PROJECT: STDF/PG/344

ESTABLISHMENT OF A REGIONAL VIRTUAL FOOD INSPECTION SCHOOL IN CENTRAL AMERICA AND DOMINICAN REPUBLIC

FINAL REPORT

JULY 29, 2016

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PROJECT INFORMATION

Title
Establishment of a Regional Virtual Food Inspection School in Central America and Dominican Republic

Implementing Agency

Inter-American Institute for Cooperation on Agriculture

Partners

Ministries of Agriculture from Belize, Costa Rica, Dominican Republic, Guatemala, El Salvador, Honduras, Nicaragua and Panama

Start Date

July 1, 2012

End Date

June 30, 2016

Beneficiary
Governments of the region will also benefit through the creation of a technically educated body of food inspectors

Budget

Project value:	US$**1.534.294,00**
STDF contribution:	US$ **977.643,00**

LIST OF ABBREVIATIONS

…
ASSA: Argentina. Agencia Santafesina de Seguridad Alimentaria
BAHA: Belize Agriculture Food Safety Authority
CAC: Central American Agricultural Council Ministers of Public Health,
COMISCA: Council of Health Ministers of Central America
ERVIA: Regional Virtual Food Inspection School
FAO: Food and Agriculture Organization of the United Nations
STDF: Standards and Trade Development Facility
IICA: Inter-American Institute for Cooperation on Agriculture
INA: Costa Rica. National Learning Institute
INCAP: Instituto de Nutrición de Centroamérica y Panamá
MAGA: Guatemala. Ministry of Agriculture, Livestock and Food
MSPAS: Guatemala. Ministry of Public Health and Social Welfare
OIRSA: International Regional Organization on Agricultural Health
PAHO: Pan American Health Organization
SENASA: Honduras. National Agricultural Health Service
UJMD: El Salvador. Universidad Jose Matias Delgado
UNAN Leon: Universidad Nacional Autonoma de Nicaragua, Leon
UNL: University of Nebraska-Lincoln, USA
UNAM: Universidad Nacional Autonoma de México
URL: Guatemala: Universidad Rafael Landivar
…

1. EXECUTIVE SUMMARY

Background
The project was conceived to address the need for harmonized food inspection protocols throughout Central America and in the Dominican Republic. Harmonization efforts were viewed within the context of economic integration and the Central American customs union.

General objective
The general objective was to improve the safety of fresh or processed foods originating in the region and thus, to facilitate trade and improve public health through harmonized modern inspection procedures carried out by a team of properly trained food inspectors in every country of the region.

Goal
To develop a virtual course for food inspectors and for food safety auditors.

Results:

Output 1: Institutional framework of a regional virtual food inspection school

- One Academic Council comprised by representatives of the eight Universities formed and leading the process.
- One Technical Consultative Group made up of representatives of the governmental sectors with competence in the subject of food inspection (Ministries of Agriculture and Ministries of Health) was formed.
- One sustainability proposal developed to guide and support the sustainability of ERVIA
- A new organizational structure for ERVIA in place. The University of Costa Rica was chosen as the Acting Secretariat.
- University Jose Matias Delgado (El Salvador), UNAN Leon (Nicaragua) and Universidad Nacional Agricola (Honduras) sent formal letters to IICA with the objective of developing virtual training initiatives at the country level.
- One regional network of academic experts on food inspection
- Technical basis to continue working on capacity development and harmonization of inspection mechanisms at the regional and country levels

Output 2: To create a virtual course for food safety inspectors

- The virtual course on food inspection is available -in Spanish- on IICA's virtual platform.
- Forty-three (43) professionals from the Universities were trained as virtual teachers and as academic assistants
- Two installments of the virtual training were conducted: February 18 to September 18, 2015; and October 20, 2015 to April 26, 2016.

    - 936 inspectors from eight countries were enrolled
    - 544 inspectors completed courses
    - 479 inspectors passed the training
        - Honduras: 48
        - Dominican Republic: 47
        - El Salvador: 104
        - Panama: 23
        - Guatemala: 43
        - Costa Rica: 144
        - Belize: 6
        - Nicaragua: 64

- Seven letters of understanding were signed between IICA and Universities with the objective of supporting the development of the virtual courses in food inspection.

Output 3: Virtual course for food safety auditors in place

- One virtual training on food auditing (available in English and Spanish in 2017) available for use by university partners.

2. BACKGROUND

Food inspection in Central American countries and the Dominican Republic is carried out by several official agencies. This makes close coordination among them important to ensure food safety throughout the food chain.

There are legal frameworks that establish the responsibilities of the various entities, in some cases actions are duplicated, whereas in others there is no control in certain parts of the food chain. Some countries have mechanisms to facilitate internal coordination of food inspection and therefore ensure food safety control without hindering production or commercial activities.

The Virtual Regional Food Inspection School is an innovative project oriented towards trade facilitation through the harmonization of food inspection protocols within the Central American Region, as a complement to harmonized regulations that lead to the mutual recognition of equivalence in food safety inspection systems between countries in the region, and, hopefully, to a similar recognition by other extra-regional trading partners. In that sense, the project provided the eight participating countries with standardized food inspection—via a cadre of inspectors evenly trained and formed—thus generating confidence in each other´s application of regional, harmonized regulations and thereby facilitating market access.

This project was conceived as a response to the need of implementing harmonized food inspection protocols throughout the region along with the harmonization efforts being made in the context of economic integration and the customs union.

The ultimate goal was to provide training for all inspectors in the eight countries; open the School to persons from the private sector who are interested in obtaining the diploma, either on their own or with financial help from their employers; and to develop a virtual training for food safety auditors.

3. PROJECT GOAL

To provide common, baseline technical and attitudinal training for food inspectors in the eight countries, to allow modernization and mutual recognition of national food inspection systems and therefore contribute to the region´s development through trade facilitation and improvement in the health of consumers from healthier, safer foods.

4. PROJECT IMPLEMENTATION AND MANAGEMENT

The school involved one university in each of the eight participating countries. The universities were entrusted with the task of delivering the training with IICA support, issuing course certificates jointly with the virtual school and answered questions from students in the countries, as well.

