



Bureau for Resilience, Environment, and Food Security

INITIAL ENVIRONMENTAL EXAMINATION AMENDMENT

PROJECT/ACTIVITY DATA

Project/Activity Name:	Feed the Future Innovation Lab for Horticulture
Geographic Location:	Central America - Guatemala
Amendment (Yes/No), if Yes indicate # (1, 2...):	Yes - Amendment 4
Implementation Start/End Dates (FY or M/D/Y):	10/1/2021 – 09/30/2026
Specify Amended End Date:	September 30th, 2026
Solicitation/Contract/Award Number:	7200AA21LE00003
Implementing Partner(s):	University of California, Davis
REFS Tracking ID:	RFS-23-09-010
Tracking ID of related IEEs:	BFS-20-03-002
Tracking ID of Other, Related Analyses:	None

ORGANIZATIONAL/ADMINISTRATIVE DATA

REFS Implementing Office:	REFS Center for Agriculture-Led Growth (CA)
Other Involved Operating Units:	USAID/Honduras, USAID/Guatemala
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Date Prepared:	9/15/2023

ENVIRONMENTAL COMPLIANCE REVIEW DATA

Analysis Type:	Initial Environmental Examination (IEE) Amendment
Environmental Determination:	Categorical Exclusion; Negative Determination with Conditions
IEE Expiration Date:	September 30th, 2026
Climate Risk Management Analysis:	2 low / 2 medium risks identified and addressed

PROJECT/ACTIVITY SUMMARY

The Feed the Future Innovation Lab for Horticulture is implementing four separate research projects in the Central America Sub-Region. The specific country where activities will occur is Guatemala.

Activities under this IEE amendment will end prior to the end date of the Prime Award - September 30th, 2026.

Activities include a combination of small-scale research trials, both confined and in the field. Field trials that are at field sites will be closely monitored by project teams. In addition to these agronomic trials, projects will implement a combination of lab analysis, market analysis, capacity strengthening, establishment of small-scale training centers, and social analyses. A summary of project activities follows:

Guatemala: Develop and validate appropriate agricultural technologies adapted to climate change for smallholders through adaptive research, field trials, and training as well as dissemination of the results. Research and trials will be conducted in protective structures and practices on the farm level to improve harvest and post-harvest management. Establish a local research center to provide important quality benchmarks and strengthen capacity building. Conduct comparative and cost-effectiveness analysis to identify a series of evidence-based recommendations about the most cost-effective mix of production infrastructure and harvest management practices.

Honduras: Increase capacity building for higher education students by providing seed funding and expert mentors for students to conduct small-scale research projects across the horticulture value chain.

ENVIRONMENTAL DETERMINATIONS

Upon approval of this document, the determinations become affirmed, per Agency regulations (22CFR216).

Table 1: Environmental Determinations

Projects/Activities	Categorical Exclusion Citation	Negative Determination
Project/Activity 1: Confined trials or monitored field trials	Applied research and capacity building that does NOT exceed 4 ha in a single location and DOES involve support or procurement of chemical pesticide, insecticide, or fertilizer input	Negative Determination, subject to the following conditions: · Appropriate pesticide and/or fertilizer use protocols to safeguard the health of research personnel and to protect local ecosystems are developed and implemented, based on toxicological and environmental data for the proposed pesticides or fertilizers. Such safeguards will address pesticide storage, handling and application, including the use of Personal Protective Equipment (PPE), cleanup and disposal. · Follow recommendations of PERSUAPS referenced in this IEE amendment.
Project/Activity 2: Confined trials or	Conducting applied research not exceeding 4 ha in a single location and NOT involving support for	Categorical Exclusion, per 22 CFR 216.2 (c) (2) (ii) Controlled experimentation exclusively for the purpose of research

monitored field trials without pesticides	procurement or use of chemical pesticides or fertilizers.	and field evaluation which are confined to small areas and carefully monitored.
Project/Activity 3: Desktop studies, data analysis, program administration, workshops and meetings.	Desktop studies, data analysis, program administration, workshops and meetings.	Categorical Exclusion, per 22 CFR 216.2 (c)(2)(iii) Analyses, studies, academic or research workshops and meetings
Project/Activity 4: Capacity strengthening centers	Establishment of training centers that include the demonstration of production practices and postharvest practices	Categorical Exclusion, per 22CFR 216.2(c)(i) Education, technical assistance, or training programs Note: no technologies established will be considered permanent structures and are capable of removal.

