STDF Standards and Trade Development Facility

STDF PROJECT PREPARATION GRANT (PPG)

APPLICATION FORM

The Standards and Trade Development Facility (STDF) provides Project Preparation Grants (PPGs), up to a maximum of US$50,000, for the following purposes (or a combination thereof):

- application of SPS-related capacity evaluation and prioritization tools;
- preparation of feasibility studies that may precede project development to assess the potential impact and economic viability of proposals in terms of their expected costs and benefits; and/or
- preparation of projects proposals that promote compliance with international SPS requirements, for funding by the STDF or other donors.

Applications that meet the STDF's eligibility criteria are considered by the STDF Working Group, which makes the final decision on funding requests. Complete details on eligibility criteria and other requirements are available in the *Guidance Note for Applicants* on the STDF website (www.standardsfacility.org). Please read the *Guidance Note* before completing this form. Completed applications should be sent by email (as Word documents) to STDFSecretariat@wto.org.

PPG Title	**Asia Pesticide Residue Mitigation through the Promotion of Biopesticides and for Enhancement of Trade Opportunities.**
Budget requested from STDF	**USD $ 34,454.56**
Full name and contact details of the requesting organization(s)	APAARI APAARI Secretariat C/o Food and Agriculture Organization of the United Nations Regional Office for Asia and the Pacific, 4th Floor, FAO Annex Building 202/1 Larn Luang Road, Pomprab Sattrupai District, Bangkok, 10100, Thailand Tel: +662-282 2918; Fax: +662-282 2919 Email: ravi.khetarpal@apaari.org; apaari@apaari.org;
Full name and contact details of contact person for follow-up	IR4 Michael Braverman IR-4, Rutgers University 500 College Road East, Suite 201W Princeton, New Jersey 08540 (732) 932-9575 ext. 4610 braverman@aesop.rutgers.edu

I. BACKGROUND AND RATIONALE

1. What is the purpose of this PPG? Explain whether it is requested to: (i) apply an SPS-related capacity evaluation or prioritization tool; (ii) prepare a feasibility study (prior to project development) to assess the potential impact and economic viability of proposals in terms of their expected costs and benefits; and/or (iii) prepare a project proposal for consideration by the STDF or other donors?

Pesticide residues can be a serious barrier to market access and trade. The primary purpose of this PPG is to prepare a full project proposal to STDF based on a unique way to mitigate pesticide residues and facilitate trade. The aim of the project that will be considered, discussed, and planned by the project team is to mitigate pesticide maximum residue limit (MRL) export violations through the use of non-residue-generating biopesticides to control key pests especially at the end of the crop growing period (the period when pesticides mostly contribute to residues at the time of harvest). Hence, the purpose of the PPG is to apply an innovative approach with a scientific rationale towards SPS related technical capacity development and evaluation.

On a global basis, the scope of what are referred to as biopesticides could include microorganisms, beneficial insects, biochemical (pheromones, plant extracts, minerals) entomopathogenic nematodes, and biotechnology (Genetically modified crops). Working backwards, the biopesticides selected would be based upon the target pest at the end of the season. Those same target pests are ones that have been the cause of conventional pesticide applications. The application may or may not have a residue of concern in international trade. Therefore, the primary focus or first tier level of the process in project selection will be based upon the question "*What are the key residue issues of concern impacting international trade?*" Going back to the scope of biopesticides, the primary focus within the project will be to utilize microorganisms since they are not likely to have residue issues of concern for importing countries. Beneficial insects fit well into IPM programs and would be considered, depending if that makes sense for the target pests. Genetically modified crops would not be considered due to regulatory concerns. Entomopathogenic nematodes have a limited scope and in general are more expensive than other classes of biopesticides, so they are less likely to be considered. Biochemical biopesticides can be considered, especially pheromones, but some biochemicals under US definition such as potassium phosphite are not likely to be considered if they have regulated moieties and do not have a current tolerance or exemption in importing countries. We have developed a harmonization list of US, EU, NZ and Australian tolerance exemptions and are seeking additional input from Canada, Japan, Korea and China. Biopesticides exempt in the importing country will be selected to facilitate trade.

