

National Lockdown and Agriculture: Impacts and Remedies



ICAR-National Institute for Abiotic Stress Management
Baramati, Pune, Maharashtra



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1. Introduction

Human civilization has faced several threats emerged from the factors beyond its control and conquered them. The recent outbreak of Corona Virus Disease 2019 (COVID 19) is one such threat, which has no precedence in modern history. The World Health Organization (WHO) has declared it as a global pandemic. It has already affected more than 1.9 million and killed more than 0.12 million people worldwide till date (April 13, 2020). The number of affected people in nearly 205 countries of the world is increasing exponentially and more and more people in various countries are coming under the impact of this deadly disease with each passing day.

India is also very severely hit by the outbreak of COVID 19. Govt. of India decided to resort to an unprecedented 21 days (March 25 to April 14) national lockdown i.e., a state of isolation and restricted access instituted as a security measure of the entire country. This is the essential step to fight against the disease but has distressed agriculture, which is the mainstay of about 55% of 1300 million population of the country. Nearly 160 million out of 250 million households are engaged in agriculture and allied activities. Agricultural activities are adversely affected due to lockdown by several issues such as travel restriction, labor shortage and disrupted market chain. Shutdown of all the activities has endangered food, health and livelihood security of millions. Farmers and agricultural labourers are those among people who are already poor, marginalized and vulnerable and facing the brunt of lockdown. Food security is of utmost importance during the lockdown as shortage or unusually higher price will lead to violation of lockdown as well as unrest in the country. As a welcome step Govt. of India has exempted agriculture and allied activities from COVID 19 lockdown so that the agricultural activities should not be adversely affected. But still numerous hardships of farming community persist. Supply chain of food items has been disrupted leading to unfair process to real producers. Necessary things for agriculture like fertilizers, seed and pesticides are either not available or available at higher prices. This will lead to increased cost of production, reduced profitability and thereby making doubling of farmer's income a distant goal.

Though, the lockdown is of paramount importance for prevention and risk reduction from a deadly disease like COVID 19, this has locked down farmers' income as well. Farmers are facing difficulty as there is nobody or limited persons to harvest the crop and more limited people to buy the harvest. Migration of people may be farm labourers and other workers have become a very serious issue. Therefore, it is a pertinent question of 'life or livelihood'. We need to balance both as aptly said 'Jan hai and jahan hai'. The paper analyses the major impacts of national lockdown on agriculture including crop, horticulture, livestock and poultry; and suggests the remedial measures.

2. Field and horticultural crops

2.1. Impacts

Everything can stop but not agriculture and allied activities. Majority of people engaged in agriculture and allied activities are highly vulnerable to natural calamities as their savings and income are low due to low profitability of their field of engagement. The sudden decision on total lockdown caused panic buying in cities while the farming community could not make the best use of this demand. This can be attributed to restriction on mobility for checking the COVID 19 Pandemic. However, the second addendum in government decision on lockdown restriction included exemption on movement of essential goods and also agricultural operations. Despite this amendments sale of vegetable, fruits and other perishable items are badly affected due to transportation restrictions by on the site law enforcement officials. This

has caused very high prices of vegetable and fruits in the cities while in rural areas these items are available at very low prices with limited share of benefits for farmers.

The outbreak of the disease particularly at the peak of rabi harvesting season has caused a serious dent on overall production. Agricultural activities during harvesting season of rabi crop is facing acute labor shortage due to restrictions on mobility. Measures affecting free movement of people, such as seasonal workers, might have an impact on overall food production, thereby affecting market prices locally as well as globally. Although cereals and pulses crop like wheat is ready to harvest but farmers are facing severe labour problems. Besides, several farm machines like combine harvester has not reached to Maharashtra from northern part of India and lie stranded on highways as there is no one to operate them. Hence farmers have to harvest the wheat and pulses crops within limited sources and labours. Therefore, appropriate remedial actions are required to prevent such threats and mitigate the hardships of farming communities.

