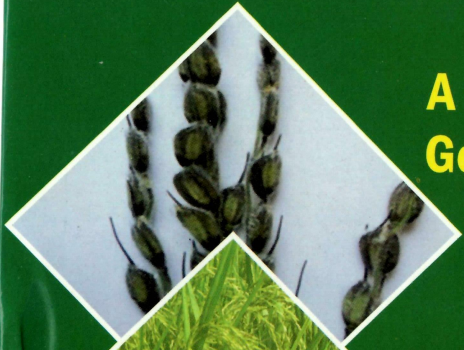


IGKV/Pub/2012/18

A Catalogue of Unique Rice Germplasm Collection from Chhattisgarh



CENTER FOR BIODIVERSITY RESEARCH AND DEVELOPMENT
DIRECTORATE OF RESEARCH SERVICES
INDIRA GANDHI KRISHI VISHWAVIDYALAYA
RAIPUR 492 012 CHHATTISGARH



Shekhar Dutt SM
GOVERNOR OF CHHATTISGARH



सत्यमेव जयते

RAJBHAVAN
RAIPUR - 492001
CHHATTISGARH
Phone : +91-771-2331100
+91-771-2331105
Fax : +91-771-2331104
+91-771-2331108

No. 853/PRO/RS/2012
Raipur, 03 Oct 2012

Message

I am glad to learn that Indira Gandhi Krishi Vishwavidyalaya is going to publish a Technical Bulletin on "Unique Rice Germ plasma"

Chhattisgarh is known for its rich biodiversity and especially for rice crops and therefore this state is also called as "Rice Bowl of India". Presently vast genetic resources are available for improvement of the rice crop which is one of the staple foods in India. As mentioned by Dr. R.H. Richharia, this region can be considered as a fountain of variability of the rice germplasm where approximately at every 250 ha, the germplasm pattern changes due to extreme variation in the agro and eco-climatic conditions, season, topography, altitude, soils and moisture stress, coupled with variation in the cultural heritage of the inhabitants. We have to preserve and maintain these precious germplasm. I am sure this catalogue will showcase such special landraces and will be useful for farmers, scientists, agriculture officers and students to increase their knowledge.

I convey my best wishes for this Technical Bulletin.

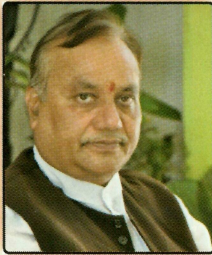

(Shekhar Dutt)



D.O. NO. 2412 Dated: 3 OCT 2012

Chandrashekhar Sahu

Minister,
Agriculture, Animal Husbandery
Fisheries & Labour Department
Govt. of Chhattisgarh, Raipur



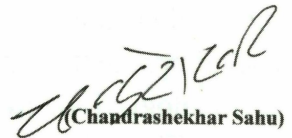
Message

Chhattisgarh is an Agricultural based state with more than 70% of the farmers depending on Agriculture for their livelihood. Here the culture itself is depended on Rice and each land race has its own importance. This could be the possible reason for calling this state as “*Dhan ke katora*” meaning the “Rice bowl” of the country. With the advent of new high yielding rice varieties, this bowl seems to be losing its treasure of rice biodiversity as many of the land races are rarely seems to be cultivated which was previously part of our culture.

Indira Gandhi Krishi Vishwavidyalaya, Raipur and their Scientists deserves the appreciation as they excellently saved our treasure, in the form of 23,250 rice accessions which has many land races and wild relatives. They deserve further applause as these germplasm is being utilized for improving the quality of rice varieties being developed. Apart from merely maintaining these treasures, they evaluated and prepared this catalogue which will be of help to one and all who want to increase knowledge about the characteristics of these land races.

This catalogue also encompasses about the medicinal and aromatic rice accessions which people are keen to know and utilize. Hope this catalogue will be helpful to all the mankind and students.