IPM is the cornerstone of reducing the use of conventional pesticides and will be a standard practice. Such standard practices will be part of the approach and in season reductions in the use of conventional pesticides may be realized. While IPM is an important strategy, conventional pesticides are still needed when pest pressure increases. The reality is that residue violations still exist which are primarily driven by the last application. It is this last application that is the focus of the mitigation approach.

We will confer with FAO on what they have determined to be the best IPM practices are. We cannot say specifically what those are because the primary driver for project selection will be where member countries determine their top crop-residue trade irritants are in addition to all the criteria for project selection. That discussion is part of what we want to achieve in the planning meeting to be funded by this PPG. Therefore, it is not a decision of if IPM will be a component, as it is a standard practice. We do see IPM as a standard practice, but not an experimental variable. As stated above, we will confer with FAO after we determine which crop–residue situations we intend to focus on.

More specifically, the hierarchal system to determine the project would be as follows. These points of discussion will be the focus of the preparation grant meeting and is why we are seeking funding through this PPG.

1. What are the primary crop export concerns- What are the conventional products causing trade irritants?
2. Differences in MRLs between producing and importing countries
3. Decline curves/persistence of the conventional product causing residues.
4. The current Pre Harvest Interval (PHI) to see if extension of the PHI is feasible. The retreatment interval will be considered to understand the likely length of control from the last application of a conventional product.
5. Target pests in last application-What is the reason the conventional pesticide was applied?
6. Are there biopesticides to manage the late season pests?

This project will develop decline residue data and better understanding of how time, IPM production practices and end of season mitigation impact residues. All available tactics will be utilized to determine how to best avoid residue trade issues.

2. Explain the key SPS problems and/or opportunities to be addressed. Clarify why these issues are important, with attention to market access and poverty reduction. Describe, if relevant, how these issues relate to SPS priorities in the Enhanced Integrated Framework's Diagnostic Trade Integration Studies (DTIS), the findings of SPS-related capacity evaluations, national poverty reduction strategies, sector development strategies or policies, etc. See Qn. 7. (b) – (d) of the Guidance Note.

Despite some efforts made in recent years many less developed economies in Asia still face increasing challenges in conforming with Codex and other trade partner pesticide maximum residue levels (MRLs), either because these MRLs are not established or because they are too low to reasonably comply with real-world use patterns by farmers. A previously funded STDF pesticide residue data generation project, managed by the ASEAN Secretariat, did help to strengthen national capacity to generate Codex MRLs.

This PPG, involves eight countries including Bangladesh and Nepal (Lower income economies), Laos, Sri Lanka and Vietnam (Lower middle economies). It also includes Malaysia, Philippines and Thailand, which are upper middle economies, but are an important component because they have better laboratories in which to train those from lesser economies. It also represents ASEAN and Non-ASEAN countries. This mixture of Asian countries, aims to develop a framework for conducting coordinated studies to mitigate conventional pesticide residues through the incorporation of biopesticides into national Integrated Pest Management (IPM) programs. The previously funded STDF residue project (STDF/PG/337) helped establish national study teams in selected Asian countries, which will be utilized to further this work on biopesticides.

Biopesticides include microorganisms (such as fungi and bacteria), and biochemicals (such as plant extracts, minerals, pheromones, etc). Biopesticides are different from synthetic pesticides in that they have natural origins and many do not produce chemical residues. Utilization of biopesticides late in the growing season, as an alternative to conventional pesticides, is one way to mitigate residue violations in export markets while providing pest control during the pre-harvest interval (PHI). For some lower income economies, it may also help to spur cottage industries for new plant extracts and alternative measure.

Most biopesticides by their nature are not subject to MRLs, and the residues of microorganisms used for pest management are therefore not subject to regulatory enforcement by importing countries. It is anticipated that the primary type of biopesticide to be utilized in residue mitigation would be microbial products Using biopesticides as a last application of the growing cycle can help reduce residues of many conventional pesticides. Substituting the last application with biopesticide

would be cheaper and faster than generating residue data and submitting new MRL packages to Codex. National residue programs should have the ability to establish MRLs when needed, but also the ability to develop alternative options when complying with export market MRLs is too problematic.

