STANDARD SECTOR INDICATOR CODE: AG-002 FTF (FTF Code: EG.3.2-7)	**New Technologies and Practices – Development:** Number of technologies or management practices under research, under field testing, or made available for transfer as a result of Peace Corps assistance. (AG-002 FTF)	
AGRICULTURE SECTOR	**Sector Schematic Alignment** *Note: This indicator belongs to the "Ag Production and Improved Cultivation Practices" Project Area and "Extension Methodology: Farmer Field Schools" Project Activities/Training Package (PA/TP) within the AG Sector but is borrowed by the following Project Activities/Training Packages within the AG and ENV Sectors.* **AG Sector ("Home" of the SSI)** **PA/TP:** Extension Methodology: Farmer Field Schools **AG Sector** **PA/TP:** Soil and Water Conservation and Management, Staple Crops, Gardens, Agroforestry, & Small Animal Husbandry: Chickens/Beekeeping **ENV Sector** **PA/TP:** Soil and Water Conservation and Management, & Agroforestry	
Type: Output	**Unit of Measure**: Technologies or Management Practices	**Disaggregation:** **Phase of development**: Phase I (Under research), Phase II (Under field testing), Phase III (Made available for transfer)

Definitions:

This indicator is for research activities and tracks the progression of new or significantly improved technologies through the research and development (R&D) process. It should not be used to track technologies being disseminated through "implementation" activities. Technologies to be counted are agriculture-related technologies and innovations including those that address climate change adaptation and mitigation (including carbon sequestration, clean energy, and energy efficiency as related to agriculture), and may relate to any of the products at any point on the supply chain.

Relevant technologies include but are not limited to:

- Mechanical and physical: New land preparation, harvesting, processing and product handling technologies, including packaging, sustainable water management practices; sustainable land management practices; sustainable fishing practices;
- Biological: New germ plasm (varieties, breeds, etc.) that could be higher-yielding or higher in nutritional content and/or more resilient to climate impacts; bio-fortified crops such as vitamin A-rich sweet potatoes or rice, or high-protein maize, or improved livestock breeds; soil management practices that increase biotic activity and soil organic matter levels; and livestock health services and products such as vaccines;
- Chemical: Fertilizers, insecticides, and pesticides sustainably and environmentally applied, and soil amendments that increase fertilizer-use efficiencies;
- Management and cultural practices: Information technology, improved/sustainable agricultural production and marketing practices, increased use of climate information for planning risk management strategies, climate

change mitigation and energy efficiency, and natural resource management practices that increase productivity and/or resiliency to climate change. Integrated Pest Management (IPM), Integrated Soil Fertility Management (ISFM), and Post-Harvest Handling (PHH) as related to agriculture should all be included as improved technologies or management practices

Significant improvements to existing technologies should also be counted against this indicator; an improvement would be significant if, among other reasons, it served a new purpose or allowed a new class of users to employ it. Examples include a new blend of fertilizer for a particular soil, tools modified to suit a particular management practice, and improved fishing gear.

A description of the three phases of research and development is below. It is not required that a technology pass through all three phases to be reported under the indicator. For example, a seed variety that is only being field-tested for country-level adaptation and then submitted for country-level certification would only be tracked through phases II and III.

***Phase I:** "under research" means under controlled conditions by qualified researchers to support development of the product or process.

New technologies or management practices under research counted should be only those under research in the current reporting (fiscal) year. Any new technology or management practice under research in a previous fiscal year but not under research in the reporting (fiscal) year should not be included. Technologies under research are as follows:

a. For biotech crop research: When technologies are under research, the process is contained in a laboratory or greenhouse; once the possibility of success is judged high enough, a permit is required to move to field testing. The change of location from a contained laboratory or greenhouse to a confined field and the receipt of a permit indicate that the research has completed the —under research stage.

b. For non-biotech crop research: When technologies are under research, plant breeders work on developing new lines on research plots under controlled conditions. All research should have a target, often expressed in terms of traits to be combined into a specific cultivar or breed. When the research achieves —proof of concept (by accumulating technical information and test results that indicate that the target is achievable), the —under research phase is completed. Note that for crops, much or all of this phase might be conducted outdoors and in soil; these attributes do not make this work —field testing.

c. For non-crop research: "under research" signifies similarly research conducted under ideal conditions to develop or support the development of the product or process.

