

DOI No.: <http://doi.org/10.53550/EEC.2022.v28i04.030>

A study on growers of underutilized pulse crop *Chani* (*Cicer arietinum* L.) of Balaghat district, M.P., India

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(Received 22 March, 2022; Accepted 27 May, 2022)

ABSTRACT

Chani or *Chanoli* (*Cicer arietinum*) is a unique small seeded underutilized gram traditionally grown in the Balaghat and some parts of Seoni district of Madhya Pradesh. It is mainly grown for its unique taste and the medicinal properties. The present study was conducted to explore the importance of *Chani/ Chanoli* along with the constraints faced by farmers and their experiences. Ex-post facto research design and purposive random sampling method were used in the present study. Personal interview method was used for data collection. Results show more than half of the *chani* growing farmers were more than 50 years old, 61.67 % of the farmers had 5-10 members in their family, 55.83 % of the farmers are engaged in farming and animal husbandry as their occupation, having small land holding. About 40.83 % and 47.50 % of the farmers had primary level of education and their annual income from farming ranged between Rs. 2,00,000-4,00,000. Farmers also reported that *chani* is not only part of important traditional food but it also has lots of medicinal benefits. It helps to cure arthritis, piles, constipation etc. The low yield of crop, low market price and unavailability of pure healthy seeds were top ranked constraints; while proper market facility, availability of pure healthy seeds and promotional activities to popularize the medicinal and nutritional values of *chani/chanoli* were found to be top ranked suggestions.

Key words : Traditional knowledge, Underutilized crop, *Chani* or *Chanoli*, Constraint, Suggestion, Pulse crop.

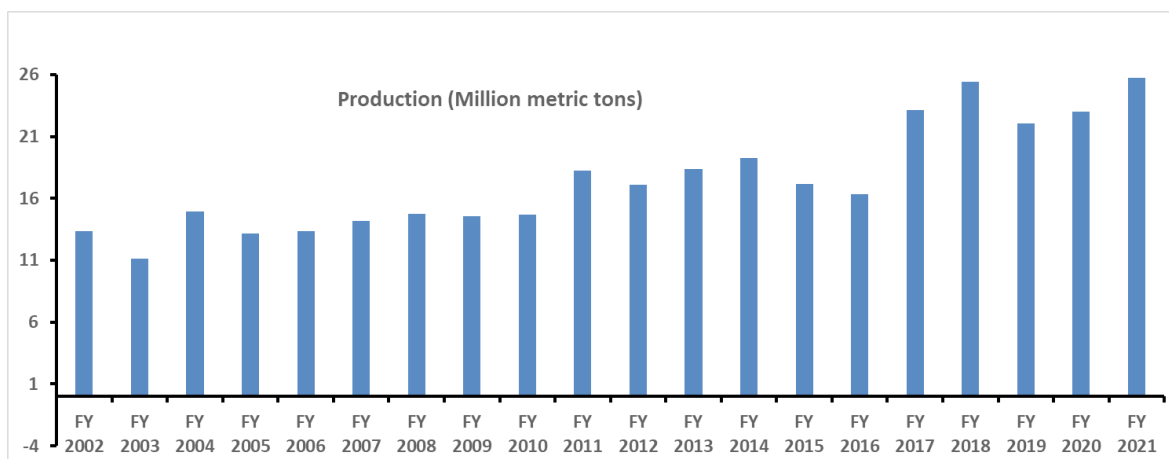
Introduction

In the present scenario agriculture is one of the most vital sources of renewable wealth in the world. Increasing population and fast exhaustion of natural resources put immense pressure to explore the possibilities of underutilized multipurpose indigenous plant species (Sarvade *et al.*, 2014). Ironically, India is one of the most agriculturally diversified country in the world with less number of crop species indentified and commercially fully utilized. It left many plant species unexplored and underutilized for their commercial values.

