

Market-oriented Agri-Technology and Agri-Extension Services for Agrarian Reform Community Connectivity and Economic Support Services (ARCESS) for Isabela

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Abstract— Market-oriented agri-technology and agri-extension services (AES) was conceptualized after need/design assessment. It is a component of DAR-ARCESS particularly harnessing Agrarian Reform Beneficiaries Organizations (ARBOs) to become skilled and equip with business knowledge align to the enterprise they have engaged in. Generally, this AES aims to provide trainings/technology transfer/coaching along the commodity/areas on value chain strategy for the Agrarian Reform Communities in Isabela. Specifically, it aimed to: 1) strengthen farm efficiencies and productivity of rice and corn farmers; 2) enhance rice and corn farmers' knowledge on postharvest; 3) improve value-adding activities of rice and corn farmers; 4) enrich rice and corn farmers' knowledge on Common Service Facilities operations and maintenance; and 5) establish pool of technical experts.

There were five lead ARBOs who participated in this project classified into rice and corn based agri-enterprises. Various extension modalities were adopted to attain project objectives. Activities were highlighted by two season long training programs on rice and corn as venue for technology lectures and demonstrations. The project outcomes are: a) 39 corn and 93 rice farmers trained field technicians; b) two field exposures (Lakbay-Aral) for rice and corn to private and public agencies outside the region; c) conducted seminar-workshop on sustainability planning; and d) developed training manuals, modules, technoguide and IEC materials for both crops.

Farmers have attained greater knowledge, developed their farming skills and more confident in doing farming business. They have improved relationships, becoming closer and open minded individuals.

The lead ARBOs farm-technicians must do their share to disseminate what they have learned to other farmers

constituent ARBOs. The DARPO must provide assistance to them for program development, financial and other logistics for the conduct of field extension services. The DAR must follow – up and conduct periodic evaluation to lead ARBOs for the implementation of sustainability plan.

Keywords— Agrarian, Agri-extension, Market Oriented, Farmers Field School, Communities.

I. INTRODUCTION

A. Project Background

The Agrarian Reform Community Connectivity and Economic Support Services (ARCESS) Project is considered as one of the priority banner programs of the Department of Agrarian Reform to increase farm productivity, improve household incomes of Agrarian Reform Beneficiaries (ARBs) and provide sustainable livelihood through the organization of competitive agricultural enterprises initially designed to be implemented in three (3) years.

The project has two components to include: 1) the provision of Common Service Facilities and 2) the provision of Business Development Services as capability building program for the Agrarian Reform Communities (ARCs). After the Needs Assessment and Design Assessment conducted by the State University and Colleges (SUCs) as a third party evaluator, market-oriented agri-technology and agri-extension services were identified to comprise the second component of the ARCESS Project.

B. Project Objectives

Generally, this Agricultural Extension Service (AES) aims to provide trainings/technology transfer/coaching along the commodity/areas on value chain strategy for the ARCs in Isabela. Specifically, it aims to attain the following objectives: 1) Strengthen farm efficiencies and

productivity of rice and corn farmers thru provision of training in production technology and management, to wit: a) soil testing and fertility management, b) integrated pest management, c) organic fertilizer production, and d) farm management and planning; 2) Enhance rice and corn farmers' knowledge on postharvest technology and management; 3) Improve value-adding activities of rice and corn farmers thru implementation of training, fora, seminar on primary processing technology and management; 4) Enrich rice and corn farmers' knowledge on Common Service Facility (CSF) operations and

maintenance; and, 5) Establish pool of technical experts thru training/coaching of farmer technicians thru Farmer Field School (Demo Farms).

C. Scope and Coverage of the Project

The scope of the AES Isabela Lot includes the five sub-projects on the first phase of ARCCCESS Project implementation. Focus of the AES interventions are on the production side of the agrarian reform communities.

These sub-projects include the following lead Agrarian Reform Beneficiaries Organizations (ARBOs), Constituent ARBOs and locations:

Lead ARBO	Constituent ARBO/s	Location
1. North Siffu Farmers' Multipurpose Cooperative	Malaya Development Cooperative	Roxas, Isabela
2. D4 Series Confederation of Irrigators Association (CIA)	None	Cauayan City, Isabela
3. Bannawing Farmers' Multipurpose Cooperative	MBSS Multipurpose Cooperative	Jones, Isabela
4. Lapogan Multipurpose Cooperative	St. Elizabeth Auto Savings Group San Francisco Kababaihan Auto Savings Group San Rafael Kababaihan Auto Savings Group Sta. Maria Kababaihan Auto Savings Group	Tumauini, Isabela
5. Villacabanes Credit Cooperative	NDC 8 CIA Namnama Irrigators' Association	San Manuel, Isabela

D. Conceptual Framework

The IPO explains the framework of the study wherein the DAR-ARCCCESS Agri-Extension Support Services would be the main input for the development of participating ARBOs. The core team from the Isabela State University implemented different modalities such as Business Planning, Training, Lakbay Aral and Information, Education and Communication (IEC) materials development to come up the expected output as indicated in Figure 1.



Fig.1: Conceptual Framework of the Study

II. PROJECT METHODOLOGY OF IMPLEMENTATION

A. Selection of ARBOs

The lead ARBOs were selected by DAR as recipient of ARCESS project of the department. They were evaluated and selected by the core team based on resources, personnel structure, track record, and capabilities to manage the CSF awarded to them.

B. Locale, Time and Participating Organizations

The project was implemented from September 2013 to December 2015 to lead ARBOs in rice and corn

communities in 4 districts of Isabela. For rice ARBOs communities are North Siffu Farmers' Multipurpose Cooperative (NSFMC), Roxas in district 1; Villa Cabanes Credit Cooperative (VCCC), San Manuel in district 2; and D4 Series Council of Irrigators' Association (D4SCIA), Cauayan in district 3; while for corn ARBOs communities are Bannawing Farmers' Multipurpose Cooperative (BFMC), Jones in district 4 and Lapogan Multipurpose Cooperative (LMC), Tumauni in district 1 of Isabela as shown in Figure 2.

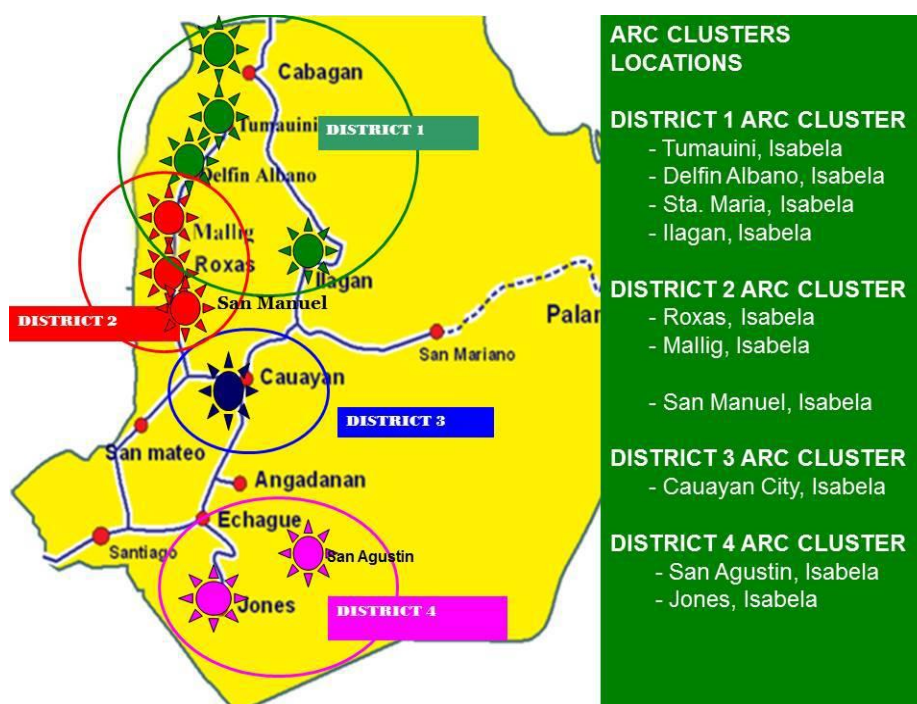


Fig.2: Location map of the DAR-ARCESS AES project

C. Extension Modalities Adopted by the Project

1. Conduct of review of the Needs and Design Assessment of the five ARBOs – Inception Meeting Activity.

This is the first step in the identification of interventions for the ARBOs under the AES project. Prior to project implementation of the ARCESS Project is the contracted activity on Needs and Design Assessment (NADA) of the sub-projects included in the AES. During the Inception meeting, project activities based on the reviewed needs were firmed up.

