

**RESEARCH ARTICLE :**

Documentation of existing cultivation practices followed by *Khurasani* (*Guizotia abyssinica* spp.) growers of Palghar district of Maharashtra

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SUMMARY : *Khurasani* is an important secondary oilseed crop traditionally cultivated by tribal farmers from hilly area of Palghar district of Maharashtra. The genus *Guizotia* consists of six species, of which five, including *Khurasani*, are native to the Ethiopian highlands. In India it is considered as minor oilseed crop but it is very important in terms of its oil content, quality and potentiality. Practices followed by *Khurasani* growers have not been systematically documented so far. So, the present investigation was conducted in Jawhar and Mokhada tahsils of Palghar district with an objective, to document the existing cultivation practices followed by *Khurasani* growers. The sample was constituted 150 *Khurasani* growers drawn from two tahsils. The respondents were interviewed with the help of a semi-structured interview schedule. In this paper, analysis of data reveals on going practices followed by *Khurasani* farmers.

KEY WORDS:

Cultivation practices,
Khurasani growers,
Oilseed crop

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BACKGROUND AND OBJECTIVES

The Palghar district of Maharashtra is a cradle for one of the most indispensable secondary oilseeds crop *Khurasani* (*Guizotia abyssinica* spp.). Mid-altitude with high area (1600-2200 m elevation) and simultaneously lower and higher elevations united with enough rainfall provides the ideal platform for the growth of *Khurasani*. The annual rainfall of Palghar ranges from 1500 to 2200 mm and which is a boon for producing reasonable yield.

In Maharashtra, *Khurasani* is grown

over an area of 0.37 lakh hectares with annual production of 0.12 lakh tones and seed yield of 324 kg per hectare (Anonymous, 2011). The prominent feature this crop possess is that it prompts proper seed yield even when subjected to poor marginal growing ambience. The crop is mainly grown for seed and for extracting oil. Oil of this crop owns multiple uses like culinary purpose, for anointing the body, manufacturing paints and soft soaps, lightening, lubrication and in cosmetics. Oil cake is well known and nutritious cattle feed.

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The crop sheds a large quantity of dry leaves in the field which boosts the soil organic matter content.

Because of the low yield levels the margin of profit from *Khurasani* is narrow in the district and as a result area under *Khurasani* is decreasing year by year. In account of figuring out the reasons behind low yield of *Khurasani* in this region even after the advent of green revolution, there is a need to document existing cultivation practices followed by the farmers, which lends a helping hand in assessing the lacunae in adoption of the scientific cultivation practices. Keeping these points in view, effort has been made in the present study to document the existing cultivation practices followed by *Khurasani* growers in Palghar district.

RESOURCES AND METHODS

Two tahsils of Palghar district *viz.*, Jawhar and Mokhada was selected purposively for the present investigation as these tahsils have more area under *Khurasani* cultivation. With the same purpose further selection of villages and respondents was done. From each tahsil five villages were selected and from each selected village 15 respondents, having maximum area under *Khurasani* cultivation were selected for the study. Thus total number of selected respondents was 150. As the present investigation was conducted to document the unexplored domain of *Khurasani* cultivation practices, exploratory research design was applied. Keeping in view the objective, a comprehensive semi-structured interview schedule was prepared. Later, the data collection was done by personal interview method and the collected data were coded, tabulated and presented in the form of tables in order to make the findings meaningful and easily understandable. The findings emerged from the analysis of data were suitably interpreted and necessary conclusions were drawn.

OBSERVATIONS AND ANALYSIS

In Palghar district *Khurasani* is mostly grown by tribal farmers in hilly areas of Jawhar and Mokhada taluks. This is an important secondary oilseed crop that also stands with poor growing conditions and mainly recognized for a long-lasting life of its oil and other medicinal properties. Cultivation practices followed by *Khurasani* growers were documented as follows:

Selection of land:

It was observed that *Khurasani* was cultivated in light to medium soil with proper drainage. Mostly Warkas land was the top choice for cultivation. Warkas land refers to the land with poor productivity, which is mainly used by the local farmers of that area during monsoon to grow 'low grade' crops like millets. Cultivation practices on Warkas land involves, burning on the vegetation on the land, preparing the soil with single or double ploughing and sowing by hand.

