PREFACE

Slash and burn agriculture (locally known as Jhum) is the most prevalent form of cropping in the hill areas of northeastern India. The early successional herbaceous communities constitute an important phase in the fallow development during secondary succession subsequent to cropping. This community which holds the ground for about 5-6 years, often gets arrested at this stage due to shortening of the Jhum cycle (the intervening fallow period before cropping is again done on the same site). Therefore, the present study dealing with the eco-physiological analysis of this community and a comparison with the herbaceous communities of older fallows of secondary succession is important both from the point of view of understanding the biological and environmental aspects related to Jhum. This work forms a part of an inter-disciplinary study on the ecological impact of Jhum which considers the agro-ecosystem and forested fallows looking into land use pattern, yield and energetics, hydrology and nutrient cycling, population dynamics, biomass, productivity and socio-economic aspects.

First five chapters presented in Section A deal with the community analysis on aspects like — community organization, soil seed population, development of C_3/C_4 photosynthetic strategy during succession, partitioning of biomass and nutrients and reproductive efficiency. Section B deals with the growth and allocation pattern of some
important early successional weedy species. Influence of slash and burn agriculture on the nitrogen mineralization process has been discussed in the last Section C. Thesis starts with a general introduction giving a review of the available literature on the various aspects investigated in this study. Repetition at certain places could not be avoided as each chapter is written in the form of an independent research paper. References are placed at the end of the thesis.