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Steps To Be Taken for Addressing the Issues Related to Non-Compliances Received from EU Pertaining to Fruit Fly Infestation in Mango and Various Other Fruits and Vegetables and Bosting Mango Exports in Upcoming Year

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Abstract: ***Fruit flies (Bactrocera spp.) present a critical challenge to the horticultural sector in India, particularly in mango cultivation and export. These invasive pests cause significant losses—up to 40%—in fruits and vegetables both at the field and post-harvest stages. Their impact is especially concerning due to their polyphagous behavior, rapid reproduction, and adaptability, leading to stringent quarantine regulations by importing countries, including the European Union (EU), the USA, Japan, South Korea, and Australia. This paper outlines a comprehensive approach adopted by APEDA in collaboration with national and regional stakeholders to address non-compliances reported by the EU, especially pertaining to fruit fly infestation in mango exports. The measures include strengthening pest surveillance at the production level, enhancing packhouse compliance with sanitary and phytosanitary standards, capacity building through training and sensitization workshops, and promoting integrated pest management practices. Additionally, conformity checks throughout the export supply chain and targeted research collaborations with ICAR are emphasized to mitigate risks. Strategies for enhancing export competitiveness, such as promotional campaigns, wet sampling, and buyer-seller meets, are also discussed. The integrated approach aims to improve phytosanitary compliance, reduce export rejections, and increase the global market share of Indian mangoes.***

I. BACKGROUND

Fruitflies*(Bactrocera spp.)* are an invasive pest of horticultural crops worldwide, due to their wide climatic tolerance, polyphagous nature, high reproduction potential, multivoltine nature and high capacity for dispersal. Owing to the significant losses and the severity of the threat it poses to the horticulture crops, fruit flies have attained the status of worldwide quarantine insect pests.

Fruit flies are responsible for 20-40% of loss in fruits and vegetables both in the field and postharvest scenario. They are the major impediments for export of fresh fruits and vegetables.

II. EXPORT REGULATIONS

Due to the high risk of its dispersal, the major importing countries have quarantined fruit flies as major pest and has laid down a set of protocol and regulations that need to be followed while exporting the various fruits and vegetables (which are susceptible to fruit flies) from India including mangoes. Well established procedures for Mango are in place for exporting the commodity to Australia, USA, Japan, South Korea and EU, that are followed by the exporters while keeping in consideration the significance of the pest in these importing countries.

The import of fresh mango fruit from all commercial production areas of India is permitted under the agreed arrangements with various importing countries, subject to a range of quarantine conditions. They include, and are not limited to-

- Irradiation treatments
- Vapour heat treatment (VHT)
- Hot water treatment (HWT)
- Inspection and remedial action verifying phytosanitary status.

Several initiatives to combat the infestation of fruit flies in horticultural crops are being taken up by State Agriculture/Horticulture departments.

APEDA in collaboration with various research institutes, State Agriculture and Horticulture Departments, and other allied departments have taken some steps and measures to prevent the non-compliances of fruit flies from EU and other importing countries.

Risk management of fruit fly is being maintained throughout the mango supply chain from production, harvesting, handling, packaging, phytosanitary inspections, certification and transportation through to export.

III. MEASURES AT PRODUCTION LEVEL TO MONITOR AND CONTROL FRUIT FLY

There are two strategies to control the infestation of the pest at the production level (including the harvesting measures) and reduce the non-compliances of the importing countries:

Since 2006-07, every year the mango farms are being registered on APEDA, *Mangonet*portal to ensure the traceability and integrity encompassing an inclusive framework to monitor the specific details of the source of the export consignment. To enhance the quality production of mangoes, a system approach has been established integrating a combination of measures that help together to mitigate the risk of fruit fly and ensure the export consignments are free from the pest. It is always being ensured that record is being maintained at the farm level for proper monitoring of pest incidence.

The initiatives taken by APEDA to mitigate the incidence of fruit fly in mango and other crops are given below:

- A project awarded to National Institute of Plant Health Management, (NIPHM), Hyderabad for organizing twelve exclusive training workshops for mango, orange, pomegranate and banana for enhancing the export of fruits through management of fruit flies. The programs are being organised in the major fruit producing belts of the country, like Andhra Pradesh, Uttar Pradesh, Maharashtra, covering the major production hubs. The main aim of these workshops is to sensitize the stakeholders with the management of fruit flies and disseminate the information pertaining to the best Integrated Pest Management practices.
- Through Regional Offices, various workshops were organised for stakeholders for registration of the farms in Hortinet portal in which the details on pesticide residue monitoring, meeting the importing countries standards, beside facilitation in tracking to the backward linkages were discussed and briefed to the participants.
- APEDA organised various training programmes on " Standard package of practices for export of Fruits and Vegetables" at different regions to enhance the quality exports.

