

PRESENT STATUS OF NUTRITIVE CEREAL: AMARANTHUS GRAIN IN AGRICULTURAL SCENARIO

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ABSTRACT

Cereals are the primary carbohydrate source for majority of the global population, with minor cereals, a category of neglected crops, playing a significant role as a substitute for rice or wheat. But the major cereals alone can not meet the demand of the growing population as these crops are high in calories and are deficient in protein and other important elements. Hence, a better replacement for them are the minor cereals. A large number of traditional crops are known, but have received little attention in the last century. Amaranth is such an underutilized pseudo cereal that is of particular interest because of its balanced amino acid and micro-nutrient profiles. Additionally, the C₄ photosynthetic pathway and ability to withstand environmental stress make the crop a suitable choice for future agricultural systems.



KEYWORDS: Millets, Amaranth, Pseudo cereal

INTRODUCTION

Minor cereals are a range of underutilized crops having excellent nutritional properties. Such crops as foxtail millet, sorghum, oats and barley have made significant contributions to agriculture. They can act as an alternative to rice or wheat, the main carbohydrate source as of today. They are considered as resistant to different abiotic stresses and with the development of irrigation facilities these crops are now being grown in many regions (Biswas *et al.*, 2021). Also, there is a rapidly growing global market for diverse and healthy foods, and most of these minor cereals are recognized as healthy foods. They are an excellent source of carbohydrates, protein and B-group vitamins, including folate and minerals, such as iron, magnesium, copper, phosphorus, and zinc (Sanyal *et al.*, 2021). Small millets have better water use efficiency, nutrient use efficiency, lower global warming potential (GWP), better resistance to biotic and abiotic stress and are more nutrient-rich than major cereals (Muthamilarasan *et al.*, 2021).

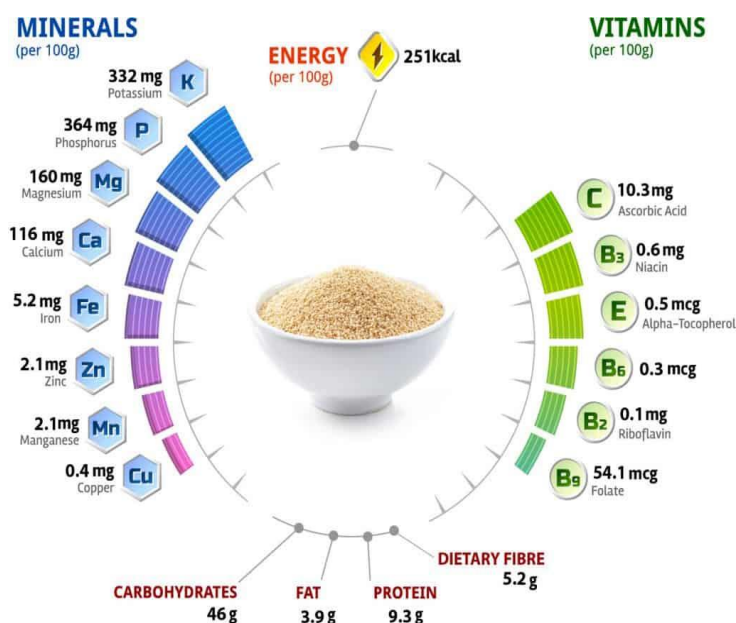
AMARANTH AS A PSEUDOCEREAL

Amaranthus sp., a pseudo-cereal, is one such crop that is nutritionally superior to many common types of grain and meets majority of the requirements of current diets. The use of amaranth species in food

formulations will broaden the range of food products available on the market. Extensive scientific research has been conducted on the high nutritional quality and possible functioning of amaranth-based food products (Bodroza *et al.*,2022).

NUTRITIONAL VALUE OF AMARANTHUS GRAIN

Amaranthus is a highly nutritious plant; both the grain amaranth and the leaves are used for human and animal food. The nutritional value and chemical composition of the species vary slightly. Amaranth leaves have been demonstrated to be great sources of protein, with the highest accumulation occurring during the flowering phase. Amaranthus is known for its nutritional value from early civilization and it is also referred to as “Ram dan” in India.



Source: [Health benefits of Rajgira \(Ramdana\) or Amaranth and How to Eat It \(happybharat.com\)](#)

HEALTH – BENEFIT ASPECTS OF AMARANTHUS SP.

When compared to true cereals, amaranth grain is a highly nutritious pseudocereal with a higher protein content (Sousa *et al.*, 2012). It is a reasonably well-balanced diet with medicinally beneficial functional characteristics. The health benefits include lower plasma cholesterol levels, immune system stimulation, anticancer activity, lower blood glucose levels, and improved hypertension and anemia conditions. It has also been found to have anti-allergic and antioxidant properties.

STATUS OF AMARANTHUS CULTIVATION IN INDIA

The Grain of God, The Royal Grain and there are numerous names for amaranth. But its name derives from the Greek word Amaranthos meaning, "that which does not wither". Amaranthus comes in a variety of forms, including green vegetables and grains. In India, a type of amaranth grain is called Rajagra or Ramdana (Maurya *et al.*, 2018). It takes less than a month to harvest and are simple to grow. It can be started at any time of year, but it cannot withstand frost. Even though amaranth is frequently grown in the summer, the optimal time to do it is during a light winter. A lot of water is necessary for amaranth. Plants need damp soil to grow well (Huerta *et al.*, 2009). Farmers typically like to water the plants twice a day with sprinklers. Amaranth on an acre can produce 4-6 tonnes of leaves. This is determined by the seed's quality, the plant's health, and the soil's nutrition.

PROS AND CONS OF AMARANTHUS CULTIVATION

Benefits	Limitations
Faster return on investment	Limited market
Quick start to harvest	Poor shelf life
Can be grown throughout the year	-

CONCLUSION

Minor cereals, such as foxtail millet, sorghum, oats, barley, and amaranth, offer excellent nutritional properties and are emerging as alternatives to traditional carbohydrate sources like rice and wheat. These crops have shown resilience to abiotic stresses and are being cultivated in various regions with the development of irrigation facilities. Minor cereals are recognized as healthy foods due to their high content of carbohydrates, proteins, B-group vitamins, and minerals. Among these cereals, amaranth stands out as a pseudocereal with exceptional nutritional value. Extensive scientific research has highlighted its high protein content and potential health benefits, including cholesterol reduction, immune system stimulation, anticancer activity, and improved blood glucose levels. In India, amaranth is known as Rajagra or Ramdana and can be grown throughout the year with a relatively quick harvesting period. While amaranth cultivation offers advantages such as faster returns on investment and year-round cultivation, there are limitations such as limited market opportunities and a shorter shelf life. Nonetheless, the cultivation of amaranth holds promises for meeting dietary needs and promoting sustainable agriculture.

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