

Amaranth Millet (Chaulai): Economic Empowerment of Self-Help Groups Women by Product Development, Value Addition, Packaging and Marketing of Chaulai Ladoo- A Case Study of Medanpur Prasad Makers Jakholi Block Rudraprayag Uttarakhand

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ABSTRACT

Millets are not only regarded as a super food, but also as a resilient crop, during the International Year of Millet in 2023. Various aspects of economic, environment and social sustainability are part of the wide spectrum of benefits connected with millet. In the Jakholi block of Rudraprayag district, Uttarakhand, this research paper was carried out in a primary survey. The study has also taken the help of a number of secondary sources. The researchers also carried out a case study with 60 women in 6 Self Help Groups using interviews to identify economic empowerment of women through the Amaranth millet production, and by studying the product made from Amaranth (Chaulai) millet. Percentage method was used for data analysis, tables and graphs were used for presentation and tabulation of data. The study revealed that the production of Amaranth (Chaulai) had largely stopped in the area, but after joining the Self-Help Group in the year, 2016-17, the women started making amaranth laddoo and also started the work of their packaging, labelling and marketing. There are 4 laddus in 1 packet and price of 1 packet is Rs. 50. They are selling these laddus named as Shree Kedarnath Mahaprasadam. The shelf life of these laddus is up to 2 months from manufacturing. The Amaranth laddoo made by women has calories 374 Kcal, saturated fat 8%, total carbohydrate 24%, calcium 12%, iron 42%, Vitamin C 5%, Jaggery 25% and protein 15 grams which is beneficial for health point of view. Each woman of Medanpur Prasad Makers earns 10,000 rupees per month from this income generated activity. Study revealed that the production of Amaranth Chaulai led to economic empowerment as well as social empowerment of women.

Key Words : Women-Empowerment, Economic-Empowerment, Self-Help Group Millet, Chaulai (Amaranth) product Development

INTRODUCTION

Amaranth (*Amaranthus Graecizans* or *Amaranthus caudatus* L.) known as Chaulai, Ramdana, Rajgira and Marsa in Uttarakhand and other states of India. A mainstay of the Aztec diet, amaranth is hailed as a “superfood” due in part to its high protein content and harmonious composition of amino acids. When it comes

to nutrient content, amaranth outperforms a lot of other crops like rice, corn, and wheat. Furthermore, the amount of lysine is double that of rice and three times that of maize. This crop has received a lot of praise for its gluten-free qualities in addition to its good agronomic qualities. In addition to being advantageous for those with gluten allergies and vegan diets, it may also deliver high-quality proteins and antibacterial properties to packaged foods

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(Adhikary *et al.*, 2020). The nutritious qualities of amaranth grain and leaves have made them popular. Grain protein concentration is approximately 15%, and its amino acid composition is well-balanced with a high lysine content. While leucine is the first limiting amino acid in amaranth and is also abundant in most of our major food sources, lysine is the limiting amino acid in most cereal crops, including wheat, sorghum, and rice. However, lysine is abundant in amaranth. Thus, when combined with another cereal, amaranth is regarded as a complete protein source. Since *Amaranthus* is a gluten-free grain, someone with celiac disease (CD) can eat it. The gluten protein causes CD, an inflammatory or autoimmune illness that affects the small intestine and can cause weight loss, exhaustion, malabsorption, nausea, and diarrhoea. One of the best additives to improve the nutritional content of gluten-free food products is amaranth. Compared to other gluten-free crops, amaranth has 2-3 times more macronutrient content than wheat. Amaranth seed contains more protein than both grains and legumes. In addition, lysine and starch content in amaranth are higher than in other cereals. Amaranth is a well-known source of dietary Fiber due to its monosaccharide composition, and it has the potential to be a substantial source of this Fiber.

A few decades ago, the plant genus *Amaranthus* was recognized as one of the most promising ones, offering potential sources of unsaturated oil, high-quality protein, and other essential elements. Since then, a great deal of study has been done on different *Amaranthus* species, and it has been growing quickly. Numerous studies have also been published. Since then, numerous review articles with a variety of topics have been published, including uses and health effects in addition to botanical, agrotechnological, compositional, biological, chemical, and technological features. The composition, processing, uses, and antioxidant qualities of amaranth are the main topics of this thorough analysis (Venskutonis and Kraujalis, 2013). Amaranth (*Amaranthus* spp.) is an annual herbaceous plant in the *Amaranthaceae* family. It has branched flower stalks (heads) that contain tiny seeds and green, red, or brown leaves. Amaranth, sometimes referred to as king seed (Rajgira) or seed sent by God (Ramdana), is a highly nutritious pseudo-cereal that has a far higher protein content than true cereals. Because it can give a “balanced” protein level when combined with other cereals, amaranth is a popular source of protein. Thus, during the past few decades, there has been a rise

in interest in using amaranth flour in blends with wheat or maize. The *Amaranthus* species, which is sometimes referred to as pigweed or amaranth, is a suitable alternative crop for temperate climes (Singh, 2021). Ancient grains like amaranth, quinoa, and millets, which are mostly grown in poor and undeveloped nations, have the potential to contribute to the fight against food insecurity due to their superior nutritional value and ability to withstand harsh weather conditions (Balakrishnan, and Renée, 2022).