CLIMATE RISK MANAGEMENT

The proposed activities listed above may be impacted by the effects of climate change in Central America. Potential climate change stressors for the region include increased temperatures and evaporation, increased frequency of intense rainfall, drought, and rainfall variability. These stressors risk impacting agriculture via reduced yield, increased risk of pest infestation and crop disease, and disruption from damage to crops from floods, droughts, and erratic rains. Reduced river flows and groundwater recharge may lessen the supply of water for irrigated lands.

Pursuant to the ADS 201mal, USAID must factor climate resilience into international development programs to the extent allowable by law, assessing and addressing climate risk, as appropriate.

Consistent with ADS 201.3.4.5, if climate risk has not been adequately assessed at the strategy or project level, or if the risk rating was not exclusively determined to be “Low”, climate risk must be assessed, with plans specifying mitigation actions at the activity level.

The Climate Risk Screening below summarizes activity-level climate risk management, including programmatic components, identified risk and associated mitigation measures. The IP will implement identified actions during the life-of-project and report back regularly to the activity manager on the status of their implementation, to enable smooth oversight and ensure sustainability of developmental objective.

Although the agronomic trials are all small research plots, climate risk management will be considered throughout their implementation. As part of these trials, good agricultural practices will be followed to limit any input that may generate greenhouse gas emissions to only the essential application rate. Furthermore, research into improving soil health and the production of crops that are climate tolerant will inform other growers on how they can alter practices to reduce irrigation needs and other inputs while still achieving effective yields. Where possible, if plastic is utilized in the agronomic trials in any capacity, efforts will be made to preserve and upcycle the plastic or determine the alternatives to the use of plastic.

Trainings will typically be held locally in order to not only minimize travel (and emissions) but to meet the convenience of intended recipients of the trainings. Centers established for training or research will not require construction - these are sites that will display low-cost technologies that can help farmers improve

production and also postharvest outcomes. The reduction in postharvest losses will also decrease the level of methane emissions from perished horticulture crops.

According to Climate Risk Management for USAID Project and Activities ADS 201 “The goal of CRM is to both render USAID’s work more climate resilient (i.e., better able to anticipate, prepare for and adapt to changing climate conditions and withstand, respond to and recover rapidly from disruptions) and to avoid maladaptation (i.e., development efforts that inadvertently increase climate risks).” Agronomic research trials and postharvest management interventions will be aligned to help smallholder producers become more climate resilient through the use of better suited varieties, climate smart agriculture approaches, and the better preservation of commodities for home consumption or sale.

Activity	Risks	Risk Rating	How Risks are Addressed	Opportunities to Strengthen Climate Resilience
Project/Activity 1: Confined trials or monitored field trials	Changing weather patterns: unreliable rainfall, drought, increasing temperatures, pest impacts.	Medium - due to the small research trial size, climate change risk is medium, but we cannot predict weather for seasons targeted for research trials	Use of GAP. Building of soil health. Use of IPM (Monitor, Identify, Control (mechanical), Biocontrol, Chemical Control, Evaluate). The activity will address any adverse effects on program implementation through proactive climate mitigation planning.	Encourage practices that build soil health, utilize abiotic stress tolerant varieties, use of efficient irrigation practices (while considering recycling, life cycle of the plastic). Track weather patterns in the area. Opportunity to sensitize key stakeholders and communities at national, provincial, municipal, and local levels on the importance of climate change risks and their impacts during training. Opportunity to lay the groundwork for field trials for new crop varieties that have enhanced resistance to abiotic and biotic stressors.
Project/Activity 2: Confined trials or monitored field trials without pesticides	Changing weather patterns: unreliable rainfall, drought, increasing temperatures, pest impacts.	Medium - due to the small research trial size, climate change risk is medium, but we cannot predict weather for seasons	Use of GAP. Building of soil health. Use of IPM (Monitor, Identify, Control (mechanical), Evaluate). The activity will address any adverse effects on program implementation through	Encourage practices that build soil health, utilize abiotic stress tolerant varieties, use of efficient irrigation practices (while considering recycling, life cycle of the plastic). Track weather patterns in the area. Opportunity to sensitize key stakeholders and communities at national, provincial, municipal, and local levels on the importance of climate change risks and their impacts during training.