2. Development of Strategic Operational Plans. One of the focused of the AES is the provision of technical assistance in the ARBOs development of strategic operational plans such as the CSF Business Plans, Farm Production, Management Plans and Sustainability Plans. With the provided Common Service Facilities as the springboard for the AES implementation, this banks on

the idea of providing farm machineries to improve the production of farmers from manual to mechanized production and for the ARBOs which are mostly cooperatives to have additional income from rents of the agri machineries. The CSF business plans and manuals were developed through the assistance of Isabela State University (ISU) Agribusiness experts for the ARBOs to have targets and directions in earning income from the CSFs. The farm production and management plans were developed to improve the farm management techniques of the ARBs. Through the plan, appropriate budgeting and target setting in their agricultural production activities.

It is hoped that through these plans, together with the coaching and mentoring activities, the ARBs will have the consciousness to look at the CSFs as a business enterprise and agricultural production as a business activity.

3. Conduct of Trainings (Season-long training and Need-based trainings). The conducted trainings for the AES came in two forms, as a result of making the interventions need-based and site specific. Two sets of training approaches were implemented to include the season-long training which is conducted for rice and the trainings on specific technologies.

The trainings catered to the needs of the pre-identified 25 ARBO technicians from the five ARBOs in complementary with the establishment of technology demonstrations farms on rice and corn.

This activity was implemented as part of the objective and expected output of training 25 farmer-technicians per ARBO who shall serve as catalyst for future coaching and mentoring in the ARCs with respect on rice and corn production.

4. Development and Dissemination of IEC Materials. The conducted trainings were supported/reinforced by the production of information, education and communication materials in the form of flyers, techno guides, manuals and other printed materials. Media preferences of farmers were defined based on the needs assessment conducted. Developed IECs underwent pre-testing with the ARBs.

5. Conduct of Lakbay Aral. The conduct of appreciation tours at successful farmers was made as reinforcements on the lecture series and trainings implemented at the ARBO communities. In here, the farmers learned the technologies but also emulate values from successful individuals in farming business.

6. Conduct of coaching and mentoring sessions. Specific needs of the ARBs were answered during the coaching and mentoring activities during field visits in the areas.

7. Establishment of technology demonstration farms on rice and corn productions. The establishment of Farmer Field School (FFS) Demo Farm complemented the lecture series implemented as part of the capability development of the rice and corn farmers.

8. Monitoring and Evaluation Activities. Monitoring activities were implemented at the ARBOs level to gauge the extent of project implementation as well as to identify problems which affects implementation.

III. PROJECT RESULTS AND DISCUSSION

A. Information About the ARBOs Assisted

1. Corn ARBOs Community

Name of ARBO	Bannawing Farmers' Multipurpose Cooperative (BFMC)
Type of Crop	Corn
ARBOs Assisted	Mapalad-Bautista-Sto. Nino-Sto. Domingo Marketing Cooperative
Location	Jones and san Agustin, Isabela
Name of ARBO	Lapogan Multipurpose Cooperative (LMC)
Type of Crop	Corn
ARBOs Assisted	<ul style="list-style-type: none"> - St. Elizabeth Auto Savings Group - Sta. Maria Kababaihan Auto Savings Group - San Francisco Kababaihan Auto Savings Group - San Rafael Kababaihan Auto Savings Group
Location	Tumauini and Ilagan City, Isabela

2. Rice ARBOs Community

Name of ARBO	North Siffu Farmers' Multipurpose Cooperative (NSFMC)
Type of Crop	Rice
ARBOs Assisted	Malaya Development Cooperative
Location	Mallig and Roxas, Isabela
Name of ARBO	D4 Series Council of Irrigators' Association (D4SCIA)
Type of Crop	Rice

ARBOs Assisted	Same (single ARBO sub-project)
Location	Cauayan City, Isabela
Name of ARBO	Villa Cabanes Credit Cooperative (VCCC)
Type of Crop	Rice
ARBOs Assisted	- Nannama Irrigators' Association - NDC 8 CIA
Location	San Manuel, Isabela

B. Background and Context of Sub-projects being Covered

1. Sub-Project Title: Provision of Business Development Service and Common Service Facilities (Machineries).

Area: Jones and San Agustin, Isabela

ARCESS Project Jones-San Agustin Cluster on a flat to slightly rolling fertile land and largely along riverbanks. Corn is the main product in the area. Cornfields in the cluster are generally dependent on rainfall as source of irrigation water. Others use open-source pumps to irrigate their cornfields. Industry in the area is agri-based with very limited farm, off-farm and non-farm livelihood opportunities available among the target beneficiaries and non-beneficiaries as well.

Corn is the major crop planted in the sub-project's service areas. Total land area covered by the Bannawing Farmers' MPC totaled to 355.60 hectares. Average farm size of members is pegged at 2.80 hectares with average production of members at 11.20 metric tons per hectare. On the other hand, the Mapalad-Bautista-San Antonio-Sto Niño Marketing Cooperative has rice, corn, cassava and carabao milk as their major commodities. Total area covered by the ARBO is pegged at 519 hectares with average farm size of members at 3 hectares. Average production of members for rice is at 4 metric tons per hectare per cropping, corn is pegged at 0.5 metric tons per hectare per cropping, cassava is at 0.8 tons/hectare per cropping and milk production pegged at 2-3 liters per day.

2. Sub-Project Title: Kita sa MaisanAtingPalakasin.

Area: Tumauni and Ilagan City, Isabela

In the context of the sub project which is focused on corn, the areas are generally crop producing areas implementing mono-cropping pattern in two cropping seasons. Majority of the areas are rainfed and farms are located in river vegas to rolling hills. Soil is generally characterized by sandy loam soil suitable for corn production. These areas are considered to be major corn-producing areas.

The sub-project cuts across three municipalities in the province to include Tumauni, where the lead ARBO is located. Lapogan MPC has rice and corn as their major crops. Total land area planted to corn corresponds to 239.40 hectares while rice accounts to 120 hectares.

Average farm size of members consists of 1.5 hectares for corn and 0.79 hectare for rice. Average production of members for corn in the area accounts to 6.34 metric tons while 5.06 metric tons for rice. Ilagan City is one of the areas under the sub-project. All of the ARBOs included in the cluster are four (4) Women Auto Savings Groups (ASGs). The St. Elizabeth ASG has rice, corn and tobacco as major cash crops. Total land area of the ARBO accounts to 945.12 hectares. Average corn farm size of farmers corresponds to 0.5 hectare with average production of 4.5 metric tons per cropping per hectare. The San Francisco KababaihanASG has corn as its major crop. Total land area accounts to 248.67 hectares. Average farm size of members is 1.50 hectares with average corn production of 5 metric tons. Corn and peanut are the major commodities of the Sta. Maria ASG. The total area of the ARBO accounts to 104.80 hectares. Average farm size of members is pegged at 1.20 hectares with average production of 5 metric tons per hectare. Lastly, the San Rafael KababaihanASG has corn, rice and peanuts as their commodities. Total area covered by the ARBO is pegged at 359.51 hectares. Average farm size of members is placed at 1.65 hectares with average production of 5 metric tons per hectare.