Preparatory tillage for *Khurasani* cultivation:

Preparatory tillage comprises practice like ploughing and harrowing. Table 1 depicts that more than half of the respondents (51.34%) followed 'two times ploughing along with clod crushing and levelling', while 27.33 per cent of respondents followed 'three times ploughing with clod crushing and levelling' and 21.33 per cent of respondents followed 'one time ploughing with clod crushing and levelling'. Basically the frequency of ploughing depends upon the resource availability of the farmer and the area under cultivation. If the farmer is involved in commercial cultivation of *Khurasani* in a large area, he tends to follow the recommended 2-3 times ploughing before sowing. During data collection, it was also noticed that most of the respondents used desi plough for ploughing.

Source of seeds:

It was revealed that most of the respondents (85.33%) used their own seed material, stored from previous production season. While, 14.67 per cent of the respondents borrowed the seeds from the farmers who were regularly involved in *Khurasani* cultivation. It is mainly because they had utilized the entire produce for various purposes and failed to store some amount of the produced seed for next season.

Seed rate:

Average seeds required for *Khurasani* is 4 to 7 kg/ha, as per the area under cultivation seed requirement varies. The data from Table 1 revealed that more than three-fourth (79.34%) of the respondents used 4 to 6 kg seed per hectare, while 18.00 per cent of the respondents used 'upto 3 kg' of seed. Only 2.66 per cent of the respondents used 'more than 7 kg' seeds for cultivating one-hectare area. The variation in seed rate is mainly

due to lack of awareness regarding recommended seed rate of *Khurasani*.

Seed treatment:

It was observed that a few respondents (12.66%)

Table 1: Average seeds required for *Khurasani* is 4 to 7 kg/ha,

Sr. No.	Practices followed <i>Khurasani</i> growers	No. of respondents = 150	
		N	%
1.	Preparatory tillage		
	Three ploughings followed by levelling	41	27.33
	Two ploughings followed by levelling	77	51.34
	One ploughing followed by levelling	32	21.33
2.	Source of seeds		
	Own seeds	128	85.33
	Borrowed seeds	22	14.67
3.	Seed rate		
	Up to 3kg	27	18.00
	4 to 6 kg	119	79.34
	7 kg and more	4	2.66
4.	Seed treatment	19	12.66
5.	Method of sowing		
	Broadcasting	111	74.00
	Line sowing	39	26.00
6.	Intercultural operations		
7.	Weeding		
	One time during cultivation	48	32.00
	Two time during cultivation	21	14.00
	No weeding	81	54.00
8.	Shoot clipping	33	22.00
9.	Intercropping		
	Udid (black gram)	52	34.66
	Vari (pearl millet)	43	28.66
10.	No. of farmers observed diseases in their field	33	22.00
	Chemical application	22	14.67
11.	No. of farmers observed pest attack in their field	56	37.33
	Chemical application	37	24.67
12.	Parasite		
	Cascuta attack	42	28.00
	Eradication	42	28.00
13.	Threshing		
	overbeating by wooden stick or rod for the separation of grains	123	82.00
	bullock pairs	27	18.00
14.	Yield (kg/acre)		
	Up to 55 kg	33	22.00
	56 to 140 kg	101	67.33
	141 kg and above	16	10.67
15.	Care before storage		
	Application of ash	41	27.33
	Application of <i>Neem</i> leaves in storage structure	16	10.66
	Application of catechu (khair) leaves	8	5.33
16.	Storage		
	Gunny bags	53	35.33
	Plastic container	46	30.67
	Bamboo basket	26	17.33
	Bamboo bin	18	12.00

treated the seeds with Thirum @ 3 gram per 10 kg of seeds before sowing operation. On the other hand, rest of the respondents were unaware about the benefits such as seed treatment protects the germinating seed and seedlings from the soil and seed borne pathogens/insects and helps in proper growth and establishment of seedling.

Method of sowing:

It was found that majority (74.00%) of the respondents followed 'broadcasting' method for sowing and the remaining 26.00 per cent of the respondents sowed the seeds behind the plough during second ploughing where the seeds were being dropped in the furrows opened by the plough.

Intercultural operations:

Almost all the respondents were found practicing one weeding during crop growth. It was further spotted that 32.00 per cent of the respondents followed weeding at 20 to 30 days after sowing. While, 14.00 per cent of the respondents practiced weeding at 40 to 45 days after sowing. Apart from this, clipping of top-shoot was practiced by 22.00 per cent of respondents. This unique practice is basically performed to induce the lateral branching in the plant and the clipped shoots are being used for purpose.

Intercropping:

It was ascertained that 34.66 per cent of the respondents followed the intercropping of 'Black gram' (*Vigna mungo*) along with the main crop *Khurasani*. While, 28.66 per cent of the respondents cultivated 'Proso Millet' (*Penicum miliaceum*) as an intercrop. Intercropping with legumes restores the soil fertility and ensures additional income generation.

