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Effect of frequency and time of cutting on the production of three strains of tropical forage legume *Aeschynomene americana* L. in drained paddy field and upland field

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Key words : cutting frequency, drained paddy field, dry matter production, tropical forage legume

Introduction In Japan the rice production control has been continuing since the 1970's, and some parts of the paddy fields are laid off into forage production. However, in the ill-drained fields or the fields with high ground water table forage species of higher wet endurance are required. Tropical forage legume *Aeschynomene americana* cv. Glenn has a high wet endurance (Bishop *et al.*, 1985; Tobisa *et al.*, 1999) and shows high dry matter productivity (Skerman *et al.*, 1988; Tobisa *et al.*, 1999). The objective of this experiment was to investigate the effects of two levels of cutting frequency and time on the dry matter productivity of *Aeschynomene americana* L. grown at both drained paddy field and upland field in southern area of Japan.

Materials and methods The experiment was conducted in the drained paddy field adjoining rice paddy field at the Kyushu University Farm. Three strains of *Aeschynomene americana* (cv. Glenn, Lee and CPI93556) were sown in spacing of 50 cm × 15 cm on June 1. Two levels of cutting frequency were (1) two times cutting (the first cutting on August 19th, the second cutting on October 3rd) and (2) three times cutting (August 4th, September 4th, October 3rd). Two levels of the first cutting were (1) early time (August 3rd) and (2) late time (August 18th), followed by the second cutting on October 9th. Measurements were made for dry matter yield (DMY), *in vitro* dry matter digestibility (IVDMD) and crude protein (CP). Digestible dry matter yield (DDMY) and CP yield (CPY) were calculated.

Results Total DMY, DDMY and CPY for the two times cutting treatment of Glenn and 93556, annual forages, were higher than the three times cutting treatment in the drained paddy field and upland field (Figure 1). As for Lee, total DMY, DDMY and CPY in the drained paddy field did not show significant differences between the two treatments of cutting, but in the upland field they showed slightly higher values for the three times cutting. Total DMY, DDMY and CPY for the early time cutting treatment of Glenn and 93556 were higher than the late time cutting treatment in the drained paddy field, but in the upland field they showed similar values between the early and late time cutting treatments.

Conclusions The results of the present study suggested that Glenn and 93556 showed higher total DMY, DDMY and CPY at two times cutting and longer period of regrowth in the drained paddy field.

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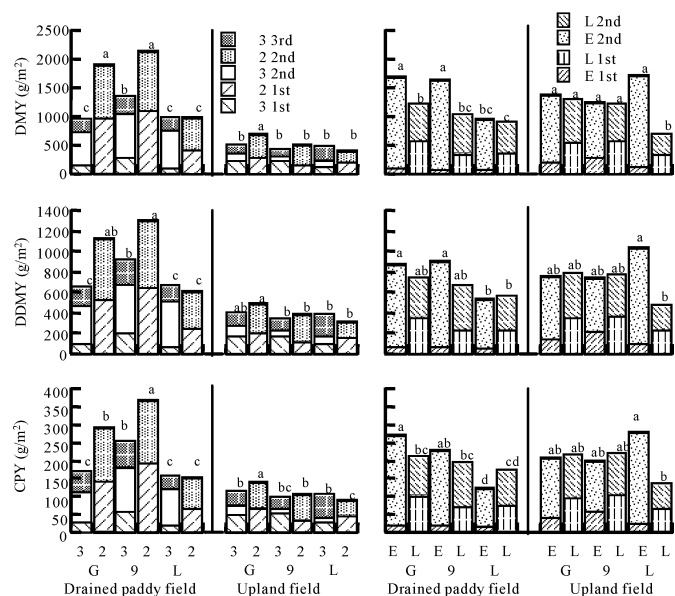


Figure 1 Effect of frequency and time of cutting on the dry matter yield (DMY), digestible dry matter yield (DDMY) and crude protein yield (CPY) of *Aeschynomene* in drained paddy and upland fields.

G: Glenn, 9: CPI93556, L: Lee, 3: three times cutting, 2: two times cutting, E: early time cutting, L: late time cutting.

The total values followed by different letters are significantly different at $P < 0.05$.