

Modified Standard Operational Procedures(SOP) for Mechanised Direct Seeded Rice (DSR) Demonstration.

1. **Background:**

Rice is the most important staple cereal for food and nutritional security as well as means of livelihood for lakhs of small-holding farmers in Odisha. Rice is grown under diverse ecosystems covering more than 36 lakh ha during Kharif and 3 lakh ha during the Rabi/ Summer season under a wide range of climatic conditions. Because of this, Rice varieties grown, crop establishment methods, management practices followed, production & productivity vary widely across the districts.

In Odisha, both Puddled Transplanted Rice (PTR) and the beusaning system/method of rice establishment are undertaken in about equal proportion during the Kharif season. These crop establishment methods are highly labour, water, energy-intensive, and costly. High-drudgery jobs are also involved in these methods. All these factors make both the methods of crop establishment less profitable and less attractive to farmers, especially youth. Furthermore, in the changing climatic conditions, potential risks of yield losses are higher in beusaning as it is a rain-dependent operation. With the delayed onset of rainfall or weak and variable monsoon, beusaning operation is delayed leading to severe weed competition and greater yield losses. A high variable cost associated with high seed rate & labour, together with low yield is common to beusaning and reduces profitability.

Mechanized Direct Seeded Rice (DSR) with Integrated Weed Management (IWM) has emerged as an efficient, economically viable, and environmentally promising alternative to PTR and Beusaning method in achieving productivity gains with less water, less labour, and reduced production cost and curbing Green House Gas (GHG) emissions. Mechanized DSR also creates avenues for employment through new service provisions and is less labor intensive and free from drudgery, hence more attractive to youth and women farmers.

2. **Objective:**

1. To promote and scale mechanized DSR systems throughout the state.
2. To promote integrated weed, water, and nutrient management practices.
3. To assess the long-term performance of DSR-based systems for long-term sustainability.
4. To promote capacity development and knowledge sharing.
5. To create avenues for employment for youth and women farmers.



Benefits of Mechanised Direct Seeded Rice (DSR):

1. Water use Efficiency sustained with less water use.
2. Labour Use Efficiency as 1-2 days against 25-30 days for Transplanted Rice (TPR)
3. Easier and faster sowing and early maturity of 7-10 days as compared to TPR
4. Suitable for Crop Intensification as harvested earlier as sowing time is less, short duration varieties are grown and 7-10 days early maturity widens the window for sowing the next crop with residual moisture and 3 crops in the areas with assured irrigation, thereby increasing cropping Intensity to more than 200%.
5. More profitable as compared to TPR as less management cost is required and grain yield is higher as compared to TPR.
6. Maintains better soil physical properties.
7. Ground water level increases as soil crusting are broken and no new sub-soil crusting occurs due to no puddling in DSR. This promotes the percolation of water down the soil column and recharges ground water.
8. Less Green House Gas (GHG), when compared with wet DSR and TPR.

3. Standard Operational Procedure (SOP)

1. Target area of intervention

Mechanized DSR will be promoted in all districts of the State during the Kharif season and in assured irrigated areas during the Rabi season. Priority will be given to the districts where more no of Seed Drills are available.

2. Cluster Approach

The programme will be implemented in a cluster approach with a continuous/ contiguous patch of minimum of 10 hectares. An agency shall implement a minimum area of 20 ha.

3. Selection of Sites:

The patch should preferably be accessible to the road and at a strategic location so that it can be visible to a large section of farmers. Maximum benefit to the extent of 2 ha (5 Acres) will be provided to a beneficiary i.e., If one farmer has land area of more than 2 ha in one or more than one cluster, he/she will be eligible to get assistance for only 2 ha.

ky

4. Selection of beneficiaries:

1. Willing Farmers having suitable land conditions for mechanized DSR will be selected as beneficiary under this programme.
2. Farmers' ID, Aadhaar No. and Contact No. are mandatory for the selection of beneficiary.
3. The standing norms of social categorization (i.e. General, SC, ST, and Women) shall be followed while selecting beneficiaries under different categories.
4. The selected beneficiary will use quality HYV seeds and other critical inputs from their own source.
5. They will adopt Mechanised DSR in their field as per the recommended method suitable to the field condition.
6. The farmer will apply in a prescribed Performa placed at Annexure – I for availing assistance under the scheme.

