Chilli (*Capsicum annuum* L.) is an important cash crop, grown extensively in different parts of India. It belongs to genus *Capsicum* and family Solanaceae. The term “chilli” or “chile” is widely used and it refers exclusively to the smaller hot type of capsicum fruits. Its orthography is common in Spanish although the name varies depending on location. The spelling “chile” and “chilli” could be derived from the Spanish and the “chill” or “chilly” from the Aztec. The word ‘Capsicum’ has most likely been originated from the Latin word, ‘Capsa’ meaning ‘Satchel’ although it could be from the Greek word ‘Kapto’ which means ‘to bite’ or to swallow hungrily and could refer to the biting sensation of the hot chilli when consumed. In another version as depicted by the Oxford English dictionary it originated from the Latin word ‘capsa’, meaning a box which refers to the shape of a fruit (Muthukrishnan *et al.*, 1986).

There has been a considerable debate since long among different authors regarding the number of species under this genus. In early 1700, Tournefort named the genus as *Capsicum* and listed 27 species under it. But Linnaeus (1753) reduced the species into two, *annuum* and *frutescens*. Later in 1767 he added two more species, *baccatum* and *grossum*. The two species (*annuum* and *frutescens*) concept was widely accepted until 1923. When Baily (1923) made one species concept i.e. *frutescens*, however, he propounded the one species concept in the name of *annuum* instead of *frutescens*. Later Heiser and Smith (1958) recategorized the genus into four species, *annuum, frutescens, baccatum* and *pubescens*, and in 1957 they identified *Capsicum chinense* as a unique species. The current recognized list of five domesticated species are *annuum, frutescens, baccatum, pubescens* and *chinense* and listed 25 wild species, but this is only supposition. It is anticipated that new species could be discovered and named in future.

The cultivated chillies are of American origin and were domesticated in Mexico from ancient times. They are known from prehistoric remains in Peru.
The centre of diversity of the common cultivated pepper (*Capsicum annuum*) is probably Mexico with a secondary centre at Guatemala. *Capsicum frutescens* is widely distributed throughout the tropical and subtropical Americas both in wild and cultivated forms which also have their origin in Central and South America and the genus is quite clearly South American in origin (Bukusov, 1930 and Shoemaker, 1953). The Portuguese introduced Capsicum from Brazil to India during 1584. They are broadly cultivated in tropical and sub-tropical countries like Africa, USA, Japan, Mexico, India, Turkey etc. Mixed stock of *Capsicum* species was introduced in India by the Portuguese during early 16th century, and Christian missionaries also introduced *Capsicum* species in the North-eastern states separately (Thamburaj and Singh, 2003).

Adaptation to Indian condition had resulted in greater diversification in hot and pungent varieties. India is now one of the leading chilli producing countries in the world. The crop is grown practically all over the country. Andhra Pradesh, Maharashtra, Karnataka and Tamil Nadu account for about 75% of the total area as well as annual production of the country. Total production of chillies during the year 2007-08, 2008-09 and 2009-2010 are 1294.15, 1269.85, 1202.94 thousand MT respectively with the average productivity of 1.6 MT/ha (NHB Database, 2010). Among the major spices grown in India during the year 2009-10 chilli shared highest area about 30% (NHB Database, 2010). The other prominent chilli growing states are Madhya Pradesh, Punjab, Bihar, Jammu and Kashmir and West Bengal.

There is a good scope for increasing its export by boosting up its production. India is the largest exporter of chilli and the total export from India is on an average only 4% of total production (Thamburaj and Singh, 2003). The other major chilli growing countries are Mexico, Japan, Turkey, The USA, Ethiopia, Uganda, Nigeria, Thailand, Indonesia, China and Pakistan.

Chilli is an herbaceous or semi-woody annual or perennial. There are distinct morphological features which distinguish the various species. Its chromosome number is \( n = 12 \) (Thamburaj and Singh, 2003). The leaves are ovate, tapering to a sharp point, entire and arranged alternately, but upper leaves
are mostly opposite and simple, the petiole is light green and angular upto 10 cm. The leaves are light to dark green in colour. The inflorescence is terminal, but due to the form of branching, appear to be axillary. The filament and stamens are inserted near the base of the corolla. The ovary is conical type. Chilli is an often–cross pollinated crop. The fruit is pendulous or erect, many seeded berry. The fruit appears at the nodes. The size of the chilli fruit is very much variable (1-30cm), Bose et al., 1986. Divergence of fruit types of C. annuum is usually classified by fruit characteristics, i.e., colour, shape, flavour, size and use (Smith et al. 1987 and Bosland, 1992).

