Addressing agriculture in view of COVID-19 challenges in Odisha

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April 2020

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INTERNATIONAL CROPS RESEARCH
INSTITUTE FOR THE SEMI-ARID TROPICS

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Introduction

India is primarily an agrarian economy. Amid COVID-19 pandemic, the populous country and growing economy like India will suffer the most as more than 50% of our population depends on agriculture for their livelihoods. Health (human and animal together) and agriculture represent both side of the same coin to influence each other. The present pandemic situation is pointing towards unprecedented human health crisis affecting the humanity. Because of shift in national attention to the health sector and disruption in supply chain, the food and agriculture and allied sectors, requiring timeliness in operations has become a casualty. Now it is the right time for the nation to come together and think how to handle agriculture production system in a holistic manner during this difficult situation of saving thousands of precious human lives. This requires a sense of optimism to utilize the available resource base, professional knowledge and technology prudently on real time basis to correct and improve agriculture and allied sectors. The immediate relief packages announced by the Centre and States are very useful to bail out the marginalized population from the face of the disaster. However, to sustain their growth, the agriculture and allied sectors need to be protected with immediate short term and short-term measures. The immediate short-term measures focus on facilitation of harvest of rabi crops while the short-term measures address planning for the ensuing kharif season.

Though the lockdown situation is a major handicap in this process, some room allowed for carrying out agri operations like harvesting, processing and transport by the governments in many states. There is a need to put in place a mechanism conducive for farmers to take up seasonal activities by mobilizing inputs and permitting required farm operations. FICCI has made 14 recommendations for agriculture and allied sectors to cope with COVID 19. However, it is also necessary to provide doable solutions to keep agri operations going despite COVID 19 challenges. The approach is to develop a robust mechanism of crop harvesting and storage, land preparation, sowing with proper input management and farm mechanization by limiting the engagement of workforce through custom hiring, post-harvest and crop processing and use of information and communication technology.

Strategy

A. Immediate short-term plan (immediately from now until 31 May 2020)

(i) Harvesting of standing crops

The COVID-19 scenario in the country has put farming and farmers at crossroads. Restricted movement and social distancing are proving quite challenging to crucial farm operations such as harvesting of standing *rabi* crops and facilitating market to sell the produce. This has an adverse effect on national food security as well. Harvesting of standing rabi crops, transporting them to market/processing centers and making it available to consumers at large is turning out to be quite challenging when movement of people and vehicles is restricted due to COVID 19 scenario.

In Odisha, whilst most of the *rabi* crops viz., blackgram, greengram, paddy, groundnut, mustard, sugarcane are ready for harvest, there is an urgent need facilitation quick harvest with minimum labour use. Besides, processing of agri produce such as hulling, milling and polishing, oil extraction etc. needs to be facilitated as quickly as possible by coordinating with various agencies, government and non-government actors.

The following is strategy is suggested for harvesting and processing of agricultural commodities:

1. Mapping all harvesting/threshing machinery in private & public sector, within & outside the state for pooling and immediately deployment for harvesting, threshing, winnowing, packing etc.
2. Mapping the crop type zones and assessing the type and number of machines to be deployed for harvesting and other primary processing operations at the farm-gate
3. Identifying selected farm workers at village panchayat level to attend manual operations wherever required under the guidance of local health workers with all safety measures
4. Facilitating smallholders to attend to harvesting and post-harvest processing by engaging family labor following required safety measures.
5. Constitution of state, district & block level 'coordinating committees' by the DoA for pooling the machinery requirement at Gram Panchayat level and facilitate movement of machinery and harvested agri commodities, by putting in place a fool-proof logistics
6. Procurement of harvested commodities through a large participation of government and public institutions, their transportation to nearby secondary processing units (Daal mills, rice mills oil mills etc.).
7. Setting up mobile godowns for procuring agri commodities by converting railway wagons into mobile procurement centres by mapping major railway stations at district and block

level for the purpose. The idling wagon capacity can be used by properly sanitizing and treating them for procuring grains as they move along the track**.**

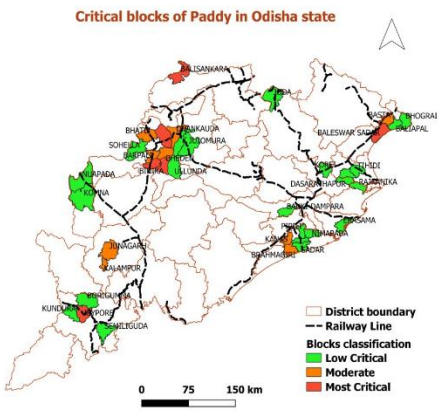
8. Permitting the functioning of a minimum number of processing units such as rice mills, dal mills, flourmills, sugar mills etc. with necessary measures of social distancing and sanitizing in place at every district.
9. Providing health insurance coverage against COVID-19 to all those involved in harvesting, transportation, storage, milling, distribution etc.

