

PLSC 731: Paper Review

Keim et al – Evaluation of soybean RFLP diversity in adapted germ plasm

Introduction

1. What are the uses of RFLPs? Why were exotic crosses initially used for molecular mapping?
2. What are the research objectives of this paper?

Materials and Methods

1. What lines were tested in this paper? Why were the specific lines selected?
2. Were the probes and enzymes appropriate? Where the hybridization performed at high or low stringency? Describe what the authors mean by “probe” and “marker”.
3. What two polymorphism indices were used by the researchers? Describe the diversity indices that were used in this paper. Were these indices and diversity estimates similar to those used previously?

Results

1. What effect did the development status of the germplasm evaluated have upon polymorphism levels?
2. What factors affect the value of a RFLP? Are these factors unique to the RFLP system or might they be shared by other marker systems?
3. What is the PI (=PIC) value for a locus with 1, 2, 3, or 4 alleles of equal frequency? Which value is highest? What is the PI (=PIC) value for a locus with 1, 2, 3, or 4 alleles of unequal frequency? What trend do you notice?
4. How many markers should be used in an analysis to get a good diversity estimate?
5. What is the relationship (if any) between the GD_P and GD_R estimate between two individuals? Why might they differ?
6. What breeding decisions might be affected by GD data? Is the research presented here necessary for the breeders to select parents properly?

Discussion

1. Are the diversity estimates reported here representative of a typical soybean breeding program?
2. Were RFLP a good markers system to detect soybean polymorphisms?
3. What effect is their if you include monomorphic probes in your diversity estimates?
4. Is soybean more or less diverse than maize?
5. What is the benefit of a denser molecular map?