2.1.1. Field crops

Wheat

Due to the lockdown, harvesting of wheat crop in all over the country is going to be affected as most of the crops are in maturity stage. Wheat is one of the major cereals of Maharashtra and sown usually in the month of October to make the best use of stored soil moisture left by returning monsoon and also restricted irrigation that improves crop performance in medium to deep black soils. Wheat is also grown in shallow soils with access to irrigation particularly where there are no alternate crops during winter season. However, due to prolonged rains the wheat sowing got postponed to November and also early December. This was unusual but unique opportunity for farmers to make best use of water stored after unprecedented rains during the previous season. While the prediction of extended winter failed with usual rise in temperature during post flowering period, early sown wheat matured by March. However, only about 40% of the wheat could be harvested so far. Even the very late sown wheat is now almost ready for harvest. Post-Covid19 lockdown restrictions have delayed the harvest due to lack of labour availability and movements of combines. The local owners of combines have the cost of harvest as the combines that move from north have not reached the wheat fields of Maharashtra. Even if some have reached, operators are prevented from reaching the field as they can not be distinguished from others by the law enforcing authorities. Given a chance, the labours can get attracted by high premium work in grape orchard, the wheat harvesting will continue to be affected. During the present crop season unusually high incidence of stem rust have been reported and also vulnerable to damage by hailstorm, which usually occurs during this season. In case of extended lockdown or self imposed quarantine if any, the combine, which arrive from North may not reach Maharashtra or start moving back for the job in central and northern India. So wheat harvest has to depend on family labours or local combine owners. This will also give chance to traders who can buy wheat at lower price irrespective of varieties grown and the mix of different cultivars will be sold in the market for consumers. Highly graded one will land up in retail grocery stores with high price and the rest will go for milling and sale of atta. However, it is noticed that the early maturing cultivars of wheat like Phule Samadhan, released by MPKV Rahuri have an edge over other cultivars as this variety could be harvested on time.

Sugarcane

Sugarcane is one of the important and income assured crop of Maharashtra. Because highly evolved cooperative system the sugarcane cultivators are not affected by lockdown as matured sugarcane in and around the factories have been harvested and have been reached to

the crushing unit. However, due to limitation in capacity to crush some activities of sugarcane factories got delayed and hence unlikely to make any difference in farmers' income. However, the agricultural operations for sugarcane ratoon crop if any are likely to get affected. Being a long duration crop the impacts of 21 days lockdown would be marginal. Further, those farmers who have shifted to drip irrigation are unlikely to be affected, if supply of other inputs such as fertilizers and essential pesticides are insured. During this lockdown, law enforcing authorities also should ensure that straw burning should be prevented as such activity in absence of labours may prove detrimental. Instead farmers should be given access to machines designed for managing sugarcane straw through KVKs or custom hiring Centres. The lockdown has reduced/stopped crushing operation at mills, which has created fear among the farmer whom crop is still standing in their field. Though no sugar mill has reported closure due to the lockdown, it has affected sugarcane cutting. Nearly 2.5 crore labours in rural Maharashtra depend on sugarcane for their livelihoods where the sugar mills gives direct employment to nearly 1.65 lakh workers. About eight lakh workers are involved in harvest and transport activities for a period of six months. Therefore, this unprecedented outbreak of COVID-19 will directly affect to rural livelihood this population particularly, those who migrated from the Marathwada regions to the western Maharashtra. The current situation will affect prices and consumption of sugar at national and global levels, if the situation continues for a longer period.

Soybean

Soybean is one of the important Kharif crop which has taken over many other crops like kharif maize in the region mainly due to assured and enhanced income. However, during the last crop season unusually heavy rain inundated soybean field in substantial area. This also affected seed production process and it is predicted that there will be scarcity of soybean seeds for farmers during 2020 kharif season. In such cases seed production units of soybean become active during summer. However, the present lockdown situation will affect this activity. Provision should be made to ensure that the sufficient soybean seeds are produced and other accessories like bio-fertilizers are also made available in sufficient quantity. Persons involved in these activities should not be stopped by law enforcing activities. FPO may also be encouraged to produce sufficient seeds of soybean and other important crops.

2.1.2. Fruits and vegetables

Farmers in Western and Northern Maharashtra worried about the quality of grapes and onion might be affected by delay in harvesting due to lack of labours during lockdown. Most of the fruits and vegetables have to be harvested within few days once they are ready or they rot on plant. Present lockdown has also huge impact of supply and post-harvest component of value chain of agricultural commodities mainly due to scarcity of labours though the movement of trucks carrying essential commodities; the cold storage and warehouses have been exempted. In the first week after the lockdown vegetable farmers preferred to sell the products in local markets as the vehicles carrying the goods got stuck at the checking points and traders were not willing to buy the produce from farmers. However, the situation is getting gradually normalized.