IV. MEASURES AT THE PACKHOUSE LEVEL TO PREVENT THE INTRODUCTION, INFESTATION AND SPREAD OF FRUIT FLY

The exports of fruits and vegetables are permitted to European Union through registered orchards under State Horticulture/Agriculture Department and packhouses recognized by APEDA & NPPO as per EU requirements. Maximum Residue Level (MRL) set by EU for residues in the produce are being adhered for export. The products are exported with issuance of Phytosanitary Certificate by NPPO India after inspection of the consignment.

At the time of auditing the packhouse facilities, the inspectors (APEDA, NPPO, Horticulture Department and DMI) make sure that the facility is following the SOP in place for export of fruits and vegetables to EU and other importing countries, to avoid any non-compliance in the future. In case, at the time of audit, if any non-conformities are being observed by the committee, the certificate of recognition is not awarded to the facility until the corrective action is not being taken.

To enhance quality exports of commodities from the approved facilities, the following measures have been taken-

- APEDA organised workshop cum Training on Phytosanitary aspects including implementation of good agricultural practices, inspection and treatments for export of pomegranate to various importing countries. The detailed procedure for export of pomegranate was shared withall the stakeholders including exporters and facility operators.
- Regular consultation prior to grape export season were held with the stakeholders to streamline the export process and ensure the best management practices to avoid any pest infestation or any other contamination in the consignments.

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V. FUTURE STRATEGIES TO BE IMPLEMENTED

To minimize the Non-Compliancesraised by EU and other importing countries raised due to the target pest (*Bacteroceraspp*) in various fruits and vegetables, which is adversely affecting our image in the global marketplace, the following strategies may be adopted-

A. Trainings and Sensitization:

- Programs/ workshops of the similar nature as mentioned above are being planned in the coming month to provide the insights to the stakeholders regarding the following measures-
  - registration of orchards and packhouses.
  - fruit fly surveillance in production areas using traps, scouting and record keeping monitoring infestation levels.
  - implementation of pre and post-harvest control measures as per SOP.
- APEDA in collaboration with NPPO India is organising five programs on Training on Phytosanitary aspects including implementation of good agricultural practices, inspection and treatments for export of Mango in Maharashtra, Andhra Pradesh, Uttar Pradesh, Tamil Nadu and West Bengal, covering all the mango growing regions. The program is aimed to enhance our competitiveness in terms of better quality in international market.
- With the facility operators and exporters, the sensitization programs vis-à-vis procedures for export of mango to USA, Japan, South Korea and EU is being planned in the coming days to ensure the implementation of the protocol in place.

B. Comprehensive Research and Development in collaboration with various research institutes:

The Agricultural research institutes have been significantly working to tackle the issue of fruit flies, from development of the best control measures to the varietal segmentation of the crop owing to its susceptibility, the research is still under progress.

According to a research study reported by ICAR in a journal, the varieties Amrapali, Gulab Khas and Dashehari were found resistant to fruit fly whereas Jardalu and Maldah were found moderately resistant. Himsagar was susceptible while Chausa, Mallika, Fazli and Bombay Green were found the highly susceptible to *B. dorsalis* infestation.

Despite the significant development, the studies are still undergoing. We may collaborate with the various research institutes like ICAR to undertake the proposals to commercialize the best practices, varieties that can help to mitigate the incidence of the pest.

C. Rigorous conformity checks across all levels of export supply chain:

There are certain procedures that are followed while exporting any perishable to EU and other importing countries, wherein the facilities are audited by NPPO and APEDA every after two years and phytosanitary certificate is issued at the final stage of handling the produce by NPPO officer. However, to ensure the implementation of guidelines and being certain about non-occurrence of target pest in the consignments, we may increase the conformity checks at various steps of supply chain.

The conformity checks across all the levels of export supply chain will ensure the product is being monitored properly and is following the procedural guidelines set by importing countries.

In addition to adhering to the best possible practices to ensure quality exports that will eventually drift the export demand of Indian mangoes, for enhancing mango exports during the upcoming mango season, the following steps may also be undertaken-

VI. PROMOTIONAL PROGRAMS

APEDA regularly organizes mango promotional programs to boost exports to diverse international markets.

