

**ROOTING ABILITY OF CUTTINGS OF GUAVA  
(*PSIDIUM GUAJAVA* LINN.) AS INFLUENCED BY  
ETIOLATION OF STOCKPLANTS**

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**Abstract**

The study describes the effect of etiolation of stockplants on rooting ability to cuttings of Guava (*Psidium guajava* Linn.). Fifteen months old sun grown containerized stockplants of guava were etiolated in a darkroom. Cuttings from the etiolated and control stockplants were tested for rooting ability. The study revealed that the cuttings of the stockplants etiolated or controlled rooted well. However, etiolation or duration of etiolation does not significantly affect the rooting ability of cuttings of the species. During propagation, cutting morphology is not significantly changed due to the etiolation of the stockplants.

**Introduction**

Guava (*Psidium guajava* Linn.) is a common fruit tree species grown everywhere particularly in homestead areas of Bangladesh (Banik, 1992). Raising plantation of guava by seedling is time consuming and it is almost impossible with the seedless high yielding hybrid varieties maintaining the fruit quality. To have fruit within a short period of time with maximum duplication of characteristics of mother tree, several vegetative methods are employed. Grafting, budding and their layering are the common methods used to propagate guava (Bailey, 1960). These techniques have several disadvantages like a low rate of multiplication, a high requirement of a skilled labour. These problem have been solved by recently developed technique of propagation by stem cuttings. Propagation by stem cuttings may be a promising technique of vegetative propagation of guava at operational scale. This technique may allow an adequate supply of planting/genetic material and help to maintain the desirable characteristics of trees (Kamaluddin *et al.*, 1996).

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Rooting success in clonal propagation is dependent upon optimizing many endogenous and exogenous factors concerned with inherent capacity for propagation, collection of source materials, preparation and treatment of cuttings, selection of propagation system, adjustment of optimum condition for rooting, treatment of stockplants and their management (Kamaluddin, 1988). The stockplants management involves several preconditioning like girdling, banding, photoperiod, etc.

A considerable body of evidence suggests that etiolation of stockplants enhances rooting. The practice of etiolation has been known to increase adventitious root formation in stem tissue. Cutting from etiolated plants were found to have a high level of endogenous auxin (IAA) at the site of etiolation (Kawase, 1965) which prevents the appearance of rooting inhibitors (Ooyama, 1962). Etiolated stems have been shown to have less mechanical strengthening tissue and lower starch content and cell deposits. Cell wall thickness is also less and there is more of parenchyma tissue which is less differentiated.

Several scientists have studied the effects of etiolation on rooting of cuttings following different methods. For instance, etiolation for stem cuttings of 5-year-old, potted *Carpinus betulus* vs., achieved by covering with a black cloth for 7 days improved rooting of cuttings reported by Richards (1992). Etiolation in 2 shading studies, stock plants were grown in a greenhouse under 0%, 50%, 75% or 95% shade until cuttings were taken, or initially etiolated (100% shade) for 15 days. Percentage rooting increased in proportion to the degree of shading, with a maximum response at 95% shade (Maynard and Bassuk, 1992). Marczynski and Joustra (1993) etiolated two-year-old stock plants of *B. utilis* and *C. maxima* cultivar Purpurea in a darkroom or grown in a greenhouse under 3 different daylengths (8, 15 or 24 h).

In the present study etiolation was done keeping the stock plants in darkroom (100% shade) to explore the effect of etiolation on rooting ability of cuttings.

## **Materials and Methods**

### **Stockplant etiolation**

Stockplants of guava were kept in a dark room and cuttings taken from the stockplants were put into rooting trials in August and September 1998. Stockplants serving as controls were kept in open sun. Before keeping them in darkroom, they were grown in open sun. The stockplants were the seedlings raised from the seeds of same mother tree and grown in polybags filled with soil and cow-dung 3:1 by volume. When the stockplants were 15 months old, they