

Evaluation of Tinda Gourd (*Praecitrullus fistulosu*) Germplasm's Yield

Asfand RAHEEL¹, Nasir Ahmad KHAN², Raheel BABAR³, Muhammad Arshad ULLAH⁴, Ali ZAFFAR⁵ Maouz IQBAL⁶, Usman ASHRAF⁷

1. First Author Institute of Horticultural Sciences, University of Agriculture, Faisalabad.

2,5,6,7. Institute of Horticultural Sciences, University of Agriculture, Faisalabad.

3. Forestry, Range, Watershed and Wildlife management, Baluchistan Agriculture College, Quetta. Pakistan

4. Corresponding Author Land Resources Research Institute, National Agricultural Research Centre, Islamabad. Pakistan. E-mail: arshadullah1965@gmail.com

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Abstract

The field experiment was conducted in vegetable area, Institute of Horticultural Sciences in University of Agriculture, Faisalabad in order to recognize morphological and fruit growth pattern and yield of Tinda (*Praecitrullus fistulosus*) gourd germplasm lines. Sixteen germplasm lines in which one line is used as check are included were sown and grown on flat beds in field. The field experiment was arranged as randomized complete block design (RCBD) with three replications. Data on days to maturity, fruit per vine, fruit weight in grams, fruit diameter and total yield obtained were recorded. The fruit texture is marked as phenotype parameter. All parameters were collected and then analyzed statistically. All lines and replications showed different results among each other according to parameter. The maximum DTM (days to maturity), F/P (fruit per plant), FW (fruit weight), FD (fruit diameter) and Yield were recorded as L₀ (68.66), L₃ (1.66), L₁₀ (248.33), L₁₃ (8.50) and L₀ (599.33) and the minimum were recorded as L₁ (56), L₁₁ (0.33), L₀ (198), L₉ (7) and L₄ (421) grams respectively. All lines showed smooth texture of fruits with no hairs when mature at harvesting stage.

Keywords: Praecitrullus, Fistulosusanalysis, Fruit, Parameters.

Major classification: Health Science.

1. Introduction

Tinda gourd (*Praecitrullus fistulosus*) is a member of known and big family Cucurbitaceae and it is the most one important and major annual summer vegetable grown widely and across the neighbor country India and in Pakistan as well. It is good in taste and surely palatable and when cooked with other product so it named as Dilpasand. It contains high amount of iron and other vitamins and minerals so it contains too much medicinal value due to its ingredient profile. It grows in almost all the type of soil so whether the kind of soil is it's not a big deal for Tinda roots. Due to its medicinal worth it is considered as solitary and natures gift for us that are obligatory good for our normal growth and health (Kirtikar & Basu, 1998).

The Cucurbitaceae family has wide distribution reaching internationally but grown mostly in semi tropical to tropical area with requirement of sandy soil for better root penetration. This Cucurbitaceae family contains important fruit bearing product that are *Cucumis melo* L. (melons), *Citrulluslanatus* (Thunb.), *Cucurbita pepo* L., Nakai (watermelon), *Cucumis sativus* L. (cucumber) and other known species like squashes and pumpkins etc. Other gourds are used as dried fruits of many species like Luffa L. and other sponges which also having some medicinal usesconferring to (Jeffrey, 1990).

It is used as vegetable in India and Pakistan. The pulp of Tinda is creamy whitish or green yellowish when it is in the stage of immaturity. Fruit constitute of proteins and carbohydrates and in abundant amount. The leaves are used for a medicinal purpose in some parts of India. The fruitovoid and elliptical with white strips when they are

immature stage and when the mature, they acquire smooth surface and yellowish strips on surface when ripe. The shape and size of Tinda fruit vary according to their growth pattern and location of a fruit where it lies on vines. The seeds of Tinda are opaque and edible when cooked with meat. Fruits can be stored for more than one or two weeks. The seeds of Tinda (*Praecitrullus fistulosus*) are used as fodder material and also medicinally for the treatment of many other diseases recommended by (Chadha & Tarsem, 1993). When leaves are cooked with other vegetables, they are able to maintain high blood pressure. Only mature fruit cooked as vegetable and also to make pickles as well in India and in Pakistan (Grubben & Denton, 2004).

