

# Farmer's Criteria for Naming Crop Varieties: A Case on Rice Varieties in Kumaon Himalaya of Uttarakhand

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Kumaon Himalaya of Uttarakhand is a well known repository of local rice cultivars. A large number of local cultivars are managed and named by local farming communities. To maintain this large genetic stock, farmers have named them on the basis of certain characteristics features. In order to investigate the naming criterions, the investigators have surveyed 5 districts, 33 development blocks, 132 villages and 405 households of the Kumaon region during last ten years. A total of 84 different farmer named cultivars were documented for the study. The present paper reveals the different nomenclature criteria followed by farmers for maintaining the rice genetic wealth on farm. The naming parameters involve morphological traits, environmental adaptability, agronomic traits, local recipes, place of origin and local legends.

**Key Words:** Farmer named rice cultivars, Traditional rice cultivars, Rice cultivars of Kumaon Himalaya, Traditional rice nomenclature system

## Introduction

Rice is the major food crop of entire Kumaon region during kharif. It is grown here since time immemorial in the region. Despite the spread of several high yielding varieties; several local cultivars are still grown in the region because of their well adaptability in various agro-climatic conditions (Bisht *et al.*, 2006). Local rice cultivars are mainly confined to rainfed as well as semi-irrigated areas in the region. Farming communities in the interior localities are completely dependent on local farmer named cultivars, which are also suitable for their environmental, socio-economic and ethnic requirements (Mehta *etl. al.*, 2008).

It is very difficult for farmers to maintain a large number of crop varieties without any name. Farmers even put the improved and high yielding varieties (HYVs) under some local naming words, which is convenient to them to call. Farmers maintain a large number of crops and their varieties without any mixture. Farmers varieties include crop population, which farmers have identified and named as units (Lando and Mark 1994). To maintain the separate identity of individual primitive cultivars of a crop, they need it's name for convenient identification. In order to maintain the separate identity of various crop primitive cultivars, farmers named them on the basis of some criterions and parameters. To study the nomenclature pattern of local cultivars of the crops, rice (*Oryza sativa* L.) was selected as it is a major crop grown worldwide. It is well known that rice emerged as staple food in South-

East Asia that proliferated and subsequently dominated the world food bowl along with other food crops (Paroda 2004).

The old traditional rice landraces are also well known in the Gazetteer of Himalayan provinces (Atkinson 1882). In view of a large number of local farmer named rice varieties which are still under cultivation in Kumaon Himalaya, the present investigation of nomenclature of traditional varieties and their relationships with the certain characteristics of cultivars, environmental factors, habitats and other ethnic needs are studied thoroughly. The characteristic features, agronomic traits and cuisines are the major criterions of naming of crop varieties (Bhatt and Chauhan 1999) were also observed in the past.

## Materials and Methods

For collection of data on traditional farmer named rice varieties grown in Kumaon Himalaya, a structured and un-structured questionnaire and interview schedule was developed. Data were collected from primary sources at individual farm household level during 1999 to 2008 cropping seasons. Sample households were randomly selected from all 33 development blocks of five districts of Kumaon region of Uttarakhand. Four villages were selected from each development block representing the distinct agro ecological niches. In each selected village 5%, households were randomly selected for interview. Lottery system was adopted for randomization at all levels. Thus a total of 405 respondent households were interviewed for documenting farmer named traditional rice

varieties. The district wise detail of development blocks, number of villages surveyed and respondent households are presented here (Table 1). Non-participant observation method was also used to collect information.

Using participatory rural appraisal, information was obtained on local rice varieties / cultivars grown in the villages and their nomenclature pattern. Respondent households were also asked to express the meaning of the local name of the varieties what they have revealed. All possible care was taken to determine the consistency in farmers naming and describing rice cultivars by comparing information from farm households and different social groups. After carefully recording the information the data were compiled and analyzed on the basis of various nomenclature parameters.

### Results and Discussion

In the present investigation, a total of 120 traditional cultivars were recorded, 36 of them were repetitions of each other. Thus a net 84 different local varieties were found under cultivation. These 84 local farmer named varieties were subjected to analysis of the nomenclature pattern. Data of the study disclosed that farmers tested and evaluated the varieties for a long. After a careful evaluation of various characteristics of the varieties they were named after a certain distinct and prominent character or place of origin or local legendlores etc. There were nine