Grape harvesting in progress though about 60% of the crop has been harvested and early harvests could get benefit of export premium. The late harvests are getting affected mainly because of labours and certain degree hesitation from export agencies. Vine industries have been closed as a consequence of lockdown leading to limited hopes for farmers who had to delay the harvest. Industries should be encouraged to consider this aspect wherever possible. Alternatively, other post-harvest value addition should be explored.

Guava is another crop, which is also likely to get affected in the case of continued lockdown unless labour crisis is solved by appropriate permit.

Pomegranate farmers organize their harvest systematically by giving due consideration to the demand. This is so particularly with respect to those who have mastered art of exporting. It is said that about 20% of the pomegranate growers planned their harvest to export their harvest by mid April. However, the restrictions, particularly due to labour may affect their expectations severely and can reduce cost benefit ratio as these farmers have invested a lot in protection of fruits through modern technologies. There should be provision to protect interests of these farmers by unrestricted labour, packaging activities and transport. Alternatively, processing units to add value to their products should be made active during the lockdown period.

Summer is the season when farmers try to earn more revenue by growing vegetables, which are highly perishable. The supply of inputs like high quality seeds of seasonal vegetables, fertilizer and other inputs like electricity should not be restricted for farm activities. The Farmer Producer Organisations (FPOs) should organize these farming activities in a way that everyone can get benefit of provision of exemptions made in the lockdown restrictions to promote e-commerce activities. Online short training through video-conferencing for enhancing awareness in this regard should be encouraged.

2.2. Remedial measures

Challenges arising out of COVID-19 in the field of agriculture and allied activities are multi-dimensional and multi-faceted. Therefore, it requires concerted and coordinated effort of several players. The Central Government agencies should work in close cooperation with State machinery, State Agricultural Universities and ICAR Institutes, Krishi Vigyan Kendras and extension workers to tackle emerging challenges in area of agriculture. Help of other Ministries are also required to continue agricultural activities unabated. Ministry of Chemical and Fertilizers along with Ministry of Commerce and Industries should ensure continuous production and supply of fertilizers and pesticides. Ministry of Surface Transport and Highways should arrange smooth movement of goods to keep supply chains alive. Cooperation from security agencies also need to be ensured. District Magistrates and District Agriculture Officers should ensure that all necessary inputs for agriculture are easily available and accessible at fair prices. Village heads or Panchayat heads should be allowed to issue passes to farmers and farm labourers for unrestricted movement to nearby markets and mandis. Despite restrictions, large number of people has migrated to their native places in villages. Farmer Producer Organisations (FPOs) and Panchayats can use such people for farming activities of the exhibit willingness. While doing all these activities, norms of social distancing and hygiene should be maintained.

Harvesting of mature crops should be undertaken using on custom hiring of available harvesters and threshers with Govt. support. Govt. should extend the date of procurement of rice and wheat from farmers.

Food processing industries should increase their processing in order to tackle any future food shortage and prevent wastage of perishable items. Digital technologies should be used to anticipate problems and smoothing temporary shortages. Entire food chain should be made resilient to avoid similar occurrences in future. Following precautions should be taken to reduce fruits and vegetables losses under lockdown situation.

- 1) Harvest fresh fruits and vegetables based on demand in market considering all the preventative measures suggested by Govt. including social distancing and personal hygiene.

- 2) Setup direct linkages with housing societies like milk supply to sell their farm produce through telecommunications and electronic media.
- 3) On-farm selling of perishable farm produce like vegetables and fruits (water melon muskmelon, grapes, tomato, etc.).
- 4) On-farm sun drying of chilies, turmeric, jeera, coriander and other leafy vegetables should be preferred for enhancing their shelf life.
- 5) Farmers should avail custom hiring services for large scale harvesting of onion and potato using tractor/power tiller operated diggers with trained operator who known to all preventive measures of COVID-19. In less rainfall areas farmers can delay the harvesting of onion and potato under scarcity of diggers and labours to avoid complete loss.
- 6) Harvested onion and potato can be stored in open sheds or by constructing on farm temporary bamboo structures.
- 7) Grapes farmers can delay the harvesting by giving light irrigation for few days. In extremes cases stop the harvesting and dried grapes on plants at field conditions for making natural resins to avoid complete loss.
- 8) In extreme cases, provision may be made to collect farm produce from village/BPL farmers field directly, free of cost during lockdown period.
- 9) Govt. has to take initiatives to create the cooperative mini processing units for fruits and vegetables at village levels and tackles such national disaster situation in future.
- 10) All the policies related MSP, loan waiver, compensation and subsidy to farm inputs should implemented by Govt. during COVID 19 situations at farmers end.

