STUDY SITES AND CLIMATE
Two forest stands dominated by alder (*Alnus nepalensis*) were selected for the present study at Upper Shillong 5.5 Km away from Shillong, the capital of Meghalaya. The study area lies between 25°34' N latitude, 91°56' E longitude and at an altitude of 1500 m MSL.

The topography of the two sites was similar and both of them were adjacent to each other. The sites are closely comparable, the functional differences are attributed to the age of the plantation. These two stands are covered with alder plantations on the same face of the hill slope. Each of the two sites chosen was subdivided into closed and open forest stands. The closed forest comprised of 35 years old alder plantation being the original undisturbed stand and the other one the young open forest stand of 20 years old exposed to disturbances such as cutting twigs and collection of wood for fuel by local inhabitants. Tree densities per hectare were 1160 and 380 in closed and open stands, respectively.

Greater Shillong falls under the Gondwana (Mesozoic) period. The plateau is constituted by the rocks of the precambrian age consisting of rocks of hard crystalline granite, gneiss and granulites (Singh, 1989). The
PLATE I - CLOSED FOREST STAND OF ALDER (ALNUS NEPALENSIS)

PLATE II - OPEN FOREST STAND OF ALDER (ALNUS NEPALENSIS)
general soil type of these sites is red loamy with fine
silt and gravel constituting the major fractions (Sand
54.1%, Silt 25.9% and Clay 20%) and acidic in reaction.

The climate of Shillong is of sub-tropical mon­
soonic type, largely controlled and influenced by the
seasonal winds, like the south west monsoonic wind and
the north east winter ones. On the basis of general meteo­
rological conditions, the year is divisible into four
seasons. The spring season starts from the month of March
to April, summer (rainy) from May to September, autumn
from October to November and winter from December to
February.

During March and April, the atmosphere gradually
warms up and relatively it is dry. From the middle of
May to the end of July, the temperature reaches the maximum.
The maximum temperature recorded during 1990 and 1991
was 24.3°C and 24.6°C respectively. The average minimum
temperature was 15.5°C in 1990-1991. The rains start in
the middle of April becomes intense in June and August­
September and sometimes even upto the middle of October
after which it gradually decreases. The annual rainfall
during 1990 and 1991 ranged from 2.1 mm to 421.2 mm and
0.1 mm to 574.0 mm respectively. Similarly, the average
humidity ranged from 59% to 89% in 1990 and 64.5% to 90%
in 1991. During winter months the climate is very cold and dry and the range of minimum temperatures was from 7.1 to 7.7°C in 1990 and from 4.8 to 8.7°C in 1991 (Fig. 1). The low temperature of the winter results into frost during December to January months.

The predominant understorey vegetation of both the selected forest stands was fairly similar. Several species like Rubus ellipticus, Litsca cubeba, Osbeckia crinata, O. nepalensis, Cassia mimosoides, Arundinella khasiana, Houttyunia cordata, Hedychium aurantiacum, Trichoranthus sp. and Eupatorium adenophorum were common to both the sites.