Suitable land Conditions;

- *Medium & low land with controlled irrigation during Rabi season*
- *There shouldn't be water stagnation in the selected land during Kharif season*

5. Identification of agencies and their capacity building

This programme will be implemented through agency/agencies. The agency/agencies may be Non-Govt. Organizations (NGO) /Community-Based Organisations like SHGs/ Pani Panchayats/ FIGs/ CIGs/ FPOs & Agro Service Centres which can provide/ facilitate the tractor-driven seed drill for mechanized DSR. Their capacity-building/ Hands-on training will be done by the master trainers of the concerned districts. The detailed selection procedure of the agency/agencies is given at Annexure-II.

6. Selection and Capacity Building of Master Trainers

One Agriculture District Officer & one Assistant Executive Engineer of concerned districts will be the Master Trainer for providing the training to the agencies. Two nos. of hands-on training programmes for the Master Trainers will be arranged by the Director, SLFMTTC with the help of IRRI (Coordinator, DSR-Odisha Project, and CSISA-Odisha Hub) centrally. The two days of training of the Master trainer will be conducted at the State Institute of Training & Extension (SITE), Baramunda, Bhubaneswar. The director, SLFMTTC will nominate the district-wise participants for training proposes & also formulate the training module in consultation with IRRI/ CSISA officials.

4

7. Awareness and mobilization of farmers for DSR

Awareness campaigns shall be organized among the farmers about the benefits of DSR by the service providers with the help of local Extension functionaries (AO/VAW /Krushak Sathis).

8. Execution:

1. The district-wise area under this scheme will be decided at the Directorate level after discussion with the CDAOs and will be communicated well ahead of the season.
2. District will select agency/agencies through the Expression of Interest (EOI) process having experience in activities related to DSR/mechanized transplanting/ other Agricultural activities/ creating awareness and mobilization of a group. CDAOs will select agency/agencies with the help of the concerned Executive Engineer/ Assistant Executive Engineer.
3. The agency will select a continuous/ contiguous patch of minimum of 10 hectares in land suitable for Direct Seeded Rice (DSR) with consultation with the Local Krushak Sathis, VAW/AO, concerned Block Agriculture Officer and Assistant Agriculture Engineer (AAE) in charge of concerned block.
4. The agency will place the list of the selected patches along with location details and geo-coordinates consulting the concerned VAW/AO to the BAO.
5. Preference will be given to those villages /GPs/ Blocks where tractor-driven seed drills along with skilled operators are available.
6. The agency will ensure the availability of tractor-driven seed drills in their selected patches which should be facilitated by the Assistant Agriculture Engineer
7. The agency will prepare the beneficiary list by consulting the concerned VAW/AO, Krushak Sathis, and PRI members and submit the list to the concerned AAE who is in charge of that block. The concerned AAE after discussing with the concerned AAO, will prepare the final beneficiary list. The final beneficiary list shall be duly signed by the AAE and AAO and will be submitted to the BAO for counter-verification.
8. BAO/AAO will submit the beneficiary list to the Chief District Agriculture Officer (CDAO) through ADO.
9. The concerned AAE will coordinate with BAO/AAO for technical support and field implementation.
10. Before going for demonstration in the field, training will be imparted to the beneficiary farmers on the package and practices of DSR. One training will be conducted involving 40 farmers for each 20 ha of DSR demonstration patch. The resource persons will be from the Departmental Officers (AAE/ AAO/ BAO). Specialists from RRTTS/KVK/IRRI/CSISA etc. may be involved.
11. Incentives will be provided to the farmers at a reducing rate for adopting DSR



consecutively for 2 years, for the first year Rs. 7000/ha. and for the second year Rs. 5000/ha. will be provided towards field preparation, Hiring charges of machineries and Integrated Weed Management (IWM).

