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Impact of COVID-19 on Rural Agriculture of Warangal District (Telangana)

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Abstract

The outburst of COVID-19, affecting millions of lives has been coincided with harvesting of rabi season crops like paddy and maize in Telangana. The immediate impact from pandemic lockdown were shortage of labour and hiked charges of the limited labour available, shortage of machinery and farm inputs. This paper provides a preliminary assessment of the adaptation strategies of Telangana farmers under such conditions. The assessment is based on telephonic survey of 30 farmers from three villages (Houzebuzurg, Neredpalli, Nandigama) of Warangal district, Telangana in the early month of May, 2020 to understand the impact of pandemic lockdown on rabi crop. Amidst challenges, farmers adopted different strategies as influenced by their holding size, financial resources, and access to local information networks. Marginal and small farmers increased the use of family labour, while medium and large famers showed an increased use of machinery which suggested improved farmer's ability to adapt to the lockdown.

Key words*:* Rabi crops, lockdown, adaptation, COVID-19

JEL Classification: Q10, Q12, Q19

Introduction

Telangana state of Southern India is the newly carved state from Andhra Pradesh in year 2014. Total geographical area of the state is 11.4 million ha. Out of this, about 38 per cent is available for cultivation with cropping intensity of 125 per cent (GOI, 2018). Agriculture is an important sector in Telangana state economy. It contributed 13 per cent to the state income. Nearly 56 per cent of population in the state is depending on agriculture. It has the net cropped area of 5.12 million ha and nearly 56 per cent of the area is irrigated by various irrigation sources (Kamraju *et al*, 2017). It has seven agro-climatic zones which are suitable for various crops. Paddy, maize, cotton, turmeric, pulses and vegetables are the prominent cropping system during kharif, whereas paddy, maize, pulses and vegetables are grown during the rabi season. Warangal is a place with a great historic past. The major crops in district are paddy, maize, green gram, red gram, groundnut, cotton and chillies (Goud *et al*, 2017). The major source of irrigation is wells, tanks, minor irrigation projects of canals and tube wells. Normal annual rainfall received is 622 mm to 750 mm. At present, rice is Telangana's principal crop, accounting for 35.6 per cent of the total area under field crops (Government of India, 2018). Farmers who have access to abundant water from rainfed reservoirs prefer to grow only rice.

International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Hyderabad, India along with TIGR2ESS: Transforming India's Green Revolution by Research and Empowerment for Sustainable food Supplies (FP4 - Water use and management under climate change) which is GCRF award collaboration project between the United Kingdom and India have been aiming at ground level problems where research and development can help better for sustainable and

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resilient agriculture policy interventions. Amidst millions of questions about Agriculture and Economy, TIGR2ESS - FP4 team has focussed to understand the farm level real problems faced in three villages of Atmakurmandal, Warangal district which happens to be study sites for the ongoing project.

Pandemic Lockdown and Telangana Agriculture

The world has been hit by unfortunate COVID-19 shaking the pillars of every economy affecting millions of lives. Many concerns were being raised about Global Agriculture, food security and livelihood. The specific period of outbreak and spread of pandemic in Telangana has been coincided with harvesting of rabi season crops like Paddy and Maize.

As a controlled measure to slow down the spread of COVID-19, Indian Government imposed Nationwide lockdown on March 24, by which all the operations came to a halt. The sudden change in situation posed many challenges from harvesting, processing to packing and marketing of rabi produce followed by kharif sowing season from June. The immediate impact from pandemic lockdown were shortage of labour and hiked charges of the limited labour available. Due to restricted movement, the labour from adjacent villages were unavailable leading to scarcity in labour. In addition, shortage of machinery and farm inputs were also expected to be an issue since its availability was also expected to be impacted by the lockdown. Eventual increase in farm costs like labour charges, machinery rentals, and costs of farm inputs may affect marginal and small farmers who occupies more than two-third of Telangana Agriculture households.

Data Sources and Methodology

To understand issues like scarcity of labour, machinery availability and hiring charges, impact on production and marketing, possible problems in coming kharif season etc, a structured questionnaire was framed based on discussions with various stakeholders including FP4 team including researchers from ICRISAT and farmers. Taking possible concerns into consideration, a group of 30 farmers (ten known farmers were selected from each village) were selected from three villages (Houzebuzurg, Neredpalli, Nandigama). With the help of framed questionnaire, survey data had been collected through telephonic conversations with farmer's consent. These farmers are a part of the ongoing FP4-TIGR2ESS project. Based on the possibility of personal visit to the farmers and available contact information (for telephonic interview), the farmers were randomly selected. The survey was conducted in the early month of May, 2020 to understand the impact of pandemic lockdown on rabi crop regarding procurement and sale of paddy and other crops.