Morphologically as fruits and vegetables they differ in class and quality which are explained by other four attributes. The appearance and its color tone the flavor which include taste and aroma. The third factor is its texture and skin surface the fourth and the last is nutritional value and ingredients. These mentioned characteristics are highly effect on us like first appearance and eye color, closely related to texture, aroma and taste. The glossy effect, size of fruit and also shape of fruit and drag us into selection by our hands. There are some distinguish between texture attributes, which include flavor and pulps juiciness in between the nutritional ingredients and vegetable fruit color (Kader, 2002). The Gerald Carr. termed fruit berry as pepo. The fruits which are spherical in shape is roughly 5 to 8 cm in diameter. The size of fruit is turnip like small and elliptical on both upper and lower side of the end, when hispid are globule afterwards (Nerson, 2002).

By measuring all circumstances, the current research was observed to sketch the summer season annual vegetable considering it at farm location and all effect directly involved on yield and considered it to regulate the summer annuals profitability in terms of farm location and its effect on vegetable yields. The current observation and research studies will benefit the high investors especially the government and business men and policy makers that makes a future strategy to provoke decisions about upcoming strategies for the growth and expansion issues of vegetable farm growers.

2. Material and methods

The field experiment was conducted at Olericulture field of Institute of Horticultural Sciences, University of Agriculture, Faisalabad during 2017. The field is situated at 186 meters above the sea level. The seeds of Tinda lines were sown on early April at raised flat beds. 10 seeds per bed were sown. Seeds were not treated with any fungicide before sowing. Before seed sown the layout was designed according to randomized complete block design (RCBD) method and plot was prepared by planking and ploughing and a recommended amount of FYM and NPK were added in soil. Sixteen different varietal lines in which one variety is used as check were used as experimental design with three replications. The seed material was obtained from NARC, Islamabad. The bed size in which seed were sown was 15 × 5 ft. The bed to bed distance were maintained at 2 ft while plant to plant were maintained at 1.5 ft respectively. Right after seed sowing first irrigation was applied by canal water two times in a week. Intercultural practices were done in fourteen days of interval. Weedicide was applied before seed sowing and after land preparation. Three plants in each line were selected for data recording. The data were compiled after taking their means and their averages. Data are days to maturity, fruit per vine, fruit weight in grams, fruit diameter, total yield in grams and fruit texture based on phenotypically were subjected to statistical analysis using the STATISTIX statistical software (Version 8.1) and the mean values were compared using Least significant difference (LSD) multiple range test P: 0.5% (Steel & Torrie, 1997).

3. Results and discussions

Many factors are directly involved on Tinda lines which include date of seed sowing early or late, cultural practices during research time period and effect of environment throughout the period. The diversity noted among Tinda fruit and noted its modification by which we generalize the nutrient amount and plant habitat actually (Bhunia, Chauhan, Yadav, & Bhati, 2006) and (Kumar, Singh, & Nepalia, 2002). The recommended dose of 75 percent NPK resulted in enhancing fruit growth parameters. > A similar substantial improvement in development characters due to immunization of biofertilizers has been reported by (Chattoo, Singh, & Prasad, 2007) in cucurbits and also (Chettri & Thapa, 2006) in tindagourds and (Zayed, 2012) in cucurbits vines.

The data presenting in table indicate that maximum days to acquire maturity by Tinda fruit were observed in local variety lines which we used as check was L₀ (68.66) when compared to other lines. Among them, the variety L₁ presented 56 days to mature closely followed by line L₄ (56.66) and line L₈ (56.33). These results corroborated the findings of (Burki, 1996) who reported the similar number of days taken to maturity of first fruit in Tinda.

