



The Sarawak Museum Journal

Vol. XLIV No. 65

December 1993



ISSN: 0375-3050

E-ISSN: 3036-0188

Citation: Hanne Christensen and Ole Mertz. (1993). The Risk Avoidance Strategy of Traditional Shifting Cultivation in Borneo. The Sarawak Museum Journal, XLIV (65): 1-18

THE RISK AVOIDANCE STRATEGY OF TRADITIONAL SHIFTING CULTIVATION IN BORNEO

Hanne Christensen and Ole Mertz

ABSTRACT

The strategy of diversity present in shifting cultivation in Borneo is elucidated. "Traditional shifting cultivation" is defined and compared to "non-traditional shifting cultivation".

The fields (swiddens) and gardens of two native societies, the Bukit and the Taboyan of Kalimantan, are cultivated with at least 92 different species (cultigens), many of which are found in several varieties. In particular, many varieties of the staple crop, upland rice (*Oryza sativa*), are cultivated.

Four different farming environments were recognized: homegardens, farm gardens, main swiddens and fallow areas. Many cultigens are only cultivated in one or two farming environments. The home garden is most intensively cultivated and has the highest diversity of cultigens. The fallow areas are very productive per unit of labour input and many cultigens are harvested for several years after the swidden has been left fallow.

The strategy of high diversity allows the farmer to survive in an unstable and difficult environment. This minimizes risks rather than maximizes profits and is crucial to the ecological and the economic sustainability of traditional shifting cultivation.

There is potential for more intensive production, but it is important that new cultigens and farming practices are integrated carefully as they may otherwise be counterproductive.

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INTRODUCTION

The traditional farming system of the tribal societies (the Dayaks) in Borneo is shifting cultivation. In ancient times it was based on staple crops such as taro (*Colocasia esculenta*) and sago (*Metroxylon* spp), but after the introduction of rice 1000 - 1500 years ago (Li 1970; Strickland 1986), this became the most important crop to which all social, religious and economic activities were closely related (Conley 1973; Dove 1985; Freeman 1955; Jensen 1965).

Only a few authors have described this farming system in detail (Chin 1985; Dove 1985; Freeman 1955), but their studies indicate that diversity is essential to traditional shifting cultivation. Chin (1985) found that the Kenyah of Sarawak cultivate at least 95 different species with more than 200 varieties, and Dove (1985) recorded that in one Kantu longhouse in West Kalimantan each household cultivates at least 20 different crops in their swidden in addition to upland rice. Vayda (1981) found at least 142 species being cultivated by the shifting cultivators in Apo Kayan in East Kalimantan.

Information on traditional shifting cultivation systems found in South and Central Kalimantan is scarce and no studies have investigated the significance

of cultigens and cropping combinations in the sustainability of these traditional systems.

This study elucidates the diversity of cultigens found in the traditional shifting cultivation systems of two tribal societies in South and Central Kalimantan and shows how distinct farming areas are created by cultivating different cultigens in different combinations for different purposes.

The Term "Shifting Cultivation"

Shifting cultivation has been practised for thousands of years, and was once common all over the world in temperate areas. Transition to more intensive systems has been gradual and very uneven (Boserup 1965). Today, shifting cultivation is mainly found in sparsely populated areas of the tropics where it often constitutes the most important farming system (Okigbo, 1984). Worldwide, shifting cultivation is estimated to support around 300 million people (Andriess and Scheelhaas 1987) of which around 1.6 million are found in Borneo (Suwardjo *et al* 1987).

The term shifting cultivation is applied to a number of farming systems. These range from the simple and destructive systems used in the Amazon basin by recent immigrants to the ingenious and sophisticated methods of resource management practised by many indigenous rain forest societies. Farming systems adapted to semi-arid areas in Africa are also included. All these systems have only a few elements in common: establishment of new fields by burning the vegetation and abandoning these swiddens after one or a few years of farming. These conspicuous similarities have led to a generalization in which these systems have been grouped together. To avoid confusion when discussing shifting cultivation strategies, we have adopted the stricter definition given by Pelzer (1945). "Shifting cultivation can be defined by the rotation of fields rather than crops, a short cropping period (1 - 3 years) succeeded by a long fallow period (5 - 20 years), and clearing by slash and burn." This represents the essence of most of the Southeast Asian traditional systems, including the Dayak shifting cultivation in Borneo. In the remainder of this paper "shifting cultivation" refers to this definition.

Furthermore it is important to distinguish between traditional shifting cultivation and non-traditional shifting cultivation. The former usually exists in a stable equilibrium with the surroundings whilst the latter often has serious detrimental consequences for the environment (Mose and Mertz 1990).

Traditional shifting cultivation systems have developed over many generations and valuable knowledge of how to manage the environment has accumulated e.g. farming practices, erosion control, use of plants etc. (Dove 1985; Mose and Mertz 1990; Posey 1984; Spencer 1966). Not only are the staple crops cultivated in many varieties, but the swiddens and gardens are also intercropped with numerous other crops and varieties. The first impression is chaos, but closer inspection reveals that the messy swiddens and the untidy gardens are part of a complex farming system closely adjusted to the sustainability of the environment and to the needs of the farmers. Many of the cultigens continue to yield several years after the swidden has been left fallow. Furthermore, the fallow vegetation is manipulated in order to produce yields of fruits, fibres, medicinal, as well as food plants, for many years. After a