With best wishes


(Chandrashekhar Sahu)



इंदिरा गांधी कृषि विश्वविद्यालय

कृषक नगर, रायपुर ४९२ ०१२ (छत्तीसगढ़) भारत

INDIRA GANDHI KRISHI VISHWAVIDYALAYA

Raipur 492 012 (Chhattisgarh) India

Phone: 91-771-2443419 (O)
Fax : 91-771-2442302, 2442131
e-mail : vcigkv@gmail.com,
spatil_igau@yahoo.com
Website : www.igau.edu.in

डॉ. एस.के. पाटील

कुलपति

Dr. S.K. Patil

Vice Chancellor

No : VC/188/2012/638

Date : 12.09.2012



Forward

Genetic resource enhancement is the foundation of any good breeding program. Apart from high yield, a modern day variety is expected to combine number of other traits of specific importance. Rice is known for its tremendous variability for number of phenological, morphological, anatomical and nutritional characters apart from adaptability and productivity. Chhattisgarh State of India is popularly known as “Rice Bowl” of the country because of rich diversity of rice genetic resources existing in the state. Dr. R.H. Richaria and researchers of the university have collected a number of rice germplasm accessions and made the university rich in rice genetic resources. Most of these land races are no longer in cultivation because of introduction of high yielding modern rice varieties in the state.

The available rice genetic resources have some unique collections; some of those also have medicinal value too. In this publication some of the unique collections are depicted. Portrayal and glimpse of these distinct collections give an array of diversity for morphological and aromatic traits.

The effort made by Dr. A.K. Sarawgi, Dr. G.R. Sahu and other Scientists of the university deserves appreciation for bringing out this valuable publication.


(S.K. Patil)

Contents

Introduction

1-2

Unique Rice Germplasm of Chhattisgarh

3-57

Introduction

Rice is not just another crop, it is a part and parcel in all the sphere of human life. More than two-third population of this world consumes rice, but all the section of society has significant liking and disliking for different categories of rice. This make rice so unique and important and therefore it is very essential to conserve, characterize and document the available unique rice not only for scientific reasons but also for social, religious, economical, political etc. reasons. Chhattisgarh state is particularly blessed with numbers of different types of rice and can be considered as foundation of variability (Gene centre) where approximately at every 250 ha. the germplasm pattern changes due to extreme variation in agro and eco-climatic conditions, seasons, topography and toposesquences, altitudes, soils and moisture stress coupled with variation in cultural heritage of the inhabitants (Richharia, 1979). In Chhattisgarh state, existence of a large number of unique types that enjoy patronage in most of the parts of state on account of their desirable quality for various purposes. These varieties include Dubraj, Vishnu-Bhog, Shri Kamal, Samund Chini, Jata Shankar, Sheetal Bhog, Jou Phool, Chinnaur, Kali Kamod, Tulsi Manjari, Lokti Machhi, Atmasheetal etc. The genetic variability in areas possessing great genetic diversity in crop plants is disappearing at an alarming rate. In this regard the contribution of Dr. R. H. Richharia and his team deserve the salute, appreciation and acknowledgement from the scientists as well as millions of rice farmers for preserving and utilizing the valuable unique diversity.

Plant genetic resources are most valuable and essential basic

raw materials to meet the current and future needs of crop improvement programme. A wider genetic base, thus assumes priority in Plant Breeding research aimed at developing new varieties for increased crop production. This diversity comprises native land races, local selections, elite cultivars and wild relatives of crop plants. The wealth of land races, which could not even be called varieties and which the farmer grew earlier, are gradually disappearing. A collection and study of these has revealed that these exhibit many useful characteristics and can help in crop improvement programmes. Plant breeders, in their endeavor directed towards increased agricultural production, have a pressing need for more genetic diversity to work upon, to cater to varied kinds of problems and needs. The wider the range of choice a breeder will help in selecting the appropriate kind of diversity, the better will be the chances for his success for any particular goal. One can thus understand the dire need for conservation of plant genetic diversity. Its value in the future will be much more than what can be imagined at present, considering the diversified crop improvement programmes, technologies and human needs.

The objective of this publication is the utilization of knowledge of unique collections with some very distinct feature of genetic, academic, evolutionary, economic, esthetic, medicinal etc. importance. As a raw and basic genetic material of future elite cultivars and an indicator of sustainability of agriculture production, the collection, characterization and documentation of genetic diversity is of utmost importance and concern for agricultural production and ultimately for the welfare of society and humankind.

