

The background of the slide is a close-up photograph of bamboo. It shows several long, lanceolate green leaves with prominent parallel veins. In the center-right, a cluster of bamboo culms is visible, showing their characteristic segmented structure and sharp edges. The overall color palette is various shades of green, from light to dark, with some brownish tones on the culms.

Bamboo flowering in Mizoram: An ecological Analysis and management of resources

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Bamboo Resources of the North East India

About 50 percent of India's bamboo resources are in the North Eastern India.

There are 63 species of 20 genera in the region.

This is 50 percent of India's bamboo species and 87 percent genera.

Bamboo Resource of Mizoram

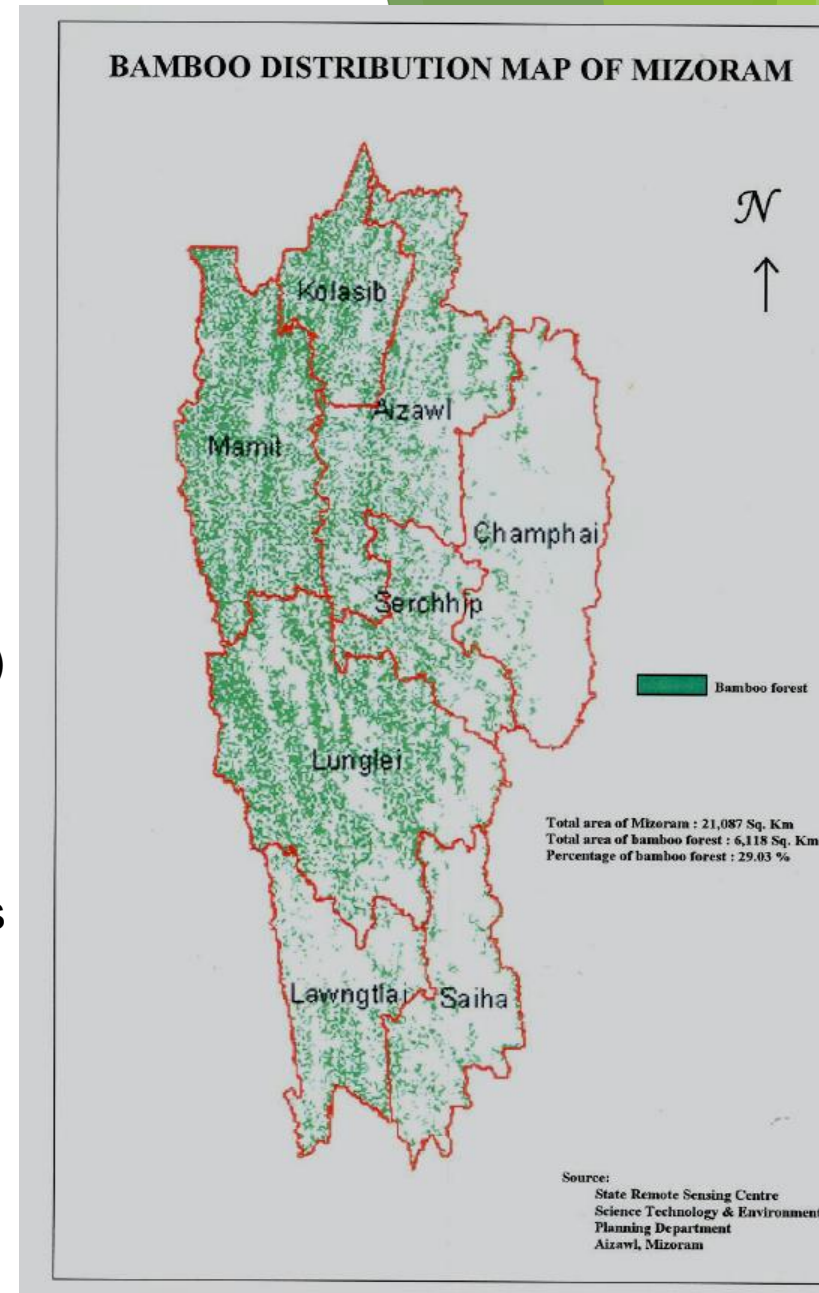
Total Area of Mizoram : 21,087 Sq. Km
Total area of bamboo forest 7091.66 Sq.Km
(33.63% of total geographical area)

(Source: Mizoram Remote Sensing Application Centre, Aizawl.)

