

Research trial: improving productivity of unmanaged 'bambu apus' (*Gigantochloa apus*) clumps in Gunungkidul

1. Background

- The root systems of 'bambu apus' clumps were not well hoarded or buried in the soil. Most of the roots were at the surface of the soil.
- Many bambu apus clumps died during the dry season owing to low rainfall and low soil fertility in Gunungkidul. The landscape in Gunungkidul is dominated by karst, limestone rock.
- The culms of bambu apus were in high demand in local markets. However, farmers were not able to meet subsistence let alone market needs.
- Rabik and Brown (2007) stated that adjusting the age ratio of bamboo clumps is necessary for maintaining the right ratio of young to old culms to maximize bamboo shoot productivity and culm quality. They advised adjusting the age structure by leaving 50 culms in clumps with a ratio of 40%: 30%: 20%: 10% based on the age group of the culm (1, 2, 3, 4 years). They also stated that soil hoarding should be applied to bamboo roots so that the bamboo culms produced the maximum number of shoots.
- However, because of the high demand for bambu culms in Gunungkidul, the age group of the culms in all bambu apus clumps consisted only of two age groups: 1 and 2 years per clump. On average, there were 8 culms (2 years-old) and 17 culms (1 year-old) in each clump.



Figure 1: Culms reduction and labelling



Figure 2. Soil hoarding on bamboo clump by bamboo owner (farmer)

2. Objective

- To demonstrate the feasibility of using regimes of fertilization and soil hoarding to improve the growth and survival rate of clumps of bambu apus and to increase production of shoots

3. Method

From the average of eight culms (2 years-old) and 17 culms (1 year-old) per clump, farmers and the researcher decided to make uniform each clump by leaving five culms (2 years-old) and 15 culms (1 years-old), with four bamboo clumps not reduced in number of culms. Four treatments were applied on the 13 clumps of bambu apus (Table 1).

Table 1. Treatments applied to 13 clumps of bamboo apus

No.	Treatments	Number of clumps (replication)
1	No soil hoarding, no fertilization, no culm reduction (control)	4
2	Soil hoarding, no fertilization	3
3	Soil hoarding, livestock manure (doses of manure at 100 kg per clump)	3
4	Soil hoarding, urea fertilizer (doses of urea at 1.5 kg per clump)	3

4. Data collection (every six months)

- Survival rate of clumps during the dry season
- The growth of girth of the sixth section of the bamboo stem
- Number of shoots per clump

5. Trial establishment

- The trial was established on September 2018

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Figure 3. Soil hoarding – Livestock manure treatment

6. Findings

The number of bamboo shoots produced from the first six months of growth shows differences in all treatments (Figure 4).

Ave_Shoots in 6 months growth (March 2019)

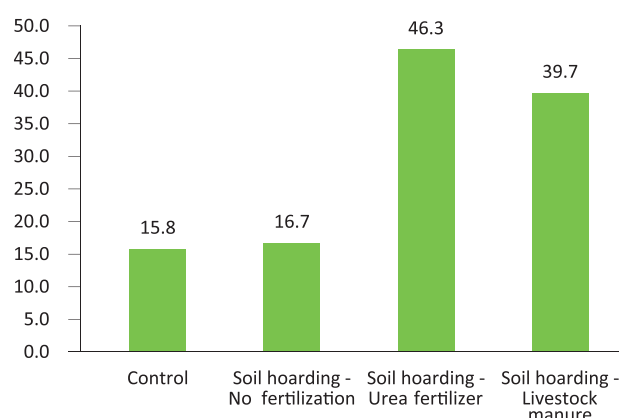


Figure 4. Average number of shoots in six months under differing regimes

Reference

Rabik A, Brown B. 2007. *Menuju perhutanan bambu resilien (tangguh). Panduan referensi peningkatan pengelolaan bambu berumpun untuk bahan bangunan dan meubel.* Towards resilient (tough) bamboo forestry. Reference guide to improving management of clumped bamboo for building materials and furniture. Ketewel, Indonesia: Yayasan Bambu Lestari.



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