



BOOK OF ABSTRACTS

First Legume Society Conference
2013: A Legume Odyssey

9-11 May 2013, Novi Sad, Serbia

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Book of Abstracts

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International Legume Society
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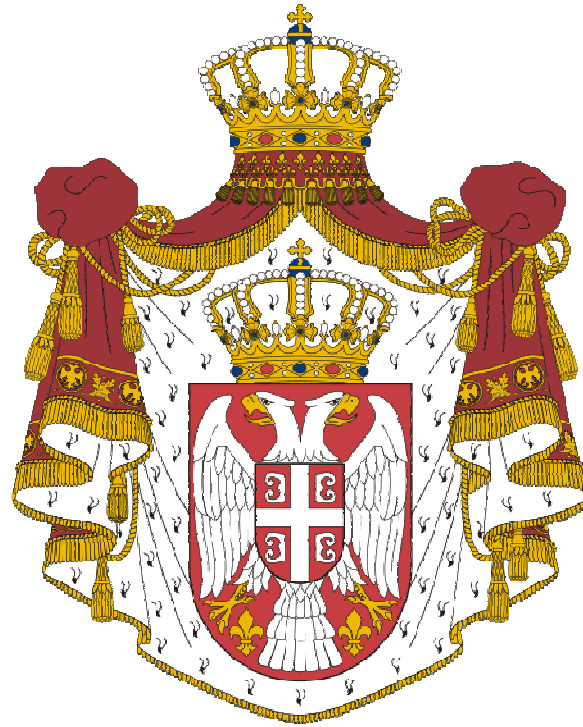
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Getting the message out: grow, use, feed and eat legumes

Learning from past: Implication of neutral variability changes during soybean breeding on further breeding process

Vuk Đorđević, Marina Tomičić, Miloš Vidić, Jegor Miladinović, Aleksandar Mikić

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Historically, soybean breeding began with a small number of genotypes and can be seen as a recurrent selection for yield. Analyzing allele frequencies in ancestral and elite population for particular region, it is possible to find neutral alleles with significant different frequencies between two populations. Each allele, which has a different frequency in the elite and ancestral population, indicates selection effects in the vicinity of a given locus. Exploring neutral variability in ancestral and elite population, it is possible to find soybean genomic locations which are under selection, actually affecting the yield increase. These parts of the genome are associated with agronomical important genes and can be used in marker assisted selection. Ancestral population was established based on pedigree analysis, which includes last available ancestor. Elite population consist of high yielding varieties that are grown in Central and Eastern Europe, breed at Institute of field and vegetable crops, Novi Sad. Analysis of variability in ancestral and elite soybean population with 50 microsatellite markers, indicate several genomic regions which are under selection. Deviation in allele frequencies from expecting values calculated by pedigree, indicate significant decreases, increases and fixation of alleles frequencies on several SSR loci. Also, strong population differentiation (F_{st}) found between elite and ancestral population for several loci. Some of genomic regions that possess signatures of selection are consistent with previously reported yield QTLs. Also, some genomic regions, previously reported as yield QTL region, do not show evidence of selection. Those regions are potential targets for further marker assisted selection. It is observed, as expecting, reduction in gene diversity in elite population. Surprisingly, is also observed increment of heterozygosity in elite population. That indicates that elite lines still have certain degree of variability within varieties, which can exploit for further selection. Overall, analysis of changes in neutral diversity can be useful in practical breeding programs, and can be used in marker assisted selection.

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In the rich world of global agriculture, diverse legumes can play key roles to develop environment-friendly production, supplying humans and animals with the products of high nutritional value.

The Legume Society was initiated in 2011 with two primary missions. One of them was to treasure the rich legume research tradition of the European Association for Grain Legume Research (AEP), with emphasis on carrying out its the triennial legume-devoted conferences. Another one is to fulfill a long-term strategy of linking together the research on all legumes worldwide, from grain and forage legumes pharmaceutical and ornamental ones and from the Old World to the Americas.

We do anticipate that the First Legume Society Conference will be a unique and genuine contribution to our common goals: to promote the legume research and all its benefits into all spheres of the society, linking science with stakeholders and decision-makers, and to demonstrate how an efficient, useful and firm network of the legume researchers of the world is possible and sustainable.

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