In support of the strategy, estimates of paddy production during *rabi*/summer, 2019-20 was worked out based on the net sown area provided by the DoA across various blocks. Two strategies one at macro level and the other at micro level are proposed for paddy procurement, (**Exhibit 1**).

- Blocks under Macro-Planning (38): Prioritization of blocks based on proximity to the rail network for immediate procurement.
- Blocks under Micro-Planning (295): As the blocks are widely spread with low outturn, logistics must focus on local aggregation and secondary processing.

Exhibit 1. Macro and micro-level planning paddy procurement and transportation

Macro Level Planning-Paddy			
Criticality	Outturn (lakh tons)	Blocks	@ 90% Marketable Surplus (lakh ton)
High (>10,000 tons)	4.45	6	4.00
Medium (5000 to 10000 tons)	2.45	9	2.21
Low (1000 to 5000 tons)	1.46	23	1.31
Total	8.35	38	7.52
Micro Level Planning-Paddy			@ 70% Marketable Surplus
No (< 1000 tons)	1.24	257	0.87
Grand Total	9.6	295	8.38



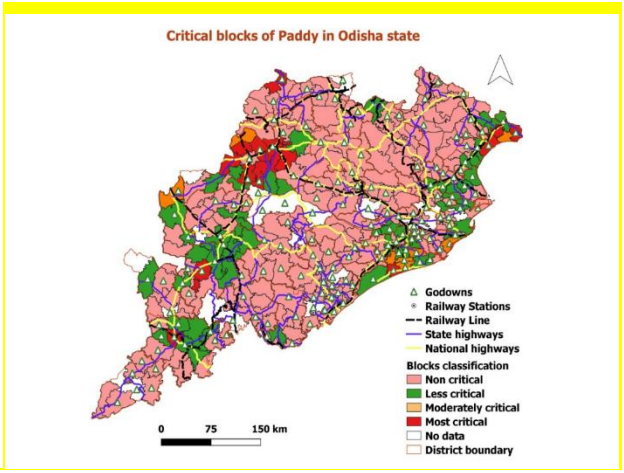


Exhibit 2: Map showing the critical blocks of paddy; **Exhibit 3**: Map showing the critical and non-critical blocks of paddy with warehouses connected through rail and road network

Exhibits 2 and **3** show I that it is important to focus on four clusters encompassing consisting of cluster 1. i.e. Bargarh (Attabira, Barapali, Bhatli and Bheden) and Subarnapur district (Binika, Dunguripail and Balisinkara), cluster 2 Baleswar district (Baleswar Sardar and Basta), cluster 3 Kalahandi district (Junagarh and Kalampur) and cluster 4 Koraput (Jeypore) to address the issue of large surplus. These four clusters have wider network of rail and road connectivity and accordingly the surplus produce can be handled with much ease and can be brought to the state headquarter i.e. Bhunaneswarar. Railway wagons may be deployed to procure paddy from the blocks that have large marketable surplus of paddy. This would require deployment of nearly 450 trains of 30 wagons each with a capacity of 55 ton to procure all the produce. This will be a huge logistic challenge for the state also requiring coordination with the Indian Railways and mapping of nearby hulling and storage facilities. Even if it is assumed that about 50 per cent of the marketable surplus is mobilized by local rice mills after partial lifting of lockdown, over 250 trains would still be the need to transport the produce to the FCI godowns and other warehouses. Odisha State Civil Supplies Corporation Limited (OSCSC Ltd.) utilises 215 godowns as rice receiving centres with a capacity of 4.10 lakh MT. It owns 212 godowns, out of which 63 with a capacity of 41,267 MT are being used as rice receiving centres. The balance capacity is met by hiring warehouses of CWC, OSWC, government agencies and private parties (http://oscsc.in/godown.html).