3. Livestock

3.1. Impacts

Though exemption on essential commodities during lockdown period, milk supply chain has been severely affected. However, to make the best use of situation, livestock owners should focus on reduction in cost of production and animal health in addition to workers health. Both routine processes of procurement of milk from farmers and supply of milk to consumers have been affected.

In India, 75 millions of farmers are producing 5 lakh tons of milk daily. The livestock sector depend on daily movement of their produce, feed, fodder, labour and other desired services such as breeding, health, feed mills, suppliers of medicine, vaccine feed, etc. Livestock production will be adversely affected by national lockdown by mainly three ways i.e., unavailability of inputs such as feed, fodder, medicine and vaccines; labour shortage for carrying out various physical activities and disruption in marketing of livestock products. These factors, solely or in combination will have the following impacts.

- 1) Decrease in milk, meat, egg production in livestock due to unavailability of inputs in desired quantity and quality.
- 2) Decrease in the body condition score due to less availability of feed and fodder.
- 3) Problems in treating sick animals due to lack of medicines and veterinary doctors at required time.
- 4) Higher cost of production due to increase in the cost of inputs.
- 5) Less demand for livestock products.
- 6) Difficulty in supply of livestock products and procurement of inputs.
- 7) Difficulty in maintaining unproductive animals.
- 8) Besides, veterinary services are affected, particularly vaccination, procurement of medicines, laboratory facilities, blood transfusions, etc.

- 9) Transportation of animals for treatment and diagnostic facilities to polyclinic is affected due to transportation problems. Large animals' sale and transportation are completely stopped affecting economy of farmers.
- 10) The activities of small dairy farmers who depend upon local sell of milk to local consumers, hotels, tea centers, hostels are completely affected. If lockdown continues further, there may be other impacts on livestock such as decrease in the reproductive efficiency in animals, decrease in the immunity of the animals making them susceptible to other diseases and increase in mortality rate in animals aggravating agony of livestock farmers.

Besides, veterinary services are affected, particularly vaccination, procurement of medicines, laboratory facilities, blood transfusions, etc. Transportation of animals for treatment and diagnostic facilities to polyclinic is affected due to transportation problems. Large animals' sale and transportation are completely stopped affecting economy of farmers. The activities of small dairy farmers who depend upon local sell of milk to local consumers, hotels, tea centers, hostels are completely affected.

3.2. Remedial measures

The following remedial measures, depending upon the situation should be adopted.

- 1) Due to limited availability, feed and fodder should be used judiciously and the production ration of animals can be cut down to maintenance ration till the arrival of fresh feed as saving the life of animals is more important than production.
- 2) The animals can be fed with unconventional feeds in small amount (upto 40% level) for maintenance. In small holders situation kitchen garbage can be used to feed the milk producing animals in absence of concentrate. The advisory issued by ICAR-NIANP, Bengaluru states that instead of throwing the milk, at least they can mix the raw milk with cattle feed and feed to cows. If possible, the animals may be kept in loose housing system, to save the life of the animals in emergency conditions.
- 3) Milking animals should be milked twice daily without fail otherwise it will cause mastitis in animals.
- 4) Strict bio-security measures should be carried out to prevent the entry of pathogens in the farm. Newly arrived animals should be kept in quarantine shed for 30 days before introducing in the herd. Vaccination schedule should be followed judiciously. Stocks of routine used veterinary medicines should be kept at the farm for treating animal diseases and prevention of production loss and life of the animals.
- 5) Feeding of bypass fat after lockdown period will help in bringing the animals to their optimum production levels.
- 6) Overcrowding should be avoided to provide sufficient feeding and watering space to the animals. Hygienic conditions should be maintained in the animal shed.
- 7) Dead animals should be disposed off properly to prevent the spread of other diseases.
- 8) The shelf life of livestock products can be increased by value addition. The milk can be converted into Paneer, Khoa and Ghee that can be stored for longer period and sold in the market after the situation becomes normal.
- 9) As precautionary measure in view of further extension of lockdown in certain parts of country, feed and fodder should be timely procured and properly stored depending upon the number of animals present on the farm.
- 10) Dry fodder can be stored in the form of hay. Green fodder can be stored as silage and can be fed during unavailability of fresh green fodder.

