

Soil-Less Misting System: A Technology for Hybrid Seed Production in Tomato (*Lycopersicon esculentum* Mill.).

Authors : K. D. Rajatha, S. Rajendra Prasad, N. Nethra

Abstract : Aeroponics is one of the advanced techniques to cultivate plants without soil with minimal water and nutrient consumption. This is the technology which could bring the vertical growth in agriculture. It is an eco-friendly approach widely used for commercial cultivation of vegetables to obtain the supreme quality and yield. In this context, to harvest potentiality of the technology, an experiment was designed to evaluate the suitability of the aeroponics method over the conventional method for hybrid seed production of tomato. The experiment was carried out under Completely Randomized Design with Factorial (FCRD) concept with three replications during the year 2017-18 at UAS, GKVK Bengaluru. Nutrients and pH were standardized; among the six different nutrient solutions, the crop performance was better in Hoagland's solution with pH between 5.5-7. The results of the present study revealed that between TAG1F and TAG2F parental lines, TAG1F performed better in both the methods of seed production. Among the methods, aeroponics showed better performance for the quality parameters except for plant spread, due to better availability of nutrients and aeration, huge root biomass in aeroponics. Aeroponics method showed significantly higher plant length (124.9 cm), plant growth rate (0.669), seedling survival rate (100%), early flowering (27.5 days), highest fruit weight (121.5 g), 100 seed weight (0.373 g) and total seed yield plant⁻¹ (11.68 g) compared to the conventional method. By providing the best environment for plant growth, the genetically best possible plant could be grown, thus complete potentiality of the plant could be harvested. Hence, aeroponics could be a promising tool for quality and healthy hybrid seed production throughout the year within protected cultivation.

Keywords : aeroponics, Hoagland's solution, hybrid seed production, *Lycopersicon esculentum*

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