

Study on “Utilization of Rice fallows for cultivation of oilseeds and pulses in Eastern Region

Background:

Rice is the major crop grown over an area of > 20 million ha in Eastern States comprising Assam, Bihar, Chhattisgarh, Jharkhand, Odisha and West Bengal. Due to various reasons such as cultivation of long-duration paddy varieties, lack of irrigation, soil moisture stress at planting time of winter crops, water logging and excessive moisture in Tal areas, lack of short duration varieties of rabi crops for late planting (Tal areas) and other socio-economic problems like stray cattle and blue bulls etc. large area of about 8 million ha remained fallow after harvest of paddy during rabi season in these States. Mono- cropping system with low yield of paddy of 1856 kg/ha in comparison to highest yield of 3859 kg/ha of Punjab and National average of 2257 kg/ha (2009-12) is attributing to low agricultural profitability in the region. An illustrative list of districts with the information pertaining to average (2008-11) area under Kharif paddy, area covered under major rabi crops like wheat, pulses and oilseeds and likely area remained fallow during rabi season is given in ***Annexure-I***. With the inception of BGREI in all the 05 States, area under paddy has also gone up and area under rice fallows has also gone up considerably. Therefore, some more potential rice fallows districts will be identified in consultation with the States.

2. Scope for cultivation of Pulses and Oilseed crops in rice fallows:

The residual moisture left in the soil at the time of rice harvest is often sufficient to raise short-duration pulses and oilseed crops and rice fallows can be converted into productive lands. Introduction of pulses such as lentil, mungbean, urdbean, lathyrus, field peas and oilseeds such as mustard, groundnut, linseed, niger, safflower and sesame etc. in rice fallows can augment the domestic availability pulses and oilseeds, which are in short supply and will also help in restoration the soil health. The small-seeded varieties of pulses may find prominence under Utera cultivation (relay cropping) in the states of Assam, Bihar, Chhattisgarh, Jharkhand and West Bengal. **In low land areas with excessive soil moisture, lentil is more suitable and assured than chickpea. Rice -lentil system can be popularized in the lowlands areas of Bihar, Jharkhand, Eastern UP and West Bengal.** Rice fallows can also be a profitably used for Groundnut cultivation in *Char* area of Bihar, Eastern UP, Mahananda *char* of Odisha, Brahmaputra valley of Assam. Mustard and linseed cultivation could be promoted in almost all the States. District wise pulses and oilseeds crops, which may be promoted in rice fallows are given in ***Annexure-II***.

3. Feasibility studies:

Some pilot studies undertaken by ICRISAT in Chhattisgarh during 2008-12 and ICARDA in the States of Assam, Bihar and WB (Since 2010) for promotion of Pulses

particularly Lentil, Lathyrus and Chickpea under rice fallows with the support of NFSM have shown a positive impact and scope for promotion of pulse cultivation in the region. During a recent Workshop-cum-Review meeting held at Guwahati on 10th November, 2014 the Research Institution of ICAR concerning with oilseeds and SAUs have also shown scope for promotion of oilseeds like rapeseed & mustard and linseed cultivation in rice fallows in Eastern Region.

4. Development Programmes on Oilseeds and Pulses:

NFSM-pulses and NMOOP is under implementation in the States of Assam, Bihar, Chhattisgarh, Jharkhand, Odisha and West Bengal without any restriction on districts. Due to limited areas under oilseeds and pulses, spread of resources over larger areas and change of beneficiaries year after year by the States, impact of these programme may not be very visible. Therefore, a differential approach is required for improving the profitability and sustainability of rice based cropping system through intensive oilseeds and pulses cultivation under rice fallows.

5. Strategies for production of Oilseeds and Pulses:

Oilseeds and Pulses are largely grown under similar agro-ecologies and considered as a companion crops for mitigating the adverse weather situation. Adoption of inter cropping of soybean with pigeon pea and groundnut with pigeon pea over larger areas are the excellent examples in this regards. Pulses and groundnut among oilseeds have additional advantage of their soil enriching capabilities and also to supplement good quality fodder. The key interventions like demonstration of improved production technologies with cluster approach, augmenting the availability of quality seed, seed priming & treatment with Rhizobium/fungicide, application of micro nutrient, insect-pests management and protective irrigation will be supported in the adopted villages for visible impact.