12. The incentives to the farmers will be released to their bank accounts by the CDAO in two phases. In 1st phase, 60% amounting to Rs 4200.00 per ha will be released to the farmers after completion of the seed sowing through tractor tractor-driven seed drill in the month of August. The 2nd phase incentive 40% amounting to Rs. 2800.00 will be released to the farmer after completion of the IWM during the month of October.
13. Similarly, in the second year, the 1st phase 60% amounting to Rs 3000.00 per ha will be released to the farmers after completion of the seed sowing through tractor-driven seed drill in the month of August. The 2nd phase incentive 40% amounting to Rs. 2000.00 will be released to the farmer after completion of the IWM during the month of October.
14. The fund will be released to the beneficiaries after receiving a joint verification certificate from the Assistant Agriculture Engineer and Assistant Agriculture Officer and a counter-verification certificate from the Block Agriculture Officer.
15. The fund over and above the cost structure will be borne by the farmer.
16. The agency will submit the list of Krushak Sathis who are engaged in the Mechanised DSR programme to the AAO concerned. The list will be approved by both AAE and AAO and submit the list to the BAO for counter verification. The BAO will then submit the list of Krushak Sathis to the concerned CDAOs through ADO.
17. The CDAO will release the remuneration cost of Kurshak Sathis in their bank account towards awareness of programme, motivating and mobilizing farmers to adopt DSR in their field, Conveyance, and supervision charges @ Rs.250/- per ha after crop cutting experiment and completion of the project.
18. Fifty (50) percent of the programme fund meant for Training on DSR to farmers will be released by the concerned CDAO to the agency as per the approved Annual Action Plan after the submission of the requisition by the agency and the rest will be released after getting completion certificate and bill vouchers from the agency.
19. The CDAO will release the service cost of Rs.2250.00/ ha to the bank account of the agency after getting the completion certificate jointly signed by the AAE of the concerned block and AAO/BAO. The list will be submitted to the CDAO through ADO for the release of service costs.
20. Proper documentation of all the processes of the programme shall be carried out with good quality photographs and videos by the Chief District Agriculture Officer and the same shall be submitted to the directorate.
21. Field verification will be done 100% by VAW/AO, 40% by AAE & AAO, 20% by BAO, 10% by ADO, and 5% by CDAO before releasing funds.
22. The BAO concerned will monitor the uploading of the MPR in the Agri-Extension

App/ e-Demonstration Portal by AOs/VAWs every month in consultation with the Assistant Agriculture Engineer and approve the same in the ADAPT/ e-Demonstration portal.

4. Source of funding for the Scheme/ Project and fund flow mechanism

The provision of funds for implementing the program will be made annually under the State Sector Scheme. Department of Agriculture & Farmers' Empowerment will release the funds to the Directorate of Agriculture and Food Production, Odisha (D.A. & F.P.). DA & FP Odisha will release the funds for district-level activities to the CDAO concerned. The concerned CDAOs will release the funds towards payment of incentives to the beneficiary farmers, vendors, Krushak sathis, and to agency/agencies for the relevant items meant for them. Fund transfers from CDAO to relevant stakeholders shall be done electronically through DBT (NEFT / RTGS) mode.

5. Intended Scheme/ Programme Outcome

After three years there will be a remarkable increase in the adaptation of improved package practices. The farmers are able to adopt new technology which will ultimately increase their income. By the end of the project, the intervention targets wide-scale adoption of Mechanised DSR (Tractor driven Seed Drill) in about 15,000 ha leading to saving in labour (30 person-days/ ha) and a reduction in production cost by 7500-8500 INR/ha increase in farmer's income by INR 18500/ha, increase in system-level productivity of 0.25 t/ha, increase in rainwater productivity, and reduction in irrigation water savings by 20-25%.

6. Programme Monitoring

1. A committee under the Chairmanship of CDAO will be formed at the district level with the following members for implementation and monitoring of the programme at the district level. It will report to the Collector and District Magistrate at regular intervals regarding the progress of the programme.

