



# Effect of Strand Thinning on Yield and Fruit Quality of Egyptian Dry Date Palm (*Phoenix dactylifera* L.) cv. Sultani

Shamel M. Alam-Eldein<sup>1</sup> and Alaa K. Omar<sup>2</sup>

<sup>1</sup> Department of Horticulture, Faculty of Agriculture, Tanta University, Tanta 31527, Egypt.

<sup>2</sup> Department of Horticulture, Faculty of Agriculture, Kafrelsheikh University, Kafr El-Sheikh 33516, Egypt.

shamel@ufl.edu

shamel.alameldein@agr.tanta.edu.eg



## Introduction:

Strand thinning is one of the main cultural practices of date palm farming that helps to reduce the compactness of fruit bunches, enhance yield and fruit quality, and reduces the incidence of alternate bearing and ensures adequate flowering in the following year. Such results can be obtained either by reducing the number of fruits per bunch or by reducing the number of bunches per palm. Thinning begins early during the stage of young (1/4 fruit size) and green fruit. Farmers' preference for a specific thinning method and time of thinning depends on the date palm cultivar.

## Objective:

Provide knowledge on strand thinning effects, in terms of time and amount of thinning, on the yield and fruit quality of 'Sultani' dates, which are considered to be one of the most important dry date cultivars in Egypt.

## Methods:

- This work was carried out during two successive seasons; 2012 and 2013, on 10-year-old 'Sultani' date palms grown in loamy sand soil in the New Valley Governorate, Egypt. Palms were in on-year during 2012 season.
- Thinning treatments were carried out by center-cut strand thinning; 15% strand thinning at pollination, 30% strand thinning at pollination, 15% strand thinning 15 days after pollination, 30% strand thinning 15 days after pollination, and the control (no thinning).
- Each treatment was imposed on three palms and each palm represented one replicate. Ten bunches were selected on each palm. A sample of 60 fruits was randomly picked from each bunch to determine fruit and flesh weight, firmness, soluble solids concentration (SSC), total and reducing sugar, tannins, and vitamin C.

## Results:

Thinning Amount and Time	Total Yield (Kg)		Bunch Weight (Kg)		Fruit Weight (Kg)		Flesh Weight (Kg)		Firmness (N)	
	2012	2013	2012	2013	2012	2013	2012	2013	2012	2013
15% at pollination	282 bc	318 b	9.4 bc	10.6 b	11.9 ab	12.5 b	9.9 b	10.6 b	4088.1 ab	4398.0 a
30% at pollination	300 b	309 bc	10.0 b	10.3 bc	12.1 a	14.1 ab	10.2 b	11.9 b	3904.9 a	3931.8 b
15% - 15 days after pollination	<b>345 a</b>	<b>393 a</b>	<b>11.5 a</b>	<b>13.1 a</b>	11.7 b	11.6 c	9.2 b	9.7 c	3888.0 ab	3802.4 b
30% - 15 days after pollination	279 c	303 c	9.3 c	10.1 c	<b>12.6 a</b>	<b>16.4 a</b>	<b>11.2 a</b>	<b>14.2 a</b>	3781.1 b	3722.9 b
Control	252 d	270 d	8.4 d	9.0 d	11.0 c	11.6 c	7.7 b	7.9 c	<b>4166.0 a</b>	<b>4494.4 a</b>

Thinning Amount and Time	SSC (%)		Total sugars (%)		Reducing sugars (%)		Tannins (%)		Vitamin C (mg/100g fw)	
	2012	2013	2012	2013	2012	2013	2012	2013	2012	2013
15% at pollination	54.2 b	56.5 b	59.8 bc	68.2 b	46.0 a	46.4 b	0.44 a	0.39 bc	1.5 bc	1.5 b
30% at pollination	59.8 a	64.0 ab	65.9 ab	70.1 b	48.0 a	55.4 ab	0.39 b	0.37 bc	1.6 bc	1.7 b
15% - 15 days after pollination	60.0 a	58.9 ab	70.2 a	73.3 ab	48.8 a	52.5 bc	0.39 b	0.41 ab	1.9 ab	2.1 a
30% - 15 days after pollination	<b>63.1 a</b>	<b>65.7 a</b>	<b>73.2 a</b>	<b>76.2 a</b>	<b>52.0 a</b>	<b>60.6 a</b>	<b>0.37 b</b>	<b>0.36 c</b>	<b>2.2 a</b>	<b>2.2 a</b>
Control	46.8 c	48.7 c	55.0 c	54.8 c	40.2 b	36.7 c	0.45 a	0.44 a	1.4 c	1.4 b

## Discussion and Conclusion:

- Compared to the control, all thinning treatments improved yield and fruit quality of 'Sultani' dates.
- Severe thinning led to a reduction in bunch weight and fruit number per bunch, but increased average fruit weight due to the reduction in fruit compactness within the bunch that gives more room for the fruit to grow.
- The increase in chemical compositions is attributed to an internal adjustment that makes the remaining fruits capable of using assimilates efficiently due to change in source to sink ratio.
- Results indicated the importance of postponing thinning for a while after pollination to make sure that only intact fertilized fruit are retained.
- Removing 30% of central strands 15 days after pollination improved yield and fruit quality of 'Sultani' dates grown under Egyptian conditions.
- This practice can be effective only if date palms are healthy, properly managed and have an optimal leaf: bunch ratio.
- This thinning effect may need to be adjusted based on the cultivar and geographical location of the production site.