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REVIEW ARTICLE

India during Covid-19 Pandemic Agriculture Research in Resources

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ABSTRACT

The duration of the lockdown measures led us to consider how potential food crops and agriculture play a vital role in this pandemic situation. Except the Health services and essential services, agriculture sector play a major role in feeding the large population of the country. (COVID-19) pandemic crises and prompts changes in paddy cultivation. At first, we study about the role of the paddy cultivation for human beings in the lockdown scenario and at second, it fully covered about the farmers and their challenges faced during the paddy cultivation in the lockdown period also it elaborates to their input access, labour facilities in this situation (Human Resources), market availability and these supply chain for paddy then it's byproducts. Also, it Prompts Changes in Paddy Cultivation and finally the study carried about the dynamic usage paddy by-products to improve the standard of living of the farmers which means mushroom cultivation, vermicomposting, ropes, packing material, pellets, paper making, mulching techniques, animal feeding, rice bran wax, industrial grade crude oil, husk briquettes and also it act as a carrier for biofertilizers organisms. Year by year the risks faced by Indian farmers keep aggravating in terms of low rainfall, price volatility and rising debts.

INTRODUCTION

Coronavirus has impacted the world's food supply chains and economies. This has added to an immediate effect on the everyday exercises of individuals, intruding on the admission of solid and suitable food. People are needed to buy vegetables in bigger amounts. The pay of families subject to every day compensation has been diminished, which will in general build people's food insecurity. Similarly, the COVID-19 pandemic has majorly affected both the creation and utilization of agrarian items because of the absence of agri-inputs. Moreover, the absence of work in the lockdown has influenced the collecting, planting and relocating of paddy, which decreased the yield. Business ranchers confronting troubles in selling their merchandise and homestead items are frequently squandered and spoiled on the field [1]. A hopeless loss of development around the globe has been set off by the COVID-19 pandemic. Meanwhile, different areas of wellbeing, schooling, farming, the travel industry, framework and soon have been influenced by the pandemic [2]. In India, poor people and every day breadwinners are generally influenced and defenseless. The agrarian item areas are additionally influenced in light of the fact that the inventory of work that works consistently is genuinely hampered. In such an emergency, during a delayed lockdown and disturbance of the food framework, it is significant for an individual to assemble a versatile ability to adjust to the developing setting and keep up the current food framework [3]. The COVID-19 pandemic has prompted outrageous and worldwide human medical conditions. Required countermeasures against the infection, for example, controls and different limitations, will persevere basically for a while with muddled end dates [4]. By confining human development, worldwide endeavours to control the

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infection at last causes monetary stuns that can affect the tasks of cultivating and food frameworks worldwide. We are as of now seeing the circuitous impacts of the CoVID-19 pandemic on horticulture and unified exercises across the globe [5]. Quarantine mediations significantly affect the inventory of work for key time-ranch exercises, from planting vegetable yields to organic product gathering. As the emergency advances, these effects are probably going to turn out to be broader and profoundly felt in the horticultural areas and public economies [6]. The centrality and seriousness of the pandemic, and its possible effect on agribusiness around the world, call for generous appearance in both the short and long terms. The quick ramifications for the worldwide organization of food and horticultural frameworks on which we depend so vigorously should be figured it out. We should screen startling dangers, weaknesses and fundamental changes to consider transient impacts just as those that might be enduring or irreversible. In this part, we examined the impact of the lockdown of COVID-19 on Indian horticulture and farming examination.

Effect of COVID-19 on agriculture

Quite possibly the most huge and ground-breaking areas in the food security of the nation is the farming area. The evolved way of life is a significant organization and farming is quite possibly the main parts in the nation. Food handling, the stock of crude materials to different businesses, occupations and the age of pay are among the primary administrations of the rural area [7]. In the accompanying areas we examined about effect of COVID19 on various parts of horticulture.

Food security

India is the country that has the biggest number of individuals overall who don't get enough food to eat. The latest yearning pervasiveness figures are in India for 2011-12 portrayed that 47.2 crore individuals in India were not acquired the base measure of food required for them to carry on with a sound life. FAO food weakness review gauges uncovered that the quantity of people confronting moderate to extraordinary food frailty in India expanded from 36 crores in 2014-15 to 45 crores in 2017-2019. Food request has been affected by a decrease in deals and purchasing power froze clients are accumulating food, which thusly has impacted the inventory and cost of food [8]. Food weakness may happen because of the decrease in worldwide exchange, interruptions in the food supply chain and food creation. The interruption of food frameworks and the impact on food security is a pressing concern. Food dispersion networks have been altogether disturbed across the pay continuum in practically all countries, with solid negative impacts for the most hindered.

Creative saline agriculture

Probably the most effortless approaches to handle the

saltiness issue while intending to create safe harvest plants for numerous pressure factors is to utilize of halophytes that can make due in seawater salt focuses. Development of salt-open minded harvest plants doesn't ensure the expulsion of salt from the dirt, they just endure saltiness stress to the most awesome aspect their capacity; nonetheless, halophytes can eliminate the salt, and they can be utilized for development with horticultural plants, or they can be developed ahead of time of the development of rural yield plants to eliminate the salt by collecting in their organelles [9]. Modestly or profoundly saline soils would then be able to be remediated through the utilization of halophytes, and these dirt can be remembered for agrarian regions with a practical way.

