

Breeding Strategies for Development of Pumpkin with High Yield and Enhanced Phytonutrients

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Abstract—Pumpkin (*Cucurbita moschata* Duchesne ex Poir.) is one of the important cucurbitaceous vegetable crops, grown worldwide under wide range of agro-climatic conditions. Pumpkin being monoecious and a cross pollinated crop offers considerable variation for different traits. The high productivity potential, low cost of production, good storability, long period of availability, better transport qualities, excellent response to forcing and comparatively high content of carotene in fruits, have enhanced the importance of this crop in recent years. Despite its health and dietary benefits, production of pumpkin in India is done on very limited scale in an area of 16.17 thousand ha with a production of 372.82 thousand tonnes. Since, India contains a high proportion of low income population that requires balanced food and nutrition at affordable prices, such less known potential commodity would serve as staple food for weaker sections of society during grain scarcity and also as profitable opportunity for many farmers because of its long storage life, good nutritive value, wide use in cooking, and low price. Hence, there is an immense need to develop high yielding varieties/hybrids with better quality produce through selection, either from the existing genotypes or from the transgressive segregants.

Seventy six diverse genotypes of pumpkin were assessed for various qualitative, quantitative, mineral and bio-chemical attributes to ascertain the nature and magnitude of variability, correlation, path coefficient analysis and genetic divergence. Variability studies revealed that seven genotypes viz., DPU-6 (node number of first male flower; fruit length, diameter and weight; flesh thickness; fruit yield per plant and per hectare; seed yield per plant; K; total antioxidant activity), DPU-26 (fruit length; flesh thickness; fruit yield per plant and per hectare; K; Ca; Mg; Fe; Mn; Cu; Zn), DPU-51-3 (number of mature fruits per plant; harvest index; fruit yield per plant and per hectare; seed length, breadth and area; 100-seed weight; seed yield per plant), DPU-75 (days to opening of first female flower; fruit weight; harvest index; fruit yield per plant and per hectare; phenol; total carotenoids), DPU-57 (fruit length and weight; plant weight; fruit yield per plant and per hectare; 100-seed weight), DPU-80 (fruit weight; flesh thickness; plant weight; fruit yield per plant and per hectare; Ca; total carotenoids) and DPU-24 (fruit diameter; harvest index; fruit yield per plant and per hectare; seed breadth) were found superior among all the genotypes under study. These genotypes need further testing to be released or can be involved in further breeding programme.