29th National Rice R & D Conference
September 7-8, 2016

Department of Agriculture
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CLEAN | GREEN | PRACTICAL | SMART

Accelerating the dissemination of associated technologies for increasing yield and profitability in irrigated ecosystem: The Region 2 Experience

Evangeline B. Sibayan
Supervising SRS

LIST OF ASSOCIATED TECHNOLOGIES

Seed Selection	• Use of the right variety and quantity of quality seeds recommended in the area
Crop Establishment	• Use of plastic drum seeder for row seeding
Tillage	• Reduced /zero tillage, dry tillage
Water Management	• AWD/CI and aerobic rice (AR) culture

LIST OF ASSOCIATED TECHNOLOGIES

Nutrient Management	• RCM/NM, LCC, MOET, NOPT, STK
Pest Management	• Integrated pest management on DS, reduced tillage and AWD fields
Harvest and Postharvest	• Mechanized harvest and post harvest operations

Methodology

Appreciation Seminar
(2 days)

On site Briefing (simultaneous) for the establishment of Techno Demo Farms

Implementers' Meeting

TARGET FOR QUIRINO

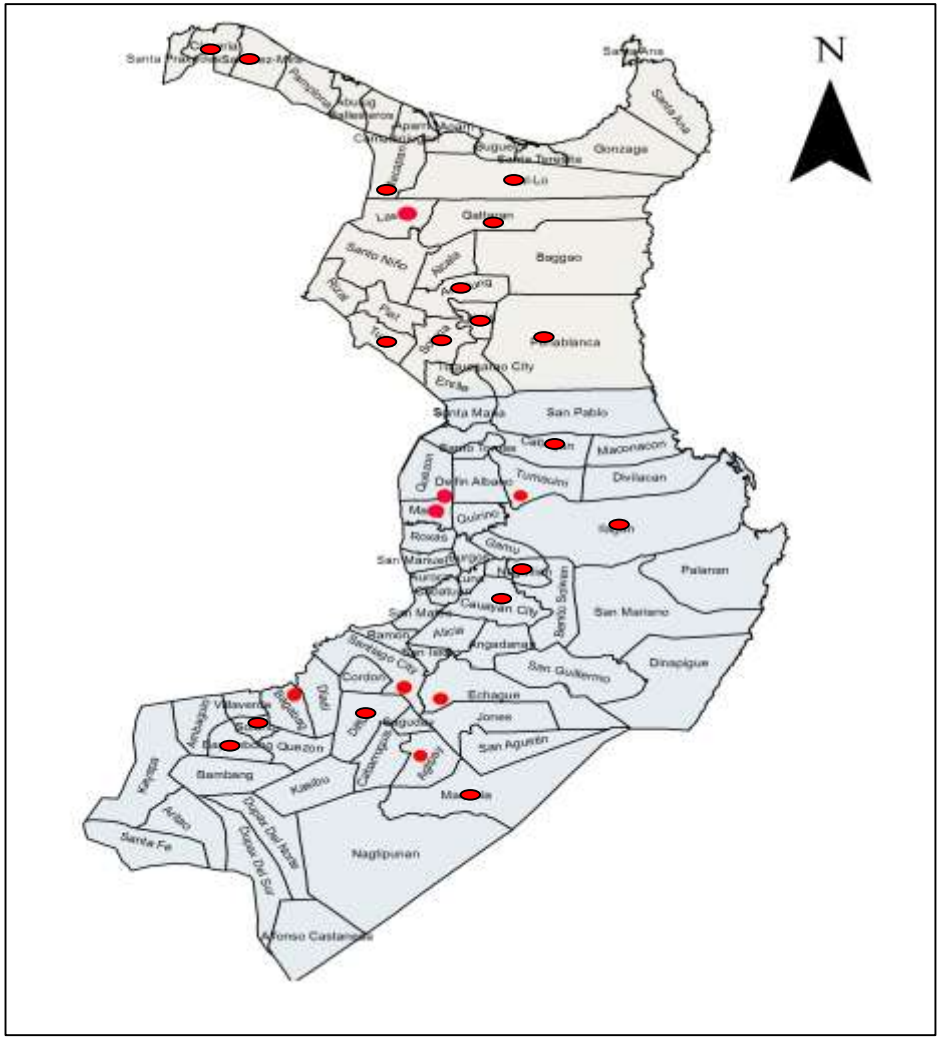
LOCATION	NAME OF IA	TECHNOLOGY TO BE SHOWCASED	FOCAL PERSON	Contact number
SAGUDAY	CENTRO KASANGA	RCM, AWD, DRUM SEEDING	Celedonio A. Chiong	09158797249
SAGUDAY	PILAK-PILAK	RCM, AWD, Drum Seeder	Celedonio A. Chiong	
ECHAGUE	MINSANPANGA	RCM, AWD, 60 KG/HA SEEDS	Raineir C. Aquino	09156451818
ECHAGUE	SALIMIG	RCM, AWD, 60 KG/HA SEEDS	Raineir C. Aquino	
MADDELA	TUNGCAB DUMABATO	AWD, Transplanting, RCM	Danilo c. Otoman	09175270188
MADDELA	UPPER VILLA HERMOSA	Drum Seeder, AWD	Danilo c. Otoman	

