Overview of Tomato Ripening Mutants: A Prospect Mechanism to improve Tomato Shelf – Life

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The potential of tomato ripening mutants*; rin*, *nor* and *alc* to prolong the shelf life of tomato cannot be overemphasized. Ripening mutants have gained a considerable attention in the last few years to extend shelf life. They have been characterized and examined for their potential utilization in lengthening shelf life. Mutant genes are therefore available to extend the shelf-life of tomato via breeding. These single recessive gene mutants mostly modify ethylene's downstream effects on specific biochemical processes related to fruit ripening. The fruits of these mutants are characterized by an absence of a ripening-associated ethylene burst and failure to ripen in the presence of exogenous ethylene. They are useful in research and breeding of cultivated tomatoes for postharvest quality. The effect is more pronounced in homozygotes where fruits do not develop normal colour. However, in the heterozygous form, several ripening characteristics exhibit levels that are intermediate between those of the wild and mutant parents and are able to produce fruits that have high shelf life than normal cultivars. Their discoveries have generated insights into ripening control and created new understanding of the primary ripening control mechanisms. Nonetheless, some scientists have argued that these mutant genes produce undesirable pleiotropic effects on other components of fruit quality. This is true in the homozygotes state, however in the heterozygote form, they develop acceptable colour for marketing, ripe naturally and exhibit extended shelf life too. Hence this offers an opportunity to exploit these genes to regulate tomato supply for longer period.

Key words: *Tomato; ethylene; fruit ripening; ripening mutants; shelf life*