Number of bamboo species found: 25 species

Melocanna baccifera : about 80 %

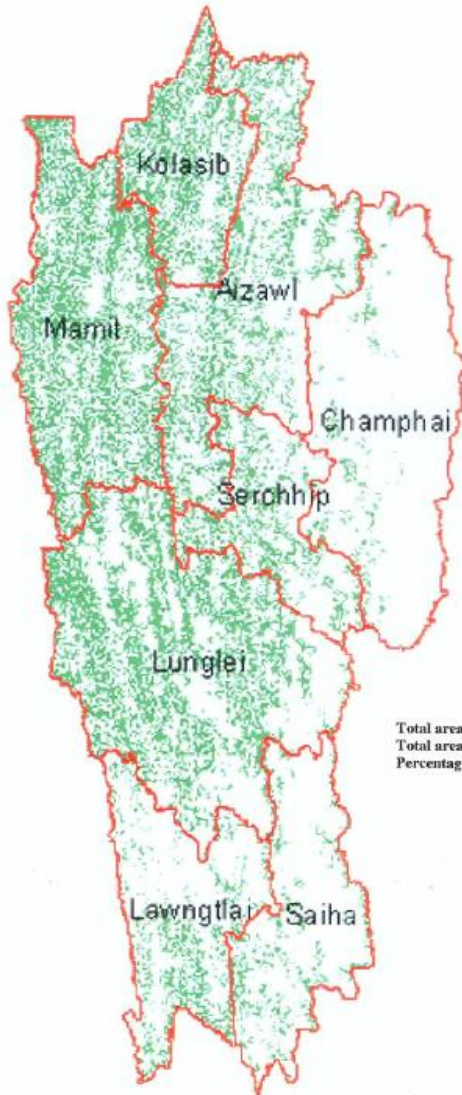
Other bamboos : about 20 %



Bamboo flowering in Mizoram

| Bamboo in flower | Name of bamboo flowering | Years |
|----------------------------------|---------------------------------|------------------|
| <i>B. tulda; D. longispathus</i> | Thingtam | 1880-1884 |
| <i>Melocanna baccifera</i> | Mautam | 1910-1912 |
| <i>B. tulda; D. longispathus</i> | Thingtam | 1928-1929 |
| <i>Melocanna baccifera</i> | Mautam | 1958-1959 |
| <i>B. tulda; D. longispathus</i> | Thingtam | 1976-1977 |
| <i>Melocanna baccifera</i> | Mautam | 2007-2010 |

