

# System of Rice Intensification (SRI)

## Project for addressing Food security in Jharkhand and parts of West Bengal

The current work focus of Ranchi based regional office of SPWD is Food Security through SRI Promotion in the Jharkhand State

Jharkhand is a state with abundant natural and mineral resources as well as hard working human population mostly belongs to tribal families, with a rich cultural heritage and traditional knowledge. Out of a total geographical area of 7.9 million ha, nearly 2.6 million ha are cultivated, while 2.3 million ha (29% of total area) are under forests. The area under assured irrigation is less than 10 percent. Out of a total population of 27 million, 21 million (78%) live in villages, while about 6 million (22%) reside in urban areas. Nearly 49% of the population lives below the poverty line. Rural poverty is greater than urban poverty. The most important rural professions are agriculture, animal husbandry, fisheries and agro-forestry. **Nearly 67% of the total labour force is dependent on agriculture for their income and work security.**

Two out of the 24 districts of the State, Gumla and Simdega have more than 85% of the total workforce engaged in agriculture. **The State falls under agro-climatic region VII, known as the Eastern Plateau and Hill region.** Average annual rainfall varies from 1300 mm to 1400 mm, nearly 80% of which is received during the South West Monsoon ( June to September). Most of the farm families fall under the category of small and marginal farmers, with **nearly 83% of the operational holdings below 2.0 ha.** About 92% of the cropped area is under paddy, wheat, maize, pulses and oilseeds (Niger, linseed and mustard).

The average productivity of paddy (1832 kg/ha), wheat (1204 kg/ha), oilseeds (574 kg/ha), maize (1204 kg/ha) and pulses (597 kg/ha) is low. Most of the cultivated area of 2.12 million ha is under a single crop during the months of June to September. After which farmers usually migrate to other cities or other states in the search of employments.

The productivity of crops is low and the deficit with reference to demand and supply is as high as 52% in the case of cereals, 65% in the case of fruits, 51% in the case of milk and 34% in the case of fish. Only one crop is taken during the *khari*f season in most parts of the State and current fallow and other fallow lands contribute 2.0 million ha (about 25% of the area). It is thus clear that accelerated agriculture development holds the key to Food security as well as poverty eradication and employment generation in the State.

The challenge of stamping out hunger as per the United Nations “Millennium Development resolution by 2015 goals can only be achieved through rapid agriculture progress and reducing poverty by taking it as a prime responsibility of all concerned stakeholder. Emphasizing that **sustainable green revolution** is the need of the hour and doubling of production, is very important and promotion of “*System of Rice Intensification*” can bring the desired results.

The System for Rice Intensification method of rice cultivation ensures higher yields as well as many other benefits. These are reduced cost of cultivation due to less water and labour requirement;

quicker maturity period; resistance to biotic and abiotic stresses; more milling percentage etc. The most important thing is that it is drought tolerant. Since in the changing conditions wherein there is a temporal shift in the Kharif rainfall pattern as observed in the last two years. The SRI would be a handy tool for farmers to overcome drought conditions.

### SRI Coverage in Last two years:

The SRI programme in the year 2008, supported by Sir Dorabji Tata Trust, was implemented in **13 districts ( 25 development blocks and 134 villages) through 13 direct partners and in total 18 partners.**

The whole project area is from three agro-climatic zones of the state:

*Zone -1: (Ranchi Zone):*

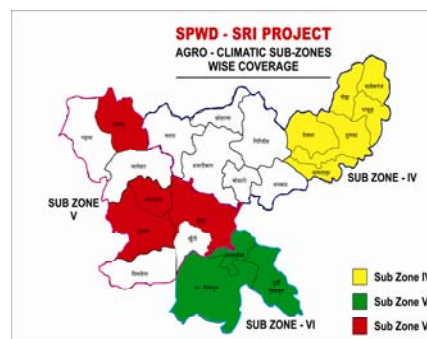
The district covers Ranchi, Lohardaga, Gumla and Palamu

*Zone -2: (Santhal Pargana Zone):*

Deoghar, Dumka, Jamtara, Pakur, Godda, Sahebganj

*Zone -3: (Singhbhum zone):*

East Singhbhum, West Singhbhum, Sarikela- Kharsawana



### The output of SRI (Kharif season of year 2008)

Sub zone	Sub region	Area (000) in ha.	Productivity Paddy (Q/ha) (as per SAMETI data)	Total No. of district (Nos.)	SPWDs Coverage-districts In nos. (%)	Productivity Average range (Q/ha.)
IV	Central North Eastern Plateau	836	11.28	13	6 (48%)	15.7-19.5
V	Western Plateau	328.5	6.9	8	4 (50%)	11-13.5
VI	South Eastern Plateau	330	4.5	3	3 (100%)	17.5 - 30
	Total (Jharkhand)	1494.5	7.56	24	13 (54.2%)	

