

Impacts Of Globalization on Indian Agriculture and Plant Pathology

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ABSTRACT

Globalization refers to the interconnectedness of countries in terms of trade, technology, food, and all social aspects. Globalization has become a boon in many aspects at the same time it is creating much nuisance in terms of human health and plant health and is causing major differences in national income. Globalization is leading to the unintentional introduction of many plant diseases, which is causing major loss in the field as well as post-harvest conditions. The government of India has enacted many laws to control such unintentional introduction of plant diseases, pests, and weeds. Citizens should follow these regulations to avoid the unintentional introduction of such species that are harmful to Indian crops.

INTRODUCTION:

Globalization refers to the interconnectedness and interdependence of the world due to trade and technology. It encompasses the economic and social changes that have occurred as a result. Over time, this interconnectedness has grown, likened to an intricate spider web with expanding threads.

These threads have facilitated the movement of people, money, goods, ideas, and even diseases. While globalization offers advantages, it also presents challenges, such as the increased risk of disease transmission, as evidenced by recent pandemics like COVID-19 and Ebola.

**Also, the following are some main problems due to globalization:**

Globalization brings with it a set of challenges that impact various aspects of our lives. One significant issue is the pressure to reduce costs, which can have ripple effects across different regions. This means that producers are compelled to find cost-effective methods, often at the expense of compromising the quality of their products. This can be a difficult situation for countries with limited technological advancements, as they struggle to compete with more developed nations.

However, it's important to acknowledge that globalization has also brought about positive changes. Wealthier nations now can assist and support poorer nations during times of crisis. The increased diversity in many countries has opened doors to learn about and appreciate different cultures, fostering a sense of global unity. Additionally, globalization has created a vast market for farmers and artisans, allowing them to sell their products globally and access raw materials from anywhere. As a result, the per capita income of people, especially farmers, has increased. Overall, globalization has both advantages and challenges, and it's important to strike a balance that benefits all individuals and nations involved.

Globalization concerning agriculture:

Globalization has the potential to significantly boost agricultural growth in low-income countries, making agriculture a key driver of economic development. By allowing agricultural production to outpace domestic consumption, globalization opens up opportunities for increased food security and the expansion of employment-intensive rural non-farm sectors. The introduction of fertilizers and quality seeds has resulted in remarkable advancements in agriculture, leading to the Green Revolution in 1973. However, it is crucial to ensure that the

benefits of globalization reach the poor and hungry, lifting them out of poverty and hunger.

In the past few decades, agricultural growth has accelerated due to globalization. While growth rates were around 3 percent per year in the past, they now range from 4 to 6 percent. However, this increased growth is accompanied by a significant change in the composition of agricultural production. Previously, the majority of growth came from basic food staples, given limited export markets. But now, there is a shift towards higher-value commodities. This growth is driven by the increasing demand for high-quality coffee, tea, and horticulture products.

As the production mix shifts towards export crops, high-value crops, and livestock, investments that reduce transaction costs become increasingly valuable. Value-added enterprises also gain importance, although they can be capital-intensive and complex in terms of marketing. This gives high-income countries a comparative advantage. Low-income countries should focus on identifying their comparative advantage at each step of the production chain, from producer to consumer, and avoid areas where they lack competitiveness.

While the role of cereal production may become relatively less important, cereals still play a vital role in global food security. With declining shipping costs, there may be an increased need for cereal imports in developing countries. This can be driven by the globalization-induced expansion of high-value crops, potentially leading to a decline in cereal production. Additionally, any shift in income distribution towards low-income, food-insecure populations will increase the demand for cereals. Consequently, low-income countries may benefit from declining cereal prices, even if they face challenges due to

declining prices of other agricultural commodities.

In conclusion, globalization offers immense potential for agricultural development in low-income countries. By harnessing the opportunities presented by globalization and focusing on their comparative advantage, these countries can improve food security, reduce poverty, and enhance their participation in the global economy.