After independence, India achieved self-suffi-

ciency in cereals production but nutritional security is one the biggest challenge (Sarvade and Singh, 2014; Rai *et al.*, 2021; Patahriya *et al.*, 2022). Pulses are an essential part of Indian diet in both rural and urban areas. It play an important role in nutritional security as they have twice the protein content of wheat and three times the protein content of rice. India has made remarkable progress in enhancing production of pulses during the last 15 years. During 2005-06, the total production of pulses in India was 13.38 million MT, which increased to 25.58 million MT during 2020-21. This shows an impressive growth of 91%.

During 2020-21, chickpea had a lion's share of



(Source: Statista 2021)

49.3% in the total pulses production. Among remaining pulses, pigeon pea contributed 16.2%, moong 10.3%, urad 9.3%, lentil 4.9% and other pulses 9.9%. During the last 15 years, the highest growth in production was observed for moong (178%), followed by chickpea (125%), urad (90%), pigeonpea (51%) and lentil (34%), (Anon., 2021a and Gaur, 2022; Thakur *et al.*, 2009).

Despite all these achievements, there are many plant species still lying unexplored and underutilized. *Chani* is one of them which is popularly known as *Chanoli*. It is one of the unexplored and underutilized member of Leguminosae family. Underutilized crops are such crops where commercial importance and market value is unknown to the public and under-exploited for their potential but their indigenous potential and ethno-botanical importance is well known to local people. In other words those crops, which are neither grown commercially on large scale nor traded widely, may be termed as underutilized crops. These crops are cultivated, traded, and consumed (William and Haq, 2002 and Kunkel, 1984). The Global Facilitation Unit (GFU) for Underutilized species also defines UUC's as, "those plant species with under-exploited potential for contributing to food security, health (nutritional/ medicinal), income generation and environmental services" (Thakur, 2014). Fortunately tribal farm families and local farmers of Balaghat district of Chhattisgarh plain region, Madhya Pradesh engaged in preserving and cultivation of this nearly forgotten pulse crop due to its medicinal and traditional values.

Morphologically *Chani* is off-white pinkish in color and very small in size. Whereas, on nutritional

side it is not only high in protein content but also has number of other medicinal values and used in Indian households since ancient time especially by tribals. It was found that the *Chani* cultivated in the Balaghat region is found to be nutrient rich [protein (19.21) calcium (140) iron (110) zinc (12.8) sodium (89.2) potassium (578) flavinoids (15.65) total phenols (19.48) raffinose (61.2) Ciceritol (45.1) [value presented in parenthesis is in mg/100 g] (Anon. 2022b)].

Chani is one of the traditional pulse crop of Balaghat district. Balaghat name signifies "above the Ghats". The name Balaghat derived from *Barahghat* because it had been divided into number of Ghat regions. Total 151.6 ha area is cultivated under *Chani* production in Balaghat and some parts of Seoni district in Madhya Pradesh which is very low compare to area under cultivation of other pulses in Madhya Pradesh. Although Madhya Pradesh is one of the highest pulse producing state in India but *Chani* is still waiting to get recognition for its medicinal value and traditional importance. *Chani* production has been limited in Balaghat area due to lack of wide awareness, low productivity unexplored medicinal values. It only survived so long due to local traditional importance and Indigenous Knowledge of its medicinal uses among the local people.

Keeping these facts in mind, the present study was conducted on *chani* growers of Balaghat district to know its importance along with constraints faced by the farmers and their suggestions.

Materials and Methodology

The present study was carried out in Balaghat district of Chhattisgarh Plain. Balaghat is popularly

known for its food forest and tribal which make it very unique. Balaghat is known for its traditional knowledge and cultural richness.

Balaghat district is located in the southern part of Jabalpur Division. It occupies the south eastern portion of the Satpura Ranges and the upper valley of the Wainganga River. The district extends from 21°19' to 22°24' North latitude and 79°31' to 81°3' East longitude. The total area of the district is 9245 km². Balaghat district is bounded by Mandla district of Madhya Pradesh to the north, Dindori district to the northwest, Rajnandgaon district of Chhattisgarh state to the east, Gondia and Bhandara districts of Maharashtra state to the south, and Seoni District of Madhya Pradesh to the west. The Wainganga and its tributaries are the most important rivers in the district. The Bagh, Nahra and Uskal rivers are tributaries of the Wainganga (Anon. 2022).

