GRAIN YELD OF LIMA BEAN (*Phaseolus lunatus*) GENOTYPES FROM SUBTROPICAL BRAZIL

Régis de Araujo Pinheiro[1], JosuanSturbelle Schiavon[2], Gilberto AntonioPeripolli Bevilaqua[3], Irajá Ferreira Antunes[3]

[1]MSc. Sistemas de Produção Agrícola Familiar- UFPel;[2] Universidade Federal de Pelotas; [3]Embrapa Clima Temperado

INTRODUCTION: When we consider the construction of more sustainable agroecosystems, we find that the process requires, at first, the reduction in the use of synthetic chemical inputs, such as N. Thus, it is affirmed that leguminous plants play a very important role, since they are able to fix atmospheric nitrogen. In addition, the improvement of the chemical, physical and biological attributes of soils the implementation of adequate techniques of soil preparation, maintenance of soil cover and increment of green fertilization. Another factor to be mentioned is that many of these legumes, besides being used as soil cover and green manure, are used for human and animal food as fodder or grains, and thus are considered as multipurpose legumes, which is inserted *Phaseolus lunatus* (VIEIRA, 1992).

In the different regions, associated with family farming systems, especially those with an ecological base, these species occupies a prominent place because of its rusticity and adaptability to low fertility soils, a fact that is directly related to the survival capacity of these materials creoles, besides being a source of protein for human and animal feeding. Embrapa Clima Temperado counts on a Bean Germplasm Bank (BAG-Embrapa) that presents more than 500 accessions of landraces of leguminous of multiple purpose. In this way, cataloging them and characterizing them is of extreme importance to obtain information that can contribute to family farmers in the construction of more sustainable agroecosystems (PINHEIRO et al, 2017). The present work aims to analyze the agronomic characteristics of lima bean.

MATERIALS AND METHODS: The site where the experiment was carried out presents the soil with the following characteristics: Solubic Hapludic Planosol, Pelotas mapping unit (Santos et al., 2006), with poor drainage and the following physico-chemical characteristics: 1.2% of (P), 35 mg kg^{-1} of potassium (K), 20% of clay and pH 5.8.

The area was fertilized with a mixture containing natural phosphate, tungue pie and agromineral granodiorite in the dosage of one t ha^{-1}, applied manually and after incorporation to the soil one week before sowing. Seeding was carried out for all genotypes on January 14, 2013. Four rows of each genotype, spaced 0.65m, each row containing 4 meters long with a seed density of 6 seeds per linear meter were sown.

RESULTS AND DISCUSSION: Were evaluated about forty genotypes of Lima bean in which it was possible to observe up to six seed collections, spaced between 7 and 10 days, making two months of production. Among them there are materials especially indicated for the production of grains while others are of dual purpose, also including the production of fodder for animals (FRAZÃO et al, 2010).

The emergence occurred in all genotypes within 8 days. It is verified that all the genotypes present indeterminate habit of growth, however the cycle ranged from 48 to 62 days, being considered early genotypes for that case those that presented DEF below 52 days, which occurred in a single case for the G 349. In contrast, it was considered as late genotype those with

DEF above 62 days, which happened for G 196, the other genotypes presented the duration of their cycle around the mean.

When we verified the DFH, it was verified that superior genotypes, that is, those that had the longest periods between flowering until the first harvest, were those that presented DFH greater than 77 days, which occurred for G 349, in contrast G125 presented lower DFC. Early genotypes with few days to harvest provide a more rapid supply of protein or fodder to farmers, which can optimize the adoption of their strategies and better adaptation in the production unit. Both genotypes presented between 2 and 3 harvests, in addition it is verified that the genotype G 125 that presented lower DFC was the most productive, as well as presented 3 harvests. The lowest productivity occurred in G 349, which also obtained three harvests, and was the earliest.

Table 1 - Grain color, growth habit (GH), number of days from emergence to flowering (DEF) and flowering to the beginning of harvest (DFH) and grain yield (kg ha^{-1}) of the different harvests (1st to 3rd Harvest) in genotypes of lima bean BAG of Embrapa Clima Temperado.

Genotypes	Grain color	GH	DEF days	DFH days	1ªH	2ª H	3ª H	Grain Yield
G 120	white	U**	58	65	167	156	-	323
G 195A	Red/white	U	58	65	133	61	133	327
G 125	White/black	U	58	61	241	155	141	537*
G 196	Violet	U	62*	75	183	303	-	486
G 349	Red/black	U	48*	81*	49	82	46	177
Media			57	69				370
Std			4,7	7,4				128
Media +std			61	77				498
Media -std			52	62				242

*Genotypes differ of media plus or less standard deviation; **growth habit indeterminado (U)

CONCLUSION: The different lima bean genotypes of BAG of Embrapa Clima Temperado vary in cycle and yield of grains, aspects of extreme importance, since due to the heterogeneity of familiar agricultural units, these genotypes can adapt in different ways and allow new strategies for the sustainable agro-ecosystems.

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