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Review Paper

The Nutritional value of Beans (*Phaseolus vulgaris* L.) and its importance for Feeding of Rural communities in Puebla-Mexico

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Abstract

The bean is one of the most important crops in the country and occupies the second crop sowing in how much space in the state of Puebla; allegedly, it was introduced in America by nomadic tribes who crossed the Bering Strait to Alaska. There is evidence that in the tenth century the Aztecs in Mexico used the beans as a staple grain, and the Incas were introduced to South America. Globally, the bean is the most important food legume for nearly 300 million people, what, most of them live in developing countries, due to the crop is also known as "the meat of the poor"; in addition, food is a little expensive for low-income consumers. The bean is considered as the second source of protein in eastern and southern Africa, and the fourth in America, it is especially important in the nutrition of women and children; in addition, it has great economic importance, as it generates income for millions of small farmers, to such a degree that the world annual production is aboutUS$11 billion. As in Mexico, in Central America, the cowpea crop goes back to the pre-columbian era. For cultural reasons and its high nutritional value, the bean is considered a staple grain to the diet of the people of Central America, and is the main source of protein in rural communities.

Keywords: Bean, nutrition, protein, rural communities and cultivation.

Introduction

The dry common beans (*Phaseolus vulgaris* L.) are widely consumed throughout the world[1]. The bean (*Phaseolus vulgaris* L.), It is one of the cultivation of paramount importance food, economic and social in Mexico. The beans, along with maize constitute the diet of a large part of the Mexican population, providing the largest part of the protein[2]. Archeological findings in the state of Puebla indicate that the bean has been known for roughly 7,000 years before our era, which it ranks as one of the oldest cultures in Mesoamerica. This has led to a large genotypic diversity in the area, Product of the selections made by the human population that has inhabited this region since prehistoric times[3-5].

Background

Common bean (*Phaseolus vulgaris* L.) in Mexico occupies the second place in cultivated area, and the sixth place by production value; its importance is ancient and the base of food supply and the source of nutrients since Pre-Hispanic times[6]. The bean has historically been a culture associated with the development of the Pre-hispanic cultures and even today plays a leading role in the power of a large part of the population in the world, but in a very special way in less industrialized countries. Currently, the bean does not have a price in the international market and as well as in the recent four years, the other grains have experienced the decline of a 10 or a 15% in the price, in the case of beans has been reduced by up to 60%, however, that the increase in the cost of production has been 70%[4].

The bean is one of the basic legumes in the Mexican diet and represents the second in importance for the structure of crops at the national level, it is estimated that 14% of the agricultural productive units are engaged in the production of beans, the average production of this crop amounts to 1.23 million tonnes per annum, of which approximately 75% corresponds to productive units of temporary. In our country, as mentioned before, the bean plays an important role, since the beans is a powerful source of elements needed for a successful nutrition in the human being[7]. The *Phaseolus vulgaris* species or common beans are native to this area of Mexico and Guatemala, as in these countries is the greater part of the diversity of crop varieties. In Mexico the areas of cultivation of beans more important represent significant percentages in the main producing states in the area cultivated, as is known, the bean is a traditional crop and it is found in all agricultural regions of the country. The demand is almost universal and includes various kinds of beans, with the exception of the regions of the tropics and the north Pacific, where they have preferences for the small black beans and opaque in the first and by the Peruvian beans type in the second. Approximately 65% of its crop is concentrated in the central-north region and pacific-north of the Republic[8]. Currently, the total production of beans in the state of Puebla is located between the 34 and 35 thousand tons and is located between the eight main producers of beans in Mexico,

but still far from the first places. The main production area in this state, it is the district of Chalchicomula deSesma or Cd. Serdan with 43% of the total production in the state, although the bean is produced in more than 140 municipalities in the state of Puebla[9].

Origin of the beans

The bean (*Phaseolus vulgaris* L.), is originating in the western area of Mexico and Guatemala. Botanical explorations in Mexico have shown that the wild varieties of *Phaseolus vulgaris* L. grow along the Sierra Madre Occidental, In a transition band ecological located between 500 and 1,800 (m.s.n.m.), Although the higher frequency of these varieties occurs to the 1,200 meters approximately. Its origin is based on the fact that there is a large genetic diversity, both in *P. vulgaris* as of some parasites of the same. In addition, in this same area have been found the oldest archaeological remains of the common beans, that have been registered to date[10]. The common bean wild and cultivated is distributed from Mexico to the Southern ends of the southern Andes. Among the cultivated types is great variation in habit of growth and other morphological traits, characteristics of seed, adaptation and performance potential[11].

