

## Organic By Default: Hill State Making Way For A Fast Comeback of Red Rice

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With the introduction of high value cash crops like apple, vegetables and other high yielding rice varieties and hybrids, the cultivation red rice is vanishing in the hilly state of Himachal Pradesh. As of now, however, demand of nutraceutically rich food is increasing with increased awareness of food and health. Keeping in view, the people are shifting to traditional varieties of rice. Realizing the increased demand and shrinking area under the red rice, recently the women farmers from Himachal Pradesh received a special award for their efforts to conserve red rice. The members of the Rohru Red Rice Farmers' Society in the state were conferred with the Plant Genome Saviour Award by the agriculture minister, Narendra Singh Tomar in New Delhi.

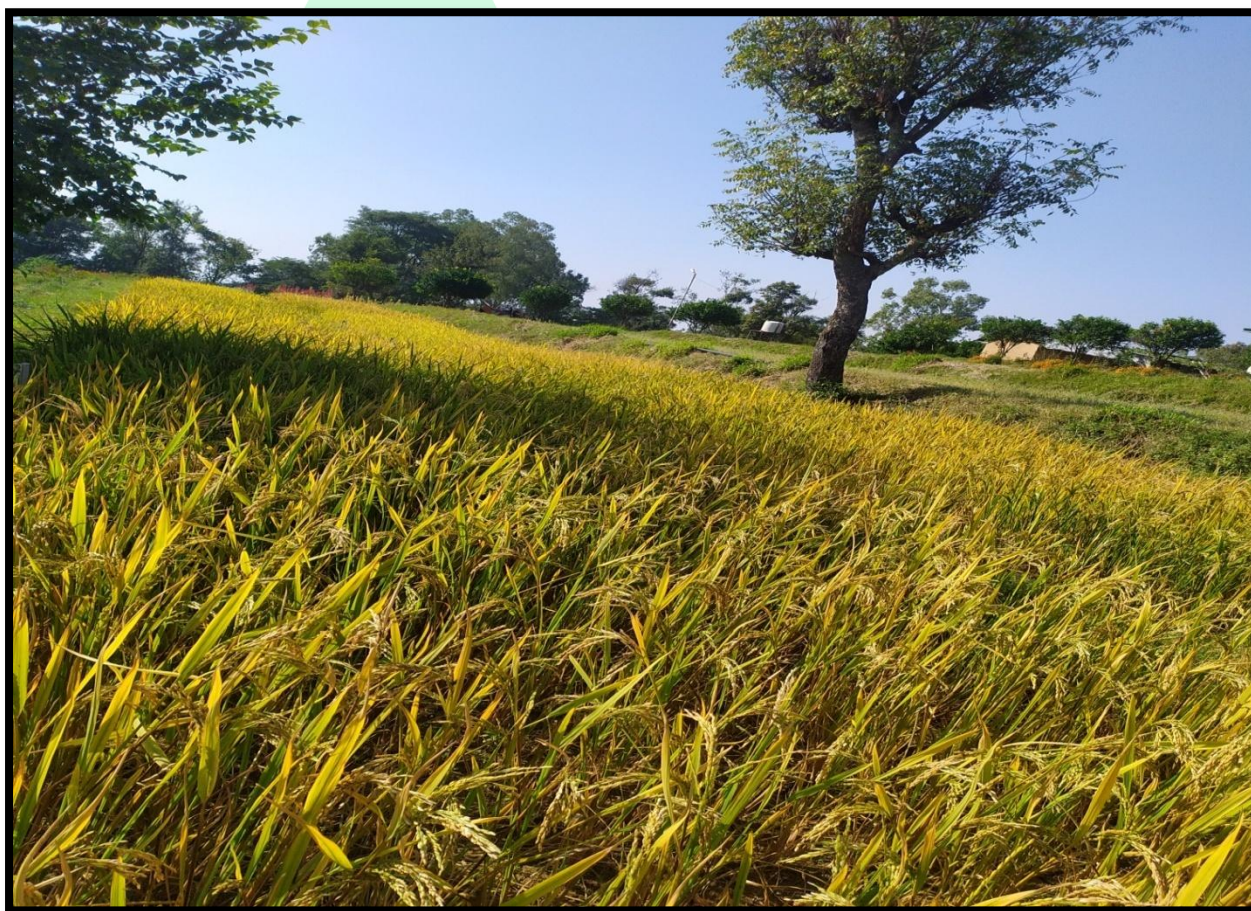
This is India's highest prize that is given to the farmers for their notable contribution in the conservation of certain plant varieties. It includes a monetary prize of ₹10 lakhs, along with a memento and a citation. The award was received by the society's president Varsha Sharma, with the members Leela Vati, Dipna Mehta and Meena Kumari in tow with her.