Parts of saline agriculture

Salt-tolerant plants and halophytes filling in different saline conditions and improvement in their efficiency by plant rearing and agronomics. Utilization of saline soils by inventive administration rehearses for crop creation [10]. Saltiness the executives in different saline climate through progress in foundation for water system and seepage adjusted to the requirements of explicit salt open minded and halophytic crops.

Biofertilizers

These potential natural manures would assume key job in efficiency and maintainability of soil and furthermore ensure the climate as eco-friendly and savvy contributions for the ranchers. They are savvy, ecofriendly and inexhaustible wellspring of plant supplements to enhance substance composts in manageable rural framework. Biofertilizer, an elective wellspring of N-compost, particularly rhizobia in vegetable beneficial interaction is a set up innovation. Utilization of the biofertilizers can likewise forestall the consumption of the dirt natural issue. From an expansive perspective, the term can be utilized to incorporate all natural assets utilized for plant development that become accessible for take-up by plants through microorganisms or plant affiliations or collaborations. The information on applied microbial inocula has a long history that is passed from age to age of ranchers. It began with limited scope fertilizer cultivating which has clearly shown biofertilizer capacity. This was perceived when the deterioration of natural deposits and agrarian results expanded and a solid yield collect was acquired. Biofertilizers are regularly seen as more costly than the compound manures because of the absence of abilities and innovation in their creation from reasonable and squander substrates. Plus, their impact on the harvests is delayed when contrasted with compound manures [11]. Extraordinary consideration is needed in their stockpiling and bundling. Legitimate treatment of microbial inocula is required with the goal that they stay compelling for broadened use. As biofertilizers are plans containing living life forms, their proficiency relies upon

natural conditions. Subsequently, results of the utilization of biofertilizers will undoubtedly be conflicting. Because of various human exercises, the climate is the most influenced. In like manner, agrarian exercises have assumed an inexorably noticeable position since the approach of man-made synthetic substances such as fertilizers, pesticides, and growth regulators to meet the need of an ever-developing population. Chemical manures in present moment can be very valuable in the harvest creation however in since a long time ago run it is only causing harm to humans and to the common flora of soil. It antagonistically bestows the impact soil fruitfulness [12]. In the event that we can eliminate the chemical fertilizer utilization and rely on more environment friendly methods like changing to biofertilizer for the same, we can store the fertility of soil and thus can improve the growth of harvests without destructing the natural habitat of the dirt that is responsible for growth and development of plants. Biofertilizers are the misleadingly prepared microbial inoculants of different a strain that helps upgrading the take-up of nutrients by plants and enhances the quality of soil by their association in the rhizosphere. When applied either on the top soil or through seed vaccinations, they upgrade the development of plants and developing soil microflora.

RESULTS AND DISCUSSION

Difficulties and possibilities of Covid-19 in agriculture

Amidst COVID-19, as a worldwide pandemic, there were not many chances rising up out of the rural emergency. Since individuals are kept to remaining at home and there is a deficiency of overabundance nutritious vegetables, the thought and association of a person in-home nursery and housetop cultivating has been advancing. Cultivating exercises for the planting of blossoms and vegetables have become extremely significant where all individuals from the family are effectively involved. Likewise, the pertinence of means cultivating has emerged [13]. The people group way to deal with cultivating was a critical feature during the lockdown as there was no need for ranchers who develop vegetables on a limited scale. To get a good cost available, either an individual necessities to deliver an immense measure of vegetables or enter different gatherings. The distributor would quit stacking the more modest volume of produce despite the fact that the transportation has been made adaptable. Also, during the emergency, dried vegetables could be one of the decisions to forestall the deficiency of vegetables in the district. The dried results of mushrooms, vegetables, etc are profoundly basic and organized. It has been found in domesticated animals that milk can be changed over into milk items like margarine, ghee, cheddar, paneer, etc. There was a lack of work to complete horticultural work on the homestead because of COVID-19, as there was trouble in the accessibility of work during the collecting of the standing harvests. Be that as

it may, this has opened the entryway for an automation approach in the extraordinary rural area, where hardware parts can be utilized in appropriate zones with bigger hectares of land to do agrarian exercises, for example, seed planting and yield reaping. Because of the absence of item supply, the importance of the nearby food accessible in the town or local location has been felt by individuals [14]. Individuals were more keen on eating nearby nourishments as they are more nutritious, instead of attempting to search for extemporized things. Individuals have begun offering need to the nearby seeds accessible in their general vicinity, in any event, for the development of yields. Somewhat, they have utilized the seeds they have saved in their homes. The utilization of nearby and native products has expanded, prompting a person's independence.