(ii) Handling of perishable commodities

Majority of horticulture farmers growing commodities viz. fruits, vegetables and flowers are enduring the most of COVID situation. Hence, this requires require a better and quick response system from the administration to limit losses for farmers and prevent shortage at consumer end. This calls for a seamless and continued supply chain right from the farm to the fork. This

calls for putting in place a well-coordinated and responsive system by the administration. The strategy for handling of perishable commodities may be as follows:

1. Aggregation of the horti produce at FPO/village level and help farmers' access block/district level markets to encourage local consumption and prevention of long-distance transportation by road so as to reduce perishability.
2. Enrolling of village volunteers or NGOs to handle the horti produce of clusters of villages and facilitate aggregation.
3. Permitting secondary processing units for utilizing of fruits and vegetables like tomatoes, chilies etc. for jams, jellies, pickles, dehydrated vegetables etc.
4. Activating local cold storage units for temporary storage of perishables. **Also exploring the possibility of pressing into service the idle air conditioned (AC) coaches to double up as mobile cold chains to ferry surplus horticulture commodities far off markets.**

In the case of perishables viz. vegetables and fruits, one of the lead districts i.e . Koraput is considered for suggesting measures of dealing with surplus and market linkage. The data shows that that one train with 14 AC coaches is the daily requirement to transport the surplus produce from and out of Koraput in Odisha **(Exhibit 4)**.

Exhibit 4. Estimation of AC and NON-AC carriers for transportation of vegetables in Koraput diststrict

Sr. no.	Crop	Final 2018-19		Total Estimated summer production @ 30 % 0f 2018-19 (MT)	Total Production during April and May 2020 (MT)	Daily production (MT)	Local market consumption @ 50% for vegetables and 25% for mango (MT)	Daily export to distant market i.e. 50 % (MT)	No. of AC coaches req. daily to transport the vegetables
		Area (ha)	Production (MT)						
1	Bitter Gourd	415	3889	1167	583	10	5	5	0.11
2	Bottle Gourd	365	5059	1518	759	13	6	6	0.14
3	Brinjal	4030	61659	18498	9249	154	77	77	1.71
4	Okra /Ladies Finger	2066	18181	5454	2727	45	23	23	0.50
5	Tomato	3340	53106	15932	7966	133	66	66	1.47
	Total Vegetables	10216	141893	42568	21284	355	177	177	3.93 (say 4)
6	**Mango**	12930	68529	NA	68529	1142 (say 914 by discounting 20% PH lossess)	456	457	**10**

B. Short-term Plan (01May- June 15, 2020)

(i) Facilitation of pre- *kharif* and planting activities

Kharif season is the main cropping season across the state of Odisha, as it contributes substantially to the state's food production. With the *kharif* season just around the corner, important farming operations such as land preparation, procurement of inputs, nursery raising, planting etc. should be planned on priority. The following are some of the strategies/actions that need immediate attention:

- In view of the need to maintain social distance while making use of the narrow window of agri operations viz. ploughing and seedbed/nursery preparation, seeding/transplantation, there will be a heightened need for mechanization.
- Administration to prepare an inventory of available tractors, ploughs and seeding equipment and transplanters etc. (including those available with tractor and machinery dealers) (Annexure I)
- Setting up/ strengthening the custom hiring centers, FPOs, Village Panchayats, and Panchayats to prioritize and execute field operations in a time bound manner by recovering a minimal/nominal cost from farmers.
- Facilitating free movement of farm equipment and tractors across villages, blocks and districts to hasten agri operations with minimum involvement of labor.
- Aggregating the Indent of farm inputs such as seeds, fertilizers and plant protection chemicals of principle *kharif* crops at villages/panchayat levels and making available inputs at village and panchayat levels to restrict movement of farmers to district and block headquarters to avoid risk of contamination

(i) Systems approach mechanizing operations

Keeping in view the infectious nature of COVID 19 there is strong need to avoid famers congregating for field operations. Mechanization of field operations is the best way to facilitate this. The following process may be adopted to promote mechanization and limit exposure of farm labor for potential infection of COVID19

1. Preparation of block level inventory of tractor, rotavators and power tillers including the equipment available with state government, individual farmers, and private agencies and pooling them at Panchayat level
2. VAO/VAW and AAOs to prepare village-wise demand for ploughing, seedbed preparation, sowing requirement keeping in view the farmer, village and block-wise area under

principle agricultural crops and prepare calendar of operation to be completed on daily basis.

3. Deployment of the available equipment on rotation basis among farmers, villages and blocks under the guidance of respective CDAO keeping panchayat as a functional unit.
4. The shortfall, if any, of implements must be supplemented accessing them from local dealers.
5. All the farm equipment available at a block must be under the command and control of the block level agricultural officer.
6. The indent for equipment from farmers may be obtained over phone by enabling a block level helpline number.
7. A digital dashboard highlighting block level inventory and schedule for farm equipment need to developed and enabled for access by smart phones.
8. Farmers' contribution towards field preparations needs be nominal
9. The equipment lying idle with equipment manufacturers may also be pooled on lease basis. Catchy tag line such as "In farm and not in factory" may be used to propagate such initiatives as a movement.