The district is divided into ten development blocks / Tehsils viz, Balaghat, Baihar, Birsa, Paraswada, Katangi, Waraseoni, Lalbarra, Khairlanji, Lanji, Kirnapur. A purposive random sampling method was used for selection of respondents for present study. Total 120 respondents were identified who are engaged in *Chani* cultivation. Ex-

post facto research design was used for the study. Keeping in view, the objectives of the study, the interview schedule was prepared in local language and data collection was done through personal interview method. Simple statistical tools viz. mean, standard deviation, frequency and percentage were used for the data analysis.

Results and Discussion

The result showed that more than half of the *Chani* growers (52.50 %) were more than 50 years old followed by 28.33 % and 13.33 % growers had 40-50 years and 30-40 age, respectively, only 5.83 % growers were from below 30 years age. In case of family size majority of the growers (61.67 %) had 5-10 members in their family followed by 25% had less than 5 members in their family and 13.33 % had more than 10 members in their family. Majority of the growers (55.83 %) engaged in farming + animal husbandry as their occupation followed by 24.17% engaged in farming alone and 14.17% and 5.83 % engaged in farming + business and farming + job, respectively.

Table 1. Personal profile of *Chani* growers of Balaghat district (n=120)

| Independent Variables | Category | Frequency | Percent (%) |
|-------------------------------------|----------------------------|------------|-------------|
| Age | <30 years | 7 | 5.83 |
| | 30-40 years | 16 | 13.33 |
| | 40-50 years | 34 | 28.33 |
| | >50 years | 63 | 52.50 |
| Size of Family | <5 | 30 | 25.00 |
| | 5-10 | 74 | 61.67 |
| | >10 | 16 | 13.33 |
| Occupation | Farming | 29 | 24.17 |
| | Farming + Animal Husbandry | 67 | 55.83 |
| | Farming + Job | 7 | 5.83 |
| | Farming + Business | 17 | 14.17 |
| Land Size | Marginal | 18 | 15.00 |
| | Small | 67 | 55.83 |
| | Medium | 22 | 18.33 |
| | Large | 13 | 10.83 |
| Education level | Illiterate | 37 | 30.83 |
| | Primary | 49 | 40.83 |
| | Secondary | 26 | 21.67 |
| | Graduate | 7 | 5.83 |
| | Post Graduate | 1 | 0.83 |
| Annual Income from Farming (in Rs.) | <1,00,000 | 14 | 11.67 |
| | 1,00,000-2,00,000 | 36 | 30.00 |
| | 2,00,000-4,00,000 | 57 | 47.50 |
| | >4,00,000 | 13 | 10.83 |
| | Total | 120 | 100 |