Methodology

River Source
Headgate
Main Canal
Lat. A
Sub-Lat. A-1
Sub-Lat. B-1
Lat. B
Sub-Lat. B-2
Lat. C
Sub-Lat. C-1
Sub-Lat. C-2
Sub-Lat. C-3
Turnout Service Area (TSA)
houts

AWD sites are established in a Turn-out Service Area (TSA) with 30-50 farmers

Location of Associated Tech Demonstration Sites in Region 2



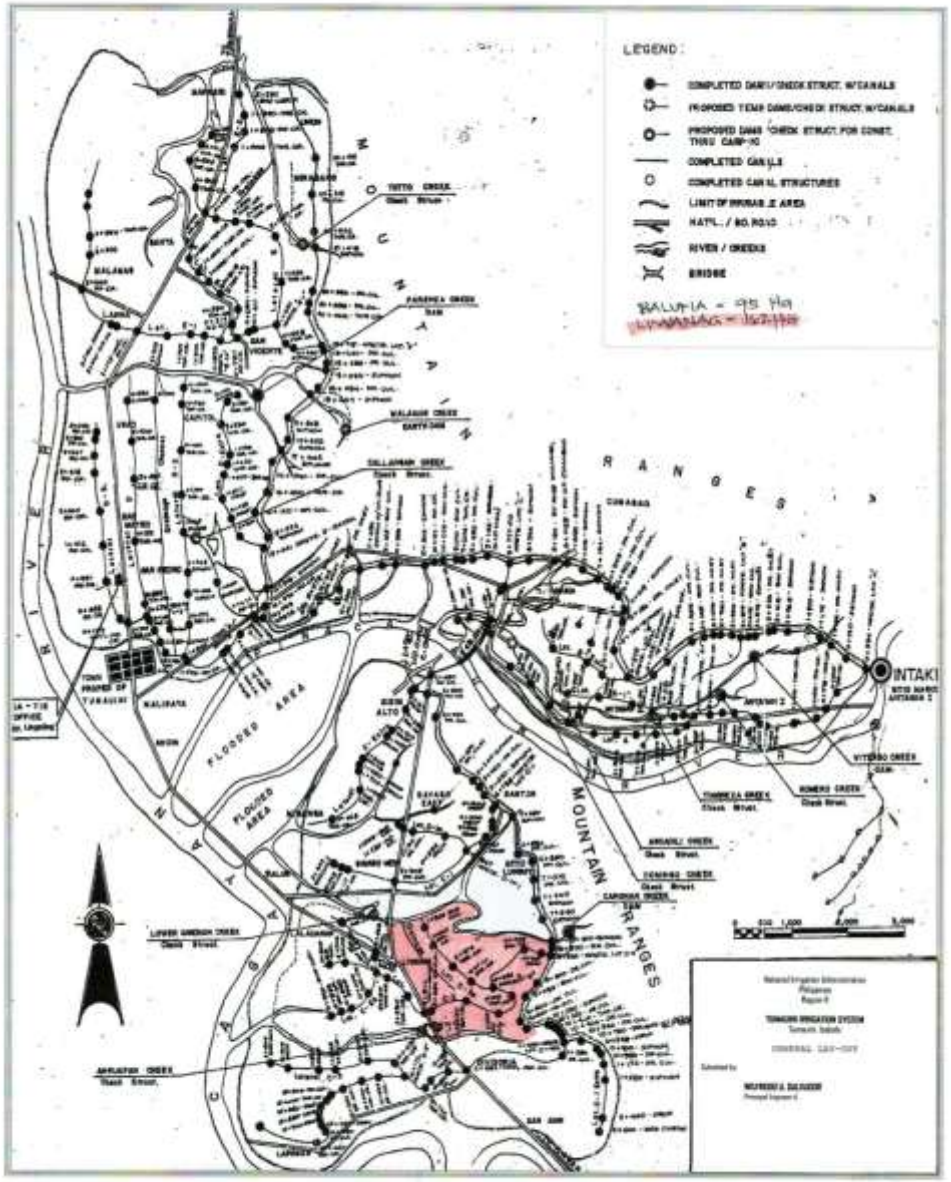
PROVINCE	IRRIGATORS ASSOCIATIONS
CAGAYAN	
Baggao	Nelia
Gattaran	Ubbog
Allacapann	Bisip
Amulung	Cabamma
Lallo	Lallo Eas, Mirasol
Tuao	Namnama
Sta. Ana	Dagupan
Penablanca	Cabsan
Solana	Muhara
Lasam	Sanngir, Nabanaggan West
Claveria	Bensang
Sanchez, Mira	Badagmar
Iguig	Santiago
ISABELA	
Cabagan	Garita
Mallig	Lateral D, Manono, Olango, Holy Friday, Maligaya, Centro
Tumauini	Cumabao, Bantog Bayabo,Liwanag, BALUFIA
Ilagan	San Juan
Santiago City	Lavermos
Cauayan	San Pablo
Naguilan	Minagga
Echague	Rumang-ay
QUIRINO	
Saguday	Magdisag
Diffun	Saranay ,MARIIS
Madella	Tungcab, Cabarana
Aglipay,Quirion	Baro A Parugruyan
NUEVA VIZCAYA	
Solano	Tucal, Lactawan,Bintawan,Lacar Dam, DADAP, Curifang
Bayombong	Lower Addawan, Paitan Farmers Org
Bagabag	Lantap-Tay-Ak

