

# 1. Title : Folk Rice: A tool tailoring rice bio-diversity conservation and entrepreneurship development in West Bengal

## 2. Category : Agriculture :

**Folk rice based cropping system with legumes can give long term ecological and monetary benefit-a new insight.**



## 3. Challenges

The gradual disappearance and colossal loss of heirloom rice varieties possessing amazing range of adaptive potentiality to different abiotic and biotic environmental conditions, yield potentialities and unique traits of aroma, nutraceutical and culinary qualities and unrevealed characters either due to replacement with modern varieties or disuse has emerged as a threat to the agro biodiversity resulting irreparable harm to agro ecosystem fetching erosion of folk knowledge and culture; exterminating many traditional agricultural systems; displacing of marginal farmers and effecting climatic aberration in larger perspective. Prior to Green Revolution, as against 82000 folk rice varieties in India, West Bengal had a rich treasure of more than 5500 numbers recorded to have existed until 1970s, but out of that approximately 150 numbers are found to be extant in the farmers' fields. Re-sensitization and re-proving the amazing yield potentialities of region specific folk rice varieties that remained obfuscated over the years is a must to combat our future food security and to minimize health expenses. A large section of farmers who understand the intrinsic value of seed is re-adopting folk rice in different areas.

## 4. Initiatives:

In order to achieve the dual objectives of conservation of rice germplasm warranting long term yield stability of crops in organic mode, attain resilience of agro-ecosystems as well as superiority over modern varieties in marginal & fertile lands as well and retention of rural youths in agriculture encouraging entrepreneurship development with potential Folk Rice, the Agricultural Training Centre, Fulia under the aegis of the State Department of Agriculture, Government of West Bengal has been implementing as PIA a scheme entitled **“Folk Rice- Collection, Conservation, Multiplication through Distribution and On Farm Trial for Popularization among the Farming Community of West Bengal under RKVY Normal (P&G) since 2015-16.**

## 5. Key Result:

With a view to showcasing ecological and regional specificity, distinctive traits like yield, taste, aroma, fineness, nutritive value of grain, straw and marketability etc. of folk rice varieties (FRVs), the following interventions being coupled with encouragement towards entrepreneurship development of rural youth has been undertaken since 2015-16 in selected 11 blocks of 11 districts in varied agro-climatic regions of the state ( shown in Table 1, 2 ,3 and 4). Farmers seeing the yield potentialities of folk rice under organic mode with the special agronomic manipulations-Single Seedling Planting method of neighbouring farmers are adopting folk rice and this number is increasing. Soil study of the centre shows that with the passage of time, under organic mode, soil microbial population that supply plant nutrients to the plants is restored thereby the cost of cultivation is minimized. This is happening in farmers' fields also.

## 6. Impact:

The project has been proved as socioeconomically relevant, viable and sustainable at least in marginal lands and thereby calls for continuity in the subsequent years and expansion in new areas. The hitherto neglected potential of these FRVs, if exposed, can ensure farming to be a remunerative one along with addressing so many issues of natural degradation. The project has succeeded in creating a craze with folk rice cultivation in the following events:

a) As the productivity of some bold folk rice under organic mode of cultivation can compete with modern rice varieties, farmers are accepting the varieties like Kerala Sundari, Bahurupi, Kesabsal etc and Kalabhat is a spectacular success in West Bengal. This aromatic black rice ( a near extinct variety of Maharashtra) being the most nutritive rice in the world has gained momentum producing more than 150 ton in West Bengal which is the highest production in India in 2017. More than 2 tons of Kalabhat was sold from a sub-divisional Agril Fair in Siliguri in Dec 2017 making a record in India. Other white aromatic rice like Mallifulo, Radhatilak , red rice like Shatia, Hetomari, Kabirajsal find ready market. Jogeshgunj (Sundarban) area is producing many such folk rice varieties with zero input. Other prominent area of folk rice is Raigunj Block ( Ultra Dinajpur), Coochbihar I block, Sonamukhi and Joypur Block of Bankura , Shyampur of Howrah, Patharpratima of South 24 Parganas , Balagarh of Hoogly etc. Market for selling different types of organic rice is picking up in different cities. Some farmers would export rice next year.

b) Based on the experimentation at Rice germplasm conservation centre and farmers fields under the project, ATC, Fulia has adopted one Sub- divisional Adaptive Research Farm (SARF) named SARF, Hanskhali in the district of Nadia of West Bengal extending advisory along with FRV seeds for multiplication for meeting demands of quality seeds. Within 3<sup>rd</sup> year of conversion, the said SARF has culminated into a centre of attraction and visits by farmers, officials of both State Government and GOI. The situation has been so enthusiastic that a Rubber Rice Huller has been installed at that farm for milling unpolished rice.



