"CANARIO PF-210": A NEW RUST RESISTANT BEAN VARIETY FOR THE PERUVIAN CENTRAL COAST

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In Peru, yellow-seeded beans known as "canarios", are preferred over light tan (bayo), white, dark red or black ones. Forty to fifty percent of the area grown with beans in the Peruvian coast is covered each year with this type of beans.

In 1957, when the National Bean Program was created, there were no cultivars of this bean type. A selection known as "Canario LM-2-57" was released in 1959 and it was not until 1965 that a new variety, "Canario Divex 8120" appeared. This new variety was the first early variety ever developed in Peru (110-120 vs. 150-160 days). "Canario Divex 8120" was a product of crossing Canario LM-2-57 and Red Kidney and its release allowed to extend planting dates of yellow beans to ranges never used before. Two problems remained: rust susceptibility and seed decoloration when beans were grown in summer time (yellow beans are planted mainly during fall). "Canario Divex 8130", a selection from C.D. 8120, partially solved the latter of these inconveniences, but still rust continued being the worst enemy of bean growers.

This note intends to give some highlights about a new bean variety of the yellow-seeded type, "Canario PF-210", resistant to rust (*Uromyces phaseoli* var. *typica*). This is a composite variety formed by the mixture of six lines, each one derived from a cross of "Canario Divex 8120 or 8130 with either of 4 rust resistant varieties from Colombia and Costa Rica. Tables 1 and 2 give details on the genetic background of the new variety.

Table 1. Parental material used in the development of Canario PF-210.

Identification	Origin	Growth habit	Seed color
Rust susceptible	Canario LM-2-57 x R. Kidney	Bush	Yellow
Canario Divex 8120	Canario LM-2-57 x R. Kidney	Bush	Yellow
Rust resistant			
Colombia I-104	Magdalena 8 (ICA)	Pole	White
Colombia I-109	Valencia (ICA)	Bush	White
Costa Rica I-7	50600 (CATIE)	Bush	Black
Costa Rica I-16	51541 (CATIE)	Bush	Black

Table 2. Genetic origin of the constituent lines of Canario PF-210.

Line	Pedigree
Canario PF-21-1	(C.D.8120 x Col. I-109)F_5
Canario PF-21-2	(Col. I-104 x C.D.8120)F_5
Canario PF-21-3	(C.D.8130 x Col. I-109)F_5
Canario PF-21-4	(Col. I-104 x C.D.8130)F_5
Canario PF-21-5	(C.D.8130 x C.Rica I-16)F_5
Canario PF-41-1	(C.D.8120 x C.Rica I-7)F_4

Crosses were made in 1972. The F_1 was grown that same year in screenhouses. From then on, two generations per year were planted in the field. All plants showing rust symptoms were eliminated starting from the F_2; pole types, in the case where Col.I-104 was involved, were eliminated too. Small seeds were discarded and the rest was classified according to their color; only yellow seeds were kept at La Molina Experiment Station; light-tan and white types were sent to places where these seed colors are preferred (northern coast). The method of selection used was the so-called one seed per plant. Special care was put on selecting for rust resistance and plant type; natural infection was always high. At F_5 seed from each cross was bulked.

All the six lines selected for resistance to rust, have similar seed and plant characteristics. Yield tests have shown an average yield of 1500-1800 kg/ha for Canario PF-210; is a bush bean which takes from 110-120 days to mature; seeds conform the canario commercial type in size and color. The rationale behind releasing Canario PF-210 as a mixture of six lines lies on several facts. One of them is that it is only at La Molina Experiment Station where bean breeding work is done in Peru. We hope that agronomists working in other areas will eventually select from this variety the best types for their particular area. Another reason is that all the "canario" beans grown in Peru derive from Canario LM-2-57 and Red Kidney germplasm; we considered necessary to introduce some genetic diversity that may allow our bean enterprise to cope with the consequences of a narrow genetic base. Lastly, there is no survey in Peru on prevalent rust races; the presumable race complex present in the growing regions might be best neutralized with a composite variety.

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