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GENETIC DIVERGENCE AMONG SUBSAMPLES OF LIMA BEAN FROM GERMPLASM ACTIVE BANK FROM UFPI

Josilane Souza da Penha¹, José Ribamar Assunção Filho¹, Márcia Rocha Ferreira¹, Ângela Celis de Almeida Lopes^{1*}, Regina Lucia Ferreira Gomes^{1,2} and Kaesel Jackson Damasceno e Silva²

¹Federal University of Piauí - UFPI, ZIP CODE 64049-550, Teresina, PI, Brazil; ²Embrapa Mid-North, CPAMN, ZIP CODE 64006-220, Teresina, PI, Brazil

*Corresponding authors: acalopes@ufpi.edu.br and rlfgomes@ufpi.edu.br

INTRODUCTION

Phaseolus lunatus L. known as lima bean, is a tropical legume specie known for high genetic diversity and yield potential (MAQUET et al., 1999). The analysis of genetic diversity is needed for better conservation. Estimating genetic diversity, by multivariate analysis, enhances the efficiency of germplasm collection management and genetic improvement. This study was conducted to investigate the genetic diversity in Lima Bean Active Germplasm Bank (BAG) from Federal University of Piauí (UFPI) based on quantitative traits of seeds

MATERIAL AND METHODS

This work was performed in the county of Teresina, Piauí, Brazil, in 2011, using 226 subsamples from Lima Bean BAG from UFPI. Were evaluated seed descriptors: length, width and thickness seed (LP, WP and TP respectively) and one hundred seed weight (100 SW). Genetic divergence among subsamples was estimated by Euclidean distance, establishing the Tocher grouping. All analysis were performed using software GENES (CRUZ, 2001)

RESULTS AND DISCUSSION

Genetic dissimilarity showed lower limit of 0.027 (UFPI-528 and UFPI-549) and upper limit of 3.814 (UFPI-217 and UFPI-688). Subsample UFPI-688 presented highest averages for length and one hundred seed weight, besides high averages for other descriptors evaluated. Twenty one were formed by Tocher method (Table 1). Group I contained 81 subsamples that showed high values for length (over 16.00mm), width (greater than 11.00mm) and thickness (greater than 6.00mm) and one hundred seed weight (greater than 60 g); Subsamples UFPI-503 (Group XV) presented lowest average thickness (6.77mm); UFPI-688 composed Group XVIII. In the Group XIX occurred UFPI-613 subsample, which present high values for width (13.38mm), length (20.24mm) and one hundred seed weight (99.67g). Subsamples more divergent were found groups XVIII (UFPI-688) and XX (UFPI-217). The relative contribution by Singh method (1981) showed that one hundred seed weight contributed with 97.42% of the difference.

CONCLUSIONS

High variability among subsamples in lima bean Active Bank Germplasm from UFPI, especially between UFPI-217 and UFPI-688 subsamples. One hundred seed weight was the most important trait for genetic divergence.

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Table 1. Grouping by Tocher method of 226 subsamples of lima bean. Teresina, PI, 2011.

Groups	Subsamples									
I	UFPI-528	UFPI-549	UFPI-212	UFPI-652	UFPI-664	UFPI-717	UFPI-522	UFPI-657	UFPI-464	UFPI-698
	UFPI-693	UFPI-673	UFPI-577	UFPI-653	UFPI-663	UFPI-605	UFPI-670	UFPI-33	UFPI-582	UFPI-281
	UFPI-578	UFPI-675	UFPI-694	UFPI-696	UFPI-651	UFPI-268	UFPI-669	UFPI-680	UFPI-689	UFPI-690
	UFPI-267	UFPI-655	UFPI-721	UFPI-701	UFPI-679	UFPI-686	UFPI-695	UFPI-718	UFPI-676	UFPI-2
	UFPI-720	UFPI-697	UFPI-668	UFPI-617	UFPI-677	UFPI-722	UFPI-187	UFPI-685	UFPI-678	UFPI-519
	UFPI-674	UFPI-666	UFPI-491	UFPI-661	UFPI-684	UFPI-662	UFPI-683	UFPI-1	UFPI-598	UFPI-472
	UFPI-705	UFPI-470	UFPI-654	UFPI-671	UFPI-504	UFPI-692	UFPI-667	UFPI-691	UFPI-702	UFPI-656
	UFPI-160	UFPI-659	UFPI-708	UFPI-703	UFPI-626	UFPI-658	UFPI-277	UFPI-700	UFPI-699	UFPI-650
	UFPI-285									
	UFPI-218	UFPI-244	UFPI-238	UFPI-250	UFPI-234	UFPI-290	UFPI-232	UFPI-243	UFPI-224	UFPI-229
	UFPI-219	UFPI-585	UFPI-537	UFPI-222	UFPI-647	UFPI-237	UFPI-513	UFPI-252	UFPI-242	UFPI-231
I	UFPI-221	UFPI-239	UFPI-240	UFPI-256	UFPI-236	UFPI-253	UFPI-728	UFPI-538	UFPI-233	UFPI-616
	UFPI-615	UFPI-225	UFPI-247	UFPI-255	UFPI-584	UFPI-627	UFPI-223	UFPI-261	UFPI-468	UFPI-612
	UFPI-594	UFPI-257	UFPI-591	UFPI-473	UFPI-588	UFPI-649	UFPI-251	UFPI-264		
	UFPI-26	UFPI-621	UFPI-586	UFPI-466	UFPI-611	UFPI-608	UFPI-712	UFPI-714	UFPI-719	UFPI-523
III	UFPI-189	UFPI-713	UFPI-518	UFPI-492	UFPI-465	UFPI-121	UFPI-715	UFPI-202	UFPI-141	UFPI-278
	UFPI-579									
IV	UFPI-471	UFPI-602	UFPI-707	UFPI-467	UFPI-589	UFPI-516	UFPI-681	UFPI-590	UFPI-274	UFPI-500
	UFPI-723	UFPI-463	UFPI-709	UFPI-710	UFPI-629	UFPI-711	UFPI-271	UFPI-704	UFPI-507	UFPI-607
	UFPI-517	UFPI-682	UFPI-587	UFPI-515						
V	UFPI-609	UFPI-619	UFPI-262	UFPI-648	UFPI-614	UFPI-134	UFPI-624	UFPI-599	UFPI-216	UFPI-596
	UFPI-625									
VI	UFPI-593	UFPI-600	UFPI-623	UFPI-214	UFPI-495	UFPI-280	UFPI-129	UFPI-706	UFPI-540	UFPI-482
VII	UFPI-228	UFPI-628	UFPI-235	UFPI-230	UFPI-220	UFPI-245				
VIII	UFPI-604	UFPI-618	UFPI-601							
IX	UFPI-597	UFPI-716								
X	UFPI-493	UFPI-620	UFPI-595							
XI	UFPI-276	UFPI-672	UFPI-508	UFPI-592	UFPI-486	UFPI-622				
XII	UFPI-273	UFPI-494								
XIII	UFPI-282									
XIV	UFPI-687									
XV	UFPI-503									
XVI	UFPI-665									
XVII	UFPI-166									
XVIII	UFPI-688									
XIX	UFPI-613									
XX	UFPI-217									
XXI	UFPI-610									

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