BAMBOO DISTRIBUTION MAP OF MIZORAM

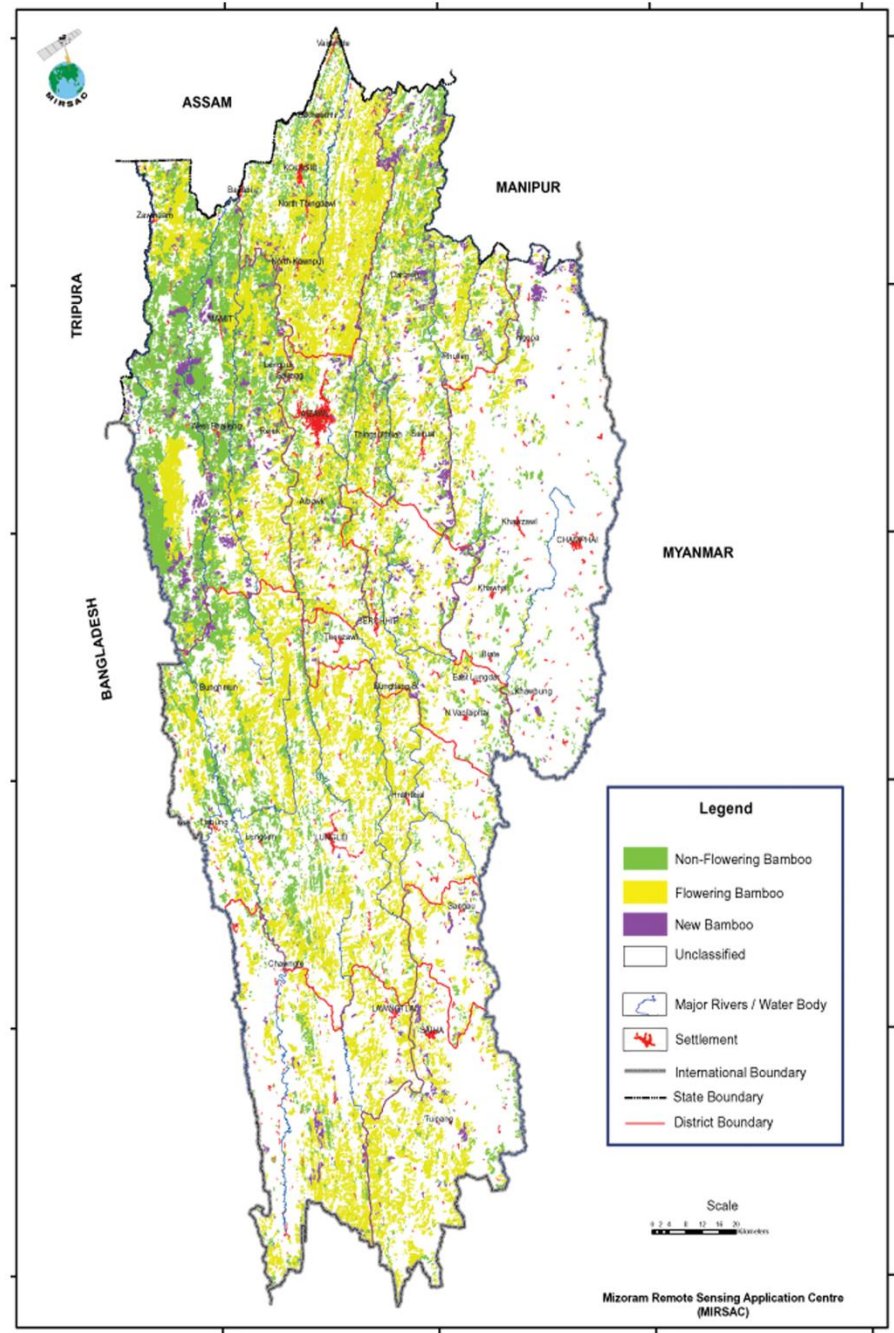


 Bamboo forest

Total area of Mizoram : 21,087 Sq. Km
 Total area of bamboo forest : 6,118 Sq. Km
 Percentage of bamboo forest : 29.03 %

Source:
 State Remote Sensing Centre
 Science Technology & Environment
 Planning Department
 Aizawl, Mizoram

MAP SHOWING BAMBOO FLORERING AREA IN 2008



Legend

-  Non-Flowering Bamboo
-  Flowering Bamboo
-  New Bamboo
-  Unclassified
-  Major Rivers / Water Body
-  Settlement
-  International Boundary
-  State Boundary
-  District Boundary



Mizoram Remote Sensing Application Centre (MIRSAC)

Bamboo flowering and rodents' population outbreak

The rodents' population study was carried out in paddy fields for 3 years(2006 -2008)

