

# Prospects of medicinal and aromatic plants commercial farming in District Uttarkashi, Uttarakhand, India.

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## ABSTRACT

Himalayan region of Uttarakhand state of India has been well known to be a treasure trove of medicinal plants. Uttarkashi district (30°732N 78°452E) of Uttarakhand is rich in medicinal plants and several studies/surveys have been carried out enlisting medicinal, aromatic and Nutraceutical plants. These include medicinal plants Kutki (*Picrorhiza kurroa* Royle), Vajradanti (*Barleria prionitis*), Archu (*Rheum emondi* Wall.), Atis (*Aconitum heterophyllum*), Kaudi (*Gentiana kurroo* Royle), Salam Panja or Hath Panja (*Dactylorhiza hatagirea*) etc., but it is almost difficult to quote any commercial level cultivation especially in remote mountain regions. During our 10 years of visiting these remote areas like Harsil, Dhontri, Chaurangi Khal, Bhatwari, by us, we became aware that the locals do have all the traditional knowledge but still are weary of taking up the commercial level mainly because of marketing. Not only medicinal plant, the entire district has huge potential for commercial cultivation of aromatic plants (like Demask Rose and Lemon Grass). As of today, several companies procure the raw material from the locals, then process it and again sell it back to the same region at much higher price. Even in case of procurement, it should be necessary to implement the access benefit sharing mechanism as per biodiversity act of 2002 because all these years the companies who have used locals to collect huge quantities of medicinal plants for a dirt cheap price have never made any contribution towards the local communities. It is thus necessary to initiate a thought process of development of products in area where the raw material is produced which will provide the much needed economic benefits and employment to locals in rural areas. This would also be one of important steps to initiate reverse massive migration that we are witnessing from the mountain regions of Uttarakhand. It is hence important to first develop awareness, sensitize locals and develop a marketing system. This will lead to huge impact on commercial farming of medicinal/aromatic plants in this remote region.

**Key words:** *Medicinal, Aromatic, Plants, Uttarkashi, Indian, Sustainable development*

## Introduction

Uttarakhand state was initially a part of Uttar Pradesh (UP). Since its geographical condition were unique, initially UP created a Hill Council because the hilly region of UP had a unique geographical

terrain and with diverse challenges and the pace of development was not as expected. A demand for separate state started growing among the locals, this demand was met and a new state of Uttarakhand was created on 9 November, 2000. The state of Uttarakhand thus created had 13 districts. These 13

districts have been divided into two geographical regions – Garhwal Region and Kumaon Region. The districts under Garhwal region are Chamoli, Dehradun, Haridwar, Pauri Garhwal, Tehri Garhwal, Rudraprayag and Uttarkashi, whereas Almora, Champawat, Bageshwar, Pithoragarh, Udham Singh Nagar and Nainital come under the Kumaon region. Out of these, 9 districts are with hilly terrain (Fig. 1). One among these district is Uttarkashi, which we are focusing in the current study.