Fertilizer application:

It was found that any sort of fertilizer application was totally skipped the respondents. Further, nearly one-fifth of the respondents were applying chemical fertilizers to the crop and the quantity applied was like basal dose or via broadcasting. Response to split method of fertigation was totally non-existent. It was subsequently noticed that only 8.00 per cent of the respondents applied Suphala (15:15:15) at the rate of 7 to 8 kg per acre, while 14.00 per cent of the respondents applied Urea at the rate of 3 to 4 kg per acre. The remaining respondents

were reluctant to apply any source of fertilizers to their crop.

Diseases and their management:

It was observed that 22.00 per cent of the respondents were aware about the diseases of *Khurasani* like leaf spot and powdery mildew. However, 14.67 per cent of the respondents followed chemical control for the management of those diseases.

A probe, on the control measures undertaken, brought out that the respondents were spraying Carbendazim @ 25 g per 10 litre of water for both the diseases. It was also noticed that the fungicide required for control were supplied by the State Department of Agriculture.

Pest and their management:

37.33 per cent of the respondents were aware about the pests of the *Khurasani* crop like hairy caterpillar, aphids etc. and 24.67 per cent of the respondents applied chemicals for controlling those pests. They sprayed Diamethoate @ 10 ml per 15 litres of water to control hairy caterpillar and 10 ml of Cypermethrin in 15 litres of water to control the aphids.

Attack of plant parasite and its management:

It was found that 28.00 per cent of the respondents experienced attack of *Cuscuta* (Amarvel) and all of them adopted mechanical control method *i.e.*, uprooting and burning of infected plants as a remedy. In depth enquiry in this regard brought out that the infestation was common in the fields where leguminous crops were grown as an intercrop.

Sign of maturity:

Development of brownish black colour of seeds, drying of stalks and flowers were the common maturity indices used by majority of the respondents. Cracking of pods on pressing by fingers was also noticed to be the method followed by few respondents to decide proper maturity stage.

Harvesting:

The harvesting is basically done by cutting the upper half-length of the stalk. Local sickle is the commonly used implement for this purpose. The left out stalk in the field is usually burnt in the field itself. Harvested stuff is

dried at a clean place under sun for 2 to 3 days and then taken for threshing.

It was found that 32.00 per cent of the respondents had hired three labours for harvesting. The wage rate was Rs.120/person/day. Maximum number (68.00%) of the respondents were found managing the task with own labour.

Threshing:

It was recorded that maximum number of the respondents (82.00%) followed overbeating by wooden stick or rod for separating the grains. While, 18.00 per cent of the respondents used bullock pairs for the same purpose. After threshing the grains are being sun dried for 2 to 3 days before storage.

Yield:

The data from Table 1 revealed that majority of the respondents (67.33 %) had obtained '56 to 140 kg' yield from cultivated area whereas, 22.00 per cent of the respondents obtained 'upto 55 kg' of yield. Rest of the respondents (10.67 %) obtained '141 kg and above' yield from *Khurasani* cultivation. The average yield obtained by the respondent was found to be 96 kg.

Care before storage:

Storage is an important aspect as it reduces the post-harvest loss of the crop. The study revealed that 27.34 per cent of the respondents practiced 'application of ash' before storing the grains. While, 10.66 per cent of the respondents mixed leaves of *Neem* tree (*Azadiracta indica*) and only 5.34 per cent of the respondents used catechu leaves (*Senegalia catechu*) instead of *Neem* leaves for controlling of stored grain pest.

Storage:

The study revealed that majority of the respondents (35.33%) used 'gunny bags' for storing the grains. While, 30.67 per cent of the respondents used 'plastic jar' and less than one-fifth of the respondents (17.33%) used 'bamboo basket', followed by 12.00 per cent of the respondents used 'bamboo bin' for storage purpose.

Concluding thought:

Khurasani is old crop for the tribal farmers of the region among the five districts of Konkan region, From the study, it becomes clear that *Khurasani* growers had followed their own management practices like land preparation, seed selection, spacing, fertilizer application and plant protection measures. Thus, special efforts need to be made to recommend standardized cultivation and management practices for *Khurasani* by agriculture universities and also efforts are being made at different levels to maximize the area production and productivity of *Khurasani* in Konkan region which will bring economic prosperity to farmers in general, and tribal in particular.

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REFERENCES

Anonymous (2011). Directorate of economics and statistics, Department of Agriculture and Cooperation, Ministry of Agriculture, GOI.

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