

## DRAFT TERMS OF REFERENCE

### Asia Pesticide Residue Mitigation through the Promotion of Biopesticides (STDF/PPG/634)

#### 1 RATIONALE AND BACKGROUND

**1.1.** Many developing countries face challenges when exporting, as conforming with international standards or with the destination country's maximum residue level (MRL) requirements for pesticide tolerance. For certain chemicals, MRLs might not be established or they might be too low compared to real-world use patterns. Pesticide residues raise food safety concerns among domestic consumers and pose trade burdens for agri-food exports.

**1.2.** The non-compliance with international market requirements and food quality and safety standards appears to be a major challenge for East Asian countries. UNIDO's "Regional Trade Standards Compliance Report"<sup>1</sup> identifies the key issues behind the increasing rejections of Asian agri-food exports. Amongst the reasons there are bacterial contamination, inadequate hygiene conditions/controls, and the presence of pesticide residues and prohibited chemicals, pesticides or additives.

**1.3.** The use of biopesticides is becoming more common worldwide, offering an improved crop yields for farmers. Compared to the use of conventional pesticides, it brings forth environmental benefits, promoting ecological sustainability, preserving natural enemies and biodiversity. The use of biopesticides can also reduce the human and animal health hazards while decreasing the pesticide residues and improving the quality of the produce.

**1.4.** Biopesticides are certain types of pesticides derived from natural materials such as animals, plants or microorganisms. They can include microorganisms (such as fungi and bacteria), beneficial insects, entomopathogenic nematodes, biochemical pesticides and biotechnology (genetically modified crops). Differing from synthetic pesticides, biopesticides have natural origins and many do not generate chemical residues. The use of biopesticides late in the crop growing season, as an alternative to conventional pesticides, is a way to mitigate residue violations in export markets while providing pest control during the pre-harvest interval (PHI). Most biopesticides by their nature are not subject to MRLs, and the residues of microorganisms used for pest control and management are therefore not subject to regulatory enforcement by importing countries.

**1.5.** Biopesticides market value represents approximately US\$1 billion in Asia and it is projected to increase up to US\$2 billion by 2025. The sector has been attracting large investments from multinational companies who are buying small biopesticides companies and start-ups. The private sector and regulatory agencies have been involved in this sector. Some Asian countries have identified access to newer, low-toxicity biopesticides for farmers as a priority, and have started to regulate and develop frameworks for biopesticides registration. Association of Southeast Asian Nations (ASEAN) has developed harmonized guidelines on the regulatory review of biocontrol agents including biopesticides.

**1.6.** Several studies were already conducted to assess the efficacy of potential biopesticides for pest and disease control. Nevertheless, there are still gaps to fill in order to identify and disseminate the more adequate pest management options through the use of emerging biocontrol products. Knowledge and capacity building is needed to comprehend how the biopesticides work, how they can be used to mitigate the conventional pesticide residues and how to promote their inclusion into Integrated Pest Management Programs (IPM). As the biopesticides are advancing rapidly, research and analysis is needed to facilitate their adoption in Asia. Notwithstanding the existence of registered biopesticide products in South East Asia, additional linkages should be established between the biopesticide registrants and regulators, which would increase the interest in the Asian market.

**1.7.** Specialty and tropical crops have been a major priority to most Asian countries, considering the high value and vast market opportunities they represent in the EU, North America and Australia. Tropical fruits are also a primary source of income for the region. For this reason, incompliance with

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<sup>1</sup> *Meeting Standards, Winning Markets - Regional Trade Standards Compliance Report: East Asia 2013*, UNIDO and IDE-JETRO, Nov 2013.

export market requirements represents a big burden for Asian producers. For most of tropical fruits and specialty crops there are still no Codex MRLs established, due to the lack of economic interest by pesticide registrants to generate residue data needed to establish Codex MRLs. Many programs supported pesticide-related trainings and enhanced the understanding of pesticide MRLs establishment process. Generating residue data, mitigated through the use of biopesticides, will represent a new capacity building area that could effectively enhance the access to newer, low-toxicity biopesticides for farmers.

