male flower produces pollen, which is transferred by hand to the female inflorescence. This requires climbing each plant during the pollination season to place the male flower into the female cluster. This operation need to be repeated three times minimum in the season to guarantee good pollination.

Date palm pollination success depends among other on the ability to climb date palms. Due to the scarcity of capable laborers and high cost, and for easy pollination of date palm and reduce the cost of pollination many research programs were conducted in different countries trying to mechanize pollination using hand dusters and machines to execute pollination from down without climbing the date palm tree. Many machines and hand pollinators were tried. Nixon (1960) in FAO (1982) reported that some growers shift pollen and apply it with insect dusters in addition to pollination with cotton recovered by pollen.

FAO (1982) also reported that from longtime Bonavia (1885) have suggested to use a rubber bulb to pollinate date palm; others have continued to modify and ameliorate this method.

Galeb et al. (1987) have test 7 pollinators: Hawallah, Khalid, American, Alexandria, Babylonia, Hammourabi and Japanese on 'Sayer' and 'Hallawi' Iraqi date palm cultivars and have select Hawallah and Hammourabi pollinators as good for pollination and favored Hammourabi because it carried on 2 wheels witch made easy to handle and very mobile in date palm orchards.

Liquid pollination is proposed as easy technique for date palm pollination technology raises advantages of (1) Saving time and effort (reducing labor cost and improve effectiveness and productivity of the used labor); (2) Reducing the quantity of pollen; (3) Reducing labor and pollen costs; (4) Reducing risk of pollination during the peak period of flowering and (5) reducing the risk of laborers climbing accidents.

Date palm liquid pollination was experimented in Oman (2012-2015) and good results were achieved in filed. The MAF Oman started to subsidized date palm liquid pollination and encourages farmers to adopt it.

This filed experimentation is started in 2016 season for two seasons in Al Kuwaitet research station in Al Ain on two date palm cultivars and it's planned to apply it in all the date palm trees (2,500) to reduce the need of man power and ameliorate the date palm production.

2-Material and Methods:

Applied date palm liquid pollination was practiced of two date palm cultivars: 'Fardh' and 'Gash Boumaan' in comparison with traditional hand pollination as control in Al Kuwaitet Research Station in Al Ain.

Three date palm trees from each cultivar were pollinated by liquid pollination technique in comparison with the traditional hand pollination in March 2016. In April 2016 samples was collected to calculate the fruit set of the treatment and the Control. Nine strands from each bunch were collected. Total number of flowers and the total fruits were counted to calculate the fruit set.

In August 2016, total production was appreciates and a sample of fruits was collected for weighting fruits and measuring dimension of the fruits.

3- Results:

To evaluate Fruit set, data were collected from the three trees from each cultivar pollinated by liquid pollination, compared with three trees pollinated hand pollination in April 2016,

after one month of applying the pollination. The total production data of the on 12 date palm trees and samples of fruits were collected and analyzed in August 2016.

The results show that the liquid pollination fruit set was less than traditional hand pollination (fig. 1). Compared fruit set for liquid pollination and hand pollination was about 15-16 % less for the two cultivars (fig 2 and 3).

The results of fruit set are comparable to research results conducted on 'Fradh' and 'Khalas' cultivars in Oman, varying from 8-18%.

Ii is important to note that in March 2016, when applying liquid pollination experimentation, 3 consecutive day's rainfall days. This continuous rainfall affected the fruit set more in liquid pollination than the hand traditional pollination.

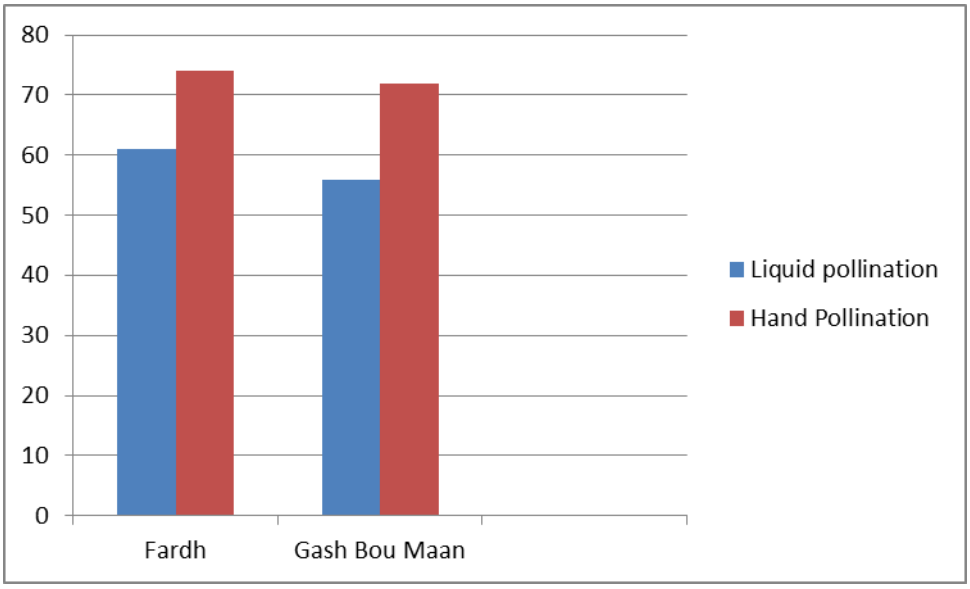

Fig. 1: Fruit set compared by liquid and hand pollination

Total yield of the trees pollinated by liquid pollination was also less than others pollinated manually. but the quality of dates, were better on trees pollinated by liquid pollination. The liquid pollination played the rule of early thinning.