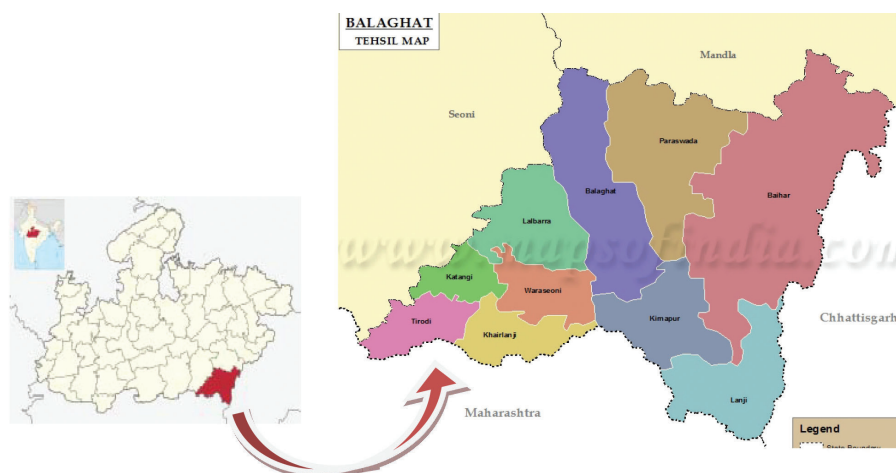


Fig. 2. Study area where farm families are engaged in *Chani* cultivation

In case of land holding majority of the growers (55.83%) had small land holding and 18.33% with medium land holding only 15 % chani growers were with marginal land holding. The majority of the *Chani* growers had (40.83 %) primary level of education followed by 30.83% were illiterate, 21.67% secondary level of education and only 5.83% and 0.83 % had graduate and post graduate level of education, respectively. Most of the chani growers 47.50 % had Rs 2,00,000-4,00,000 annual income from farming followed by 30% Rs 1,00,000-2,00,000 and 11.67% had less than Rs 100000 while only 10.83 % had more than Rs 4,00,000 annual income from farming.

Collection of medicinal and traditional importance of *Chani*

In study it was observed that very less document, publication, or project were found related to *Chani*

cultivation or focusing on its importance for multi-purpose uses. Based on the information gathered from the 120 key informant farmer, some important medicinal and traditional uses of chani were collected and presented into Table 2.

These medicinal and cultural values and utilization of *Chani* in local areas may help it to preserve for so long by rural people of Balaghat district.

Constraints faced by the farmers

Constraint refers as situation or circumstances which impede restrict or limit the activity or a performance of an individual. In this study it operationalized as the items of difficulties experienced by the farmers in cultivation of *Chani/Chanoli*. As such constraints in flow of services should be studied carefully and efforts should be made for rapid action. The information regarding constraints faced by the farmers were collected by using open

Table 2. Collection and presentation of medicinal and traditional uses of *Chani* in local area

| Sr. No | Problem | Medicinal use |
|---------------------------------------|---|---|
| Medicinal value | | |
| 1 | Arthritis | Since <i>Chani</i> has warm in nature, its regular use helps to improve arthritis considerably |
| 2 | Piles | <i>Chani</i> seeds soaked overnight then grind them well. Grinded material then mixed with powder of spine guard roots. Sauté this mixture in <i>desi ghee</i> of cow. Application of this mixture for seven days gives better result |
| 3 | Constipation | Prepare powder of <i>Chani</i> seed after roasting it and mixed with rock salt. By using this mixture every day I the morning will to reduce constipation and improve digestive system |
| 4 | Skin disease | Use of <i>Chani</i> oil with certain herbs on the affected area helps to reduce problem |
| Traditional and cultural value | | |
| 1 | Traditionally, sweets prepared from <i>Chani</i> is used as offering to god in many festivals by local people | |
| 2 | Curry prepared from Chani is used in social functions and festivals as the mark of prestige especially by <i>Kosti</i> Community of Balaghat district | |

ended questions. Agreements of each farmer against enumerated constraints were sum up separately and converted into percentage and then rank was assigned. The classified data are presented in Table 3.

The data presented in Table 3 indicated that out of all constraints low market price (96.66 per cent) was reported as major constraint by the famers and ranked first followed by low yield of crop (90.00 per cent) got second rank, unavailability of pure healthy seeds (82.50 per cent) ranked third, lack of technical knowledge about *Chani* cultivation (78.33 per cent) ranked fourth, lack of proper knowledge about medicinal and traditional use of *Chani* among people (73.33 per cent) fifth rank, inadequate preservation and documentation of Traditional Knowledge of *Chani* cultivation (61.66 per cent) got sixth rank, lack of Govt. scheme to promote cultivation of *Chani* (58.33 per cent) got seventh rank, lack of financial support (55.00 per cent) ranked eighth, and improper market facilities (50.83 per cent) given ninth rank and lack of proper identification of true *Chani* seeds (39.16 per cent) ranked tenth. This finding is in conformity with those of Prusty and Mohapatra (2021); Poonguzali *et al.* (2020) and Parmar *et al.* (2019).

Suggestions to overcome from constraints

Suggestion refers as opinion about constraints which can be used as solution to overcome or to minimize. In order to develop a foolproof extension strategy, it is essential to seek the opinions of the farmers who were directly involved in cultivation of *Chani/Chanoli*. The constraints faced by them may be sometimes imaginary and sometimes due to lack of co-ordination at different levels. Hence in this study, all the farmers were requested to provide

their valued suggestions for eliminating the constraints.

