YELLOW BEANS IN LATIN AMERICA

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A set of stereotypes are common in the language used to refer to common beans (*Phaseolus vulgaris* L.). One of the most prevalent is that beans are "food for the poor", a statement which is partly correct given that beans are consumed mainly by the lower economic levels of society. However, it is not correct to say that bean consumption is limited only to the poor; actually, beans are consumed by all levels of society with one important difference: the poor eat beans more frequently that the rich.

Despite their many differences in social standing, nationality or race, one thing distinguishes all bean consumers: their marked preference for specific grain types, based on exacting requirements of the right color, size and shape. The opposite of these preferences by bean consumers is a distinct discrimination of grain types other than the ones they are accustomed to. One can draw a parallel between languages and bean preferences to better understand this discriminatory behaviour. Take for example the English language and the small red beans. Both, in the USA and the UK people speak English but users and uses of English can be characterized in terms of variation in region, society, style and medium that actually we could talk about English languages. The same, people in Honduras, Nicaragua, Costa Rica and El Salvador all eat small red beans, but preferences for particular variations in color intensity, brilliance and hilum characteristics of the grain mark the differences among countries and even regions within countries. In summary, like the subtle differences between accents within a single language, a single seed class can have very subtle variations, that in turn affect whether a variety is accepted in a region or not. The subtle variations described for the small red grain type occur in the eight basic colors of bean seeds and in all countries it seems the bean consumer is as particular as the most demanding gourmet. In this article, I will discuss the origins and importance of yellow beans in Latin America.

Countries that consume yellow beans in Latin America

The principal countries that consume yellow beans in Latin America are Peru, Ecuador and Mexico (Table 1). Yellow beans are also planted to a lesser extent across a wide geographic area from Brazil, Bolivia, Chile, Colombia and Panama (Table 2). Bean consumers in these countries have invented a number of descriptive names for the yellow beans they prefer, based on the many tones found in this seed class. If they are widely grown, some of these names are the epithet for a distinct, recognizable commercial seed class.

TABLE 1.- The relationship between different commercial yellow seed classes and the regions within countries that consume yellow beans.

PERU			ECUADOR			
COAST	HIGH-LANDS	JUNGLE	COAST	NORTHERN HIGHLANDS	SOUTHERN HIGHLANDS	MEXICO
Canario	-	-	-	-	-	Peruano[1]
	-	-	Mantequilla	Matahambre	Mantequilla	Canario
-	-	-	-	-	-	Azufrado
-	-	-	-	-	-	Garbancillo
-	Amarillo	-	-	-	-	-
-	-	Ucayalino Huallaguino	-	-	-	-
-	-	-	-	Canario Ojo Negro (BolónAmarillo)	-	-
-	Canario (serrano)	-	-	-	Canario (Bola Amarillo)	-
-	Q'osqo Poroto	-	-	-	-	-

[1] Since 1978 when Azufrado Pimono 78 (Mayocoba) was released

The following conclusions can be made from the above table:

- The term "canario" does not refer to the same type of bean in the three principal countries that consume yellow beans. There are at least 11 different yellow bean types grown and consumed in Latin America
- Each region has its own widely distributed, specific type of yellow bean
- The most demanding region, inasmuch as preference for a particular yellow bean, is the Peruano coast where only one type of yellow bean is accepted, "canario" the very same color that in Mexico is called Peruano or Azufrado Peruano

1. Peru. Yellow color is very important in Peru. This country produces yellow cassava, yellow potato, yellow pepper and yellow beans. Peru is probably the most important center of diversity for yellow beans with two commercial classes that are found nowhere else in the world ("canario" and "Q'osqo Poroto"); two other seed classes ("Amarillo Gigante" and "Ucayalino") that probably originated there but that have now been distributed more widely within but not outside of Latin America. A short description of these beans follows:

a) "Canario" beans, named after the cheerfull little Canary bird with the bright yellow plumage, have been grown along the Peruano coast since ancient times. The Mexicans received from Peru a sample of the variety (Peruano) "canario", a type III bean which they called "Peruano" to distinguish it from their own "canario" type which is a different type of yellow bean with a dark hilum. "Peruano" was later crossed with "Canario 107" a commercial type I bean to produce in 1979 the variety "Azufrado Pimono 78", which was later renamed "Mayocoba", the first Mexican variety to resemble the bright yellow color of the Peruano original "canario". This new (for the Mexicans) yellow color was from then on called "Peruano" or "Azufrado Peruano"

