

**A REPORT ON FIELD
SURVEY OF YARTSA
GUMBA
EXTRACTION AND
ITS ECOLOGICAL
EFFECT IN
GARHWAL
HIMALAYAS**

INTRODUCTION

Yartsa gumba or “Himalayan Viagra” is a rare and unique medicinal complex herb that grows in the alpine meadows in the Kumaun and Garhwal Himalayan region of Uttarakhand. Yartsa gumba (*Ophiocordyceps sinensis* syn. *Cordyceps sinensis*) literally means a summer – plant (Yarsa) and winter – insect (Gumba) in Tibetan. It is a parasitic Himalayan caterpillar fungus that grows on mummified (Kills) in Tibetan ghost moths, underground during their larval phase. Before the rainy season or as snow starts melting, spores of the *Cordyceps* mushroom settle on the heads of caterpillars that lives underground. The fungus gets so much into the body of the caterpillars that it grows out through its head and drains all the energy from the insect and ultimately it dies. A tiny mushroom sprouts from the head of the dead larva, poking a few millimeters out of the ground. It is found in a depth of 12-13 cm from the land surface.



Importance

Various types of medicinal plants are found in Himalayan region but the popularity of Yartsa gumba is overwhelming. For the last few decades, the trade of Yartsa gumba is increasing. It has been regarded as an expensive life saving tonic. It is also believed to be a cure for sexual impotency – a Himalayan Herbal Viagra. Traditional Chinese medicine (TCM) claims that the fungus when boiled and added to tea or soup can act as an aphrodisiac, cure cancer and fight fatigue. These medical claims have not yet been proved scientifically. It has been reported that it is very helpful in increasing physical performance and endurance of the body, sharpens the memory, boosts immunity system, relieves stress, and improves appetite. It is also effective in blood pressure, lipid profile, arthritis, anti-aging, hepatic function, and cancer.

Survey of Keeda Jadi extraction in Dholiganga catchment (Joshimath block) areas:

A survey was conducted in areas of Joshimath block regarding Keeda Jadi extraction by local people. The Study area includes the Dayalisera bugyal, Kwanri pass, Gimni gettha and the adjacent areas. The main reason for selecting these sites was that these areas have been the center for Keeda Jadi collection by the local people for the past 10 to 12 years.

Areas in which rural people depend for Keeda Jadi extraction:

S. No	Village Name	Area / Bugyal
1	Raigarhi	Rigtal , Kanmunyal
2	Karchhi	Tagadi kundi, Chhota masan getha, Bada masan getha, Janchtal bugyal and Patharkharak.
3	Tugashi	Kuchchhyan, Pali, Ghimnigettha
4	Subhain	Raunthi Bugyal, Chanchari
Adjacent (Other villages)		
1	Gangapar (Bhanggul)	kautatthi Bugyal
2	Bargaon / Painka	Barmi Bugyal and Kakbhusandi bugyal
3	Bhyundar	Rajkharak
4	Saloor	Gorson bugyal
5	Molta / Ganai	Chhatar Sema bugyal
6	Dumak / Kalkot	Rudranath area.

In this survey information was gathered from the Gram Sabha Raigarhi, which includes Karchi, Togashi and Raigarhi villages. The population of this Gram Sabha is about approximately 900 and it consists around 570 voters. About 95% families of the Gram Sabha is totally dependent on the agriculture, animal husbandry and forest products like Keeda jadi, Medicinal herbs and Jhoola moss grass for their basic livelihood. Every households earns around 10000–15000 rupees / year from animal husbandry and agricultural products. Apart from the above mentioned activities this area is also well known for Rajma and Potato cultivation.

Generally the villagers do not migrate from this village as the income generated from the collection of Keeda jadi and other forest products is sufficient to meet their needs.

Members from each family travel 10 to 12 Kilometers for keeda Jadi extraction in every harvesting season i.e. during the month of mid May to mid July. The Keeda Jadi harvesting process is done mainly by young members of the family. Along with the collection of Keeda Jadi, villagers manage their agricultural activities also.