Danwar

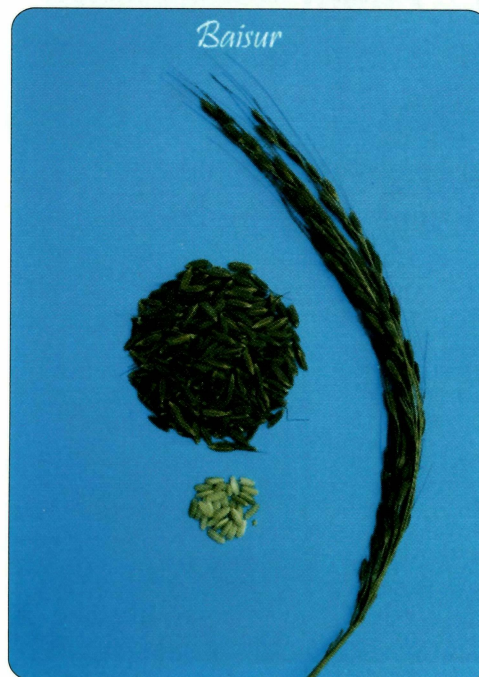
(D: 1363), 390852

- Collected from Sarona/ Bastar (C.G.)
- Hull light purple colour with long and partly awning.
- Coleoptile and stigma is purple in colour
- Kernel colour is red.
- Its grain is used for easy removal of placenta of cow after delivery

Baisur

(B: 1611), IC 390853

- The smoke from burning husk (Chaff) cures half side head-ache in human beings.
- Kernel colour is red.
- Hull is black in colour with long and partly awning.



Resari

(R: 346), IC 390854C

- It's over cooked rice with enough water (semi liquid) is fed to cattle for removal of weakness.
- The tribals use *Murra* of this variety, mixed with the bark of Phans plant, to cure prolonged cough.

Sarai Phool

(S: 739), IC 390851

- Used for removing weakness in human beings.



Maharaji

(M: 504), IC 390850

- Used for removing weakness in mother caused by bleeding after delivery.

Bhejari

(B: 289), IC 390848

- Its grain mixed with crushed linseed (grains) and boiled, then fed to a cow after delivery to ease removal of placenta.



Gathuwan

(G: 1039), IC 390847

- Coleoptile, Basal leaf sheath, collar and stigma are purple in colour. Hull colour is brown (tawny).
- Used for patients suffering from joints pain.

Nariyal Chudi

(BD: 650, N: 174), IC 390876

- Hull colour is brown (tawny).
- Suitable for deep water situation and marshy land.



Ama Ruthi

(A: 643), IC 390773

- Collected from Antagarh/ Bastar (C.G.).
- Spikelets are of clustering habit, looks like cluster of mango fruits.
- Grain size is medium bold.

Koudi Dhul

(K: 1849), IC 390770

- Collected from Dharamjayagarh/ Raipur (C.G.)
- Panicle has super clustered spikelets (2 to 7 spikelets in place of one).
- Grain size is short slender.
- Kernel is of deep red colour.



Chhind Guchhi

(C: 739), IC 390771

- Collected from Bhanupratappur/ Bastar (C.G.).
- Spikeles are in clustering habit.
- Hull colour is of golden lines on red.
- Grain size is medium slender.

Ama Jopha

(A: 200), IC 390769

- Collected from Deobhog/ Raipur (C.G.).
- Panicle has clustered grains (2 to 3 grains in place of one).
- Setting of spikelets looks like cluster of mango fruits.



Nariyal Phool

(N: 796), IC 390772

- Collected from Saraipali/ Raipur (C.G.).
- Its panicle has clustered grains.
- Due to clustering habit spikelets look like flower of coconut.

Sua Pankhi

(S: 1634), IC 390770

- Collected from Seoni (M.P.).
- Spikelets have typical long sterile glumes like wild species *O. grandiglumis*.
- Hull colour is red.



Pankhi

(P: 189), IC 390778

- Collected from Deobhog/ Raipur (C.G.).
- Spikelets have long sterile glumes.
- Spikelets look like flying birds.
- Colour of Lemma Palea is reddish to purple.
- Hull is of black colour.

Ramali Chonch

(R: 489), IC 390782

- Collected from Durgukondal/ Bastar (C.G.).
- Spikelets have long sterile glumes.



Pakshi Raj

(P: 92), IC 390783

- Collected from Pusour/ Raigarh (C.G.).
- Spikelets have long sterile glumes.
- Hull colour is reddish to purple.
- Spikelets look like flying birds.