Recently, a private company in the USA, claims to have developed a new variety called “Enola” and has taken out patent rights on the yellow color of the original “Peruano” or “Azufrado Peruano”. The company patent wrongly alleges to have introduced yellow beans for the first time to the USA market, when the USDA has several “Azufrado Peruano” plant introductions (P.I. under their original name “canario”), such as the variety “Canario LM”, in the germplasm collection at Prosser, Washington. Furthermore, Voysest in 1960 made available the variety to breeders in the USA (BIC Annual Report, Bean Improvement Cooperative BIC Vol 3. p. 23, 1960). The germplasm bank at CIAT, Colombia also has a diverse set of yellow bean varieties in its FAO designated germplasm collection of 26,000 bean accessions that are held in trust for the world community.

b) “Q’osqo Poroto” is another class of yellow beans which is unique to Peru. It is a small, round, yellow popping bean (known locally as “frijol reventón”, “ñuña” or “poroto”) that is grown exclusively in the southern Andes of Peru. We hope not to see popping beans patented elsewhere out of Peru under an odd assumption.

c) In the highlands there are also large-seeded golden yellow, non-popping beans that are found infrequently in other areas of Andean South America. Similar beans of smaller size are found in the highlands and valleys of Bolivia. Another type of yellow bean, called “Canario Serrano” is grown in the Peruano Andes and also in the southern highlands of Ecuador. In the lowland rainforest of Peru there is a small-seeded golden yellow bean that is found nowhere else in Latin America.

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2. Ecuador. The large round “bolón” beans (above 60 g/100 seed) are characteristic only of Ecuador and Colombia. The Ecuadorian Canario has the same color as the Mexican Canario (light tan with yellow patches; dark hilum) but the size and shape are different

3. Mexico. Up to the late seventies, the Mexican consumers have traditionally had three commercial types of yellow beans: “azufrado”, “canario” and “garbancillo”. The differences between these seed classes especially between “azufrados” and “canarios” are subtle, albeit important to yellow bean consumers. Beginning in 1979, with the release of the new variety “Mayocoba”, the commercial class “Peruano” began to be grown in Mexico. Mayocoba represented a new type of yellow bean for Mexico, with a different tone than the previous three classes: an intense yellow color without the dark hilum ring that is found in all the previous yellow seed classes. It is interesting to note that the original Mexican “canarios” belong to the Andean gene pool and must have been introduced from South America a long time ago. In northern Mexico as in many other countries (Tables 1 and 2) many land race varieties of "canario" beans are sometimes known as “mantequilla” beans, which translated from Spanish are butter beans. In germplasm collections there are many accesions of Mexican type “canario” beans that are called “beurre” beans, which translated from French would also mean butter beans. This French denomination for yellow beans may have been translated inaccurately into “burro” beans which are found in Chile. Alternatively, “burro” the Italian word for butter is also used to describe the "mantequilla" (butter) beans. The other category of yellow beans, the “garbancillos” are truly Mexican and has been classified as belonging to the Jalisco race within the Mesoamerican gene pool.

Yellow beans of Latin America can be considered to be a unique genetic resource found mainly in Peru, Ecuador and México (Tables 3, 4, 5). As such this resource should be protected from misappropriation by individuals who would not give the due recognition of the valuable role that Latin American farmers have had in developing and preserving this interesting set of bean varieties.

TABLE 2. Yellow bean seed classes in Latin America and the countries that produce them on a minor scale

Yellow bean classes	BRASIL	BOLIVIA	CHILE	PANAMA	COLOMBIA
Jalinho	Jalinho	Mantequilla	-	-	-
Liborino	-	-	-	-	Liborino
Canario	Jalo	Manteca	Mantequilla Burros	Mantequilla	-
Azufrado	Enxofre Enxofrão	-	Azufrado	-	-
Garbancillo	-	-	-	-	-
Peruano	-	-	-	-	-
Amarillo Gigante	-	-	-	-	-
Ucayalino	-	-	-	-	
Q'osqo Poroto	-	-	-	-	-
Canario Bolón	-	-	-	-	-
Canario Bola	-	-	-	-	-

TABLE 3. Varieties of yellow beans developed in Mexico, and Ecuador. 1930 - 1999

COMMERCIAL CLASS	COUNTRY	VARIETY	ORIGIN	YEAR
CANARIO	Mexico	Canario 101	selection	1950's
		Canario 107	selection	-
		Canario Guanajuato 43	selection	-
		Canocel	hybridization	1959
		CIAS 72	hybridization	1972
		Ahome	hybridization	1978
AZUFRADO	Mexico	Amarillo 153	selection	-
		Amarillo 154	selection	1954
		Azufrado 33	selection	1970's
		Azufrado Bolita	selection	-
		Azufrado Regional	selection	-
		Culiacán 200	hybridization	1976
		Cahita 100	hybridization	1978
		Azufrado Tapatio	hybridization	1990
GARBANCILLO	Mexico	Garbancillo Zarco	selection	-
		Garbancillo Supremo	selection	-
BOLA CANARIO	Ecuador	INIAP-419 Canario	selection	1994
BOLON AMARILLO	Ecuador	Canario Ojo Negro	selection	-

TABLE 4. Varieties of unique yellow color from Peru. 1930 – 1999.