10 cages and 20 local traps provided to one family

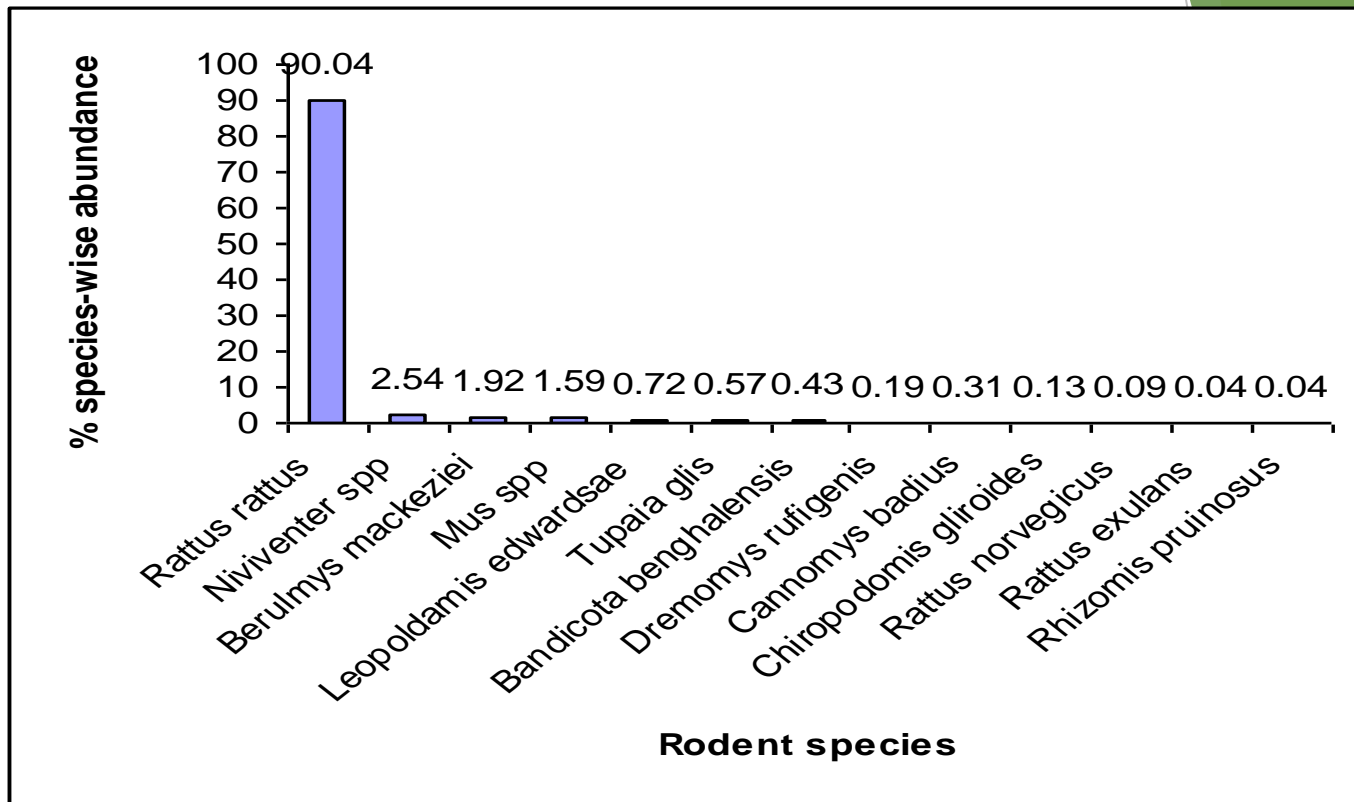
5 families in each village

3 villages in each district

A total of 9 villages and 45 families in 3 districts

