

Globalization: Impacts on Agriculture Concerning Plant Pathology

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Introduction:

"Globalization" refers to the process by which trade and technology have increased interconnectedness and interdependence across the world. It encompasses the ensuing changes in society and economy. This expanding network of connections over time is like a complicated web of spiders with dispersing threads. These connections have made it simpler to transport people, money, goods, ideas, and even illnesses. Globalization has advantages, but it also has disadvantages, such as an increased risk of disease transmission, as the most recent pandemics like COVID-19 and Ebola have demonstrated.

Problems due to globalization concerning plant pathology:

Globalization offers benefits to every area of the economy, including agriculture, but it also has disadvantages. Accompanying processed agricultural goods, seeds, plants, and planting materials that have caused and continue to cause significant losses in terms of life and money have been brought into India are numerous pests and diseases. Numerous plant diseases were introduced to India. Plant diseases introduced from overseas, such as 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), and potato golden cyst nematode (Europe, 1961), are causing substantial losses, especially for Indian farmers. Some diseases have spread across the country, but others are limited to particular regions of India due to quarantine laws that are upheld by the Indian government. The public's use of the phrase "quarantine" has increased significantly after COVID-19. It indicates that a plant disease is localized and cannot spread to other regions of the country. In these, 15% of India's yearly potato crop losses are attributable to *Phytophthora*



infestans, often known as potato late blight. Pests such as rice bacterial leaf blight (*Xanthomonas oryzae* pv *oryzae*), grape downy mildew (*Plasmopara viticola*), coffee rot (*Hemileia vastatrix*), and banana bunchy top (a virus) are causing significant losses in India.

Furthermore, two significant quarantine diseases in India are potato golden cyst nematodes (*Globodera rostochiensis*) and potato warts (*Synchytrium endobioticum*). Plant diseases are thought to be responsible for 26% of all agricultural losses, according to study from Punjab Agriculture University. Weeds and bugs also contribute significantly to this loss. Introduced weeds like parthenium grass and lantana, as well as pests like fruit borer on many vegetable crops and fall armyworm on maize, are major contributors. In India, the combined effect of pests and diseases results in agricultural losses exceeding INR 290 billion per year. Therefore, it is essential to raise awareness of the disorders in order to take preventative action. To decrease the impact of the losses brought on by these recently arriving diseases, people and technical personnel alike must do their tasks as well as they can.

Globalization concerning agriculture:

Globalization, one of the main drivers of economic progress, has the power to significantly boost agricultural growth in low-income countries. Globalization offers opportunities for increased food security and the expansion of rural non-farm job sectors by allowing agricultural output to exceed local demand. Fertilizers and superior seedlings led to remarkable breakthroughs in agriculture, which in turn sparked the start of the Green Revolution in 1973. However, we must ensure that those who are hungry and poor benefit from globalization and are able to overcome their circumstances. Over the past few decades, agricultural expansion has accelerated due to globalization. Growth rates today range from 4 to 6 percent every year, compared to roughly 3 percent in the past. Basic food staples accounted for much of the increase in the past due to the lack of export markets. But today, there's a shift in favor of more valued goods. This increase is being driven by the growing demand for high-quality tea, coffee, and gardening supplies. When the production mix shifts, investing in low-transaction-cost crops, cattle, and export goods becomes more profitable. Value-added companies are also growing in importance, even if their marketing plans may be complex and resource-intensive. This comparative advantage is advantageous to high-income countries. Low-income countries should avoid uncompetitive markets and focus on finding those where they have a comparative advantage from producer to consumer along the whole production



chain. Cereals continue to be vital to the world's food security even if grain output may decline. As transportation costs decline, developing countries could need to import more grain. This might be because of the rise in high-value crops brought about by globalization, which could cause the output of cereals to decline. Any change in the income distribution that benefits low-income and food-insecure populations would also increase demand for cereals. Because of this, low-income countries may benefit from declining cereal prices even as they continue to face challenges due to declining agricultural commodity prices. In conclusion, globalization has enormous promise for the expansion of agriculture in low-income countries. By focusing on their comparative advantage and taking use of the opportunities presented by globalization, these countries may be able to boost food security.

Impact of globalization on plant pathology:

The result of globalization's influence on the migration of people, plants, and animals was ecological and human devastation. In extreme locations, the diseases progressed to the point that entire communities were destroyed. The introduction of alien weeds and insects—such as Phylloxera in grape vines—that were affixed to imported plants resulted in further problems. Even yet, the negative impacts of trading domesticated plants and animals were insignificant compared to the significant contributions that agricultural trade made to the global food and fiber supply. Globalization also led to the spread of diseases to previously uninfected areas, which had devastating effects on both the human species and the economy. To prevent future losses in terms of money and personal belongings, everyone must be aware of these negative consequences and adopt the appropriate safety measures. By understanding the potential risks and taking the necessary steps to mitigate them, we may lessen the negative effects of globalization and safeguard our wellbeing and means of sustenance.

Quarantine regulations India:

The government of India has put laws and regulations in place to stop the unintentional and unlawful introduction of weeds, illnesses, pests, and other things. The Department of Agriculture and Farmers Welfare of the Indian government is governed by the Plant Protection Order, 2003, which regulates the entry of agricultural goods into India. The objective is to inspect agricultural items that are imported to prevent the spread of pests and illnesses that harm India's wildlife and flora. This order tests the entire region for the presence of any



bothersome weeds, illnesses, or pests and quarantines the product for a certain amount of time in a quarantine station.

The area is subsequently fumigated to ensure that any remaining pests and diseases, if any, are eliminated. Any insect, fungus, or other pest that is or may be injurious to agriculture cannot enter India or be transported from one state to another under the Destructive Insects and Pests Act, 1914.

Conclusion:

By taking into account all the odds and evens that globalization brings for agriculture, especially for crop protection, the benefits of it may be reaped. To prevent the harmful effects of globalization, a few safeguards only need to be taken. Both the administration and the people living in the country need to be aware of the problems caused by the unwelcome entry of new diseases and pests. Just for a moment, consider a world in which India had never been exposed to such diseases or pests. Yes, that would have raised our production by 30% and allowed us to save the money we presently spend on crop protection.

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