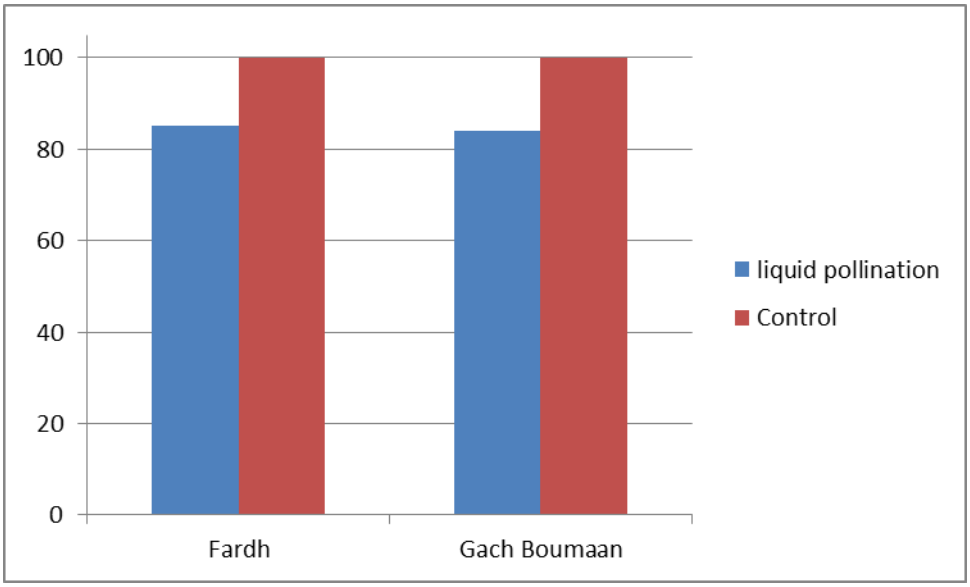

Fig. 2: Fruit set between liquid and hand pollination (based on 100% level)

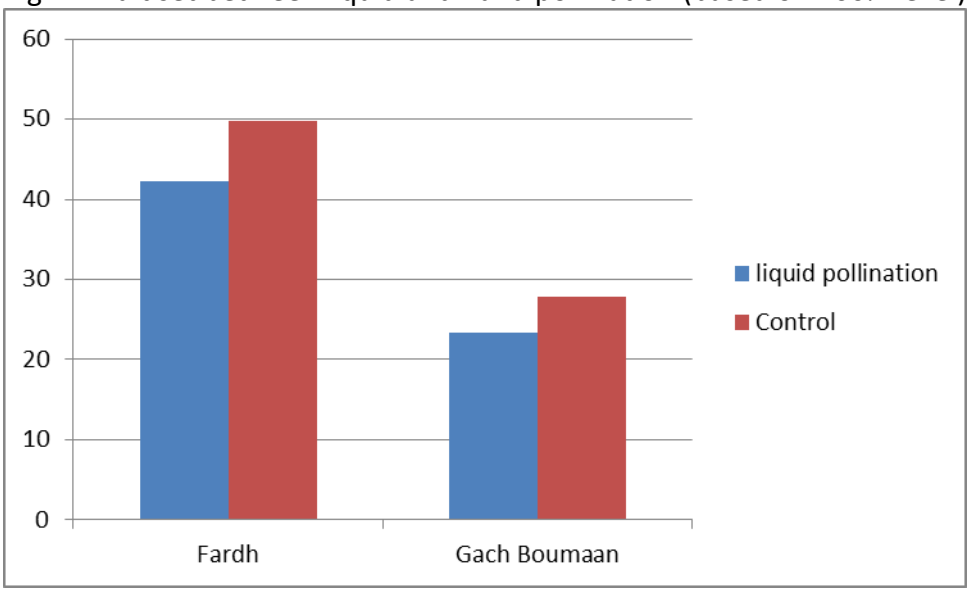

Fig.3: Total production between liquid and hand pollination

4- Conclusion:

Liquid pollination was applied of two cultivars in El Kuwaitet research station. The results of the first year showed that this technique can reduce the effort of pollination without affecting the total production. The reduction was minimal.

The season 2016 was rainy in the pollination period what is affected the experiment Liquid and traditional pollination. But is comprehensive, that the rainfall happening just one day after the pollination can affects the liquid pollination more than the traditional. We recommend repeating the liquid pollination in 2017 season.

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