Temporary settlement of local people in the Bugyal areas:

S. No	Village Name	Camping site / Harvesting area	No. of tents
1	Raigarhi	Rigtal , Kanmunyal	32
2	Karchhi	Tagadi kundi, Chhota masan getha, Bada masan getha, Janchtal bugyal and Patharkharak.	40
3	Tugashi	Kuchchhyan, Pali, Ghimnigettha	34
4	Karchhon Jonj	Dyalisera	55

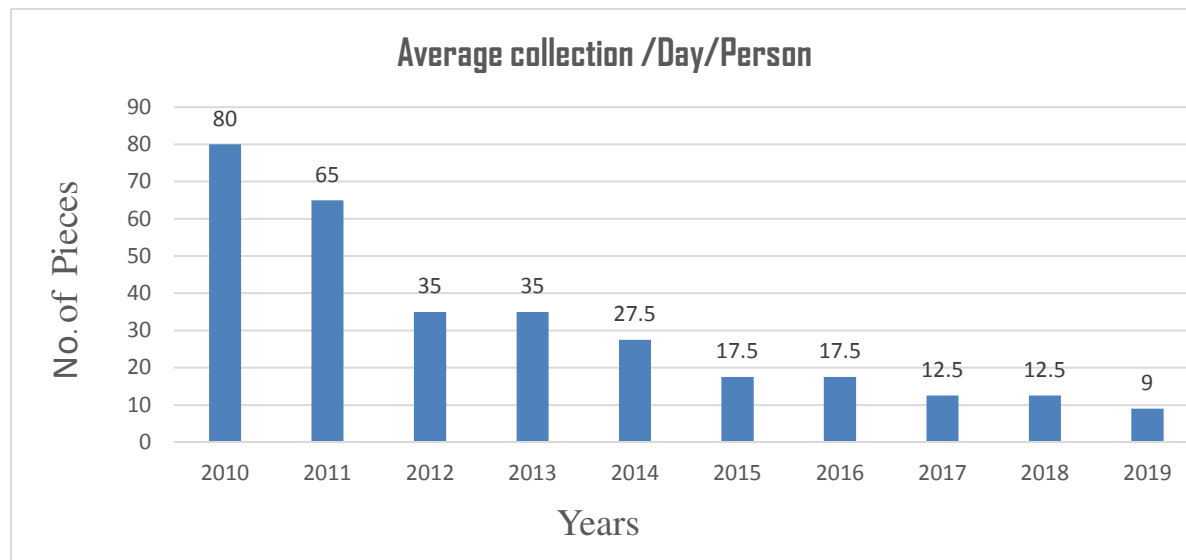
According to the survey, the maximum number of tents (55) were set up by villagers of Karajon Jonj village.

40 tents were set up by the people of Karchi village and 37 and 32 tents were installed by the people of Tentshi and Rayagadhi villages respectively.

Yearly data of Keeda Jadi collected: per person per day:

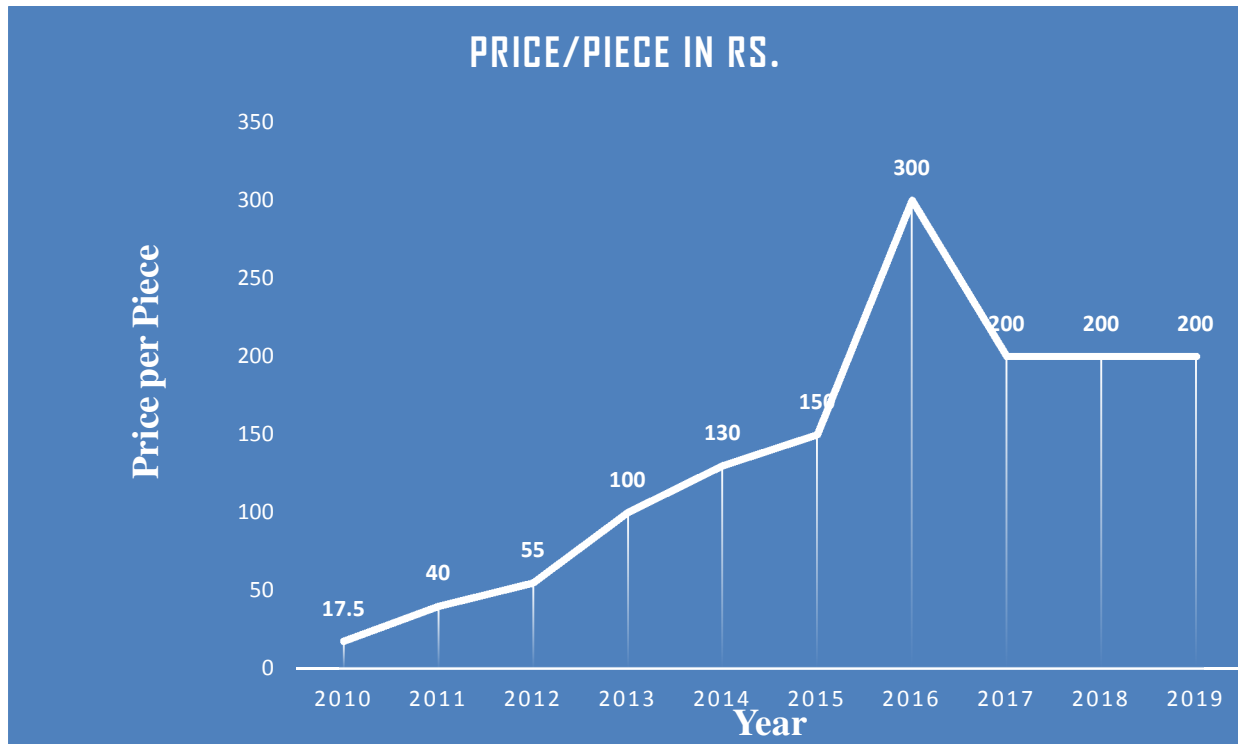
Year	No. of keeda Jadi collected /day/Person	Rate per piece in rupees
2010	60 -100	15 -20
2011	60 -70	30 -50
2012	30 -40	50 -60
2013	30 -40	100
2014	25-30	130
2015	15 -20	150
2016	15 -20	300
2017	10 -15	200
2018	10 -15	200
2019	8 -10	200

Average Keeda Jadi collection in Last 10 years by local people:



According to the above graph, Keeda Jadi collection has drastically decreased from the year 2010 to 2019. The main reason for this may be illicit trade of Keeda Jadi or climatic change which can affect their growing numbers.

Variation in price of Keeda Jadi (Per Piece) in last 10 years:

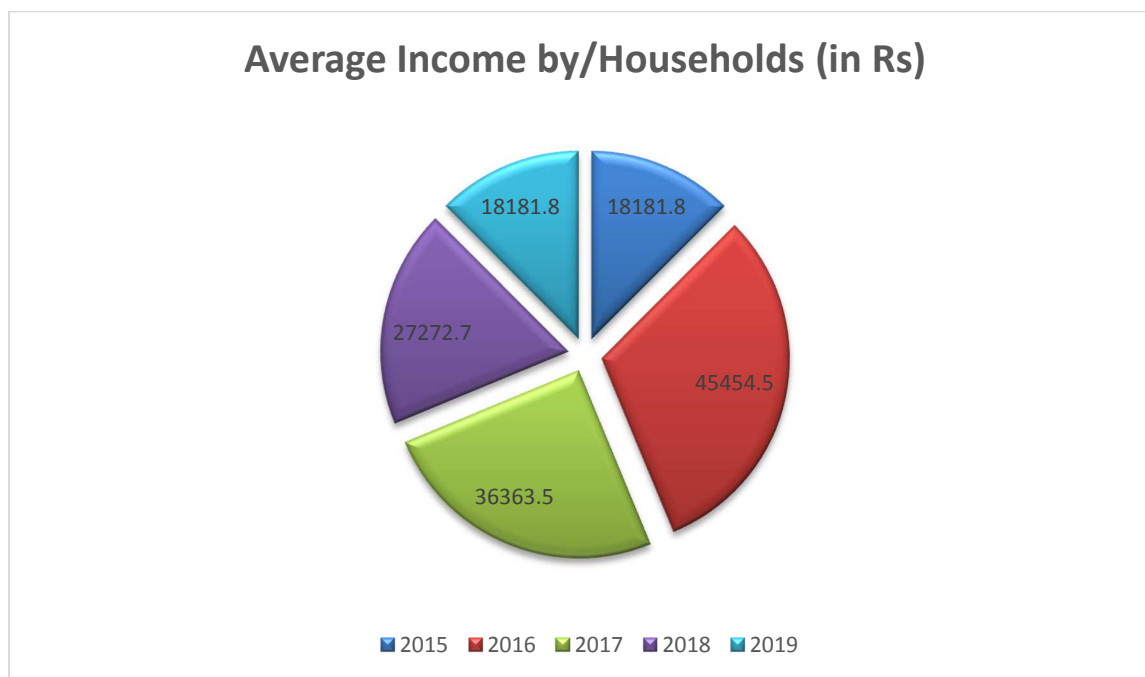


According to the study, there has been a huge increase in the price of the Keeda Jadi in past 10 years. The price of Keeda Jadi was highest (Rs.300 per piece) in the year 2016.

Income generated by keeda Jadi extraction in last five years by Karchhi village people:

Year	Income in lac rupees
2015	10 lac
2016	25 lac
2017	20 lac
2018	15 lac
2019	10 lac

Average income of Karchhi's households by Keeda Jadi extraction in last 5 years:

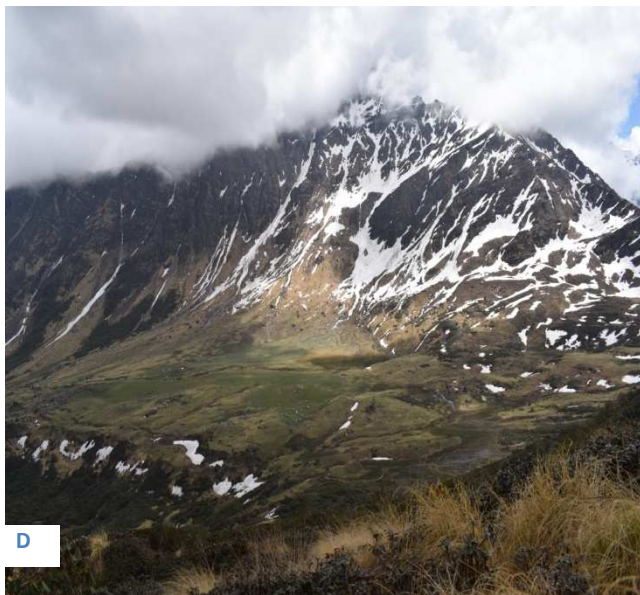
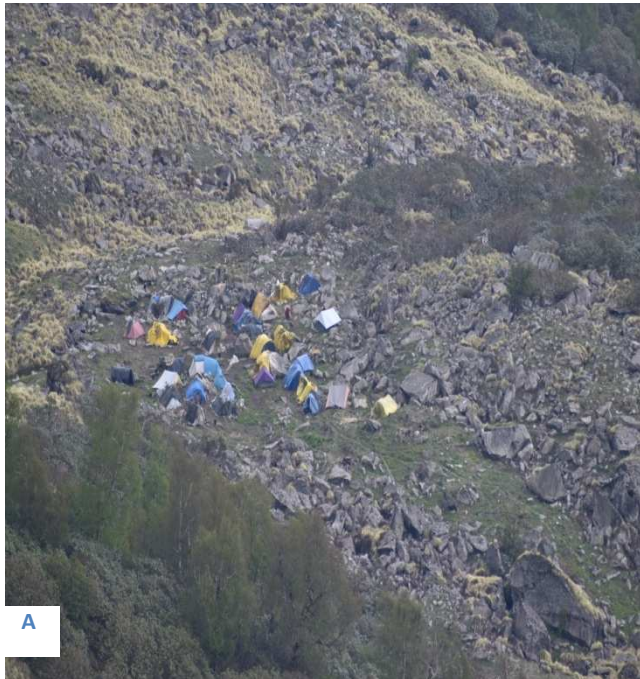


There are 55 families living in Karchi village, whose main source of income is farming, livestock and collection of Keeda Jadi. Highest income was generated in the year 2016 From the Keeda Jadi collection. On an average each family generated an income of 45000.