The International Advisory Group in charge of curriculum and class material development formed during the pre-project stage was confirmed and expanded. This group, composed of representatives from universities in Europe (Universidad Politecnica de Valencia, Spain), North America (University of Nebraska-Lincoln - UNL, USA; Universidad Nacional Autonoma de Mexico - UNAM), Central America (Universidad de Costa Rica), as well as food safety institutions, national and international, such as the Agencia Santafesina de Seguridad Alimentaria - ASSA, from Argentina. This group was subsequently expanded to include representatives of the Food and Agriculture Organization of the United Nations - FAO, the Pan American Health Organization - PAHO, and the International Regional Organization on Agricultural Health - OIRSA).

The Academic Council consisted of eight individuals—one from each participating university [one university per country]—and the Technical Consultative Group made up of a representative from each food safety control agency in all eight participating countries.

In the project document, a Steering Committee was formed as the school´s top governing body. During the implementation process, the Academic Council and the Technical Consultative Group assumed this role cooperatively.

The project was implemented and managed by the Inter-American Institute for Cooperation on Agriculture (IICA), which held the Secretariat of the school while the project was being executed. Once the project was completed, a new structure for ERVIA was agreed to by the Academic Council and the Technical Consultative Group, in which a new Official Technical Committee, an Academic Council and a Secretariat became the Governing bodies.

5. PROJECT OBJECTIVE, OUTPUTS & ACTIVITIES

5.1. Project Objective:

To provide common, baseline technical and attitudinal training for food inspectors in the eight countries, to allow modernization and mutual recognition of national food inspection systems and thus contribute to the region´s development through trade facilitation and improvement in the health of consumers from healthier, safer foods.

5.1.1. Output 1: Institutional framework of a regional virtual food inspection school

The first stage of the project was the implementation of the institutional framework of the school. The International Advisory Group, the Technical Consultative Group and the Academic Council were formed. Tables 1, 2 and 3 show the representation of these groups.

5.1.1.1 The International Advisory Group:

The International Advisory Group was confirmed and expanded to include representatives of the Food and Agriculture Organization of the United Nations - FAO, the Pan American Health Organization - PAHO, and the International Regional Organization on Agricultural Health - OIRSA.

Table 1: International Advisory Group Representatives	
Rolando Flores	Universidad de Nebraska, Lincoln Food Processing Center
Marcos Monteverde	Secretary, Agencia Santafesina de Seguridad Alimentaria
María Salud Rubio	Profesor, Faculty of Veterinary Medicine, UNAM
Juan Antonio Serra	Profesor, Departamento Tecnología de Alimentos, Universidad Politécnica de Valencia
Marjorie Henderson	Food Safety Specialist, CITA,
Ileana Leandro	Director, Núcleo de Inocuidad de Alimentos, INA
Enrique Pérez	Senior Advisor Foodborne Diseases and Zoonosis, PAHO
Oscar García	Food Safety Official, OIRSA
Marisa Caipo	Food Safety Official, FAO
Ana Victoria Román	Food Safety Specialist, INCAP

During the implementation of the project, the group met four times to review the curriculum developed during the pre-project stage and the materials for the food inspection training, to discuss the curricula for the food auditors training, and to asses and approve the final materials for the food inspection training.

5.1.1.2 The Technical Consultative Group:

Representatives from each food safety control agency, in all eight participating countries, comprised this group. A formal letter to the competent authorities in each country was sent through the IICA Offices, to identify the representatives that would make up the group. Table two shows the list of country representatives at the beginning of the project.

Table 2: Technical Consultative Group Representatives

Country	Organization	Name
Costa Rica	Servicio Fitosanitario del Estado (SFE)	Magda González
	Servicio Nacional de Salud Animal (SENASA)	German Rojas
	Ministerio de Salud, Dirección de Regulación de la Salud, Unidad de Control	Jennifer Lee
Nicaragua	Ministerio de Salud, Dirección de Regulación Sanitaria	Ricardo Orozco
	Ministerio de Agricultura	Manuel de Leon
Panamá	Ministerio de Salud - Departamento de Protección de Alimentos (DEPA)	Anais Vargas
	Ministerio de Desarrollo Agropecuario (MIDA)	Emmeris Quintero
		Manuel González
Guatemala	Ministerio de Agricultura, Ganadería y Alimentación (MAGA)	Otto Fernando Maldonado
	Ministerio de Salud	Gladys Arreola Camargo
El Salvador	Ministerio de Agricultura	Helmer Esquivel
	Ministerio de Salud	Raúl Barahona
Honduras	Ministerio de Agricultura	José Heriberto Amador
	Ministerio de Agricultura	Juan R. Velázquez

	Ministerio de Salud, Dirección de Regulación sanitaria	Mirta Escobar
Belize	Belize Agricultural Health Authority (BAHA)	Miguel Figueroa
Dominican Republic	Ministerio de Agricultura	Raúl Peralta
	Ministerio de Agricultura	Rafael Nuñez
	Ministerio de Salud Pública	Salvador Hiciano

The group met twice in 2013 to review and approve the food inspector curricula, to review the list of inspectors by country and the delivery method of the training. In 2014, virtual meetings were held at the country level to start working on the identification of participants and during the first part of 2016 two in-person meetings were held to discuss the food auditing training, the results of the food inspection training and the school sustainability proposal.

The participation of the Government Representatives in the group was not steady during the project implementation period due to changes within the country Governments. Table 3 shows the list of the Technical Consultative Group at the end of the project.

Table 3: Technical Consultative Group Representatives 2016

Country	Organization	Name
Costa Rica	Servicio Nacional de Salud Animal (SENASA)	Bernardo Jaen
	Ministerio de Salud, Dirección de Regulación de la Salud, Unidad de Control	Jennifer Lee
Nicaragua	Ministerio de Salud, Dirección de Regulación Sanitaria	-
	Ministerio de Agricultura	Martha Hernández
Panamá	Ministerio de Salud - Departamento de Protección de Alimentos (DEPA)	Anarella Jaen
	Ministerio de Desarrollo Agropecuario	Roberto Crespo
Guatemala	Ministerio de Agricultura, Ganadería y Alimentación (MAGA)	Alex Salazar
	Ministerio de Salud	Gloria Bressani

El Salvador	Ministerio de Agricultura	Douglas Navarro
	Ministerio de Salud	Raúl Barahona
Honduras	Ministerio de Agricultura	Howard Padget
	Ministerio de Salud, Dirección de Regulación sanitaria	-
Belize	Belize Agricultural Health Authority (BAHA)	Miguel Figueroa
Dominican Republic	Ministerio de Agricultura	Raúl Peralta
	Ministerio de Salud Pública	Pedro Leandro De Padua

5.1.1.3 The Academic Council:

The school involved one university or equivalent academic/technical institution in each of the eight participating countries. The universities tasks were providing course certificates cooperatively with the virtual school, answering questions from students in their country, and, when necessary, mentioning them to an International Advisory Group, and lastly, facilitating local infrastructure, information and facilities necessary for the implementation of training activities with inspectors in the context of this Project.