Folk Rice at SARF Hanskhali , SARF , Nadia

c) International Society for Krishna Consciousness (ISCKON), Mayapur, Nadia, West Bengal witnessing the amazing potential of folk rice conserved and multiplied both at ATC, Fulia and SARF, Hanskhali, has been thrilled to convert its 50 acres farm land in exclusive organic mode with FRVs. The FRVs grown and multiplied there are Radhatilak, Kalabhat, Dudheswar, Gobindabhog, hamai, Jhumpuri, Khara and Balam on 55 Bighas (33 decimel) during Kharif 2017-18 and 2 varieties of folk rice like Sonalu and JP110 are to be cultivated on 60 Bighas of land during Summer, 2018. This has documented further spread of wings of folk rice being coupled with its dazzling performances.



d) Increased awareness generation among farmers has fetched distribution of folk rice varieties from the germplasm repository in the following manner: 100 varieties to 40 farmers; 80 varieties to 45 farmers; 120 varieties to 64 farmers; 150 varieties to 80 farmers during 2014, 2015, 2016 and 2017 respectively. The farmers obtaining particular FRV from this centre don't need to collect that FRV again in his life time if that seeds are maintained properly.

e) The organic farming with amazing 435 folk rice varieties at this centre has been a place to visit under exposure visit activity of ATMA, PMKSY & PKVY and altogether 1633 farmers from all over the state marked their footprints during 2017-18.

### 7. Lessons Learned

As the centre has the experience of growing more than 400 folk rice varieties in its Bio Diversity Conservation Farm for more than a decade, the centre has got the confidence to grow them in farmers fields in a project mode after many initial success in different location with the technology that has been developed and tested in the farm. The learning from the centre and from the farmers regarding the region specific technology is of great help while transferring them in the fields. However, many farmers still show their reluctance despite seeing the amazing results. The seeds are not a marketable commodity which they are used to. Its challenging in one sense that market forces dealing with external agricultural inputs may not encourage the no external input driven -high return organic farming in the farmers' level. Despite all odds, farmers with their firm conviction and commitment towards organic farming overcome all obstacles, Raigunj in particular increased area of organic farming from 3 acres to 20 acres within a couple of years.







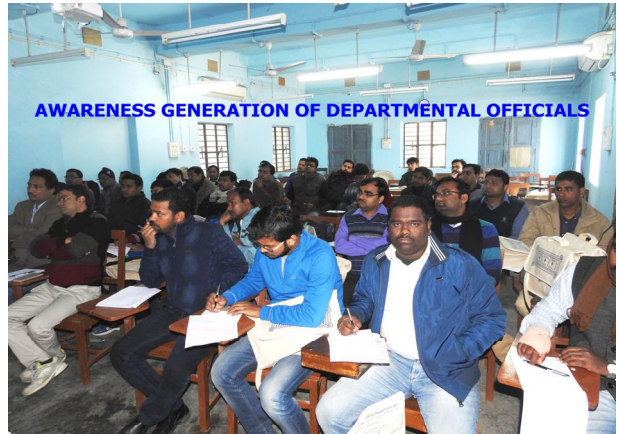
**JOINT SECRETARIES VISITING AT ATC PULTA'S STALL**



**IN SITU CONSERVATION AND MULTIPLICATION OF FRVs**



**SENSITIZATION PROGRAMME OF FARMERS**



**AWARENESS GENERATION OF DEPARTMENTAL OFFICIALS**



Speaker : Dr. Paritosh Bhattacharaya  
Ex Director, National Center for Organic Farming  
Govt. of India

One Day Awareness  
Generation Programme  
of the Departmental Officers  
on  
Sensitization of Folk Rice  
under RKVY Scheme, 2017-18  
10th & 11th January, 2018



**KALABHAT DC AT COOCHBEHAR, 2016**

8.