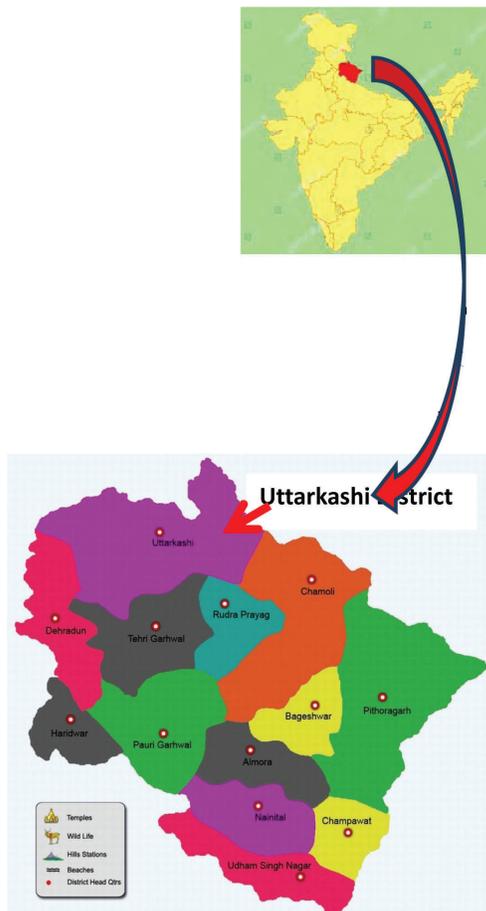


Fig. 1. Map Showing Location of Uttarakhand and Uttarkashi District

Source: <https://uttarkashi.nic.in/about-district/>

### Uttarkashi District

Uttarkashi district was created on February 24, 1960 out of what then constituted the parganas of Rawain and Uttarkashi of Rawain tahsil of erstwhile Tehri Garhwal district. It sprawls in the extreme north-west corner of the state over an area of 8016 sq. kms. in the rugged terrain of the mystic

Himalaya.

### Materials and Methods

#### Study site

District Uttarkashi

Location: Village Chaurangikhal, Dhontri Jandhriya, Chaundiyatgaon, Bhetyara, Kamad, Thandi. Initial survey was also done in Manpur area.

About study site: There are six blocks in district Uttarkashi namely Bhatwadi, Dunda, Chinyalisaud, Naugaon, Purola and Mori. In most of these districts, as per the national informatics center, India, forests occupy a place of pride in the environment of the district not only for the sheer bulk of the area they occupy but also for the richness of variety of vegetation. As much as 88 percent of the total area of the district is administered by the Forest Department. Pine forests occur between the altitude of 900-2000 metres, Deodar forests between 2000-3000 metres, Fir and Spruce forests over 3000 metres and Kharshu, Birch and Junipers forests upto the height of 4000 metres. Above the Fir and Spruce forest zone, alpine pastures are found throughout the district between the height of 3500 metres to 4877 metres above sea level. Rich varieties of grass, shrubs and herbs come up during June- September while during the remaining part of the year these areas remain covered with snow. A large number of medicinal plants of great commercial value grow spontaneously in the forests (Jain and Saklani, 1991; Kala, 2006; Bisht and Badoni, 2009; Negi *et al.*, 2011; Pandey *et al.*, 2019). Some of these grow in the valleys, some in sub-montane tracts while some other on higher altitudes. Forestry too does play an important role in the economy of the district. It employs persons both in preservation and propagation of forests as well as in their exploitation. Herbs are the most important minor forest produce. A large variety of herbs grow wild and all these can be used for developing an economically sustainable practices with scientific inputs.

Location of study site and basic conditions: Location Coordinates: 30.73°N 78.45°E

#### Location for survey

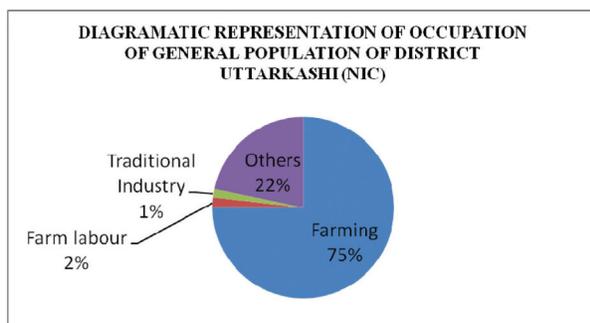
The survey area included specific regions like Manpur, Chaurangikhal, Jandriya, Chaundiyat Gaon, Bhetyara, Kamad, Thandi, Dhontri and Dikholietc (Fig. 2 and 3). Survey forms were devel-



ment schools, enrollment in forces (army, navy, airforce, paramilitary etc.) or farm labours. Most of the individuals, especially young male migrate to cities in search of jobs and hence we see a distinct pattern of migrations. Most of the workforce in the villages is that of women.