Selected farmers

The average area of the sampled farmers was 5.77 acres; the average landholding of the marginal (up to 2.5acres), small (2.5-5 acres), medium (5-10 acres) and large (>10acres) farmers was 1.6, 2.64, 7.02 and 19 acres respectively (Table 1).

The average landholding in the state was found to be 2.47 acres. Farmers that owned less than 5 acres formed 50per cent of the total sample, medium farmers formed a major proportion (40%) of the total sample.

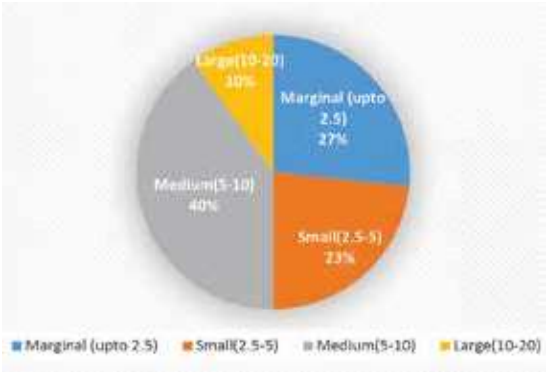

Fig 1. Propotion of Total area of sampled farmers

Table 1. Categorization, number and average area of landholding of selected farmers

Category of farmers	Number of farmers	Percentage	Average Area of landholding (acres)
Marginal (upto 2.5 acres)	8	26.7	13.3
Small(2.5-5 acres)	7	23.3	18.5
Medium(5-10 acres)	12	40.0	84.3
Large (10-20 acres)	3	10.0	57.0
Total	30	100	173

Primary occupation being farming for all the sampled farmers, working as farm labour was secondary occupation for more than 70 per cent of farmers and rest 30 per cent farmers were engaged in agriculture related business. By taking an account of the problems that they were facing during the lockdown period, gave us an insight into the issues at hand, subsequent measures that the farmers were taking and the required government action to tackle the same.

Results and Discussion

Rabi Season

Paddy and maize are the two crops cultivated in rabi season of 2019-20 occupying 76 per cent and 24 per cent respectively of total area from sampled farmers. Since most of the farmers depend on Government procurement system, an attempt was made to understand the adverse impact on farmers due to spread of pandemic and lockdown (Table 2).

Table 2. Area of rabi season crops of selected farmers (area in acres)

Category of farmers	Paddy	Maize	Total
Marginal	12.8	0	12.8
Small	17.5	3	20.5
Medium	26.5	21	47.5
Large	32	4	36.0
Total	88.8	28	116.8
Percentage	76	24	100

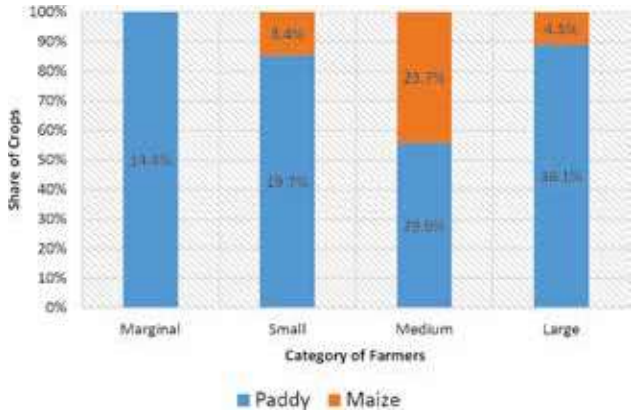

Fig 2. Cropping Pattern - Rabi

Various facets of agriculture that were expected to be impacted due to the COVID-19 pandemic are below:

Harvesting

The outbreak and spread of pandemic at final stage of crop triggered serious issues like scarcity in labour, machinery and increase in hiring charges and transportation issues.

Restrictions imposed by lockdown lead to lack of transportation facilities and hindrance of travel in larger groups. So, the labourers from adjacent villages could not reach the farming area leading to scarcity in labour. Consequently, the wage rates of the existing labourers were seen to escalate. It is observed that, about 47 per cent of the farmers faced issues of labour scarcity and about 30 per cent claimed increase in wage rates (Table 3).

