PC-05

Feed Value Analyses on Different Plant Parts of Forage Rice Varieties

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[Introduction]

At present, rice-based forage is being produced on a large scale in forage production complexes due to the successful development of high-biomass rice varieties targeted for animal feed. Despite varietal availability, information on the feed values for these varieties have not been fully provided and it is an challenge to make suitable animal feedstock with balanced nutrients. Therefore, we investigated the feed values of each plant parts of major rice forage cultivars.

[Materials and Methods]

The four forage rice cultivars, ‘Jonong’ (early-maturing), ‘Nokyang’ (mid), ‘Yeongwoo’ (mid-late), ‘Mogwoo’ (late) were grown and harvested at 30 days after heading with 3 replications. We measured wet and dry biomass. The feed value components, crude protein (CP), crude fat (CF), crude ash (CA), acid detergent fiber (ADF), neutral detergent fiber (NDF) and lignin were determined for panicles, leaves and stems. Total digestible nutrient (TDN) was calculated from ADF (TDN=88.9-(0.79% × ADF). All data were subjected to analysis of variance, multiple comparison using SAS 9.2 software.

[Results and Discussion]

The content of feed value ingredients showed large differences according to the plant parts. Panicle had the highest ratios in CP (7.0%) and lignin (3.1%), while the ratios of CA, NDF and ADF content were significantly lower than other parts. TDN content in panicle was 77.3%, which was much higher than stem (64.8%) and leaf (63.6%). On the other hand, there were no significant differences in the content of CF across plant parts. Feed value also varied across the four varieties. ‘Jonong’, ‘Nokyang’ and ‘Yeongwoo’ had higher panicle TDN contents between 78.5 and 79.1% than ‘Mogwoo’ (72.9%), whereas ‘Mogwoo’ had significantly higher CP content (8.7%) than other varieties (6.2~6.6%). Notably, ‘Mogwoo’ had very low contents of CA, NDF, ADF and lignin compared to other varieties, and the feed values of stem and leaf were very excellent. The total dry matter weight of ‘Mogwoo’ was the highest at 123g per hill, compared to 82~105g/hill of other varieties. ‘Mogwoo’ is highly advantageous in terms of quantity and feed value as forage variety.

[사사]

본 연구는 농촌진흥청 어젠다 사업(과제번호: PJ012552032021)의 지원에 의해 이루어진 결과로 이에 감사드립니다.

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