Random sampling adopted

Species -wise abundance of rodents



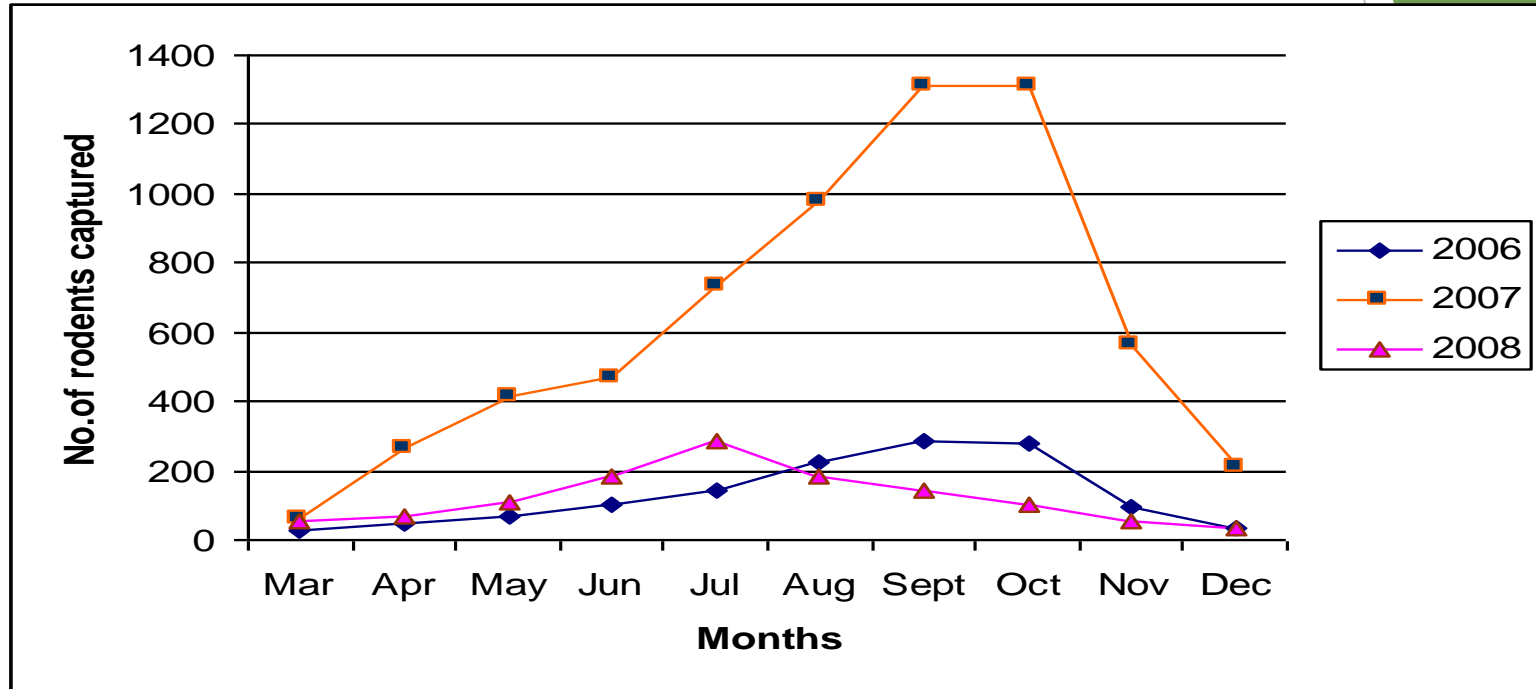
Rattus rattus (Black rat)



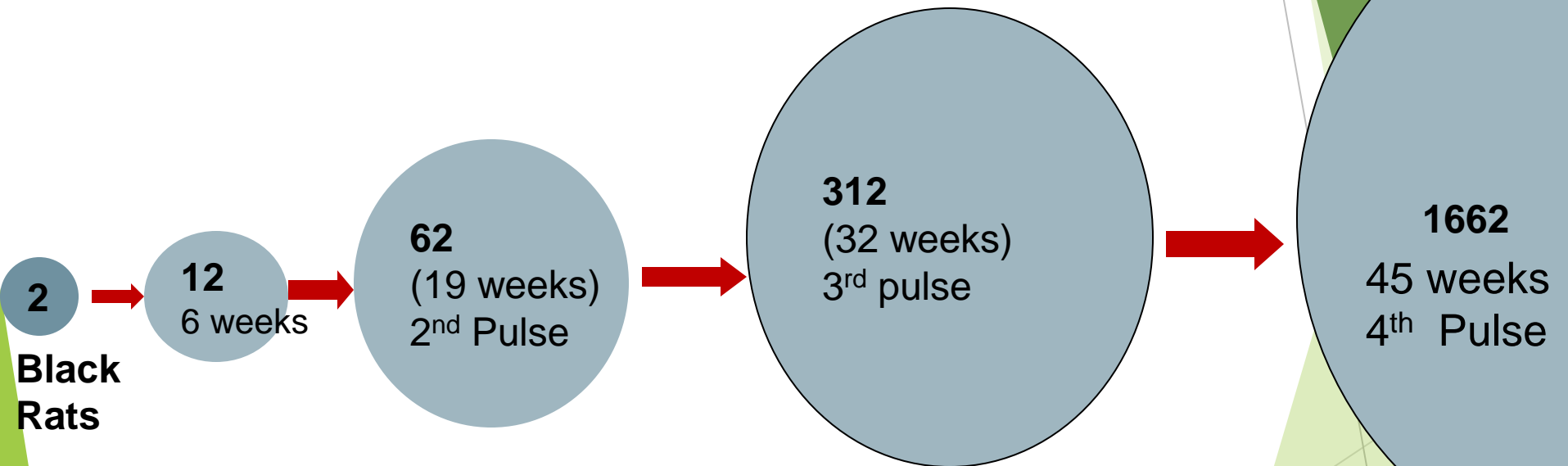
Different spp of rodents)

