The rice crop in the state of West Bengal, India, is grown under diverse agro-climatic conditions. There are three distinct rice growing seasons, viz., Aus in Pre-kharif (March to July in North Bengal and May to October, in South Bengal), Aman or Kharif (June to December) and Boro (November to May).

The net cropped area of the state is 5.51 million hectares. Considering the area cropped more than once (i.e., 1.98 million hectares), the gross cropped area comes to 7.49 million hectares. Out of this, more than 5.20 million hectares is under rice alone, i.e., 4.00 million hectares in Aman (Kharif), 0.80 million hectares in Aus (Pre-kharif) and 0.40 million hectares in Boro (dry) seasons.

During the past decade, the area under Boro (dry) rice has increased to 0.40 million hectares from an area of only 0.03 million hectares in 1965-66. The spectacular increase in the area of Boro (dry season) rice cultivation is mainly attributable to the expansion of semi-dwarf, fertiliser responsive high yielding varieties since mid-sixties, and the new varietal-types cover more than 95 percent of the Boro (dry season) rice crop. The Boro (dry season) crop though accounts for only 7.7 percent of the rice cropped area but it contributes 13.11 percent of the total rice production of the state mainly because of high
harvest index. Nevertheless, the cultivation of Boro (dry season) rice in West Bengal is confronted with certain specific problem. The water requirement of Boro (dry season) rice crop is around 4600 m.m. of which 50 percent is needed through irrigation water during April-May i.e., during reproductive period of growth. The river valley projects generally can not supply water beyond March, thus, the crop is often subjected to moisture stress, at this vital stage of crop growth and the yield is reduced. The weather is cool during the months of November to February when average diurnal temperature ranges between 9.3°C/25.2°C and 14.9°C/28.8°C. The crop duration of the presently grown rice varieties during Boro (dry) season is prolonged under the influence of low temperature during the vegetative growth phases.

The effect of low temperature on growth of rice plant is manifested through many characters. Leaf yellowing under cool temperature have been reported by several workers (Salauddin and Vergara, 1974; Srinivasulu and Balakrishna Rao, 1972; Kaneda, 1972), certain other characters adversely affected by low temperature are - seedling height (Adair, 1968; Salauddin and Vergara, 1974; Williams and Peterson, 1973), short growth and internode elongation (Kondo, 1954; Nagai, 1961; Matsushima et al, 1964; Tsunoda, 1964; Hearth and Ormrod, 1965; Ueki, 1966; Palace et al, 1971; Sato, 1972; Chamura and Honma, 1973; Osada et al, 1973; Yoshida, 1973). There are also reports of increase/decrease in tiller production (Oka, 1955; Takahashi et al, 1955; Hasegawa, 1959;
The problem of low temperature on growth of rice plants and characters associated with yield have been studied rather extensively for the success of rice cultivation in the cooler areas of temperate zone. Cool injury of rice plant is a problem not only in the temperate zone but also in the tropics. According to a survey report of Kaneda, 1972, several countries in the low latitude areas reported injury to rice plant due to cool weather. Owen, 1971, stated that low temperature injury in the tropics resulted from the spread of dry season culture of rice and use of high yielding semidwarf photoperiod insensitive varieties together with development of irrigation facilities.

Boro (dry season) rice cultivation in West Bengal is associated with some specific problems of low temperature. Several types of cool-weather injury have been identified, Kaneda, 1972; and their significance to rice yield are diverse and complex due to differences in rice growing season, elevation, latitude, variety, rice cultural technology, developmental age etc. (Satake, 1976; Nishiyama, 1976). Therefore, in the present
investigation an attempt was made to identify the specific types of low temperature injury to rice plant and to study their influence on growth and performance during Boro (dry) season in West Bengal, India, through a series of field experiments during the years 1974–1977, at Rice Research Station, Chinsurah.