In addition to developing a framework for conducting coordinated studies, the full proposal developed from this preparation grant will facilitate the integration of biopesticides as a good agricultural practice of tropical crops. The common practice of intercropping complicates conventional pesticide practices, in that residue labeled uses and MRLs for understory crops often differ significantly, from tree crops, resulting in off-target applications and unintended residues on understory crops. This is especially true for Vietnam, which has adopted a policy of only using Global Health Standard level 5 pesticides in fruit crops. Therefore, the use of biopesticides will have ancillary risk benefits by reducing chemical residues on off-target crops.

Globalization of the food supply has the potential to expose consumers worldwide to food hazards and many countries rely heavily on imports for their food security. Increasingly, governments worldwide are moving toward implementing risk-based approaches to food safety management that requires all operators in the supply chain to share responsibility for food safety and apply measures to reduce food safety hazards. Concurrently, industrialized countries are setting increasingly restrictive pesticide MRLs, or removing pesticide MRLs, including those for many of the specialty crops produced in Asia. This represents a significant hurdle to market access for Asia's producers of specialty crops.

According to UNIDO's "Regional Trade Standards Compliance Report - East Asia 2013" the potential of East Asian trade is significantly constrained by rejections due to food safety issues such as pesticide MRLs being exceeded for permitted pesticides, presence of prohibited pesticides, presence of quarantine plant pests and pathogens and food-borne pathogens.

The Codex Alimentarius is the globally recognized body responsible for setting food safety standards to help in the facilitation of international trade in safe foods. The WTO SPS Agreement encourages WTO Members to harmonize or base their national measures for food safety on the international standards, guidelines and recommendations developed by Codex. Participation of Asian nations in the Codex Committee on Pesticide Residues (CCPR) has significantly increased in recent years. Additionally, Association of South East Asian Nations (ASEAN) has developed harmonized guidelines on the regulatory review of bio-control agents, including biopesticides, while in least developed economies of South Asia (Nepal and Bangladesh) the registration of biopesticides is presently in active discussion. This is encouraging; however, there is no clear organized effort on how to promote the inclusion of biopesticides into IPM programs or how they can be used to mitigate the residues of conventional pesticides that can be problematic for trade. IPM approaches have included utilization of biopesticides to overcome resistance issues and maintenance of beneficial insects. These uses of biopesticides are good; however, pesticide residues are primarily determined by the last application, therefore simply including a biopesticide in a rotation is not likely to result in decreased residues of conventional products and will not help trade. A purely biopesticide program would result in lower residues, but may not be sufficient alone to control the pest or be financially viable. This project aims to balance the advantages of conventional pesticides (generally lower cost and generally greater efficacy) with the advantages of a biopesticide at the end of the season (to result in lower residues while providing sufficient extension of pest control caused by extending the PHI of the conventional product). In consultation with the researchers it will be decided which crops will be included, but most likely the focus will be on tree fruit and vegetables. During development of the full proposal, all practical IPM approaches will be considered depending on the crop-pest combination and the selection of the primary crop pest combination will depend on what the key export residue concerns are.

As an outstanding agenda item of the CCPR, specialty crops and tropical crops have been a major priority to most Asian countries because of the high value and vast market including niche markets of EU, North America and Australia for these commodities. Among the specialty crops considered within Codex, tropical fruits dominate the list of Asian exports and a broad survey of farming practices across the Asian region show that the Asian rural farming communities rely on tropical fruits as the primary source of income. If Asian producers are unable to meet export market requirements, market access is impeded, resulting in loss of income for subsistence farmers.

Hence, building capacity in this regard is critical to achieving poverty alleviation in rural Asia. In terms of international standards, there are still no Codex MRLs for most of the tropical fruits groups and specialty crops exported from Asia. This is largely because of lack of economic interest by pesticide registrants to generate the residue data needed to establish Codex MRLs. As a result, many governments/regions are establishing "minor use" programs to help fill these data gaps and take a more active role in identifying, registering, and setting trade standards to support their agricultural sectors. Building the capacity of developing countries to generate residue data that is mitigated through the adoption of biopesticides will effectively enhance access to newer, low-toxicity biopesticides for farmers - an important priority for Asia.