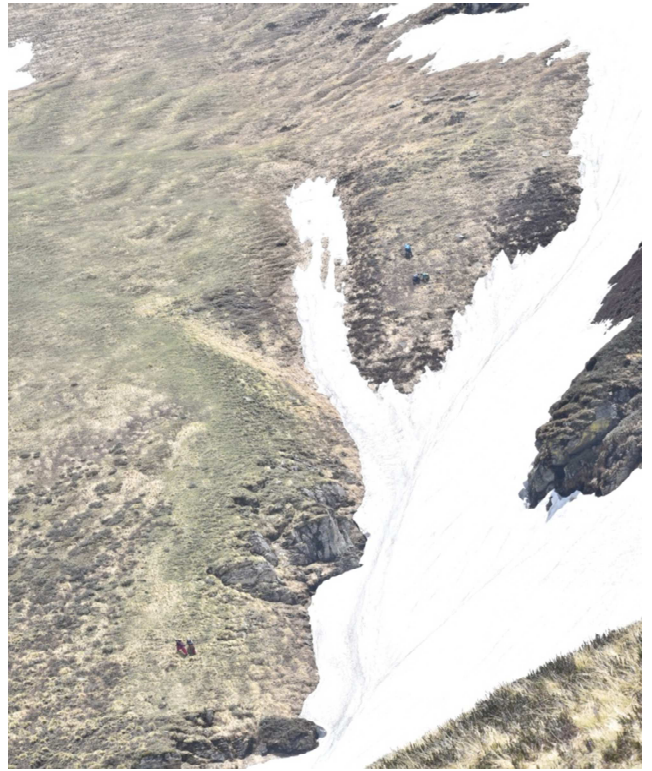
- According to the villagers, Bhangayul (Ganga par) and Subhain villages earn utmost from the collection of Keeda Jadi. In these villages the average income generated by each household is approximately 4 to 5 lac in per kg of Keeda Jadi.

Market Price of other valuable herbs found in this area is as follows:

S. No.	Name of herb	Rate per kg
1	<i>Paris polyphylla</i>	5000.00
2	<i>Trillium govanianum</i>	500.00
3	Morchella	5000 -10000
4	Jhoola	170.00



Over view of study area A- Rigtal (Raigarhi) , B - Tagadikundi (Karchhi) , C – Kuchchhyan (Tugasi) and D & E - Dyalisera (Karchhon ,Jonj).



People harvesting keeda jadi

As per the questionnaire, Respondent Mr. Makar singh Negi has shared his experience which is as follow:

- The best season of harvesting keeda jadi is 15 May to 15 July.
- The following is the list of species that are found mainly with Keeda Jadi.
 - 1- *Cassiope fastigiata* locally known Tagsu
 - 2- *Aconitum balfouri* locally known Jahrila grass
 - 3- *Danthonia* sp. locally known Mamal grass
 - 4- *Polygonum* sp. locally known Sara grass
 - 5- Buggi grass.(Keeda Jadi is mostly found nearby/ adjacent to Jahrila grass).



(A – Tagsu, B - Buggi grass , C - Mamal grass, D - Sara grass)

- According to the respondent Makar Singh Negi, the Keeda Jadi herb, mainly found in the direction of Mount Kailash (in Kailash Mukhi direction).
- The keeda jadi mainly found in the middle areas. Such areas are best for its growth.
- The respondent is extracting Keeda Jadi since 10 to 12 years. According to him keeda jadi is mainly found in Sandy black soil.
- The yield of Keeda Jadi is significantly reduced with prolonged snow cover.
- Long, thick golden caterpillar is considered best.
- According to the respondent the money earned from Keeda Jadi is generally used by local people in construction, education and marriage of their children.
- According to Makar Singh Negi, there has been a decrease in the growth of Keeda Jadi herb from 2017-18 onwards.
- Per kg of Keeda Jadi has about 3800 to 4000 pieces.

Ecological Aspects of Keeda Jadi Extraction Observed during the Survey

Ecologically this area is rich in biodiversity. Many medicinal plants are found in this area. Most of the villagers are aware about the medicinal properties of *Fritillaria roylei* (Van lahashun), *Dactylorhiza hatagirea* (Salampanja), *Picrorhizza kurooaa* (Kutki), *Paris polyphylla* (Van Satuwa), *Trillium govanianum* (Naagchatri).