## Supporting Quotes

### **ENTREPRENEURSHIP DEVELOPMENT-** the most scintillating success of the intervention:

The centre has succeeded to extend its outreach and encourage 26 User's Group across the State to retain agricultural activities with Folk Rice as an indispensable constituent of cropping programme exclusively in low cost, organic and remunerative mode of farming. Stalls at **Biswa Bangla & Sufal Bangla** procuring folk rice and offering sale to customers etc. are illustrative of the keen concern of the Government for harnessing a breakthrough especially with aromatic folk rice. **Consumers increased demand for organic food items boost up these Users' Group for marketing their special rice viz, unpolished black, brown, red and white rice.** The activities of few of these leading entrepreneurs, showcasing agriculture a profession for unemployed youths for ensuring livelihood security, are exemplary and documented below:



Table 4: Some of the Rural Youths Taken up Folk rice for their Livelihood

 <p><a href="mailto:bhairabsaini@yahoo.in">bhairabsaini@yahoo.in</a></p>	<p><b>Sri Bhairab Saini</b> along with 36 farmers of Panchal of Sonamukhi Block of Bankura district of West Bengal conserve 147 numbers of FRV and multiply 12 FRVs for commercial production in organic mode forming a Farmers Group covering 8 hectares of land. The prominent varieties are Kalabhat, Gobindabhog, Dehradun gandheswari, Chamarmani, Bahurupi and Asitkalma. The Group participates in several Utsavs &amp; Krishi Mela both domestically and nationally and offers for sale of those organically grown rice and derived food items like rice bubble, puffed rice etc. The expertise Sri Saini is being utilized in the flagship mission of PKVY as LRP and he has supplied FRV seeds to 50 acres of land under PKVY cluster.</p>
 <p><a href="mailto:kkmsbhat@gmail.com">kkmsbhat@gmail.com</a></p>	<p><b>Sri Sourin Chatterjee</b> of Ausgram-1 Block of Burdwan district, another unemployed youth is engaged in cultivation of folk rice varieties in 10 hectares of land and eking out his livelihood by sale of the varieties like Kalabhat, Kabirajsal, Dehradun gandheswari, Lalsaru, Chamarmani, Tulaipanji, JP-110 etc in the locality as well as in several Shopping Malls and his own stall in the Gariahat area of Kolkata. The group also traverses across the State for showcasing the exhibits and sale of organic produce. Sri Chatterjee has created employment opportunity of nearly 25 unemployed youths of the locality.</p>
 <p><a href="mailto:krishiratna@gmail.com">krishiratna@gmail.com</a></p>	<p><b>Sri Nimai Mondal</b> of Hanskhali Block of Nadia district is another unemployed youth and leads the way to create employment by motivating 165 farmers in organic cultivation and commercial folk production in 20 hectares of land and sustains livelihood by offering sale of varieties like Kalabhat, Kabirajsal, Dehradun gandheswari, Radhatilak, Shatia etc in the locality as well as in several shopping malls. They have formed a farmer's organization employing local youths in various stages of production, value addition and marketing. The organization also participates in Krishi Mela and Exhibition for showcasing and sale of their organic folk rice.</p>

**Few prominent FRVs, with export potential, promoted through this intervention:**



Dehradun Gandheswari - Fine



Agniban- Medicinal rice



Kalabhat & Black rice



Kaminibhog- Aromatic rice



Bakui & Medicinal rice



Radhunipagol- Aromatic rice



**Talmugur – Red rice**



**Khara – Red rice**



**Kaminibhog – Aromatic rice**

**Additional Information :**

A good marketing linkage for these Folk Rice Varieties can thereby retain unemployed youths in Agriculture and pave their ways towards economic prosperity. Fish cum paddy culture in low lying areas could be an important part in the years to come to generate more income.

This distinctive intervention, being pioneer of its kind under RKVY under (P&G) since 2015-16, has been instrumental in extending outreach, generating keenness, and encouragement among these Usersø Group and piloting for fulfilling the dual objectives of rice germplasm conservation in the International Decade of Biodiversity (2011-2020) and employment generation with these amazing Folk Rice Varieties through well-knit marketing linkages.

Among other Usersø groups, Forum for Indigenous Agriculture Movement, Raigunj, Uttar Dinajpur (sudiptamukhopadhaya@gmail.com) and Paschim Sridharkati Jankalyan Sanghya, Jogesgunj, North 24 Parganas (psjks.hingalganj@gmail.com ) etc. are equally important to mention for their commendable entrepreneurship with these special aromatic rice.