Enhanced income for rural poor

Today, it has been a great challenge to provide safe, healthy and nutritious food for poor income group and undernourished population of the developing world to sustain and lead a healthy life. The ever-rising cost, shortage and unreliable supply of healthy food in the developing and underdeveloped countries have resulted in search of cheap and alternative source of healthy and nutritious food and the wild species of edible plants have been identified as a potential source of nutrition [15]. To supplement the nutritional requirement with dietary diversification from such plant species, the demand from consumers in developing countries are growing which provides the opportunity to exploit the untapped potential of wild edibles for domestication. The systematic cultivation with the development of agro-techniques for such non-conventional plants may prove to be rewarding and will ultimately create new market niches for these crops. These market opportunities can provide livelihood option and generate additional income for the rural populace in less-favoured environments where these crops have comparative advantages over major staples or commercial crops.

Microbial Pigments: Future route for public health and environment

Natural pigments origination from microbial sources (bacteria, fungi, and micro algae) as secondary metabolites is found to be more valuable and demandable over synthetic pigments. Microbial pigments have economic potential and industrial importance providing opportunities for application in textile, pharmaceutical, food, cosmetic etc. But their current volume of production still has not attained the optimum level to satisfy the demand aroused due to the recent awareness for natural products [16]. The current novel strategies like gene-splicing, molecular biology techniques and fermentation technologies are highly contributing to the maximum yield of bacterial pigments. Nowadays, it is becoming more popular because of not forming harmful intermediates and thereby protecting both environment and humans.

SUMMARY AND CONCLUSION

Crop production and availability of seeds and fertilizers

The labour, logistics, harvesting machinery and the plants are not operating at maximum levels till now. Lot of the migrant workers were headed back home thereby creating problems for farms, seeds production areas, seed packing and crop harvesting [17,18]. This is the concern for all companies, and stakeholders across India. The impact of the Covid-19 pandemic on Indian fertilizer production capacity has been widespread and facing logistical constraints due to movement restrictions, road closures, lack of enough track drivers to make deliveries, labour shortage at production plant, limited manpower, limited storage capacity resulting in pressure on the evacuation of materials, low availability of raw materials and consumable materials- bag, chemicals, and government restrictions and protocols, etc.

Food production and distribution

Most of the countries have taken procedures such as travel bans, home confinement and business restrictions to control infection rate. Farmers are compelled to hold their unsold produce for a longer period of time due to perishable nature of Agriculture produce. This has led to a reduction in food quality as well as an increase in the cost of cultivation.

Livestock sector

Livestock production sector, segmented by type into dairy, meat, poultry, aquaculture and others are affected significantly due to the increased rate of virus spread. Regional demand for chicken, mutton and fish are decreased and basic food or essentials have been on the rise. Market growth has also affected due to the shutdowns of the food chain services including restaurants. Despite the high demand for meat, aquaculture and dairy products amidst the corona virus, the supply chain has witnessed a host of disruption, which is stopping producers from providing their products in the market. Disruptions in the supply chains are causing wastage of fresh produce even through there are a high demand and food shortage for dairy produce. The impact under consumers of the pandemic will humidify the require for animal protein, subsequently affecting the feed market.

Labour

Rural laborers in India, absence of appropriate wellbeing administrations and social security because of practically zero investment funds. During COVID-19 pandemic, numerous casual farming laborers are committing to work for their food notwithstanding the self-separation convention. On account of non-accessibility of work, hurt activities in numerous parts.

Costs of farming items have fallen because of ascend in labour expenses and absence of access.

Shortage of public goods

Making the food grains, products of the soil and other fundamental things accessible to customers, both in metropolitan and provincial regions, is the most basic test. In different nations around the globe, the Covid-19 pandemic is spreading at different rates. Considering these difficulties, the worldwide economy is going through a new and diverse experience which is presently occurring in various nations [19]. The cultivating area was not impervious to the financial mischief brought about by the episode and experienced extreme damage. If the necessary strides for practical creation in farming and the protection of the pattern of market interest are not taken, wellbeing and food security will confront an emergency. In spite of gigantic human misfortunes affecting various enterprises around the world, an individual can at present see the silver covering that can come over because of COVID-19 with the elevating of lockdown. To save independence, each degree of government ought to be more connected with farming exercises. Sanitation and wholesome security are essential to human, social and financial turn of events [20]. The prosperity of a nation is directly linked with the health and happiness of the people and a country could only be secured if the citizens have access to healthy food to meet their nutritional need for a healthy life. However, access to nutritious food continues to be a major concern in the developing countries, millions of people continue to suffer from malnutrition, which is a cause for various kinds of diseases and premature death of children and women. In this perspective, the wild edible plants embedded with rich nutrient potentials have emerged as the best option not only to provide required nutrients but also to enhance the availability of healthy and nutritious food. These plants have sustained human populations as a source of food, livelihoods, health and culture. They are vital biological assets for the rural poor and can help improve the overall welfare of millions of tribal populations across the globe. The potential of WEPs in generating income and livelihood options for rural masses has been acknowledged around the world. The high cost, shortage and poor supply of nutritious food for the malnourished population of developing countries creates market opportunities for these food plants to satisfy their dietary sufficiency and nutritional adequacy.

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