The maximum fruit per vine acquired by Tinda line were observed in line L₃ (1.66), line L₈ (1.66) and line L₁₂ (1.66). when compared to other lines. There was not much difference in fruit per plant. Among them, the lineL₁₁ showed 0.33 fruit per plant closely followed by line L₀ (0.33) and line L₆ (0.66).The soil decrease in carbohydrate content expands the C: N ratio and lower metabolic activity which leads to switching from reproductive buds to vegetative buds (Fieller & Leschke, 1970) in cucumber

The maximum weight gained by fruit was observed in line L₁₀ (248.33) when compared to other lines. Among them, the lineL₀ showed 198 fruit of weight closely followed by line L₁ (224.00) and lineL₁₅ (225.00).The significant mean values for average fruit weight of Tinda gourd as affected by late sowing (Khan, Iqbal, Jilani, Ghafoor, & Waseem, 2001).

The maximum fruit diameter was obtained in line L₁₃(8.50) when compared with other lines. Among them, the lineL₉ showed (7) fruit diameters closely followed by line L₁ (7.23) and lineL₂ (7.23).There is an appropriated ratio between fruit length and fruit diameter to attend each purpose. Edible fruits are characterized by thin rind and mature fruits for more developed rind, increasing fruit protection. Fruit size is another important characteristic and the most desired size might change depending on use or harvest system (Paris, 1989).

The maximum yield was observed in line L₀ (599.33)grams when compared to other lines. There was a much significant difference in yield of lines. Among them, the lineL₄ showed 421grams of yield closely followed by line L₁ (440.67) grams.The maximum net return was also recorded with NPK application, FYM and mulching respectively. Similarly, (Choudhary, Yadav, & Chandra, 2012) also reported favorable effect on yield in *cucurbitaceae* species.

The name “quality” originates from the Latin ‘qualitas’, which means feature, stuff or basic nature of a thing. However, nowadays it can be well-defined as the “grade of excellence” (Kader, 1985).Texture characteristics are as follows: Firmness or Hardiness, Softness or Smoothness, Crispiness or Juiciness, Succulence or Fibrousness. In concerning to collected data, the Tindagourd texture are harvest at horticultural maturity because why all Tindagourd fruits are hairless and smooth skinned when touched.

Table 1: Yield and yield parameters of Tinda gourd (*Praecitrullusfistulosus*) germplasms

Lines	DTM	F/P	FW (g)	FD (cm)	Yield (g)
L ₀	68.66 a	0.33 a	198.00 f	7.89 bcde	599.33 a
L ₁	56.00 e	1.00 a	224.00 e	7.23 fg	440.67 h
L ₂	59.66 cde	1.33 a	232.33 bcde	7.23 fg	495.67 g
L ₃	57.00 de	1.66 a	228.33 de	7.99 abcde	531.00 f
L ₄	56.66 de	1.33 a	239.67 abcd	7.51 defg	421.00 h
L ₅	60.00 cde	1.33 a	240.00 abcd	7.84 bcde	550.67 def
L ₆	64.66 ab	0.66 a	244.00 ab	7.70 cdef	481.67 g
L ₇	59.00 cde	1.00 a	231.67 cde	8.06 abcde	592.33 abc
L ₈	56.33 de	1.66 a	235.67 bcde	8.20 abc	595.67 ab
L ₉	61.33 bc	0.66 a	239.00 abcd	7.03 g	588.00 abc
L ₁₀	61.33 bc	1.00 a	248.33 a	7.50 efg	561.33 cdef
L ₁₁	60.33 cd	0.33 a	242.33 abc	7.73 cdef	540.33 ef
L ₁₂	57.66 cde	1.66 a	243.67 abc	8.28 abc	563.67 bcde
L ₁₃	57.33 cde	1.00 a	238.00 abcd	8.50 a	562.00 cdef
L ₁₄	65.66 a	1.00 a	236.00 bcde	8.36 ab	561.33 cdef

L₁₅	64.66 ab	1.00 a	225.00 e	8.09 abcd	577.67 abcd
LSD	4.27	2.27	12.09	0.59	32.14

DTM= days to maturity, F/P= fruit per plant, FW= fruit weight, FD= fruit diameter, Y= yield

4. Conclusion

Through these parameters, the amount of diversity within Tinda (*Praecitrullus fistulosus*) cultivars was observed clearly and the degree of differentiation and accessions were detected.

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