The landscape of the sub-project is composed of non-irrigated flatlands. Cornfields in the cluster are dependent on rainfall as source of irrigation water. Others use open-source pumps to irrigate their cornfields. The farm production technology used in the area is a combination of labor and mechanized production system. Land preparation of corn fields is done with tractors/mechanized preparation coupled with labor-based/manual planting, fertilization is done manually, as well as weeding with the use of draft animals. Harvesting is done manually. The ARBOs use threshers during harvesting. Tractors, pavements, kuliglig, trailers, water pumps, storage facilities (kamaligs) and hauling trucks are present in the locality. Very limited livelihood opportunities are available among the target beneficiaries specially the KababaihanASGs.

3. Sub-Project Title: Provision of Common Pre and Post Harvest Facilities Cum Seed Capital (Rice). Area: Mallig and Roxas, Isabela

The area of the sub-project composed of irrigated rice fields, which are generally irrigated flatlands. The landscape of ARCESS Roxas-Mallig Cluster is relatively composed of flatlands with minimal rise at certain point with base mountain elevations on the eastern part. Other parts of the cluster can be described as low-lying hills with rolling terrain with an elevation of 200 feet or 61 meters above sea level. The cluster is dissected by creeks, rivers and waterways acting as natural drainage from waters coming from the uplands. The *Siffu River* and *Magat River* supply the rice fields in the cluster with irrigation. In this ARCESS Project cluster, rice is the predominant crop, planted twice a year. In the service area of the proposed project corn is also planted. Livelihood opportunities among the target beneficiaries are limited to on-farm and off-farm activities in rice and corn farming.

The sub-project is composed of two (2) ARBOs from the municipalities of Roxas and Mallig. North Siffu MPC is the lead ARBO with palay, corn and vegetable as their major commodities. Total area covered corresponds to 650 hectares with average farm size of members' accounts to 2 hectares with average production of 5.5 metric tons per hectare. On the other hand, the Malaya Development Cooperative has rice and dairy as its major commodities. Total area covered is 2,506 hectares with average farm size of members accounting to two (2) hectares with average production of 4.5 metric tons per hectare.

The farm production technology used in the area is a combination of labor and mechanized production system. Land preparation of corn fields is done with tractors/mechanized preparation coupled with labor-based/manual planting, fertilization is done manually, as well as weeding with the use of draft animals. Harvesting is done manually. The ARBOs use threshers during harvesting. Tractors, pavements, kuliglig, trailers, water pumps, storage facilities (kamaligs) and hauling trucks are present in the locality.

4. Sub-Project Title: Council of Irrigators Mechanized Rice Production. Area: Cauayan City, Isabela

ARCESS Project MINAGMARCO ARC Cluster lies on a flat fertile land of Isabela. The landscape of ARCESS Project MINAGMARCO ARC Cluster is composed of irrigated flatlands. The Magatriver (through the Magat Dam supply the rice fields in the cluster with irrigation. In this ARCESS Project cluster, rice is the main crop, planted twice a year. Mono cropping is practiced.

MINAGMARCO ARC Cluster areas are generally rice producing areas. Total area covered is 2000.9277 hectares with average farm size of members at 1.3 hectares with 5.85 metric tons per hectare as average production of members. Considerably, the production system of

MINAGMARCO is highly mechanized, wherein, land preparation is done with tractors (kuliglig) and harvesting is done with combine reaper-harvester. Fertilization is done using manual labor.

The Council of Irrigators Association (CIA) showed good financial position in their operation particularly in year 2009 and 2010. They have increased total assets in 2010 with Php 5,952,424.13 as compared to year 2009 with Php 3,125,134.92.

5. Sub-Project Title: Provision of Business Development and Common Service Facilities for Rice. Area: San Manuel, Isabela

The landscape of ARCESS Project San Manuel is composed of irrigated flatlands. The dominant cropping pattern is rice-rice. The farmers are mostly Agrarian Reform Beneficiaries. Though near the Magat River and the area receives irrigation from it, the IA-member ARBO of the cluster depended largely on rain water as source of irrigation for their rice fields. Others use open-source pumps to irrigate their ricefields. Very limited livelihood opportunities are available among the target beneficiaries. The sub-project consists of three (3) ARBOs in the municipality of San Manuel. Rice is the major commodity planted. Villacabanes Credit Cooperative has total area coverage of 115.98 hectares. Average farm size of members is pegged at 1.81 hectares with average production of members at 9.8 metric tons. Namnama Irrigators Association on the other hand has 72 hectares of total area covered. Average farm size of members is pegged at 2.05 hectares with average production of members at 10.8 tons per cropping per hectare. The North Diversion Canal 8 Council of Irrigators Association (NDC 8 CIA) has 1,374 hectares of total land area. Average farm size of members is pegged at 1.43 hectares with average production of members at 7.5 tons per cropping per hectare.

C. Technical Persons in Project Implementation

1. Organizational Structure

Figure 3 shows the organizational structure of AES technical working group. The project team was staffed with different as indicated in the organizational setup. They were coming from main campus of the Isabela State University at Echague, Isabela.

2. Technical/Managerial Staff

a. **PEDRITA N. MEDRANO** - Project Coordinator/ Technology Transfer Specialist. She is responsible to: 1) oversee overall project implementation; 2) heads the management team; 3) review and suggest improvement of training modules; 4) coordinate/Liaise with the management team and DAR; 5) monitor and evaluate project implementation; and 6) prepares progress report and submit to DAR.

b. **VANESSA V. CARRIEDO**- Asst. Project Coordinator/ IEC Development Specialist. She is task to do the following: 1) assist the project coordinator in overall implementation; 2) manages the production, development, prototyping and dissemination of IEC materials; 3) review of training modules/concepts; 4) in coordination with the Training Specialist, conduct information and needs assessment; 5) coordinate and facilitate conduct of trainings/coaching/ mentoring activities; 6) prepare reports; and 7) do other activities mandated by the project leader in relation to project implementation.

c. **ALBERTO R. DOMINGO** - Economic Development Specialist. His tasks are: 1) Prepares training design along economic development of the ARBOs (business plan making, CSF business plan and scheduling); 2) Lead in the identification of resource persons, preparation of logistics and others; 3) assist in the conduct of the trainings; 4) prepare activity report after trainings; and, 5) do other activities mandated by the project leader in relation to project implementation.

d. **LUZVIMINDA L. DOMINGO** - Community Organizing and Training Specialist. She is assigned to: 1) oversee preparation of all training modules; 2) lead the conduct of trainings and other technology transfer activities; 3) conduct regular monitoring and evaluation of trainings conducted; and, 4) do other activities mandated by the project leader in relation to project implementation.

e. **DIOSDADO C. CAÑETE** - Agri business Development Specialist. His tasks are: 1) prepares training design along agri-business development of the ARBOs (farm management, planning and others); 2) lead in the identification of resource persons, preparation of logistics and others; 3) assist in the conduct of the trainings; 4) prepare activity report after trainings; and, 5) do other activities mandated by the project leader in relation to project implementation.

f. **Consultants** (on an on-call basis). Table 1 shows the list of on-call experts as consultants of the project indicating their position and expertise.

