

Abstract

Solanum villosum is an important African leafy vegetable whose yield is limited mainly by competition from early and excess fruit-set. Induced male-sterility is a potential tool to reduce this competition and enhance yields. This study was conducted to investigate the influence of photoperiod and temperature on the floral dynamics of a season-dependent male-sterile mutant. The mutant, named T-5, has flowers which are sepaloid, mostly stamenless, indeterminate and partially restored in winter, late-spring, summer and autumn, respectively. Floral organ restoration was found to be largely independent of photoperiod conditions. Day/night temperatures of 25/25 and 30/20°C were found to favour restoration of the floral organ but most flowers were stamenless and infertile. High night temperature favoured the formation of indeterminate flowers both in the growth chamber (30°C) and in the greenhouse (>25°C). On the other hand, low growth chamber (10°C) and greenhouse (<15°C) night temperature favoured the formation of sepaloid flowers. The optimum temperatures for floral structure and fertility restoration were between 20°C and 25°C (day) and 15–20°C (night). Propagation of T-5 mutant can thus be achieved by growing in regions or seasons with such temperature ranges. Under temperatures unfavourable for fruit-set, leaf productivity is expected to be high.