

Study the Indicators of germination and growth of two varieties of papaya

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Abstract

The study was conducted in the Seyhan Agricultural Reserve in the city of Siba in Basra Governorate during the period (2019-2021), for the purpose of knowing the extent of the success of the cultivation of *Carica papaya* L. and identifying the indicators of germination and growth of two varieties of local and Red lady papaya. Papaya seeds were grown under standard germination conditions.

The results of the study showed the superiority of the Red Lady cultivar in the percentage of germination, seed germination speed and stem diameter, while the local cultivar was superior in seedling height.

Key words: Papaya, Red lady, seed germination, variety

I. INTRODUCTION

Papaya (*Carica papaya* L.), commonly known as Papaya, is the only species in the *Carica* genus of the Caricaceae family (Martelleto *et al.*, 2008). The papaya originated in the Caribbean coast of Central America and is now cultivated throughout the tropical and subtropical regions of the world (Yogiraj *et al.*, 2014).

Papaya occupies 15.36% of the total production of tropical fruits in the world. The global production of papaya in 2017 amounted to about 130,16281 tons. India was the largest producer of papaya (5.94 million tons) followed by Brazil in second place with an annual production of 1057,101 tons. Thus, India and Brazil together account for more than half of the production World Papaya (FAO, 2022).

Papaya has gained great importance due to its high palatability, ability to bear fruit throughout the year, early fruiting, and high yield. Papaya has high nutritional and medicinal value and diverse uses



(Azad *et al.*, 2012; Parkash *et al.*, 2015). Papaya fruits are high in polysaccharides. An increasing number of papaya cultivars are grown around the world. The main papaya cultivars that dominate world trade are Solo, Sunrise, Maridol, Red Lady, Linda and Tainung. The Red lady is a hermaphrodite papaya variety that can be successfully grown under protected conditions (Parkash and Singh, 2015). Propagation by seed is the common way to propagate papaya because it is easy and cheap due to its abundance of fruits. The current study aims to know the indicators of germination and growth of two varieties of papaya.

II. MATERIALS AND METHODS

Plant cultivation and sample preparation

The field experiment was carried out in Basra Governorate, southern Iraq, throughout the growing seasons (2020-2019), for the purpose of knowing the extent of the success of the cultivation of the fruit *Carica papaya* L.

The seeds were extracted from the ripe papaya fruits of the cultivated variety Red lady as for the seeds of the local variety, they were collected from one of the private nurseries in Babil Governorate.

planting seeds

The seeds were sown in cork dishes. The dishes were sterilized before planting with Beltanol 50% SL at a concentration of 1 ml L⁻¹ and then filled with German-origin peat moss supplied by Klas-Man Company. The seeds were planted, then the dishes were placed inside a tunnel covered with polyethylene, and they were served and followed up on their germination and growth.

studied traits

Germination rate of seeds (%)

The final germination percentage was calculated after 40 days and the germination criterion was normal seedling growth (Ellis *et al.* 1991).

germination speed (%)

The percentage of germination at the initial count 15 days after seed germination was considered as a guide to the speed of germination (Al-Rawi, 2009; Dias *et al.*, 2014).

seedling height (cm)

The height of the seedlings was measured by measuring tape from the soil surface to the growing top of the seedling.

Leg Diameter (mm)

The diameter of the stem was measured using a foot (Vernier caliper) at the level of the soil surface.

The study included the cultivation of two papaya cultivars, the local variety Red lady, and a T-test was used to compare the two cultivars with five replicates for each cultivar.

III. RESULTS AND DISCUSSION

1. Seed germination percentage (%)

The results of Table (1) indicate that there are significant differences between the two cultivars in the percentage of papaya seeds germination, as the local variety gave a high percentage of germination compared to the Red Lady variety, which amounted to 63%, while the percentage of seeds of the Red Lady variety reached 57.5%. The trait indicates the difference in genetic composition among them as well as their chemical composition (Al-Seadi *et al.*, 2021). The results of the current study are similar to what was found by Das and Dinesh, (2014) when studying two varieties of papaya.

2. seed germination rate %

The results in Table (1) showed that there was no significant difference between the two cultivars with regard to seed germination speed.

3. seedling height (cm)

It is noticed from the results of Table (1) that there are no significant differences between the two cultivars in the character of the height of seedlings.

4. leg diameter (cm)

The results of Table No. (1) showed that there was a significant difference between the two cultivars in the characteristics of stem diameter, as the Red Lady variety was significantly superior in stem diameter, which amounted to 0.280 cm compared to the local variety, which amounted to 0.260.

Table (1) Indicators of germination and growth of two types of papaya

Varieties	Studied Traits			
	Seed germination percentage (%)	seed germination rate %	seedling height (cm)	leg diameter (cm)
Local	63.0 ^a	49.5 ^a	7.07 ^a	0.260 ^b
Red Lady	57.5 ^b	44.50 ^a	6.55 ^a	0.280 ^a

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