Growing Amaranth: a feasible and profitable activity

The amaranth cultivation is a viable and cost effective alternative productive activity. His qualities and nutritional, agricultural, industrial and economic properties ensure the success of the nutritional chain but the loss of a tradition is a disadvantage.

The economic performance of amaranth in rain fed and irrigated crops are higher than other traditional species, as a short crop, drought resistant and its high nutritional value cycle. For example, in recent years, in terms of profitability, the price of grain amaranth market is higher than other grains (corn $ 1500/ton ; $ 3000/ton beans , wheat $ 900/ton , and amaranth $ 3,450 / ton) per hectare yield of 1.00 to 2.00 ton , without irrigation.

The great utility that generates amaranth cultivation itself has promoted sustainable development in rural communities by generating investment and job creation in the field, using artisanal technology available.

Amaranth is produced in a short cycle (150-180 days, depending on species and variety), it also tolerates low and erratic rainfall, moisture needs only at the time of planting until the sprouts appear. The grain amaranth do well with little water, even more, come to grow better in dry and warm conditions.

The total amount of water required by amaranth seed through its life cycle is only 60% of water compared to wheat or barley, so amaranth seed is an ideal crop for dry regions.

Given this reality, other governmental and nongovernmental organizations in Mexico and some countries of the world have found potential industrial uses of amaranth as a vegetable, ornamental plant to produce grain and Beddings, which has application in many activities and sectors, such as in the food and beverage industry, chemical, pharmaceutical, in agriculture, livestock sector and in specific niches such as gourmet, nudist and confectionery industries.

Profitability

Amaranth is one of the vegetable "pseudo - cereal" most profitable market in relation to certain traditional crops grown in the central part of Mexico. The commercial price of the amaranth, in recent years, is twice higher than corn, more than three times more beans and wheat. The income per hectare varies between 1.0 and 2.0 ton. (no irrigation), allowing the farmer to ensure an increase in the profitability of land in a 100 to 200 %.

This high trading price of amaranth is due to its high protein (13% wheat, corn 7.68 %, 15.54% amaranth), its energizing powers (energy cal/100g wheat 354 %, 361 % corn, amaranth 439.90 %), its resistance to drought (low humidity demand), adaptability to various production areas, the more potential use and applications.

Knowledge and good land management, farming systems, technology package, market demand, cultural aspects are determining which produce 1.0 to 1.5 tons/ha in the first year of "knowing" the
crop. According to experiences in different regions, such income may rise in subsequent years to keep improving specific techniques for cultivation, the production potential of the land and the availability of resources.

**Subsistence**

The cultivation of amaranth as a viable and profitable alternative activity is framed as a regional economic trigger that helps reduce levels of malnutrition among the most vulnerable sectors of the population. The new farmer forays into this productive activity is improving their nutritional status and their entire family, to adopt as amaranth consumption and by-products, in addition to their normal diet.

One feature that makes it "ideal" to Amaranth for human consumption is that it produces a nutritious grain that is versatile as an ingredient in food. Amaranth grain has a single protein that is high in lysine.

**Competitiveness**

Today the comprehensive utilization of crop amaranth represents a potential to become a competitive productive activity within the national and international markets.

The agronomic and economic characteristics of the crop will fall within the desired range that allows acreage worldwide, ensuring the permanent presence of the product in the market parameters. One of its biggest advantages is the adaptability to different production areas and environments with a very wide variation, ranging from 300 to 2,000 mm of annual rainfall, at altitudes from sea level to 3,000 meters above sea level and soils of medium and low quality yet. The most acceptable for growing annual rainfall is ranging from 400 to 1,000 mm.

Another contributing, their level of resistance to drought, as it needs an amount of water equivalent to 60% of the water needed by the wheat or barley; resistant to common pests and diseases and has a low incidence of these in production yields.

In commercial terms, the cultivation of amaranth represents higher profitability than traditional cereal crops because of its higher market price. The "Strategies for the promotion and production and exports its products amaranth and" established a production cost of $1,917,477, gross income from the sale of production of $3,150,000 and gross profit of $1,232,532.

With regard to the industrialization of amaranth as a competitive activity, the development has been very slow. The transformation of the grain is mostly done by hand, which has meant creating niche markets such as naturopathic and alternative power.

