

INTRODUCTION

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The genus Ipomoea comprises the largest number of species within the convolvulaceae. Throughout the world Ipo-
moea is usually estimated to contain 500 species, (Mabberley,
1989; Mc Donald and Mabry, 1992). However/Austin and Huaman 3/
(1996) believed that Ipomoea is more likely to contain 600 -
700 species. Ipomoea carnea, Jacq is one of the major weeds in
India.

Many plants of this genus Ipomoea are cultivated in
Bombay presidency either as useful or ornamental plants. Some
of them are as follows.

- 1) Ipomoea Batatas, Poir, Encye(Kanangi).
- 2) Ipomoea tuberosa, Linn (Spanish Arborvine).
- 3) Ipomoea carnea, Jacq (Garvel).
- 4) Ipomoea Leari, Poxt.
- 5) Ipomoea hederacea, Jacq.
- 6) Ipomoea dasysperma, Jacq.
- 7) Ipomoea Horsfallice, Hook.
- 8) Ipomoea rubro-coerulea, Hook.

Ipomoea carnea, Jacq from above is characterised by
showy and pale rose coloured corolla with long tube. Generally
the plant is about 20 feet in height and woody in nature. It
is introduced in many gardens of Bombay presidency.

The Ipomoea carnea, Jacq occurs all over the world
but it is a native of South America. It occurs in many states
of India. In Maharashtra these species are commonly occurring
in all the districts and cultivated as hedge plant and termed

as weed. It does not require any special type of climate and soil. It is popular among the farmers with local name as "Garvel" or "Besharam". Recently Ipomoea carnea, Jacq is recognised in two sub species i.e. Ipomoea carnea sub sps carnea, Jacq and Ipomoea carnea sub sps. fistulosa, Mart-ex-choicy. These two species are studied in present investigation.

Among the various plant organs the senescence of leaves has been mainly investigated. Wareing and Seth, (1967) defined senescence as deteriorative events and according to Thomas and Stoddart(1980) leaf senescence is as the series of events concerned with cellular disassembly in the leaf and the mobilization of materials released during this process. Crop yield vegetal productivity depends upon degree of interception of light by leaf surface. According to Leopold (1961) leaf senescence has two aspects, it permits recovery through retranslocation of bulk of nutrients from the leaf and it brings about shedding of ineffective leaves from the plant. Thus it is physiological process which leads to cellular breakdown and death of organ. (Sacher, 1973). The term aging or senescence is usually related to accumulation of somatic structure and increase in metabolic failures (Woolhouse, 1967).

According to Nooden (1989) the leaves and other parts of polycarpic plant, senescence is in co-relative manner. According to Beaver's (1976), the leaves of annual plants senescence in sequential fashion in those leaves that are first formed by the growing apex. According to Kusunlata

(1990) senescence is an integrated biological breakdown which forms a constituents process of plant development.

Senescence could be the result of biomembrane damage within plant cells. As senescence advances to its end point plasmolemma integrity is lost and this is consistent with idea that death is a loss of homeostasis. The changes are occurring in membrane lipid during senescence of leaves. There is a general lipid breakdown. This phenomenon is generally accompanied by some disorganization of membranes in senescent cells or organelles. Sometimes the appearance of plastid-globuli probably built with membrane lipid materials is noticed in chloroplast (Thomas & Stoddart, 1980). Nucleus undergoes degenerative changes marked by vasiculation of the nuclear membrane and a breakdown of the internal matrix (Butler and Simon, 1970).

Mitochondrial function continues until quite late and that may be related to continued need for energy by the active process in senescence, (Nooden and Thompson, 1985).

The growth regulators like cytokinin, ethylene and abscisic acid (ABA) plays an important role in senescence. It is concluded that cytokinins coming from roots via xylem are known to delay leaf senescence and their decline may be important in Soyabean plant. Larry D. et al (1990). It is also concluded that ethylene plays an important role in carnation (Dianthus caryophyllus L.) flower senescence (Goldthwaite, et al, 1967).

According to Stoddart and Thomas (1982) the plant

growth regulators exert a controlling influence over leaf senescence.

91 However ^{senescence} the growth retardation due to growth regulator is well established. A systematic analysis of various growth parameters under hormone control is performed by few workers only. Therefore with this view, attempt has been made to study some aspects regarding organic and inorganic status of mature leaf of Ipomoea carnea sub sp carnea, Jacq and Ipomoea carnea sub sp fistulosa, Mart ex choisy. The fate of some organic constituents like chlorophylls, carotenoids, polyphenols, Titratable acid number (TAN) were studied during course of senescence. The morphological changes, physical properties of leaves, relative water contents (RWC) and density are also studied.

Chapter-I includes brief review of Ipomoea carnea, Jacq. This chapter includes general account of Ipomoea carnea, Jacq its morphology, physiology of senescence, role of environmental factors and role of harmones.

The Chapter-II materials & methods include methods and procedures followed for the present studies. The material was selected for the study of different organic constituents like moisture percentage, relative water contents (RWC), titratable acid number (TAN), polyphenols, chlorophylls, carotenoids and inorganic elements, like Sodium (Na), Potassium (K), Calcium (Ca), Magnesium (Mg), Iron (Fe), Copper (Cu), Manganese (Mn), and Zinc (Zn). The effects of hormonal treatments of Gibberelic acid (GA), Indol acetic acid (IAA) and kinetin were

studied seperatly. The two enzymes like peroxidase and Acid phosphatase were also studied in the present investigation.

The important findings of the present investigation are briefly summarised in the chapter-IV as "Summary and Conclusion".

The present study gives some idea of senescence of Ipomoea carnea, Jacq under natural conditions and with treatment of growth harmones.