The table shows that in all the agro-climatic subzones of Jharkhand the SRI paddy production is more than traditional paddy production. We have tried to compare our production through SRI method with the data provided by Jharkhand State government. A range of production data (minimum to maximum) is taken against the state average paddy production and the result is very encouraging. Approximately 40 % to 300% increase was noticed. This increase is seed neutral as very good performance is witnessed in traditional varieties of paddy namely, Gerua Muri, Sikki Nenia etc.

**In year 2009,**

SPWD, under the SDTT supported programme on SRI has implemented the project in 17 districts of Jharkhand and 1 district of West Bengal with coverage of 5239 farmers covering 2182 acres under

paddy (kharif and Garma), while it also introduced the principles of SRI in wheat popularly known as SWI, covering 1122 farmers covering 265.9 acres land with the partnership of 28 NGO's.

#### Glimpses of the Productivity Agro Climatic Sub Zone Wise

The rainfall of 2009 was not good as there was monsoon failure. It was late as well was very erratic in nature so sowing was only 32 % in the state of Jharkhand. The 2<sup>nd</sup> stage of nursery in SRI and short term variety was adopted as strategy to address the draught situation. In such a situation of draught SRI has performed well in terms of success. The low land was used for SRI paddy cultivation and it has given satisfactory yield. Though the production at the level of average of last year which was 11 Q/ha, but important was that SRI has given production where all traditional paddy has almost failed. 22 districts were announced under draught by the Government of Jharkhand. The average production of the agro-climatic subzone IV in the year 2009 kharif season is given below in the table. This data is of one of our project area in East Singhbhum.

The strategy to counter these adverse conditions were devised and tried in the field. It was

- Short to medium duration paddy was promoted ( baad swarna-90 days variety, Lalat, Abhishek)
- Since the variety was of medium duration we had reduced the spacing from 25 cm and subsequently to 20 cm. This was done since the tillering potential of short and medium duration variety is less we had suggested the same

#### Agro climatic Sub Zone IV (*Last year average production was 11.28 Q/ha.*)

Name	Village	Age of seedling	SRI land (acre)	Variety	Grain yield (Kg)	Straw Yield (Kg.)	Productivity (Q/ha)
Dina Singh	Rangamatia	19	0.26	Baad Swarna	1136	1178	11
Rathu Singh	Rangamatia	19	0.26	Baad Swarna	589	799	6
Aitwari Marandi	Ranitand	19	0.5	Baad Swarna	1942	2185	10
Mansi Marandi	Ranitand	19	0.5	Baad Swarna	2266	2428	11
Nalin Marandi	Ranitand	19	0.42	Baad Swarna	1130	1291	7
Bulai Besra	Bagrudih	19	0.4	Baad Swarna	1424	1424	9
Arjun Besra	Bagrudih	19	0.21	Baad Swarna	884	918	11
Shibu Kisku	Bagrudih	19	0.4	Baad Swarna	1554	1813	10
Jamal	Chunudih	19	0.4	Baad Swarna	1489	1618	9
Jamruddin Ansari	Rajamitha	19	0.4	Baad Swarna	1230	1424	8
Chand Mohammad	Ringochingo	19	0.42	Baad Swarna	1224	1495	7
Azmul Ansari	Ringochingo	19	0.21	Baad Swarna	646	782	8
Sahabuddin Mian	Manikpur	19	0.42	Baad Swarna	1088	1563	6

Agro-climatic Sub Zone-V (Last year average production was 6.9 Q/ha.)