Lockdown has affected the availability of machinery and increase in hiring charges as reported by farmers. Easing norms related to Agricultural purposes, the state government arranged for the movement of such machinery to various parts of the State during lockdown, thereby ensuring maximum possible availability. However, about 33 per cent of selected farmers mentioned problems in availability of machinery for harvesting crops and 7 per cent claimed increase in hiring charges of machinery. Thus, delay in harvesting lead to considerable amount of post-harvest losses.

Marketing

The procurement under price support is taken up mainly to ensure remunerative prices to the farmers for their produce which works as an incentive for achieving better production. Procurement price of a commodity refers to the price at which govt. procures the commodity from producers for maintaining the buffer stock or the public distribution system. It also ensures effective market intervention thereby keeping the prices under check and adding to the overall food security of the country. Though Government tried to begin procurement process to the earliest possible, about 73 per cent of sampled farmers claimed delayed procurement due to pandemic crisis. Generally, as soon as the procurement happens, payment of the produce is often done in weeks' time. During the lockdown period, late procurement led to delay in payments. However, only about 5 per cent of sampled farmers mentioned an issue of delayed payment. Though Government permitted transportation of vehicles/machinery/produce related to agricultural purposes, about 13 per cent of sampled farmers mentioned transportation issues as

Table 3. Problems faced during harvesting of rabi crops (Multiple Response)

Category of farmers	Scarcity of labour	High wage rate	Availability of Machinery	High hiring charges of machinery	No problem
Marginal	2	1	3	1	3
Small	2	1	2	0	5
Medium	8	5	3	1	2
Large	2	2	2	0	0
Total	14	9	10	2	10
Percentage	46.7	30.0	33.3	6.7	33.3

a constraint during pandemic lockdown thus closing local market opportunities. However, all the marginal farmers waited patiently for Government procurement only. As the most important rabi crop in Telangana, Paddy is procured by Government at higher price (Rs 1860) compared to last year (Rs 1810), there were no issues of price among farmers. Few farmers sown their rabi crop late and harvested late. The time, crop reached its physiological maturity, situation got better regarding availability of machinery for harvest. Thus, it was found that, about 30 per cent of sampled farmers faced none of the above problems due to pandemic lockdown (Table 4).

Measures to tackle the problems

Though State Government are making all the efforts to ease obstacles in agriculture, farmers too acted accordingly following patience as a key to resolve sudden problems during pandemic lockdown period.

About 47 per cent of the farmers faced sudden labour shortages due to pandemic lockdown and about 30 per cent mentioned problems through higher wages. The number of manual days for harvesting of crop has been increased through managing with few local labourers thus delaying harvest and marketing of produce. Besides, Marginal farmers who possess generally 1-2 acres depended on family members to ensure timely harvest of crop thereby avoiding losses.

It is observed that almost all the farmers depend on machinery to harvest crops and presence of fewer machineries in surrounding villages resulted in rapid rise in demand. About 33 per cent of sampled farmers mentioned problems in availability of machinery for harvesting crops and 7 per cent claimed increase in hiring charges of machinery. But they were waiting patiently for their turn to use machinery supporting co-farmers to overcome the crisis period. Responding to the call of Government to wait for procurement, about 73 per cent of sampled farmers claimed delay in procurement but waiting patiently through token system during pandemic crisis period. Only 5 per cent of mentioned delay in payments from overall sampled farmers.

Due to lack of transportation, local market opportunities and other reasons, all the farmers stored their harvested rabi produce at farm waiting to be procured by Government. Because of pandemic lockdown, farmers reported unavailability of jute bags to pack those produce in bags ready for market which eventually resolved later. It was also confirmed that none of the produce was dumped and stored well.

Table 4. Problems faced in marketing of rabi crops (multiple response)

Category of farmers	Delayed procurement	Delayed payment	Decline in demand	Transport
Marginal	8	0	0	0
Small	6	0	1	2
Medium	12	1	3	2
Large	3	1	0	1
Total (per cent)	73	5	10	13

To address concerns regarding the fate of rabi yields due to unavailability of timely machinery and labour during lockdown period that might lead to lower yields. Surprisingly, it was observed that, about 67 per cent of farmers reported moderately increased rabi yield of this year compared to the previous year due to good rainfall and the rest 33 per cent claimed the same yield as earlier rabi season.

Kharif season 2020

An attempt was also made to understand the perspective of farmers with regards to expected issues that are likely to be faced during upcoming kharif season. Generally, Major crop in the state during the last season was paddy as it was cultivated on about 56 per cent of the total land of sampled farmers in the state. Cotton was cultivated in 30 per cent of the total area during previous kharif season.

