

## Induction of flowering in cassava brown streak resistant clones using plant growth regulators, pruning and extended photoperiod through night-breaks

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### ABSTRACT

Cassava is utilized as a food security crop in Kenya. Its production is affected by biotic and abiotic factors such as the viral disease, cassava brown streak disease (CBSD). The challenge requires urgent breeding interventions. Cassava breeding is hampered by poor and asynchronous flowering. The aim of this study was to induce and enhance flowering in CBSD immune and resistant cassava clones with variable flowering characteristics. The study was set as two experiments at Kenya Agricultural and Livestock Research Organization (KALRO), Thika. First experiment testing a combination of plant growth regulators and pruning, laid out in a randomized complete block design (RCBD) with four replicates. Second experiment testing the effects of extended photoperiod on flowering, set in RCBD with twelve replicates. In this experiment, 100W white LED lights were used to extend photoperiod by breaking nights for three hours. In the first experiment, treatment resulted in a significant ( $p \leq 0.001$ ) increase in the number of female flowers, number of fruits, and number of seeds. However, the treatment did not reduce days to flowering and height to first branching. In the second experiment, night break significantly increased ( $p \leq 0.001$ ) the number of female flowers, number of fruits, wet shoot weight while reducing the days to flowering, height to first branching, and number of nodes to first branching. These results offer a solution to the poor flowering in different cassava clones through a combination of PGRs, pruning and extending photoperiod. Approaches tested here can be readily deployed in accelerating cassava breeding and contribute to improved food security.

**Keywords:** Flowering, induction, nightbreaks, plant growth regulators and pruning