Variation of *in vitro* dry matter digestibility in *Brachiaria ruziziensis* populations

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Introduction

Domestic ruminants are kept by humans to produce milk, meat, and wool from plant material, which, for the most part, is unsuitable for direct human consumption. Forage quality is one of the main objectives of current *Brachiaria* species breeding program (Miles *et al.* 2004), and one of the most important traits for forage quality is dry matter digestibility, and it lead to rapid financial benefits to the agricultural community. Phenotypic recurrent selection is the effective practical method in breeding of open-pollinated forage crops The available variance within breeding population is the indicator of the possibility in the successful improvement.

Objective

To clarify the variation of *in vitro* dry matter digestibility (IVDMD) in open-pollinated populations of *B. ruziziensis* (ruzi grass), which is the major forage cultivar in Thailand.

Materials and Methods

Ten genotypes of diploid *B. ruziziensis* (Thai population) and 10 genotypes of tetraploid 'Okinawa-1', which was derived from the work of Ishigaki *et al*. (2009), were evaluated in completely randomized design with 2 replications. Each genotype was clonal propagated by stolon with roots, and grew in culture plastic pot containing sand with enriched fluid nutrient. The shoots of each plant were collected at 5 weeks after the cut. Dry samples were ground to pass through a 0.5 mm mesh screen. Pepsin-cellulase method was utilized for IVDMD determination









Results

In vitro* dry matter digestibility of 10 genotypes of diploid *B. ruziziensis* and 10 genotypes of tetraploid *B. ruziziensis

Genotypes	Mean±S.D.
Diploid ruzi-01	77.5±0.4 A
Diploid ruzi-05	76.5±0.0 AB
Diploid ruzi-09	76.2±0.1 ABC
Diploid ruzi-04	76.0±1.0 ABCD
Diploid ruzi-08	75.0±0.3 BCDE
Diploid ruzi-07	74.6±0.3 CDE
Diploid ruzi-06	74.4±0.3 DE
Diploid ruzi-03	74.0±0.0 E
Diploid ruzi-10	73.9±0.0 E
Diploid ruzi-02	72.0±0.7 F

Genotypes	Mean±S.D.
Tetraploid ruzi-05	77.6±0.3 A
Tetraploid ruzi-02	75.0±1.0 AB
Tetraploid ruzi-03	74.9±0.9 AB
Tetraploid ruzi-07	74.4±2.0 AB
Tetraploid ruzi-01	73.6±0.0 AB
Tetraploid ruzi-04	73.4±3.8 AB
Tetraploid ruzi-08	72.4±0.2 AB
Tetraploid ruzi-09	72.2±0.1 AB
Tetraploid ruzi-06	71.7±0.3 AB
Tetraploid ruzi-10	70.9±2.1 B

Mean were tested by Tukey Test and means followed by different letters are significantly

Summary and Discussion

1) Analysis of variances showed the significant difference of IVDMD within both populations.

2) There was no significant different in IVDMD between 2 populations. This result was different with the previous works in temperate grass (Kasperbauer et al. 1987) which reported that tetraploids had higher DMD than their respective diploids; however the tetraploids materials in this experiment were not derived from these experimental diploid genotypes.

3) The results could show the possibility in population improvement for increased IVDMD in both populations of *B. ruziziensis.*

References

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