parameters of nomenclature identified during the study. The nomenclature parameters identified were seed colour (25.30%) followed by seed shape and size (21.68%), plant habitats (18.07%), place/area of origin (9.64%), panicle characters (8.43%), suitability for particular cuisine (4.82%), local legendlores (4.82%), plant height (3.62%) and emergence of panicle and maturity period (3.62%) as mentioned in Table 2. There was no consistency in cultivars names and often it was difficult to ascertain that all farmer named varieties are genetically distinct (Bisht *et al.*, 2007). All care was however, taken to record only distinct cultivars based on farmers description of their varieties using distinct nomenclature criteria as listed (Table 2). It is interesting to note that farmers criteria of naming of varieties is based on some scientific features such as morphological characters (seed colour, plant height, vegetative traits), environmental adaptation (soil type, micro-econiches, tolerance of biotic/abiotic stresses, cropping system), agronomic traits (panicle emergence and maturity time, earliness, growth habit, grain yield), place of origin (region, village, farmer) and type of recipes (taste, ethnomedicinal values etc.).

It is very common to call the varieties on the basis of their seed colours. In case of rice, there are a large number of local varieties which are known after their seed colour such as *Laldhan* (red), *Kaladhan* (black), *Pyolia* (yellow), *Dhulia* (White), *Anjan* (black), *Kalthunia* (black tipped)

**Table 1. Number of districts, development blocks, villages and households surveyed for collection of information on traditional rice varieties**

District	Development blocks	No. of villages selected for the study	Number of households surveyed
Almora	11	44	128
Bageshwar	03	12	36
Champawat	04	16	51
Nainital	07	28	89
Pithoragarh	08	32	101
<b>Total</b>	<b>33</b>	<b>132</b>	<b>405</b>

**Table 2. Farmers parameters of nomenclature of local rice cultivars**

S. No.	Parameters of nomenclature	Characteristic features	Percentage of varieties responsible for naming
1	Morphological traits	Seed colour Seed shape and size Panicle character Plant height	25.30 21.68 8.43 3.62
2	Environmental adaptation	Plant habitats	18.07
3	Place of origin	Village and area	9.64
4	Type of recipes/uses	Cuisines	4.82
5	Local legendlores	King, queen, goddesses and other personaties	4.82
6	Agronomical traits	Maturity period	3.62

etc. The maximum number of local varieties are named after their seed colour. It is not certain that all these varieties of a single name are genetically same. It may be genetically different from one another, but it is a popular naming criterion in the region. Farmers also maintain the population of each variety with its colour (Table 3a).

Seed shape and size is also an important seed character, which is considered for selection of a variety. On the basis of seed shape rice varieties were named like *Patoli* (thin), *Sweedi* (Needle pointed), *Binduli* (Round), *Jeeruli* (Cumin shaped), *Nan basmati* (small scented rice) etc. The names of traditional rice varieties mentioned in Table 3b are different varieties. They differ in seed shape and sizes. The name of a particular variety reveals itself the character of the seed. Seed shape and size is a very important parameter of nomenclature of the varieties in Kumaon Himalaya. Several varieties are named after seed shape, size and other characteristics like scent, shattering habit, threshing, dehussing qualities etc.

In Kumaon Himalaya, there are various types of topographic climatic conditions and micro-econiches. Farmers of the region have identified the rice varieties in order to suit their conditions, 18.07% traditional varieties are named after the various agro-econiches ranging from rainfed (dry/wet) to irrigated areas, from low land to hilltops and various other climatic and environmental conditions of the hills (Table 3c).

For naming of the local varieties, the place/areas of origin of seed material also play an important role. There were 9.64% rice varieties, which are named after the place or area of origin. *Kapkoti*, *Katyuri*, *Dotiyali*, *Askotiya* and *Ramgarhi* are the farmer named varieties, which are popular in another region of the Kumaon hills, hence named after the place or area of their origin. *Kashimiri*, *Punjabi* and *Jorhati* are the varieties carried by some army service personnel in the region and became very promising for yield point of view. Similarly, an important and promising landrace *Thapachini* is considered brought by *Thapa* people, who intruded into the region from China. Chinese people locally called as *Chini* in the Kumaon. Hence the rice brought by them is called *Thapachini* in Kumaon hills (Table 3d). The exchange of seed material within a region and inter regional system helps farmers to introduce the seed material. After getting a seed popularized in the area, it was named after the area or place of its origin. It is also observed in the study area that sometimes a married daughter carries the seed material from parental house to her in-laws house and visa-versa.

Similarly some service personnel like military men and others collected the seed material from very far-flung regions like Punjab, Kashmir and Jorhat. After observing their performance. After successful cultivation and acclimatization of these varieties in the area where they were introduced, they are named after their place of origin (Mehta *et al.*, 2008). Several studies have also documented the flow of local seed material of different landraces among small farmer (Sperling and Loevinshon, 1993).