Problems arising due to globalization concerning plant pathology:

Many plant diseases were introduced to India. Coffee rust (Sri Lanka, 1879), potato late blight (UK, 1883), grape downy mildew (Europe, 1910), banana bunchy top (Sri Lanka, 1940), potato wart (Netherlands, 1953), rice bacterial leaf blight (Philippines, 1959), potato golden cyst nematode (Europe, 1961) are some of the plant diseases which were introduced from foreign countries and causing serious losses especially for the farmers in India. Out of these, some diseases have spread to the whole country and some are limited to some regions within India due to the imposition of quarantine laws by the Indian government. The word quarantine has become very familiar to people after COVID; here it means the plant disease is restricted to a particular region and is restricted to spread to other regions of the country.

In these, potato late blight (*Phytophthora infestans*) is causing 15% losses in potato crops every year in India. Coffee rust (*Hemileia vastatrix*), grape downy mildew (*Plasmopara viticola*), rice bacterial leaf blight (*Xanthomonas oryzae* pv *oryzae*) are causing severe losses all over India, while banana bunchy top (a virus), potato wart (*Synchytrium endobioticum*), and potato golden cyst nematode (*Globodera rostochiensis*) has quarantine importance in India.

According to a study conducted by Punjab Agriculture University, the loss of agriculture caused by plant diseases is **26%** of the total agricultural loss. Such loss is also contributed by pests and weeds, in which the introduced pests (like fall armyworm on maize, fruit borer on many vegetable crops) and weeds (like lantana, and parthenium grass) have a major contribution. Pests and diseases together cause over **INR 290 billion** in losses of crops every year in India. Thus, there is an urgent need to emphasize the problem of diseases so that preventive measures can be taken.

To reduce the impact of the losses due to these introduced diseases, the technical personnel and citizens have to play their respective roles effectively. By following some regulations given by the government, one can enjoy the advantages provided by globalization by keeping in check the disadvantages.

Role of scientists, government, students, and general citizens in preventing the introduction, establishment, and spread of exotic diseases in India:

Prevention of the introduction of such devastating diseases is the joint responsibility of the government as well as the citizens of the country. Controlling such diseases not only avoids the losses due to the diseases but also saves an enormous amount of money the country is spending on disease control measures. The government has established regional plant quarantine stations to avoid the spread of the disease within the country. Scientists are working relentlessly to combat such diseases. They are working to find out the biology and spreading mechanism of such introduced pests and diseases so that an effective management strategy can be framed. Students should have an idea of such diseases having quarantine importance and educate the surrounding farmers about selecting healthy seeds and avoiding the purchasing of unauthorized planting or seeding material,

which may lead to the unintentional introduction of the diseases. Citizens also have a role in the spread of such diseases on a household scale.

Why does this outbreak happen?

In the original geographical conditions of the pathogen, there will be some natural enemies that keep their population in control, but in newly introduced regions no such natural enemies will be there which leads to an increase in the population of the particular pathogen or pest which ultimately lead to the outbreak of disease which causes huge crop loss.

Quarantine regulations India

The Indian government has its laws and regulations to control this unintentional and unauthorized introduction of pests, pathogens, weeds, etc.

Department of Agriculture and Farmers Welfare of the government of India, under the Plant Protection Order, 2003 regulates the import of agricultural commodities in India. The objective is the inspection of imported agricultural commodities to prevent the introduction of exotic pests and diseases harmful to Indian flora and fauna. Under this order, the commodity is placed in a quarantine station for a specified amount of time and the whole lot is tested for the presence of any problematic pest, disease, or weeds. Then the whole lot is fumigated to kill the remaining pests and diseases if any. Destructive Insects and Pests Act, of 1914 is an act to prevent the introduction into India and the transport from one state to another of any insect, fungus, or any other pests, which are or may be destructive to crops.

CONCLUSION:

By considering all the odds and evens of globalization concerning agriculture, especially crop protection, the benefits of globalization can be enjoyed just by adopting some measures to prevent the ill effects of the same. Along with the government, the citizens of the country should be aware of the problems created due to such unauthorized introduction of new diseases and pests. We can just imagine, what if those pests or diseases were never introduced into India? Yes, if that was the case our production would be more by 30% and we would have saved the money we are spending on crop protection.

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