Collective Conduct of on site briefings (PhilRice, RFO 2 and NIA 2)

Establishment of demo farm and monitoring/data gathering

Field Day at Liwanag IA, Tumauini IS, Tumauini, Isabela, March 2016

RESULTS



Tumauini Irrigation System (TIS)

Case 1- AWD Site

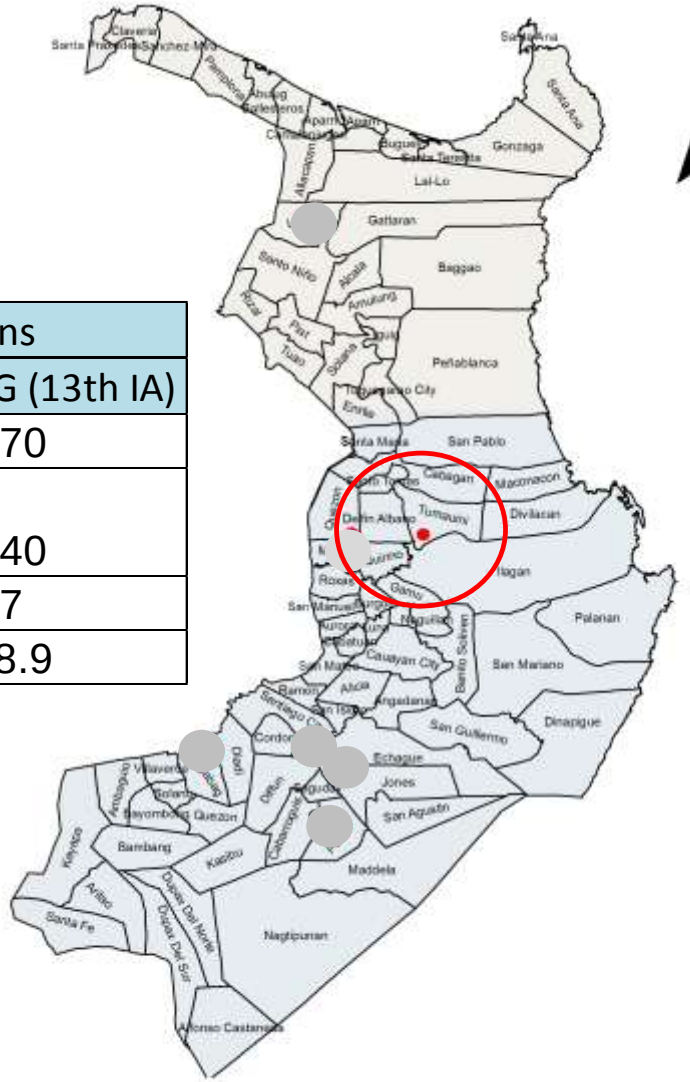
Details	Values
Total Service Area (ha)	3,020
Number of IA	14
Farmer Beneficiaries	1,817
Number of TSA	147
Length of Canal (km)	11.4
Area of IAs under Study (ha)	
BALUFIA	94.5
LIWANAG	170.4

