

COLLECTION, DRYING AND MARKETING OF MORELS IN UTROR VALLEY KALAM DISTRICT SWAT.

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ABSTRACT

This paper is based on a research project carried out to study 'Role of morels in the socio economic status of the rural community of Utror valley, Kalam District Swat, Utror valley supports five species of Morels including *Morchella hybrida*, *Morchella angusticeps*, *Morchella esculanta*, *Morchella delicosa*, and *Morchella conica*. Morels are collected, dried, packed and marketed for its economic incentives, medicinal value and use for food. The locals of the valley use their endogenous knowledge for collection, drying, packing and marketing. Questionnaire of standard questions was designed and data regarding five years back record, recent information on collection in the beginning of summer season and at the end of summer season was investigated and asked about the total quantity of morels (Species wise) collected from the study area. the local people use traditional techniques of collection, drying, storing and packing which have diverted the attention of consumers but still it posses a high annual marketable growth i-e 81,20,000 rupees. The measures recommended for scientific management of morels collection, drying and marketing include, education of the local community for conservation and management morels, old nor too young but healthy and mature morels should be harvested, drying and collection of morels species should be free from michorobial and insects infestation, during collection the plastic bags should be avoided and fresh healthy morels should be dried by using modern techniques like drying in air dried oven at $105\pm^{\circ}\text{C}$, vacuum dried oven at $105\pm^{\circ}\text{C}$ and 20 atmospheric pressure etc, If the modern techniques are not available then the hanging threads should be placed in a clean and well aerated spot for proper de-moisturization and re-examination of the dried morels is must before packing.

INTRODUCTION

There are over 120,000 species of fungi, which is the largest family of plants that bear no functional greenery, with out chlorophyll fungi do not need to rely on photosynthesis for their energy supply; instead they survive by feeding off other organic matter, dead or alive. Mushrooms fall in to this category and with in the kingdom of mushroom, there are nearly 2000 verities known to be esculent (Chang 1999, Palazon 1992).

Morels are commonly known as spongy mushroom. Mushrooms including morels are one of natures's most wonderful cariosities. The 18th century German women discovered profuse morel growth. Further evidence that morels are attracted to burn grounds, was furnished during World War II when morels were observed to be flourishing at bombsites across Europe.

Morels the most edible forest products receiving increase attention national and international levels (Schlosser and Blatner 1995). The morels are

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classified into three Broad categories (Bunyard 1994, Sharma 1993).

- A. Yellow morels: It includes *Morchella esculenta*, *Morchella delicosa*, *Morchella crassipes*.
- B. Black Morels: It includes *Morchella angusticeps*, *Morchella elata*, and *Morchella conica*.
- C. Half Morels: It contains *Morchella semilibera*.

Study area

The present work is confined to Utror valley Kalam, Swat, located at the extreme north of Swat District, Khyber Pakhtunkhwa, Pakistan Utror valley is located from 35°-18` to 35°-52` North- latitudes and 72°-12` to 72°-33` East longitudes over the globe. It is bounded in the east by Ushu valley, in the Southeast by Kalam, in the South by Bahrain and in the west by Chitral. Utror proper is the main settlement of the valley with total area of 38733 hectare. The Utror River is one of the main tributary that form river Swat at Kalam.

Collection of morels

The collection of morels call for particular technicalities because it need the identification of pre mature and over mature stages and also wants long distances to cover on the hillside. But the high marketable value, additional food and native medicine system have arrested the concentration of the people towards collection, drying and marketing. Morels are widely gathered by men, women, and children in the temperate forests of Pakistan (Iqbal 1993).

Drying of morels

Gathering and processing of morels provide an extra income for peoples involved in activities out the forest such as farming. The morels collected by the locals in a traditional way and have no any proper technology for its drying. Therefore the people have adopted their own techniques (non scientific) for its drying. As morels are also known as spongy mushrooms, because its holds 90% water when it is fresh. These mean a kilogram fresh morel reduce their weight after well drying up to only 100 grams. Drying process is under taken by the collector by making a garland with the help of pin and thread, then hanging the garland of morels on wall of the house or rafters. The drying of morels depends upon the climatic conditions, but normally it takes 4-5 days (Ali, 2002).