6. Approach:

A different approach comprising the following features will be adopted for implementation of the programme for promotion of oilseeds and pulses cultivation under rice fallows:

- 6.1** Identification of 50 districts with highest coverage under Kharif paddy and lowest coverage (<50%) under Rabi crops in consultation with State Department of Agriculture.
- 6.2** Identification of 100 villages per district with highest coverage under Kharif paddy and lowest coverage (<25%) under Rabi crops.
- 6.3** Preparation of village Action Plan and identification of beneficiary by a Committee headed by Agriculture Supervisor/VLEW and 2-3 progressive farmers, a farmer facilitator identified by ATMA as members.
- 6.4** The consolidated village level Action Plan of each district will be vetted either by GB ATMA or a District Level Committee comprising District level Head of Agriculture Department, Incharge of KVK and Representative of PRIs. The same

Committee will also be responsible for monitoring and impact assessment of the programme.

- 6.5 The District level Action Plan will be consolidated and vetted by a Committee comprising Director Agriculture, Director Research of the concerned SAU or the institutions of ICAR located in the State and a Representative of PRI.
- 6.6 Organizing demonstration of improved technology in a cluster of 100 ha in each village continuously for 3 years without change of beneficiary. In case of non-availability of 100 ha area in a village, the cluster will be contiguous in the neighboring villages.
- 6.7 An assistance of Rs.10 lakh will be provided for each village. Out of which 50% funds would be incurred on organizing demonstration of improved production technologies and remaining may be utilized for supply of other inputs like seed minikits, supply of certified seed, soil ameliorant (lime/gypsum) PP chemicals, farm machinery, irrigation appliances, setting up small dal/oil mills within the approved cost norms of NFSM/NMOOP on need basis, which may be decided by GB ATMA or the District Level Committee as suggested under para 6.4, within the approved cost norms of various interventions under various schemes of DAC like NFSM/NMOOP/NMSA/ NAMET.
- 6.8 ICAR Institutions located in the project State and concerned SAUs, would be involved for technical backstopping. Proposals for adaptive research comprising identification of location specific varieties/technologies and FLDs including buy back arrangement of quality seeds from the trials organized by the Scientist on the farmers field will also be supported on need basis.

7. **Financial requirement:**

An allocation of Rs.1500 crores is proposed for 3 years @ Rs. 500 crores per year @ Rs.10 lakhs per village per year and Rs. 10 crores per district per year for organizing production programme and other allied activities over an area of 5.00 lakhs ha per year.

Annexure-I

District wise area under kharif paddy, area sown under Rabi crops and expected fallow area

(Area in lakh ha)

