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INDIGENOUS RICES OF MIZORAM STATE

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The explorations undertaken in Mizoram state revealed enormous germplasm diversity of rice. A total of 90-95 landraces were grown under *jhum* (upland) and wetland conditions. These differed highly in growth duration, grain quality, yield potential, disease and pest resistance and cultural practices. Some of the varieties were drought tolerant (Hmawrhang), well adapted to high altitudes (Buhtawi) and highly acidic soil conditions (Liachai).

Key words : Rice, genetic diversity, landraces, upland and lowland varieties

Rice mainly grown on *jhums* in Mizoram is the staple cereal food of Mizo people. Mizoram is situated between 22°12′ to 24°90′N latitude and 92°20′ to 93°29′E longitude. The altitude ranges from 30 m to 2210 m and the area is characterised by a humid temperature at (8° to 23°C) climate over high hills and warm humid subtroipcal (15° to 30°C) climate in valleys and low hills. The mean annual rainfall is about 2, 640 mm of which 90 per cent is received in monsoon season (May to October). The soils are loamy to clayey and acidic (pH 4.1 to 5.8), high in organic matter (1.30% to 4.60%), low in available phosphorus (2.0 to 13.9 ppm) and medium in available potash (60.9 to 522.8 ppm) (Anon. 1989). The three districts (Aizawl, Lunglei & Chhimtuipui) have been further divided into 5 agricultural districts, viz., Aizawl east, Aizawl west, Lunglei, Saiha and Kolasib. Such diverse agro-ecological conditions host a large number of paddy varieties well adapted to different situations. The present study is an attempt to list all the indigenous resources of rice varieties in Mizoram.

REGIONS SURVEYED AND SAMPLING STRATEGIES

Collection of indigenous rice germplasm was carried out in three exploration and collection tours. These were conducted in March, 1989; November, 1990 and April, 1991. During these trips, 35 sites were covered. These sites fall under the major rice growing areas of Aizawl, Champhai, Lunglei, Sercchip, Saiha, Keifang, Khawzawl and Kolasib. Sampling was done from the represented places where it is grown, especially the valley and river bed areas. The distance

between the sampling places were almost 20-30 km or more apart. The altitude of these sites varied from 200 m to 1260 m above msl The routes followed in these surveys have been depicted in Fig. 1.