This variety's colloquial name is known as 'Chhohartu.', this variety is categorised under 'Japonica Red Rice.' It is cultivated in villages such as Peja, Masli, Jangli, Daboli, Kaloti, on an area around 1000 hectares and at an altitude from 1300m to 2100m i.e. free from pesticides and herbicides. These villages are situated in Chhohara valley in the Rohru sub-division of the state in Shimla district. All of these villages are located on the banks of the Pabbar river.

The Chhohartu rice is considered to be rich in zinc and iron, along with elements of vitamins. The locals believe that the excess water that is poured off after cooking the rice is extremely beneficial for pregnant women. Its outer layer is red in colour and is known for

being sold at a higher price in the market. The Himachal Pradesh Agriculture University (HPAU) helped register the variety with the Protection of Plant Varieties and Farmers Right Authority (PPVFRA).

In a bid to give red rice, a new lease of life i.e. on the verge of extinction, the Himachal Pradesh government has fixed a target to bring around 4,000 hectares of land under its cultivation and produce around 40,000 quintals of cereal grain annually in the next five years – as said by the state Agriculture Minister, Virender Kanwar. At present, the total area under cultivation of red rice has been recorded at around 1,100 ha. The total annual production is 9,926 quintals, with an average of 8-10 quintals/hectare production.



**Fig 1.HPR 2720(Palam lal dhan-1) variety released by HPAU grown in field conditions**

According to the state government, the area under the cultivation of red rice has registered an increase from the past years due to the sustained efforts of the Agriculture Department. HPAU has submitted an application for GI (Geographical Indication) registration of Japonica Red Rice to the Geographical Indications Registry Office, Chennai.

After getting a GI tag, the farmers get national and international recognition for that particular crop or commodity will help farmers them to get better price benefiting them financially.

Red kernelled rice commands a higher price, is nutritionally superior being rich in iron and zinc and numerous trace elements and vitamins and in addition has high antioxidant properties. These Red Rice varieties belong to both indica and japonica subspecies.

### **What is red rice?**

Rices with a red bran layer are called red rices. Though the color is confined to the bran layer, a tinge of red remains even after a high degree of milling. The color of the bran ranges from light to dark red. The bran layer contains polyphenols and anthocyanin, and possesses antioxidant properties. The inner portion of red and white rices is alike and white. The zinc and iron content of red rices is 2–3 times higher than that of white rices. American scientists have reported a similar high iron content in the Chinese red varieties ‘Bloody Sticky’ and ‘Dragon Eyeball’.



Red rice

### **Cultivated red rices**

Before the advent of high-yielding varieties, which are mostly white, red rices formed an important group in almost all the rice-growing Asian countries such as Sri Lanka, Philippines, Korea, China, Japan, and India. A scan in the literature reveals that about 20% of the germplasm collected in China comprises red rices. In India, red rices were prevalent in the South, East, and the hilly tracts of the Northeast and West. Red rice cultivars showed high tolerance to such unfavorable environments as infertile soils, deep water, and mountain lands.



A number of red-grained varieties were cultivated in Kerala, Tamil Nadu, Karnataka, Bihar, Orissa, Bengal, Madhya Pradesh, and the northeastern states with areas having unfavorable conditions such as deep water, drought, sandy soils, salinity, and cold conditions. As in white rices, great diversity exists among red rices. They are glutinous and non-glutinous; scented and non-scented; late and early maturing, and short- and long-grained. However, most red rices are coarse-grained. Among the long-grained red rices, Himalayan red has made its presence felt in the export market also.

Some of the famous red varieties include Matta of Kerala, Patni of Maharashtra, and Jatu and Matali of the Kulu valley in Himachal Pradesh. It is said that the Commissioner of Kulu, during the British period, was so fond of Jatu rice for its sweet taste that he used to send it to his family in England.