### **STDF Project Preparation Grant**

**1.8.** In October 2018, the STDF Working Group approved a Project Preparation Grant (PPG) entitled "Asia Pesticide Residue Mitigation through the Promotion of Biopesticides and for Enhancement of Trade Opportunities". The PPG was requested by the Asia-Pacific Association of Agricultural Research Institutions (APAARI). The application (see Appendix 1) was developed in consultation with the ASEAN Expert Working Group (EWG) on MRLs, IR-4 Rutgers University, USDA and Crop Life Asia. Preliminary consultations took place also with relevant FAO staff in the topic and/or the region. The PPG is supported by following APAARI's member organizations: Bangladesh, Lao PDR, Malaysia, Nepal, the Philippines, Sri Lanka, Thailand and Viet Nam.

**1.9.** The purpose of the PPG is to develop a project proposal aiming to mitigate MRL export violations through the use of non-residue-generating biopesticides hence to improve the market access of Asian specialty crops. The resulting project will be a regional project that will carry out coordinated studies to help mitigate conventional pesticide residues through the incorporation of biopesticides into national IPM programmes and Good Agricultural Practices (GAP) for specific crops to be selected through this PPG.

**1.10.** The PPG will be built on an innovative and collaborative approach focusing on diminishing trade barriers related to MRLs. It will stimulate the coordination within Asian countries and foster public-private collaborations amongst regulators, biopesticide registrants and interested international partners.

**1.11.** The work to be carried out under the PPG will be designed and implemented in close cooperation with stakeholders involved in other relevant on-going/planned initiatives in order to ensure synergies and avoid duplications. The PPG aims to build also on the existing knowledge developed through past technical assistance projects, to strategize how to benefit from the existing biopesticide regulatory infrastructure and to identify key gaps and additional expertise needed. These initiatives and projects include: (i) projects implemented by FAO including the FAO Regional Vegetable Integrated Pest Management (IPM) Programme in Asia; (ii) the STDF-funded project implemented by the ASEAN Secretariat on "Strengthening capacity in ASEAN to meet pesticide export requirements" ([STDF/PG/337](#)), which improved ASEAN members states' capacity to meet pesticide related export requirements based on Codex standards; (iii) various projects supported by the German Federal Ministry for Economic Cooperation (BMZ) in Southeast Asian countries that developed IPM strategies to control major pests and plant diseases (including attention to biopesticides) and delivered sustainable production solutions based on biological control agents; (iv) projects supported by Sweden to build capacity and foster regional collaboration for efficient pesticide risk reduction and chemicals management in the Mekong Region countries; (v) COLEACP "Fit for Market" programme; Japanese-supported projects on GAPs and organic agriculture in Lao PDR and Cambodia; STDF-funded project in Myanmar on the oilseed value chain (STDF/PG/486). These projects are described in more detail in Appendix X.

**1.12.** In addition, work carried out under this PPG will be carried out in a way that is linked to other relevant work, including work within ASEAN, Codex, the IPPC and the OECD. This includes: (i) work of the OECD Expert Group on Biopesticides (EGBD) on biopesticides; (ii) ongoing discussions and work in the Codex Committee on Pesticide Residues (CCPR)<sup>2</sup> on specialty and tropical crops including ongoing work led by Chile on international biopesticide regulatory harmonization; (iii) work carried out under the framework of the Asia and Pacific Plant Protection Commission (APPPC), and (iv) ASEAN harmonized guidelines on the regulatory review of bio-control agents, including biopesticides. Work under the PPG should also pay attention, wherever possible, to any plant health concerns

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<sup>2</sup> The 50th CCPR in April 2018 established an electronic working group chaired by Chile and co-chaired by India and USA to prepare discussion paper for consideration at the next session on potential guidelines on biological and mineral compounds used as pesticides of low public health concern.

linked to the use of biopesticides through attention to the relevant standards of the International Plant Protection Convention (IPPC), which also address the export, shipment, import and release of bio-control agents.<sup>3</sup>

## **2 THE SCOPE OF THE PPG**

**2.1.** IPM is the cornerstone to reduce the use of conventional pesticides and this PPG and the resulting project will be based on this concept. Since pesticide residues are primarily determined by the last application of the crop growing period, the PPG will specifically focus on the last application to develop the mitigation approach. FAO will be engaged as a key partner to provide advice and guidance regarding the most effective IPM practices based on the identified crop-residue concerns. The PPG will cover the targeted use of biopesticides at the end of the crop growing period, in combination with IPM during the rest of the crop production. This approach will combine the advantages of conventional pesticides with the advantages of biopesticides at the end of the season.

