

Super food - rich in proteins and fibre and low in fat

Fox nut

Generic Name : *Euryale ferox*

Family : *Nymphaeaceae*

Fox nut, also known as Makhana, is a nutritious snack derived from the seeds of the lotus plant. It is low in calories, fat, and sodium and is considered a good source of protein, carbohydrates, fibre, and various essential minerals like magnesium, potassium, and phosphorus. It offers a distinct flavour, a satisfying crunch and aids digestion, weight management and supports heart health. It exhibits anti-inflammatory and antioxidant properties, which help reduce inflammation and the effects of oxidative stress. It is gluten-free and suitable for individuals with gluten intolerance or celiac disease. It is used as a topping for desserts, yogurt bowls, smoothies, and breakfast cereals. Besides this, as it is high in thiamine content and helps in aiding cognitive function, the demand for makhana is increasing across



Makhana

Know your Favourite *Fox Nut*

Preface

Fox nut (*Euryale ferox*), an aquatic crop of the Family Nymphaeaceae commonly known as *MAKHANA*, is unique, highly nutritious, non-cereal food cultivated in flood prone zone of north Bihar, lower Assam, and part of Bengal. It is commonly known as *Makhana* or Gorgon nut or Fox nut, and grown in stagnant perennial water bodies like ponds, land depressions, oxbow lakes, swamps and ditches. *Makhana* seeds are also called as Black Diamond. The seeds of *Makhana* are popped and eaten as roasted as well as used in preparation of various kind of sweets and recipes. It has nutritional and medicinal properties and there is a great export potential of this crop.



Fox nut



Water chestnut and Barseem cultivation in Makhana

Climate and Morphology

Fox nut (*Euryale ferox* Salisb) is a plant of tropical and subtropical climate. For its proper growth and development, the conducive range of air temperature is 20 to 35°C, relative humidity 50%-90% and annual rainfall of 100-250 cm, organically reach water bodies with less than 50% water transparency. An important aquatic herb, prickly water plant with gigantic floating nature leaves of a size of 1-2 m, and these leaves are born on 3-5 feet long petioles, green in upper and purple in lower side, thorny in both side of leaf even in entire plant. It grows well in stagnant water of 0.2-2 m depth, with thick rhizomatous stem, deeply rooted in cluster form in sediment.



Effect of makhana based cropping systems on fertility status of soil.

Makhana plants contain

- 0.31% nitrogen (N),
- 0.48% phosphorus (P),
- 0.40% potassium (K),
- 2200 mg/kg iron (Fe),
- 1000 mg/kg manganese (Mn),
- 8.0 mg/Kg copper and
- 105 mg/Kg zinc (Zn).

While the seeds of Makhana contain

- 1.67% nitrogen (N)
- 0.40% phosphorus (P)
- 0.12% potassium (K)
- 960 mg/kg iron (Fe)
- 40 mg/kg manganese (Mn)
- 12.0 mg/Kg copper and
- 125 mg/Kg zinc (Zn)

Makhana cropping adds 7.0 t/ha/yr (Dry weight basis w/w) biomass to the soil which significantly helps in sustainable management of soil. On average, *Euryale ferox* contribute 34.35 kg/ha of Nitrogen, 56.04 kg/ha Phosphorus, 53.07 kg/ha Potassium, 27.26 kg/ha Iron and 12.31 kg/ha Manganese in the soil system.

Makhana-chestnut-berseem cropping system appreciably increased the nutrient status of soil over other makhana-based cropping system alone.

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