*TSA- Turn out service area

TUMUAINI Irrigation System, NIS 1, Isabela IMO

- ✓ **Draws water from Cagayan River**

Details	Irrigators' Associations	
	BALUFIA (12th IA)	LIWANAG (13th IA)
Area (ha)	90	170
Number of Farmer Beneficiaries	71	140
Number of TSA	5	7
Canal Length (km)	2.0	18.9



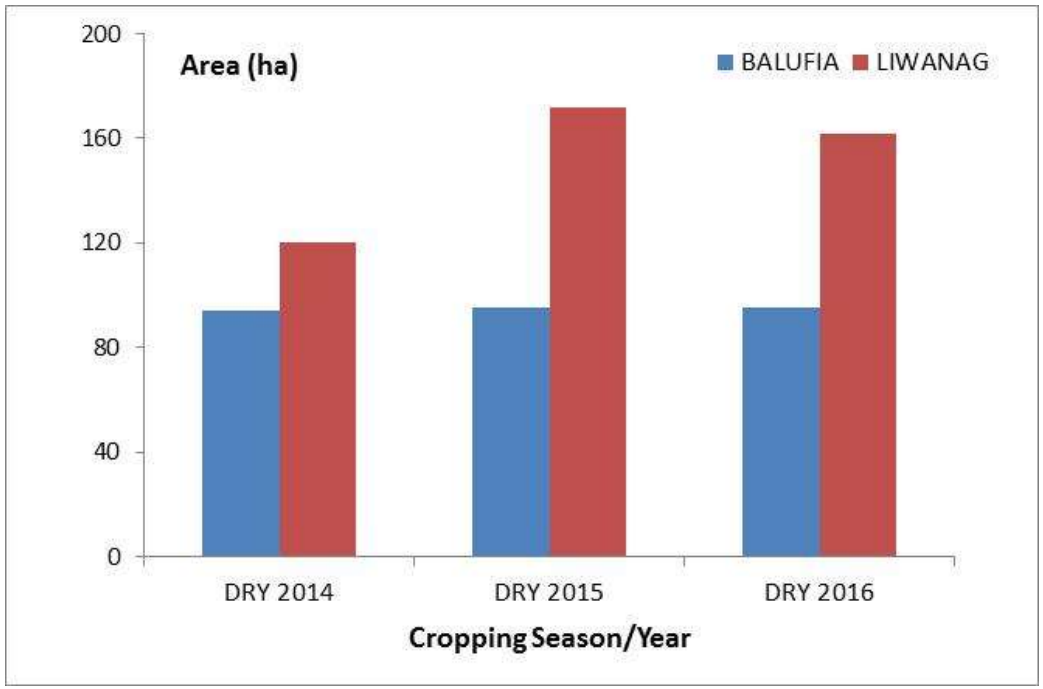
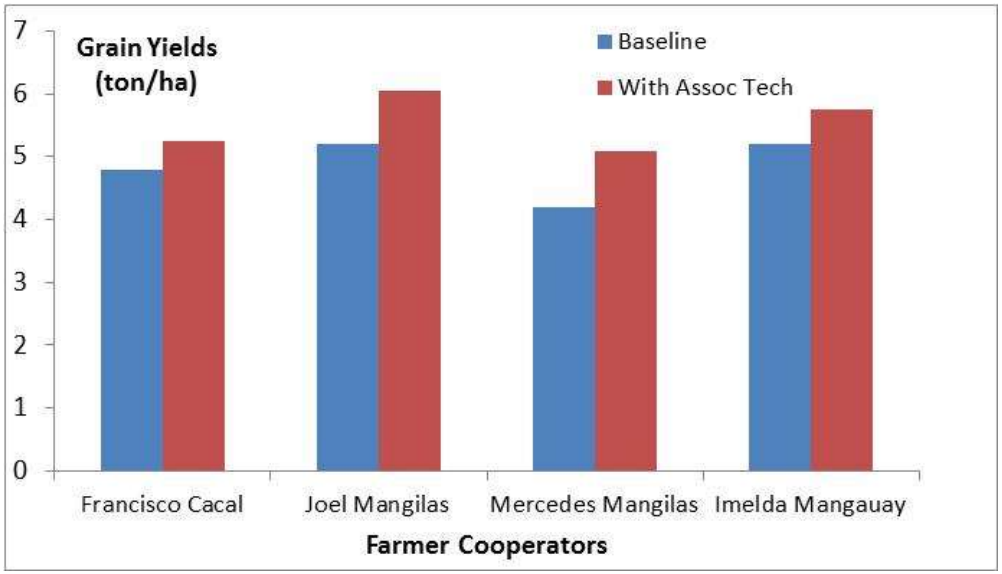


