



# Bureau for Resilience, Environment and Food Security

## INITIAL ENVIRONMENTAL EXAMINATION AMENDMENT

### PROJECT/ACTIVITY DATA

<b>Project/Activity Name:</b>	Feed the Future Innovation Lab for Horticulture
<b>Geographic Location:</b>	West Africa - Ghana, Mali, Nigeria, Guinea Bissau
<b>Amendment (Yes/No), if Yes indicate # (1, 2...):</b>	Yes - Amendment 1
<b>Implementation Start/End Dates (FY or M/D/Y):</b>	10/1/2021 – 09/30/2026
<b>Specify Amended End Date:</b>	September 30th, 2026
<b>Solicitation/Contract/Award Number:</b>	7200AA21LE00003
<b>Implementing Partner(s):</b>	University of California, Davis
<b>REFS Tracking ID:</b>	RFS-23-09-004
<b>Tracking ID of related IEEs:</b>	<a href="#">BFS-20-03-002</a>
<b>Tracking ID of Other, Related Analyses:</b>	none

### ORGANIZATIONAL/ADMINISTRATIVE DATA

<b>REFS Implementing Office:</b>	REFS Center for Agriculture-Led Growth (CA)
<b>Other Involved Operating Units:</b>	USAID/Ghana, /Mali, /Nigeria, /Guinea Bissau
<b>Prepared by:</b>	Daniel Bailey, Archie Jarman
<b>Date Prepared:</b>	9/15/2023

### ENVIRONMENTAL COMPLIANCE REVIEW DATA

<b>Analysis Type:</b>	Initial Environmental Examination (IEE) Amendment
<b>Environmental Determination:</b>	Categorical Exclusion; Negative Determination with Conditions
<b>IEE Expiration Date:</b>	September 30th, 2026
<b>Climate Risk Management Analysis:</b>	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 West Africa Sub-Region. The specific countries where activities will occur are Ghana, Mali, Nigeria, and Guinea Bissau.

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

This project will utilize pesticides for both research and demonstration activities. The Implementing Partner will follow all requirements of the PERSUAPs listed in the table below, including allowable pesticides, elements of §216.3(b) Pesticide Procedures, and the safe use of pesticides per the Safe Use Action Plan.

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 lab analysis of indigenous vegetables, market analysis, capacity strengthening, nutritional analysis (dietary surveys), establishment of small-scale training centers, and social analyses. A summary of project activities follows:

**Ghana and Mali:** Implement research plots at confined trials and monitored field site to evaluate optimum agronomic practices and determine which indigenous vegetables available in Ghana and Mali are best suited to agroecological zones with a focus on climate resilience. Assess indigenous fruit and vegetable value chains to profile and identify cultural properties of indigenous fruits and vegetables to understand regional demand and supply, characterize them in terms of agronomic practices, nutritional composition, postharvest practices and value addition potential. Research pathways to strengthen indigenous fruit and vegetable seed production systems, identify nutrient-rich, climate-resilient high- yielding indigenous vegetable genotypes for production among smallholder farmers in Ghana and Mali. Develop an accessible database of indigenous fruits and vegetables in West Africa, to fill the existing use and nutrient knowledge gaps. Research consumer preferences to determine pathways for promoting consumption of indigenous fruit and vegetables. Integrate education, health and agriculture to improve fruit and vegetable consumption behavior in communities.

**Nigeria:** Research climate-smart agronomic practices with indigenous vegetables that improve soil health while engaging youth at confined trials and monitored field sites. Utilize sites for demonstration and research trials that are accessible to youth (schools for example) and research methods for promoting engagement with indigenous vegetables as a means to increase youth participation in the horticulture sector.

**Guinea Bissau:** Research conducted on key crops to determine best agronomic practices and suitable production zones. Institutional and local capacity strengthening through farmer field schools and other training in a range of horticulture production and postharvest management topics. Establishment of horticulture centers to demonstrate, conduct training, and research technologies and practices for improved production and postharvest management. Research pathways to improve the seed supply for targeted crops in Guinea Bissau.

## 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	<p>Negative Determination, subject to the following conditions:</p> <ul style="list-style-type: none"> <li>· 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.</li> <li>· Follow recommendations of PERSUAPS referenced in this IEE amendment.</li> </ul>
Project/Activity 2: Confined trials or monitored field trials without pesticides	Conducting applied research not exceeding 4 ha in a single location and NOT involving support for procurement or use of chemical pesticides or fertilizers.	Categorical Exclusion, per 22 CFR 216.2 (c)(2)(ii) Controlled experimentation exclusively for the purpose of research 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	<p>Categorical Exclusion, per 22CFR 216.2(c)(i) Education, technical assistance, or training programs</p> <p>Note: no technologies established will be considered permanent structures and are capable of removal.</p>

**CLIMATE RISK MANAGEMENT**

The proposed activities listed above may be impacted by the effects of climate change in West Africa. Potential climate change stressors include rising temperatures/evaporation rates and increased frequency and intensity of heavy rainfall events. Risks include disruption of agricultural activities due to heat stress, water stress, heavy rainfall, flooding, erosion, and/or waterlogging as well as increased incidence of crop pests and disease. Disruption of transportation networks and access to agricultural inputs and markets (e.g

flood and landslide damage and destruction of roads and bridges) is also a potential risk, as well as damage to facilities and infrastructure.