Khatiapati

(K: 60)

- Source of collection was Pallari/ Raipur (C.G.).
- Long slender grains and have red colour hulls.



Parmal

(P: 445)

- Collected from Paraswada/ Balaghat (M. P.).
- Long slender grain (such as non scented basmati).

Papita

(P: 672), IC 390820

- Collected from Khairagarh/Rajnandgaon (C. G.).
- Long slender (long fine) spikelets.



Ram Laxman

(R: 358)

- Collected from Gharghoda/ Raigarh (C.G.).
- Each panicle contain 55 per cent double grain and 2 to 3 per cent triple grains.
- Exhibit presence of multiple pistils in each spikelet.

Hanuman Langur

(H: 470), IC 390822

- Collected from Mahasamund/ Raipur (C.G.).
- Size of spikelets are long slender (long fine).



Do Dana

(D: 612), IC 390777

- Collected from Bilaspur (C.G.).
- This has multiple pistil spikelets (special character).
- Coleoptile, collar, auricle and basal leaf sheath is of purple colour.
- After maturity about 65 per cent spikelets consist of double grain.
- Triple grain are also found.

Dokara Dokari

(D: 520), IC 390786

- Collected from Fingeshwar/ Raipur (C.G.).
- Super long spikelets (about 13 to 14 mm).
- Longest grain among all accessions of germplasm.



Suldhan

(S: 1470), IC 390829

- It was collected from Deobhog, Raipur (C.G.).
- Long and fully awned with black hull colour.
- Kernel is dark red in colour.

Jhilli

(J: 384), IC 390840

- Collected from Patthalgaon/ Raigarh (C.G.).
- Grain size is medium slender (medium super fine).
- It was used for cooling purpose.



Jalponga

(J: 311), IC 390826

- Collected from Baihar/ Balaghat (M. P.).
- Hull is typically brown furrow on straw colour.
- Medium bold grains.
- It is a deep water paddy.

Roti

(R: 299), IC 390790

- Collected from Bastar (C.G.).
- Short and fully awned with dark red and glutinous kernel.
- Basal leaf sheath is of light purple colour.
- Suitable for making chapatti bread.



Hathipanjara

(H: 144), IC 390827

- Collected from Keshkal/ Bastar (C.G.).
- It has long bold spikelets with highest 1000 grains weight of about 48.0 gms.
- According to its name, grain is typically bold.

Bokramundi

(B: 2318), IC 390797

- Hull colour is red with golden lines.
- Grain size is short bold.

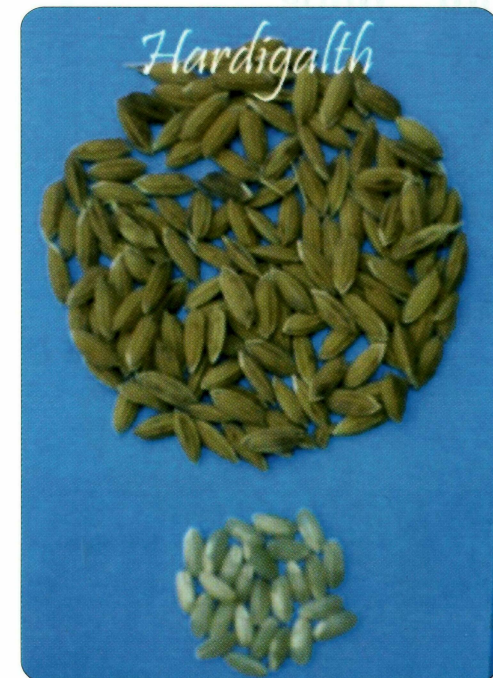


Chepti Gurmatiya (C: 843), IC 390817

- Coleoptyle, basal leaf sheath, ligule and stigma have purple colour.
- Leaf blade have purple margins.
- Popular non scented variety in Chhattisgarh state.
- Leaf sheath having anthocyanine pigmentation.

Hardi Gathi (H: 17)

- High yielding amongst traditional cultivars.
- Hull is typical golden colour.
- Ligules have purple line.



Son Banke

(BD: 115, S: 167), IC 390843

- Medium super fine grains.