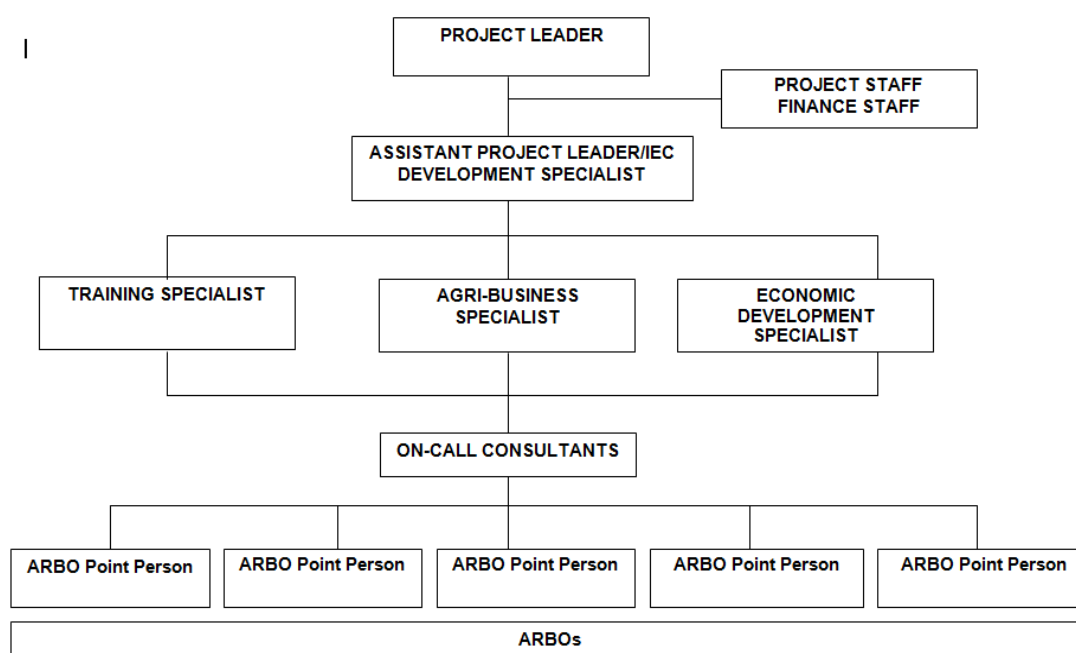


Fig.3: Organizational Structure of Project Core Team

D. Project Inception Meeting

The inception meeting was conducted on August 7, 2013 at Biazon Hostel, Isabela State University, Echague, Isabela. Representative from the lead ARBOs in the sub projects are invited composed of the following: Chairman, President/Manager, Accountant, and five members from the various service areas of the ARBO.

Representatives from the ARBOs in the cluster are also invited together with the Department of Agrarian Reform Provincial Office - Barangay Development Council Department (DARPO-BDCD) representatives. The third party project progress monitoring and evaluation representative was also present during the inception meeting.

Table.1: Nature, task and position/expertise of on call experts of the project

Nature of Task	Position/expertise	Task
One (1) Soils Expert One (1) IPM Expert One (1) Organic Fertilizer Production Expert One (1) Post Harvest Management Expert One (1) Food Technologist One (1) CSF Expert One (1) Farm Management Expert 12 Experts for the 12 modules on Season Long Rice Production Technology 12 experts for the 12 modules on Season Long Corn Production Technology	Soils Expert IPM Expert Organic Fertilizer Production Expert Postharvest Management Expert Food Technologist Farm Management Expert 12 Experts for the 12 modules for Season Long Rice Production Technology 12 experts for the 12 modules for Season Long Corn Production Technology	<ul style="list-style-type: none"> • Serve as resource speakers on the identified areas for training conduct. • Provide recommendations on existing practices of rice and corn farmers.

The project team divided the inception meeting into three (3) parts. First is the presentation of the NADA results of the sub-projects. The project team saw this as an important part of the inception meeting as a stepping stone of the AES implementation. It should be noted that the ISU Project Team was also the group of evaluators who conducted the NADA of the sub-projects. Second is the presentation of the Personal Entrepreneurial Competencies of the ARBOs. Considering that the ARCESS Project is towards implementation of an agri-enterprise, it is important that the ARBOs could see their entrepreneurial competencies. These first two parts serve as feed backing activity with the ARBOs on the NADA results. Third part is the presentation of the project brief followed by the levelling of expectations and open forum with the ARBO representatives.

The following are the highlights of the conducted inception meeting with the ARBOs:

Presentation of the NADA results

Ms. Carriedo, Project Staff, presented the NADA results to the ARBO representatives. Particularly she provided focused on the training needs, CSF needs vs. CSF proposed in the ARCESS project, recommendations from the ISU Evaluation team. (please see attached presentation). After the presentation, Ms. Carriedo asked the group if the presented results (CSFs and agricultural needs) are still prevailing in the communities. The group answered yes, with some comments on the awarded CSFs.

The Chairman of the Lapogan MPC expressed that the CSF provided to them are not suited to their needs, as the corn thresher provided to them requires de husking first before threshing. The technology according to him does not suit the existing production technologies implemented in their fields. DARPO representative, Ms. Loret Gaspar

answered that such had been the problem of the first phase, since the bidding process was made at DAR Central Office. Also, according to her, the lack of specifications made the bidding process acquire the threshers from Cebu. She added that the problem was answered for the second phase of ARCESS Project, as bidding will be done at the regional level with complete specifications.

The D4 Series CIA also expressed concern on the specification of the tractor given as he said that such could have been better if the specification a 90 horse power tractor, compared to the 35 horse power engine provided. This is seconded by the North Siffu Farmers' MPC. Ms. Loret answered that the ARBOs should maximize the utilization of the awarded machineries. According to her, the ARBOs could buy a new one from the income of the CSFs. All the ARBOs agreed. The North SiffuMPC said that they now have Php200,000 income out of the rentals of their CSFs.

Personal Entrepreneurial Competencies

Dr. Luzviminda Domingo presented the result of the PEC scores obtained during the NADA. In general, the ARBOs have low entrepreneurial competencies. The ARBOs asked if they could still improve on their competencies. Dr. Domingo answered yes and suggested conduct of trainings along the matter.

ARCESS-AES Project Brief

Dr. Pedrita N. Medrano, Project Leader presented the ARCESS-AES Project Brief. She presented the objectives, activities, expected outputs and terms of engagements with the ARBOs along project implementation. During the plenary session, one of the raised concerns is on the season long training of 25 farmer-technicians from each of the lead ARBOs by sub-project. Lapogan MPC said that they cannot provide the

pre-identified in the project. Suggestion from the group is that Lapogan MPC could tap/get other farmer-trainers from the other ARBOs in the cluster. It was agreed upon by the ARBOs. Also, one of the concerns in the season-long training is ID there is a set criteria for the identification of the farmers.

Making the approach participatory, the team asked the ARBOs on what should be the criteria/qualities of the farmers who should undergo training. One of the representatives said that the farmer should have the commitment to finish and share the knowledge that he/she could gain out of the training. Also, they said that he/she should have a farm, since not all of the members of the ARBOs have farm fields. With the initial inputs from the ARBOs, the ISU Project Team presented the proposed list of criteria in the selection of farmers for the season-long training for validation. The criteria are as follows: 1) commitment to coach (willingness to share/serve other members of the ARBOs as a technician), 2) must have a farm and willing to share/use farm in coaching/mentoring of other farmers, 3) all ARBOs included in one sub-project should have at least one (1) representative in the training, so that all member ARBOs of the cluster will be represented), 4) couples are not allowed to attend the trainings. Only one of them should attend the training, and 5) physically and mentally fit regardless of age to undergo training.

The list of criteria was validated and accepted for implementation by the ARBOs. The ARBOs also agreed that the season-long training and the establishment of a demo farm will be conducted at Isabela State University, considering the facilities and resources available in the university. The season-long training will be conducted using the German Dual-Tech approach wherein lecture will be followed immediately by hands-on application. The ARBOs also suggested on the presented contents of the trainings to include specifically the dapog establishment. It was also agreed upon by the stakeholders that the training schedule will follow the planting calendar. The ARBOs agreed to submit the names of the farmers who will attend the training on or before August 14, 2013.