4. Poultry

4.1. Impacts

COVID 19 and lockdown events have reduced the demand for poultry drastically as reported by trade association in the region. The main reason can be attributed to the fact that consumers increasingly believe that the disease has spread through animals in China. Majority of the restaurants and meat shops in cities have been closed or the sale is drastically reduced. The demand for eggs from domestic sector may continue. So, any attempt to protect the Poultry farmers at this point should involve the hygiene and restriction on expansion of the poultry farm. Protection of birds should be given priority until the situation gets normalized. Similar procedures to be followed for goats and sheep rearing which may likely to get affected due to drastic reduction in demand. The scope for reduction in cost of production/maintenance can benefit the farmers.

In India, 1.6 million farmers are engaged in poultry, which produce 250 millions eggs and 3 million tons of meat daily. The poultry sector depends on daily movement of their produce, feed, fodder, labour and other desired services such as breeding, health, feed mills, suppliers of medicine, vaccine feed, etc. Poultry industry has taken the worst hit due to the lockdown resulting in decline in sell of poultry products. Availability of workers is the main limitation for carrying out the routine activities in a poultry farm. Another major effect is the increased feed cost. So, poultry operators are getting affected in both the ways i.e., less price of finished products and high cost of production due to increased feed prices. In addition, major consumption of chicken is by daily wage labourers who has shifted or gone to native place and middle class who are not coming out to purchase. Besides, some big companies/integrators are not able to supply feed/vaccines and buy-back the birds compelling the farmers to sell birds at whatever price they may get. Transport of vaccine required for these birds is also affected. Ancillary industries linked to poultry, like chicken feed including maize and soybean farmers, pharma and other are also weighed down.

4.2. Remedial measures

After the Govt. guidelines that agricultural services are exempted from the restrictions of movement, the transport of animals, fodder and other required inputs (veterinary services, feed, vaccines, etc.) should be normal. Migration of labour leading to unavailability of workers in farms, feed mills, market, etc. should be stopped and they can resume their duties, of course following the health guidelines. Measures need to be taken for safety of work force to avoid their fear migration. The assured prices need to be given for the products during the lockdown period. Fixed prices during period of pandemic may be beneficial for farmers as well as consumers. Support system may be developed for purchase of perishable farm produces like eggs. Following preventive and curative measures should be taken in the poultry industry under lockdown situation.

- 1) Regular check-up and social distancing of workers engaged in poultry industry for pandemic COVID-19. Poultry workers may contact immediately to nearby hospital for any kind of health issue during lockdown situation.
- 2) Awareness training/education programme on personal hygiene and quality maintenance of the birds in small groups (3-4 numbers) to workers engaged in poultry farming should be organized to minimize the chances of spreading of COVID-19 under lockdown situation.

- 3) Poultry industry should supply all preventive items like mask, hand gloves, mask, sanitizers and fumigants to the poultry farmers and workers (farm, transports and butcher etc.).
- 4) Produce/grows/supply numbers of birds considering the market demand and profit under lockdown situation.
- 5) Regular implementation of biosecurity (segregation and traffic control, cleaning and disinfection), vaccination program and medication is essential.
- 6) Cleaning and sanitation of housing, vehicles and equipment with recommended detergents/soap water/sanitizer/fumigants is the next most effective step (removes 80% of the contaminants).
- 7) Don't add new birds to flock and restrict entry of wild birds, rodents, pets and other animals are the carriers of infectious agents.
- 8) Provide adequate good quality feed, water, temperature and airflow as per standard in poultry housing for ensuring good health of bird.
- 9) Small and backyard poultry farmers should supply fresh chicken and eggs to consumer on demand directly with help of telephone and electronic media viz. mobile apps, etc.
- 10) Dispose dead birds, feathers, litters and unutilized parts at chicken shops in safe way by composting, incinerating, deep burial and lime and digestions.

5. Fishery

5.1. Impacts

Fisheries and aquaculture are major sources of food and nutrition with total fish production of about 13 million tons (2017-18). The inland fisheries comprising of open water fisheries and aquaculture contribute about 9 million tons to the total production. The inland fisheries provide employment to 14.5 million people and further supports twice this number in further value chain. The impacts on the national lockdown on inland fisheries will affect food, nutritional security, employment and livelihood, economic prosperity and ecological health. The major impacts of the national lockdown will be the following:

- 1) Limited availability of trained manpower.
- 2) Non-availability of fish feed and medicines, decrease in fish production.
- 3) Non-availability of means of transportation and markets for fish.
- 4) Delay in harvesting marketable fish.
- 5) Fish cannibalism in tilapia and catfish farms.
- 6) Uncontrolled algal growth and eutrophication leading to depletion of dissolved oxygen in the aquaculture systems, hence sudden mass mortality.
- 7) Increase in production cost and loss of income to fishers.
- 8) Fish breeding and hatcheries will produce less seed due to the stress induced in brood stocks.