The Academic Council has played a key role in the implementation and success of the project. Despite of the challenges faced, their continuous support and technical commitment allowed IICA to achieve the goals of the project.

Table 4: Academic Council Representatives

Country	Academic Center	Name
Costa Rica	Universidad de Costa Rica (UCR)	Marjorie Henderson
Nicaragua	UNAN -Leon	Azucena Montenegro
		Ivania Toruño Fonseca
Panama	Universidad de Panama	Omaris Vergara
Guatemala	Universidad Rafael Landivar	Mario Santizo

El Salvador	Universidad Jose Matias Delgado	Lillian Carmen Carreño
Honduras	Universidad Nacional de Agricultura Catacamas	Fanny Maradiaga
Dominican Republic	Universidad ISA	Edwin Reyes
Belize	University of Belize	Feliz Tzul

5.1.1.4 The Steering Committee:

The Steering Committee consisted of five individuals, elected in the first joint meeting of the Academic Council and the Technical Group for a period of two years.

The Committee was comprised by five members, (two from the Academic Council and two from the Technical Consultative Group), and one of the University of Costa Rica as a permanent member of the group.

The following are members of the Management Committee for the 2013-2015 term:

For the Technical Consultative Group
Regular members: Magda González (Costa Rica) and Salvador Hiciano (Honduras)
Alternate members: Manuel de León (Nicaragua) and Anais Vargas (Panama)
For the Academic Council
Regular members: Mario Santizo (Rafael Landívar University) and Ivania Toruño (UNAN, León)
Alternate members: Edwin Reyes (ISA University) and Feliz Tzul (University of Belize)

The group was supposed to constitute the school's major government body, but due to the political changes in the Government Representatives, the group was not functional and it was not possible to organize meetings to discuss the project implementation actions and future steps. Annex 3 contains more information about the meetings of these groups.

5.1.2. Output 2: To create a virtual course for food safety inspectors

5.1.2.1. Development of class materials by the International Advisory Group

The virtual course for food safety inspector's curriculum was discussed and approved during a joint meeting of the Academic Council and the Technical Consultative Group; and developed by the International Advisory Group (Table 5).

Table 5: Development of class materials	
INSPECTOR CURRICULUM	**Responsible**
Module 1: Food chemistry	Alejandra Diaz IICA,
Module 1: Food microbiology	Andrea Bianchini, University of Nebraska, Lincoln
Module 2: Hazards	Marjorie Henderson, CITA

Module 3: Good Agricultural Practices, Good Animal Rearing Practices and Good Manufacturing Practices	Marcos Monteverde, Agencia Santafesina de Inocuidad de Alimentos
Module 4: hazards/risks and controls (preventive actions) associated with the storage, handling, processing, and preservation of foods - Water and beverages - Fruits and vegetables - Oils - Dairy products - Fish products - Meat and Poultry - Canned products	Juan Antonio Serra, Universidad Politecnica de Valencia Marjorie Henderson, CITA Maria Salud Rubio, Enrique Delgado UAM Andrea Bianchini, University of Nebraska, Lincoln
Module 5: Food Safety Legislation and/or regulations	Alejandra Diaz, IICA
Module 6: Modern Food Safety Inspection Principles	Ricardo Molins, IICA

5.1.2.2 Virtual training planning process

While the materials were being developed, IICA, with the support of the Technical Consultative group, updated the number of inspectors by country. IICA and the Academic Council Representatives discussed different options and alternatives to deliver the food inspection training in Central America and Dominican Republic.

The project document stated as a goal the training of at least 35% of the inspectors in the Region. At the end of 2013, the updated number of inspectors was 2750 representatives, which meant 962 inspectors would be trained in the framework of the project.

After a series of discussions with the Academic Council and the IICA virtual training center, it was noticed that neither IICA nor the Universities had the infrastructure needed to train 962 inspectors in one installment.

Based on this findings and after a series of discussions with the donor, it was agreed the importance of working in the development of the technical and operative infrastructure that made possible the successful implementation and sustainability of the project.

The following remedial measures were implemented:

- The virtual training of inspectors was rescheduled to the beginning of 2015.
- Instead of having one group of inspectors trained in one installment, two pilot trainings in the first and second semester of 2015 with eight virtual classrooms of forty to sixty participants each were organized.
- The goal of professionally training 35% of the inspectors in the region was modified to 20%-25%.
- IICA, using its own financial and technical resources and without adding any financial costs to the project, committed to the development of a virtual training course that taught how to perform as an academic assistant and a virtual teacher.

- Working with the Academic Council representatives in the formation of teams of professionals to receive the training developed by IICA was planned, as a way to prepare them to be the part of the team technical group in charge of delivering the food inspection training.
- One to three representatives from each University would receive the training developed by IICA.
- The hiring of an academic assistant to support the overall implementation of the virtual trainings.
- The development of an interdisciplinary group of professionals to support the overall implementation of the training content materials took place: Teachers and academic assistants at the country level, academic assistant to support the project, IICA specialist and a moodle specialist.
- An agreement was reached with the Academic Council to train at least three representatives from each University on how to perform as an academic assistant and a virtual teacher.

