INTRODUCTION
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The coal based thermal power plants are the point sources of air pollution with a more or less definite pattern of emission. The organic fuel burnt at thermal power plants contains harmful impurities which are injected into the environment in gaseous form ($SO_2$, $NO_x$, CO, HC's and Fluoride etc.) and solid components of combustion products (Fly ash, Bottom ash, Particulate matter etc.) which cause deleterious effects on the whole complex of the living system or the biosphere including the vegetation, aquatic life of the region, animals and man. These thermal power plants use thousands of tons of low quality, high ash content coal per day (Indian bituminous coal contains 15 to 45 per cent ash against 3 to 5 per cent of in situ formed European coal). A super thermal power plant using even normal or low sulphur coal will emit about 100 tons of sulphur dioxide into the environment every day. It has been reported that after the consumption of 80 million tons of coal, 1.35 million tons of $SO_2$ is released into the atmosphere (Kumar and Prakash, 1977). As quoted by Sharma (1986) 13 million tons of fly ash, 4,80,000 tons of $SO_2$, 2,80,000 tons of $NO_2$, 16,000 tons of CO and 5,000 tons of hydrocarbons are released into the atmosphere each year by our thermal power plants as long back as 1980. Further it has been estimated that, every three tons of carbon burnt consumes eight tons of oxygen. That is, we are borrowing from the present oxygen reserve of the atmosphere. With an estimated known workable fossil fuel reserve of 8.6 trillion tons, man can deplete about 17 x $10^{12}$ tons of atmospheric oxygen (Sahu, 1994).

Toxic substances contained in flue gases discharged from stacks of thermal power plants are potentially harmful to vegetation. Significant injury to living vegetation can occur when atmospheric conditions are not conducive to rapid dispersion of the pollutants. This injury can reduce the photosynthetic capacity of the vegetation resulting in lower yields of green plant products and, in severe cases,
death of sensitive species. The main culprit of this in coal smoke is $SO_2$. The devastating effect of $SO_2$ on vegetation is well established and proved beyond doubt (Katz et al., 1939; Whitby, 1939; Thomas, 1951; Pelz, 1956; Thomas and Hendricks, 1956; Thomas, 1961; Linzon, 1965; Prokopiev, 1965; Rao and Le Blanc, 1966; Dochinger, 1968; Stern, 1968; Jacobson and Hill, 1970; Jones et al., 1974; Mudd and Kozlowski, 1975; Mansfield, 1976; Kumar, 1977; Hallgren, 1978; Malhotra and Blanel, 1980; Dubey et al., 1982; Iriving and Miller, 1984; Treshow, 1984; Malhotra and Khan, 1984; Heggestad et al., 1986; Farooq et al., 1988; Amundson et al., 1990; Murray and Wilson, 1990; Sharma and Prakash, 1991; Polle et al., 1992; Efe et al., 1993; Qifu et al., 1993; Huang et al., 1993).

A team of environmental botanists working at the department of botany, Aligarh Muslim University, Aligarh, has studied the adverse effects of vegetation around a thermal power plant, and found to affect some timber trees (Khan, 1982; Ghouse et al., 1984a,b; 1986a; Ahmad and Kalimuth, 1986, 1988; Kalimuth et al., 1987; Gupta et al., 1988), Vegetable Crops (Amani and Ghouse, 1978; Gupta, 1981; Khan and Khan, 1991) and the various weeds of the locality (Amani et al., 1979a,b; Amani, 1982; Ghouse and Khan, 1983, 1984, 1986; Khan, 1985; Ghouse and Saquib, 1985; Iqbal et al., 1986a,b; 1987a, b; Mahmooduzzafar et al., 1986, 1987; Saquib, 1989; Usmani, 1990; Malibari et al., 1991; Saheed et al., 1993a; Lone et al., 1994b). Further, morphological variations, variation in the leaf epidermal architecture, sulphur catching capacity as well as changes in the amount of photosynthetic pigments of different plant species have also been studied under the influence of coal smoke pollution (Ghouse et al., 1980; Khan and Khair, 1984, 1985a,b; Khan et al., 1984; Ghouse et al., 1985; Ghouse and Saquib, 1986; Ghouse et al., 1986b; Gupta and Ghouse, 1986, 1987b; Saquib et al., 1986; Ahmad et al., 1987; Khan and Ghouse, 1988; Khan and Usmani, 1988; Ghouse et al., 1989; Khan et al., 1991; Saquib and Ahmad, 1991; Lone and Ghouse, 1992; Ghouse et al., 1993; Lone et al., 1993; Lone and Ghouse, 1993; Saheed
et al., 1993b; Lone et al., 1994a,b) and the biochemical impact on some plantation crops (Lone, 1993). Measuring a physiological response to SO$_2$ exposure under field conditions is an important step in understanding the responses of trees to fumigation episodes and in further predicting the effect on trees under field conditions. Regardless of several reports on Indian crops and other plant species, the literature concerning the biochemical responses of perennial broad-leaved forms under the stress of coal-smoke pollution in field conditions is very meagre, and is yet to be carried out in detail. Therefore, the present study has been directed in this line in order to unerl the biochemical behaviour of some perennial species under the stress of coal-smoke pollution. The study will elucidate the seasonal variations in the mineral balance, photosynthetic pigments, ascorbic acid and proline, as well as some metabolic products like carbohydrate and proteins etc. in the leaves of various selected species. Furthermore, the newly formed bark and wood samples of the selected species have also been designed for analysis subjecting several biochemical parameters. The experimental site for the present study has been selected around a coal-fired power plant situated at Kasimpur, 16 kms. North-East of Aligarh City in Uttar Pradesh.

The massive plantation drive launched in this country requires a proper selection of species for plantation in areas which are under air pollution threats. For this purpose, an effective screening of trees is essential, rather than seasonal crops due to the long standing experience of trees to ambient pollution load. Trees are already known to act as biological scavengers of toxic elements emanating out of coal burning. They are capable of fixing atmospheric metallic and non-metallic oxides present in ambient air. It is, therefore, believed to be essential to investigate the common tree species for their relative capability to fix the toxic elements by wide screening techniques. The present investigation is undertaken with the hope that it will yield useful data for an overall assessment of species for its performance and suitability to plant in large number to provide green cover and biological purifiers to the site.