Farmers also name varieties on the basis of panicle characters and 8.43% local varieties are named accordingly. Drooping, erect, long panicle fingers, long and thick panicles, long awns and hard threshability are the major features of panicles, which are used by the local farmers to name the varieties. *Jhakai*, *Jhumariya*, *Badtiya*, *Sirmodiya*, *Lamadiya*, *Jhusia* and *Lathait* are the varieties, which were named after their panicle characters (Table 3e).

Distinct using qualities of a particular variety are known for that cuisine. *Jaulia* is best known for its *Jaula* (a local cuisine) quality. *Jaula* is a popular local recipe of Uttarakhand hills. A large population prepare and consume it. A local rice variety, which is coarse grained is very useful for making *Jaula* and its taste qualities. Similarly a local rice, which is suitable for its *khaja* and popping quality is named as *Khajia* or *Khasiyari* by the local communities *Naula* (plant biomass) is required to feed the domestic animals. Since animal husbandry is also an integral part of farming system in Kumaon hills, farmers have identified good biomass yielding rice cultivars they named them as *Naula*. These cultivars are well known in the region for their distinct quality traits (Table 3f). These cultivars are very popular among local folks. Apart from the cuisine qualities, rice varieties were also named after their plant height. There are some popular varieties like – *Nandhani* (dwarf rice), *Chhotia* (small plant/dwarf) and *Thang* (Tall and strong stem) are named on the basis of their plant height (Table 3g) an important morphological trait.

Duration of emergence of panicles and maturity is very important features used for nomenclature of cultivars by the farming communities. In Kumaon hills 3.62% local varieties are identified their names with their duration of panicle emergence and maturity. *Timasia* means matures in three months. *Taoli* and *Utaoli* also express the meaning early in maturity (Table 3h). Farming communities have also given the due respect to their

**Table 3. Criteria followed by local farmers for naming their rice cultivars**

S. No.	Vernacular/local name of the varieties	Common meaning of the naming words (Characteristics description)
<b>a) Nomenclature on the basis of seed colours</b>		
1	Lalsal	Red shawl (Red seeded)
2	Kalthudia	Black tips (Black tipped seeds)
3	Ratdhan	Red paddy (Red seeded)
4	Dudh	Milky white (White seeded)
5	Sunkhar	Pure gold (Golden seeded)
6	Pyolia	Yellow (Yellow seeded)
7	Matiya	Like soil (Brown seeded)
8	Ram manua	Blackish finger millet (Round fine blackish seeded)
9	Lali	Reddish (Reddish seeded)
10	Pingau	Yellow (Yellowish seeded)
11	Khardudh	Pure milk (White seeded)
12	Mail	Dirty (Brownish fine seeded)
13	Suntola	Gold weighing (Golden fine seeded)
14	Kaidhan	Blackish paddy (Black seeded)
15	Kalisal	Black shawl (Black seeded)
16	Bhuria	Brownish (Brown seeded)
17	Kalparia	Black husk (Black seeded)
18	Dhaulia	White (White seeded)
19	Musia	Colour like rat (Brown seeded)
20	Kalasyot	Black pine (Blackish in colour seeds like pine seeds)
21	Anjan	Black (Blackish seed corners)
<b>b) Nomenclature on the basis of seed characters</b>		
22	Patoli	Thin (Fine seeded)
23	Sweedi	Like needle (Sharp pointed tips and hard awns)
24	Binduli	A round mark made on the forehead (Round seeded)
25	Jeeruli	Like cumin ( <i>Jeera</i> ) (Seeds like cumin- <i>Jeera</i> )
26	Akadi	Tight (Hard dehusking like leather)
27	Nanbasmati	Small scented (Small scented seeds)
28	Thulbasmati	Bold scented (Bold scented seeds)
29	Goldhan	Round paddy (Round seeded)
30	Chamari	Hard (Hard dehusking)
31	Chinburi	Small brown (Small brown seeded)
32	Jhadua	Shattering (Shatters on maturity)
33	Bhadgar	Stout (Stout seeded)
34	Jawan	Caraway- <i>Ajwain</i> (Seeds fine and caraway shaped)
35	Masur	Lentil (Seed round like lentil)
36	Dhania	Coriander (Stout seeds like coriander)
37	Ghesu	Rubbing (Needs more rubbing for dehusking)
38	Bakul	Broad bean (Seed thick like broad beans)
39	Basmati	Scented (Local scented rice)
<b>c) Nomenclature on the basis of plant habitats</b>		
40	Dhurbasmati	Forest edges/hillocks, scented (Scented rice grown in forest and hillocks areas)
41	Boran	Rainfed (Suitable for rainfed conditions)
42	Gadayai	Near rivulets (Grown in marshy land)
43	Gajai	Marshy land (Grown in marshy land)
44	Gajla	Marshy land (Grown in marshy land)
45	Jangloi	Near forest (Suitable for forest areas)
46	Dangajai	Hill top marshy land (Grown in hill top marshy land)
47	Jamoli	To transplant (Transplanting rice)
48	Banpas	Near forest (Grown near forest land)
49	Jamal	To transplant (Transplanting rice)
50	Jungle dhan	Forest rice (Suitable for nearby or close to forest areas)
51	Danisanw	Hill top stout rice (A coarse rice grains suitable for hill tops)
52	Rokhyal	Dry land (Suitable for dry areas)
53	Kirmiti	Tight soil (Suitable for hard or clay soil)
54	Thai	Hill top plain (Suitable for hill top plains)
<b>d) Nomenclature on the basis of place or area of origin</b>		
55	Thapachini	Thapa community people of Chinese origin (The Chinese people living in the Kumaon hills with their surname Thapa. It is considered that they brought this variety with them from adjoining areas of China and Tibet.)