A case on aggregation tractors in two districts i.e. Bargarh and Cuttack is worked out to hasten land preparation without involving more humans and the need for social distancing. As per the information collated from the government sources, the DoA has provided about 5672 and 3245 tractor equivalents (tractors and powertillers) in Bargarh and Cuttack districts respectively in the recent past. Considering these facts and the data presented in **Exhibit 5**, it can be assumed that there is no criticality in completion of field operation i.e. ploughing and puddlling leading to transplantation of paddy in these districts during *kharif*, 2020. It is worth mentioning a fact that recently the TAFE has launched JFarm Services to provide support to connect the tractor owners with farmers and avail the tractors on rent (https://tafe.com/news-room/TAFE-JFarm-Services-Launch-Odisha.php) under its CSR initiatives. District administrators along with tractor aggregators like JFarm Services can develop a deployment plans as per the crop calendar.

Exhibit 5: Block level inventory of tractors

Bargarh				Cuttack			
Block	**Area (ha)**	**Tractor equivalents required**		**Block**	**Area (ha)**	**Tractor equivalents required**	
		Ploughing	**Puddling**			**Ploughing**	**Puddling**
Ambabhona	13721	327	343	Athagad	13150	313	329
Attabira	24832	591	621	Badamba	7520	179	188
Barpali	20336	484	508	Banki	7390	176	185
Bargarh	20962	499	524	Banki-dampara	6950	165	174
Bhatli	20485	488	512	Baranga	6320	150	158

Bheden	26950	642	674	Cuttacksadar	9810	234	245
Bijepur	19651	468	491	Kantapada	5487	131	137
Gaisilet	15508	369	388	Mahanga	11395	271	285
Jharbandh	15227	363	381	Narasinghpur	12200	290	305
Padampur	21154	504	529	Niali	10390	247	260
Paikamal	204	5	5	Nischintakoil	12755	304	319
Sohella	25689	612	642	Salepur	13380	319	335
Total	224719	5350	5618	Tangi choudwar	14320	341	358
				Tigiria	4130	98	103
				Total	135197	3219	3380

C. Innovative logistic support to procurement and input supply

(i) Maximizing the utility of currently idling railway resources

The administration to identify important block and district headquarters that are connected by railway lines across the state of Odisha. Such railway stations are supplied with wagons which can be stationed for specified number of days in identified block and district centers identified as procurement centers. Data on extent of crop area especially the paddy should be analyzed to allocate wagons for procuring. Wagons may also be allocated to other prominent crops grown on substantial area. The wagons can be sanitized, treated with chemicals for safe storage of grains. The district administration should make arrangements to procure the produce of important agri-commodities. Payment to farmers may done through Direct Beneficiary Transfer (DBT).

Movement of perishables has been an issue since lockdown. Farmers lack free access to urban market due to restricted movement while urban consumers are paying high prices to vegetables and fruits due to short supply. An innovative mechanism needs be worked out by requesting the railway to deploy their air-conditioned coaches for ferrying perishable to distant markets. This will be a win-win situation for both the farmers and the railways. As passenger railway services are suspended during lockdown, the AC railway coaches with minor modifications can serve as cold chain carriers.

D. Use of technology to enable agriculture during COVID19

Taking cues while coping with nationwide lockdown on account of deadly COVID-19, there is an urgent need for use technology to overcome difficulties in marketing of agricultural commodities to secure livelihood of farmers. The need of the hour is to aggregate the requirement of inputs and services besides arranging for procurement of harvested produce. This process can be greatly aided by use of technology.

(i) Input Aggregator

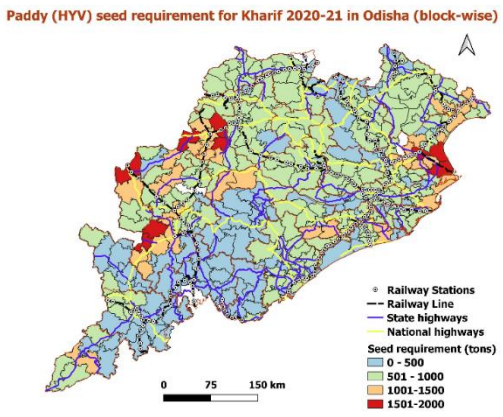
Cloud-based applications provide a detailed account of farm inventory of individual farms and farmers and input requirement including detailed information such type of inputs viz., seed, agricultural chemicals including fertilizers, implements, labour and farm power along with cost estimation. Aggregation of input requirement of individual farmers will help farmers' access better quality inputs at reasonable prices.