Over the past several years, many Asian countries have participated in pesticide-related training programs led by the U.S. Department of Agriculture (USDA), the United Nation's Food and Agricultural Organization (FAO), CropLife Asia, and other organizations. Many Asian countries are now demonstrating a better understanding of the process of pesticide MRL establishment and assessment of the risk from dietary intake of residues. The next logical step to support Asian countries is to work toward implementing concrete actions to address specific barriers to expanding trade.

In brief, the ultimate benefits of the project to be developed through this PPG, to the region will be:

- Facilitate access to, and use of, biopesticides to mitigate residues of conventional pesticides which is a unique way to facilitate compliance with MRLs
- Overcome hindrances to export (and regulated domestic) markets access due to the absence of corresponding pesticide trade standards for specialty crops (fruits and vegetables) and other tropical crops of importance to Asia.
- 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 and monitoring in laboratories as well as a better understanding of residue decline over time.
- Build a sustainable process for regional data generation required for the registration of biopesticides for Asia's priority crops such as leafy brassicas, yard-long bean, tomato, eggplant, peppers, bitter gourd and mango, papaya and dragon fruit.
- Develop a grower outreach program to promote the use of biopesticides in export promotion programs and domestic markets.

3. Which government agencies, private sector, academic or other organizations support this PPG request? Letters of support from each of these organizations would be advantageous (Appendix 1). See Qn. 7. (e) of the Guidance Note.

The following government agencies support holding a PPG workshop to develop a framework for establishing a collaborative biopesticide project, which will then be drafted into a full STDF Project Grant (PG) proposal with commitments from participating agencies. Letters of support are included in Appendix 1.

- Bangladesh- Department of Agricultural Extension
- Nepal National Agricultural Research Council
- Sri Lanka-Department of Agriculture
- Laos PDR- Department of Agriculture
- Malaysian Agricultural Research and Development Institute
- Philippines – Department of Agriculture
- Thailand Department of Agriculture
- Vietnam Ministry of Agriculture

It is hoped that a full Project Grant will include eight South and South East Asian countries, including Bangladesh, Nepal, Sri Lanka, Laos, Malaysia, Philippines, Thailand and Vietnam. Since this PPG meeting will be held in conjunction with the ASEAN Expert Working Group on MRLs, it is anticipated that following the PPG meeting with this initial group, the ideas will be put forth to the entire ASEAN group (With Myanmar as the host of that meeting) and additional ASEAN countries will become part of the full proposal.

Commitments to provide technical support for this PPG (and the resulting project) have come from the U.S. Inter-regional Research Project (IR-4)[1], the United States Department of Agriculture (USDA) and APAARI. Contacts for these organizations are listed below. In addition, a letter of support is included from industry groups (CropLife Asia and the Thai Agricultural Innovation Trade Association, and International Biocontrol Manufacturers Association)

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4. How does this PPG complement and/or build on past, ongoing and/or planned national programmes and/or donor-supported projects? See Qn. 7. (f) of the Guidance Note.

A Project titled "ASEAN Pesticide Residue Data Generation Project" STDF/PG/337 was completed in November 2016. It was initiated by USDA in collaboration with the ASEAN Secretariat in 2010 with the aim to assist ASEAN member states to enhance their capacity to meet pesticide-related export requirements based on international (Codex) standards in order to enhance market access of ASEAN agricultural commodities. The project was in-line with the ASEAN Economic Community Blueprint (AEC-BP) to increase agricultural production and its competitiveness to enhance ASEAN trade.

[1] The IR-4 Project was established in 1963 as a partnership between USDA and the state agricultural experiment stations to assist specialty crop growers by developing data that is necessary to support the registration of safe and effective crop protection chemicals (pesticides) on fruits, vegetables, herbs, and other specialty horticultural crops.