S. No.	Vernacular/local name of the varieties	Common meaning of the naming words (Characteristics description)
56	Kapkoti	Belongs to Kapkote area of Bageshwar district (Brought from Kapkote area)
57	Katyuri	Belongs to Katyur area of Bageshwar district (Brought from Katyur)
58	Dotiyali	Nepalese are known as Dotyal (Nepalese brought it in Kumaon from district Doti in Nepal)
59	Askotiya	Belongs to Askote area of Pithoragarh district (Brought from Askote area)
60	Kashmiri	Belongs to Kashmir in J&K (Brought from Kashmir by some one military person)
61	Ramgarh	Belongs to Ramgarh area of Nainital district (Brought from Ramgarh)
62	Jorhat	A place in Assam (Brought from Jorhat by any service person)
63	Punjabi	Punjab origin (Brought from Punjab)
<b>e) Nomenclature on the basis of panicle characters</b>		
64	Jhakai	Long hairs (Long awned rice panicles)
65	Jhumariya	Drooping (Drooping panicles)
66	Badiya	Erect (Erect panicles)
67	Sirmodiya	Drooping panicles (Drooping panicles)
68	Lumadiya	Drooping thick panicle (Drooping thick panicles)
69	Jhusia	Awned (Long awned rice panicles)
70	Lathait	Needs more beating (Hard threshability)
<b>f) Nomenclature on the basis of local use/recipes</b>		
71	Jaulia	A local recipe (a local recipe) prepared from rice, curd, black soybean)
72	Khajia	Uncooked rice eating (Suitable for eating uncooked) and popping
73	Khasiyara	Uncooked rice eating (Suitable for eating uncooked)
74	Naulia	Straw for animals (More straw yielding rice, tall)
<b>g) Nomenclature on the basis of plant height</b>		
75	Nan dhani	Dwarf rice (Dwarf plants)
76	Chhotia	Dwarf rice (Dwarf plants)
77	Thang	Tall and strong (Tall and strong stem)
<b>h) Nomenclature on the basis of crop maturity</b>		
78	Timasia	Three monthly (Matures in three months)
79	Taoli	Early (Early maturing)
80	Utaoli	Early (Early maturing)
<b>i) Nomenclature on the basis of local legends</b>		
81	Rajdhan	King's rice (Preferred by the Kumaoni kings (Raja) because of fine grain rice)
82	Rajmati	Queen's rice (Preferred by the Kumaoni queens (Rani) because of its fine grain)
83	Parvati	Lord Shiva's wife (Sacred, named after Parvati)
84	Rajula	The queen of <i>Bairath</i> in Kumaon and heroin in the drama ' <i>Kumaon ke Samrat</i> ' –Hindi (Sacred, named after Rajula—a fine rice)

local legends such as Kumaon's king, queen, Parvati (Lord Shiva's wife) and *Rajula* (the queen of *Bairath* in Kumaon region). Four fine grain rice varieties were named after them (Table 3i).

Naming of varieties is very important in view of their separate identity. The origin of naming words is based on seed colour, seed size, place of sowing, recipes, persons and distinct properties of rice in Kumaon Himalaya were observed earlier also (Bhatt and Chauhan 1990). After its satisfactory yield, they name the varieties for their future use. For naming, farmers carefully study the characteristic features of the variety and distinct features are taken into consideration. The distinct characteristic feature may be its morphological character, environmental adaptability, agronomic trait, place or

area of origin, cuisine quality etc. Naming of a local and promising cultivar is also very important in view of its identity, exchange, potential utilization, conservation and sustainable agricultural development. Plant breeders may select the different cultivars of their choice on the basis of this compendium. The present study may be very useful for those who are involved in varital development and breeding programmes.

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