Trading and marketing of morels

Countries like Pakistan, Afghanistan, India and China traded morels internationally in large quantities Urban entrepreneurs buy morels from local

collectors and transport them in dried form to overseas markets, especially to Europe, where demand from them as gourmet or specially food consistently exceeds local or regional supplies, and prices are uniformly high.

Pakistan and India are the main producing countries, each produce about 50 tones of dry morels annually (equivalent to 500 tones of fresh morels); all of which are exported. According to the unpublished record of International Center (ITC) the imports of dried morels to Europe Economic Community (EEC) countries and Switzerland range between 100-120 tones per annum. Morels commands very high price. In Pakistan, the price of morels has raised constantly from rupees 80/kg of dried morels in 1962 to the current level 9f.o.b) of more than rupees 4000 (US \$ 133.00) /kg. The gathers, however get one-half to two third of price (Iqbal 1991, 1993, Greg Filip 1998). The local people consider morels as source of income, therefore they show keen interest in the trading of morels after collection and drying, sell it to the local shopkeepers, they sell it to the dealers at Mingora and onward supplied to Islamabad for further marketing on national and international level.

OBJECTIVES

1. To investigate collection, drying and marketing of morels.
2. To offer recommendations for scientific collection, drying, marketing and trading of morels.

MATERIAL AND METHODS

MATERIALS

Questionnaire, pencil, rubber, writing pad and pen Digital camera, Computer with other accessories. Altimeter.

METHODS

This study was completed in two phases.

Phase I

Local peoples were interviewed through questionnaire in regard to the five years back record (uses etc) and recent information on collection in the beginning of summer season.

The selected people were again visited at the end of collection summer season and asked about the total quantity of morels (Species wise) collected from the study area.

Phase II

Questionnaire for collection, marketing trade, consumption and processing was designed to collect five years back record and current record.

Pre-test.

To identify any amendments/change in the questionnaire (strategies) of the study, a pre-test was conducted in one site of the study area. Any revision needed as a result of this pre test was noted and under taken by the following day. In this context total 100 respondents were contacted and interviewed, regarding the morels ecology and trade pattern (one person/10 houses) In this way total 80% of the local population was interviewed.

RESULTS

Table 1. Estimated annual consumption of morels in Utror valley Kalam, Swat District

Name of morels		Quantity consume/annum	Rate/kg in local market	Approximate value (Rs)
Morchella escaulanta	Toura Guchhi	800	4000	3200000
Morchella conica	Zirra Guchhi	600	4000	2400000
Morchella hybrida	Lappra Guchhi	100	700	70000
Morchella delicosa	Spina Guchhi	400	3500	1400000
Morchella angusticeps	Khossa Guchhi	300	3500	1050000
			Total	8120000

Table 2. Feed back of the respondents of Utror valley Kalam, District Swat

Kinds of morels		Tools for collection		Collection		Time/season of collection		Trend in collection	
5 years back 1995	NOW 2002	Have	Collection	Gender	% of collectors	5 years back 1995	NOW 2002	5 years back 1995	NOW 2002
Morchella escaulanta	Morchella escaulanta	Hands Knife	Cloth bag	Male Female Children	Male= 0% Female 20% Children 70%	3kg/km Summer	3kg/4-5km summer	60% for own use 40% for marketing	2% for own use 98% for marketing
Morchella conica	Morchella conica	Do	Do	Do	Do	Do	Do	Do	Do
Morchella Hybrida	Morchella Hybrida	Do	Do	Do	Do	Do	Do	Do	Do
Morchella Delicosa	Morchella delicosa	Do	Do	Do	Do	Do	Do	Do	Do
Morchella Angusticeps	Morchella angusticeps	Do	Do	Do	Do	Do	Do	Do	Do