Classification and Description Botany: *Phaseolus vulgaris* is the best known species of the genus Phaseolus in the family Fabaceae of about fifty plant species, all native to America.
Taxonomy:
Divisions: Magnoliophyta
Class: Magnoliopsida
Order: Fabales
Family: Fabaceae
Genus: *Phaseolus*
Specie: *P. vulgaris*

The bean is an annual herbaceous plant, climber or erect, their leaves are composed of three oval-shaped leaflets or rhomboid, Sometimes covered of villi, the habit of climbing plants have stems and fickle tendrils formed by the modification of terminal leaflets, has asymmetric flowers of white or purple and its fruit is a legume of variable color, with 3-12 seeds in its interior[12].

The bean is a crop of warm climate that shows greater development in environments with average temperature of 16 to 26 °C during the growing season and a precipitation of 300 to 500 thousand millimeters throughout the crop cycle. The ripening of plants must coincide with the completion of the rainy season to prevent the grain from staining and lose quality. The reproduction of the beans is by means of seeds, which are used according to the consumer preferences of bean variety of the region and you can choose between different varieties, climbing or matas low, determinate or indeterminate[13].

The cultivation of beans you prefer loose soil and not as heavy limestone or clay and sunny exposures, depending on the weather, are planted in mid-spring or when there is no risk of frost, they also need a contribution of mineral fertilizer, especially potassium and phosphorus. In their roots exist nodules formed by symbiotic bacteria of the genus Rhizobium, which allow them to fix the atmospheric nitrogen, are very sensitive to the cold, too much moisture and the winds[12].

Has an extensive root system was mainly made up of a taproot, numerous secondary roots and tuberous roots, the latter making it a perennial plant. The system is extensive and caulinar with numerous tendrils that allow its climbing habit. The leaves of this species are composite, with three leaflets diamond-oval, widths and integers. Flowering is abundant; with flowers typically papilionáceas arranged in bunches of 2 to 20 flowers, white or scarlet and on long stalks. Once self-pollinated, the flowers give rise to pods and seeds which are the bodies of consumption of the species. The seeds are white, red, yellow, brown, black, purple, gray, and pinto or fluted[14].

Technology of production: The technology in the production of the beans is not very complicated but varies because greater technology to higher performance. The beans should be to grow in the following manner. The beans should be planted in soil medium and light, with good drainage; the soil or clay with problems of strong sales, are not own to the planting of this crop[15-16].

Proper preparation of the terrain makes a good seedbed, which facilitates the predetermined at birth, favors the vigorous development of the plants and a better use of water; therefore it is advisable to perform the following tasks:
Fallow: Make a fallow deep between 30 and 40 centimeters immediately after the harvest of the previous crop, this brings the following benefits: i. Allows you to incorporate the waste for its rapid decomposition, ii. Reduce the population of weeds, iii. Destroy the larvae of insects that winter and iv. Loosen the soil, which improves its structure.

On the other hand, should be avoided this practice when the ground is too wet, due to be erected to auctions of soil, which compacts the soil and leaves very large clods when it dries. It is advisable to give one or two steps of scraper to remove the large clods, and leave a good seedbed, to permit the passage of air and a good absorption of the water[17].

Levelling: It is very important to achieve a good distribution of water, avoiding puddles and high parts where does not reach the sufficient moisture for the plant this can be done with the fresno.

Furrow: The address of the furrows should be done in the direction of the stroke of irrigation; this provides a greater efficiency in the implementation of the water. The separation of the furrows should be 70 centimeters.

The importance of preparing the ground for the cultivation of beans indicates that you must take special care to implement all

the tasks that are fallow, tracking, leveling and furrowing. One of the main factors affecting the low yields of bean cropisusedvarietiessusceptible to disease. At the national level, are available a lot of varieties, of which you can select the most appropriate for eachagricultural region.