***Phase II:** "under field testing" means that research has moved from focused development to broader testing and this testing is underway under conditions intended to duplicate those encountered by potential users of the new technology. This might be in the actual facilities (fields) of potential users, or it might be in a facility set up to duplicate those conditions. More specifically:

a. For biotech crop research: Once a permit has been obtained and the research moves to a confined field, the research is said to be —under field testing.

b. For non-biotech crop or fisheries research: During this phase the development of the product or technology continues under end-user conditions in multi-location trails, which might be conducted at a research station or on farmers'/producer's fields/waters or both.

Note that for crops, all of this phase would be conducted outdoors and in soil, but this is not what makes this

work ”field testing”.

c. For non-crop research: —”under field testing” signifies similarly research conducted under user conditions to further test the product, process, or practice. In the case of research to improve equipment, the endpoint of field testing could be sales of equipment (when the tester is a commercial entity). In other cases it could be distribution of designs (when the tester is a noncommercial entity) and also distribution of publications or other information (on the force of the good results of field testing).

***Phase III:** “made available for transfer” means that the product or process has received all required approvals, has a proven benefit, and is ready for broad-scale use.

Note that completing a research activity does not in itself constitute having made a technology available. In the case of crop research that developed a new variety, e.g., the variety must have passed through any required approval process, and seed of the new variety should be available for multiplication. The technology should have proven benefits and be as ready for use as it can be as it emerges from the research and testing process. In some cases more than one operating unit may count the same technology. This would occur if the technology were developed, for instance, in collaboration with a U.S. university and passed through regional collaboration to other countries.
Also note that this phase counts technologies that are now able to be transferred to an end user. It does not count the number of technologies actually transferred by public or private entities, including implementing partners. Completing a research activity does not in itself constitute having made a technology available for transfer. Conditions may need to be met before a technology can move into the public domain, and this Phase captures technologies that have met these conditions. For example, in the case of crop research that developed a new variety, the variety has to pass through any required approval and certification process, and seed of the new variety should be available for multiplication in order for the seed to be available to public or private entities which can then transfer to the end user.

Technologies made available for transfer should be only those made available in the current reporting year. Any technology made available in a previous fiscal year should not be included for this indicator

Fiscal year – October 1 to September 30

Rationale: This indicator tracks the three stages in research and technology investments, and progress toward dissemination.

Measurement Notes:

1. **Sample Tools and/or Possible Methods:** Volunteers should use data collection tools to measure progress against project indicators. For this Standard Sector Indicator, a tracking sheet that collects the number of technologies or management practices in one of the following phases of development; under research, under field testing, or available for transfer, will capture the needed data.

2. **General Data Collection for Volunteer Activities:** All Volunteer activities should be conducted with the intention of achieving outcomes – knowledge change (short-term), skills demonstration (intermediate-term), and behavioral changes (intermediate to long term) as defined by the progression of indicators within the objectives of a project framework. The progression of measurement for all Volunteer activities should begin with baseline data being conducted prior to the implementation of an activity (or set of activities), followed by documenting any outputs of the activities and then later at the appropriate time, measurements of specific outcomes (see “Frequency of Measurement”).

3. **Activity-Level Baseline Data Collection:** Because this is an output indicator that does not measure any change,

there is no need to take a baseline measurement before reporting the results of this indicator. However, Volunteers should take baseline measurements for any outcome indicators that are related to this output indicator. Refer to the project framework to review related outcome indicators.

4. **Frequency of Measurement:** An output indicator only needs to be measured once—in this case, every time a technology or management practice in one of the following phases of development; under research, under field testing, or available for transfer, a Volunteer will want to keep track and report on it in the next VRF.

5. **Definition of Change:** Outputs do not measure change. However, if desired, a minimum expectation can be set for meeting the output. See above ("Definition") for explanation of change for each phase of development.

6. **General Reporting in the VRF**: In the case of output indicators, Volunteers only have one box to fill in on their VRF: "total # (number)."

7. **Reporting on Disaggregated Data in the VRF:** This indicator is disaggregated by "Phase of Development". When reporting in the VRF, a Volunteer should disaggregate the total number of technologies or management practices by under research, under field testing or available for transfer.

Data Quality Assessments (DQA): DQAs are needed for each indicator selected to align with the project objectives. DQAs review the validity, integrity, precision, reliability, and timeliness of each indicator. For more information, consult the Peace Corps MRE Toolkit.

Alignment with Summary Indicator: AG. NEW TECH/MGMT PRACTICES, & ENV. IMPROVED NAT. RES. MGMT PRACTICES