THE SCIENCE WORLD
A Monthly e Magazine
ISSN:2583-2212
Oct, 2023; 3(10), 2599-2604

Popular Article

Medicinal And Nutritional Benefits of Chia (*Salvia Hispanica* L.)

[1]Shubham Dubey, [2]Lalit Kumar Sanodiya, [3]vipin Patel
[1*3] M.Sc. Scholar, department of agronomy, united university, jhalwa, prayagraj (u.p.).
[2]*assistant professor, department of agronomy, united university, jhalwa, prayagraj (u.p.)

https://doi.org/10.5281/zenodo.10028236

Abstract

Nitrogen takes part in many physiological and and biochemical plant processes and is a structural unit of amino acids, nucleic acids, enzymes and proteins, chlorophyll, and cell wall. Nitrogen is thus universally limiting factor in soil and most important for crops growth and yield, its management in the field level is necessary to obtain high seed yield. Efficient fertilization is necessary in both economic and environmental terms. This minimizes nutrient losses to the environment while producing optimum crop yields.

Keywords: Agronomic practices, Sowing, Irrigation, Insects & disease management, Health Benefits of Chia Seeds.

Introduction

Chia (*Salvia hispanica* L.) seed is a member of the Lamiaceae family and comes from Mexico. Chia seeds have previously been used to make seed oil, mucilage, flour, and entire seeds. Chia seeds are gaining popularity in Mexico as a whole in refreshing drinks, which is increasing their use as an ingredient in food products. As a result, during the past few years, there has been a sharp increase in the number of publications regarding chia seed that describe its usage as a food additive. Due to their outstanding nutritional qualities, including as their high fiber, polyphenol, and fat content, they have been highly regarded **(Zettel & Hitzmann, 2018).**

Chia, also known as *Salvia hispanica* L, is a multipurpose plant whose use as food dates back to 2500 B.C. Between 1500 and 900 B.C., it was a staple food in Mexico after being domesticated in Mesoamerica (Pozo Pozo, 2010). It is an annual herbaceous species in the Labiatae family, and in pre-Columbian times, its fruits were one of the four main traditional food sources. It was rediscovered recently (**Ayerza and Coates, 2009**).

Published: **18.10.2023**

Nutritionally, chia seeds are rich in alpha-linolenic acid (ALA), a plant-based omega-3 fatty acid. The seed contains 25% to 40% oil with 60% of it comprising (omega) ω-3 alpha-linolenic acid and 20% of (omega) ω-6 linoleic acid. The human body badly need both essential fatty acids for healthy life, and they cannot be artificially synthesized. They are also high in dietary fibre, protein, calcium, iron, magnesium, zinc by (**Herman *et al*., 2016**).

Fig: - Data observation of respective research trial

Nitrogen takes part in many physiological and biochemical plant processes and is a structural unit of amino acids, nucleic acids, enzymes and proteins, chlorophyll, and cell wall. The main problem is the unequal ripening of the central inflorescence compared to the side shoots that stay green. However, waiting until all seeds are mature rises the risk of seed loss due to shattering problems, damage from birds, and abiotic factors like rain and wind. Chia is an interesting option, which has been illustrated as being drought resistant while maintaining high growth under reduced water availability. while in Mexico, 68 kg of nitrogen per hectare, however, recent crops already use quantities greater than 100 kg /ha of nitrogen. Chia (*Salvia hispanica* L.) is a plant of the *Lamiaceae* family native to Mexico and Guatemala. This crop was cultivated by pre-Columbian communities, and it was the third most important economic source only surpassed by corn (*Zea mays* L.) and beans (*Phaseolus vulgaris* L.). Chia seeds were valued for food, medicine and oil. With Spanish contact and colonization, however, cultivation of the species diminished sharp. **(Ixtaina *et al*., 2010).**

Official Website
www.thescienceworld.net
thescienceworldmagazine@gmail.com
Published: **18.10.2023**

Health Benefits of Chia Seeds

Magnesium and phosphorus are two elements found in chia seeds that are essential for maintaining healthy bones. Additionally, one ounce of the seeds has 18% of the daily recommended calcium intake, which is necessary for strong bones, muscles, and nerves. Chia seeds have more calcium than dairy products gram by gram.