People with hypertension and cardiovascular illness may benefit from amaranth seed or oil; regular ingestion lowers blood pressure and cholesterol levels, enhances antioxidant status and some immunological markers, and reduces pain and inflammation. Amaranth is a helpful supplementary tool for colonoscopy since it may be utilized as a staining material for pre-malignant tumours and colon cancer in humans. Benefits of Amaranth for Health. The increased folic acid content in amaranth may contribute to an increase in haemoglobin levels in the blood, lowering blood sugar and enhancing anti-allergic conditions. Amaranth grain can reduce blood sugar intake and insulin levels by suppressing hunger. This is particularly beneficial for people who are at risk of diabetes because obesity and high insulin levels are two of the “red flags” for the disease. When compared to actual cereals, amaranth grain is a highly nutritious pseudocereal with a higher protein content. It’s a comparatively well-balanced diet with useful qualities that have been demonstrated to offer health advantages. Reduction of plasma cholesterol, immune system stimulation, anticancer activity, blood glucose reduction, and amelioration of anaemia and hypertension are among the health benefits ascribed to it. Furthermore, it has been documented to exhibit antioxidant and anti-allergic properties. This article gives a thorough introduction to amaranth grain with an emphasis on current studies describing its application in clinical settings and potential health benefits.

Self-Help Group: Game Changer for Rural Women:

A Self-Help Group (SHG) is a small, nonprofit organization made up of people who join together to discuss and work for shared socioeconomic goals and needs. These are some of the main attributes and roles of SHGs-Members of Self-Help Groups (SHGs) voluntarily join based on common interests and aims. Usually, members are from the same neighbourhood or community. SHGs normally have between 10 to 20

members, which is a tiny membership size. This guarantees efficient group decision-making, cooperation, and communication. Members hold regular meetings, usually once a week or once a month, where they discuss problems, exchange stories, and decide as a group. Meetings offer a setting for planning, education, and social contact. The promotion of savings and the provision of credit is one of SHGs' main purposes. Regular savings contributions are made by members into a common fund, which is subsequently utilized to lend money to members for a variety of needs, including small business startup or expansion, emergency fund replenishment, and home expenses. Members of SHGs cultivate a culture of solidarity and support for one another. When they are in need or facing a crisis, they help each other emotionally, socially, and occasionally financially. Self-Help Group frequently plan seminars, training sessions, and skill-building initiatives to improve the capacities of its members. Financial literacy, entrepreneurship, health and hygiene, agricultural practices, and women's empowerment are a few possible topics of discussion.

Women Economic Empowerment through Millet for Sustainable Future's:

Millets can be a comprehensive solution with multiple elements for empowering women economically. Particularly in areas where they are historically cultivated, millets provide a sustainable and nutrient-dense food source that can greatly improve livelihoods and food security. They are also very nutritious and resilient to climate change. Millets are rich in nutrients this is known to everyone and along with this, it is also contributing to growth of economy. Women of Rudraprayag district started producing Amaranth by linking it with economy in the year 2018-19. Women are making Amaranth laddus which are being given as prasad to the devotees visiting Kedarnath Temple. Amaranth is also eaten during fasting days; hence it can be consumed as prasad.

Here are some ways that millets can empower women economically like:

Farm Ownership and Decision-Making:

Women can be economically empowered by being encouraged to own land and take part in millet farming decision-making processes. Their agency and economic standing within their families and communities can be improved by giving them access to land titles and making sure they participate in agricultural planning and

management.

Training and Capacity Building:

Women's productivity and income from millet cultivation can be increased by providing them with training programs on sustainable millet farming techniques, contemporary agricultural practices post-harvest handling, and value addition.

Access to Resources:

Women may increase their millet output and profitability by having access to vital resources like high-quality seeds, finance facilities, agricultural inputs, and technology.

Value Addition and Processing:

Encouraging women to participate in value addition and processing tasks like grinding, packing, and making millet-based goods like drinks, snacks, and flour can open up new revenue-generating avenues. This could entail establishing businesses or cooperatives led by women that process millet.