Another concern raised by the ARBOs is the transportation cost of going to ISU during trainings. The ISU Project Team answered that they can write the Local Government Units (LGUs) to shoulder the transportation cost of the farmers to and fro during the training, while meals of the farmer-trainees will be charged against the ARCESS-AES Project fund. Dr. Medrano said that such approach was implemented and proved to be applicable and working during the recently concluded SM Foundation and Har Best Training on High Value

Commercial Crops. The stakeholders agreed that ISU will write the LGUs for the said request.

Season Long Training

During the consultation, on the part of the 25 farmer-technician, the ARBOs signified their concern on the fact that they cannot readily provide the identified list. With this, it is suggested that the methodology of identifying the 25 farmers be changed and should not be confined within the lead ARBO members. As such, the following changes in the methodology will be incorporated in the project work plan: a) the 25 farmers who will attend the season-long training will not only come from the lead ARBO, whilst, a minimum of one representative from the other members of the cluster ARBOs within the sub-project will be included; b) the criteria in identifying the 25 farmer-trainees will be employed; and c) ISU will serve as the training venue for the season-long training for rice, while for corn season training at BannawingMPCI.

Also, there is a change in the schedule of project implementation. Based on bid documents, July should be the start of project implementation, though the problem of common schedule impeded the conduct of the inception meeting. With this, the ISU project team will implement the season-long training for second cropping while conducting the CSF Business Planning cum Training-Workshop for August and September.

Considering that the project will implement a season-long training, another change in the methodology is the integration of previously identified individual trainings into the season long trainings. As per consultation, the ARBOs would like to have an integrated and continuous training course on the production technologies composed of the modules from the pre-identified individual trainings.

E. Farmer Field School (FFS)

1. Identify FFS Study Site

On corn FFS were conducted in separate sites due to the distance of the two ARBOs. BannawingMPC was on site lecture and establishment of techno demo farm. Aside from on call experts who conducted lectures on site on his/her technical expertise, one specialist on corn production from the DA-LGU technician in Jones was assigned to lecture other technologies, establishment and monitor the operation of corn techno demo farm. On the other hand, Lapogan Multipurpose Cooperative was conducted their FFS based on the needed technologies that they want to learn. The trainings were conducted at different sites where the expertise and facilities are located like farm planning was conducted in Isabela State University; soil analysis and fertility management, pest

and diseases control, and postharvest management were conducted at DA-CVRC, Ilagan.

For rice FFS which involving for three (3) ARBOs such as North Zifu, Villa Cavanos MPC and D4 Series CIA was strategizing also its lecture and technical demonstration based on the location of expertise and facilities. Due to unavailability of demo farm area, proximate distance from among them and persons that will monitor and safeguard the demo farm while not on session the group decided to have it in ISU Echague. Among the agencies tapped by the core team to facilitate the FFS were DA-ATI, DA-CVRC and ISU.

2. Name and qualification of facilitator for the FFS

To facilitate the FFS both rice and corn in order to achieve the set forth objectives, the core team tapped a specialist/experts on specific technology on rice and corn production in the university and consortium agencies like DA-ATI and CVRC. Remedial classes were also

undertaken for the ARBOs who want to know topics that can help them increase income like engaging entrepreneurial activities aside from farming. The following are the facilitators, lecturers during the FFS-Corn and Rice as indicated in Table 2.

3. Details on the Curriculum Developed

a. Corn Season Long Training

As conducted, the curriculum implemented followed the “Agro-Ecosystems Approach” or AESA. The Lead Resource Person, Mr. German Cabudol (DA Agricultural Technologist of Jones, Isabela) and ISU TEAM agreed and as implemented, sessions were started from Farm Planning and Budgeting/Seed selection/ Land Preparation, integrated nutrient management, soil testing and analysis (use of BIO-N included), Natural Farm Inputs, integrated pest management, harvesting technology, post-harvest technology, up to storage and marketing.

Table.2: List of experts lecturers of the two season long training programs of the AES project

Corn Season Long		Rice Season Long	
German Cabudol	DA-LGU-Jones Corn Expert	Prof. Teodoro Agtunong	Crop Science/Plant Breeding
Minda Flor Aquino	DA-Region 02 Corn Expert	Dr. Evalyn Rose Romero	Agri-business Management
Severino Tumamang	DA-CVRC Corn Expert	Mr. Jose Felipe Romero	Environmental Science
Leodelia Babaran	DA-CVRC Corn Expert	Dr. William Gabriel	Crop Science
Dr. Democrito Rebong	Plant Breeding	Dr. Juanito Atiwag	Soils Expert
Engr. Arlina Golonan	Agricultural Engineering	Mr. Stanley Pastor	Farm Machinery
Prof. Nelson Sotelo	Agronomy/Crop Science	Dr. Lucila Rocha	Crop Water Management
Dr. Visitation Dacuycuy	Crop Science	Ms. Gracia Amar	Plant Pathologist
		Jean Mirandilla	Soil Science

The lecturers for Remedial Classes:

Dr. Francis Baleta and Dr. Imelda Lucero – Fisheries/Aquaculture

As planned agreed by ARBO Officers/members and Season Long Training (SLT) participants and ISU Team, Season Long Training sessions was conducted once-a-week (every Wednesday or as announced by the resource person).

A field visit by the farmers on the demo site was conducted before their class every Wednesday, usually at 6:00 am. The AESA was conducted during said time and results were presented by group before a lecture was given by the expert.

In a consultation meeting conducted by ISU TEAM in Lapogan MPC, the modules included in the Catch-up Plan were as follows: a) Integrated Nutrient Management, b) Integrated Pest Management, c) Open Pollinated Variety Corn Seed Production, d) Other Corn Production

Technologies, and e) Other Technologies like Vermicomposting Technologies. Experts of DA-CVRC were tapped as resource persons.

b. For Rice Season Long Training

The FFS (season-long training) being developed is based on the training needs of the ARBO with some modifications made during the actual conduct of the training. The training was done at Department of Agriculture – Agriculture Technical Institute (DA-ATI) San Mateo, Isabela where the Resource Persons or experts and most of the facilitators came from the PHILRICE.

The curriculum which is a season-long training integrates experiential learning theory where the farmer-participants learned by actual doing. This was done when farmers

went to the rice demo field areas where they actually conducted hands on demo preparation of the Minus One Element Technique (MOET) supervised and facilitated by the researchers from PHILRICE. The MOET is integrated in the module on Integrated Nutrient Management. For the Integrated Pests Management module, the trainees collected some samples of the pests and diseases in the demonstration farm site which were then identified and classified by them. They presented their outputs during the group presentation. By doing so, the farmer-trainees can apply their learned lessons and knowledge acquired from the lectures and then applied to the actual field. This approach was selected because of the following reasons: a) knowledge acquired by the trainees from the lectures will be applied in the field; b) the approach serves as a feedback or a M & E mechanism where the Resource Person can determine whether there are gaps in the lectures, hence, reinforcement lectures can be done; c) the participants can evaluate by themselves if they need to further learn the lesson or topic given to them. With this reasons, the German Dual Tech System of Training suits the Season Long Training.

Information derived from the survey provided the project team a notion on the topics which needs to be given emphasis and what not. This way the lectures and hands-on activities were need-based.

4. Pre-KSA Measurement Tools

a. Corn ARBOs Community

Knowledge, skills and Attitudes that need to be improved by core group members.

Based on survey, the Bannawing FMC needs to improve on their technical know-how on producing corn. Farm planning and budgeting is also deemed needed as well as the need to improve the entrepreneurial competencies of the ARBO members.

In Lapogan MPC and its women ASG cluster members need to improve on their technical know-how on producing corn. Farm planning and budgeting is also deemed needed as well as the need to improve the entrepreneurial competencies of the ARBO members. Added component technologies such as vermicomposting and production of open-pollinated variety corn seed were identified and were included in the catch up plan.

Tools for administering pre-KSA survey.

Group consultations were conducted as well as a survey form was used to determine the specific individual training needs of farmers. This provided a glimpse of the technical knowledge of the farmers on the trainings to be conducted.