1. **Rich in Nutrients:** Chia seeds are packed with essential nutrients, including fiber, protein, omega-3 fatty acids, antioxidants, vitamins (such as vitamin B, vitamin D, and vitamin E), and minerals (including calcium, magnesium, phosphorus, and potassium).
2. **High in Dietary Fiber:** Chia seeds are an excellent source of dietary fiber, which can aid digestion, promote a feeling of fullness, and help regulate blood sugar levels. The soluble fiber in chia seeds can also contribute to lower cholesterol levels.
3. **Heart Health:** The omega-3 fatty acids in chia seeds, particularly alpha-linolenic acid (ALA), can help reduce the risk of heart disease. They may lower blood pressure, reduce inflammation, and improve overall cardiovascular health.
4. **Weight Management:** Due to their high fiber content and ability to absorb water, chia seeds can help control appetite and contribute to weight loss or weight maintenance when incorporated into a balanced diet.
5. **Blood Sugar Control:** Chia seeds have a low glycemic index, which means they have a minimal impact on blood sugar levels. This can be beneficial for individuals with diabetes or those looking to manage their blood sugar.
6. **Bone Health:** Chia seeds are a good source of calcium, phosphorus, and magnesium, all of which are essential for maintaining strong and healthy bones.
7. **Digestive Health:** The fiber in chia seeds supports a healthy digestive system by promoting regular bowel movements and preventing constipation.
8. **Hydration:** Chia seeds can absorb up to 10 times their weight in water, making them a valuable addition to hydration strategies, especially for athletes. They can help maintain electrolyte balance and prolong hydration during physical activity.
9. **Antioxidant Properties:** Chia seeds contain antioxidants, such as quercetin, chlorogenic acid, and caffeic acid, which help protect cells from oxidative damage and reduce the risk of chronic diseases.
10. **Omega-3 Fatty Acids:** Chia seeds are one of the best plant-based sources of ALA omega-3 fatty acids. These fats are associated with brain health and may have anti-inflammatory effects.
11. **Skin Health:** The combination of antioxidants, omega-3s, and minerals in chia seeds can contribute to healthy skin by reducing inflammation and promoting tissue repair.

Official Website
www.thescienceworld.net
thescienceworldmagazine@gmail.com
Published: **18.10.2023**

Varity' CHIAmpion W-83' crop variety was manually sown during the second fortnight of July and harvested during the first fortnight of November, etc.

CLIMATE

Chia seeds are a popular superfood known for their nutritional benefits, and they can be grown in various climates. However, they have specific requirements for temperature, rainfall, and soil conditions. Here's an overview of the climate requirements for chia seed cultivation.

Temperature: Chia plants (*Salvia hispanica*) thrive in moderate to warm temperatures. They are typically grown in regions with average temperatures ranging from 60°F (15°C) to 95°F (35°C). Chia plants are sensitive to frost and cannot tolerate freezing temperatures.

Rainfall: Chia is a drought-tolerant crop and can grow in arid or semi-arid regions. It prefers well-distributed rainfall or irrigation during its growing season. However, chia can also adapt to regions with as little as 300 to 600 millimeters (12 to 24 inches) of annual rainfall.

Soil: Chia plants prefer well-draining soils. Sandy or loamy soils with good aeration and organic matter content are ideal. Soil pH should be in the range of 5.0 to 8.0 for optimal growth. Chia plants that are mature do not tolerate damp soils during growth, however chia seeds that have been sown need moisture for seedling establishment.

Growing Season: Chia seeds are typically sown in the spring or early summer when temperatures are warm and there's adequate sunlight. The growing season lasts for several months, depending on the local climate.

Land preparation: Choose a well-drained field with good soil fertility. Sandy or loamy soils with good organic matter content are ideal for chia cultivation. Ensure that the selected site receives adequate sunlight, as chia plants require plenty of sunlight to grow and produce seeds.

Soil Testing: Conduct a soil test to determine the pH and nutrient content of the soil. Chia plants thrive in soils with a pH between 5.0 and 8.0. Based on the soil test results, amend the soil as needed to ensure proper pH and nutrient levels. This may involve adding lime to raise pH or adding organic matter or fertilizers to address nutrient deficiencies.