State	Major districts	Major Rabi Crops					Likely rice fallow area (2008-11)
		Kharif	Wheat	Pulses	Oilseeds	Total	
		Paddy (2008-11)	(2008-11)	(2008-11)	(2008-11)	(2008-11)	
Assam (08)	Lakhimpur	1.330	0.003	0.030	0.240	0.273	1.057
	Jorhat	0.920	0.002	0.016	0.109	0.127	0.793
	Sibsagar	1.000	0.000	0.003	0.012	0.015	0.985
	Dibrugarh	0.740	0.001	0.004	0.010	0.015	0.725
	Golaghat	0.990	0.010	0.012	0.066	0.088	0.902
	Karbi	1.260	0.010	0.012	0.174	0.196	1.064
	Nagaon	1.870	0.030	0.031	0.145	0.206	1.664
	Morigon	0.820	0.060	0.012	0.064	0.136	0.684
Total		8.930	0.116	0.120	0.820	1.056	7.874
Bihar (02)	Kisanganj	0.840	0.220	0.020	0.003	0.243	0.597
	Katihar	1.040	0.380	0.030	0.010	0.420	0.620
	Total	1.880	0.600	0.050	0.013	0.663	1.217
Chhattisgarh (06)	Sarguja	3.070	0.200	0.039	0.297	0.536	2.534
	Jashpur	1.800	0.010	0.027	0.065	0.102	1.698
	Raigarh	2.400	0.020	0.031	0.068	0.119	2.281
	Durg	4.590	0.240	0.323	0.094	0.657	3.933
	Bilaspur	3.190	0.150	0.004	0.060	0.214	2.976
	Baster	2.400	0.010	0.365	0.030	0.405	1.995
Total		17.450	0.630	0.789	0.614	2.033	15.417
Odisha (09)	Koraput	1.270	0.004	0.040	0.064	0.108	1.162
	Kalahandi	2.750	0.004	0.155	0.278	0.437	2.313
	Sambalpur	1.480	0.000	0.012	0.125	0.137	1.343
	Sundergarh	2.120	0.010	0.030	0.121	0.161	1.959
	Bhadrak	1.700	0.000	0.036	0.049	0.085	1.615
	Puri	1.560	0.000	0.197	0.182	0.379	1.181
	Dhenkanal	1.050	0.000	0.052	0.139	0.191	0.859
	Mayurbhanj	3.190	0.010	0.029	0.217	0.256	2.934
Balasore	2.420	0.000	0.051	0.198	0.249	2.171	
Total		17.540	0.028	0.602	1.373	2.003	15.537
WB (09)	Bankura	3.740	0.040	0.006	0.350	0.396	3.344
	Birbhum	3.760	0.340	0.161	0.383	0.884	2.876
	Bardhaman	6.700	0.020	0.018	0.433	0.471	6.229
	Medinipur (W)	6.970	0.040	0.036	0.845	0.921	6.049
	Coochbihar	2.920	0.110	0.015	0.107	0.232	2.688
	Jalpaiguri	2.310	0.160	0.033	0.140	0.333	1.977
	South 24 Parganas	4.000	0.010	0.139	0.057	0.206	3.794
	Purulia	2.830	0.010	0.010	0.014	0.034	2.796
South Dinajpur	1.980	0.110	0.002	0.225	0.337	1.643	
Total		35.210	0.840	0.420	2.554	3.814	31.396
Grand Total		81.010	2.214	1.981	5.374	9.569	71.441

District wise potential pulses and oilseed crops proposed for rice fallows

(Area in lakh ha)

State	Major districts	Pulses						Oilseeds				
		Chickpea	Lentil	Urd/ Moong	Horse Gram	Lathyrus	Pea	Mustard	Linseed	Sunflower	Sesame	Niger
Assam (08)	Lakhimpur	L	M	M			M	H	L		L	L
	Jorhat	L	L	H			M	H	L		L	
	Sibsagar	L	L	L			L	M			L	L
	Dibrugarh	L	L	L			L	M	L		L	L
	Golaghat	L	M	M			M	H	L		L	L
	Karbi	L	L	M			L	H	L		H	L
	Nagaon	L	M	M			M	H	L		M	L
Bihar (02)	Kisanganj	L	M						L			
	Katihar	L	M							M		
Chhattisgarh (06)	Sarguja	M	M			L	M	H	H			
	Jashpur	M	L			L	M	H	H	H		
	Raigarh	L	L			M	M	H				
	Durg	H	M			H	L		H			
	Bilaspur	M	L			H	M		H			
	Baster	L	L			L	L					
Odisha (09)	Koraput	M		M								
	Kalahandi	H		H				H	H	H	M	
	Sambalpur	L		L				H			H	
	Sundergarh	M		L								
	Bhadrak	L		M						M		
	Puri	M		H								
	Dhenkanal	M		H								
	Mayurbhanj	M		M				H	H			
Balasore	L		H									
WB (09)	Bankura	L		L	L		L				H	
	Birbhum	H	H	M	L	M	L				H	
	Bardhaman	L	M	L	L	L	L	H			H	
	Medinipur (W)	L	M		M	L	L				H	
	Coochbihar		M	L	L	L	L					
	Jalpaiguri	L	M	L	L	L	L					
	South 24 Parganas	L	L	H		H	M	H			H	
	Purulia	L	L	L	L	L	L					
South Dinajpur	L	L	L	L	L	L	H			H		

L=Low area<1000ha, M=Moderate area>from 1000 ha to 2500 ha and H= High area>2500 ha

