INTRODUCTION

1.1. INTRODUCTION

Chayote (*Sechium edule*. Swartz, Fam. Cucurbitaceae, tribe : Sicyoideae) is a squash like vegetable crop. It is locally (in Darjeeling hills of Eastern India) known as 'Eskush' among Nepali speaking people and the word 'Eskush' is the deformation of English word 'squash' which is the misnomer for chayote. Chayote is the derivative of Aztec word 'Chayotle' meaning with throns (Cook, 1901). It is named variously in various parts of the world as christopine, mirlinton, choko or chocho, suqash, tayote (Cook, 1901; Aung *et. al.*, 1990; 1991 ; MacLeod, 1990; Lama; 1995, Dolui and Jana, 1988).

The native home of this species is the tropical and subtropical regions of Central New World and gradually its cultivation is extended in other warmer parts of the globe. The first European document on account of the chayote was the work of Francisco Hernandez in the later period of sixteenth century (Cook, 1901). According to Cook (1901), the first introduction of the plant in India was in between the late 19th century to the beginning of the 20th century from Kew Garden, England. The hilly regions of Eastern and Western Himalayas of Meghalaya, Sikkim, Uttar Pradesh, West Bengal, Karnataka and Maharastra states are the main chayote growing areas in India (Chakraborty, 1973).

The crop can be grown with relative ease due to its adaptibility to a wide range of climatic conditions. Aung *et. al.* (1990) reported that it can be cultivated from sea level to regions with altitudes of 1300-2000m. The whole plant has immense food value which is lucidly described elsewhere (Aung *et. al.*, 1990; Lama, et al., 1994).

One of the most distinctive characteristics of chayote among the gourd family is that the fruit bears a single large seed with viviparous germination capacity (Cook 1901; Dey and Jana, 1988; Aung 1990; 1994). Lama *et al.* (1994) described the varietal differences of *Sechium edule* growing in various altitudinal zones of Darjeeling hills and the differences were made on the basis of morphological characters of mature fruits (Vide Table 1.2). Engels (1983) recorded eleven varietal types of *Sechium edule* based on fruit characters from Central American countries of Costa Rica, Hondurus, Guatemala, and Mexico.

The plant gives three edible items in a year i.e., the young shoot with tendrils

colloquially known as 'Munta' in summer, the fruit (dana) during rainy season to winter and root (Jara) between the winter and spring (Sharma, 1993; Haque and Lama, 1996). The plant plays an important role in the hill economy of Darjeeling region. Various parts of the chayote are used variously viz.;

a) The fruit of chayote as human food, b) the young shoot with tendrils as green vegetable, c) fruits and leaves as fodder, d) flower as delicious fried table item, e) vines for forage and fibre, f) the tuberous root as delicious human food, g) leaves as medicines, h) the chayote flower for bee keeping and above all, i) plants as ornaments (Cook, 1901).

In spite of its high nutritive value, wide range of adaptibility in different climates and commercial potentialities cultivators and researchers have not yet been successful for popularizing its wide scale cultivation. Thus, keeping in mind the plus points and economic potential of this hilly vegetable crop, an attempt was made in this investigation to sort out the problems and negative points for its wide scale acceptance as profitable cash crop after thorough consultation with the local crop growers along with comprehensive surveying of existing agricultural practices. From this preliminary ground work, the present investigator pinpointed several deleterious features of the crop which cause to impair yield of fruits and tuberous roots. These include : 1. unwanted excessive vegetative growth of plants reducing their reproductive potential; 2. production of large number of male flowers than female ones minimising the fruit production, and 3. early senescence of assimilate supplying contributory leaves causing nonfulfilment of optimum sink demand.

Hence, a strategy was devised to enhance crop yield by attempting to produce a desired model plant type and manipulating source-sink relationship with a few chemical instruments-the plant growth retardants and growth promoters.

Thus, in this investigation emphasis was given to obviate or at least to partially alleviate some negative yield attributing characters of the chayote plant by (a) scaling the plant to desired length and vigour, (b) enhancing plant potential during fruiting phase, (c) increasing female flower production, and (d) by deferring early senesence of the plant, using growth retarding chemicals along with some growth promoters.