During the 2014 period and based on the remedial measures implemented the following actions were developed:

- Two virtual courses were held to prepare the group of academic counterparts of the project as tutors and academic facilitators.
- From February 17 to March 17, the online course "Management of Learning Processes" was held with the participation of 43 professionals from the Universities' part of the project.
- From July 15 to August 15, the online course "Development of Professional Competences" was delivered to twenty-four University Representatives.
- One Technical Guide: “How to develop virtual training materials” was developed and shared with the International Advisory Group.
- Two guidelines explaining the main tasks and responsibilities of the virtual teachers and academic assistants were developed and shared with the Academic Council.
- Work was carried out on the design of a guide for "Technical orientation of the specialists directed to teachers who will develop modules of the ERVIA project". (Annex 4)
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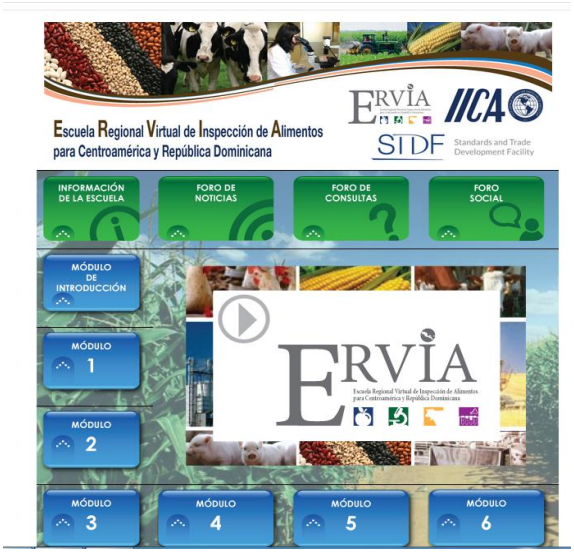
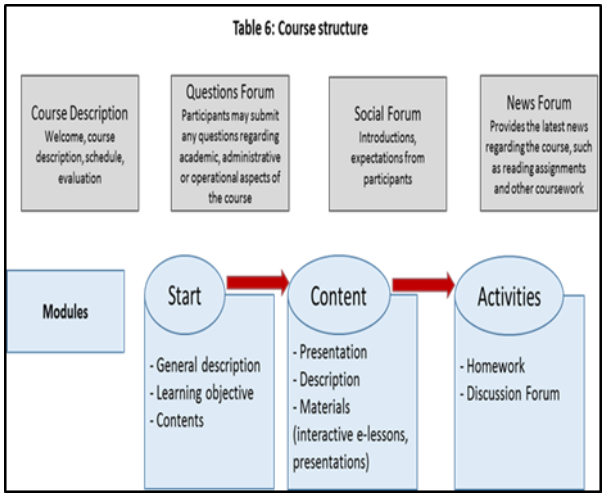
5.1.2.3. Design of the virtual platform, installation of material in platform and pilot testing

One of the IICA priorities established in its Medium Term Plan for 2014 – 2018, is to increase the capabilities of the public and private sectors with the purpose of promoting a productive, profitable and competitive agricultural sector that provides safe food to local, regional and global markets through the application of appropriate sanitary and phytosanitary standards.



The implementation of effective capacity building initiatives with public and private stakeholders, throughout the use of knowledge management, information and communication technologies, and the intensive use of virtual (online) and blended learning tools, has become a successful experience. The implementation of mechanisms for building consensus between the public and private sectors has allowed the exchange of technical cooperation initiatives among member countries to strengthen the institutional framework, agricultural innovation, food security, trade and the linking of producers to agricultural chains.

For the food inspection school, it was decided that the training approach would be to use virtual learning tools. The school’s educational materials were uploaded to the IICA virtual platform and all the contents went through a three-stage review process. The first review was made by IICA to verify the quality of the technical contents and the compliance with the guidelines needed for a virtual training course. The International Advisory Group representatives made the second review and it was an in-depth technical review to verify accuracy and technical consistency of the materials along the training. In the framework of this review, it was noticed that some of the terms and practical exercises were not consistent with those usually used in the Region. As a way to avoid this



situation and to ensure the technical quality of the materials, a third review was conducted by the Academic

Council to validate not just the language but also the level of the training, based on the knowledge and academic background of the inspectors. The group modified part of the learning activities to earn a higher degree of consistency with the Region's situation.

A description of the course structure can be seen in Table 6.

5.1.2.4. Initiation of classes for food safety inspectors

In the time period from 2012 – 2014 due to the election times, the appointed country representatives in the Technical Consultative Group changed more than once. As a way to continue working with countries in the implementation of the project and to present the new Government Representatives the project objectives and advancements, a series of country virtual coordination meetings were organized and held between October and November 2014 (Belize, Guatemala, Nicaragua, El Salvador, Honduras, Dominican Republic and Panama). Representatives for the Academic Council and the Technical Consultative Group were invited and joined the meeting.

In those meetings the groups were informed about the changes made to some of the project activities with the objective of making possible the execution of the project on sustainable bases. The number of country representatives were reviewed and updated with the Group. Table 6 shows the updated number of inspectors by country.

Table 7: Number of inspectors per country

Country	Organization	Total	25%	20%
Belize*	BAHA and Ministry of Health	39/7	10	8
Costa Rica**	Ministries of Agriculture, Health, National Veterinary Service, National Plant Protection Organization	547/407	136	109
El Salvador***	Ministries of Agriculture and Health	688	172	137
Guatemala	Ministries of Agriculture and Health	64	16	12
Honduras****	Ministries of Agriculture (SENASA) and Health	410	102	82
Nicaragua	Ministries of Agriculture and Health	361	90	72
Panama	Ministries of Agriculture and Health	348	87	70
Dominican Republic	Ministries of Agriculture and Health	336	84	67
Total		**2579**	**697**	**557**

*****Before the first training kick off Belize informed just seven professional will take the training due to language constraints.
**Costa Rican NPPO informed only 5 professionals would be involved in the training. The number decreased to 407.
******* For the first inspectors training the Government informed no participants from the Health Sector would be taking the training. Same situation for the second training with the participants from the Ministry of Agriculture.
******** For the second inspectors training the Government informed no participant from the Health Sector would be taking the training.

The first training took place from February 2015 to September 2015. Through the IICA offices in the countries, formal letters were sent to the Technical Consultative Group Representatives and to the Ministers of Agriculture and Health with specific information about the training. The number of participants per country were identified based on the number of inspectors reported per country.

The first installment began with eight virtual classrooms conducted simultaneously, each with 40 participants from different countries (Honduras and Guatemala were exceptions since they had classrooms with only their own nationals). Table 8 shows the results of the process by country.

Table 8: First installment of the Food Inspection Training

Country	Organizations	# Enrolled	# Finished the course	# Approved
Belize	BAHA	7	6	6
Costa Rica	Ministries of Agriculture, Health, National Veterinary Service, National Plant Protection Organization	92	68	68
El Salvador	Ministry of Agriculture	36	18	14
Guatemala	Ministries of Agriculture and Health	21	19	18
Honduras	Ministries of Agriculture and Health	52	26	15
Nicaragua	Ministries of Agriculture and Health	40	24	19
Panama	Ministries of Agriculture and Health	55	25	12
Dominican Republic	Ministries of Agriculture and Health	47	28	22
Total		**350**	**214**	**174**

In the framework of this process, the Academic Council had 22 virtual meetings to:
- Review, discuss, modify if needed the educational materials and activities for each module.
- Discuss the course grades and particular situations of the students
- Get feedback regarding specific questions from participants about the contents of the training.
- Develop twenty-four learning guides for the participants were developed and delivered with information about the contents and activities of each module. More information can be found in Annex 5.

