

Planting Cactus Pear on Raised Beds Versus Planting on Flat Land

Sameh Labib
Cactus Farmer
Egypt
labib@intouch.com

INTRODUCTION

Many vegetable types are planted on raised beds. In establishing a nursery for cactus pear, planting the cladodes on raised beds was recommended (Mondragon and Pimienta-Barrios). In establishing a cactus-pear orchard, no publications were found to recommend planting on raised beds. In a visit to a cactus-pear farm in Egypt, I observed that, for some reason, one row was planted on a raised bed, and it showed better growth than the other rows. This raised the possibility that planting cactus pear on raised beds might be a profitable practice.

PURPOSE OF THE WORK

The purpose of this work was to compare the growth of cactus pear planted on raised beds versus those planted as usual, on flat land, using three soil fertilities:

- Very poor soil used for first-time planting
- Borderline fertile soil
- Fertile soil.

THE STUDY FARM

The study was done at a farm in the western desert of Egypt. The basic soil of the farm is coarse sand with very little organic material and nutrients. The temperature is Mediterranean. Annual precipitation is about 50 mm, which occurs only in winter. The land was cross-ripped with a chisel. The cladodes were planted in October 1996 in hedge rows spaced 1 meter in the row and 3 meters between rows. The cultivar used was Ofer. Plantation was done by putting cladodes a half-cladode deep in each hole with their surfaces facing east and west. Continuous year-round irrigation and fertigation were done through a drip system with emitters spaced 1 meter apart along the irrigation pipes. Irrigation was done once weekly at the rate of 1 mm/day from April through September and 0.5 mm/day from October through March. N, P, and K were introduced with irrigation (fertigation) at the rates of 70 ppm, 30 ppm, and 70 ppm, respectively.

MATERIAL AND METHODS

The study was designed to allow comparison of planting on raised beds versus planting on the flat surface of the land by using three groups of soil fertilities. Each group included 120 plants planted in 3 rows. In each row, 20 plants were planted on the flat surface of the land, and 20 plants were planted on a raised bed 1-m wide and 35-cm high.

Group I and Group II were at a site on the farm that had been occupied for 10 years by peach trees spaced 6 m by 3 m. All irrigation and nutrition had been delivered through the drip system to the tree lines, while the area between the tree rows is considered virgin soil because it did not receive any irrigation or nutrition.

Group I: Cladodes were planted in rows in the virgin soil between the previously planted peach-tree rows.

Group II: Cladodes were planted in rows in more fertile soil that previously was the site of peach-tree rows.

Group III: Cladodes were planted in fertile soil in a part of the farm that received large amounts of manure and fertilization because it was used for years for highly intensive vegetable production. In February 1997, the number of new cladodes for each row was counted and the results were compared.

RESULTS

Tables 1, 2, and 3 show that the number of new cladodes produced on plants on raised beds was more than twice the number produced on the flat surface, regardless of soil fertility. However, there was a difference in the number of new cladodes produced relative to soil fertility.

Table 1. Group I: Nonfertile Soil		
	Cladodes Produced	
	Flat Surface	Raised Bed
Row 1	65	158
Row 2	66	172
Row 3	73	119
Total	204	449

Table 2. Group II: Borderline Fertile Soil		
	Cladodes Produced	
	Flat Surface	Raised Bed
Row 1	108	256
Row 2	121	235
Row 3	77	130
Total	306	621

Table 3. Group III: Fertile Soil		
	Cladodes Produced	
	Flat Surface	
	144	Raised Bed
Row 1	138	301
Row 2	120	308
Row 3	402	260
Total	804	869

DISCUSSION

These results show that cactus pear planted on raised beds produced more than twice the number of new cladodes as those planted on the flat surface, regardless of the state of the fertility of the soil, which means that raised beds themselves have a role in promoting growth of cactus pear. Vegetable farmers explain better performance of vegetables over raised beds by more concentration of applied irrigation and fertilization and better drainage of any extra irrigation. This may be an explanation in the case of cactus pear as well, but an added explanation is that the roots of cactus pear grow better when the soil is light and not compacted. Raised beds create a very light soil, which gives the roots room for growth and expansion.

CONCLUSION AND RECOMMENDATIONS

We can conclude from this study that there is a significant advantage to planting cactus pear on raised beds. The results of this experiment justify recommending planting cactus pear on raised beds under any situation of soil structure and fertility. The marked difference in growth in the plants and the expected earlier production of a crop of greater yield will produce much more income than the expense of establishing the raised beds. It is really amazing that the cactus planted on raised beds in the virgin nonfertile soil gave nearly the same number of new cladodes as the cactus planted on the flat surface in the fertile soil, indicating that planting on raised beds can replace years of effort and expense to develop soil fertility.