Under this project led by IR-4, pesticide residue studies were carried out on mango, papaya, lychee and dragon fruit after a series of trainings. Field trials and laboratory analysis work was completed for all studies under the project. The project helped ASEAN countries by providing theoretical and practical experiences in conducting field trials, laboratory analysis by exposure to practice, techniques and expertise of GLP studies. It improved the capability of ASEAN countries to generate quality data for establishing an MRL based on international guidelines (e.g., OECD-GLP, EPA-GLP, FAO Manual (2009). ASEAN member scientists networked to learn and share experiences on the coordination of work and capacity building efforts, between government regulatory officials, laboratory and field technicians, as well as pesticides industries. Most importantly, JMPR reviewed and recommended establishment of new CODEX MRL's based on the data generated from this project.

Two projects entitled, 'Less loss, more profit, better health: reducing the losses caused by the pod borer (*Maruca vitrata*) on vegetable legumes in Southeast Asia and sub-Saharan Africa by refining component technologies of a sustainable management strategy' and '*Attraction in Action:* Using pheromones and other safe and sustainable management strategies to reduce losses from insect pests and plant diseases on vegetable legumes and leafy brassicas in Southeast Asia' funded by BMZ (Federal Ministry for Economic Cooperation and Development via Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH) and implemented by WorldVeg in selected countries in Southeast Asia have introduced and evaluated newer bio-pesticides and pheromones, which are currently being promoted among the growers, private sector and extension agencies in these countries.

GTZ has helped to organize efforts to harmonize regulations for biopesticides in ASEAN. Through this preparation grant, we would strategize how to benefit from the current biopesticide regulatory infrastructure and provide additional expertise as needed. During the Global Minor Use Summit 3 in Canada, one of the new efforts has been for Harmonization of Exemptions from Tolerance, which focuses on biopesticides. IR-4 in cooperation with the EU Minor Uses Coordination Facility is leading the effort to extend the recognition of exemptions from tolerance. Through this planning grant, we can discuss the application of exemptions of tolerance and how this can involve the regulatory authorities to facilitate biopesticide registration.

There is an existing framework for biopesticides in some countries but not in others with Asia. For the full proposal, lists of currently registered biopesticide products will be obtained and this has already occurred with Thailand. As mentioned in the PPG, part of the anticipated full proposal will be to help develop the regulatory infrastructure needed to facilitate the registration of biopesticides. The efforts by GTZ have been cited in the PPG and their work and others is summarized in this FAO document http://www.fao.org/3/a-i3323e.pdf

The use of biopesticides is expanding rapidly worldwide. See report by Dunham-Trimmer.

http://wrir4.ucdavis.edu/events/2017_SLR_Meeting/Presentations/GeneralPresentations/1%20Trimmer%20-%20Global%20Biocontrol%20Market%202017.pdf

The current value for the biocontrol market is about 1 billion dollars in Asia and is expected to be almost 2 billion by 2025. The Asian market has been growing at approximately 16% per year. All the major multinational companies have invested heavily and buying up smaller biopesticide companies while they are decreasing development of synthetic pesticides. The organizations CropLife Asia, the Thai Agricultural Innovation Trade Association and the International Biocontrol Manufacturers Association all support this proposal. They have the infrastructure needed to help promote the outcomes of this project within the farmer community along with the government co-operators that will be involved in conducting the research. In addition, this will help increase the demand for biopesticides as a method of producing a crop without residues. In addition, as stated above, this would be in addition to standard IPM practices, so the residue mitigation is the primary research variable, but not the sole component. Residue mitigation is an end of the season approach in addition to standard IPM practices.

The state of biocontrol registration has been reviewed by Lim et al 2014: http://www.asean.org/storage/images/Community/AEC/AMAF/OtherDocuments/ASEAN%20Guidelines%20on%20Biological%20Control%20Agents.pdf

Table 1: Categories of BCA[6] and number of products available in ASEAN (Source: ABC database)

BCA category	Indonesia	Lao PDR	Malaysia	Philippines	Singapore	Thailand	Vietnam	Total
Attractant	9						9	18
Botanical	16	1	8		3	2	60	90
Growth stimulator		2					47	49
Microbial	31	6	35	9	7	23	62	173
Natural product		2	2		1		79	84
Other	1	7				1		9
Product Mix	4	3	1				39	47
Semiochemical	1							1
Grand Total	62	21	46	9	11	26	296	471

There are existing registered products in SE Asia and the project would help further establish connections between Biopesticide registrants and regulators, which would increase interest in the Asian market and the availability of biopesticide products. The use of biopesticides does need improvement and the incentive of increased international marketability of produce grown under the combination of IPM and residue mitigation would help incentivize the market for biopesticides.

