Early Growth of *Panicum sarmentosum* Roxb. – A Promising Grass in Livestock - Coconut Integration System

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ABSTRACT

Coconut plantations have been long widely used as growing area. In Central Sulawesi this integrated system traditionally plays important roles in small scale farmers. In Central Sulawesi, the system is suitable and productive forage genotypes are important aspect for the production systems. *Panicum sarmentosum* and *Panicum maximum* were compared in a plot trial under coconut plantation at Lalombi of Lembasada village, South Banawa, district of Donggala. The treatments: *P. sarmentosum, P. maximum, P. sarmentosum* with *Desmanthus virgatus,* and *P. maximum* with *D. virgatus* were replicated 5 times. The 20 experimental units were arranged in completely block randomized design. This paper reports plant height, number of tiller, and herbage production at the early growth, 8 weeks after planting, of the grasses. The study has shown that *P. sarmentosum* grew better than *P. maximum*, both on grass monoculture, and on mixed-with *desmanthus*. *P. sarmentosum* and *P. maximum* did not differ statistically in plant heights, neither without (149.3 cm vs. 141.7 cm), nor with *desmanthus* (138.7 cm vs. 133.9 cm). Nevertheless, the number of tillers and dry forage yields of *P.sarmentosum* was significantly higher than those of *P. maximum,* both without and with *desmanthus*, i.e.; 145 vs. 81 and 124 vs. 75, and 425.6 vs. 235.1 kg/ha and 316.5 vs. 141.2 kg/ha, respectively. The correlation of these two attributes is also significantly high (R^2 = 0.9132). This result has suggested that *P. sarmentosum* grows better than *P. maximum* that well adapts under shade. It is concluded, therefore, *P. sarmentosum* is another promising grass for use in shaded niches.

Key words: *Panicum sarmentosum; integrated farming; shaded niches*

INTRODUCTION

Steady growth of the human population leads to an increased demand for agricultural products. These stuffs essentially depend on agricultural land availability, while this sort of land is continuously shrinking resulting from land use convertion (Singh and Ghosh, 1993; Sukmana, *et al*., 1994), which is another impact of the population increase and needs. In addition, the number of farm animals has increased, resulting in severe competition for land use between crops and livestock, therefore, there is an urgent need for increased productivity per-unit area from forage plants to help redress the problem (Blair, 1991; Dzowela and Kwesiga, 1994). Incorporation of forage plants onto plantation lands is an alternative solution to provide herbage. Moreover rising livestock under plantation crops has long been practised, such as on coconut lands in Central Sulawesi, though none or very limited forage improvements have been done by the farmers.

Overall integrated farming is suggested as the largest category of livestock systems in the world in terms of animal numbers, productivity and the number of people it services (Thornton *et al*., 2002). They maintain that, over the last decade, meat production from these systems has grown at a rate of about 2% per year, and about two-thirds of the rural small-scale farmers rely on mixed crop-livestock systems for their livelihoods. Moreover, given the demand increases for livestock products forecast for the coming decades, mixed systems are going to have to provide a disproportionate part of this increase, especially in developing countries – so they will become even more important in the future (ILRI, 2000).

Coconuts plantation lands have long been widely used in rising livestock in most of tropical countries. This integrated land-use system plays important roles for small scale farmers. In Central Sulawesi, however, the system is still practiced by farmer traditionally with limited forage improvements. Since it is relized that integrated farming systems are very helpful in