Tupaia glis

Population increase of rodents in paddy fields during 2006-08



Pictorial representation to show the potential increase of black rats



Harvest time of maize, paddy and other crops synchronizes with the so estimated 3rd and the 4th pulse of rats

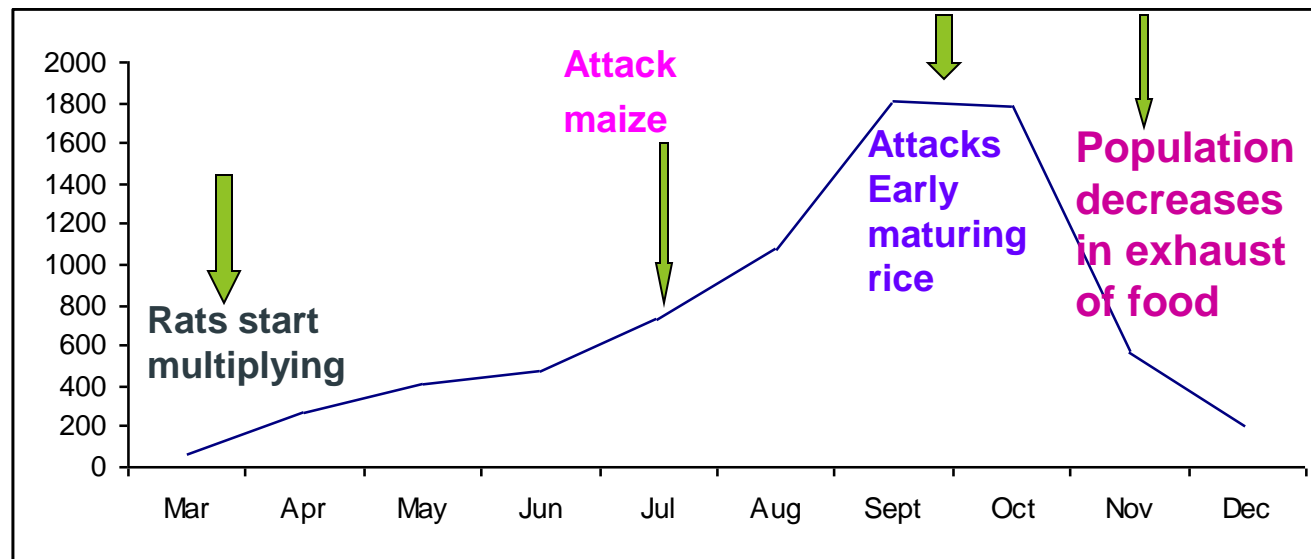
Synchronization of bamboo flowering with rodent outbreak

October / November -- Flowering of bamboo starts

January / February – Seeds production starts

Till June - Seeds remain available for rats

July onwards - Seeds are germinated and becomes inedible



Why do rodents increase ?