Activity	Risks	Risk Rating	How Risks are Addressed	Opportunities to Strengthen Climate Resilience
		targeted for research trials.	proactive climate mitigation planning.	Opportunity to lay the groundwork for field trials for new crop varieties that have enhanced resistance to abiotic and biotic stressors.
Project/Activity 3: Desktop studies, data analysis, program administration, workshops and meetings.	Unpredictable weather patterns. Storms and floods could damage infrastructure; road, house, water, health, communication and other services. Heat waves, droughts and floods could injure communities and individuals. This could impact capacity to administer the program or conduct training.	“Low” Impact of climate risks on the implementation of this largely desk-based activity is considered Low.	Much of this activity requires desk-based implementation and will therefore not be affected by climate change during LOP. The activity will address any adverse effects on program implementation through proactive climate mitigation planning.	Opportunity to sensitize key stakeholders and communities at national, provincial, municipal, and local levels on the importance of climate change risks and their impacts during training.
Project/Activity 4: Capacity strengthening / training centers	Unpredictable weather patterns. Storms and floods could damage infrastructure; road, house, water, health, communication and other services. Heat waves, droughts and floods could injure communities and individuals. This could impact capacity to conduct training at a field site or at a center location.	“Low” Impact of climate risks on the implementation of this largely capacity strengthening activity is considered Low.	The activity will address any adverse effects on program implementation through proactive climate mitigation planning.	Opportunity to sensitize key stakeholders and communities at national, provincial, municipal, and local levels on the importance of climate change risks and their impacts during training.

Table 1. List of Requested Pesticides

Active Ingredient	Pesticide Type	PERSUAP Title	EPA Reg Number	Country
Abamectin	Insecticide	Programmatic Pesticide Evaluation Report FAW	100-1259	Guatemala
Acetamiprid	Insecticide	Programmatic Pesticide Evaluation Report FAW	2749-609	Guatemala
Azadirachtin	Insecticide	Feed the Future Guatemala Project for Innovative Solutions for Agricultural Value Chains (PROINNOVA)	62552-3	Guatemala
Azoxystrobin	Fungicide	Feed the Future Guatemala Project for Innovative Solutions for Agricultural Value Chains (PROINNOVA)	91127-10	Guatemala
bacillus thuringiensis subsp. Kurstaki	Insecticide	Programmatic Pesticide Evaluation Report FAW		Guatemala
Beauveria bassiana	Insecticide	Programmatic Pesticide Evaluation Report FAW		Guatemala
Benzovindiflupyr	Fungicide	Feed the Future Guatemala Project for Innovative Solutions for Agricultural Value Chains (PROINNOVA)	100-1478	Guatemala
Bifenazate	Acaricide	Feed the Future Guatemala Project for Innovative Solutions for Agricultural Value Chains (PROINNOVA)	91813-2	Guatemala
Boscalid	Fungicide	Feed the Future Guatemala Project for Innovative Solutions for Agricultural Value Chains (PROINNOVA)	7969-198	Guatemala

Active Ingredient	Pesticide Type	PERSUAP Title	EPA Reg Number	Country
Buprofezin	Insecticide	Feed the Future Guatemala Project for Innovative Solutions for Agricultural Value Chains (PROINNOVA)	71711-20	Guatemala
Carbaryl	Insecticide	Feed the Future Guatemala Project for Innovative Solutions for Agricultural Value Chains (PROINNOVA)	19713-75	Guatemala
Carbaryl	Insecticide	Feed the Future Guatemala Project for Innovative Solutions for Agricultural Value Chains (PROINNOVA)	34704-447	Guatemala
Chlorantraniliprole	Insecticide	Feed the Future Guatemala Project for Innovative Solutions for Agricultural Value Chains (PROINNOVA)	279-9621	Guatemala
Copper hydroxide	Fungicide	Feed the Future Guatemala Project for Innovative Solutions for Agricultural Value Chains (PROINNOVA)	55272-19	Guatemala
Copper oxychloride	Fungicide	Feed the Future Guatemala Project for Innovative Solutions for Agricultural Value Chains (PROINNOVA)	55272-14	Guatemala
Cyantraniliprole	Insecticide	Feed the Future Guatemala Project for Innovative Solutions for Agricultural Value Chains (PROINNOVA)	279-9627	Guatemala
Deltamethrin	Insecticide	Programmatic Pesticide Evaluation Report FAW	10163-409	Guatemala
Difenoconazole	Fungicide	Feed the Future Guatemala Project for Innovative Solutions for Agricultural Value Chains (PROINNOVA)	87373-43	Guatemala

