CHAPTER I
INTRODUCTION

Pomegranate (Punica granatum L.) is a well-known table fruit of tropical and subtropical regions of the world. The Romans received it from Carthage, hence the name of the genus Punica. Some botanists place it in the family Lythraceae, of the peculiar type of fruit, called as balausta, most authorities make it the only genus in the family Punicaceae. It belongs to genera Punica and family Punicaceae (Chatterjee and Randhawa 1952; Joshi 1956). The name pomegranate follows the Latin name of the fruit Malum granatum, which means “growing apple” the plant was first domesticated about 10,000 years ago in Iran, where it is native (Eric, 2005) and is extensively cultivated in Mediterranean regions since ages especially in Morocco, Egypt, Afghanistan. It is also grown to some extent in Burma, China, Japan, USA, USSR, Bulgeria and Southern Italy. Generally pomegranate is not similar to other fruit crops of temperate, tropical or subtropical fruits except that it behaves as deciduous in temperate but in tropical and subtropical regions it behaves as an evergreen or partially deciduous.

In India, it is cultivated in states of Maharashtra, Gujarat, Rajasthan, Tamil Nadu, Uttar Pradesh, Haryana, Andhra Pradesh and Karnataka. In Gujarat, it is cultivated on an area of 9.4 (‘000 ha) with an annual production of 99.3 (‘000 MT) (Anon., 2014). In Gujarat, it is mainly grown in Banaskantha, Sabarkantha, Patan and Kutch districts. Ganesh and Dholka are mainly cultivated in Gujarat. New improved variety such as Arakta, Mridula and Bhagwa (Sinduri) are mainly cultivated in Sabarkantha district.

The versatile adaptability, hardy nature, drought resistance, low cost of maintenance, steady yield, good keeping quality and therapeutic values are the main features for its popularity.

Pomegranate is a shrub that naturally tends to develop multiple trunks and has a bushy appearance. When domesticated, it is grown as a small tree that grows up to 5m (Levin, 2006), leaves have an oblanceolate shape with an abtuse apex and
acuminate base. Mature leaves are green, entire, smooth and hairless, the flowers can appear solitary, pairs or cluster. In most cases, the solitary flowers will appear as spurs along the branches while the clusters are terminal. Fruit is globular, possessing a smooth outer rind with juicy arils (Mars, 2000).

Pomegranate bears on current season’s growth and flowers appear in the axils of new leaves therefore, it responds well to pruning. Three types of flowers are present in pomegranate: a) Male “bell shape”, b) Hermaphrodite “vase shape” and c) Intermediate. The vase-shape flower is fertile with a normal ovary capable of developing of fruit. The stigma is at the anthers height or emerging above them, this position allows for self-pollination as well as pollination by insects. Cultivars with higher vase-shape to bell-shape ratio will have a higher fruit yield potential. The percentage of vase-shape flowers in Indian cultivar is 53% to 83%.

*Punica granatum* L. classified into two sub species viz., chlorocarpa and porphyrocarpa. Chlorocarpa is found in transcaucacus regions, while porphyrocarpa is found in central Asia. The types of pomegranate cultivated in India are distinguished by shape and colour of the fruit, thickness of the rind, colour of aril and the taste. The different cultivars grown in India are Alandi, Dholka, Kabul, Kandhri, Ganesh and Bhagwa.

Bhagwa (Sinduri) cultivar is a supposed to be a further selection from Arakta cultivar. It has attractive glossy red thick skin with blood red and bold arils with medium size fruits. It has also soft seeds, high TSS, good shelf life and tolerant to fruit cracking.

Pruning of pomegranate is one of the most important practices that influence the vigour, productivity and quality of the fruits (Gadgil and Gadgil, 1933). Fruit thinning in the early stages of fruit growth increases size of remaining fruits, reduces trunk breakage and promotes regular bearing. Fruit set, fruit size, fruit weight and organoleptic values were also found improved as compared to unprunned. Flowers and fruits of thinned plants showed less drop than control (Tahir and Hamid, 2002).

Some of the major problems confronted in pomegranate are absence of information on the level of pruning and fruit load.
As the flowering habit is mainly terminal as such pruning may encourage axillary flowering and excessive setting which is the main cause for the variability in size of the fruit. By thinning, optimum load of the fruit may be maintained which may help in getting uniform, bigger size and quality of fruits.

Most of the farmers of Gujarat suffer to getting small fruit size due to continues flowering and fruit setting in pomegranate. The present study will generate the information to overcome the above problem up to some extent.

In the light of the above facts, the present study was taken up with the objective to study the “Standardization of severity of pruning and crop load on yield and quality in pomegranate (Punica granatum L.) var. Bhagwa”.

**Objectives:**

1. To study the effect of severity of pruning and crop load on growth of pomegranate.

2. To study the effect of severity of pruning and crop load on fruiting and yield of pomegranate.

3. To study the effect of severity of pruning and crop load on quality of pomegranate.

4. To study the effect of severity of pruning and crop load on economics.