Fuel Wood: During the keeda Jadi harvesting, the harvesters mainly use *Rhododendron campanulatum* and *R. anthopogon* for fuel wood. Consumption of fuel wood is around 2 kg per day per tent. In every 4-5 days they collect 10-12 kg fuel wood. Therefore 100- 120 kg of fuel wood is used by group of 3-4 people in a season.

For Shelters: For shelters, harvesters use wood of *Betula utilis*, *Sorbus foliolosa* (Salu) and *Abies pindrow*. They also use the branches of *Rhododendron campanulatum* to protect their tents. The harvester collect keeda Jadi from fixed sites.

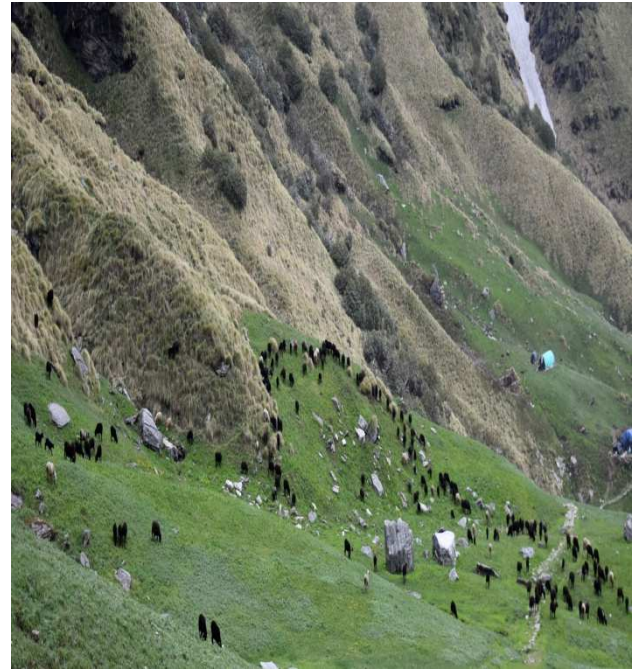
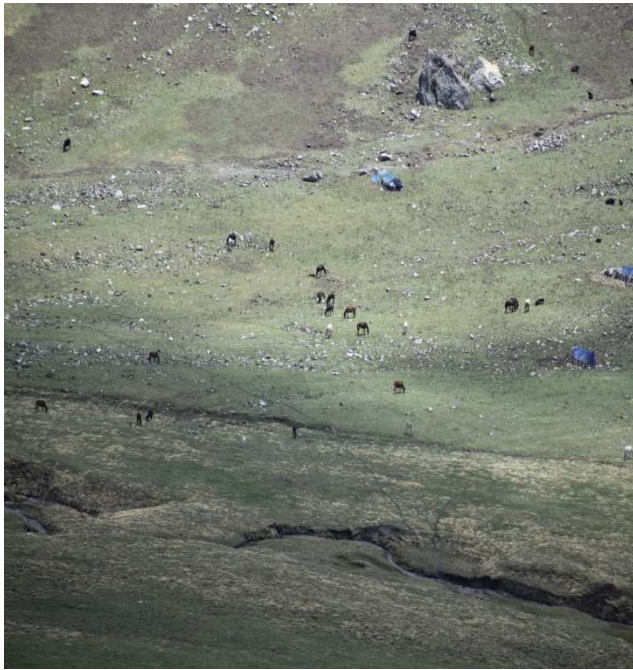
Approximately 25 -30 kg of wood is used by per tent for Shelter making. Apart from this branches of *Cassiope fastigiata* (takshu) is used for broom making.

Biotic Pressure: During harvesting season villagers use Mules for transportation of ration. Survey has revealed the fact that around 161 tents were present in collection site and each tent consisted 3 to 4 people. So on an average around 500 to 600 people are involved in the extraction process for a duration of two months. The area is heavily grazed by 4,000 to 5000 sheep's, goats, 30 to 60 mules , horses, and 20 to 30 cattle's thereby creating an immense biological pressure.

Unscientific Manner of Harvesting: Keeda jadi is harvested by digging in surface. It takes 5 * 5 * 4 cm digging in the surface for one piece of this herb. In this manner there are 75000 to 100000 (Around 15-20 pits per day by each person) of small pits dug per year.



Use of trees / wood in different ways.



Over view of grazing in Bugyal area