**2.2.** The focus of this PPG is expected to be on microorganisms/microbial biopesticides. Beneficial insects may also be considered, depending on the target pests and commodities. The selection will take into account IR-4's existing list of exempt products and will be based upon the target pest at the end of the season. The final selection will be further discussed and clarified with FAO (including FAO experts involved in the IPM Programme, as well as the Codex and IPPC Secretariat) as part of the inception work.

## **3 OBJECTIVES, EXPECTED RESULTS, DELIVERABLES**

**3.1.** The aim of the PPG is to develop a proposal for a regional project to promote the use of biopesticides by reducing residues of synthetic pesticides, thereby overcoming pesticide residues as barriers to trade. Subject to further discussions to be carried out with key partners and stakeholders under the PPG, the resulting project may be expected to:

- Build a sustainable process for regional data generation required for the registration of biopesticides for Asia's priority crops (e.g. leafy brassicas, yard-long bean, tomato, eggplant, peppers, bitter melon and mango, papaya and dragon fruit);
- Help to develop the regulatory infrastructure needed to facilitate the registration of biopesticides;
- Facilitate the integration of biopesticides as a GAP of tropical crops;
- Facilitate access to, and use of, biopesticides to mitigate residues of conventional pesticides which is a unique way to facilitate compliance with MRLs;
- Develop a grower outreach program to promote the use of biopesticides in export promotion programmes and domestic markets.

**3.2.** As such, the resulting project would be expected to help overcome challenges to export (and regulated domestic) markets access due to the absence of corresponding pesticide trade standards for specialty crops (fruits and vegetables), including high value tropical crops; decrease exposure of consumers to conventional pesticide residues that result from off target applications; decrease exposure of farmers to higher-risk synthetic pesticides in cases where proper handling practices are not followed; increase technical expertise concerning residue analysis, the monitoring in laboratories and the understanding of residue decline over time; and increase knowledge and technical expertise on IPM practices vis-à-vis the use of biopesticides.

**3.3.** The project proposal should, inter alia:

- Clearly elaborate the purpose, scope, specific objectives, and expected outcomes, outputs and activities of the proposed project, based on a coherent logical framework. The logical framework should include indicators to measure performance, sources of verification and any key risks and assumptions.
- Clearly identify the roles and responsibilities of all concerned public and private stakeholders, with clarity on the proposed project implementation and management arrangements.
- Identify linkages, synergies and complementarities to relevant activities and projects supported by donors and development partners.

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<sup>3</sup> Notably, ISPM 3 (Guidelines for the Export, Shipment, Import and Release of Biological Control Agents and Other Beneficial Organisms) and ISPM 11 (Pest risk analysis for quarantine pests).

- Include a detailed estimate of the budget required to implement the proposed project and, where possible, identify possible donors and/or private sector support for specific components.
- Consider cross-cutting issues related to gender and environmental aspects.
- Include a detailed work plan and timetable for project implementation.
- Identify and assess the possible risks and challenges faced in the proposed project, as well as risk mitigation strategies to ensure its success and sustainability.

**3.4.** In addition to the regional project proposal to be produced under the PPG, APAARI would deliver a short report on the implementation and outcomes of this PPG, to be submitted to the STDF within one month of its completion. This report should describe the activities implemented, the results achieved, and the key stakeholders involved and/or consulted. It should also attach copies of relevant documents produced under the PPG. Any relevant documents identified during the course of the PPG should be provided to the STDF for inclusion in the STDF online Library.