1	Chief District Agriculture Officer(CDAO)	Chairman.
2	KVK /RRTTS Scientist	Member
3	Agriculture District Officers (ADOs) of the district	Members
4	Executive Engineer/ Assistants Executive Engineer/ Assistant Agriculture Engineer	Member
5	Scheme officer O/o CDAO	Member Convener

2. The committee will select the agency for the programme implementation through EoI Process.

3. The committee will distribute the target area among the selected agencies.
4. The committee will approve the selected patches as well as the beneficiary list of those patches.
5. The Committee will regularly monitor & supervise the programme for its successful implementation.

7. Roles and Responsibilities of the selected agencies

1. Aware farmers about the benefits of Direct Seeded Rice (DSR).
2. It will provide a coordinator for each cluster who will responsible for the implementation of the programme in that cluster. The name of the coordinator should be provided to the CDAO for smooth implementation of the programme.
3. Motivate and mobilize farmers to adopt DSR in their field and collect applications in the prescribed format from the willing farmers,
4. Select patches suitable for DSR taking various factors like land suitability, availability of irrigation source, availability of implementation for DSR, etc..
5. Submit geo coordinates of continuous/ contiguous patch along with beneficiary list to concerned BAO.
6. Ensure the participation of farmers/ department officials during the selection of patches and farmers' lists for DSR demonstration.
7. Submit the patch and beneficiary list to the concerned BAO well ahead of the farming season.
8. Conduct training on the different technical aspects of DSR involving KVK/RRTTS scientists/Departmental officials, etc.
9. Facilitate in provisioning of Tractor-driven seed drill /Multi seed driller at farmers' doorstep for successful adoption of the technology.
10. It will facilitate the ploughing of the field by tractor and sowing of the paddy seeds through Seed Drills machines in the field of the beneficiary.
11. Ensure regular monitoring of the DSR patch during implementation. Any difficulties faced by the beneficiary during the implementation of DSR shall be either resolved by the agency or shall be brought to the notice of the block-level officials of the Agriculture Department.
12. Motivate and ensure the beneficiaries for timely application of the critical inputs i.e. Seed treating chemicals, fertilizers, pesticides including Integrated weed Management, etc.
13. Facilitate department for Crop Cutting Experiment of DSR plot.
14. It will produce the claim bill duly filled in all respect to the AAE for the release of

incentives for DSR to the farmers. The claim bill shall contain the farmer's details, land details, bank account details, a declaration by each individual farmer regarding the completion of the work, etc.. All the documents before submission to the AAE shall be duly verified/ certified by the local AO/VAW.

15. It will make all-out effort to document the DSR demonstration with good-quality photographs, videos, and success stories.
16. Necessary steps for publicity of the programme.



8. Forms for application by the beneficiaries

Annexure – I

**APPLICATION FORM FOR AVAILING ASSISTANCE OF MECHANISED
DSR STATE SECTOR SCHEME**

Year-

Season- Kharif/Rabi

1. Name of the Farmer :

2. Fathers Name :

3. Address:-

a. Village :

b. G.P. :

c. Block :

d. Contact No. :

4. Area (in Ha.) for availing incentive:

5. Name of the Project Village:-

a. Khata No. :

b. Plot No. :

c. Area (in Ha.) :

d) Farmer's ID :

e) Account No.

f) IFS Code :

g) Bank & Branch :

Recommendation of VAW/ AO

Signature of the Applicant

Name:

G.P.

