

**GENETIC RELATIONSHIP AMONG POVERTY GRASS (*Danthonia spicata*)  
ECOYPES COLLECTED FROM MISSOURI AND MINNESOTA AS  
REVEALED BY TRAP DNA MARKERS**

\*HWEI-YIING JOHNSON, Cooperative Research and Extension, Lincoln University,  
Jefferson City, MO 65102, USA

NADIA NAVARRETE-TINDALL, Cooperative Research and Extension, Lincoln  
University, Jefferson City, MO 65102, USA

JINGUO HU, USDA-ARS, Western Regional Plant Introduction Station, Pullman, WA  
99164, USA

*Abstract.* Poverty grass (*Danthonia spicata*) is a cool season bunch grass native to most of the US. As its name implies, poverty grass can be found in natural habitats without irrigation and fertilization. The lush green color of young plant and relatively short and compact appearance partly due to curling of leaf blades, as plant matures, make poverty grass a good species for lawns receiving low maintenance. However, its low germination rate and lack of readily available seed sources hinder its field establishment. In this study the genetic relationship among 23 poverty grass ecotypes obtained from seven sources in two states (MN and MO) were assessed with the use of a genotyping technique named Target Region Amplification Polymorphism (TRAP). DNA was extracted from young leaf tissues. PCR (polymerase chain reaction) amplification was carried out by following the published TRAP protocol with modification. Two fixed primers, designed against annotated EST (Expressed Sequence Tag) sequences of *Hordeum vulgare* cultivar Strider and *Poa pratensis*, respectively. Each fixed primer was combined with four arbitrary primers labeled with fluorescence dyes in PCR. The resulting 298 polymorphic markers not only discriminated each of the ecotype, but also distinguished ecotypes obtained from the two States with one exception. In addition, results revealed the MN ecotypes sharing a higher similarity (60 to 74%) than those collected from MO (40 to 70%). The biological significance of this detected difference needs further investigation. This study demonstrated TRAP technique an effective technique for assessing genetic diversity and relationship of poverty grass.