Chilli is famous for its pleasant aromatic flavour. Different varieties of chillies are grown and used as vegetable, spice and condiment, and also widely used for preparation of sauces, pickles and other food products. The green chillies are rich in ‘rutin’ which is of immense pharmaceutical need (Purseglove, 1977). Chilli is broadly used in culinary purpose, beverages and pharmaceutical industries worldwide. Both ripe and green fruits are important condiment used for imparting pungency which is due to an active principle ‘Capsaicin’, an alkaloid present in the pericarp and placenta, which has good export possibility. Capsaicin is also used in many pharmaceutical preparations like pain balms, skin ointments and ointments for cold, sore throat, chest congestion, etc. and in cosmetics like prickly heat powders (Pruthi, 1979).

Among the spices, dry chillies contribute the major in India (Raju and Luckose, 1991). Chilli is the largest spice item exported from India in terms of volume and it also occupies second position in terms of value. During 2008-09, chilli accounted for 40 percent in volume and 20 percent in terms of value of total export of spices from India. During the year, India has exported 1, 88,000 tonnes of chilli and chilli products valued at Rs. 1080.95 crores (Anon. 2009). High export value is also one of the reasons for increasing its popularity among farming community in growing region of our country.

It is considered to be a good source of Vitamin-C (ascorbic Acid). Awasthi and Singh (1979) reported Ascorbic acid and Capsaicin content of different chilli cultivars. Moreover, it also acquired a great importance for its
oleoresin content, which permits better distribution of colour and flavour of the food. Whereas the red colour extract is the attribute of carotenoid pigment Capsanthin (0.2%-0.5%). Capsanthin is used as colour additives in food industry and poultry feed industry. The constituent of green chilli fruits consist of (per 100 g of edible portion) Moisture-85.7 g, Proteins-2.9 g, Fat-0.6 g, Minerals-1.0 g, Fibres-6.8 g, other Carbohydrates-3.0 g, Phosphorus-80 mg, Calcium-30 mg, Ascorbic Acid 111mg, Vitamin A -292 IU, Rivoflavin-0.39 mg, 0.19 mg and 29 cal energy (Choudhury, 1967).

West Bengal, being the only state of India having all types of agro-climatic conditions, the crop can be exploited economically in the Gangetic alluvial plains. It is now successfully grown in West Bengal in the summer months and as an autumn crop extending up to winter months. The fruits are, therefore, available in the market throughout the year. Chilli is an important crop in the saline belt of West Bengal particularly in the coastal areas like South 24 – Parganas and Purba Medinipur districts. It has been found that the recent trend in vegetable cultivation is using improved or hybrid cultivars. But insufficient availability of seed of the improved or hybrid varieties is an important constraint of cultivation. However, different well-known local cultivars are grown by the farmers of these areas, but their yield potentiality under the saline condition is unknown to us. Chilli varieties of Bapatla, Andhra Pradesh were found to be salt tolerant and withstood the salinity upto 8 EC (Kameswari and Prasad., 2005), Systematic evaluation of available local cultivars is therefore, necessary to identify the more efficient or best cultivar suitable for this region.

Moreover, chilli is predominantly used for its green pungent fruits, where excessive use of inorganic source of nutrients for its cultivation may invite health problem. Therefore, inclusion of organic source of nutrients more than usual inorganic sources is essential consideration. Integrated nutrient management with vermicomposting, green manuring or application of biofertilizers also showed significant effect on chillies (Nath et al., 2008). The production and quality of chilli is governed not only by the inherent yield potential of the cultivar, but also greatly influenced by several physiological
activities of the plant, which are governed by various endogenous plant growth hormones. These are organic compounds other than nutrients, which in small quantities promote, inhibit or otherwise modify any plant physiological process. They have pronounced effect on the growth, flowering and fruiting of the plant. The positive response of growth regulators on chilli has been reported by several workers in different chilli growing regions. Sharangi et al. (2003) reported that double spraying of NAA @ 20 ppm resulted in retention of more flower in chilli cv. Bullet and better fruit set leading to better yield in comparison to CCC @ 1000 ppm and NAA @ 15 ppm. But there is insufficiency of information in this aspect under this saline region of West Bengal.

Systematic research work on the above mentioned aspects of chilli under saline condition were, therefore, felt to be necessary. The present field trials were conducted with the following objectives:

1) Screening of different local cultivars suitable for the agro-ecological condition of the saline belt on the basis of yield and quality characteristics.

2) To find out the effect of different combinations of organic and inorganic sources of nutrients on growth, yield and quality of chilli.

3) To study the response of chilli to the application of different growth regulators at different concentrations to find out their effect on growth, yield and quality of chilli.