Vishnu Bhog

(V: 28), IC 390859

- Collected from Badrafnagar/Surguja (C.G.).
- Stigma is of yellow colour.
- Popular variety amongst short slender scented group.



Samund Chini

(S: 980), IC 390857

- Collected from Fingeshwar/ Raipur (C.G.).
- Hull is straw coloured.
- Kernel is short slender, white scented.

Keraghul

(K: 2034), IC 390833

- Collected from Gharghoda/ Raigarh (C.G.).
- Smallest grains among all accessions.
- White, scented kernel.



Atma Shital

(BD: 293), IC 390804

- Collected from Chhindgarh/ Bastar (C.G.).
- Having glabrous leaf pubescence.
- Popular scented variety of Bastar District.
- Smaller, short slender, scented grain with golden hull.



Dubraj

(D: 34), IC 390868

- Collected from Balodabazar/Raipur (C.G.).
- High yielding, medium slender, white kernel.
- Field tolerant to gall midge.



Chhatri

(C: 92), IC 390803

- Collected fro Dabra/ Gwalior (M.P.).
- Collar, auricle and stigma is of purple colour.
- Straw coloured hull.
- Kernel is white scented.

Kali Kamod

(K: 338), IC 390802

- Collected from Arang/ Raipur (C.G.).
- Lemma palea is of typical purple colour.
- Hull is black in colour.
- Medium slender, scented, white kernel.

Chhatri



Kali Kamod



Badshah Bhog

(B: 42)

- Popular scented variety in Bastar district.
- Short slender scented rice collected from Bakawand/ Bastar (C.G.).
- Hull colour is of vermilion and stigma is of typical purple colour.
- Tolerant to case worm.

Bans Patri

(B: 728), IC 390799

- Collected from Gariyaband/ Raipur (C.G.).
- Lemma palea is of straw colour.
- Medium slender, white scented kernel.
- Field tolerant to gall midge.



Chini Kapoor

(C: 459), IC 390800

- Collected from Sarana/ Bastar (C.G.).
- Hull is of golden lines on vermillion colour.
- Medium slender, scented white kernel.
- Long and partial awn.

Tulsi Manjari

(BD: 1290), IC 390784

- Collected from Sabour/ Bihar.
- Lemma Palea colour is spreading light purple on straw.
- Kernel is of white colour.
- Spikelets look like flower of *Tulsi*.



Bhainsa Puchhi

(B: 2333), IC 390828

- Collected from Deobhog/ Raipur (C.G.).
- Grain size typical round (short bold).
- Lemma Palea colour is purple furrow on straw.
- Awn long and full, colour is of typical purple, look like hairs of buffalo's tail.

Tulsi Prasad

(BD: 8, T: 56), IC 390815

- Collected from Arang, Raipur (C.G.).
- Hull is of spreading light purple colour.
- Kernel medium slender, white and scented.



Kubri Mohar

(BD: 401, K: 59), IC 390816

- Collected from Magarlod, Raipur (C.G.)
- Lemma Palea is of golden lining on vermilion colour.
- Kernel is medium slender, white and scented.
- Having glabrous leaf pubescence.

Chinnor

(BD: 1295), IC 390808

- Collected from Tilda, Raipur (C.G.).
- Golden hull, long and partly awned.
- Kernel medium slender scented and of white colour.



Kari Gilas

(K: 760)

- Collected from Charama, Bastar (C.G.).
- Kernel is red in colour, scented, medium bold.
- Lemma palea colour is purple.

Elayachi

(E: 15), IC 390810

- Collected from Fingeshawar. Raipur (C.G.).
- Golden lemma palea.
- Round shaped grain (short bold), look like *Elayachi*.



Shri Kamal

(S: 663), IC 390842

- Collected from Raipur, Naikin/Sidhi (M.P.).
- Round (short bold) grains.
- Spreading purple colour on straw hull.
- Stigma is of yellow colour.



Jira dhan

(BD: 575)

- Hull is black in colour without awn.