Details on the result of the pre-KSA survey.

There are a total of 25 participants in the Technology and Information Needs Assessment conducted in BannawingMPCI. Technical knowledge on corn production is one of the identified KSA needed by the ARBOs based on the survey result particularly on integrated pest management.

In Lapogan MPC, there are a total of 25 participants in the Technology and Information Needs Assessment. Majority of the respondents are within the age of 36 to 50 years old, with landholdings averaging to 0.5 to 2 hectares. Technical knowledge on corn production is one of the identified KSA needed by the ARBOs based on the survey result.

b. Rice ARBOs Community

Knowledge, skills and attitudes that need to be improved by core group members.

This process of identifying the KSA of the group members is completed through the Technology Need Assessment (TNA0 conducted. Results showed that ARBO members of North SiffuFMPC, D4 Series CIA and VCC need to improve their technical know-how on the commodity production. This result validated the result of the NADA wherein, technical knowledge on rice production technologies specifically on the use of the CSF is one of the major concerns. The issue of how to integrate and assimilate the technical knowledge is one of the KSA which needs to be addressed. Farm planning and budgeting is one of the KSA that is found to be wanting among the ARBO members.

Tools for administering pre-KSA survey.

Group consultations are conducted as well as a survey form is used to determine the specific individual training needs of farmers. A pre-test questionnaire will also be used before the start of every training module. This will provide a glimpse of the technical knowledge of the farmers on the trainings to be conducted.

Details on the result of the pre-KSA survey.

Based from the data gathered, the farmer-enrollees identified the lack of technical knowledge in rice farming as their prime weakness in their rice production. Clearly from the identified training needs, the farmers need to undergo the season long training for rice to answer for their need on technical assistance on rice production.

5. Post-KSA Measurement Tools

a. Improvements in knowledge, skills and attitude by core group members.

The attendees derived added technological information on integrated nutrient and pest management. Accordingly, they derived knowledge on the use of natural enemies of corn and exhibited positive attitude on the use of these bio pesticides. Skills on preparing a vermicompost pit as well

as proper management techniques were also acquired by the farmers as an add-on feature of the SLT.

b. Tools for administering post-KSA survey.

Hands-on demonstration on the application of theories discussed was conducted during the trainings as seen in the demonstration site through the Agro Ecosystem Analysis (AESA). It made use of presentation of findings and applying the theories.

c. Details on the result of the post-KSA survey.

Skill on vermicomposting technology is evidently acquired as the farmers demonstrated their knowledge gained during the hands-on activity. Positive view on the use of INM and IPM implementation was also evident as the farmers signified intention to utilize said technologies with the end view of lower production cost and as a healthy production option.

6. Follow-up

The FFS facilitators served as the conduits of the farmers with the experts. Documentation on the implementation of the FFS activities was done. Coaching and mentoring by ISU TEAM in topics of interest of participants.

F. General Assessment of each sub-project in the contracted lot

1. Bannawing Farmers' Multipurpose Cooperative. The Bannawing Farmers Multipurpose Cooperative is peculiar among the ARBOs served in terms of geographical setting, and communication access, which could be attributed to the exhibited strong group cohesion of the officers and members. Considerably, it is the farthest service area of the project.

The AES interventions specifically on the provision of season-long trainings were conducted in collaboration with the Local Government Unit of Jones, Isabela. The approach implemented was the AESA. This approach was complemented by the establishment of a demonstration farm in the vicinity. With this setup, the participation from the trainees registered a complete attendance as well as exceeded the target of 25 farmers to an actual number of 31. Field visit, harvest festival and graduation were also conducted as culmination activities for the trainings conducted.

Coaching and mentoring activities were conducted onsite. Through these activities, constant advice on how to make the common service facilities (CSFs) profitable was also imparted. Added technologies on organic fertilizer production were also provided to the ARBO members. These technologies serve double purpose as they serve as part of the production technologies alternative to synthetic fertilizer, as well as potential source of income.

A technoguide on corn production was also provided. Flyers on the add-on technologies were also developed and disseminated. The ARBO also established a vermicompost production area in their barangay. One problem encountered in this sub project is the technical problem encountered by the sub-project on their CSF machineries. The conducted Lakbay Aral provided insights for the ARBO members.

Across project interventions implemented, gender balance is very prevalent. Considerably, at the onset of project implementation, the ARBO somehow lacks the needed business mindedness required in managing an agri-business enterprise. Significantly, after project implementation, the interventions changed their perspectives on their facilities and developing an entrepreneurship mind. With this changed values and mind set, the ARBO still need continuous coaching activity to further develop their entrepreneurial capacities. This will complement the improved managerial capacity of the ARBO in handling the cooperative operation. Based on the assessment conducted, the ARBOs still yet to establish a full scale cooperative operation on a day-to-day basis. The ability of the ARBO to learn from other ARBOs within the project helps them to innovate and improve their operation.

2. Lapogan MPC. The Lapogan Multipurpose Cooperative is one of the experienced ARBOs in the AES Isabela Lot. It has experience on producing and marketing BIO-N. The production stopped since they lack adequate market for their BIO-N. The cooperative has an existing office and other infrastructures such as the drying pavement, tractor and a storage facility. The ARBO has a long standing reputation as a cooperative.

It is peculiar with the ARBOs since they still have not received their CSF machineries under the ARCESS Project. It is a known fact since the start of the AES project that the corn sheller provided to the ARBO is not applicable to the current production system of the community. With this, the ARBO has no CSF operation at present.

Trainings were conducted on a need-based basis. In consultation with the ARBO, a set of trainings particularly on fertilization management, pest and diseases management were conducted in collaboration with the Department of Agriculture – Cagayan Valley Research Center (DA-CVRC) in Ilagan, Isabela. A technology demonstration farm was not established for the ARBO since the project duration does not permit the intervention since it was too late then for the activity. The farmers participated well in the conducted trainings. IEC materials were also developed for the ARBO.

In the conduct of the interventions, especially on the trainings conducted, the ARBO showed exceptional

technology-orientation. The specific technologies provided to them complemented their existing corn production practices. The ARBO also established a vermi-composting plot.

Based from the evaluation conducted after project implementation, the ARBO still has reservations since they have yet to receive the CSF component of the project. Accordingly, the trainings were used in their production but still lack the mechanization component.

3. D4 Series CIA. A unique ARBO whose income is not primarily derived on credit/multipurpose services of the organization but more on their share from Irrigation Service Fees from National Irrigation Administration (NIA).

Project interventions include the conduct of season-long training on rice production and the establishment of rice technology demonstration. The German Dual Tech system was implemented in the season-long training. Technology interventions on soil testing and analysis, IPM integration and use of mechanized system in rice production were the focus of the season-long training. A total of 27 farmers completed the training and graduated as farmer-technicians. Reinforcement trainings were conducted particularly on the integration of technologies as livelihood options for the ARBOs. These include the conduct of training on rice-fish culture, and organic fertilizer production.

At the onset of project implementation, analysis result to low entrepreneurial competencies of the CIA. The development of the CSF Business Plan opened the minds of the CIA to make business out of the provided machineries. As of date, they are integrating the services of the CSFs as a business enterprise, but still wanting, which is why continuous coaching and mentoring activity should be implemented.

After project implementation, the CIA is now willing to use organic fertilizer in their production considering that lowland/irrigated rice production is dominantly inorganic in production.

4. North Siffu Farmers' Multipurpose Cooperative. The North Siffu Farmers' Multipurpose Cooperative has a business-minded attitude when it comes to managing the Common Service Facilities (CSFs). As a veteran cooperative they are keen to interventions. They developed a sense of corporate identity within their community. With this, from among the five sub-projects, this cooperative has a working business, complete with office, staff, resources and other enabling factors for a business to thrive. They managed to integrate the CSF in their existing business activities.