According to the shape, size and color of the beannames are: Florde Mayo, Garbancillo, Yellow, Peanuts, Sulfur, Pintos and White, among others. Based on the size, the classifications are: small (<25 gr. /100 seeds), medium (25 to 40gr.), Large (> 40 gr. /100 seeds). Regarding the form, the grain can be round, oval, elliptical, rhomboid, kidney-shaped, prismatic and cylindrical. Other classifications of beans are races or by their growth habit. For its growth habit, the classifications are:

Type I. Mata, generally have few knots (5 to 10), ending in inflorescence remains erect seed tend to be large, early, with short flowering period, low yield potential (although you can compensate with higher density plants), maturity more uniform, strong and thick stalk, relatively high height of pods, and pods are generally long to soft bouillon and cooking. These varieties respond well in rows 30 to 60 cm. wide.

Type II. Remain upright, have a little guide on the main stem and branches do not produce guides are high yield potential and greater number of nodes (11-14) than the Type I, tend to be seed pods and girls, and mid to late life cycle. Adequately respond grooves 40 to 70 cm. wide.

Type III. Son of high yield potential, greater number of nodes and branches (12-16), of various colors and grain sizes, its growth cycle is intermediate to late. These varieties respond well in rows 60 to 70 cm. wide.

Type IV. They tend to climb, come in various colors, high yield potential, with 14 to 18 knots, and tend to be late maturing (> 120 days). These varieties respond well in rows 70 to 80 cm. wide.

Type V. They are late maturing (120-160 days), with 16 to 30 knots, high yield potential, of various colors and size of seed, usually where it rains well, unsupported produce almost no grain. Can be planted in rows 80 to 90 cm wide.

It is clear that there are varieties in each habit both low and high yield potential, so that it may be the case that a variety of Type I strains outperform other habits.

The following lists are some varieties by type habit. i. Bayomex, Canario 107, Peach Blossom, Black Pearl and Peru 87. ii. Like the variety Jamada. iii. Bayo, Central, May FlowerM38, BayoINIFAP Sulphuretted, Tapatio, Otomí Black and Black 8025. iv. Puebla Black, Yellow153 and154, San Francisco, 150 and Garbancillo Black, can be plantedal one or in association with maize. v. Garbancillo Zarco, May Flower half an ear, Rosa deCastilla, Purple Water and Cejita. Varieties that have tended to disappear[18].

Description bean productionnation wide: For Mexico, the bean is a strategic commodity in the country's rural development, because together with maize, represents a tradition of production and consumption, fulfilling various functions of food and socioeconomic status have allowed transcend to today. Their presence along Mexico's history, it has become not only a traditional food, but also an element of cultural identification, comparable with other products such as corn and chili, which are fundamental to explain the diet of yesterday, today and most likely the future[7].

It is considered that in total there are about 150 species of this legume, but in Mexico these amount to 50, highlighting the four species that man has domesticated, such as the *Phaseolus vulgaris* L. (common bean), *Phaseolus coccineus* L. (runner bean), *Phaseolus lunatus* L. (camber bean) and *Phaseolus acutifolius* Gray (tepary bean). In our country, the most important species in terms of acreage and production are the first two. Currently, the most common varieties of beans and planted regions listed below: White 157 (Bajio), Canocel (Bajio), Pinto Durango 133 and 225 (Bajio and semiarid regions), 664 Durango (Durango, Zacatecas and Chihuahua), Durango 222 (semi-arid regions), Canary 72 (Sinaloa, Nayarit, Jalisco and Bajio), Ojo de Cabra 73 (Chihuahua, Zacatecas, Durango), Rio Grande (Durango and Zacatecas), Bayo Calera (Zacatecas), Bayo Durango (Durango, Chihuahua, Zacatecas, Aguascalientes), Black Pearl, Bayo Macentral, Flor de Mayo M38, June Flower Marcela, RMC Mayflower, Mayflower Bajio, Black 150, Bayo INIFAP, Black 8025, Peach Blossom; them to subhumid temperate zones. Mestizo Pinto, Pinto Bayacora, Black Altiplano, Black Sahuatoba, Pinto Villa, Bayo Victoria, Durango Black, Black Querétaro, San Luis Black (Altiplano Semiarid)[19].

For consumer preference, the bean is classified as highly preferred, Sulphuretted, Mayocoba, Black Jamapa, Peruvian, and Flower May Flower June; Garbancillo varieties are preferred, Manzano, St. Louis Black, Querétaro Black and Pinto. And finally, the preference is not White Beans, Bayo White, and Black Zacatecas. In northern Mexico consumes sulphurous varieties, grown mainly in Sinaloa, while a large portion of black bean grown in Nayarit and Zacatecas, with demand largely concentrated in the central and southern regions. Currently, this legume is facing major changes with a changing society, including eating habits as a result of urbanization, migration and employment, and the transition from a closed economy to a global economy, which is putting pressure on various stages of the production, marketing, processing and consumption[13].