**Some other unique
scented
Rice
Accessions**





RICE VARIETIES EVOLVED BY INDIRA GANDHI KRISHI VISHWAVIDYALAYA, RAIPUR

S. No.	Variety	Year of Release/ Notification	Salient features	Duration Days	Yield q/ha
1	IGKV R2 (Durgeshwari)	2011	Better tolerance to drought at physiological level, resistant to leaf blast, moderately resistant/ tolerant to sheath blight, BLB, sheath rot, gall midge and rice tungro diseases	130-135	50-55
2	IGKV R1 (Indira Rajeshwari)	2011	Tolerant to drought at physiological level, moderately resistant to leaf blast, gall midge and brown spot, posses long bold grain with good head rice recovery	120-125	52-57
3	Indira Barani Dhan-1	2010	Specially bred for rainfed shallow lowland ecosystem, adopted to aerobic conditions, moderately resistant to stem borer, field tolerance to neck blast and bacterial blight	111-115	40-45
4	IGKV R -1244 Maheshwari	2009	Resistant to leaf blast and gall midge, moderately resistant/ tolerant to sheath blight, RTV, BPH and stem borer, long slender grain with better head rice recovery	130-135	50-55
5	Karma Mahsuri	2007	Resistant to gall midge biotype 1,4 and 5, moderately resistant to leaf blight and tolerant to brown spot. Improvement over Mahsuri and Swarna	125-130	45-50
6	Indira Sona (Hybrid)	2006	Semi dwarf, resistant to gall midge and tolerant to blast, long slender grain type.	120-125	65-70
7	Chandrasahini	2006	Semi dwarf, resistant to gall midge biotype 1, moderately resistant to BPH, Leaf folder, WBPH and Neck blast, tolerant to leaf blast, brown spot and sheath rot, export grain quality (non basmati), high head rice recovery	120-125	45-50
8	Samleshwari	2006	Semi dwarf, resistant to gall midge biotype 1 & 4, moderately resistant to blast, tolerant to brown spot and neck blast, tolerant to drought, high head rice recovery and desirable alkalivalue.	105-112	30-35
9	Jaldubi	2006	Tall, strong and stout culm, resistant to blast and gall midge biotype 1, medium fine grain with good head rice recovery	135-140	40-45
10	Indira Sugandhit dhan 1	2004	Semi dwarf, resistant to gall midge, tolerant to brown spot and field tolerant to blast and stem borer, medium slender grain, strongly scented and good head rice recovery	125-130	40-45
11	Bamleshwari	2001	Semi dwarf, resistant to BLB, tolerant to sheath blight and brown spot, field tolerance to gall midge and WBPH	130-135	45-55
12	Danteshwari	1997	Semi dwarf, resistant to gall midge, tolerant to brown spot, normally escapes drought stress being early variety, suitable for kharif and summer cultivation, long slender grain with good head rice recovery	105-110	30-35
13	Poornima	1997	Semi dwarf, straw colour husk, being as early variety it escapes the most of the diseases and pests under field condition, long slender grain, good head rice recovery and eating quality	100-105	30-35
14	Shyamla	1997	Semi dwarf, purple coloured leaf sheath, leaf blade and margins, better tolerance to drought than other purple leaf varieties. This variety help in identification of wild rice plants in early crop growth stage in nursery and field, long slender grain with good head rice recovery percentage	130-135	35-40
15	Mahamaya	1995	Semi dwarf, purple auricle and abiculus, resistant to gall midge, tolerant to WBPH, leaf folder, sheath rot, brown spot and BLB, suitable for poha industry	125-128	50-55

Gall-midge resistant genes registered by IGKV, Raipur

S. No.	Genes Registered for	INGR No.	National Identity	Genotype
1	Rice gall midge resistance gene <i>Gm-1</i>	04003	IC 296614	Samridhi
2	Rice gall midge resistance gene <i>Gm-2</i>	04004	IC296614	Surekha
3	Rice gall midge resistance gene <i>gm-3</i>	04005	IC 296614	RP 2068-18-3-5
4	Rice gall midge resistance gene <i>Gm-4</i>	04006	IC296614	Abhaya
5	Rice gall midge resistance gene <i>Gm-5</i>	04007	IC 296614	ARC 5984
6	Rice gall midge resistance gene <i>Gm-7</i>	04008	IC296614	RP 2333-156-8
7	Rice gall midge resistance gene <i>Gm-8</i>	04009	IC 296614	Jhitpiti
8	Rice gall midge resistance gene <i>Gm-9</i>	04010	IC296614	Line 9