Based on the results of the first training some measures to improve the training and avoid participants' desertion were taken:

- Technical contents of the training course were updated, adapted and uploaded in the IICA new virtual platform, based on participants' feedback and module reports.
- National groups instead of regional groups of participants were formed.

The second installment started on October 20th 2015 and finished on April 23rd, 2016. Nine virtual classrooms were formed (One for DR, Panama, Nicaragua, Guatemala and Honduras and 2 for El Salvador and Costa Rica), with 40-60 participants per class. As a way to facilitate and improve communications and share experiences, between the participants and the virtual teachers that had the same citizenship. In the framework of this training, 25 learning guides were developed (Annex 5). Table 9 shows the results of the second training per country.

Table 9: Second installment of the Food Inspection Training

Country	Organizations	# Enrolled	# Finished the course	# Approved
Belize	BAHA	-	-	-
Costa Rica	Ministries of Agriculture, Health, National Veterinary Service, National Plant Protection Organization	116	77	76
El Salvador	Ministry of Health	126	92	90
Guatemala	Ministries of Agriculture and Health	48	31	25
Honduras	Ministry of Agriculture	33	33	33
Nicaragua	Ministries of Agriculture and Health	69	50	45
Panama	Ministries of Agriculture and Health	98	17	11
Dominican Republic	Ministries of Agriculture and Health	96	30	25
Total		**586**	**330**	**305**

5.1.2.5. Evaluation of the food inspection course by graduates (Annex 7)

At the end of each module, IICA sent the participants evaluations about the training with the objective of identifying areas of improvement at a technical and technological level.

The results were discussed during the virtual meetings that were held with the group of virtual professors and academic assistants and became useful tools to make corrections and adjustments to the upcoming modules. Most of the comments received by the participants, focused on the importance of having more follow up and feedback from the tutors, having clear learning guides regarding tasks and responsibilities, and strengthening technological skills before the kick-off of the training to facilitate the use of the virtual learning tools.

Despite of the efforts made by the virtual tutors and academic assistants, a significant number of participants dropped off the training or never accessed the virtual platform during the first months of the courses. Some of the reasons reported for this situation were the lack of knowledge in the use of virtual tools, difficulties to access the virtual platform, the level of preparedness of the inspectors to take and pass the training, internet access and lack of time allowed to take the training during work hours. Besides that, the absence of a binding mechanism to make participants commit and comply with the training in countries like Honduras, Panama, Nicaragua, El Salvador and Dominican Republic were raised by the Academic Council representatives, as one of the main reasons why members dropped out of the training.

5.1.2.6. Letters of agreement with the Universities (Annex 6)

To support the organization and implementation of the food inspectors training IICA signed seven letters of agreement with the Universities (Universidad de Costa Rica, Universidad José Matias Delgado, UNAN Leon, Universidad ISA, Universidad de Panama, Universidad Nacional Agricola and Universidad Rafael Landivar). University of Belize due to internal matters informed it wouldn´t be able to sign the agreement.

Each University became an academic counterpart for the project and made available on a part-time basis, professional personnel (at least 3 instructors) in food safety to support the implementation of the two online training courses for food inspectors throughout 2015.

Universities through their professional workforce, committed to serve as tutors and/or academic facilitators in the online courses. For these purposes, the aforementioned personnel must have had completed and passed the virtual training course for tutors and academic facilitators developed and imparted by IICA, with no cost to the project.

IICA with the project resources, purchased and transferred videoconferencing equipment (a point-to-point system with an incorporated microphone and audio system) that was required for the implementation of the School's activities to Universidad ISA, Universidad de Costa Rica, Universidad Rafael Landivar, UNAN Leon and Universidad Jose Matias Delgado. For the Universidad Nacional de Agricultura and Universidad de Panama, two-webex licenses were purchased for a two-year period each.

Once the virtual training started and as agreed in the document signed, IICA transferred to the Universities, the sum of USD 75 (seventy-five dollars) for each student enrolled in the course and the sum of USD 75 (seventy-five dollars) for each student who completed and passed the virtual training. Those resources were used by the Universities to recognize the professional services of the academic staff who supported the Project.

The implementation of these agreements ensured the transparency of the process, and furthermore, confirmed the commitment and active involvement of the personnel responsible of delivering the training.

5.1.3. Output 3: Virtual course for food safety auditors in place

5.1.3.1 Videoconference lectures on four or more topics of interest.

As part of the initiative, and in order to improve the technical knowledge of the participants on food safety issues, a series of virtual conferences were offered on food safety topics of interest.

- Canada´s new regulatory framework for food safety inspection jointly with Canadian Food Inspection Agency (CFIA) (August 13, 2014).
- Trade Facilitation Agreement and its Relation to Sanitary and Phytosanitary Measures (October 29, 2015)
- Food Safety Modernization Act Rules - Final Rule for Produce Safety: An overview (May 5, 2016)
- Food Safety Modernization Act Rules Final Rule for Preventive Controls for Human Foods and Foreign Supplier Verification Program: An Overview (May 18, 2016)
- Food Safety Modernization Act Rules: Final Rule Accredited Third Party Certification: An Overview (June 6, 2016)

5.1.3.2 Design of level-2 curriculum (food safety auditor course) by the school's International Advisory Group

In order to have a proposal for the food safety auditors training aligned with the Region situation, IICA developed a draft to be discussed with the International Advisory Group. The draft proposal was reviewed by the group in a meeting held in March 2014 and updated by IICA based on the feedback received from the group.

The Academic Council discussed and approved the updated curriculum in a meeting held in November 2014. The improved proposal was studied and accepted by the group. The representatives advised on the importance of organizing specific training, as a way to strengthen their technical skills in the area of food auditing.

Meanwhile, the document was sent for consultation to the Government authorities through the IICA offices in the countries at the end of 2014. The Belize representatives mentioned the importance of having this virtual training available in English and Spanish.

The aim of the course is to train auditors capable of performing internal or external GAP, GMP and HACCP audits.

