

# Genetic Diversity in Tetraploid Switchgrass Revealed by AFLP Polymorphisms

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## Introduction

Switchgrass (Fig. 1) a warm season grass, recently was identified as a biofuel crop (McLaughlin et al., 1999). High yielding cultivars are required to satisfy the increasing energy demand. Diverse germplasm are beneficial for breeding improvement.

Objectives of the study are to characterize genetic diversity of Oklahoma State University tetraploid switchgrass germplasm collection from the US, and to analyze the genetic relatedness among them using Amplified Fragment Length Polymorphisms.

## Materials and Methods

Tissue from 56 tetraploid switchgrass accessions (49 lowland and 7 upland) of Oklahoma State University germplasm was harvested.

DNA extraction was performed using the Zymo ZR Plant/Seed Kit™. The AFLP procedure was performed according to Bai et al. (1999).

The collected data were analyzed using NTSYS-pc 2.2 for calculating genetic similarity coefficients(GS), performing a cluster analysis (CA), and principle coordinate analysis (PCOA).



Figure 1. OSU switchgrass germplasm

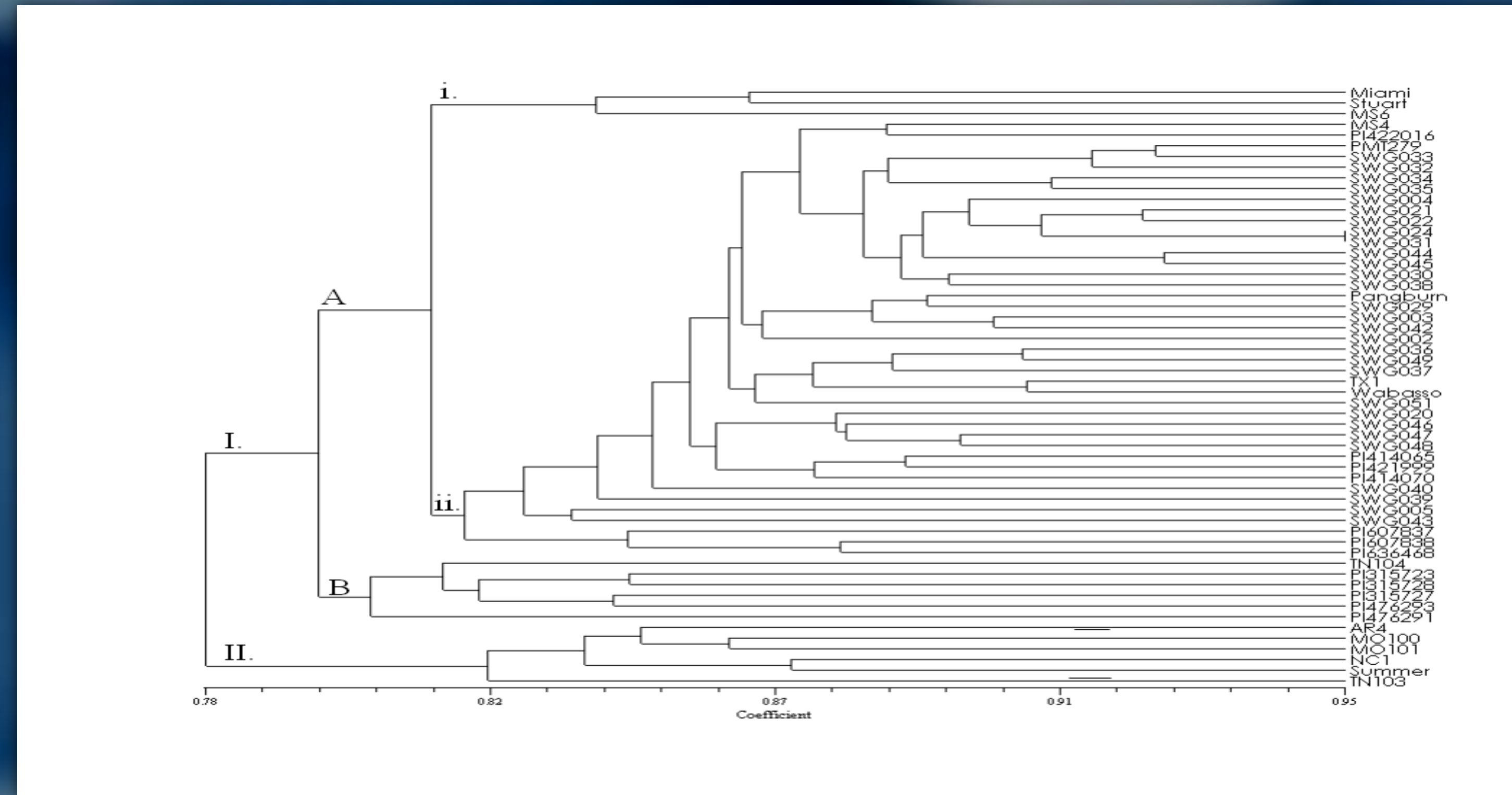


Figure 2. Cluster tree of genetic diversity based on AFLP markers

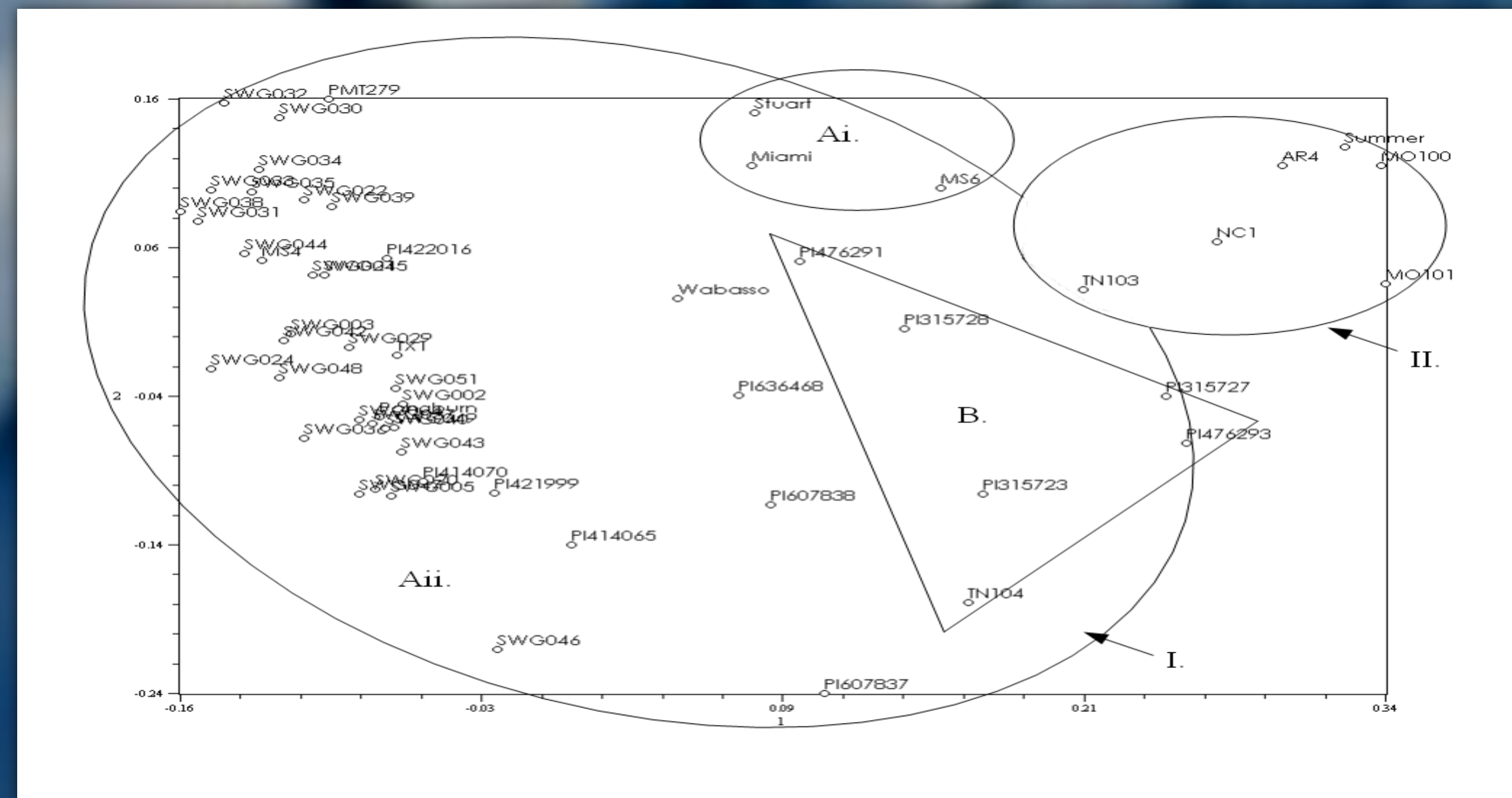


Figure 3. Principle coordinate map based on AFLP markers

## Results

Sixteen primer combinations produced 658 markers, of these, 451 were polymorphic (68.5%). The GS ranged from 0.727 to 0.950.

According to the cluster analysis, all the accessions were divided into two major clusters (Fig. 2). All the lowland germplasm are in Cluster I and all the upland germplasm are in Cluster II with the exception of TN104.

The PCOA was basically consistent to the CA (Fig. 3). There isn't a clear cluster division among germplasm according to region, but there are some trends.

## Acknowledgements

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## References

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