Description of bean production in the state of Puebla

Agriculture in the state of Puebla is presented in a variety altitudes ranging from 500 to over 2,700 m in very different climatic conditions; upstate develops in humid temperate climates, in the central part of the state and nearby of the Sierra

Nevada, and Malinche volcano Pico de Orizaba is performed under cold conditions with frequent frosts that cause severe damage to crops, and finally, in the south, formed by the mountain ranges of the Sierra Madre del Sur and Neovolcanic, is under the influence of a variety of climate types, ranging from warm and wet to semi dry, with little recent rains that limit the availability of water, both for agriculture and for the making other activities (table-1). For the peasant economy of the entity beans are sources of employment and income, as well as ensuring food security for subsistence[20].

Economic importance: In the state of Puebla, the total production obtained is 34,332.84 tons in 2005, thus placing it as the producer No. 8 nationally with a gradual increase in production in recent years, which has been generated by the increase in acreage because yields per hectare declined from 2004 to 2005, as these were of 648 kg per hectare in 2004 and 595 kg in 2005[20].

General properties: It can be said with certainty that a group of chemicals studied for many years in depth, due to the variety of processes involving plant are flavonoids. Their therapeutic importance is known only recently. The Flavonoids, also called bioflavonoids are a group of about three thousand phenolic compounds that have a similar chemical structure. These compounds can be found in all higher plant families and in almost all plant species, but recent studies have identified as plants especially legumes rich in flavonoids and isoflavonoids specifically[5]. It is generally accepted that flavonoids have diverse activities on health among other reasons, because they tend to improve the capillary resistance and inhibit inflammation and inhibit free radical trap a variety of enzymes as discussed below. When speaking of flavonoid refers to various groups including flavones, flavanones, isoflavonoids and flavans.

These compounds have different functions in plants as antioxidants, as protectors of ultraviolet radiation and as antibiotics against pathogenic microorganisms[5]. In legume isoflavonoids are synthesized primarily as an important part of the defense system of these plants as microbial infections, however, these compounds besides the aforementioned therapeutic properties have been subject to a variety of recent studies, by their possible anti-cancer properties. Data from experiments in vivo and in vitro have demonstrated that flavonoids most abundant are genistein, daidzein, luteolin, apigenin and quercetin, with the first two character isoflavonoid[5].

The isoflavonesgenistein and daidzein besides having oestrogenic properties, are capable of inhibiting cancer cells through multiple mechanisms, eg inhibit enzymes like tyrosine kinase residue (PKT), protein kinase C (PKC), cyclooxygenase and lipooxigensas and others involved in transduction pathways signals that interfere with the activation of the nuclear transcription factor kappa B (NF-kB), but still need to study the pharmacokinetics of these metabolites and their mode of action[21].

Numerous studies show positive results against the establishment, development or metastasis of malignant tumors in animals. Few studies have been done at the clinical level yet, promising results have not only sparked an intense research with these compounds, but also prepared using soya bean (legume) as a source of these compounds. This can be clearly seen by the wide publicity given to the present consumption of soybeans and products and the high cost of pharmaceutical preparations with soy extracts. Common bean belongs to the same family of legumes, so has the same biosynthetic routes soybeans, so it is natural that also contain high amounts of isoflavones. Hence they can easily assume all evidence obtained with soy isoflavones, to propose that some of the therapeutic activities of common bean biochemical identity come from that. Moreover, the data concerning anticancer properties of isoflavones may abocarse for common bean as reported and some authors[22].

The use of this plant as a medicine greatly increases its importance, not only for our consumption Mexican people for their nutritional value, but as a source of therapeutic value prepared. These preparations rich in isoflavones could add value in traditional medicine (table-2).