Figure 1. Graph showing the increase in irrigated area in Liwanag IA during 2015 and 2016 DS

- Increased cropping intensity of Liwanag IA from 1.8 to 2.0 after Balufia IA adopted AWD



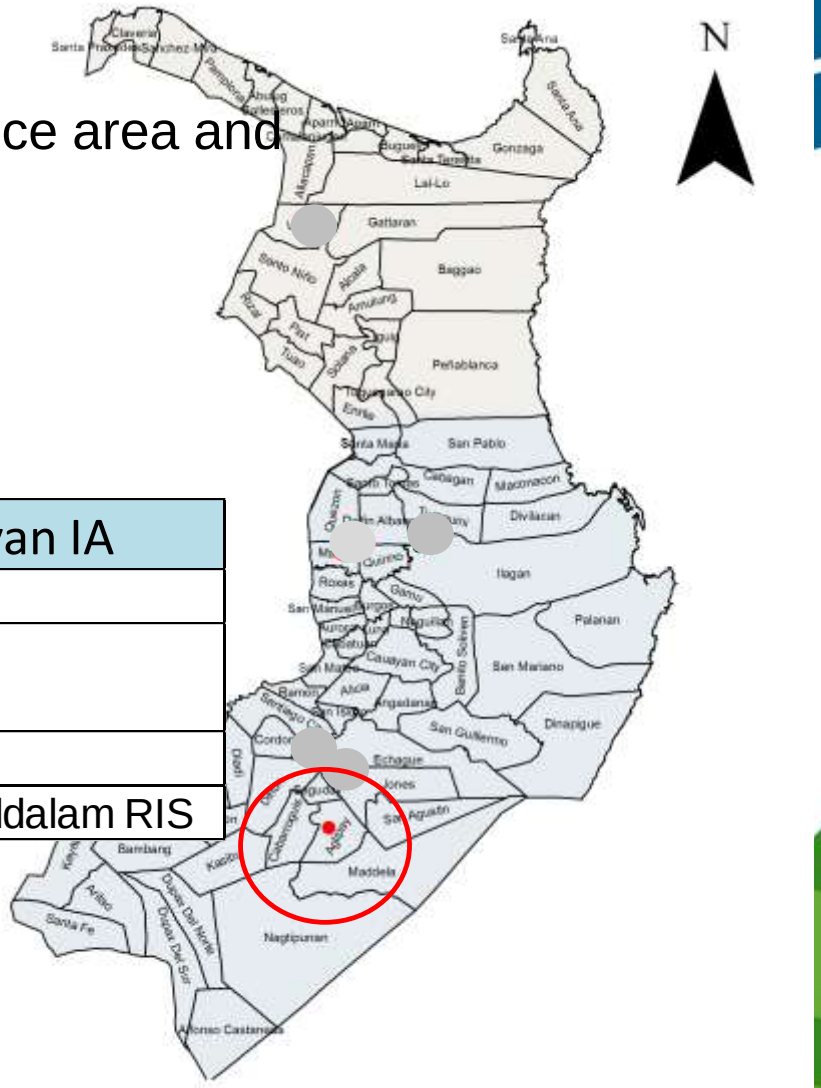
- Increased grain yields of farmers by 9-18% adopting AWD relative to the conventional practice (CF)

Figure 2. Grain yields of selected farmers in Balufuia IA practicing AWD, 2016 DS

CASE 2

Addalam RIS, NIS 1, Quirino IMO

- Congressional District 1
- Composed of 17 Ias, 10, 626 service area and
- 6, 755 farmer beneficiaries



Details	Baro a Pagrugyan IA
Service Area (ha)	464
Number of Farmer Beneficiaries	350
Number of TSA	18
Toposequence	17th IA: Tail end of Addalam RIS

Site verification and distribution of observation wells to farmer cooperators

Table 1. Fertilizer recommendation based on RCM and farmers' practice for Baro A Pagrugyan IA, Addalam RIS, Villa Pagaduan, Aglipay, Quirino 2016 DS