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	Use of GAP. Building of soil health. Use of IPM (Monitor, Identify, Control (mechanical), Biocontrol,	Encourage practices that build soil health, utilize abiotic stress tolerant varieties, use of efficient irrigation practices

Activity	Risks	Risk Rating	How Risks are Addressed	Opportunities to Strengthen Climate Resilience
		seasons targeted for research trials	Chemical Control, Evaluate). The activity will address any adverse effects on program implementation through proactive climate mitigation planning.	(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 targeted for research trials.	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 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

Activity	Risks	Risk Rating	How Risks are Addressed	Opportunities to Strengthen Climate Resilience
				<p>communities at national, provincial, municipal, and local levels on the importance of climate change risks and their impacts during training.</p> <p>Opportunity to lay the groundwork for field trials for new crop varieties that have enhanced resistance to abiotic and biotic stressors.</p>
<p>Project/Activity 3: Desktop studies, data analysis, program administration, workshops and meetings.</p>	<p>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 individual. This could impact capacity to administer the program or conduct training.</p>	<p>“Low” Impact of climate risks on the implementation of this largely desk-based activity is considered Low.</p>	<p>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.</p>	<p>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.</p>
<p>Project/Activity 4: Capacity strengthening/ training centers</p>	<p>Unpredictable weather patterns. Storms and floods could damage infrastructure;</p>	<p>“Low” Impact of climate risks on the implementation of this largely</p>	<p>The activity will address any adverse effects on program implementation</p>	<p>Opportunity to sensitize key stakeholders and communities at national,</p>

Activity	Risks	Risk Rating	How Risks are Addressed	Opportunities to Strengthen Climate Resilience
	road, house, water, health, communication and other services. Heat waves, droughts and floods could injure communities and individual. This could impact capacity to conduct training at a field site or at a center location.	capacity strengthening activity is considered Low.	through proactive climate mitigation planning.	provincial, municipal, and local levels on the importance of climate change risks and their impacts during training.

**IMPLEMENTATION**

In accordance with 22CFR216 and Agency policy, the conditions and requirements of this document become mandatory upon approval. This includes the relevant limitations and conditions enumerated in this document as well as the requirements of the original IEE.

Approval:         Jerry Glover                 12/1/2023          
Jerry Glover, REFS Center for Agriculture-Led Growth Acting Director Date

Clearance:         Daniel Bailey                 10/27/2023          
Daniel Bailey, REFS/CA, A/COR Date

Clearance:         Faith Bartz Tarr                 11/29/2023          
Faith Bartz Tarr, REFS/CA, Climate Integration Lead Date

Concurrence: \_\_\_\_\_  
William Thomas, REFS Bureau Environmental Officer Date

### LIMITATIONS OF THIS INITIAL ENVIRONMENTAL EXAMINATION

The determinations recommended in this document apply only to projects/activities and sub-activities described herein. Other projects/activities that may arise must be documented in either a separate IEE, an IEE amendment if the activities are within the same project/activity or other type of environmental compliance document and shall be subject to an environmental analysis within the appropriate documents listed above.

Other than projects/activities determined to have a Positive Threshold Determination, it is confirmed that the projects/activities described herein do not involve actions normally having a significant effect on the environment, including those described in 22CFR216.2(d).

In addition, other than projects/activities determined to have a Positive Threshold Determination and/or a pesticide management plan (Pesticide Evaluation Report Safe Use Action Plan - PERSUAP), it is confirmed that the projects/activities described herein do not involve any actions listed below. Any of the following actions would require additional environmental analyses and environmental determinations:

- Support project preparation, project feasibility studies, or design for activities listed in §216.2(d)(1);
- Affect endangered and threatened species or their critical habitats per §216.5, FAA 118, FAA 119;
- Provide support to extractive industries (e.g. mining and quarrying) per FAA 117;
- Promote timber harvesting per FAA 117 and 118;
- Lead to new construction, reconstruction, rehabilitation, or renovation work per §216.2(b)(1);
- Support agro-processing or industrial enterprises per §216.1(b)(4);
- Provide support for regulatory permitting per §216.1(b)(2);
- Lead to privatization of industrial facilities or infrastructure with heavily polluted property per §216.1(b)(4);
- Research, testing, or use of genetically engineered organisms per §216.1(b)(1), ADS 211;
- Assist the procurement (including payment in kind, donations, guarantees of credit) or use (including handling, transport, fuel for transport, storage, mixing, loading, application, clean-up of spray equipment, and disposal) of pesticides or activities involving procurement, transport, use, storage, or disposal of toxic materials. Pesticides cover all insecticides, fungicides, rodenticides, etc. covered under the Federal Insecticide, Fungicide, and Rodenticide Act per §216.2(e) and §216.3(b).