The potential for expanding the acceptance or recognition of tolerance exemptions is another aspect the IR-4 is involved with. IR-4 is involved in Chile's efforts on international biopesticide regulatory harmonization; this work is being done through the Codex Committee on Pesticide Residues. This has been a topic of discussion with Eduardo Aylwin (eduardo.aylwin@achipia.gob.cl) at the last Global Minor Use Summit 3 in Canada this past year. This was identified as one of the priorities to promote international harmonization of products that are of extremely low toxicity, where many countries do not set MRL standards. IR-4 started with the US list of tolerance exempt products, then requested a list of tolerance exempt products in the EU from Jeroen Meeusen (jeroen.meeussen@minoruses.eu) of the Minor Uses Coordination Facility.

At the June OECD meetings of the Expert Group on Biopesticides (EGBP), IR-4 subsequently obtained Australian and New Zealand lists of exemptions and is awaiting input from Canada, Japan, China and Korea. The lists have been combined into an Excel spreadsheet (attached) and has been organized into individual countries and a list in which the same active ingredient is listed one or more country. The initial list was distributed prior to the OECD meetings and discussion was led by Jeroen Meeusen. Coming out of the Global Minor Use Summit, the initial thought was to develop a guidance document within OECD first, however, OECD decided that since Chile has initiated similar work through Codex and since Codex sets international standards, it was agreed that the EGBP would not proceed with the development of the guidance document but will try to co-ordinate and support Codex activities to avoid duplication of efforts. Since the primary goal of this project is to promote trade, products will be selected from the harmonization list that coincide with existing tolerance exemptions in which the developing countries want to export to. Having additional countries involved in biopesticide activity should help foster greater interest in formation of guidance within JMPR and eventual recognition or standards to be set by CODEX. The mandate established at the 50 CCPR was to establish an electronic working group, chaired by Chile, and co-chaired by India and the United States of America and working in English and Spanish, with the following mandate/terms of reference:

(i) Provide background (such as trade problems and possible risk to human health) for justifying new work under the mandate of CCPR.

(ii) To develop a proposal for guidelines to harmonize concepts to recognize biological and mineral compounds used as pesticides of low public health concerns which should be exempted from Codex MRLs and / or that do not give rise to residues.
(iii) Provide classification of such compounds and possible lists or criteria, etc.
(iv) Provide a revised project document scoping the work.
(v) Based on the above considerations, submit to proposal on future work for consideration at CCPR51.

Consultations have taken place with Dr. Fen Beed (now based at FAO HQ) to connect this PPG to the capacities established by FAO Asia Regional IPM program for sustainable intensification of agricultural production, with special emphasis on pesticide risk reduction in Southeast Asia. This future work will utilize the Study Teams (developed under the completed STDF regional MRL project) to carry out complimentary biopesticide research. The preparation grant would also enable the communication between the participating countries, FAO, COLEACP and any other stakeholders to coordinate efforts and build upon existing successes.

FAO Philippines and the FAO Regional Office in Bangkok facilitated cooperation on this PPG with the Philippine Department of Agriculture and they assisted with establishing contact with that agency. A letter of cooperation from the Department of Agriculture in the Philippines is included in the PPG. IR-4 is open to cooperation with FAO and additional follow up will occur as warranted in the preparation of the full proposal. We will build upon programs already implemented by FAO on Pesticide Risk Reduction http://www.vegetableipmasia.org/programs/view/117 and the Swedish authorities https://www.kemi.se/global/broschyrer/towards-a-non-toxic-south-east-asia.pdf so that farmers and consumers can realize heath as well as trade benefits.