TIME OF SOWING

Winter is the ideal time to plant and grow chia seeds and the very early spring, because it is considered as the short-day plant and cannot grow in long day season. But they cannot tolerate frost and snow.

Fertilization: Apply any necessary fertilizers based on soil test recommendations or the nutrient requirements of chia. Balanced fertilization can promote healthy plant growth and seed production.

Official Website
www.thescienceworld.net
thescienceworldmagazine@gmail.com
Published: **18.10.2023**

Insects & disease: It is possible for your chia seeds to become infested with bugs. This is because bugs and other pests tend to be attracted to cool dark places, such as your pantry. If you notice bugs, eggs, or any other type of pests have invaded your bag of chia seeds, throw them out immediately.

POPAGATION

Growing chia plants from seeds might be the best work; simply prepare the soil for crop, scatter the seeds over it, prick them gently, and then cover them with dirt. Chia seeds are propagated from both seeds and seedlings. Chia seeds should be watered often; they begin to sprout in 7 to 10 days. Thin the seedlings as they develop once they reach a height of 7 to 10 cm and have 5 to 6 pairs of genuine leaves.

SEED RATE

Typically, 2.5 to 3 kg per acre area sown.

IRRIGATION

Chia crop should be irrigated frequently for better yields, in chia plantation; the plan may need, from one to five irrigation per growing season, depending on climatic conditions and rainfall

HARVESTIN:

Plant starts yielding by 100-140 days after plantation. Harvesting is done during winter month as the plant become dormant.

Store the Chia Seeds: Once you have separated the seeds from the flower heads and any remaining debris, store the chia seeds in airtight containers. Store the containers in a cool, dry place away from direct sunlight. Proper storage helps maintain the freshness and quality of the seeds.

CONCLUSION

The findings of present study showed that application of treatment combination performed better of growth and economy which was found to be more productive and economically viable. Since the finding are based on the research done in one season. Further trials are needed to confirm more precise results.

References:

Freitas, J. H. E. S., de Santana, K. V., do Nascimento, A. C. C., de Paiva, S. C., de Moura, M. C., Coelho, L. C. B. B., & Napoleão, T. H. (2016). Evaluation of using aluminium sulphate and water-soluble Moringa oleifera seed lectin to reduce turbidity and toxicity of polluted stream water. *Chemosphere*, **163**: 133-141.

Herman, J. P., McKlveen, J. M., Ghosal, S., Kopp, B., Wolson, A., Makinson, R., & Myers, B. (2016). Regulation of the hypothalamic-pituitary-adrenocortical stress response. *Comprehensive physiology*, **6**(2): 603.

Inamullah, S. I., Ayub, M., Khan, A. A., Anwar, S., and Khan, S. A. (2012). Response of common buckwheat to nitrogen and phosphorus fertilization. *Sarhad J. Agric*., **28**(2): 172-178.

Ixtaina, V. Y., Vega, A., Nolasco, S. M., Tomás, M. C., Gimeno, M., Bárzana, E., & Tecante, A. (2010). Supercritical carbon dioxide extraction of oil from Mexican chia seed (*Salvia*

Official Website
www.thescienceworld.net
thescienceworldmagazine@gmail.com
Published: **18.10.2023**

hispanica L.): Characterization and process optimization. *The Journal of Supercritical Fluids*, **55**(1): 192-199.

Kirruti, J. S., Mburu, M. W., & Njoroge, D. M. (2021). The Effect of Drying Processes on the Nutritional and Phytochemical Levels of Chia Leaves (*Salvia hispanica* L.) at Different Stages of Growth. *European Journal of Agriculture and Food Sciences*, **3**(6): 68-75.

Maruti, Hulihalli, U. K., and Arvind K. B. N. (2018). Production potential of buckwheat (*Fagopyrum esculentum*) as influenced by genotypes and fertilizer levels in Northern transition zone of Karnataka, India. *International journal of current Microbiology and Applied Sciences*, **7**(9): 537-545.

Zettel, V., & Hitzmann, B. (2018). Applications of chia (*Salvia hispanica* L.) in food products. Trends in Food Science and Technology, 80, 43–50.

Ayerza R, Coates W, 2009. Influence of environment on growing period and yield, protein, oil and linolenic content of three chia (*Salvia hispanica* L.) selections. *Ind. Crops Prod.* 30:321-4