

---

**POPULAR ARTICLE**

**Potential uses and nutritional value of Niger crop**

A.R.G. Ranganatha<sup>1</sup>, M.Y.Dudhe<sup>2</sup>

**1. ICAR-Project Coordinating Unit (PC Unit) for Sesame and Niger Jawaharlal Nehru Krishi**

**Vishwa Vidyalaya (JNKVV), Jabalpur, 482004 Madhya Pradesh, India**

**2. ICAR-Indian Institute of Oilseeds Research, Rajendranagar Hyderabad, 500030 Telangana India**

**Corresponding authors email: argranga@gmail.com**

Manuscript received: October 16,2025; Decision on manuscript, October 25,2024; Manuscript accepted: November13, 2025

---

Niger (*Guizotia abyssinica*) is a resilient, minor oilseed crop grown for its nutritious seeds, rich in oil (32-40%) and protein (18-24%), used for cooking, birdseed, and as a base for perfumes, with its cake serving as valuable cattle feed; it thrives in rainfed conditions, tolerates poor soils, and is cultivated in Africa and India, particularly in tribal regions, supporting local economies and biodiversity.

**Cultivation, origin, geography, key characteristics and uses**

Seeds yield high-quality oil, often used for culinary purposes, lighting, and cosmetics. Seeds provide protein, oil, and are a good source of nutrition for humans and animals. Oil cake is a great protein supplement for milch cattle; seeds are a popular birdseed globally; plant used for green manure. Tolerant to pests, diseases, wild animals, and drought, making it ideal for marginal lands. Native to the Ethiopian highlands. India and Ethiopia are major cultivators, with India leading in area, production, and export. Grows well under rainfed conditions, requiring moderate rainfall and thriving on light black or brownish loam soils. **Indian states producing niger** include Madhya Pradesh, Odisha, Maharashtra, Karnataka, and Chhattisgarh.

**Economic:** Supports tribal economies, especially in India.

**Environmental:** Good for soil conservation and supports pollinator diversity, making it a sustainable option.

**Spice:** Used in chutneys and pickles (called karale, uchellu, veri nuvvulu in different regions).

**Culinary:** Oil used for cooking; seeds added to dishes.

**Feed:** Oil cake is a protein-rich feed for dairy cattle.

**Nutritive values at glance and key nutritional highlights (per 100g, approximate)**

Niger seeds are a nutrient-dense oilseed, packed with healthy fats (oleic, linoleic acids), high protein (around 24%), significant fiber (11%), energy (over 500 calories per 100g), and rich in minerals like calcium, iron, phosphorus, and magnesium, plus beneficial antioxidants and B vitamins, making them great for bird feed and human nutrition, especially for bone health and energy.

**Calories:** ~515 kcal

**Fat:** ~39 g (high in unsaturated fats like linoleic acid)

**Protein:** ~24 g

**Fiber:** ~11 g

**Minerals:** High in calcium (300% DV), iron (57% DV), phosphorus, potassium, magnesium

**Vitamins:** Contains thiamine, riboflavin, niacin (B vitamins)

**Antioxidants:** Rich in phenols and flavonoids

**Benefits and uses of niger seeds**

- **Energy source:** High caloric and fat content provides sustained energy, great for birds in winter.
- **Digestive health:** Fiber promotes healthy digestion.
- **Bone health:** Calcium and phosphorus support strong bones.
- **Heart health:** Omega fatty acids contribute to cardiovascular wellness.
- **Gluten-free:** Suitable for gluten-free diets.