Not much work has been done in Bangladesh and Nepal so far and discussions with those countries revealed that involvement in this proposal would be of immense value to re-orient their IPM activities for facilitation of trade of their agricultural produce. However, it may be noted that both Bangladesh and Nepal have recently started adopting the SAARC GAP, which was developed under an FAO project. This residue mitigation can become part of the GAP action plans to help ensure compliance with CODEX MRLs by avoiding illegal residues.

5. Have you discussed this PPG request – or funding for the project proposal which would result from it – with any potential donors (bilateral, multilateral, Enhanced Integrated Framework, etc.)? If so, provide details below and indicate potential sources of funding for the resulting project. See Qn. 7. (g) of the Guidance Note.

During the development of the full proposal we will discuss the potential of other donors to contribute. Based on the previous project, ASEAN Pesticide Residue Generation Project, industry tthrough CropLife Asia provided funding to help offset the cost of some of the meetings (Note CropLife Asia letters of support). They also provided technical expertise and the products and analytical standards used for the analysis of the residues. We anticipate that similar contributions will be available for this actual project as well. The cost of transportation for some of the participants is being offset by having this planning meeting in conjunction with the annual ASEAN Pesticide Expert Working Group meeting, to be held in Myanmar in January, 2019.

Local registrants (manufacturers of biopesticides) will be consulted during the preparation of the full proposal so that the biopesticides are utilized in the correct matter of application and economics of different use rates will be considered, and the International Biocontrol Manufacturers Association is willing to assist (See IBMA letter of support). They will also help to access and maximize the potential economic impact of this project.

USDA and APAARI (if need be) are committed to provide in-kind support for this PPG by providing time and travel for a pesticide expert to help design and direct the plans. Once the project concept has been strengthened through support of this PPG, multiple partners will be included in developing the full project grant to STDF. Several partners will be approached to support the project either in-kind or financially, including USDA, and participating biopesticide manufacturers. FAO will be requested to contribute in the form of guidance on IPM/GAP policies so that this project compliments the existing efforts of FAO. Further collaboration will be sought with the project "Sustainable agrifood systems in the ASEAN region", which includes promotion and use of

biocontrol options and with the Japan funded project to promote GAP and Organic Agriculture in Lao PDR and Cambodia. CropLife Asia will also be consulted who are developing a project to harmonise pesticide registration, including biopesticides, across ASEAN member states.

A larger, primary goal of this project would be to ensure its sustainability by securing long-term financial commitments from these various organizations. This in turn, would continually establish crop/pesticide priority lists and assist local registrations and data generation to establish trade standards. If this project is implemented successfully, we believe that there will be significant incentives for a long-term program to be established through partnerships between the public and private sectors. Export promotion programs in Thailand have been predicated on growing safe produce for greater economic return and biopesticides can be adopted to meet export promotion guidelines.

6. Briefly explain how cross-cutting issues (e.g. related to gender, the environment) are relevant for this PPG and, if appropriate, how they will be addressed.

The majority of the research staff that will meet to develop the research proposal are women. A core team of the women who held lead roles in the previous ASEAN residue project will be part of this project as well. In the previous residue project, women led both field and laboratory analytical activities. Women do most of the jobs involved in horticulture, especially vegetable production. Conceivably, the reduction of off-target application of conventional pesticides will directly and indirectly improve the livelihood of women and their families in target countries by reducing unintentional pesticide exposure and increasing the exportability and trade of smallholder crops.

By reducing the use of conventional pesticides in horticultural crops and reducing off-target applications, exposure to bees and other sensitive species in the environment will decrease. Although conventional pesticides are safe when used appropriately, in reality good agricultural practices are not often followed in developing countries. In these cases, use of lower-risk biopesticides also protects the environment and provides ecological sustainability by conserving natural enemies and biodiversity.

II. IMPLEMENTATION & BUDGET

7. Who will take the lead in implementing this PPG? If particular national experts and/or international consultants are proposed, attach a copy of their Curriculum Vitae and record of achievements (Appendix 2). If no names are provided, the STDF will provide a shortlist of consultants if the PPG request is approved.