5.2. Remedial measures

- 1) Awareness and training regarding the pandemic and national lockdown to the fish manpower, handling pandemics by social distancing, maintenance of personal and family hygiene, minimization of usage of tobacco and chewing habits and spitting causing generation of disease carrying aerosols or droplets.
- 2) Developing scientific guidelines and standard operating procedure (SOPs) for fishers and fish farm management.

- 3) Providing personal protection equipment (PPE) including masks, sanitizers, water showers, soaps etc. at the fish farms and cages.
- 4) Automation of fish farms and cages, installation of aerators for maintaining dissolved oxygen. Automatic feeder installation for minimizing animal human interface.
- 5) In house production of fish feed using locally available ingredients and creating short-term fish feed storage facilities and training.
- 6) Creating small and medium scale fish cold storage, processing and packaging facilities, at fish farms and markets.
- 7) Increasing digital facilities such as mobile phones, internet connectivity and their usage training during emergent national lockdown.
- 8) Local transportation vehicles for sell of fish produce in residential areas.
- 9) Creating awareness in consumer regarding fish purchase, consumption and health benefits to fight diseases and pandemics. Partial opening of fish markets, maintaining social distance, market and consumer hygiene using PPEs.
- 10) Selection and breeding of stress tolerant fish species.

6. General Recommendations

The specific remedies for individual sectors of agriculture have been presented in the above sections. Some of the general recommendations are presented below.

- 1) Creating more awareness among the farmers and farm labourers about the disease, the preventive and control measures to be taken and also Govt. initiatives.
- 2) Creating awareness in consumer regarding the importance of healthy diet to increased immunity to the disease and safety procedures for hygiene and handling of food products to fight the disease.
- 3) Milk cooperatives and other agro-industries should be trained to ensure the highest possible compliance with respect to hygiene and essential protective measures for farmers and workers.
- 4) Seed production in summer for important crops should be promoted by involving FPOs.
- 5) State Agriculture Universities and crop institute should ensure timely provision for supply of latest varieties of seeds.
- 6) Digital technologies should be promoted for delivery and input supply.
- 7) More research for developing agro-technologies and genetically improved stress tolerant crop, horticulture, livestock and fisheries systems to withstand delayed harvesting and easy processing.
- 8) Providing frequent agro-advisories using real time spatial information with the help of Indian Space Research Organization (ISRO).
- 9) Migration of labour leading to unavailability of workers in farms, feed mills, market, etc. should be stopped and they can resume their duties, of course following the health guidelines.
- 10) For a long-term plan, agriculture may be brought into the Concurrent List of the Indian Constitution to deal with such kinds of emergency situations to ensure more coordination.

7. Conclusions

Lockdown is of paramount importance for prevention and risk reduction from a deadly disease like COVID 19. However, essential activities like agriculture should continue to ensure food security and mitigate ill-effects caused by the disease. The current lockdown has large impacts on supply and post-harvest chain of agricultural commodities. More crucial now what is going to happen after the lock down. If lock down is extended, agriculture with its full chain should be exempted. Storage of harvested produce is going to be another issue.

State and Central Governments have taken initiatives to extend all possible supports so that agricultural activities are not affected. Govt. should come up with special package for agriculture and migrant labourers. Crop insurance to cover the loss due to non-selling of produce may be another option to help farmers. Provisions for regular checkup and social distancing of workers engaged in agriculture and allied sectors need to be made for pandemic COVID-19. Awareness training/education programme on personal hygiene and quality maintenance of the produce to workers engaged in farming should be organized to minimize the chances of spread of COVID-19 under lockdown situation. However, some more steps as described in the article should be taken by all stakeholders including farmers, consumers, service providers, policy makers and researchers to minimize the adverse impacts of the lockdown. We should learn from the crisis so that better planning can be done in future to prevent the hardships to farmers and agricultural labourers.

Contributors

Brahmane MP, Gaikwad BB, Kochewad SA, Kumar M, Kurade NP, Meena KK, Nirmale AV, Pawar SS, Rane J, Wakchaure GC and Pathak H