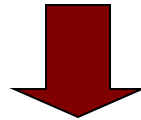
Abundance of food

Increased fertility
of female

Natural irruptions triggered by
rainfall and rain induced food
availability

Rats lose
desire to eat pups

Higher survival of the litters



Leads to massive production of
individual in successive generation in short time

Bamboo seed production and regeneration

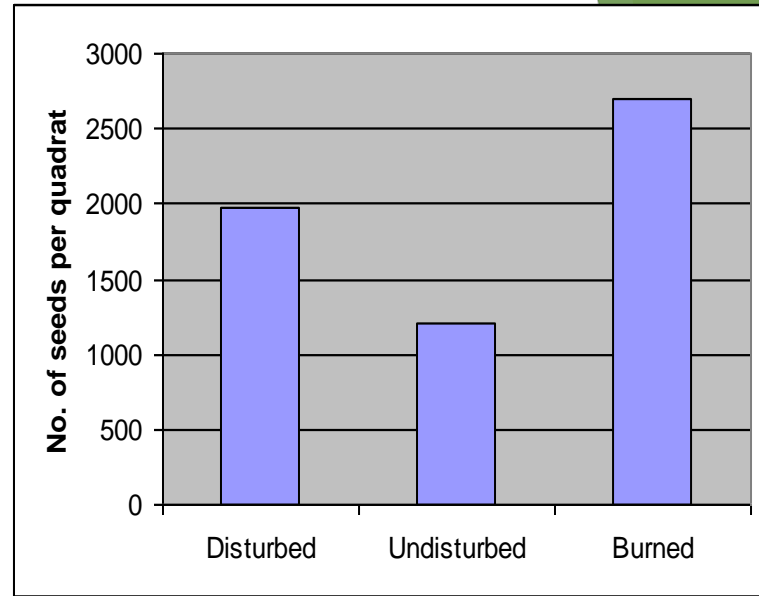
- ▶ Different management practices -
Harvesting intensity, age of the culms,
cleaning, fire etc
- ▶ A study was conducted on the influence of
excessive disturbance and fire on the
culms density, size and seed size and
production rate.

Table showing different growth parameters of bamboo (*Melocanna baccifera*) under different conditions

| Parameters | Undisturbed | Disturbed (Biotic pressure) | Burned (bamboo area) |
|--|---------------------------|--------------------------------|-----------------------------|
| Culm Density (No. of culms per 25m ²) | 140.33 (±20.03) | 82.67 (±23.16) | 119.67 (±19.86) |
| Diameter of culm (mm) | 27.4 (±0.39) | 23.6 (±0.71) | 26.3 (±0.51) |
| No. of seeds produced in one culm | 12.89 (±2.77) | 8.72 (±1.23) | 16.33 (±6.22) |
| No. of seeds produced per quadrat (25m ²) | 1771.39 (±299.95) | 709.84 (±171.96) | 2698.48 (±311.31) |
| Avg. weight of fruits (gm) | 118.98 (±6.96) | 90.48 (±7.80) | 72.35 (±2.78) |

Figures in the parenthesis are Standard Deviations.

Bamboo seed production in different sites



The regenerating bamboo seedlings require protection from fire and overgrazing.



Bamboo based agroforestry

Bamboo-based agroforestry could be a viable system to rehabilitate degraded lands, and to decrease pressure over the natural bamboo forests

Bamboo can be used to repair soil damaged by overgrazing, shifting cultivation, erosions etc.



Bamboo resource availability in Mizoram

Bamboos are seldom harvested from the steep slopes or inaccessible areas in the forest.

It has been estimated that only about 20-30 percent of bamboo area is accessible and as a result the resources of the steep slopes and inaccessible areas remain untapped.

Labourers are always tempted to harvest bamboos from the easily accessible areas, usually from the banks of perennial streams (chara).

Therefore, bamboos are over exploited in these accessible areas. Overexploitation causes a gradual degeneration in health and sizes of the bamboos.

Threats to natural bamboo forests in Mizoram

- ▶ Shifting cultivation, agricultural extension, expansion of manmade forests.
- ▶ Biotic factors such as fire and grazing.
- ▶ The unscientific harvest and management of bamboo.
- ▶ Lack of efforts to take up compensatory planting of bamboo.

Key Efforts Needed

- ▶ Strong capacity development initiative
 - Skills, Entrepreneurial Ability, Market Orientation
- ▶ Federated approach to production and marketing
- ▶ Overall involvement of artisans in sector from casual/marginal to continuing basis
- ▶ Induction of appropriate technology value addition of bamboo
- ▶ Induction of Livelihood Finance agency for credit
- ▶ Build strength in domestic market before considering exports
- ▶ Subsidy on transport through policy support

“Bamboo is a Green Gold”

THANK YOU