The major issues that are likely to be faced from farmers view point are availability and higher costs of labour and farm inputs. As result, choice, variety, and cultivation area of crops compared to last year might be different this season due to ongoing crisis. In this direction, analysis of the expected choice of crops and any changes thereof in the forthcoming kharif season (June-October) relative to the last season was undertaken.

Crop choice in kharif season

It was observed that paddy being the dominant crop covering about 55 per cent of sampled farmers area, pandemic has shown little or no change in area of paddy cultivation. The next most cultivated crop, Cotton is expected to show downtrend from 30 per cent in the previous year to 25 per cent in the upcoming season. The remaining crops like maize, groundnut, turmeric, and chilli are other upland crops occupying four per cent, five per cent, four per cent, and two per cent of total area. However, area under cultivation of Maize, Groundnut and Chilli are likely to increase till 5 per cent, 9 per cent and 3 per cent respectively compared to previous kharif season. Thus, excluding paddy, changes in cropping pattern can be observed this season as an approach to sustain pandemic crisis.

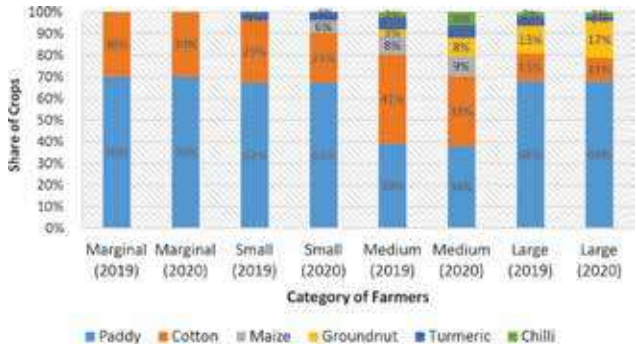

Fig 3. 2019 and 2020 Cropping Pattern - Kharif

Problems likely to expect in kharif season

Foreseen situations may prepare farmers with contingency plans beforehand. About 32per cent of total sampled farmers expect trouble with availability of good quality seeds while other 30per cent forecast unavailability and higher cost of Agri-chemicals like fertilizers, weedicides, and pesticides in kharif season. Like pandemic period, ten per cent of sampled farmers predicted increase in labour charges from now on. All the above-mentioned issues may contribute to overall increased cost of cultivation. The rest 20 per cent of sampled farmers expect no problem and have no idea what to expect in the forthcoming season (Table 5).

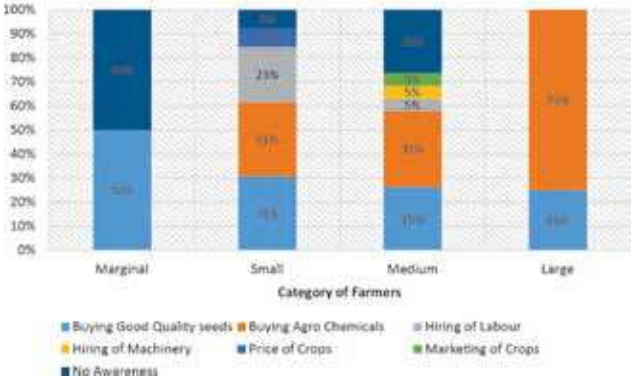

Fig 4. Problems likely to be faced by farmers in kharif season 2020

About 57 per cent of sampled farmers denied any difficulty in accessing credit while the rest 43per cent being small and marginal households faced situations with lack of credit availability during pandemic-lockdown. Most of the farmers depend on local money lenders to borrow money for timely farm works.

Though State and Central Government are taking all the necessary steps not to hinder Agriculture, Pandemic Lockdown surely have affected production and distribution of various farm inputs like improved seeds and Agri-chemicals. As its availability at right time is important to reap higher yields, farmers are worried about quality of inputs available and higher

Table 5. Problems likely to be faced in kharif season, 2020

Category of farmers	Buying of improved seeds	Buying of fertilizers/agro chemicals	Hiring of labour	Hiring of machinery	Price of crops	Marketing	No idea
Marginal	4	0	0	0	0	0	4
Small	4	4	3	0	1	0	1
Medium	5	6	1	1	0	1	5
Large	1	3	0	0	0	0	0
Total	14	13	4	1	1	1	10
Percentage	32	30	9	2	2	2	23

costs to be incurred. Through consistent efforts and screening of inputs, it can be resolved.

