

Present and future prospects of millets in Himachal Pradesh

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*Millets are the super food adapted to varying climatic conditions ranging from Shivalik hill zone having subtropical climate with elevation of 350-650 m above mean sea level to high hills dry temperate zone that lies 2200 m above mean sea level. In Himachal Pradesh, millets are produced in most of the regions characterized by moderate (1100-2100 mm rainfall) to low precipitation (50 mm rainfall-snowfall). Major millets crops being grown in substantial quantity in Himachal Pradesh include finger millet (*Eleusine coracana*), pearl millet (*Pennisetum glaucum*), foxtail millet (*Setaria italica*), little millet (*Paspalum scrobiculatum*) and barnyard millet (*Echinochloa frumentacea*). Pseudocereals viz. *oat* (*Fagopyrum esculentum*), *phafra* (*Fagopyrum tataricum*) and *Amaranthus hypochondriacus* are also grown in wet and dry temperate regions of Himachal Pradesh. Strategies to mitigate challenges of nutritional security through intercropping or monocropping of millets with cash crops in potential niche areas would help in regaining global nutritional security in a sustainable manner.*

Keywords: Area, Himachal Pradesh, Millets, Pseudocereals, Production

THE Himalayas being the youngest mountain system of the Earth, encourages high environmental variability and supports rich biodiversity. However, abrupt climatic variations characterized by an increasing temperature, extreme variations in rainfall/snowfall pattern, frequent droughts and fluctuation in diurnal temperature is greatly affecting the availability of biotic resources on sustained basis. Climate change and malnutrition are becoming major concerns across India and globe. *Poshan Abhiyaan* also known as National Nutrition Mission is India's flagship scheme launched in 2018 keeping in view the poor nutrition status of dietary food. Main focus of mission is to lay emphasis on improvement of nutritional outcomes of adolescents, children, pregnant women and lactating mothers in the country. Millets are referred to as nutri-cereals and possess nutraceutical properties providing food and nutritional

security to the dryland agriculture as they are the hardiest and most resilient crop under adverse climatic conditions.

Current and future status of millets in Himachal Pradesh

Millets and pseudocereals are being grown in all districts of Himachal Pradesh with varying degree. Most of the districts of Himachal Pradesh grow one or more millet crop species and some pockets of district Shimla and Kinnaur grow pseudocereals in substantial quantity for domestic consumption. A total of ~ 1084.9 tonnes of millets food grains are produced in Himachal Pradesh from nearly 1882 ha area (Directorate of Agriculture, Shimla, HP, 2022). In Himachal Pradesh, Shimla, Kinnaur and Kangra are the topmost district in millets cultivation with a share of 36%, 32% and 14% to total millets area. Sub-tropical mountain and mid hills of Himachal comprising Una, Bilaspur, Hamirpur, Sirmour, Solan, Kangra and Chamba district

grow more of finger millet, pearl millet, little millet and foxtail millet contributing 358.9 tonnes of millet food grains production from 485.72 ha area. Kangra district alone account for more than 54% area with overall production of more than 41% under monocropping system. High hill wet temperate and dry temperate zones of Himachal comprising districts of Shimla, Kullu, Mandi, Kinnaur and Lahaul & Spiti account for almost 50% area under millets and pseudocereals. Wet and dry temperate zone of Himachal Pradesh contribute 1395.7 ha area with millet production of 726 tonnes which account for 74% area and 67% total millet production of Himachal Pradesh. In Shimla, Kullu and Mandi district, millets are grown as intercropped either with apple and other crops. However, in dry temperate zone of Kinnaur and Lahaul & Spiti, millets are grown as monocrop but buckwheat and amaranthus are grown as intercrop with apple in some places.

Table 1. Area, production and potential niche areas of millet producing districts of Himachal Pradesh