Our long term survey data categorized the activities of the villages of Gajna Patti (area between Chaurangi Khal , Dhontri and Kamad into two different activities. One as cultivated cropping and other as Natural Resource based Agro-Forest based cropping. As shown in the study sitemap, this area has diverse climatic zone. Chaurangikhal gets regular snow while region like Dhontri and below are very warm. Because of these different climatic zones, there is a diverse range of natural resources as well as diverse agriculture practices. As regular cultivated crops are similar as in other regions, here we are focusing on the natural agro-forest based resources. These resources are:

- a. Rhododendron: This plant is locally known as "Burans". During flowing season, the flower of this plant is collected by locals and the flower is used to prepare a juice concentrate. This juice is known to have medicinal properties traditionally. Some of the organizations have started to sell this product in market but there is not organized chain and is done randomly by different group. There are not specific nurseries developed for Rhododendron in these area and individuals collect them from forest only. The Rhododendron product based industry could fetch huge profits for the entire area but it has to be organized based on latest technology and in a sustainable fashion.
- b. Tejpatti / Bay leaves(*Cinnamomum tamala*)– Cinnamon (*Cinnamomum verum*)



Source: <https://cdn.s3waas.gov.in/s3ef575e8837d065a1683c022d2077d342/uploads/2018/04/2018040671.pdf>

There are forests of cinnamon trees in the area and the locals use the tree as fodder for cattle. Those who know about it, they cut the leaves, fill them and sacks and sell it to market. No one has tapped into this huge "organic cinnamon" market potential, that too grown in the pristine wild condition.

- c. Vajradanti (*Barleria prionitis*). This plant grows in forest floor of entire Chaurangikhal on its own. This could further be propagated and used for commercial applications.
- d. Aarcha (*Rheum austral*). This plant is used by locals to fix the bone fractures as there are no doctors in these remote areas and as a pain killer just like present day "Analgesic topical application cream". It is known to fix the bones within a short period of time. It grows very well in higher altitudes in entire district. Besides this, Atis and Kutki also grow very well in these areas.
- e. Ganoderma / Chui. These are mushrooms found in the forest of Harsil and other higher altitudes.
- f. Salam Panja (*Dactylorhiza hatagirea*) is a medicinal orchid found in this area in large quantities.

Potential other crops are:

- a. Demask Rose
- b. Lemon Grass
- c. Walnut

Most of these areas have huge number of monkeys, wild boars and other wild animals. These animals cause a huge damage to the crops and many of the villagers have given up farming because of these problems. Demask rose, lemon grass and walnut are usually not affected by wild animals and could be a huge potential in these area.

**Issues of farmers:** Even when the entire area is almost 90% organic, some of the farmers have started using pesticides because of vegetable farming being attempted by farmers. Even with the best of crop, the issues faced by farmers are:

- a. No product development unit or support.
- b. Farmers are forced to either sell the produce to middle man for very less or dump the entire crop in village without much economic benefit
- c. Marketing and logistic organization problems related to technical backup and latest technology
- d. Shortage of information of government schemes.

