Mango (*Mangifera indica* L.) belongs to the family Anacardiaceae, which is an important fruit crop of India as well as tropical and sub tropical countries of the world. Since a long time mango is a part of our culture and religion because of its usefulness and delicious taste. Though it possess sweet fragrance, high palatability, attractive colour and high nutritive value beside it’s fine taste, this fruit is well known as “The King of Fruits” and undoubtedly deserve to be the “National Fruit of India”.

The fruit is considered to be a good source of vitamin A, B-complex and C; β-carotene, nutritive minerals, digestable sugars and trace elements. It is having a fascinating taste, aroma and flavor which attracts every one. It's kernel contains carbohydrates, carotene, riboflavin, thiamine, protein, fat and calcium as well as possesses medicinal value (Anon., 1983). Because of this in valuable qualities, this fruit has a high demand in the global as well as in the domestic market. Reputed as fruit for excellence, mango has assumed a leading position among the commercial fruits (Singh, 2004). Due to the awareness about the nutritive value among the consumers and awareness about the market potential among the producers, export of mango is now gaining global attention.

India ranks first among the major world producers of mango accounting 50 % of world’s production. Mango is grown in almost all states of India. Major mango growing states of India are Andhra Pradesh, Bihar, Gujarat, Maharashtra, Karnataka, Kerala, Tamil Nadu, Orissa, Uttar Pradesh and West Bengal. In Gujarat Bhavnagar, Surat, Valsad, Junagadh, Mahesana and Kheda districts are the main mango growing belts. We produce 185.06 lakh tonne of mango from 22.17 lakh ha area with a productivity of 8.3 tonne/ha. Gujarat stands in 6th position in area and production of mango with 1.42 lakh ha and 11.25 lakh tonne, respectively. Gujarat having productivity of 7.89 tonne per ha, which contributes around 7 per cent of the total production of mango in India (Anon., 2015).

Mango is a highly nutritive fruit. Immature and green mature fruits are suitable for pickling and chutney preparation due to its acidic nature. Ripe mangoes are excellent table fruit and can also be transformed into a variety of products. Crushed shoots of mango tree are substitute for toothbrush in India, which is believed
to protect the teeth and gum. Mango fruit can be easily separated into three parts skin, pulp and stone (seed). Relative proportion of these parts in fruit varies mainly with the variety and stage of maturity. The fruit contains nearly 81 per cent of moisture, 0.4 per cent of fat, 0.6 per cent of proteins and 0.8 per cent of fibres. It also contains nearly 17 per cent of carbohydrate. The fruit is rich with important minerals like Potassium, Magnesium, Sodium, Phosphorus and Sulphur. In addition to sumptuous tropical flavour, mango delivers a host of nutrients and makes a delightful sensory experience. Mango is an excellent source of vitamins A and C, both are important antioxidant nutrients. Vitamin C promotes healthy immune functioning and collagen formation. Vitamin A is important for vision and bone growth (Mukherjee, 1997).

Around 2000 varieties of mango are found across the world. India is also having a great and huge varietal wealth. The “Lakh Bag” near Darbhanga in Bihar, was planted by Moghul Emperor Akbar and had one lakh varieties. At present, the number of commercial varieties is estimated at over 1000. The most famous varieties of mango available in Gujarat are Kesar, Alphonso, Rajapuri, Totapuri, Dashehari, Langra, Neelum, Jamadar and Vanraj. Out of them, commercial cultivars Alphonso and Kesar occupied a prime position among farmers as well as consumers. Kesar is the most popular mango variety in Gujarat and has good export potential. It accounts for more than ninety per cent of the mangoes exported from Gujarat (Srivastava, 2007). It is famous for its excellent sugar: acid blend with good processing quality and pleasant flavour, attractive shape, size, saffron colour pulp and good keeping quality. Excellent fruit and keeping qualities made Alphonso as one of the leading export variety from our country. It’s attractive capucin yellow colour, ovate shape and medium size give a good consumer appeal. Langra fruits are oval shaped fruits having very sweet pulp. It is known as the most popular variety of Pakistan because of their high yield, good taste, attractive colour and good aroma (Pal, 1998). However, because of short shelf life, quite high percentage of this fruit is wasted. Ratna is a hybrid of cross between Neelum and Alphonso. Fruits are characterised by medium size, very good quality, attractive colour, high TSS, sweet and pleasant flavour. Ratna is free from spongy tissue which is a major problem in Alphonso.

