

学 位 論 文 要 旨	
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題 目	Studies on germplasm evaluation and development of selection methods in <i>Brachiaria</i> spp. breeding for increased dry matter digestibility (ブラキアリア属育種における乾物消化性向上のための遺伝資源評価と選抜方法の開発)
<p>This study aimed to evaluate dry matter digestibility using <i>in vitro</i> DMD (IVDMD) and related traits of <i>Brachiaria</i> spp. for clarifying the most appropriate materials in the breeding for increased DMD. Moreover, the study aimed to develop the selection methods in the hybridization breeding for increased DMD. In addition, the objective of the study was also to develop molecular markers linked to apomixis gene as the quicker and reliable method to assess the reproductive mode in a segregating breeding population.</p> <ol style="list-style-type: none">1. IVDMD value and its stability of 17 genotypes of <i>Brachiaria</i> germplasm, including 12 genotypes of <i>B. brizantha</i>, 1 genotype of <i>B. decumbens</i>, 2 genotypes of <i>B. ruziziensis</i> (ruzigrass), and 2 genotypes of <i>B.</i> hybrid were evaluated. It was found that ‘Miyaokikoku’, sexual tetraploid ruzigrass, showed the highest IVDMD value and its stability; therefore, it could be the most appropriate material in the breeding for increased DMD.2. Correlation analysis was conducted to determine the relationships between IVDMD and the morphological traits, and plant water content among <i>Brachiaria</i> germplasm. It was found that leaf-stem index (ratio of leaf width/stem diameter), leaf shape ratio (leaf width/leaf length), and plant leaf water content could be the promising selection criteria for the <i>Brachiaria</i> breeding for increased DMD.3. Selection indexes for IVDMD were constructed in F₁-hybrid population of ‘Miyaokikoku’ x ‘Basilisk’ using leaf water content (LWC) leaf width (LW), leaf length (LL) and leaf shape ratio (LR; LW/LL). It was found that LWC-LW index (the index value = 0.31 LWC + 0.10 LW) was the most appropriate index for DMD.4. An Amplified Fragment Length Polymorphism (AFLP) based linkage map of brachiariagrass was constructed using single-dose fragments, which segregates into a 1:1 ratio (present : absent). The ‘Miyaokikoku’ was crossed with the apomictic hybrid ‘Mulato’ to generate a mapping population. The map contained 29 linkage groups with 272 markers. It was found that the apospory apomixis locus co-segregated with 12 tightly clustered AFLP markers which enable to perform Marker Assisted Selection for apomixis in brachiariagrass breeding.	