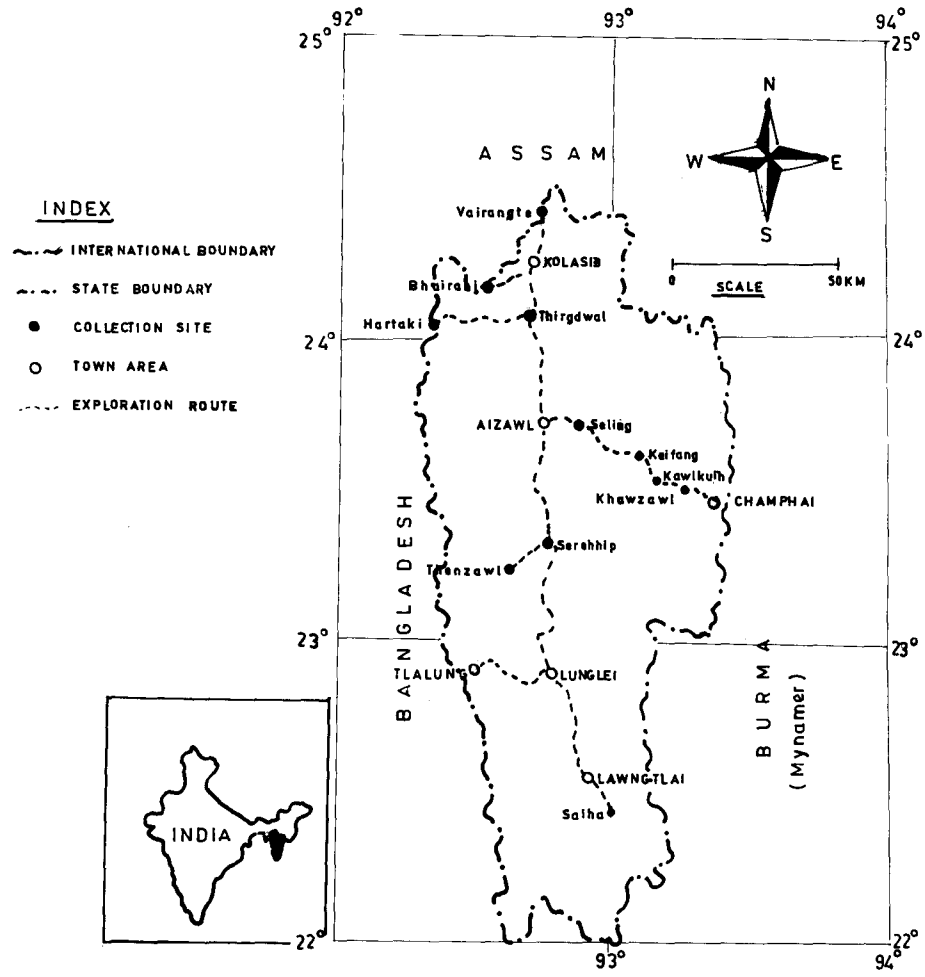

Fig. 1. Route map for collection of rice germplasm from Mizoram State

DISTRIBUTION AND DIVERSITY PATTERN

Rice cultivation is generally taken up in Mizoram on *jhum* lands but wetland rice culture is also common in valley lands. A large number of varieties (90-95) are grown in the state. These have been introduced from Burma, Bangladesh (Chittagong hills), Manipur and Assam (Surma Valley) at different occasions in the past. However, these have lost their original identity over the time and now may rightly be called as landraces. A list of rice landraces of southern Mizoram is given in Table 1. All the available landraces

Table 1 : Some paddy landraces of southern Mizoram with their characteristic features

Local Name	Crop duration (days)	Potential grain yield (q/ha)	Cultural Practice	Salent varietal characters
Madino	160-170	20.0-30.0	*Jhum*	Small slender grains
Laka Kyly	100-110	15.0-20.0	*Jhum*	Long bold sticky grains
Liachaw	170-180	30.0-38.0	*Jhum*	Small slender grains
Kaodi	90-105	17.5-22.5	*Jhum*	Medium long slender grains introduced from Burma (Arakan)
Moresah	110-115	15.0-20.0	*Jhum* and Wetland	Bold grains variety
Ngawni Mawpa	180-185	30.0-40.0	*Jhum*	Long slender grains
Sasai	110-115	17.5-22.5	*Jhum*	Small slender grains
Sakha Kyly	160-165	15.0-22.5	*Jhum*	Bold grains
Laka	115-120	17.5-22.5	*Jhum*	Grains small slender
Hekha Kyly Saipe	140-150	15.0-20.0	*Jhum*	Sticky
Aksina	135-145	25.0-30.0	*Jhum*	Grain breakage, more susceptible to blast and good yielder in *jhums* and low altitudes
Zosah	110-120	20.0-22.5	*Jhum*	Small slender grains and a good variety for ratooning and photo-thermo insensitive
Taho	135-145	25.0-30.0	*Jhum*	Small slender grains
Kasaba	135-145	20.0-25.0	*Jhum*	Small slender grains variety is good for jhum cultivation in low as well as high hills.
Zosa	130-145	20.0-25.0	*Jhum*	Medium long slender grains
Rapha Kyly	130-145	23.0-25.0	*Jhum* and Lowland	Long bold sticky rice
Kypu	130-140	20.0-25.0	*Jhum*	Long slender grains
Liaraw	180-185	30.0-35.0	*Jhum*	Small slender grains
Angka	130-135	20.0-25.0	*Jhum*	Medium long slender grains introduced from Burma
Mochisah	130-135	18.0-22.5	*Jhum*	long slender grains
Mipu Kyly	180-185	25.0-30.0	*Jhum*	Bold grain
Pawnbuh	125-130	30.0-35.0	*Jhum*	Tall

of Mizoram may be classified into two major groups - upland (*jhum*) varieties and lowland or wetland varieties. These could be further divided into following subgroups :

