

Ripening associated physico-chemical changes in star gooseberry [*Phyllanthus acidus* (L.) Skeels], an underutilized fruit of North-East Himalayan region.

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ABSTRACT

Star gooseberry [*Phyllanthus acidus* (L.) Skeels] is a small berry type fruit, found to grow in North-east Himalayan states of India; yellow in colour, having ethnomedicinal uses by the ethnic tribes living here and used for preparation of syrup, juice, jelly, pickle etc. The physico-biochemical changes of the fruit, from their set to harvest is hitherto unknown, which should be considered as prime factor for considering the stage of harvest for its targeted utilization. Therefore, a research attempt was made to evaluate the ripening associated physico-biochemical changes of star gooseberry fruits, grown at Mizoram. Results of the physical parameters revealed that at 2 days after fruit set (DAFS) fruit length (4.40 ± 0.55 mm), diameter (4.60 ± 0.89 mm), weight (0.09 ± 0.01 g); seed length (0.80 ± 0.45 mm) and seed weight (0.01 ± 0.00 g) was low; which got increased and recorded maximum at 24 DAFS [fruit length (15.20 ± 0.84 mm), diameter (20.80 ± 1.30 mm), weight (4.64 ± 0.22 g); seed length (5.20 ± 0.84 mm) and seed weight (0.37 ± 0.07 g)]. However, data of the mentioned parameters clearly indicated an initial period incremental growth, followed by a slow growth as lag phase and subsequently a rapid growth phase, signified double sigmoid growth in star gooseberry fruits. While biochemical parameters like total soluble solids (TSS), TSS:acid ratio, sugars and ascorbic acid content had marked increment and scored highest, whereas titratable acidity and total phenol content was minimum at 24 DAFS. Based on physico-biochemical parameters, it can be concluded that star gooseberry fruits are of optimum maturity for harvesting after 22-24 days from fruit set for further utilization.

Keywords: Ascorbic acid, double sigmoid, firmness, peel colour, pulp recovery, total phenol