Market Connections and Entrepreneurship:

Women's economic prospects can be increased by assisting them in connecting with local, regional, and global markets for the millet goods they produce. Women can gain even more economic empowerment by being encouraged to start their own businesses and receiving support and training in this area.

Nutrition and Health Awareness:

Women's health can be improved, healthcare costs can be decreased, and productivity can be increased by informing women about the nutritional advantages of millets and encouraging their intake in families.

Policy Support:

Women's economic empowerment through millets can be facilitated by supporting policies that advance gender equality in agriculture, guarantee women's access to land, credit, and markets, and encourage sustainable millet farming techniques.

Research and Innovation:

The economic prospects of women involved in millet farming and related activities can be further enhanced by funding research and innovation projects that aim to

improve millet varieties, production techniques, and processing technologies.

Objectives of the study:

- To identify economic empowerment of women through the Amaranth millet production
- Studying the product made from Amaranth (Chaulai) millet and their Nutrition Values

METHODOLOGY

A case study with 60 women in 6 Self Help Groups of Medanpur Prasad Makers using interviews in the Jakholi block of Rudraprayag district, Uttarakhand, this research paper was carried out in a primary survey and some secondary sources data. Percentage method was used for data analysis, tables and graphs were used for presentation and tabulation of data (Table 1).

Table 1 : Name and Total Number of Members Self-Help Groups

Sr. No.	Self-Help Group	Number of Members in SHG's
1.	Ganga DugdhUtpadak SHG	10
2.	Chandika SHG	10
3.	Binsar Dewta SHG	10
4.	Jai Nagraj SHG	10
5.	Jai Gang Dev SHG	10
6.	Mathiyana Maa SHG	10
	Total	60

Source: Primary Data Collection

RESULTS AND DISCUSSION

Socio-Economic status is a significant variable in study. Because it affects a wide range of outcomes relating to health, education, work, housing, nutrition, well-being, and social mobility, Researchers can better comprehend gaps, pinpoint underlying causes, and guide policies and actions meant to advance equity and enhance social outcomes by taking socio-economic aspects into account. This study result based on 60 women from Medanpur Prasad Makers group from Rudraprayag District who are associated with SHG. Details of their Socio-Economic status is given in the Table 2.

Table 2 shows that most of the women were in the age group of 41-50, whose percentage was 48.33. 91.67% of women in the group were married and 8.33% widow, women who had received education till primary school were more, whose % was 38.33, after that 26.67%

Table 2 : Socio-Economic Status of Women of Medanpur Prasad Makers

General Information of the Self-Help Group Members	
Particulars	Percentage
Age of the Respondents (Years)	
31 to 40	14 (23.33)
41 to 50	29 (48.33)
51 to 60	17 (28.33)
Total	60 (100%)
Marital Status	
Married	55 (91.67%)
Widow	5 (8.33%)
Total	60 (100%)
Educational Qualifications	
Uneducated	16 (26.67%)
Primary	23 (38.33%)
Secondary	18 (30%)
Intermediate	3 (5%)
Total	100%
Type of Family	
Joint	49 (81.67%)
Nuclear	11 (18.33%)
Total	(100%)
Ration Card Status	
BPL	60 (100%)
Residential Status	
Puccha	50 (83.33%)
Semi Kuccha	10 (16.67%)
Total	(100%)
Occupation	
Agriculture	60 (100%)

Source: Primary Data Collection

of the women were illiterate. 81.67% women were form joint families and all women were from BPL category and were primarily engaged in agriculture business.

In the Table 3 gives details of the amount of income earned from amaranth laddus in the last three years from 2021 to 2023 in Rudraprayag district. In the year 2021, rupees 16 lakh was earned from chaulai laddus, in which there was a total increased of rupees 27 lakh in 2022 and earning was rupees 43 lakh, year 2023 earned a total of rupees 65 lakh which is increased by 22 lakhs from last year.

