

Investigation into differences in palatability among *Festulolium* varieties as haylage

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Introduction In Japan, paddy fields that are no longer used for cultivation of rice are being converted to cultivation of forage crops. Therefore, grass with greater wet resistance and higher quality is required. *Festulolium* is an interspecific hybrid between the *Lolium* and *Festuca* species and combines the characteristics of high-quality ryegrass and resistance to hostile environments from fescues (Thomas & Humphreys, 1991). Among *Festulolium* varieties, there is wide variation in environmental resistance and feeding value. One *Festulolium* variety, Paulita, shows superior wet resistance to Evergreen and the total digestible nutrients of Evergreen was similar to that of cocksfoot (cv. Kitamidori) (Touno *et al.*, 2004). In this study, we investigated palatability differences in *Festulolium* varieties.

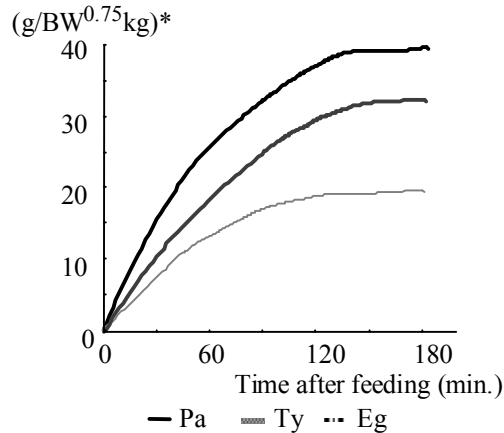
Materials and methods Two varieties of *Festulolium* (Paulita (Pa) and Evergreen (Eg)) were studied. Timothy (*Phleum pratense* L. cv. Nosappu (Ty)) was also included as a reference species. These grasses were harvested at the heading stage and made into high dry matter silage (60%DM). Exp.1; Palatability of each silage was assessed by measuring dry matter intake (DMI) of mature castrated sheep for 1 hour after morning feeding with cafeteria feeding. Exp.2; Four lactating Holstein cows were assigned to a 3 x 3 Latin square design. The DMI of each silage was measured for 3 hours after morning feeding. Exp.3; A mature castrated bull fitted with ruminal cannulae was used for an *in situ* incubation trial. Nylon bags, each containing 5g dried sample milled through a 5mm mesh, were inserted in the rumen and removed at 3, 6, 12, 24, 48, 72, 96 h.

Results In Exp.1, the palatability of the grasses decreased in the order : Pa > Ty > Eg with Pa significantly superior ($p < 0.05$) to the other silages. The DMI of dairy cows increased linearly for 1 h after feeding with DMI for this period in the order : Pa > Ty > Eg, with Pa significantly higher ($p < 0.05$) than Eg. The DMI of silage after 3 h of feeding tended to decrease Pa > Ty > Eg, but there were no significant differences (Exp.2, Figure 1). The soluble fraction of Pa (15.52%) was twice that of Ty (6.65%) ($p < 0.05$), but there was no difference observed between those of Pa and Eg (13.41%). Rate of degradation of Pa (23.52%) was higher ($p < 0.05$) than that of the other silages (Ty = 18.56%, Eg = 18.25%) (Exp.3).

Conclusion The results of Exp.1 and Exp.2 indicated that the palatability of Pa silage was higher than that of the other silages. The higher degradability of Pa could have accounted for higher DMI after 3 h feeding but the significant difference between Pa and Eg in intake over 1 h could not be explained by only by the degradability of Pa. The olfactory and taste senses play an important role in the selection of feed (Morrison *et al.*, 1986). The odour of Pa silage was similar to caramel and we considered that this is probably one factor related to its high palatability.

References

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* Dry matter food intake measured every 5 min.

Figure 1 Changes in food intake of silage for 3 hours after morning feeding for cows in midlactation