From the trainings conducted, a total of 28 farmers attended the season-long trainings. They showed active participation in the in the different interventions provided

to them. The Lakbayaral activities provided to them has provided them with knowledge on other livelihood activities.

As the officers are highly empowered, they needed to train second liners to manage the cooperative in the future. Continuous coaching and mentoring activities should be done at their level to make sure that the accomplishments of the project will be sustained.

5. Villacabanes Credit Cooperative. The Villacabanes Credit Cooperative is the youngest of all the ARBOs from the AES Lot Isabela. It has a strong connection with the Local Government Unit. From among the ARBOs, this ARBO requires more capability building activities.

As to AES project interventions, Villacabanes participated well in the conduct of various activities. On training, they registered a total of 27 participants. In so far as attendance, the Villacabanes Credit Cooperative has the least number of participants in the trainings conducted.

On their CSF operation, the cooperative has yet to maximize use of their machineries.

With the current situation of VCC, they have strong and capable officers which they can bank on. Though, the VCC among others, needed more coaching and mentoring activities to make the organization and its operation stronger.

G. Project Accomplishments

1. Number of farmer-technicians. Table 3 shows the number of farmer-technicians who finished the FFS curriculum.

Table.3: List of farmer-technicians who finished the FFS curriculum of the project

ARBOs	FFS Curriculum
Bannawing Farmers' Multipurpose Cooperative	31
Lapogan Multipurpose Cooperative	28
North Siffu Farmers' Multipurpose Cooperative	27
Villa Cabanes Credit Cooperative	34
D4 Series Council of Irrigators' Association	32
Total	152

2. Trainings Completed

The project completed one each season long training for rice and for corn which were participated by 93 and 31 farmers members in ARBO, respectively, one farmer-technician trainings and eight farm technicians trained.

3. Lakbay-Aral

There were 2 Lakbay-Aral (one for Corn based Enterprise ARBOs and one for Rice based Enterprise ARBOs) conducted.

4. Sustainability Plans

On sustainability planning output are: a) validated farm production and management plan (to include proceeding and attendance of validation sessions and resolutions of ARBO Board of Directors and general assembly approving and adopting the plan) for all participating ARBOs; b) report on adoption and implementation of the Farm Production and Management Plan by farmers in their farms; c) provided component technologies as livelihood options such as training on organic fertilizer production, organic pesticide production (FPJ, FFJ, KAA, Botanical pesticides) vermicomposting; d) fourteen consultation/ coaching sessions conducted; e) Training Manual for all ARBOs; f) Twenty modules and manuals completed; g) One (1) CSF Business Plan for each Lead ARBO; h) One (1) TNA Report Developed for each Lead ARBO; i) One (1) Farm Operation & Management Plan for each Lead ARBO; j) One (1) CSF Operation manual for each Lead ARBO; k) One (1) Training Manual; l) One (1) Training Proceeding; m) Thirteen (13) Training Modules; and One (1) Phase-out plan in each ARBO.

5. IECs

For IECs there were 2 IEC booklet Developed (one for rice and one for corn production); and 2 Technoguide (one for rice and one for corn production).

6. Reports

The team submitted reports to DARPO and DAR Regional Office on the following: a) post evaluation report on the Farm Production and Management Plan Adoption; b) report on Training implemented with list of participants; c) post training reports of farmer technicians with document duly signed by the officers; d) Validated technoguide of commodity; e) Report on Training implemented and post training reports with list of participants; and f) coaching and mentoring reports duly signed by ARBO.

H. Stakeholders Involvement Assessment

As shown in the Table 4, there is high participation from among the stakeholders of the project which leads to its successful implementation and realization of the goals and objectives. The tasks of each stakeholder were delivered at their best on time.

Table.4: Stakeholders assessment of AES Project implementation in Isabela.

Stakeholder	Level of involvement (choose from the following list)	Stakeholders' influence in the current process(Please rate from low to high)	Stakeholders' interest in the current process(Please rate from low-high)	Feedback
ARBOs (including members and officers, as well as households)	Co-deciding	high	high	Participatory process of project implementation
Local Government Units (thru the MAROs)	Co-producing	high	high	The LGUs are included in the training as one of the implementers through co-sharing of resources
Isabela State University	Co-producing	high	high	ISU's co-shares resources and facilities (esp. in the demo farm establishment)
DARPO - Isabela	Advising	high	high	DARPO Isabela provided needed advising and administrative support during project implementation
DAR-Region 02	Advising	High	high	DAR Regional Office provided needed advising and administrative support during project implementation

K. Key Risks, Issues and Slippages Assessment

On risk factor assessment results of the AES, revealed very high but it was managed by implementing an appropriate strategy like intensive advocacy at the community thru imposition of training importance (Table 5). Misunderstanding among ARBOs in the cluster on the use of CSF was the main issue which is considered critical. This was resolved through the help of DARPO

Isabela to make a mediation/negotiation process on ownership and utilization of CSF. The project was encountered delay implementation of of some activities but it is rated low impact since it is within the timeframe of the project. This was overcome by the team through multitasking activities during coaching sessions to keep up with the project.

Table.5: Keyrisk, Issues and Slippages Assessment of AES project implementation in Isabela

<u>Risks</u>	<u>Impact</u> (please rate from very low, low, high, very high)	<u>Risk Management Strategies</u>	<u>Duration</u>
Low participation of farmers in the training	Very high	Intensive advocacy at the community level thru imposition of training importance	October – November 2013
<u>Issues</u>	<u>Priority</u> (please rate from low, medium, high, critical)	<u>Actions Taken</u>	<u>Duration</u>
Misunderstanding among ARBOs in the cluster on the use of CSF	Critical	The project team provided feed back to DARPO-Isabela and asked for a mediation/negotiation process to take place, as this crucial in the project implementation	October 2013
<u>Slippages</u>	<u>Impact</u> (please rate from low-high)	<u>Actions Taken</u>	<u>Duration</u>
Delayed activities	Low (since the delayed activities are still within the timeframe)	Implemented measures such as multi tasking of activities during coaching sessions to keep up with the project implementation.	October-December 2013

IV. SUMMARY, CONCLUSION AND RECOMMENDATION

A. Summary and Conclusion

The market-oriented agri-technology and agri-extension services project was conceptualized based on the recommendation of the third party SUC evaluator after NADA. It is a component of DAR-ARCESS particularly harnessing the participating ARBOs to become skilled and equip with knowledge on business align to the enterprise commodity that they have engaged in. Generally, this AES aims to provide trainings/technology transfer/coaching along the commodity/areas on value chain strategy for the ARCs in Isabela. Specifically, it aims to attain the following objectives: 1) strengthen farm efficiencies and productivity of rice and corn farmers thru provision of training in production technology and management, to wit: soil testing and fertility management, integrated pest management, organic fertilizer production, and farm management and planning; 2) enhance rice and corn farmers' knowledge on postharvest technology and management; 3) improve value-adding activities of rice and corn farmers thru

implementation of training, fora, seminar on primary processing technology and management; 4) enrich rice and corn farmers' knowledge on CSF operations and maintenance; and 5) establish pool of technical experts thru training/coaching of farmer technicians thru Farmer Field School (Demo Farms).

There were five lead ARBOs who participated in this project classified into rice and corn based agri-enterprise communities located in 4 districts of Isabela. Various extension modalities were adopted to attain the set forth objectives of the project. Inception meeting was conducted to have levelling off from among ARBOs, Core Team and DAR about the project implementation.

The project activities were highlighted by two season long training programs one for rice and one for corn production. This was called FFS which is used as venue for lectures and demonstration of technologies on rice and corn. Various topics like farm planning and budgeting, seed selection, soil and nutrients management, integrated pest management, and postharvest processing were lectured goes along to the season long training program of both crops. Other entrepreneurial topics delivered

werevermi culture for organic fertilizer, preparation of organic foliar fertilizer and bio-spray chemicals, mushroom production and smoked fish preparation. Parallel to this activity, sustainability planning, preparation of manuals, modules and IEC materials for both crops were also undertaken and validated by the members and officials of ARBOs.