In upcoming year, more comprehensive programs to promote Indian mangoes in various markets shall be carried out in collaboration with Indian missions and Embassies abroad.

VII. DISPLAY AND WET SAMPLING OF MANGOES AT VARIOUS TRADE FAIRS/EXHIBITIONS

Indian mangoes, which are widely known for their supreme taste and delicacy, may be showcased and wet sampling may also be carried out in the international and national exhibitions.

VIII. BUYER SELLER MEETS

For encouraging mango exports during the coming season, Buyer Seller meets on horticultural products including mango will be organised to strengthen the position of Indian mangoes in interenational markets.

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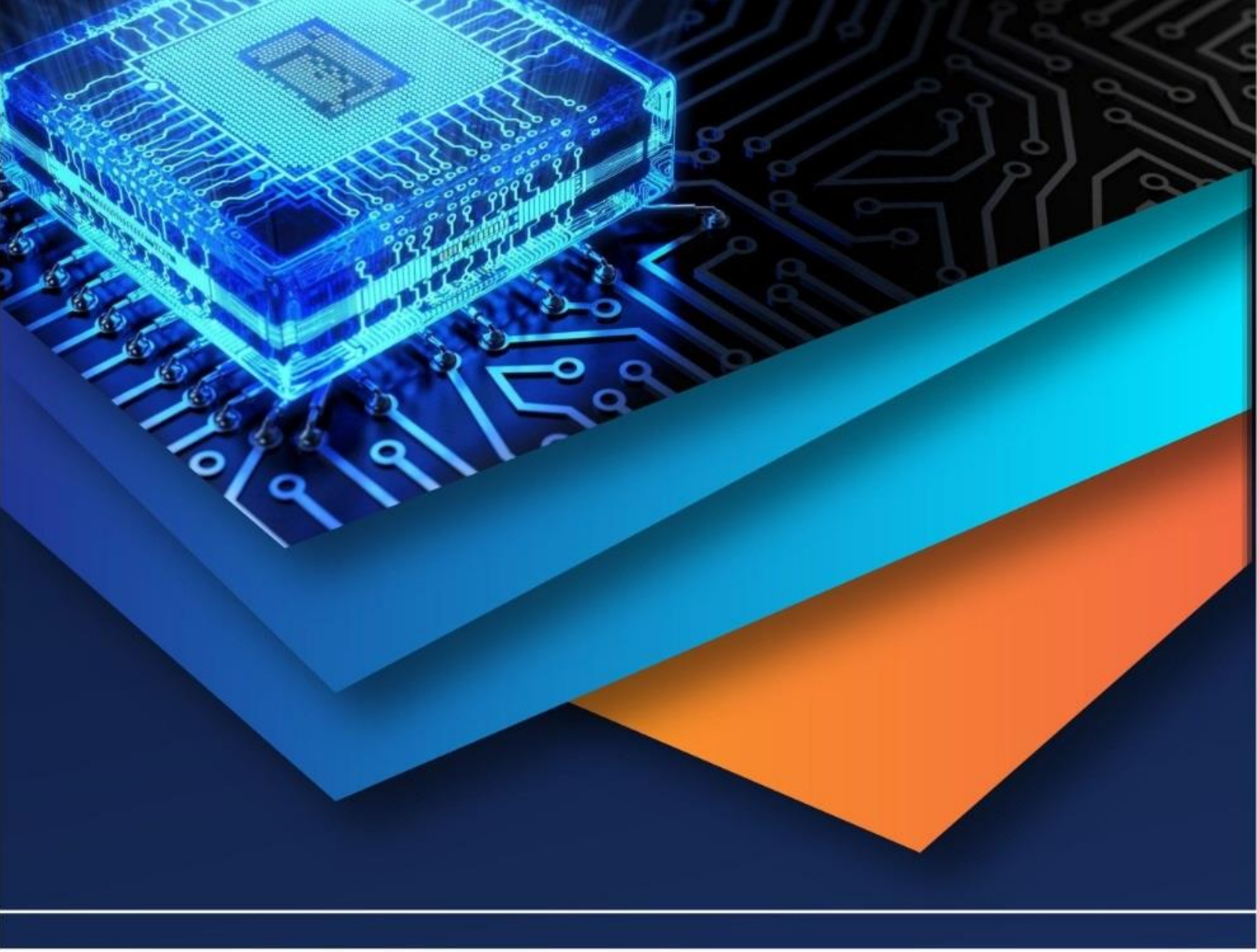

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