Importance of Chia (*Salvia hispanica*) Cultivation in Indian Agriculture

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ABSTRACT

In recent days with increase in the health awareness throughout the world, it demands for health benefit food, by using these foods it may prevent many diseases (diabetes, obesity and cardiovascular) in the globe. Chia as a domesticated almost 4,500 years ago in Mesoamerica and it was used as food and medicine. Chia seed is composed of high dietary fiber, ash, protein, lipids, carbohydrates, minerals, vitamins, antioxidants and also contains high amount essential fatty acids of omega-3 and omega-6. It hardly needs less inputs or fertilizer for cultivation. Chia seeds may be added to other foods as topping materials. Successful cultivation of chia crop in India will improve economic condition, living standard and health as a medicine.

INTRODUCTION

In recent time, public health awareness is increasing throughout the world, it demands for functional food with multiple health benefits. The use of medicinal food to prevent diseases such as diabetes, obesity and cardiovascular problems is now gaining momentum in the globe. It was traditionally one of the four basic elements in the diet of Central American civilizations in the pre-Columbian epoch. Today chia is being re-introduced into western diets because of its numerous positive nutritional characteristics.

Chia as a domesticated almost 4,500 years ago in Mesoamerica and it was used as food and medicine. However, just only in three centuries,
it became a forgotten crop and remained an unknown crop for many years (Ayerza and Coates, 2006).

The word "chia" is derived from Nahual - chian, meaning oily. *Salvia hispanica* is one of two plants known as "CHIA" and other one is *Salvia columbariae*. Chia (Salvia hispanica L.) is an annual plant belonging to mint (Lamiacea) family, native to Mexico and Guatemala (Ixtaina et al., 2008). It is considered a pseudocereal, cultivated for its edible and commonly used as food in several countries of western South America, Western Mexico and South Western United States. Today, its cultivation is not only limited to America but is also extended to other areas such as Australia and Southeast Asia (Jamboonsri et al., 2012). It is well known for its nutraceutical value.

According to the Nutritional Science Research Institute (NSRI), chia seed is considered a Dietetic Nutritional Supplement by the Food and Drug Administration in the United States and qualifies as “healthy food” by NSRI’s standards (Motis Tim, 2011). Chia (Salvia hispanica L) has a long history as a food crop, both for humans and animals and is being “rediscovered” for its nutritional value and health benefits. Now a day chia is treated as a newly discovered superfood. CSIR- Central Food Technological Research Institute (CFTRI) Mysore, Karnataka introduced the chia crop to Indian farmers for cultivation for the first time and also began the research work on chia seeds in 2012.

**Importance of seeds**

Chia seed is composed of high dietary fiber (18 – 30 %), ash (4 – 5 %), protein (15 –25 %), fats (30 – 33 %), lipids (31 - 35 %), carbohydrates (26 – 41 %), minerals, vitamins and also contains a high amount of antioxidants (Ixtaina et al., 2008). Higher concentration of essential fatty acids i.e., PUFAs (Poly Unsaturated Fatty Acids) of omega-3 (58 - 64 % of the total lipids) and omega-6 (Valdivia and Tecante, 2015). This fatty acid is found to be very good for health and heart health. These characteristics are helping to rapidly increase its production in worldwide. The ALA (alpha linolenic fatty acid) in Chia seed is the only known essential PUFA omega-3 that the body can't produce on its own. It can fulfil the needs of human health. Omega-3 is found in foods such as chia seed, flax seed, flax oil, olive oil, walnuts, sea fish, spinach, cauliflower, broccoli etc.

Since 2000, India has been witnessing increased use of sunflower oil for consumption purpose, which has resulted in a drastic imbalance of the essential fatty acids with more intakes of omega-6 fatty acids. Recently, chia seed is gaining popularity across the globe because of its higher beneficial nutritional value for health.

**Crop requirement**

It is a short-day flowering plant, indicating its photoperiodic sensitivity and lack of photoperiodic variability in traditional cultivars, which has limited commercial use of chia seeds in tropical and subtropical latitudes until 2012.

The length of growing cycle (100-150 days) is varies based on location and is influenced by elevation also. It hardly needs less inputs or fertiliser. It requires the light to medium clay or sandy soils for cultivation, low maintenance, prefers moderately fertile, well-drained soils, but can cope with acid soils and moderate drought. The plants have purple or white, self-pollinating flower spikes. It is optimally established from 400 to 2500 mt above sea level but conditions below 200 mt elevation is not adequate for its cultivation. It grows in between the latitudes of 20° 55' Northern and 25° 05' Sothern hemisphere.

Crop shows intolerant to freezing in all the crop development stages. It requires the minimum and maximum growth temperatures are 11° and 36°C respectively, with an average of 16-26°C. Crop can be sown after June-July or in October-November. Since crop is little bit drought hardy
in nature, it may notice a smaller number of pest and diseases in the growing seasons.

CFTRI has developed the two high yielding verities of chia (CHIAmpion W-83 and CHIAmpion B-1) crop. These verities yield, white seeds which have higher demand compared to commonly available black mottled seeds in the market. It can yield about 3 quintals an acre for the white variety and about 5 quintals for the black variety.

**Usages**

Chia seeds may be added to other foods as a topping into smoothies, breakfast cereals, energy bars, granola bars, yogurt, tortillas and bread. In 2009, the European Union approved chia seeds as a novel food, allowing chia to be 5 per cent of a bread product's total matter. The gel prepared out of chia seeds, it may be used to replace the egg content in cakes while providing other nutrients also. The chia oil has superior quality than other oils such as soybean oil, sunflower oil, rapeseed oil and olive oil. Chia is the safest, cheapest and the most sustainable source of PUFAs ω-3, as the intake of 25 to 50 g per day is enough to meet the daily demand (Vuksan et al., 2007).

**CONCLUSION**

It is a new crop, but the economic value of chia seed in national and international market is very high. Successful cultivation of chia crop in India will improve economic condition, living standard and health as a medicine. Chia is becoming very popular as Super food all around the world with dramatic increase in cultivation and consumption. With high demand in international and Indian market, it can be cultivated as profitable commercial crop.

**REFERENCES:**