Table 3. Feed back of the respondents of Utror valley Kalam, District Swat

Kinds of morels		Processing of morels		Purpose of processing (use)		Market value of morels	Sale/ Annum (Rs)	Market	
5 years back 1995	NOW 2002	5 years back 1995	NOW 2002	5 years back 1995	NOW 2002	NOW 2002	NOW 2002	Local	Dealers
Morchella esculanta	Morchella esculanta	Food, medicines	Food, medicines market	Traditional drying	Food, medicines market	4000/kg	3200000	Shop keepers	Mingora
Morchella conica	Morchella conica	Do	Do	Do	Do	Do	2400000	Do	Do
Morchella Hybrida	Morchella Hybrida	Do	Do	Do	Do	Do	70000	Do	Do
Morchella Delicosa	Morchella delicosa	Do	Do	Do	Do	Do	1400000	Do	Do
Morchella Angusticeps	Morchella angusticeps	Do	Do	Do	Do	Do	105000	Do	Do

DISCUSSION

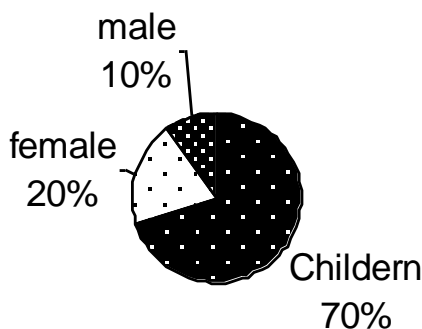
According to the designed questionnaire total 100 respondents were interviewed and their views according to the morels (*Morchella*) habitat, season of collection, processing, marketing value and its medicinal uses were studied.

Kind/season and tools of morels collection

The table 1.0 shows the feed back response of the respondents from the study area. In the present survey the respondents were asked about the types, season and tools for the collection of morels. After their reply it was found that total five species of morels (*Morchella*) such *Morchella hybrida*, *Morchella angusticeps*, *Morchella esculanta*, *Morchella delicosa*, *Morchella conica* noted and later on were confirmed in the selected 10 plots in Utror valley Kalam swat District, after their collection. Further more it was confirmed from the respondents and in the field that summer season 9March, April, May, June0 is growth/maturation period for morels. The respondents extend their views towards the tool used for the collection of morels and it was revealed that they collect morels with the help of knife and by hand using cloth bags and baskets as a source of collection sink.

But among these tools hands were preferred over knife due to the mechanical shock and damage to morels body. As the hands always provide a soft touch to the body of morels therefore morels can be collected through hands in safe way (Palazone Lazana 1992, Tiffany 1998). The present investigation also provide an opportunity about the percent gender collectors and %age of collectors. According to respondents that male including traders, female and children are the main collectors. Among these sources of collection the children

constitute 70% female 20% and 10% male (5% local people and 5% traders) for the collection of morels as can be seen from the given graph. The hand collection of morels was experienced in the selected plots and found a suitable source of collection.



Time and trend of collection

The respondents expressed their views about the time of collection required for morels collection five years back and recently (2002), the morels population can be judge by the distance covered by the local collectors. Five back, they were collecting 3kg of morels per kilometer and at present such morels could be obtained at 4-5 km from te home in hillside area. It has been observed that the demand for morels is increasing and the quality and availability of morels is increasing and the quality and availability of morels in the forest is declining. Further it has been found that 2% locals in the study area collect morels for their own uses and 98% for marketing, while five years back about 60% locals had collected morels for their own requirements and 40% for commercial purposes (Table 2).

Local uses of morels

In the present study the respondents were asked about the local uses of morels and it was found that morels are used in the indigenous system of medicines for the curing of various ailments. Further it was added that when the dried morels are mixed with eggs, fish and powdered roots of *Paeonia emodi* (mamekh) and fried with cows ghee, a mixture prepared, from this mixture two table spoon are taken early in the morning and evening before meal for fifteen consecutive days, which is considered as a remedy for nervous disorder, backache and rheumatic pain. It is also considered as a general body tonic and heats muscle tonic, while some people oil morels in cow's milk for half an hour and take with glass of milk at bed time, which is believed an aphrodisiacs agent. Bobriyal and Singh 1997 have studied the folk medicinal uses of many species

including *Morchella esculanta*. Fakim 1990, Largrothera et al 1993, Stasi et al 1994, Sher and Ahmed 1998 have discussed their common names, traditional medicinal uses economic values and its pattern of business (Table-3).