## **4 ROLES AND RESPONSIBILITIES OF APAARI**

**4.1.** The PPG will be implemented by APAARI, in close collaboration with IR-4, USDA, technical experts from participating countries in the region, and other partners. In implementing this PPG, APAARI will work closely with other partners, including IR-4, Rutgers University, which will be sub-contracted by APAARI to provide technical expertise to the PPG.

**4.2.** APAARI's main role under the PPG will be as follows:

- Identify and follow-up with experts from countries (including Bangladesh, Nepal, Sri Lanka, Malaysia, Philippines, Thailand and Viet Nam, as well as other countries in the region) to be included in the PPG meetings to be organized on the margins of the ASEAN EWG meeting on MRLs (Singapore, January 2019).
- Organise a PPG meeting, on the margins of the Singapore ASEAN EWG meeting, bringing together all the participating country representatives to collect the key inputs for the development of the project proposal.
- Explore further and analyse the linkages, synergies and complementarities with other relevant projects, as well as related work by ASEAN, Codex, IPPC and OECD, including to:
  - i. Seek the support/inputs of international organizations, including FAO in terms of collecting guidance on relevant IPM and GAP policies.
  - ii. Liaise with IR-4, USDA, the ASEAN Secretariat and interested non-ASEAN member state representatives, to identify further potential stakeholders and the contacts from the relevant projects or programmes.
  - iii. Coordinate with other key stakeholders to seek their buy-in and engagement in the implementation of this PPG and support for the resultant project proposal.
  - iv. Contact and hold discussions with relevant private sectors stakeholders, including local registrants, biopesticide manufacturers and the International Biocontrol Manufacturers Association.
  - v. Explore options to engage other relevant stakeholders in Cambodia, Myanmar and Nepal (including the Nepalese Department of Food Technology and Quality Control).
- Manage, contract and approve technical work to be carried out by IR-4 as part of this PPG. The technical work to be carried out by IR-4 is expected to include the following tasks:
  - i. development of the agenda and supporting documentation for the PPG planning meeting;
  - ii. organization of the research team and its work; facilitation of the PPG planning meeting;
  - iii. development of surveys and consultations to determine relevant priority crops/conventional pesticides/registered biopesticides to be included in the resulting project;
  - iv. development of the comprehensive priority list of crops/conventional pesticides/registered biopesticides to be covered by the resulting project;

- presentation of the PPG to the ASEAN group to explore the options to include other countries (e.g. Cambodia and Myanmar);
- v. consultations and engagement with FAO on relevant IPM practices;
  - vi. provision of inputs to the regional project proposal including on the budget and technical scope;
  - vii. consultations on the draft regional project proposal with the ASEAN Secretariat, FAO, the beneficiary countries and any other relevant stakeholders to obtain feedback and comments and revise the draft project proposal as required.
- Take the lead on preparing in collaboration with IR-4 and other relevant stakeholders, a proposal for a regional project based on the discussions and outcomes of the PPG meeting and other interviews / consultations related to this PPG, as well as other relevant information and comments received.
  - Obtain letters of support for the resulting project proposal from key public and private sector stakeholders in the region. As appropriate, these letters should include a clear expression of support for the proposed project, and demonstrate clear commitment to take actions needed to ensure the success and sustainability of the project. At a minimum, letters of support are expected from relevant government authorities in the countries to participate in and/or benefit from the proposed project, as well as private sector stakeholders (including Crop Life Asia, the Thai Agricultural Innovation Trade Association and the International Biocontrol Manufacturers Association).
  - Use this this PPG to facilitate dialogue on biopesticides among international, regional and national organizations, as well as with the private sector, and relevant development partners and donors. This will involve consultations with relevant donors in the region (including bilateral donors, as well as the private sector) to explore options to mobilize additional funding sources for the resulting project that would complement the requested STDF contribution, as well as the expected in-kind contribution from the participating countries.<sup>4</sup>

## 5 TIMEFRAME

- 5.1.** The planned starting date is 10 January 2019 with a competition date of end August 2019.

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<sup>4</sup> For details on the amount of the in-kind contribution, see: [www.standardsfacility.org/project-grants](http://www.standardsfacility.org/project-grants)