Source of Information

In spite of tremendous efforts to increase active participation of Agriculture department officials and farmers in timely dissemination of information to farmers to encourage their agricultural activities, about 20 per cent of sampled farmers (mostly large and medium farmers) are receiving information from government officials directly while 50 per cent of farmers depend on local village announcements and 30 per cent of farmers rely on information from society members comprising small marginal farmers.

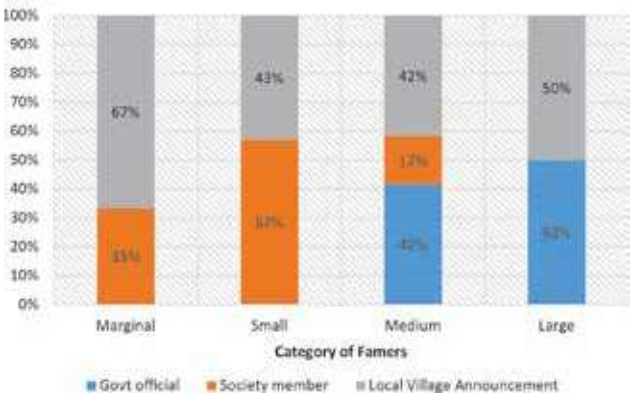

Fig 5. Source of Information

Water usage

Telangana farmers who are known for rainfed agriculture and dryland farming expect no change in water use for agriculture in forthcoming kharif season. They mostly depend on tank irrigation and electricity which are not affected fortunately during National lockdown. About 34 per cent of sampled farmers are moderately open in trying new technologies that can save labor and water usage. (while 66 per cent of farmers are not interested in changing their routine style of farming practice. The reasons being worried of change and not sure of profitable outcome while few were disappointed by problematic weeds when tried in the past).

Conclusion and Policy Implications

Agriculture is the primary occupation for majority households in Telangana. National lockdown, being an important tool in slowing down the spread of COVID-19, stirred the obvious detrimental consequences in Agriculture. Unfortunately, the first phase of lockdowncoincided with the harvesting period of paddy, one of the dominant crops, and subsequent marketing of *rabi* crops. The deterrence of physical movement of goods and persons and shutting down of other economic activities, lead to scarcity in labour, farm inputs, transportation issues etc, with severe impact on farming culture and community. Further, pooling of labour from adjacent villages to place of work is a common practice but restriction in movement in larger groups due to national lockdown, led to hike in labour charges. In addition, limited movement across the states lead to shortage and rise in expenditure on farm machines.

The present study brought out that though pandemic lockdown did impact various facets of Telangana agriculture which are likely to extend to the kharif season. However, labour shortages and subsequent higher wages, and expensive and limited transportation were found to be the relatively common constraints for the farming community; however, these issues did not become widespread. Though a certain rise in farm and marketing costs were experienced but none of the *rabi* produce of the state was lost or dumped due to

the pandemic.

Pandemic Lockdown surely have affected production and distribution of various farm inputs like improved seeds and Agri-chemicals. As its availability at right time is important to reap higher yields, consistent efforts and screening of inputs must be necessary at all levels not to hinder Agricultural production. The government must facilitate smooth agricultural operations and curtails the appreciation in farm costs. With regards to rise in wages, fixing of a rate of agricultural wages that could be enforced through the panchayats is crucial.

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Annexure

Rabi crop yield (2019-20) compared to last year (2018-19)

Category of farmers	Moderately Increased	Same	Moderately Decreased	No rabi crop last year	Total
Marginal	4	4	0	0	8
Small	4	3	0	0	7
Medium	6	4	1	1	12
Large	2	1	0	0	3
Total	16	12	1	1	30
Percentage	66.7	33.3	8.3	8.3	100

Credit flow whether affected by pandemic lockdown

Category of farmers	Yes	No	Total
Marginal	4	4	8
Small	5	2	7
Medium	4	8	12
Large	0	3	3
Total	13	17	30
Percentage	43.3	56.7	100

Source of information

Category of farmers	Govt official	Society member	Local village announcement
Marginal	0	3	6
Small	0	4	3
Medium	5	2	5
Large	1	0	1
Total	6	9	15
Percentage	20	30	50

Readiness to adopt new technology in kharif season

Category of farmers	Very open	Moderately open	neither	Moderately opposed	Very opposed
Marginal	0	3	3	2	0
Small	0	1	1	5	0
Medium	0	5	2	5	0
Large	1	0	1	1	0
Total	1	9	7	13	0
Percentage	3.3	30	23.3	43.3	0