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**Table 1: Initiates taken up to sensitize the farmers to readopt folk rice**

<b>Intervention</b>	<b>Achievements</b>
Awareness generation	4450 farmers of 11 Blocks of 11 Districts have been trained on folk rice potential
On Farm Trial	209 ha of 11 districts have been covered with FRVs with organic inputs.
Collection of FRVs	100 FRVs have been collected from across the State and conserved in ATC,Fulia
In-situ conservation	A repository and treasure trove of 435 indigenous rice varieties in ATC,Fulia
Morphological & Participatory Research	Conduction of Morphological research is carried out each year. DNA finger printing, bio-chemical analysis etc are being studied by University scholars. Morphological data of 225 indigenous varieties have been generated as an instrument towards GI registration. Proximate analysis of 25 FRVs are under process.
Participation in Krishi Mela, Seed festivals etc	Participation in State Level Programme like Mati Utsav, participation and display of folk rice exhibits at ISKCON, Mayapur during Rathajatra, Organic agriculture fair at Kolkata and so on showcasing amazing potential of FRVs with derived food items.
Value addition of FRVs through distribution of Rice Huller	Subsidized distribution of 11 Rice hullers to the registered farmers Group or FPOs of 11 Blocks to commence shortly.

**Table 2: Productivity of few prominent FRVs grown organically with Single Seedling Planting (based average since 2015-16 to 2017-18) while implementing the projects in 11 Blocks of 11 districts of West Bengal.**

Sl. No	Name of the Variety	Yield / ha (t/ ha)	Sl. No	Name of the Variety	Yield / ha (t/ ha)
1	Agniban ( Red rice)	3.85	10	Kalabhat ( aromatic)	3.65
2	Badshabhog ( aromatic)	2.83	11	Kalonunia ( aromatic )	2.45
3	Bahurupi ( Bold ) *	5.20	12	Kaminibhog ( aromatic)	2.90
4	Birole ( Medium)	3.90	13	Kankchur ( aromatic)	3.85
5	Chamatkar ( Fine rice)	3.75	14	Kerala Sundari ( bold)*	5.35
6	Dehradun Gandheswari	3.63	15	Khejurchari ( medium)	4.25
7	Gobindobhog ( aromatic)	3.20	16	Radhatilak ( aromatic)	3.85
8	Jhingasal ( Fine rice )	3.58	17	Tulaipanji ( aromatic)	2.0
9	JP 110 ( Fine aromatic)	3.90	18	Tuslimukul ( aromatic)	3.35

\*These can compete with and perform better than modern varieties with organic input only. Aromatic rice fetches good monetary return.

**Table 3: ECONOMICS OF TRIAL WITH FRVs (FOR 1 BIGHA UNIT AT COOCHBEHAR I BLOCK (based average value since 2015-16 to 2017-18).**

Item	Input/Bigha (33 decimal) for MTU-7029 (HYV)	Cost of Input in Rupees	Input/Bigha(33 decimal) for Folk Rice variety Kalabhat	Cost of Input in Rupees for Folk Rice variety Kalabhat
Seed	6 Kg	100.00	Farmers own seed	0.00
Seed Treating Chemicals	12 g	12.00	Trichoderma- 24 g/Bigha	15.00
Seed Bed preparation	-	325.00	-	325.00
Land preparation	-	750.00	-	750.00
Fertilizers	10:26:26 - 20 Kg Urea 6 10.00 Kg MOP 6 6 Kg	550.00	Neem cake	400.00
Transplanting	-	1500.00	Double Transplanting	1800.00
Pesticides	-	800.00	Liquid manure	250.00
Fungicides	-	450.00	-	0.00
Weedicides	-	300.00	-	0.00
Management at intermediate stage	-	2000.00	-	2000.00
<b>Total Cost</b>		<b>6787.00</b>		<b>5540.00</b>
Yield in terms of Clean Rice	-	425.00 Kg		220.00 Kg
Sale Price	Rs. 23.00 /Kg	9775.00	Rs. 70.00/Kg	15400.00*

\*Indicates that organically grown aromatic rice Kalabhat is far more remunerative than modern varieties.