Active Ingredient	Pesticide Type	PERSUAP Title	EPA Reg Number	Country
Dimethoate	Insecticide	Programmatic Pesticide Evaluation Report FAW	19713-209	Guatemala
Imidacloprid	Insecticide	Programmatic Pesticide Evaluation Report FAW	1381-231	Guatemala
Indoxacarb	Insecticide	Feed the Future Guatemala Project for Innovative Solutions for Agricultural Value Chains (PROINNOVA)	352-694	Guatemala
lambda-Cyhalothrin	Insecticide	Programmatic Pesticide Evaluation Report FAW	100-1107	Guatemala
Mancozeb	Fungicide	Feed the Future Guatemala Project for Innovative Solutions for Agricultural Value Chains (PROINNOVA)	87845-4	Guatemala
Metaldehyde	Molluscicide	Feed the Future Guatemala Project for Innovative Solutions for Agricultural Value Chains (PROINNOVA)	6836-107	Guatemala
Oxytetracycline	Bactericide	Feed the Future Guatemala Project for Innovative Solutions for Agricultural Value Chains (PROINNOVA)	71185-5	Guatemala
Oxytetracycline hydrochloride	Bactericide	Feed the Future Guatemala Project for Innovative Solutions for Agricultural Value Chains (PROINNOVA)	71185-5	Guatemala
Penthiopyrad	Fungicide	Feed the Future Guatemala Project for Innovative Solutions for Agricultural Value Chains (PROINNOVA)	86203-1	Guatemala

Active Ingredient	Pesticide Type	PERSUAP Title	EPA Reg Number	Country
Pyriproxyfen	Insecticide	Feed the Future Guatemala Project for Innovative Solutions for Agricultural Value Chains (PROINNOVA)	87373-18	Guatemala
Spinetoram	Insecticide	Feed the Future Guatemala Project for Innovative Solutions for Agricultural Value Chains (PROINNOVA)	62719-539	Guatemala
Spinosad	Insecticide	Feed the Future Guatemala Project for Innovative Solutions for Agricultural Value Chains (PROINNOVA)	168316-95-8	Guatemala
Streptomycin sulfate	Bactericide	Feed the Future Guatemala Project for Innovative Solutions for Agricultural Value Chains (PROINNOVA)	55146-79	Guatemala
Tebuconazole	Fungicide	Feed the Future Guatemala Project for Innovative Solutions for Agricultural Value Chains (PROINNOVA)	74054-4	Guatemala
Thiabendazole	Fungicide	Feed the Future Guatemala Project for Innovative Solutions for Agricultural Value Chains (PROINNOVA)	148-79-8	Guatemala
Thiophanate-methyl	Fungicide	Feed the Future Guatemala Project for Innovative Solutions for Agricultural Value Chains (PROINNOVA)	23564-05-8	Guatemala
Trifloxystrobin	Fungicide	Feed the Future Guatemala Project for Innovative Solutions for Agricultural Value Chains (PROINNOVA)	264-776	Guatemala

Table 2. List of Requested Fertilizers

Product Name/Type	Organic or Inorganic	Application
Processed poultry litter	Organic	The organic material will be applied during the preparation of the culture bed. It is placed in a narrow trench in the center of the bed and then covered with soil. The soil preparation is done manually using a hoe. All the organic materials will be tested for human pathogens before implementing the field evaluation in order to identify those materials with no risk for human health.
Compost	Organic	The organic material will be applied during the preparation of the culture bed. It is placed in a narrow trench in the center of the bed and then covered with soil. The soil preparation is done manually using a hoe. All the organic materials will be tested for human pathogens before implementing the field evaluation in order to identify those materials with no risk for human health.
Dehydrated poultry litter + lime	Organic	The organic material will be applied during the preparation of the culture bed. It is placed in a narrow trench in the center of the bed and then covered with soil. The soil preparation is done manually using a hoe. All the organic materials will be tested for human pathogens before implementing the field evaluation in order to identify those materials with no risk for human health.
Vermicompost	Organic	The organic material will be applied during the preparation of the culture bed. It is placed in a narrow trench in the center of the bed and then covered with soil. The soil preparation is done manually using a hoe. All the organic materials will be tested for human pathogens before implementing the field evaluation in order to identify those materials with no risk for human health.
Composted poultry litter	Organic	The organic material will be applied during the preparation of the culture bed. It is placed in a narrow trench in the center of the bed and then covered with soil. The soil preparation is done manually using a hoe. All the organic materials will be tested for human pathogens before implementing the field evaluation in order to identify those materials with no risk for human health.