**Nutritional value comparison**

Nutritionally, niger seeds are comparable to other oilseeds, offering a substantial profile of energy, protein, and essential minerals, with variations depending on the specific variety and growing conditions. The oilseeds are all highly nutritious, but they differ in their primary nutritional strengths, such as protein, fat, and specific mineral content. Sesame seeds are generally highest in calcium, while niger seeds are an excellent source of iron and phosphorus, and sunflower and safflower oils are high in healthy unsaturated fats. Here is a nutritional value comparison of niger seed, sunflower seed, sesame seed, linseed (flaxseed), safflower seed, mustard seed, and soybean based on approximate values per 100g serving:

**Table1:Nutritional value of the oilseeds crops**

Nutrient	Raw soybeans	Sunflower seed	Sesame seed	Linseed (flaxseed)	Niger seed	Safflower seed	Raw mustard greens
<b>Calories/energy ((kcal)</b>	432-446	570-620	573-584	534	515-520	356	541
<b>Protein (g)</b>	36-43.2	19.8-21	17.7-18	18-18.3	24	~26	20-34.6
<b>Total fat (g)</b>	19.5-20	51-52.1	49.6-50	42-42.2	39-40	16.5-38	25.4-39.7
<b>Carbohydrates (g)</b>	15.7-20	~20	~20-23	~29	~11-15	~10-15 g	4.7 g
<b>Fiber (g)</b>	15.7	8.6-11	11.8-14.5	28.8-29	11	35	~2
<b>Omega-3 (ALA) (g)</b>	9	-	-	~20-23 (very high)	-	-	-
<b>Omega-6 (LA) (g)</b>	51	72	~21	-	~33	71-79	12-18
<b>Calcium (mg)</b>	277	~78	~1100-1780	~200-250	~300-470	~50-80	115
<b>Iron (mg)</b>	15.7	~5	~12	~5.7	~10-57	~2-4	1.6
<b>Phosphorus (mg)</b>	704	~660	~740	~460	~660-870	~400-600	58

### Key nutritional highlights

- **Protein powerhouse:** Soybeans are the clear leader in protein content among these options, making them an excellent plant-based protein source.
- **Fiber champion:** Linseed (flaxseed) is exceptionally high in dietary fiber, which is crucial for digestive health.
- **Essential fatty acids**
  1. **Omega-3:** Linseed (flaxseed) stands out as a top source of alpha-linolenic acid (ALA). Soybeans also contain an appreciable amount of linolenic acid.
  2. **Omega-6:** Safflower and sunflower seeds contain very high levels of linoleic acid (Omega-6). Niger seeds also have high polyunsaturated fatty acid content, primarily linoleic acid.
- **Mineral rich:** Sesame seeds are particularly rich in calcium, with up to 1787 mg/100g, making them beneficial for bone health. Niger seeds are also a significant source of calcium and iron.
- **Fat content:** Sesame and sunflower seeds are among the highest in total fat, which contributes to their high calorie count, but these fats are generally healthy unsaturated fats.
- **Vitamins and antioxidants:** Niger seed oil contains much higher levels of tocopherol (Vitamin E) and Vitamin K1 compared to sunflower and safflower oil, which contributes to its stability and nutritional benefits. All are generally good sources of various vitamins and antioxidants.

### References

1. Deme T, Haki GD, Retta N, Woldegiorgis A, Geleta M. 2017. Mineral and anti-nutritional contents of Niger seed (*Guizotia abyssinica* (L.f.) Cass., Linseed (*Linum usitatissimum* L.) and Sesame (*Sesamum indicum* L.) Varieties grown in Ethiopia. *Foods*. 2017 Apr 1;6(4):27.
2. Sarwar F., M. H. Sarwar, M.Sarwar, N.A. Qadri and S. Moghal 2013. The role of oilseeds nutrition in human health: A critical review Muhammad . *J. Cereals and Oilseeds.*, 4(8), pp. 97-100
3. Gunstone F. 2011.. *Vegetable Oils in Food Technology: Composition, properties and uses*. John Wiley & Sons; Hoboken, NJ, USA: 2011.
4. Hussain S., Anjum F.M., Butt M.S., Sheikh M.A. Chemical composition and functional properties of flaxseed (*Linum usitatissimum*) flour. *Sarhad J. Agric.* 2008;24:649–653.
5. Karnika, A. Kawatra, J. Verma, S.Rani, Deepankar, S.Kumar 2022. Nutrition evaluation of oilseed Meals. *J. Agric. Res. Technol.*, Special Issue (1) : 045-056.