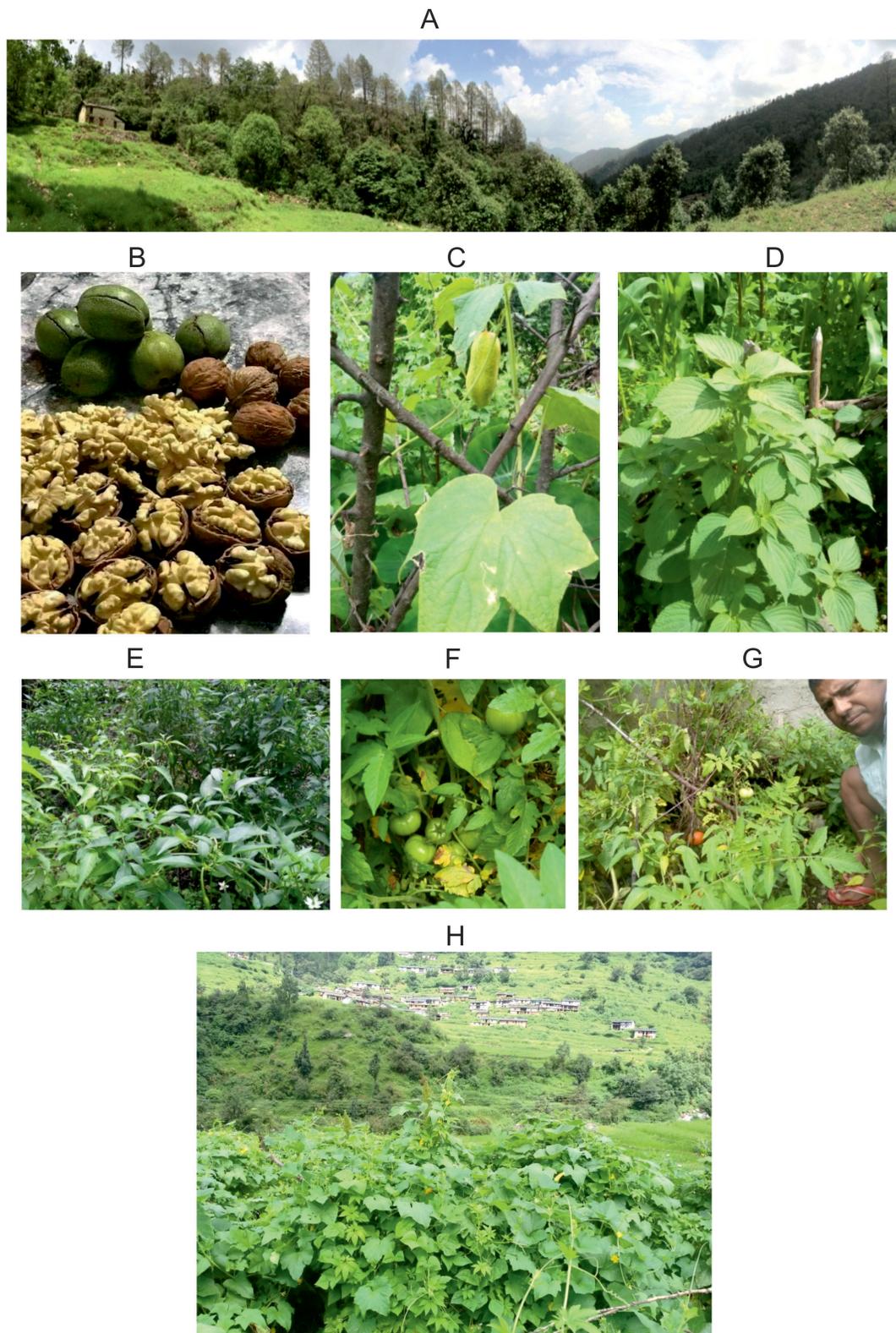


Fig. 5. Some of the representative photographs. A- typical "Chaan" located at higher altitude at Chaurangikhal. B to G – farmers growing vegetables, H- a typical village in the area.

- e. Half-hearted attempt by officials to implement schemes and
- f. Issues related to participation of women in training programs.
- g. Lack of working model system for demonstration of technology implementation and training of youth.
- h. Issues related to setting up of small scale startups
- i. Migration of farmer families and barren fields especially the locally called "Chaan" or locations outside village with massive land holdings as per mountain criteria.
- j. No cold storage in the region.
- k. No packaging or labeling facility even for organic produce

**Conclusion and Recommendation:** Our study concludes and recommends that

1. The entire area is very rich in water resources and so there is not issue of irrigation. This is contrary to the prevailing situation in all mountain regions where agriculture is mostly rain dependent. This abundant water supply gives unique advantage to district Uttarkashi and our study site. Addition to drip irrigation technology would help the farmers to utilize the water resources throughout the year and this would completely transform the farmer's conditions in this area with huge economic benefit.
2. Almost all the farmers are willing to participate in small scale startups especially the addition of aromatic plant farming for economic benefits.
3. As the road connecting four pilgrimage sites of Uttarakhand (Badrinath ji, Kedharnath ji, Yamunotri ji and Gangotri ji) passes through this area, excellent marketing opportunity of products is possible with some technical backup.
4. One window technical knowhow and backup system needs to be developed.
5. The entire crop in region is mostly organic. There is a need to spread this awareness of "organic brand" and adequate packaging of

**products with brand names and certification so that there is value addition to products and farmers get a better price.**

6. There are several local resources available and they have been exploited by several companies in the past. **Sustainable use / development of locally available natural resources should be a priority.** This can be done easily because all the locals know about it and if there is a marketing backup provided.
7. Serious thought should be given to **develop "Aromatic Clusters" for Demask Rose and Lemon Grass which should be product oriented** instead of selling the extracted aromatic oil. This will **develop small scale startups which will be beneficial for local youth and will help in reversing the migration trend.**

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