Name	Village	Age of seedling	Variety	Land (acre)	Grain Yield (Kg.)	Straw Yield (Kg.)	Productivity (kg/acre)	Productivity (Q/ha)
Raphael Ekka	Barisa	10	lalat	0.7	566	1020	809	2.0
Pradeep Minj	Barisa	10	lalat	1	2023	1457	2023	5.1
Budhu sahu	Kaliga	10	hybrid	0.7	793	1359	1133	2.8
Lily S.H.G.	Jilinga T.toli	10	lalat	1.51	4399	5865	2913	7.3
Anand ekka	Bargoun	10	hybrid	1.1	1780	2670	1618	4.0
Bolwa Oraon	Khora Jamtoli	10	lalat	1.25	788	2023	630	1.6
Dahru Kharia	Musatoli	10	lalat	1	1424	3884	1424	3.6
Gandhira oraon	Litatoli	10	lalat	0.6	281	1359	468	1.2
Mangu kharia	Jatratoli	10	lalat	1	566	1618	566	1.4
Nago kharia	Jatratoli	10	lalat	0.5	583	971	1165	2.9
Magdali panna	Danrtoli	10	lalat	1	1457	3399	1457	3.6
Junash Kerketta	Chatakpur	10	hybrid	1	1157	1942	1157	2.9
Herman Tigga	Chatakpur	10	hybrid	1	647	1456	647	1.6
Ashok Ekka	Chatakpur	10	hybrid	0.5	339	971	678	1.7
Antonis lakra	CCPatratoli	10	hybrid	1	1133	4855	1133	2.8
Moris xalxo	Samtoli	10	lalat	0.5	477	728	955	2.4
Ajit xalxo	Samtoli	10	lalat	0.5	486	971	971	2.4
Anil xalxo	Samtoli	10	lalat	0.5	461	1214	922	2.3
Anup bilung	Purnapani	10	lalat	0.5	397	971	793	2.0
Albina lakra	Dhouthatoli	10	lalat	1.5	4006	11652	2670	6.7

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Agro-climatic Sub Zone VI (Last year average production was 4.5 Q/ha.)

Name	Village	Age of seedling	Variety	Land (acre)	Grain Yield (Kg.)	Straw Yield (Kg.)	Productivity (kg/acre)	Productivity (Q/ha)
Delip Ho	Gobindpur	0.42	Lacal (Balibhojna)	11	1505	1507	3583	9.0
Jhinga Mahato	Amlatola	0.42	MTU-7029 (Swarna)	11	1490	1500	3547	8.9
Manjalomoni Mahato	Amlatola	0.42	MTU-7029 (Swarna)	11	1485	1492	3536	8.8
Sohagi Murmu	Amlatola	0.21	MTU-7029 (Swarna)	11	751	755	3576	8.9
Kadam Mahato	Amlatola	0.42	MTU-7029 (Swarna)	11	1493	1496	3555	8.9
Sita Tudu	Amlatola	0.21	MTU-7029 (Swarna)	11	766	770	3648	9.1
Hira Majhi	Amlatola	0.45	MTU-7029 (Swarna)	11	1600	1606	3556	8.9
Mouli Mahato	Amlatola	0.42	MTU-7029 (Swarna)	11	1475	1496	3512	8.8
Nigri Mahato	Amlatola	0.25	MTU-7029 (Swarna)	11	889	905	3556	8.9
Gudri Hembram	Gobindpur	0.42	MTU-7029 (Swarna)	11	1420	1490	3381	8.5
Sushank Pradhan	Shasikala	0.25	MTU-7029 (Swarna)	11	700	700	2800	7.0
Nageshwar Pradhan	Shasikala	0.25	MTU-7029 (Swarna)	11	800	810	3200	8.0
Pramatho Pradhan	Shasikala	0.25	MTU-7029 (Swarna)	11	700	725	2800	7.0
Sivnath Pradhan	Shasikala	0.25	MTU-7029 (Swarna)	11	750	751	3000	7.5
Lalit Mohan Murmu	Bandu	0.15	MTU-7029 (Swarna)	11	280	654	1867	4.7
Subodh Manjhi	Hutup	0.1	MTU-7029 (Swarna)	11	267	765	2670	6.7
Rui das Manjhi	Hutup	0.15	MTU-7029 (Swarna)	11	312	678	2080	5.2
Bharat Singh Hunda	Edaldih	0.2	MTU-7029 (Swarna)	11	453	1234	2265	5.7
Daroga Singh Munda	Edaldih	0.15	MTU-7029 (Swarna)	11	342	765	2280	5.7

The above production data gives an indication that in the field of Paddy production, SRI with slight change in strategy has helped in drought mitigation as it indicates a key factor to address the issue of food security. The effort of SPWD through this has helped small and marginal farmers in getting 2 to 3 months assured additional food in the year of drought. The important factor is the method has done well with traditional seed variety as well as it has required less water also.