Table 3 : Total Income Earn from Amaranth (Chaulai) Ladoo in Last Three Years in Rudraprayag District

2021	2022	2023
16 Lakh	43 Lakh	65 lakhs

Source: www.nrhm.com and www.amarujala.com 15 may 2023

There are two pictures of Amaranth Millet Seeds captured in study are- before and after Roast



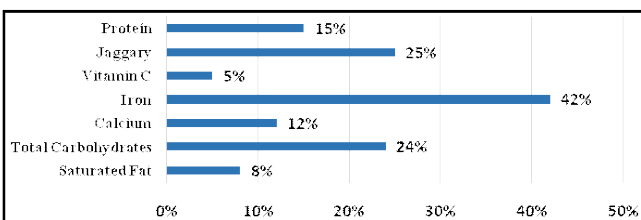
Source: Primary Data, Image: Amaranth Millet Seed (Chaulai/ Rajgira/Ramdana)

Table 4 and Fig. 1 shows that the Amaranth laddoo (Chaulai) made by women has calories 374 Kcal, saturated fat 8%, total carbohydrate 24%, calcium 12%, iron 42%, Vitamin C 5%, Jaggery 25% and it contains protein 15 grams which is beneficial for health point of view. It helps in improving digestion, metabolism, immune system, preventing heart attacks, osteoporosis and controlling diabetes etc.

Table 4 : Amaranth Ladoo made by Medanpur Prasad Makers Jakholi
Nutrient Content of the Nutritious Ladoo

Nutrition	Nutritive Value
Calories	374 kcal
Saturated Fat	8%
Total Carbohydrates	24%
Calcium	12%
Iron	42%
Vitamin C	5%
Jaggery	25%
Protein	15gm

Source: Primary Data Case Study Ingredients: Amarnath pops, Jaggery and Raisins

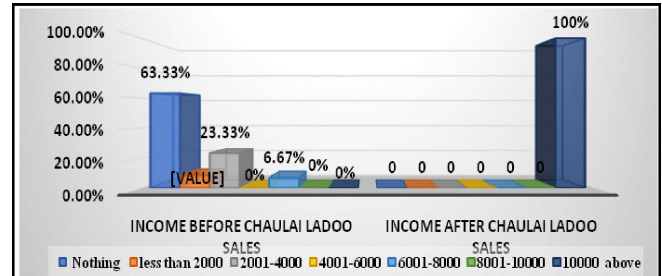


Source: Ganga Dugdh Utpadan Samiti, Medanpur Rudraprayag

Fig. 1 : Amarnath Ladoo made by Medanpur Prasad Makers, Jakholi Nutrients and Nutritive Value (Approx. 100 gm) of Chaulai Ladoo

Fig. 2 shows that there are 63.33% Women had no income before selling Amaranth Chaulai laddus, 8.33 % women earned less than Rs. 2000 per month. 23.33% women earned between Rs. 2000 to 4000 per month and

6.67% women earned between Rs. 6001 to 8000 per month. After making and selling Amaranth Chaulai laddus, per month income of all 60 women increased to above Rs 10000. It is known from these figures that women have become financially empowered after starting the business of Amaranth laddus.



Source: Primary Data Collection

Fig. 2 : Income per month before and after Amarnath Ladoo Sales

There are some pictures of Medanpur Prasad Makers women while Making Chaulai Ladoo due to Survey (Case Study)



Source- Primary Data Collection



Image: Making Amaranth Ladoo



Image: Amaranth Ladoo



Source- Primary Data Collection



Image: Packaging and Labelling of Amaranth Ladoo



In the above pictures Medanpur Prasad Makers women's making, packaging and labelling Amaranth (chaulai) laddu. Along with employment, local products also got a boost: president of Ganga Milk Production association Ghungra Devi told that this time she has prepared about 106 quintals of Amaranth Laddus and Churma and sold them in Kedarnath. In the last 6 month of 2022 she has provided employment to more than 75 women, out of which 60 women are regularly associated with him through the groups formed under NRLM.

Conclusion and Suggestion:

In rural areas, Self-Help Groups (SHGs) are essential for the empowerment of women and communities. In general, self-help groups in rural regions act as a grassroots source of empowerment, resilience, and sustainable development, acting as a catalyst for socioeconomic change. SHG members are encouraged to take up income-generating hobbies outside of their regular jobs. This could involve launching small companies, cooperative farming endeavours, or working on community-based initiatives that bring in money for the organization. SHGs give members especially women opportunities for leadership, decision-making, and involvement in group activities, all of which contribute to the empowerment of its members. Members of SHGs frequently report feeling more confident, having a higher social standing, and having more control over their lives as a result of their membership in the group. To get resources, knowledge, and support for their operations, Self-Help Groups (SHGs) frequently build connections with government offices, non-governmental organizations (NGOs), financial institutions, and other relevant parties.

By launching projects that cater to regional needs and goals, SHGs support more extensive community development. This can entail supporting initiatives related to social welfare, healthcare, education, and environmental preservation.

By putting these tactics into practice, women can gain economic empowerment through millet production, which will help their communities develop sustainably, reduce poverty, and ensure food security. Particularly in rural and underprivileged regions, Self-Help Groups are essential for promoting socio-economic development, empowerment, and community resilience.

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