

A Case Study :

Nutrient management in small cardamom (*Elettaria cardamomum*)

A. SUBBIAH, M. MURUGAN, A. RAMESHKUMAR, R. JAGADEESAN AND M. PRABHU

Accepted : November, 2008

Cardamom, the “Queen of Spices” is native to evergreen Western Ghats of India and one of the most valuable spices in the world. Indian cardamom is known for its luxuriant green colour with good aroma quality, which was internationally accepted. The cardamom oil is found to be anti microbial in nature and hence used in mouth fresheners and confectioneries. Currently it is being grown in Kerala, Karnataka, Tamil Nadu and parts of Sikkim in India. The production and productivity of cardamom is gradually declining in certain tracts of cardamom cultivation. The reasons are so many, yet, nutrient deficiency accounts to a greater extent.

Deficiencies of nutrients in plants have various visual symptoms. The most common deficiency symptom is reduced growth, which is difficult to detect and diagnose at a glance. Other visual symptoms usually involve changes in coloration following a specific pattern, such as from the leaf tip down the midrib towards the base of the leaf or from the leaf margin toward the midrib or between the veins of the leaf. Such symptoms may appear in new leaves or old leaves, indicating the phloem-mobility of the deficient nutrient and the ability of the plant to translocate existing stocks of the deficient nutrient. In many cases, internodal distances will shorten as well (Korikanthimath, 1994). Many nutrient deficiency symptoms are ambiguous unless they are well-developed, and a visual diagnosis can be regarded as an educated guess until tissue samples are gathered and chemical analyses are used to compare elemental composition with healthy leaf tissue. In fact, many types of environmental and management damage can masquerade as visual nutrient deficiency symptoms.

Role of different nutrient elements on growth, yield and quality of small cardamom :

Good plant growth, yield and capsule quality depend on an adequate supply of all the nutrients through out growth. A deficiency of any one of them will affect the cardamom yields detrimentally. As visual symptoms of deficiencies tend to mask one another, it is be difficult to diagnose the actual problem. The descriptions of the more common deficiency symptoms are given below which would assist in making the correct diagnosis and allow timely action to be taken (Khader and Sayed, 1977).

Major nutrients :

Nitrogen :

Nitrogen is involved in the protein synthesis mechanism of cardamom plant and highly essential for the vegetative growth, photosynthesis and also for the development of chlorophyll (green colour) pigment of cardamom capsules. ‘N’ is very much important for the new tiller production, vegetative growth of young tillers, initial capsule development and also for the luxuriant green colour development of the capsule. Nitrogen deficiency may be exhibited by general paling, chlorosis (yellowing) on new leaf, young tillers and also lead to poor green colour development of cardamom capsules. Mild N deficiency will restrict plant growth, but often in a subtle manner that can only be assessed by comparison to plants grown with an adequate N supply. Moderate N deficiency will cause leaves to be light green or yellowish. Severe symptoms include necrosis (tissue death) starting at the tips of older leaves, with the tissue death developing a V-pattern down the midrib toward the base of the leaf. An adequate supply of N is associated with vigorous

See end of the article for authors' affiliations

Correspondence to:

A. RAMESHKUMAR
Department of
Horticulture, Horticultural
College and Research
Institute, Tamil Nadu
Agricultural University,
COIMBATORE (T.N.)
INDIA

Key words : Cardamon,
Nitrogen, Phosphorus,
Potassium, Calcium