COMMERCIAL CLASS	COUNTRY	VARIETY	ORIGIN	YEAR
PERUANO	Mexico	Mayocoba	hybridization	1978
		Azufrado Peruano 87	hybridization	1987
		Azufrado Regional 87	hybridization	1987
		Azufrado Noroeste	hybridization	1995
		Azufrado Higuera	hybridization	1995
	Peru	Canario	land race	-
		Canario LM 1	selection	1944
		Canario LM-2- 57	selection	1957
		Canario Camanejo	land race	-
		Canario Divex 8120	hybridization	1965
		Canario Divex 8130	hybridization	1966
		Canario PF 210	hybridization	1967
		Canario Barranquino	hybridization	1970
		Canario Chinchano	hybridization	1970
		Canario Huaralino	hybridization	1970
		Canario Molinero	hybridization	1970
		Canario Centinela	hybridization	1991
		Canario 2000 INIA	hybridization	1991
		Pata Amarilla	hybridization	1998
AMARILLO GIGANTE	Peru	Q'ello Poroto	land race	-
		Kori Inti	hybridization	1989
		Jacinto INIA	hybridization	1994
HUASCA POROTO	Peru	Ucayalino	land race	-
		Huallaguino	land race	-
Q'OSQO POROTO	Peru	Q'osqo Poroto INIA	selection	1996

TABLE 5. Varieties of yellow beans grown in Brazil, Bolivia, Chile, Colombia y Panama. 1930 - 1999

COMMERCIAL CLASS	COUNTRY	VARIETY	ORIGIN	YEAR
CANARIO	Brasil	Jalo EEP 558	selection	1950's
		Jalo Precoce	selection	1990's
		Novo Jalo	hybridization	1984
	Bolivia	Manteca Mairana	hybridization	1992
	Chile	Burros Argentinos	selection	-
	Panama	Mantequilla	selection	-
		Primavera	-	1988
AZUFRADO	Brasil	Enxofre	selection	-
		Enxofrão	selection	-
	Chile	Azufrado	selection	-
JALINHO	Brasil	EMGOPA 201- Ouro	hybridization	1984
	Bolivia	Mantequilla Mairana	hybridization	1992
LIBORINO	Colombia	Liborino	selection	-
		Guarzo amarillo	selection	-

FINAL COMMENTS ON TRUTHS AND LIES IN THE CASE OF ENOLA BEAN VARIETY

"The problem is, yellow beans have been grown in Mexico for Millennia". This argument has been mentioned repeatedly by various opponents of the Enola patent, however, this simply is not true.

a. While it is true that in Mexico there are many yellow beans until 1960-1970 there were no beans in Mexico with Mayocoba characteristic yellow color.

b. The "yellow" bean color Mayocoba "(or Peruano) was only introduced in Mexico presumably in the 1960's. Inexplicably INIFAP, although you can, so far has not provided the exact date when it was introduced from Peru beans Canario (Canario variety presumably LM-2-57) even though this data is recorded in the input files of materials from the Germplasm Bank. It is the ONLY yellow material "Mayocoba" (or Peruano) that owns Mexico. These have subsequently entered the bank of the yellow beans such as Canario Divex 8120 and 8130 also Divex Peru. After Mayocoba Mexican breeders have developed other varieties of Peruano type but always the source of yellow was the Canario Peruano.

Table 6. Mexican Yellow Bean Varieties, Genealogy, Year of Release

VARIETY	**YEAR**	**GENEALOGY**
Azufrado Pimono 78 (Mayocoba)	1979	Canario 107 x **PERUANO**
Azufrado Peruano 87	1988	Azufrado 100 x (Canario 107 x **PERUANO)**
Azufrado Noroeste	1995	Azufrado 100 x (Canario 107 x **PERUANO)**
Azufrado Higuera	1995	(Red Kidney x **PERUANO**) x Royal Red

Peruano Canario Bean was introduced from Peru and may be the only source in developing Mayocoba type varieties. Those yellow beans from the Peruano type "occur in Mexico for thousands of years ago", simply is incorrect because they have never been grown for that time.