Signature of AAE

Block Agriculture Officer

+

Selection Process of Agencies

1. Agency/Agencies will be selected at the district level through EoI Process.
2. Advertisement of Expression of Interest for selection of agency/agencies for undertaking different key activities is to be published/ notified by the concerned CDAO.
3. A time period of 15 days shall be given to the agency/agencies for submission of a letter of intent.
4. The agency may be a Non-Governmental Organization (NGO)/Community-Based Organisations like SHGs/ Pani Panchayats/ FIGs/ CIGs/ FPOs/Agro Service Centres.
5. It should submit a letter of intent mentioning that he/she is willing to be involved in the assignment along with a resolution to CDAO.
6. Preference should be given to the agency having its own tractor with seed drill or it will facilitate providing tractor with seed drill for mechanized DSR.
7. For this purpose, the agency will provide documents regarding having tractor with seed drill in their name or it will submit an agreement paper with farmer having tractor with seed drill or with any agency for providing tractor with seed drill.
8. Preference shall be given to local agencies i.e., agencies of the same district.
9. In the case of NGO, it must be registered under any appropriate authority and having certificate of Incorporation / Registration and a self-attested copy of PAN card.
10. It should not be blacklisted by any Government Agencies.
11. Should have a valid GSTIN Number.
12. Should have an active bank account.
13. The District Level Committee under the Chairmanship of CDAO will scrutinize the agencies applied for the assignment and will finalize one or more agency/agencies for the purpose.
14. Once applications are received at district level, Scrutiny of documents, Field Verification, and Shortlisting of agency/agencies will be done by District Level Committee:
15. The District Level Committee shall be convened within 7 days of receipt of the proposal. The District Level Committee will examine the proposals and approve suitable agency/agencies as per requirements in the district.
16. In case, more than one agency is being selected, the committee will allot the target area as well as the jurisdiction (Blocks/ GPs/ Villages) of the agencies for programme implementation, and accordingly, MOU will be signed between the CDAO & the agencies.



A. Indicative cost Structure per Ha

Cost Structure per ha				
Sl. No	Interventions	Unit	Unit cost in Rs	
			1 st year	2 nd year
1	Training on DSR to Farmers	ha	₹ 500.00	
2	Incentive to farmers (towards field preparation, Hiring charges of machineries and Integrated Weed Management (IWM))	ha	₹ 7,000.00	₹ 5,000.00
3	Documentation, publicity, Banner, Poster, mobility, etc.	LS	₹ 500.00	₹ 500.00
4	Service Cost to Agency (For facilitating ploughing by tractor and sowing of the paddy seeds through Seed Drills)	ha	₹ 2,250.00	₹ 2,250.00
5.	Remuneration to Krushak Sathis		₹ 250.00	₹ 250.00
Total			₹ 10,500.00	₹ 8,000.00

B. Indicative Cost Structure for the training of 40 no's of progressive farmers (Rs 500/Ha) for 20 ha

Sl. No	Particulars	Rate	Total
1	Training material (40 Nos.)	Rs 30/- per trainee	₹ 1200.00
2	Working Lunch for 40 Nos. of trainees	Rs 120/-	₹ 4800.00
3	Honorarium to Local Resource persons (02)	Rs 750/-	₹ 1,500.00
4	Misc. (Banner, photo, local conveyance &, etc.)	LS	₹ 2,500.00
Total			₹ 10,000.00

N.B. There shall be inter-component flexibility within the total financial limit subject to justification and approval in the district-level committee.

C. Indicative Cost Structure for District-Level Training Including Service Provider

Sl. No	Particulars	Rate	Total
1	Training material (50 Nos.) including pen, Pad & Folder	₹ 100/- per trainee	₹ 5000.00
2	Working Lunch for 50 Nos. of trainees	₹ 220/-	₹ 11000.00
3	Honorarium to Local Resource persons (04)	₹ 750/-	₹ 3000.00
4	Misc. (Banner, photo, documentation, local conveyance, conveyance for the resource person &, etc.)	LS	₹ 6000.00
Total			₹ 25000.00

N.B. There shall be inter-component flexibility within the total financial limit subject to justification and approval in the district-level committee.

D. Indicative Cost Structure for State-Level Training for Master Trainers

Sl. No	Particulars	Amount (in Rs)
1	Honorarium to resource persons @ ₹ 750 per lecture 8 lecture	₹ 6000.00
3	Boarding & lodging of trainees @ ₹ 500/-Per head per day including refreshment, lunch & Dinner for 20 person for 2days.	₹ 20000.00
4	Training Kit including training materials @ ₹ 400/- per trainee	₹ 8000.00
5	Contingencies including audio-visual arrangement, workshop visit, POL, &, etc.	₹ 6000.00
Total		₹ 40000.00

N.B. There shall be inter-component flexibility within the total financial limit subject to justification

As approved in the OSWAS File No.DAFP-SPIII-MISC-0014-2022:2023-24 at noting- 83


ADA, Rice


Joint Director of Agriculture
(SP & C)


Director of Agriculture &
Food Production, Odisha