#### **Use in religion and culture**

In Himachal Pradesh, the entire process of cultivation of Jatu rice is a ceremonial affair. Seed soaking and preparation of land for transplanting is accompanied with the worship of the family deity Ishtadeo. Before transplanting, the seedlings are placed at the entrances of temples. Before harvest, the ripe grains are first cooked and offered to the deity Kuladeo. On this occasion, there is a tradition of distributing such cooked rice among family members, neighbors, and relatives. After the harvested grain is brought home, some rice is separately preserved for religious ceremonies associated with the Gods. The cultivation of Jatu is done on fixed dates. The fields are prepared and seeds are soaked on the Sankranta (the beginning of a month or year) of Vaishaka (April–May). The grains are covered with the leaves of bhojpatra (*Betula alnoides*) for one month. On the next Sankranta, the sprouted seeds are put into the nursery area. Again on the Sankranta of Ashadha (June–July), transplanting is undertaken. From the Sankranta of Sawan (July–August) to that of Bhadon (August–September), weeding is carried out. The harvest of Jatu is started on the Sankranta of Kartik (October–November). The new harvest is eaten after the month of Magha (January–February).

#### **Present status in Himachal Pradesh**

Red rice or Laal Dhaan is a famous land race of mid and high hills of South Western Himalayas in Himachal Pradesh, Jammu & Kashmir and some parts of Uttrakhand. During pre-green revolution era, it was one of the most important staple foods of hill folks of south

western Himalayas. The name 'Red Rice' or 'Laal Dhaan' (local name in Hindi) has been given owing to its unique characteristics of red tinge of varying degree in decorticated grains. Red kernel colour in rice is primarily a monogenic dominant trait, however, in some ecotypes two dominant genes with complementary gene action is also present. The husk (palea and lemma) resembles the white rice and having pale yellow colour. The red colouration is present in the bran layer. The grains beyond the bran layer are same as that of ordinary rice. This crop is native to Asia and mainly grown in the hills at elevations ranging from 1100-2400 mamsl during the kharif season. The major growing regions in Himachal Pradesh include DodraKwar, Chirgaon, Rohru, Jubbal and Chopal in district Shimla; Naggar and Nirmand areas in district Kullu Jogindernagar and Jhanjheli areas of district Mandi; low lands along Giri, Tons rivers and their tributaries in Sirmaur; Bhanghal area of district Kangra; and mid and high hills of Chamba. The area under red rice has been shrinking remarkable after the introduction of cash crops like fruits and vegetables. Farmers have restricted cultivation to domestic consumption only.

### **Landraces in Himachal Pradesh**

There are various land races named after the region of cultivation or special characteristics like Bhrigu, Sukra, Jattu, Matali, Jhinjan, Juin, Kafayala, Desi Dhan, Karad, RodaDhan, Begmi, Chhohartu, Lal Dhan, LaluDhan. Most of these names are in local dialect of the region.

### **Varieties in Himachal Pradesh**

Palam Lal Dhaan-I (HPR 2720): Red rice variety developed by CSKHPKV, Palampur in 2013. Suitable for irrigated areas of mid hills (650-1500 m amsl) of H.P. Matures in 135-140 days after transplanting. Average yield 4.0-4.5 MT ha<sup>-1</sup>.

Him Palam Lal Dhan 1 (HPR 2795): Red decorticated grains developed by CSKHPKV, Palampur during 2017. Recommended for cultivation in rainfed uplands of low and mid hills (upto 1500 m amsl) of H.P. Harvestable maturity attains in 120-125 days after transplanting. Average yield ranges between 2.7 and 3.5 MT ha<sup>-1</sup>.

Chhohartu: Farmer's variety. The land race from Tehsil Chirgaon of district Shimla has been registered under PPV&FRA by Sh. Nehar Singh, Village for having special specific characters of red colour of decorticated grains. The land race has been named as 'Chhohartu' after the Chhohara Valley, being the home of this land race. Red rice, like white rice, is a



kharif season crop and there is no remarkable difference in cultivation practices of the two. In Himachal Pradesh, Transplanting time ranges from June to July. Sowing should be done 4 weeks prior to the scheduled date of transplanting. Harvestable maturity is attained in 120-140 days i.e. September-October.