c. Upon receipt of the variety Canario Peru, the Mexicans recorded it as Peruano. They did not use its original name (Canario) in the country (Peru) because Mexico has a commercial class of pale yellow bean very popular also called Canario. The author spent a year working on the Bean Program in Mexico (1958-1959) and never saw a yellow bean color Mayocoba Peruano type or the field or in the germplasm collection. Mexico has a great diversity of Creole yellow beans that have existed in Mexico "for millennia" and which varieties derived by selection: the canario types (Canario 101, Canario 107, etc.). Sulfur types (Yellow 53, Yellow 154, 33 Azufrado etc.) the type garbancillo (Garbancillo Zarco, Supreme Garbancillo, etc). Only from the 70s in Mexico began creating yellow grain varieties by hybridization. In the period 1970-78 were created canario type varieties and sulfur (CIAS 72, Ahome, Azufrado Cahita 200 and 100) using Mexican canario parents. In the development of Mayocoba or Peruano color they never used local germplasm for one simple reason: they did not have in their germplasm collection any bean of that color. Germplasm used only introduced in 1978 (Peru) to develop a new type of bean yellow, or Mayocoba Peruano type (Table 6). This is due to the introduction of Canario Peruano bean type (presumably the variety Canario LM-2-57). With this parent created the variety Azufrado Pimono bean 78 the first Peruano type developed in Mexico. The author was in Los Mochis watching the demonstration plots of 78 Pimono Azufrado planted next to an old acquaintance of mine the Canario, beans, habit III, most popular and preferred in Peru and which works for 17 years. It is therefore not true that such planting Mexico yellow bean "for millennia.

Yellow beans were introduced in 1960s, used in crosses in 1970s, sowed commercially in the 1980s and the Azufrado Pimono became Mayocoba 78 in 1979.

d. The Peruano beans or Mayocoba in Peru: Canario Beans (yellow Peruano or Mayocoba) is the most prized beans kind of in Peru, mainly in central and south coast and parts of the mountains. Its cultivation dates back to the "dawn of time" without being able to determine exactly from where. The variety (a land race) was practically the only Canario sown. It's a habit III of a growing season varying from 120-150 days. In 1944 Boza Barducci made a selection in the variety and launched Canario LM 1 (LM for the station La Molina). With the creation in 1957 the National Bean Program was launched Canario range 2-57 LM (possibly that was sent to Mexico later) derived by selection in the Canario LM 1. This bean was sown in Canario Central Coast to the mid-60's fall between the rows of "ratoon" cotton (cotton pruning) after summer for regrowth in the spring). The beans planted at relatively low temperatures and little sunshine yielded a beautiful yellow bean, unique among all the yellow, just like the plumage of birds canary. A similar custom observed in California in the Salinas Valley where the furrows harvested lettuce was planted in autumn, the California Small White. People called the canario seed in these coastal valleys of Chincha Canario (the valley of Chincha cotton).

On the south coast seeding system in the valleys of Majes rice and beans Camaná also sown in autumn in the same fields in which rice had been harvested (Table 7). The beans planted in the residual moisture of the rice reached the highest yields of Peru and the bean known as Canary Camanejo (through the valley of Camana was a favorite among housewives. In the decade of 60 for health reasons is banned "ratoon" (pruning) of cotton but the cotton farmers in the new variety found Canario Divex 8120, a bush beans, early, which gave greater flexibility in planting and adaptation to farming systems. Canario was the first bean Divex Peruano product of hybridization. Then came another canary beans hybridized products such as Canario Divex 8130 (1966), Canario PF 210 (1975), Canary 2000 (1991), Canary Sentinel (1991), Canary CIFAC 90,105 (1998), Canario CIFAC 90106 (1998), all having the original in Canario genealogy. The valleys of Majes Camana and in the south of Peru did not take any of these varieties as the Canario Camanejo, late and habit III continued to be the best option in their traditional rice and beans. In short, Peru never bought a gram of Enola or Mayocoba seed. It has from time immemorial the yellow color that has generated this absurd controversy. Doubters can travel to Peru and see in different bean valleys, thousands of hectares planted with Canario Peruano, the true color of yellow.

Table 7. Bean Production in Peru. Information: Angel Valladolid (2004)

PERUVIAN VALLEYS	HAS.
Majes y Camaná	5,000
Costa Central (Lima, Huaura, Barranca, etc)	4,000
Costa Sur Medio (Nazca e Ica)	300
Costa Norte (Lambayeque)	200
San Miguel (Ayacucho)	500
Condebamba (Cajamarca)	300
Ancash	300
Huánuco	300