I. Upland (*jhum*) varieties

(i) **Early (90-110 days)** : Buhmiltha, Taibial, Zongam, Khazang, Buhban

(ii) **Medium (110-140 days) and Late (140-185 days)** : Taibar, Mawngbuh, Zaithai, Buhsezuk, Buhbial, Buhdite, Mydani, Mybring, Farel, Vaibuh, Phulbuh, Luangbuh, Fazai, Liankhuma, Burma buhban, Ui thobuh, Maimi, Chiaru, Leva, Kaikuangbuh, Beti, Badia, Dilung, Kengpui, Zaithai, Hawnghen, Taibawr, Ralleng, Buhpui (Red), Taho, Hmaohmisapa, Zosa, Kypu, Liaraw, Angka, Mochisahr, Aksina, Laka, Saipo, Sakha Kyly, Sasai, Ngawni mapaw, Kaodi, Liachai, Laka Kyly, Madino, Maubuh, Chhirthlukpui, Maibasa, Pawnbuh.

(iii) **Sticky** (used as flour or for fermentation)

(a) **Early** : Kawlawang

(b) **Medium and Late** : Buhbanben, Ziankhuma, Fazu, Zakeuva (best quality), Tawisanga, Dumte, Buhsanghar Kyly Doehque, Vikakyly, Mipukyly, Matukeuleu, Tialpui (scented), Lianran (red), Taisanghar (red and scented grain), Konglang

(iv) **Cold tolerant and lodging resistant** : Buhtawi, Kasaba

(v) **Scented and fine quality** : Tai (very early), Farate (early), Bawngbuh (early), Mawngbuh, Zongam (long slender grains), Phanrai

(vi) **Drought resistant** : Hmawrhang

(vii) **Ratooning** : Zosah (early)

II. Wetland (low land) varieties

(i) **Early** : Tai.

(ii) **Medium and late** : Vuitawi, Phaipui Buhban, Tialte, Taifang Sawl, Vuitawia, Mawngsen (Leilet buh), Lalruma.

(iii) **Scented and fine quality** : Tai Kawlawang (Late), Moresah.

(iv) **Sticky** :

(a) **Early** :

(b) **Late** : Maipuom, Rapha Kyly (good in upland also)

(v) **Ratooning** : Tai (bold grain, 4 months' duration).

It was interesting to observe the cultural practices of rice in Mizoram which may have relevance to understand the changes in evolutionary pattern of rice germplasm in the context of their cultural characteristics. *Jhum* or shifting cultivation is predominant. A *jhum* cycle of 6 to 8 years is followed.

The paddy is grown on about 71,000 hectares per family which is the highest in north-eastern region (Upadhyaya, 1986). The *jhum* clearing and burning is completed before February and March. Field preparation and sowing start in April. The Mizo farmers do all the field work themselves and no draft animals are employed for agricultural work. All the cultural operations performed by using few implements like axe (**Hreipui**), **dao** (**Chem**), small and big spade (**Tuthlolawh te** and **pui**) and a sickle (**Fafah**). The holes are dug without using a definite scale but depending on the tillering capacity of a variety and 8-10 seeds are placed in each. These may be thinned out (3-4 or 5-6 seedlings) later. In general, the harvestable paddy yields are about ten quintals per hectare. The reasons for this low yield could be due to little irrigation facilities, damage by pests, wild animals (elephants, wild pigs) and post harvest losses. The loss of *jhum* lands varies from 5 per cent to 15 per cent or even more and 50 per cent of the total area remains under forest cover. In good years, however, a yield of 30-35 quintals/ha of paddy is not uncommon.

The varieties under cultivation in the southern Mizoram are unique in many aspects and their detailed features are presented in Table 1. They showed variation in maturity from 90 to 185 days, the yield potential ranged for high altitudes, wetlands and uplands, and ratooning etc. They also possessed a moderate degree of resistance to leaf roller, brown plant hopper and root knot nematodes which are serious yield barriers in the region.

To conclude, all the germplasm of rice in Mizoram have been found to posses many valuable genes for various abiotic and biotic stresses, high yield potential under favourable conditions but moderate yields even under adverse conditions.

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REFERENCES

Anonymous. 1989. Agriculture - Today in Mizoram. Directorate of Agriculture & Fishery Publication, Government of Mizoram.

Upadhyaya, K.K. 1986, Development, Problems and Prospects of Mizoram, p. 27-41. Inter-India Publications, New Delhi 110 015.