The outcomes of the different extension modalities adopted were impressive since the project turn it out with the following: a) 39 farmers trained field technicians for corn and 93 farmers trained field technicians for rice; b) two field exposures (Lakbay-Aral) one for rice and one for corn to different private and public agencies outside the region; c) conducted seminar-workshop on sustainability planning; d) developed and disseminated training manuals, modules, technoguide and IEC materials for both crops; and e) various reports submitted to the DAR provincial and regional offices.

Farmers underwent to training program have attained greater knowledge, developed their skills on a specific technologies taught by the trainers and more confident in doing farming as business. Furthermore, relationships of farmer members in ARBOs have improved, becoming closer and open minded individuals regarding to the project.

There is high participation from among the stakeholders that lead to the successful implementation of this project in Isabela. On risk, issues and slippages confronted by the core team management of the project were resolved immediately at the first quarter through Catch-up project plan implementation.

B. Recommendation

Lead ARBOs participated to the project were much provided with technical and financial supports under DAR-ARCESS-AES project that make them equip and

knowledgeable on the commodity where they belong. The graduate lead ARBOs farm-technician specialists must do their share to disseminate what they have learned to other farmers particularly to their constituent ARBOs service areas. The DARPO must provide assistance for program development, financial need and other logistics for the conduct of field extension services of farm-technician specialist. The DAR must follow –up the trained lead ARBOs on the implementation of sustainability plan and conduct periodic evaluation for it.

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PICTORIALS

CORN SEASON LONG TRAINING PROGRAM



Mr. German Cabudol, Senior Agricultural Technician from LGU Jones serves as the Resource Speaker for the conduct of the Season Long Training on Corn Production at Bannawag, Jones, Isabela which commence on January 14, 2014.



Mixing of 2 bags 14 –14 –14 fertilizer with 5 bags Organic Fertilizer



Mixing of corn seeds with BIO-N



Dr. Luzviminda Domingo and Dr. Diosdado Cañete applying fertilizer in the demo site on January 14, 2014



Conduct of 1st Agro Ecosystem Analysis (AESA) on January 22, 2014 at the demonstration site of the Season Long Training on Corn production in Bannawag, Jones, Isabela .



Presentation of AESA conducted on January 22 and 29, 2014



Presentation of AESA conducted on February 12, and 19, 2014





Preparation of Organic pesticides like Fermented Fruit Juice, Fermented Plant Juice, Kuhol Amino Acids and Botanical Pesticides on March 5, 2014 as part of the Season Long Training on Corn Production.



Packing the collected plant/fruit juice for fermentation lead by Mr. German Cabudol of LGU Jones. .



Collecting/Harvesting of the fermented organic pesticides after two weeks by Mr. German Cabudol of LGU Jones. .



Ms. Mindaflor Aquino of DA-RFO II discussing the topic on Integrated Pest Management on March 12, 2014. Participant inspecting the earwigs given by DA-RFO II. After the lecture Ms. Minda Flor Aquino distributed earwigs and trichograma to farmer-participants.



Dr. Alberto Domingo and Mr. Quinones pose at the demonstration site. The crop at 50 days after planting on March 5, 2014



The crop at 78 days after planting on April 2, 2014

RICE SEASON LONG TRAINING PROGRAM



Dr. Pedrita Medrano, Project Leader of DAR-ARCESS AES delivers her Welcome Remarks and Rationale of the Training during the Opening Program on the Season Long Training on Rice Production. Ms. Jesbeth Quidasol, from DARPO delivers her Message during the Opening Program on the Season Long Training on Rice Production on December 4, 2013 at CVARRD Complex, ISU, Echague, Isabela.



Dr. Evalyn Rose Romero and Dr. Juanito Atiwag both Professor from the College of Agriculture while discussing the topic on Farm Planning and Budgeting on December 4, 2013 and Soil Analysis on December 17, 2013, respectively at CVARRD Complex, ISU, Echague, Isabela



Dr. Teodoro Agtunong and Prof. William Gabriel, both Professor from the College of Agriculture while discussing the topic on Seed Selection and Seed Bed Preparation on December 5, 2013 and Land Preparation on December 17, 2013, respectively at CVARRD Complex, ISU, Echague, Isabela.



Mr. Stanley Pastor, Technician from Agri-component Corporation discusses and demonstrated the proper use of the seed sowing machine distributed to ARBOs on December 19, 2013 at CVARRD Complex, ISU, Echague, Isabela.



Technicians from Agri-Component Corporation while demonstrating the proper use of the rice transplanter at the demonstration area on December 19, 2013 at ISU, Echague, Isabela.



Dr. Pedrita Medrano and Ms. Jesbeth during the Ribbon Cutting Opening Program on the Season Long Training on Rice Production on December 4, 2013 at CVARRD Complex, ISU, Echague, Isabela.



Dr. Lucila Rocha, professor from the College of Agriculture while discussing the topic on Water Management on January 6, 2014 at CVARRD Complex, ISU, Echague, Isabela.



The ARBO-participants during an ocular visit at the Organic Farm of DA-ATI San Mateo on January 20, 2014 as part of the training on the Season Long Training on Rice Production.



Ms. Jean Mirandilla from PHILRICE discusses on the topic Integrated Nutrient Management at the DA-ATI, San Mateo, Isabela on January 20, 2014



The participants while collecting soil sample for the preparation of the MOET as part of the lecture on Integrated Nutrient Management at the DA-ATI, San Mateo, Isabela on January 20, 2014



The participants while conducting the Minus One Element Technique (MOET) preparation as part of the lecture on Integrated Nutrient Management at the DA-ATI, San Mateo, Isabela on January 20, 2014



The participants while conducting soil analysis as part of the lecture on Integrated Nutrient Management at the DA-ATI, San Mateo, Isabela on January 20, 2014



the lecture on Integrated Pest Management at the DA-ATI, San Mateo, Isabela on January 27, 2014

The participants while collecting pests at the demonstration area of PHILRICE San Mateo as part of



The participants while collecting pests at the demonstration area of PHILRICE San Mateo as part of the lecture on Integrated Pest Management and The participants while identifying friendly and harmful insects found in the field as part of the lecture on Integrated Pest Management at the DA-ATI, San Mateo, Isabela on January 27, 2014



Ms. Grace Ama, OIC Director of PHILRICE San Mateo
while discussing the topic on Integrated Pest
Management at the DA-ATI, San Mateo, Isabela on
January 27, 2014



Validation of CSF Business Plan at D4 Series CIA on
January 21, 2014 at Minante I Cauayan City.



Finalization of CSF Business Plan at D4 Series CIA on January 28, 2014 at Minante I Cauayan City.



Participants pose in front of the Administration Building of the Philippine Council for Agriculture, Aquatic, Forestry and Natural Resources Research and

Development (PCAARRD), Los Baños, Laguna during

the conduct of Lakbay Aral on March 16-18, 2014



The participants and Spokesperson from PHILRICE pose in front of the administration building of PHILRICE Maligaya on March 18, 2014



The participants watch a video presentation of PHILRICE's programs and projects on March 18, 2014



Mr. Manuel Alejar, Associate Scientist of IRRI explaining the difference varieties of seeds developed by IRRI on March 17, 2014



Participant from D4 Series CIA while reading some information about rice at IRRI's Riceworld Museum and Learning Center on March 17, 2014



Participants from D4 Series CIA while examining one variety of rice at the demonstration area of PHILRICE, Muñoz, Nueva Ecija on March 18, 2014



Engr. Aldrin Hipolito explains to the group the different farm machineries and its uses at PHILMEC Nueva Ecija on March 18, 2014.