The course is divided into five (5) modules, and provides standardized knowledge on the international and regional legal framework for GAP, GMP and HACCP. Additionally, it defines the attributes and skills expected of auditors and develops their competence in applying audit principles, managing audit programs and performing audits. It also addresses the context of international standards related to the audit process and auditing to assess official food safety systems. A description of the academic program can be seen in Table 10.

Table 10: Food Auditing Training Academic Program	
Module	**Learning objectives**
1. Standardization Module	- To be aware of the international and regional regulatory framework related to inspection and audit. - To standardize the knowledge and abilities in GMP and HACCP, in order to ensure the necessary competences for the auditing process.
2. Basic elements of the audit	- To have knowledge of the principles of auditing. - To identify the attributes and competencies that auditors should have for ensuring the reliability of the audit process.
3. Management of an Audit Program	- To establish an audit program that takes into account all the necessary activities for planning and organizing the type and number of audits, and the resources to carry them out effectively. - To ensure that there is a risk-based audit program.
4. Execution of the audit	- To plan and manage the typical activities of an audit.
5. Audit of official food safety systems	- To be aware of the principles and international guidelines related to the audit of inspection systems. - To be aware of cases of audits of large commercial partners.

5.1.3.3 Preparation of course material for food safety auditors

The Food Processing Center of the University of Nebraska, Lincoln was selected to develop the educational contents for the food auditing training in English and Spanish. The quality of the materials, the knowledge in the area of food safety and food auditing and the interdisciplinary group of professionals in the area of food safety able to develop the contents in both languages, were the most important reasons to assign this responsibility to the Center.

As a way to validate the content of the modules, train the Academic Council representatives on the principles of food auditing and start discussing a sustainability proposal for the project, an in-person meeting was held in Lincoln, Nebraska in May 2016.

During the first day, a meeting between the Academic Council and the Technical Consultative Group was organized to discuss the project's main results and the sustainability of the initiative.

The second and third day a training on general principles on food safety auditing was delivered to the Technical Consultative Group Representatives, the University Representatives (3-4 representatives) and the IICA local Specialists from different countries in the region. Two specialists from the Food Processing Center were in charge of the training.

The fourth and fifth day a meeting between the University representatives and the Food Processing Center experts was held to review the items and contents of the training; and with the aim of sharing ideas and experiences on the type of activities to be developed. All the feedback received, was used by the experts to improve and adapt the contents to the Region situation**.**

At this time, the materials are available in the IICA virtual platform in English and Spanish and are under review by the Academic Council representatives. More information about the training and agenda can be found in Annex 8.

5.1.3.4 Sustainability proposal

In the framework of the meeting held in Nebraska in May 2016, the Representatives of the Academic Council and the Technical Consultative Group gathered to discuss initiatives related to sustainability for the project. During that meeting, the group agreed upon the interest of both sectors in ensuring the sustainability of ERVIA at the regional and local levels, through active participation and a strategic partnership.

Some University representatives (Honduras, El Salvador and Nicaragua), mentioned their interest to continue working in the initiative not only at the regional level but also at the national level as a way to improve the technical performance of the inspectors based on the country's situation.

The University of Costa Rica committed to develop a sustainability proposal that would be discussed during the closure meeting of the project in June 2016, therefore in the second week of May the UCR shared the proposal with IICA and the Academic Council Representatives. From the IICA offices in the countries the proposal was shared with the Government authorities one week before of the final project meeting with the objective of being analyzed at a country level in advance.

The project closing meeting was held on June 22 and 23 in Miami. An agreement was reached to make the initiative sustainable through the establishment of an organizational framework that guaranteed the availability of resources needed to maintain the platform, pay for tutors and academic assistants, and update learning materials.

Three bodies comprised the new organization structure. The Official Technical Committee (OTC) with two representatives of the competent authorities in each country; the Academic Council that maintains its current structure and the Secretariat that will be in charge of coordinating ERVIA different initiatives. University of Costa Rica was appointed as the Acting Secretariat by the Group.

1. **Responsibilities of the OTC**

- Oversee the quality and updating of learning materials for ERVIA courses, together with the Academic Council.
- Define the inspectors who will participate in each country.
- Monitor the work carried out by the tutors and inform the academic counterpart of any issues.
- Recommend personnel from official services who could serve as tutors.
- Provide the necessary conditions to enable the inspectors to complete the courses.
- Monitor the performance of the inspectors as participants in the courses, based on feedback provided by the Academic Council, and recommend any corrective actions if necessary.
- Coordinate any actions related to the sustainability of ERVIA with ministerial authorities, the private sector, intersectoral committees, and international organizations involved in food safety matters in the countries of the region.
- Manage cooperation and funding resources for ERVIA, in coordination with the Academic Council.

2. **Responsibilities of the Academic Council**

- Oversee the quality and updating of learning materials for ERVIA courses, with the Official Technical Committee.
- Create and update learning materials based on the needs of the OTC and other strategic partners.
- Provide tutors who will monitor the training of students in each country and ensure that they are effectively carrying out their responsibilities.
- Issue course certificates in the corresponding countries.
- Periodically report to the OTC on the performance of course participants.
- Manage cooperation and funding resources for ERVIA, in coordination with the OTC.
- Identify methods for providing academic recognition, based on the internal rules of the participating universities.

At the end of the meeting, the representatives of the public and academic sectors committed to discuss this proposal with the corresponding universities and governments. More information about the sustainability proposal can be found in Annex 9.

6. FINANCIAL OVERVIEW

SUMMARY OF EXPENSES	AMOUNT
Output #1 - Institutional framework of a regional virtual food inspection school	249.258,15
Output #2 - To create a virtual course for food safety inspectors	245.379,97
Output #3 - Virtual course for food safety auditors in place	275.244,24
Subtotal	769.882,36
Overhead 8%	61.590,59
TOTAL EXPENSES OF THE PROJECT	**831.472,94**

7. OVERALL PROJECT RESULTS AND LESSONS LEARNED

7.1.1 Overall project results

Output 1: Institutional framework of a regional virtual food inspection school

- One Academic Council comprised by representatives of the eight Universities that were part of the project was formed and became one of the most important bodies during the execution of the project.
- One Technical Consultative Group made up of representatives of the governmental sectors with competence in the subject of food inspection (Ministries of Agriculture and Health) was formed.
- One International Advisory Group in charge of curriculum and class material development formed during the pre-project period confirmed and expanded.
- One sustainability proposal was developed to guarantee the sustainability of ERVIA by the Academic Council and the Technical Consultative Group.
- A new organizational structure for ERVIA was agreed upon in June 2016. The University of Costa Rica was chosen as the Acting Secretariat.
- University Jose Matias Delgado (El Salvador), UNAN Leon (Nicaragua) and Universidad Nacional Agricola (Honduras) sent formal letters to IICA with the objective of developing virtual training initiatives at the country level.
- One regional network of academic experts on food inspection
- Technical basis to continue working on capacity development and harmonization of inspection mechanisms at the regional and country levels

Output 2: To create a virtual course for food safety inspectors

- The virtual course on food inspection is available at the IICA's virtual platform.
- Forty-three (43) professionals from the Universities were trained as virtual teachers and as academic assistants
- Two installments of the virtual training were carried out from February 18 to September 18, 2015 and from October 20, 2015 to April 26, 2016.