(ii) Smart Marketer/Output Aggregator

While the Agri-input Aggregator aids farmers to aggregate the inputs, Smart Marketer helps in aggregating farm produce from largely segregated and isolated individual farm.

The Farm Inventory is the gateway of supply chain that helps the Smart Marketer to play a pivotal role to facilitating a fair deal to farmers while selling their produce. The name of crop, variety, acreage, harvest date, potential yield and status of crop health is mapped vide the Farm Inventory, also could give a reasonable opportunity for the individual farmers to predict farm output well in ahead of its intended sale. This would enable the individual farmers or FPO to quote the price and keep informed the prospective buyers about production trends, quantity and price various agri-commodities at appropriate time intervals. The prospective buyers viz. bulk consumers, *mandi* merchants, corporate houses who are into the processing and trading of agri-commodities can virtually negotiate on quantity and price well in advance and place the indent to generate receipt in proof of the deal.

An interactive online portal depicting the maps of nutrient status and requirements at block level is developed and hosted at URL: https://odmaps.s3.ap-south-1.amazonaws.com/map_1.html for the convenience of policy makers, planners and administrators (**Exhibit 6 and 7**).



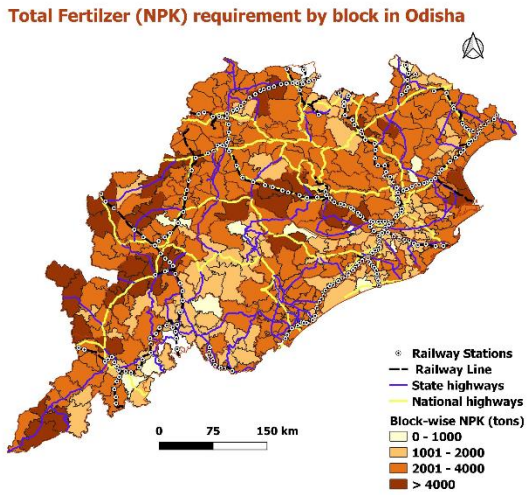


Exhibit 6. Paddy seed requirment across various blocks; **Exhibit 7** : Fertilizer requirement for paddy across various blocks

E. Building a system for responsive response

The lockdown in force due to COVIC 19 across several states has challenged the way a host of activities that are needed to be carried out in order to mobilize the ground level operations in view of required social distancing. This calls for a new response system that can be handled virtually but much more efficiently. Due to restrictions in place for travel and meetings, the organized sectors have to quickly adapt to new ways of transacting their business. Virtual meetings through teleconferencing and video conferencing are the only way of consultations and meetings. The bureaucracy will have to adapt to a paperless commucnitaons doing away with moving of physical files. Many approvals have to be accorded and decisions have to be communicated on emails and text messages.

Although the need of the hour has forced governments to embrace this change, it is also proving to be very quick and efficient. The response time to the emerging needs and challenges of the situation is getting shorter. This is a positive outcome of the challenges thrown at the governments by COVID19. There is also a need to assure and encourage the government functionaries at all levels to use technology extensively to be able to respond to the challenging situations. This may need passing of certain GOs, directives and advisories to foster an enabling environment.

There is a good chance of technology supported virtual communcitions becoming a routine and normal even after recovery from COVID 19. If this happens, that would be one of the best outcomes of the dreaded pandemic. This will also enable a multi-stakeholder sector like

agriculture to embrace change by respecting virtual communication systems. Government offices that are used to reminders and follow ups for file movement should now start functioning proactively without insisting for physical presence of individuals to pursue the matters in the bureaucratic channels. This will not only build a responsible system of responding to the situation during COVID19 but also will go a long way in developing a sense of urgency for delivery of services to farmers and other stakeholders.

F. Facilitating the engagement in managing sponsored project

In order to have better and wider outreach of best outcomes of sponsored projects to larger sections of farmer, the state departments need to engage/associate with their partners that are implementing special project within challenging geographies. Engaging with such partners will add value and introduce innovative ideas and approaches to overcome the difficult times in view of COVID 19. Such engagement needs to be further promoted in the larger interest of enhancing the capacity of farming community for embracing change. The following may help give an impetus to engage with partner institute:

- Immediate release of sanctioned funds for 2019-20 and the funds for first half for 2020-21 as approved for completing the planned activities. This will help reach more number of farmers during this difficult time.
- Facilitating presence of the project partners in the fields to understand the field level problems from the COVID-19 perspective and find solutions to implement the same in a participatory mode.
- Convergence of all state and centrally sponsored schemes with RKVY projects for maximize the reach and impact besides achieving prudence in use of limited resources.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