APAARI will lead the logistical implementation of the PPG and engage IR-4's technical expertise through a sub-contract, and USDA and country technical experts through direct consultation. The PPG will facilitate the development of details and arrangements for project implementation.

All partners will ensure that the PPG is used to develop a project that links to similar and related efforts in the target countries including FAO, CropLife Asia, pesticide manufacturers, exporter organizations, etc.

The project will call upon expert knowledge of minor use research by IR-4, USDA and technical country experts. This will involve the selection of field trial locations, crops/biopesticides, development of trial protocols to demonstrate biopesticide efficacy, and coordinating efforts for data reports and utilisation. The project will aim to demonstrate efficacy of biopesticides and to promote their use through increased commercialisation and thus availability to producers.

Activity	Responsible	Tentative date of Completion	Expected output
Designate contacts for participating countries at the ASEAN Pesticide Expert Working Group (EWG) meeting in Myanmar. The PPG meeting will include country representatives to develop the PG proposal.	APAARI IR-4 USDA	February 1, 2018	Term of reference (TOR) drafted Participating countries identified
Develop priority crop/chemical questionnaire for participating countries.	IR-4	February 28, 2018	Priority list of crop/conventional pesticide/biopesticides to address under the project Capacity of participating countries evaluated for making assignments
Discussions with potential partners, private sector, international organizations, donors	AAPAARI IR-4 USDA and Non- ASEAN and ASEAN member state representatives	February 28, 2018	Priority list of crop/conventional pesticide/biopesticides to address under the project Capacity of partners and other projects to add synergy identified
Draft proposal	APAARI	March 1, 2018	Develop full project grant proposal for STDF
Continue planning for work in anticipation of potential project approval.	IR-4 and APAARI	May 31, 2018	Study protocols developed; timing, rates, field locations, etc.

Budget

Activity	Responsible	Estimated Budget (US$)
Expertise *International Consultant: IR-4*	Technical guidance by IR-4 to develop planning meeting agenda, lead discussions, identify interested participating countries, develop country team members, consult with participating experts to determine priority crops/pesticides/biopesticides to include in the design of the project IR-4 advisor: 7 days @ $500 per day = **$3,500** APAARI technical inputs on crops, biopesticides,	USD $6,000

	markets and partners 5 days @ $500 per day = **$2500** *USDA to provide in-kind support for technical expert for planning and project development	
Travel for consultative workshop	Consultative Workshop on the sides of the annual ASEAN MRL EWG meeting (no participant travel costs needed) • IR-4 airfare **$3500** • APAARI airfare and visas; from Bangkok – **$500** • IR-4 per diem @ USD $287 per day x 5 days x 1 persons = **$1435** APAARI based on receipts of actual costs estimated to be $200 per day X 5 days = **$1,000** • Non-ASEAN participant travel (Nepal, Bangladesh and Sri Lanka) airfare 3 countries X $1,500 ($4,500) and per diem @287 per day X 3 days X 3 countries ($2,583) **=$7,083** • ASEAN participants (Thailand, Vietnam, Malaysia, Laos, Philippines) per diem 5 countries @287/day = **$1, 435** *USDA to provide in-kind support for technical expert travel	USD $14,953
Stakeholder meetings and workshops *If appropriate, include travel of participants, hire of venue, facilitator, etc.*	Consultative Workshop (Myanmar) • Venue cost @ USD **$750**; 1 day needed on sides of ASEAN EWG *In-kind contributions USD 3,225	USD $750
General operating expenses *If appropriate, include telephone calls, photocopying, administrative assistance, etc.*	Stationary, telephone cards, photocopies, internet, administrative costs • APAARI = **1060** • IR-4 costs = 500	USD $ 1,560
Project proposal compilation	APAARI, 10 days at $500 per day = **$5000** IR-4 ,5 days at $500 per day = **$2500**	USD $7,500
Subtotal		$ 30,763
Other costs (describe)	indirect costs at 12%	USD $3,691.56
TOTAL		**USD $ 34,454.56**

Appendixes

Appendix 1: Letters of support from each of the organizations supporting this proposal.

Appendix 2: Letter of Cooperation between IR-4 and APAARI and Curriculum Vitae.