    - 936 inspectors from the 8 countries were enrolled
    - 544 inspectors completed courses
    - 479 inspectors passed the training
        - Honduras: 48
        - Dominican Republic: 47
        - El Salvador: 104
        - Panama: 23
        - Guatemala: 43
        - Costa Rica: 144
        - Belize: 6

- Nicaragua: 64

- Seven letters of understanding were signed between IICA and Universities with the objective of supporting the development of the virtual courses in food inspection.
- Consistent with the project document, videoconferencing equipment was purchased for Universidad Rafael Landivar, UNAN León, Universidad ISA, Universidad de Costa Rica and Universidad Jose Matias Delgado. Universidad Nacional de Agricultura and the University de Panama received a webex license for a two-year period.

Output 3: Virtual course for food safety auditors in place

- One virtual training on food auditing (available in English and Spanish in 2017) available for use by university partners.

7.1.2 Lessons learned:

- This project was conceived to address the need to harmonize food inspection protocols across the region. Throughout the implementation period, the necessity of working in the improvement of the technical capabilities of the inspectors at a country level was noticed. If at a country level harmonized criteria on food inspection does not exist, it is difficult to achieve the goal at a regional level.

- The request made by El Salvador, Honduras and Nicaragua can be seen as a starting point to achieve harmonization of food inspection techniques and protocols at a country level.

- Political involvement and commitment in this kind of initiative is necessary. The changes in the Government Representatives within the Technical Consultative Group was one of the project's main challenges. The involvement of the Agriculture and Health Government representatives was not as expected, due to other priorities and tasks assigned. The formation of national coordination committees was an option to increase the involvement and active participation of the Government authorities (Health and Agriculture).

- The Academic Council was essential and contributed to the project's success. With the changes made to the roles and responsibilities of the University representatives, an effective operational and sustainable structure was built, allowing the achievement of the project's goals.

- Virtual learning techniques have become a very important option to reach new target audiences in food safety. However, public sector officials that work at central and regional levels are not used to this new learning approach. Within the framework of the project, the introductory module was strengthened to improve participant's technological skills.

- There are notable differences in the levels of preparedness, academic background and technical knowledge of food safety inspectors among the countries. That was acknowledged as one of the main reasons why the participants of some countries dropped off the training. The virtual professors considered this topic during the discussions held on how to improve the training materials. It was agreed that some work needs to be done at a country level to adapt the materials to address this specific situation.

- The importance of having a linking mechanism that connects the training to the participants' performance appraisal could be a mechanism that receives more commitment from the members. Some nations used these systems during the implementation of the project and the level of desertion decreased.

8. RECOMMENDATIONS

8.1. Specific recommendations to the project

- To strengthen communication mechanisms and collective work between the Academic Council and the Technical Group at a regional and country level. The countries that had this articulation achieved better results.
- To identify schemes that allow more involvement of the Ministries of Health.
- Translating the food inspection training into English.
- To open the initiative to the private sector.
- Identification of strategic partners to ensure the sustainability of the initiative.
- Present the results of the initiative to the Ministers of Health and Agriculture in the Region.

8.2. Broader recommendations

- Identify strategic partners in the Americas that might be interested in the implementation of this initiative in other regions and countries.
- Develop tailor made training initiatives in food inspection and food auditing according to the audience and needs of the different sectors

9. ANNEXES

9.1. Annexes

Annex 1: Project Reports
Annex 2: List of food safety inspectors in the Region
Annex 3: Information about the meetings held with the Academic Council, the Technical Consultative Group and the International Advisory Group
Annex 4: Guides for the Academic Assistant, Virtual Teachers and International Advisory Group
Annex 5: Learning Guides
Annex 6: Agreements with Universities
Annex 7: Modules Evaluations
Annex 8: Food Auditing Training
Annex 9: Sustainability Proposal

9.2. Contact List

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9.3. Logical Framework

Output / Activity	Indicator / Target:	Actual performance: (% complete)	Comments (results and challenges faced)
Output 1: **Institutional and operational framework of a regional virtual food inspection school**	Indicator 1: International Advisory Group, Academic Council, Technical Group and Steering Committee formed.	100%	- International Advisory Group, Academic Council, Technical Consultative Group and Steering Committee were formed.
Activity 1.1.: Expansion and/or confirmation of the International Advisory Group	Target 1: At least seven international advisors comprise this group.	100%	- Representatives from Universidad Politécnica de Valencia, Spain), University of Nebraska-Lincoln - UNL, Universidad Nacional Autónoma de México - UNAM, Universidad de Costa Rica, and Agencia Santafesina de Seguridad Alimentaria have confirmed their participation. Representatives of the Food and Agriculture Organization of the United Nations - FAO, the Pan American Health Organization - PAHO, the International Regional Organization on Agricultural Health – OIRSA, and the Central America and Panama Nutrition Institute – INCAP, have been included .