Table-1
Area (Ha) Capability with Beans for Temporary State of Puebla

Development District Rural	Capability(HA)				
	Not Suitable	**Very Good**	**Good**	**Medium**	**Water Bodies**
I. Huauchinango	304,483	164	0	0	1,200
II. Zacatlán	259,439	1,376	542	0	56
III. Teziutlán	271,543	8,956	2,437	0	139
IV. Libres	345,622	201	100,585	0	458
V. Cholula	249,123	82,922	79,725	4,501	2,781
VI. Izucar De Matamoros	747,953	6,653	9,000	97,529	160
VII. Tecamachalco	357,022	0	63,365	23,878	0
VIII. Tehuacán	360,799	0	1,346	38,743	0
Total Estatal	**2´895,984**	**100,272**	**257,000**	**164,651**	**4,794**

*Statistical Yearbook of the domestic production of basic grains, INEGI 2010.

Table-2
Nutrition Facts

Nutrients	Units	Nutrients	Units
Calories	322 Kcal	Riboflavin	0.17 mg.
Protein	21.8 g.	Niacin	1.8 mg.
Fats	2.5 g.	Calcium	183 mg.
Carbohydrates	55.4 g.	Iron	4.7 mg.
Thiamine	0.63 mg.		

Nutraceutical properties: The list is added benefit of decreasing cholesterol and triglycerides, and to combat constipation preventing colon cancer. There are so many properties that experts recommend daily consumption. No wonder this food is considered the star.

This can explain why there is a loss of fat than beans, which gives no energy, which produces colitis and gastritis, but rather contributes to the regulation of digestive processes. Another aspect is that they have reduced bean producers because they are exporting more; it also produces a decrease in consumption in the home. Legumes contain a significant amount of protein in the case of chickpea has more calcium, lentils by size is high in fiber, and white beans has the same properties of black or red, but for some people it is easier to digest. The ideal way to prepare any bean except lentils is soaking to produce the onset of germination, where substances are released and become more digestible, soaking must be at least about 8 hours, preferably after cooking pot pressure. There is a tendency to consume beans brilliant but should consider cooking it lasts longer because it is harder. Also, according to this author[22], the recommended dose of black beans that would indeed be prepared as follows: You must drink the liquid obtained from Soak beans in pods and pods consume 100-200 g baking with chopped onions, beans (100 g) are consumed as food. Also recommend the green pods of 5-15 g per day as grass or pods and powder (2.5 g) with boiling water.

Medicinal Attributes

Beans are a rich source of protein and carbohydrates, as well as being a good source of vitamin B complex such as niacin, riboflavin, folic acid and thiamine. It also provides iron, copper, zinc, phosphorus, potassium, magnesium and calcium, furthermore, has high fiber content. It is also an excellent source of polyunsaturated fatty acids[23-24].

Currently, it is accepted that the common bean has medicinal use based on indigenous customs and practices, and its properties are described in treatises such as: the "Herbal Medicines Therapeutic Guide" developed by the German Commission E[29], charged with bibliographic data independent check on the effectiveness and accuracy of herbal medicines, including monographs in *Phaseolus vulgaris*. In the book Handbook of Medicinal Herbs[22], as well as in the book Herbal Medicines is included as a medicinal plant beans[25-26]. There are also a number of publications including Father's Nature Pharmacy, Indian Council of Medical Research, Physician Desk Reference, among others, consider the use of beans for its medicinal properties. Unfortunately, in the current literature treaties herbal, the Mexican beans does not appear as a medicinal plant, knowing of his great wealth and traditional uses. Probably the majority use in the feeding of this plant led to its use as medicine lost[23]. In some publications, is discussing the potential of bean pods in his role as a diuretic. Such is the case of the guidewire from the German Commission mentions where pods of the bean plant seedless (fructus sine *Phaseolisemini*) support as an herb in treating difficult urination (diuretic).

The valvas of the pods are used as herbal teas and it is recommended that they are dry; they are green straw and no black spots. In Handbook of Medicinal Herbs (Hanbook of Medicinal Herbs, are credited with diuretic and hypoglycemic action, to be used in a complementary manner in kidney, heart, rheumatic and diabetes. Seed ground seems to have the same effect. Addition of *P. vulgaris* is added to *P. coccineus, P. lunatus* with these same properties[22]. Moreover, in the Book of Herbal Medical Reference asserts that "in the green beans are chromium salts that may have an antidiabetic effect." Diabetes mellitus, the most common disease of sugar metabolism, requires medical supervision extremely careful and precise, to balance the metabolism of carbohydrates. Diabetes mellitus symptoms are not uniform, but can be divided into different types: Type I (starts in youth) and Type II (starts at maturity), the causes and pathogenesis are different[23].

