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Morphological finger printing of tomato hybrids

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ABSTRACT

The present experiment was carried to characterize morphological traits in tomato hybrids. The hybrids T 1210, NS 816 and NS 77 were unique by their seed colour and showed variation from all other cultivars. T 1210 is unique by its brown colour while, NS 816 and, NS 77 by its dark yellowish brown. Hybrids were grouped into two groups *viz*., Purple and green based on hypocotyl colour. Purple pigmentation was present in all the hybrids except eight cultivars. Among the hybrids studied only C0TH 2 and T 1210 showed determinate type of growth habit while, Heem Sohna, US 1196, Super Samaurai, NS 816 and US-618 showed larger plant size. Most of the fruits were grouped into either greenish white or light green colour based on exterior colour of immature fruit. Presence of green shoulder on the fruit was observed in seven hybrids *viz*., COTH 2, T 1210, US 2175, US 1196, US 618, Anup, and NP 5024. There was a wide variation in fruit shape among hybrids and were grouped in to eight groups. The results of the present study clearly indicated that the hybrids of tomato examined can be distinguished and identified by seed, seedling morphological characters and could able to differentiate all the hybrids within a short period of time and can be successfully utilized.

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Key words : Tomato, Morphological traits, Hybrids

INTRODUCTION

In recent years public institutions and private companies introduced many hybrids/varieties one after the other for commercial cultivation. The enactment of Plant Varieties Protection and Farmers Right Act called as PPV and F R Bill, 2001, by the Government of India, that provide protection to new varieties and germplasm. To qualify for protection under this Act, the variety must be evaluated for its DUS (Distinctness, Uniformity and Stability) and VCU (Value for Cultivation and Use) tests. Hence, discrimination of tomato varieties, especially by examination of the plant / seed morphology is increasingly important in order to protect the breeders and farmers rights (Wang *et al.*, 2000) and to ensure genetic purity or genuineness of variety which is most important characteristic of a quality seed.

Therefore, to identify tomato cultivars relative taxonomical descriptors are published by International bodies like International Union for Protection of New Plant Varieties (UPOV, 1992) and these morphological descriptors have traditional significance and have been adopted as classical taxonomic approach for identification of crop varieties. Further, keys for identification could be developed on the basis of morphological traits which could serve as a data base for identification of cultivars.

Although tomato being widely studied crop, a systematic studies in varietal characterization is lacking especially for newly developed promising varieties and hybrids. Thus characterization of varieties and hybrids which are of wider acceptance by farming community need to be studied in order to regulate their purity.

MATERIALS AND METHODS

The experiment was conducted at the Horticulture Research Station, Gandhi Krishi Vigyana Kendra, University of Agricultural Sciences, Bangalore, on red sandy loam soil during the *Kharif* season of 2007-2008. In this experiment twenty two tomato hybrids have been selected from both public and private sectors (Table 1).

The experiment was laid out in a Randomized Complete Block Design (RCBD) with three replications. Healthy, uniform 28 days old seedlings were transplanted on 31st August 2007. The distance between plants was 0.75m and the distance between rows was 1.0m. The crop was raised by providing recommended package of practices. (Anon., 2004). Five plants were selected at random from each hybrid and were observed for various stable and distinguishable characters according to UPOV guidelines (UPOV, 1992). Various morphological traits were recorded at different plant growth stages, besides

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