Mango is a highly perishable fruit possesses an incredibly short shelf life and attain respiration peak on 3rd and 4th day after harvest at ambient temperature during ripening process. The shelf life of mango varies among different cultivars depending upon storage conditions and ranges from 4 to 8 days at room temperature and 2-3
weeks in cold storage at 13 °C. During the ripening period fruit undergo different physiological and chemical changes affects the shelf life and quality of fruits.

Post harvest losses can be reduced by adopting various methods which reduce the rate of respiration and ultimately ripening. Pre and post harvest application of different chemicals and growth regulators can improve the shelf life and quality of fruits. These will help to expand marketing distances from growing area.

Polyamines are polycationic compounds of low molecular weight that are present in living organisms. The term polyamines collectively apply to Putrescine, Spermine and Spermidine along with few other related secondary conjugated products. Exogeneous application of these polyamines reported to improve the shelf life and quality in many fruit crops including mango. Exogeneous application of polyamines, delay the fruit senescence and physiological process leading to the fruit ripening (Valero et al., 2002). A higher endogeneous level of Putrescine is associated with delayed fruit ripening. Pre and post harvest application of Putrescine increased fruit firmness & also retarded colour development (Malik et al., 2003). Spermine reduces the enzymatic activity of pectin methyl esterase and membrane electrolyte leakage, demonstrating its protective role on cell integrity (Jhalegar et al., 2012). Exogenous application of polyamines have been demonstrated to influence shelf life and quality of various fruit crops such as apple (Kramer et al., 1989), peaches (Martinez- Romero et al., 2000) and mango (Purwoko et al., 1998).

Gibberallic acid plays a role not only in shelf life of fruit but also to improve the post harvest quality of fruits. Gibberellic acid has been known to delay the process of ripening in mango and other fruit crops (Khader, 1992). Therefore, GA₃ seems to play an important role in delaying ripening, prolonging shelf life and maintaining postharvest quality of various fruit crops. Calcium chloride has been extensively used in the fruits and vegetables sector for whole and fresh-cut commodities as preservative and firming agent. It has been observed that calcium is associated with fruit firmness, stress tolerance, ripening and senescence (Martin-Diana et al., 2007). Therefore, beneficial effects of these chemicals as pre and post exogeneous applications on different cultivars yet to be in need of detailed investigation.

Mango is a very sensitive fruit to low temperature. Therefore, the total production in India is handled at high tropical ambient temperature. Under these
conditions fruit ripen within 6-7 days and become over ripe and spoil within 15 days culminating in post harvest losses amounting to 25-30%.

Mango fruit being a climacteric has a short shelf life. Due to this reason, a significant percentage of this fruit is wasted. Since mango is highly perishable, it ripe fast during summer and becomes inconsumable very soon. The abundant supply of mango in the market from a period of short span causes glut in the market thereby causing reduction in price. This leads to loss in returns to the orchardists. This short period of shelf life also limits the long distance commercial transport.

In order to tackle the problems related to post harvest losses and to extend the shelf life of different varieties, a detailed study in ripening and storage behaviour is required. Even though a lot of research studies on shelf life of mango is widely carried out, but they are limited to only few leading varieties like Kesar and Alphonso. Since different varieties show different ripening behavior, affects its shelf life and quality in storage. When Kesar and Alphonso show long shelf life, in the other side Langra shows poor keeping quality. Therefore, a detailed investigation on shelf life of other important cultivars of this region was an urgent need to improve the market potential of these varieties.

In view of the above consideration and paucity of adequate research evidences, the study entitled “Effect of pre and post harvest treatments of chemicals on shelf life of different cultivars of mango (Mangifera indica L.)” was conducted at Department of Horticulture, J.A.U, Junagadh with the following objectives.

1. To study the ripening and storage behaviour of different varieties of mango.
2. To find out the best treatment which can reduce the post harvest losses, improve the shelf life and quality of mango.
3. To study the interaction effect of different chemicals on shelf life and quality of different varieties of mango.