However, the concern of many countries, among them Mexico is developing new consumer products: energy bars, drinks for children, athletes, seniors. Create niche markets: gourmet (vegetable), light, Nudist, organic products, etc. Incorporate protein amaranth products industry snacks, cereals and bread: Barcel, Sabritas, Kelloggs, Maizoro, Bimbo, Tia Rosa, Wonder, etc. That is, an extension of traditional markets, mass and specialized.
Amaranth is a way to diversify their farming company providing a competitive advantage in the market. Interestingly, most of the world’s population is fed by only seven crops. What's more, it has been common practice for the past 15 years for farmers to specialize in certain crops. Amaranth crops farmers provide them the option to increase the diversity of crops, reducing the risk of insect, disease and weed pests become serious problems.

For industrialization Amaranth reach strong levels of competitiveness in the global market is essential to generate multiple technological applications. Thus, high quality protein, modified starches, edible oil, pharmaceutical applications with competitive niche markets in a context of economy of scale.

**Few intermediaries**

Despite being a market undeveloped due to a commercial delay performance and industrialization, by treatment production on small plots for centuries, adding to this little technological research; amaranth producers precisely known supply and demand: there is a direct relationship between the producer and the processor Amaranth, almost completely avoiding the middleman. Fact is not true in the marketing of the vast majority of traditional crops, which increase and abuse the product. Consequently and deductible that both the producer and the processor have better income from their work, and therefore consuming also receives a fair price.

**Biodiversity**

This is efficient in plant photosynthesis process, since it is a C4 plant, carbon fixation mechanism in efficiency exceeding remaining CAM and C3 plants. C4 plants growing route generally respond more quickly and under adverse environmental conditions. Make more efficient use of water consumed to form biomass, compared with C3 plants use. (National Research Council, 1984 Maribel Flores, 1994). Amaranth seeds are small and lenticular-shaped, 1.0-1.5 mm average each seed in diameter and 1,000 seeds weighing 0.6-1.2 g.

Given its agricultural, amaranth is characterized by a short growing cycle, drought tolerant, resistant to pests and diseases or low incidence of these in production yields. It is sown in rain fed and irrigation, preferably. With a high nutritional value and multiple uses and forms of exploitation is considered an alternative crop.

The cultivation of amaranth is done in many countries. Mainly in temperate, tropical and subtropical areas, developed in environments with a very wide variation, ranging from 300 to 2,000 mm of annual rainfall, at altitudes from sea level to 3000 m and in soils of medium and low quality yet. Acceptable annual precipitation: 400 to 1000 mm.

Due to its easy adaptation to climate, soil and heights, diversification of production amaranth has seen some development.

For example, many species of amaranth as vegetables grow throughout the tropics and East Asia, although only A. tricolor has been extensively cultivated, especially in south China. A. cruentus is used as an African leafy vegetable but is actually a grain amaranth probably introduced from
Central America. Is also a popular herb pot (Martin and Telek, 1979), whereas A. caudatus, A. gracilis, A. graecizans, and A. spinosus are native foods in Mozambique.

In the Americas amaranth cultivation is significant. From Canada to Argentina planting this plant are recorded. Mexico is a producer par excellence and is pushing to amaranth and its products, under the concept of “product - country.”

Peru, considered one of the major producers of this “pseudo - cereal”, has cultivated a total of 7,300 tons in 1998 in the Andean valleys at an altitude of 3,000 to 4,000 m.

Like the United States and Canada have developed growing amaranth for both research and commercial purposes. It is estimated that in Canada have come to plant up to 150 acres of this crop.

Retains commercial value

For its nutritional, agronomic and economic qualities amaranth retains its market value in both the Spring - Summer season (PV) and the production period from November to January. That is, throughout its life cycle (150 to 180 days, depending on the species and variety). In production periods, November to January, the kilogram comes amaranth trading between 3.50 and 5.5 pesos MN, put on the field. Meanwhile, the season in the months of June to August, this can be up to 22.00 pesos MN.

The commercial value of amaranth has always been high, relative to traditional grains. The value of the grain varies, but on average is twice the market price of beans (about $30 to $40.00 kg amaranth in Querétaro). The joy of 10x15cm bar was $4.00 and in health food stores trapping ¼ kg amaranth amounted to $9.50, ie $38.00 kg.

It should be stressed that gardening can make several plantings throughout the year, scheduling various harvest time grain or cut foliage and vegetables, which adds a higher profit margin, the level of performance doubled.
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