### REVISIONS

Per 22CFR216.3(a)(9), when ongoing programs are revised to incorporate a change in scope or nature, a determination will be made as to whether such change may have an environmental impact not previously assessed. If so, this IEE will be amended to cover the changes. Per ADS 204, it is the responsibility of the USAID A/COR to keep the REFS BEO informed of any new information or changes in the activity that might require revision of this environmental analysis and environmental determination.



List of Requested Pesticides

Active Ingredient	Pesticide Type	PERSUAP Title and Link to ECD File	EPA Reg Number	Country
2,4-D Dimethylamine salt	Herbicides	<a href="#">Programmatic PERSUAP Mali / Phosphine Fumigation Stored Agricultural Ghana / Programmatic PERSUAP Nigeria</a>	84009-4	Mali,Ghana, & Nigeria
Acetochlor	Herbicides	<a href="#">Phosphine Fumigation Stored Agricultural Ghana</a>	66478-2	Ghana
Ametryn	Herbicides	<a href="#">Phosphine Fumigation Stored Agricultural Ghana</a>	100-579	Ghana
Azadirachtin	Insecticide	<a href="#">Programmatic Pesticide Evaluation Report FAW</a>	121701	Nigeria
Chlorpyrifos-methyl	Insecticide	<a href="#">Programmatic PERSUAP Mali</a>		Mali
Copper oxychloride	Fungicides	<a href="#">Phosphine Fumigation Stored</a>	55272-14	Ghana

		<a href="#">Agricultural Ghana</a>		
Copper sulfate (pentahydrate)	Fungicides	<a href="#">Programmatic PERSUAP Mali / Phosphine Fumigation Stored Agricultural Ghana</a>	46923-4-50661	Mali & Ghana
Deltamethrin	Insecticide	<a href="#">Programmatic PERSUAP Mali / Phosphine Fumigation Stored Agricultural Ghana</a>	432-879	Mali & Ghana
Dicamba	Herbicides	<a href="#">Programmatic PERSUAP Mali / Phosphine Fumigation Stored Agricultural Ghana</a>	70506-505	Mali & Ghana
Dimethoate	Insecticide	<a href="#">Programmatic PERSUAP Mali / Phosphine Fumigation Stored Agricultural Ghana</a>	70506-455	Mali & Ghana
Dimethomorph	Fungicides	<a href="#">Phosphine Fumigation Stored Agricultural Ghana</a>	241-382	Ghana

Glyphosate	Herbicides	<a href="#">Programmatic PERSUAP Mali / Phosphine Fumigation Stored Agricultural Ghana / Programmatic PERSUAP Nigeria</a>	87659-3	Mali,Ghana, & Nigeria
Glyphosate Isopropylammonium (isopropylamine salt)	Herbicide	<a href="#">Programmatic PERSUAP Nigeria</a>	103601	Nigeria
Imidacloprid	Insecticide	<a href="#">Programmatic PERSUAP Mali / Phosphine Fumigation Stored Agricultural Ghana</a>	101563-100	Mali & Ghana
Indoxacarb	Insecticide	<a href="#">Programmatic PERSUAP Mali / Phosphine Fumigation Stored Agricultural Ghana</a>	279-9588	Mali & Ghana
Lambda-cyhalothrin	Insecticide	<a href="#">Programmatic PERSUAP Mali / Phosphine Fumigation Stored Agricultural Ghana</a>	74530-23	Mali & Ghana

Mancozeb	Fungicides	<a href="#">Programmatic PERSUAP Mali / Phosphine Fumigation Stored Agricultural Ghana</a>	89333-3	Mali & Ghana
Myclobutanil	Fungicides	<a href="#">Programmatic PERSUAP Mali</a>	35935-99	Mali
Pirimiphos-methyl	Insecticide	<a href="#">Programmatic PERSUAP Mali / Phosphine Fumigation Stored Agricultural Ghana</a>	1381-268	Mali & Ghana
Propiconazole	Fungicides	<a href="#">Phosphine Fumigation Stored Agricultural Ghana</a>	92564-38	Ghana
Sulfur (sulphur, hydrogen sulphide)	Fungicides	<a href="#">Phosphine Fumigation Stored Agricultural Ghana</a>	67702-17	Ghana
Thiophanate methyl	Fungicides	<a href="#">Programmatic PERSUAP Mali</a>	1001-63	Mali