District	Crop	Local Name	Scientific name	Niche/ Potential area	Area (ha)	Prod (Qts)	Cropping pattern
Bilaspur	Finger millet Little millet Foxtail millet Pearl millet	Ragi/ Mandal Kodo Kaayi Bajra	<i>Eleusine coracana</i> <i>Paspalum scrobiculatum</i> <i>Setaria italica</i> <i>Pennisetum glaucum</i>	Jhandutta, Ghumarwin, NainaDevi, Sadar	59.4	385	Mixed cropping with maize crop
Chamba	Finger millet Little millet Foxtail millet Amaranthus Buckwheat	Mandu/ Ragi Kodra Kauni Chulai Foolan	<i>Eleusine coracana</i> <i>Paspalum scrobiculatum</i> <i>Setaria italica</i> <i>Amaranthus hypochondriacus</i> <i>Fagopyrum esculantum</i>	Chamba, Bharmour, Bhatiyat, Mehla, Salooni, Tissa, Pangi	90	1350	Intercropping with maize, Mono-cropping in Pangi
Hamirpur	Finger millet	Mandal	<i>Eleusine coracana</i>	Bamson, Sujanpur, Bhoranj, Hamirpur, Nadaun, Bijhari	37	190	Mono crop/ Mixed with maize or Soybean
Kangra	Finger millet Little millet Foxtail millet	Mandal Kodra Kangni	<i>Eleusine coracana</i> <i>Paspalum scrobiculatum</i> <i>Setaria italica</i>	Bajinath, Panchrukhi, Bhawaarna, Bhedu Mahadev, Lambagaon, N. Bagwan & Surian, Dehra, Pragpur, D/shala, Rait, Nurpur, Fatehpur, Indora	265.32	1500	Mono-cropping
Kinnaur	Finger millet Foxtail millet Proso millet Amaranthus Buckwheat	Kodro/ Koda Kauni Radh/Cheena Dankhar Ogla and Phafra	<i>Eleusine coracana</i> <i>Setaria italica</i> <i>Panicum miliaceum</i> <i>Amaranthus hypochondriacus</i> <i>Fagopyrum esculantum</i> <i>F. tataricum</i>	Nichar, Sungra, Ponda, Bari, Tranda, Rupi, Sangla, Pooh, Kalpa, Bada /Chota Kambha, Garsu, Rakcham, Chitkul, Kamru, Meeru, Meber, Ribba	605	3015	Mono-cropping/ Intercropping buckwheat with apple
Kullu	Finger millet Little millet Foxtail millet Pearl millet Amaranthus Buckwheat	Ragi Kodra Kauni Bajra Salyara Kuttu	<i>Eleusine coracana</i> <i>Paspalum scrobiculatum</i> <i>Setaria italica</i> <i>Pennisetum glaucum</i> <i>Amaranthus viridis</i> <i>Fagopyrum esculantum</i>	Kullu, Nagar, Banjar, Nirmand, Anni, Malana	6.50	67	Mixed cropping
Lahaul & Spiti	Buckwheat	Ogla	<i>Fagopyrum esculantum</i>	Udaipur, Keylong	37.5	188	Mono-cropping
Mandi	Finger millet Foxtail millet Barnyard millet	Ragi Kangni Sawa/Sawan/ Jhingora	<i>Eleusine coracana</i> <i>Setaria italica</i> <i>Echinochloa frumentacea</i>	Karsog, Sadar, Balh, Chauntra, Drang, Gopalpur, Gohar, Sunder nagar, Seraj etc.	68.7	598	Mixed and Mono-cropping
Shimla	Little millet Foxtail millet Amaranthus	Kodo/ Kodra Kauni/ Kangni Chollai/ Bathu	<i>Paspalum scrobiculatum</i> <i>Setaria italica</i> <i>Amaranthus hypochondriacus</i>	Rampur, Chirgaon, Chopal, Rohru, Pandar, Baota, Dodra, Kavar	678	3392	Mixed/ Inter-cropping
Sirmour	Finger millet Little millet Foxtail millet Amaranthus	Ragi/ Mandal Kodra Kangani Chulai	<i>Eleusine coracana</i> <i>Paspalum scrobiculatum</i> <i>Setaria italica</i> <i>Amaranthus hypochondriacus</i>	Shillai, Sangrah	18	88	Mono-cropping
Solan	Finger millet Little millet Foxtail millet	Ragi Kutki Kauni	<i>Eleusine coracana</i> <i>Paspalum scrobiculatum</i> <i>Setaria italica</i>	Solan, Kunihar, Kandaghat, Nalagarh, Dharampur	14	70	Mixed cropping
Una	Finger millet	Ragi	<i>Eleusine coracana</i>	Bangana	2	6	On bunds in field

Source: Directorate of Agriculture, Shimla, H.P. 2022

Amaranthus seed and leaves can be used for making laddu and saag. Buckwheat is an acceptable, eatable cereal during fasting days and flour can be used for making chilta, whereas barley grain is used as food in rural area as flour mixed with wheat for making chapati. Roasted grain are eaten with sugar syrup. Barnyard millet and little millets

are cooked and consumed like rice. Pooped grain are used for making laddus and kheer. However, finger and foxtail millets are cooked like rice, and dosa, ground to flour for making roti and chilta. Threshing of millets can be done using sticks in which grains are crushed with sticks to separate it from the straw. This is the simplest method of

separating grains from plant and seeds are separated from straw using wind. Light particles of straw fly into the air, while heavy particles and light grains separate and form a pile nearby. Thereafter, clean grains are collected and stored in wooden structure called as kathar. This method has been used by farmers around the world for centuries.



Amaranthus



Finger millet



Proso millet



Buckwheat

Cultivation of various millets

and citrus in Kangra district and millets cultivation and consumption is now confined to domestic level.

SUMMARY

Millets being oldest food known to humanity have started to regain their significance owing to their nutritional quality, low carbon footprint and wider climatic adaptability under changing climatic scenario. Therefore, exploitation of indigenous or improved varieties/hybrids in potential niche areas for their introduction and large-scale adoption may play a significant role in the productivity improvement of these crops. National initiatives on Food Security and Nutrition Mission of Government of India would serve to enhance awareness among people, promote the consumption of millets, necessitating expansion of potential niche areas and enhancing productivity of smart food paving way for sustainable nutritional security to attain *Swasth Bharat Mission*.

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Shimla district accounts for maximum area of 49% with an overall millet production of 47% followed by Kinnaur with 43% and 42% respectively. However, Kullu and Una district have negligible area and production of millets in

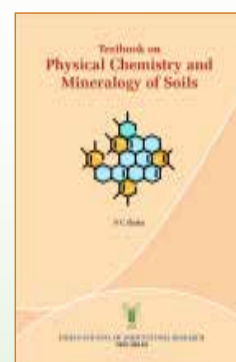
Himachal Pradesh (Table 1). In Himachal Pradesh, area under millets has been decreasing drastically over the years, because of surrender of major area under cash crop like apple and pear in Shimla and Kinnaur district while mango

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TECHNICAL SPECIFICATIONS

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