The farmers were requested to express their suggestion to overcome the constraints. The frequency for each suggestion was calculated and converted into percentage. Later on, rank was assigned. The suggestion receiving high percentage was considered as an important suggestion and the suggestion receiving low percentage considered as less important suggestion. The data in this regards is presented in Table 4.

The data presented in Table 4 indicated that out of all suggestions the proper market facility to sell crop on good price (88.33 per cent) ranked first followed by availability of pure healthy seeds (81.66 per cent) got second rank, promotional activities to popularize the medicinal and nutritional values of *Chani* (74.16 per cent) ranked third, proper collection validation and documentation of *Chani* production technology (60.00 per cent) ranked fourth, development of scientific method to increase productivity (52.50 per cent) given rank fifth, increase consumer awareness about identification true *Chani* (45.00 per cent) got sixth rank, proper government schemes to motivate farmers for cultivation of *Chani* (42.50 per cent) ranked seventh, and government should provide financial support to promote *Chani* cultivation (40.00 per cent) ranked eighth. This finding is in conformity with those of Prusty and Mohapatra (2021), Poonguzali *et al.* (2020) and Parmar *et al.* (2019).

Conclusion

Many underutilized crops were once widely grown but with the time their cultivation declining may be mostly due to low yield, low market price and unex-

Table 3. Distribution of farmers according to constraints faced by them (n=120)

| S.No. | Constraints | Frequency | Percent | Rank |
|-------|--|-----------|---------|------|
| 1. | Low market price | 116 | 96.66 | I |
| 2. | Lack of financial support | 66 | 55.00 | VIII |
| 3. | Lack of govt. scheme to promote cultivation of <i>Chani</i> | 70 | 58.33 | VII |
| 4. | Improper market facilities | 61 | 50.83 | IX |
| 5. | Unavailability of pure healthy seeds | 99 | 82.50 | III |
| 6. | Low yield of crop | 108 | 90.00 | II |
| 7. | Lack of technical knowledge about <i>Chani</i> cultivation | 94 | 78.33 | IV |
| 8. | Inadequate preservation and documentation of Traditional Knowledge of <i>Chani</i> cultivation | 74 | 61.66 | VI |
| 9. | Lack of proper knowledge about medicinal and traditional use of <i>Chani</i> among people | 88 | 73.33 | V |
| 10. | Lack of proper identification of true <i>Chani</i> seeds | 47 | 39.16 | X |

Table 4. Distribution of farmers according to their suggestions (n=120)

| S. No. | Suggestions | Frequency | Percent (%) | Rank |
|--------|---|-----------|-------------|------|
| 1. | Proper market facility to sell crop on good price | 106 | 88.33 | I |
| 2. | Proper collection, validation and documentation of <i>Chani</i> production technology | 72 | 60.00 | IV |
| 3. | Government should provide financial support to promote <i>Chani</i> cultivation | 48 | 40.00 | VIII |
| 4. | Availability of pure healthy seeds | 98 | 81.66 | II |
| 5. | Promotional activities to popularize the medicinal and nutritional values of <i>Chani</i> | 89 | 74.16 | III |
| 6. | Proper Govt. schemes to motivate farmers for cultivation of <i>Chani</i> | 51 | 42.50 | VII |
| 7. | Development of scientific methods to increase productivity | 63 | 52.50 | V |
| 8. | Increase consumer awareness about identification true <i>Chani</i> seeds and grains | 54 | 45.00 | VI |

plored economic importance. Farmers and consumers are using these crops less because they are not remunerative as other crop species. Chani which is largely grown in Balaghat district has multipurpose uses in terms of medicinal properties and traditional importance. The majority of the farmers those who are engaged in chani cultivation are aged with low educational profile and income group. All they are facing lots of constraints to continue with chani cultivation. Its need an hour to address all those issues with considering their suggestions. This is high time to explore the economic importance of this forgotten pulse crop which can play important role in achieving not only nutritional security but economic security too.

Acknowledgement

Authors are thankful to the Dean College of Agriculture, Balaghat for motivation and support to prepare manuscript.

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