Activity 1.2 Formation of a Technical Consultative Group consisting of food safety control officials from all involved services in all participating countries	Technical Consultative Group formed and confirmed by national authorities	100%	Changes of the representatives in the Technical Consultative Group throughout the project period affected its implementation.
Activity 1.3 Formation of the school's Academic Council (made up of one representative from each participating university)	Academic Council formed and installed.	100%	
Activity 1.4. Four meetings of the International Advisory Group	At least four meetings held to discuss curricula for inspectors and auditors, development of materials, and modifications or improvements needed.	100%	

1.5 First meeting of the Technical Consulting Group	Meeting held to discuss and agree on the proposed curriculum for inspectors and formation of the Steering Committee.	100%	First meeting of the Technical Consultative Group was held the first week of February.
1.6 Second meeting of the Technical Consulting Group	Coordination among food safety control authorities in all participating countries regarding food safety inspection achieved	100%	One meeting of the Technical Consultative Group was held on October 29th, 2013.
1.7 Meetings of the Academic Council plus the International Advisory Group. Confirmation or modification of curriculum and academic processes.	Three joint meetings of the Academic Council and the International Advisory Group held to discuss curriculum and modify or confirm it, as needed, and plan other academic activities.	100%	On December 10th and 11th a virtual meeting was held between the Academic Council and the International Advisory Group to review and approved the materials of Module # 1 and Module # 3.
1.8 Joint meetings of the Technical Consulting Group and the Academic Council (1 per year).	Agreement on possible revisions of curriculum or processes to fit the needs as the project progresses.	100%	One meeting of the Academic Council and the Technical Consultative group was held on October 30, 2013. Two meetings between the Academic Council and the Technical Consultative Group were held in May and June 2016.

1.9 Formation of the school's Steering Committee during the first joint meeting of the Technical Consulting Group and the Academic Council. This meeting will also initiate a discussion on the school´s sustainability.	Steering Committee formed by election during the first joint meeting of the Technical Consulting Group and the Academic Council. It is envisioned that the Steering Committee will function unchanged throughout the duration of the project, will be composed of three members from each group, and will have an elected chair belonging to the Academic Council.	100%	Steering Committee was formed during the first meeting of the Technical Consulting Group and the Academic Council. The Steering Committee is not functional due to changes in the Government Representatives.
Activity 1.10: Six-month report to Ministers of Agriculture and Public Health		100%	Report was sent to the Secretariat of the Central American Ministers Council (CAC) regarding the actions implemented in 2014, 2015 and 2016.
Output 2: Virtual course for food safety inspectors developed and in place	Indicator 1: Virtual course for food safety inspectors available.		

Activity 2.1 Confirmation or revision of proposed curriculum for food inspectors received from the International Advisory Group.	Draft of curriculum for the food inspectors´ course was developed during the project preparation stage.	100%	Final curriculum was developed and is available. A copy of the curriculum is enclosed with this report
Activity 2.2 Submission of the planned curriculum for food inspectors for comments by the school's Technical Consultative Group and confirmation of the course fee (30-day comment period).	Comments received.	100%	The curriculum was sent to the Technical Consultative Group for comments. Letters to the Technical Consultative Group were sent on November 2011. Deadline to submit comments: January 2013. The curriculum was discussed and approved by the technical consultative group during the meeting in February.
2.3 Development of class materials by the International Advisory Group.	Agreement reached on assignment of tasks among the International Advisory Group to develop specific sections of the curriculum. Members of the Group deliver the materials.	100%	During the meeting of the International Advisory Group the members identified the specific sections of the curriculum they would be working on. The members are currently working in the final version of the course materials.

2.4 Design and diagram of class materials.	Class materials are available in proper design for online adaptation. The material has also been placed in proper diagram form.	100%	100% percent of the class materials are available and placed in proper diagram form.
2.5 Design of the virtual platform.	Virtual platform designed and ready to install.	100%	The virtual platform was designed.
2.6 Installation of the virtual platform.	Virtual platform installed and operational.	100%	The virtual platform was installed and operational.
2.7 Installation of material in platform and copies on CD – pilot testing.	Course online and on CDs. Pilot testing completed.	100%	Pilot testing implemented and completed. It was decided by the group that CD copies wouldn't be made due to technological issues and training design.
2.8 Procurement and installation of videoconference equipment at each participating university and pilot testing.	Selection and purchase of videoconference equipment for all academic institutions completed, installed and tested	100%	Purchasing and installation of videoconference equipment and webex licenses completed
2.9 Nomination of the first 50 – 100 inspectors per country.	List of candidates per country available.	100%	Nominations of the first and second group of inspectors were received.

2.10 Initiation of classes for food safety inspectors.	The school is open and the first students are registered and taking the course on food inspection.	100%	The trainings were delivered in February and October 2015.
2.11 Evaluation of the food inspection course by graduates.	Evaluation questionnaire developed, sent to graduates, and responses received and processed.	100%	All the modules were evaluated by the participants
2.12 Modification or adjustment of curriculum and training and operating procedures, as needed.	Evaluation results used to adjust curriculum and/or school procedures.	100%	Based on the first training for food inspectors, adjustments to the course were made by the Academic Council
2.13 Dissemination of news about the course among private sector organizations and invitation to participate – promotion visits to 8 countries.	Dissemination material (brochures) developed and available. Eight promotional events for the private sector conducted (one in each participating country).	25%	Press releases about the training were issued. One informative brochure was developed. Due to the changes made to the project approach this topic was added to the sustainability proposal developed by the Technical Consultative Group and the Academic Council
2.14. Operation of the school on non-project funds.	The school is functioning on funds coming from student registrations.	100%	A sustainability proposal was developed to continue with the initiative at the regional and local levels.

Output # 3 Virtual course for food safety auditors in place			
3.1 Videoconference lectures on four or more topics of interest.	At least four distance lectures have been offered on food safety topics of interest to students by individuals from such agencies as CFIA, U.S. FDA, etc.	100%	Four distance lectures were offered: Canada´s new regulatory framework for food safety inspection jointly with CFIA and International Adulteration on Food jointly with FDA Regional Office for Latin America; Antimicrobial resistance on December 4th, 2014 and FSMA final regulations in May and June 2015
3.2 Design of level-2 curriculum (food safety auditor course) by the school's International Advisory Group.	Draft of level 2 curriculum (for food safety auditors) developed.	100%	Proposal ready, shared and approved by the Technical Consultative Group in May 2016.
3.3 Submission of the planned curriculum for food safety auditors for comments by the school's Technical Consulting Group – confirmation of the course fee (30-day comment period).	Comments received.	100%	

3.4 Preparation of course material for food safety auditors by the International Advisory Group.	Agreement reached on assignment of tasks among the International Advisory Group to develop specific sections of the curriculum. Members of the Group deliver the materials.	100%	As a way to facilitate and ensure the quality of the training the task was assigned to the University of Nebraska, Lincoln
3.5 Design, diagram and installation of the food safety auditing course (level 2).	Class materials are available in proper design for online adaptation. The material has also been placed in proper diagram form.	100%	Design, diagram and installation are completed. The training is available at the IICA platform. on time.