In the book The Herbal Medicine (Herbal Medicine), different herbs are recommended for the adjunctive treatment of diabetes, among which is the bean pods (*Phaseolipericarpium*) and also points out that among the four that are considered (the other three are: Myrtilli folium, PotentillaAurea and Galegaofficinalis), bean pods are the most effective. For administration recommend putting a bunch of grass in a pint of water, let it boil until reduced to half volume and infusion divided in two doses, one to be taken in the morning and once at night. It is worth mentioning that these authors also report an antidiabetic effect a plant native to Mexico and Brazil[25].

Currently, rheumatic diseases are classified into groups and subgroups very large, but the extraordinary thing is that although these diseases are pathologically different, respond to similar treatments. For arthritis and osteoarthritis, the same disorder leads to either pole accretions, induration and loss of function. In any inflammatory process, it is first necessary to

determine whether it corresponds to a self-regulatory process of self-healing. Hence, more valid strategy for treating inflammatory rheumatic diseases is to relieve acute symptoms, but have poor long-term results[23]. This is where you can play what role investigated the alternative herbal or naturopathic treatment where herbal medicine should be a key element in the basic treatment of such diseases. Anti-discratico drugs seem justified, whose mechanism is always believed that it was a general stimulation of excretions, not only in the kidney and intestine, but also in other excretory glands like the liver. However, it is now known that the aquaretic effects and are only simple aspects choleretic a large effect. Clinical and experimental studies have shown that mature bean pods have a weak antidiuretic effect, so it is recommended as anaquaretic broadly, with an emphasis on anti-discrática capacity. Although not a very powerful herb, the effect is strong enough to justify its use medicinal[25].

When talking about their activities can be listed as follows, according to the compilation by Duke *et al*., based on several publications or traditional knowledge, which was published in the Handbook of Medicinal Herbs: It antiplatelet, anti-angiogenic, anti-cancer, anti-depressant, anti-leukemia, antimelanómico, antiprostático, apoptotic, cardioprotective, estrogenic, hepatoprotective, chemopreventive, hipocolesteronémico, hypotensive, lipolytic, lipotropic, plus antibacterial, antidiabetic, diuretic, antiviral and mutagenic, antipyretic, carminative, depurative, diaphoretic, emmenagogue, fungicidal and Work out, emollient, and hypoglycemic[27, 28-29].

Bean production and its contribution to development: The food crisis broke sharply on global and national scenario. The prices of basic grains such as corn, wheat, soy beans and increased, they began to talk of overall shortages and the need for urgent action by various governments to address this situation. The beans and corn to Mexico represent two of the most important crops in the agricultural sector, to cover more than half of the acreage in the country and employs about four million farmers, said Undersecretary of the Ministry of Agriculture, Livestock, Rural Development, Fisheries and Food[30].

Beans are the main source of vegetable protein consumed by Mexicans and one of the staple foods of Mexico. Beans "Sulfur" yellows are popular in the northeast region where, according to research, consumes 98% of the population. For the peasant economy of the entity beans are sources of employment and income, as well as ensuring food security for subsistence. Since the 1990s proposed policy actions, are aimed at improving marketing processes of agricultural products, both for the local and export market, for which it is considered crucial to improve the efficiency of the various actors along the commodity production so as to achieve a better position for the placement of these products in the international market. Beans in general are one of the best options in terms of cost per gram of protein. Relatively inexpensive, beans are an excellent source of protein and fiber. They contain no cholesterol and empirical evidence suggests that regular consumption reduces cholesterol levels in the blood. They are also rich in vitamin B, iron, calcium, potassium and phosphorus, and contain small amounts of sodium, in addition to its contribution to human nutrition; this crop has great economic importance, as it generates income for small farmers[25].

Conclusion

Beans are a legume with great potential for human consumption, for its dual use (grain and pod) and their protein intake, also a part of its production is sold frozen and canned, but must advance the increase in production, control of pests and diseases through of genetic improvement and adaptation of farming techniques in different areas of the country.

Clearly still lacking basic and clinical research that validates these activities, but it is clear that over time and based on data from the pre-Hispanic culture, has been given the common bean medicinal value in other countries, especially the called first world. What warrants a new approach to a plant traditionally occupies a large percentage for human consumption and that in rural areas; it is sometimes designated with demeaning definition of "meat of the poor".

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