Market value of morels

The table 1 and fig 13, 14, 15 shows the stimated annual consumption of morels in Utror valley Kalam Swat, District. The data shows the *Morchella esculanta* with local name torra guchhi at a quantity of 800kg consumed annually. The marketable price for *Morchella esculanta* is Rs: 4000/- per kg, therefore the total approximate value Rs: 3,200,000/-. Similarly the other morels species like *Morchella conica* 600kg *Morchella hybrida* 100kg *Morchella delicosa* 400kg, *Morchella angusticeps* 300kg, with the total approximate values Rs: 2400000/- Rs: 700000/- Rs: 1400,000/- Rs: 1050000/- respectively. The rate per kg in the local market can be seen from table 1.0. From the above discussion it is clear that *Morchella esculanta* and *Morchella conica* carries a high marketable price in the local market and gives a good reflection towards the attraction of local community. They also revealed that the people are more oriented towards these two species which may be due to their medicinal uses, delicious supplementary food, as reported by Royse et al 1996, Royse et al 1997 and its consumption, production of specialty mushroom including the *Morchella species* in USA and its production of specially mushroom increase at a faster rate.

CONCLUSION

- 1) Local communities have is far acquired the crude skill pertaining to collection, processing and storage of mushroom.
- 2) The male, female and children are main collectors of morels. The knife and hands are used as tools for collection, cloth bags and baskets as a source of collection sink. Among the tools hands are preferred over knives due to the mechanical shocks and damage by the later to the morel body.
- 3) Five years back the population of morels were high (3kg/km) but now these non timber forest products (NTFPs) is decreasing day by day 93kg/4km).
- 4) The morels play a significant role in the socioeconomic status of the rural community by using morels in the indigenous system of curing of various ailments, supplementary food item and a source of income generation (2% of the morel products and 98% of the morel production).
- 5) Te local people sell morels to the local shopkeepers; they sell it to the dealers at Mingora, which they supply to the dealers at Peshawar and Islamabad at relatively high rate.

- 6) The local community of the study area has adopted a traditional techniques of drying morels by making a garland of morels hanging on the walls or rafters of houses losing 90% weight/kg.

RECOMMENDATIONS

The following suggestion and recommendation, for the improvement of morels quality should be adopted.

1. The result of this study can contribute to the scientific management of Morels and hence will act in providing economic incentives to the local communities.
2. Base line information for the research workers should be provided in the form of books, research journals, magazines and reports about the current situation of morels marketing.
3. The education of the local community is the prime concern for conservation and management morels. Therefore their proper training for collection, drying storing, packing and marketing of morels is recommended.
4. Old nor too young but healthy and mature morels should be harvested because on nutritional point of view very young and too old plants are dangerous for health.
5. Drying and collection of morels species should be free from michorobial and insects infestation.
6. During collection the plastic bags should be avoided it causes the suffocation and ultimately result in to spoilage of morels.
7. The fresh healthy morels should be dried by using modern techniques like drying in air dried oven at $105\pm$ °C, vacuum dried oven at $105\pm$ °C and 20 atmospheric pressure etc, If the modern techniques are not available then the hanging threads should be placed in a clean and well aerated spot for proper demoisturization.
8. Re-examination of the dried morels is must before packing.

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QUESTIONNAIRE

1. Name of locality.
2. Name of the interviewed gender.
3. Profession.
4. What is the local name of morel used in your village?
5. Where does the morel grow?
6. How many kinds of morels were growing in your village five years back?
7. How many kinds of morels are growing in your village now?
8. What is the proper season for growing of morels?
9. Do you collect morels? Yes/No
10. If yes what tools do you use for harvesting of morels?
11. Who collect morels normally in your village?
12. How many people collect morels?
13. What was the purpose of collection five years back?
14. What is the purpose of collection of morels now?
15. What tools do you use for collection of morels?
16. How much time was taken by the basket filling five years back?
17. How much time is taken by the basket filling now?
18. Do the collection trend in the people increasing or decreasing?
19. Do you process morels after collection? Yes/No
20. If yes what type of methods are used for processing?
21. Why you process the morels?
22. What was the medicinal use of morels five years ago?
23. What is the medicinal use of morels now?
24. What is the market value of morels now?
25. How much quantity of processed morels do you sale?
26. What kind of species of morels do you sale?
27. How much quantity of each kind (species) do you sale?
28. Where do you sale morels?