Name of Farmer	Variety	Farmers' Practice	RCM Recommendation	Actual Application	Yield (t/ha)
Merlita C. Belmonte	Hybrid	15 DAT 2 bags C + 1 bag 21-0-0	0-14 DAT 4bags 14-14-14	7DAT 4bags 14-14-14	7.34
		30 DAT 2 bags urea + 1 bag C	21-24 DAT 2bags 46-0-0	22 DAT 2bag 46-0-0	
		55 DAT 2 bags urea + 1 bag 0-0-60	34-39 DAT 2 bags 46-0-0	34 DAT 2bag 46-0-0 + 1 bag 0-0-60	
		NPK= 123.5-14-44	NPK= 120-28-28	NPK= 120-28-58	
Benito Lagmay	Hybrid	15 DAT 2bags 14-14-14 + 1 bag 46-0-0	0-14 DAT 4bags 14-14-14	7DAT 4bags 14-14-14	6.25
		36 DAT 2bags 46-0-0 + 1bag 14-14-14	21-24 DAT 1.5bag 46-0-0	22 DAT 1.5bag 46-0-0	
		Booting 1 bag 21-0-0	34-39 DAT 1.5bag 46-0-0	36 DAT 1.5bag 46-0-0 + 1 bag 0-0-60	
		NPK = 100.5-21-21	NPK= 97-28-28	NPK= 97-28-58	
Noli Castillo	Hybrid	15 DAT 2bags 14-14-14 + 1 bag 46-0-0	0-14 DAT 4bags 14-14-14	7DAT 4bags 14-14-14	5.86
		36 DAT 2bags 46-0-0 + 1bag 14-14-14	21-24 DAT 1.5bag 46-0-0	22 DAT 1.5bag 46-0-0	
		Booting 1 bag 21-0-0	34-39 DAT 1.5bag 46-0-0	36 DAT 1.5bag 46-0-0 + 1 bag 0-0-60	
		NPK = 100.5-21-21	NPK= 97-28-28	NPK= 97-28-58	

Table 2. Profitability analysis between farmers' practice and adoption of AWD, RCM and hybrid rice , Baro A Pagrugyan IA, Addalam RIS, Villa Pagaduan, Aglipay, Quirino 2016 DS

Farmer Cooperator	Technologies adopted	Grain yield (kg/ha)	Gross income (Php)	Production cost (Php)	Net income (Php)
Merlita C. Belmonte	Baseline Data	5,600	78,400	47,241	31,159
	AWD + Hybrid Rice + RCM	7,340	102,760	60,237	42,523
Benito Ligmay	Baseline Data	5,100	71,400	46,139	25,261
	AWD + Hybrid Rice + RCM	6,250	87,500	53,556	339,944
Noli Castillo	Baseline Data	5,400	75,600	47,466	28,134
	AWD + Hybrid Rice + RCM	5,860	82,040	51,831	30,209

Name: Leonida Baniqued
Address: Cento 1, Mallig, Isabela
(17.20844, 121.6173)

Variety: NSIC Rc196H (MESTISO 16)
Target Yield: 9.36ton / hectare

Recommended Rate: 133.1 - 37.52 - 16.2 - 11.02





STAGES	Pagsusuwi	Pinakamaraming bilang ng suwi	Paglilihi	Pamumulaklak	Paglalaman hanggang Paggulang	
DAT Days After Transplanting	8-14	21-27	44-50	57-63		
Option 4						**Total**
Complete	46.0kgs 1.0 bag(s) P 993.6	46.0kgs 1.0 bag(s) P 993.6				P 1,987.2
Urea	44.0kgs 0.75 bag(s) P 844.8	58.0kgs 1.25 bag(s) P 1,113.6	101.0kgs 2.0 bag(s) P 1,939.2	58.0kgs 1.25 bag(s) P 1,113.6		P 5,011.2
Muriate of Potash	3.0kgs 0.0 bag(s) P 85.2			14.0kgs 0.25 bag(s) P 397.6		P 482.8
Zinc Sulfate	12 kgs P 384					P 384
Total per Stage:	P 2,307.6	P 2,107.2	P 1,939.2	P 1,511.2	**Grand Total**	**P 7,865.2**

This total fertilizer computation is for a hectare rice field. To adjust the computation to your actual farm size, press adjust size

Adjust Size

The potential yield of NSIC Rc196H (MESTISO 16) in your ricefield if you follow this recommended fertilization guide is 9.36tons/ha or 187 cavans, given that other crop management areas (cultivation, water management, pest management, etc.) are not neglected and conditions for crop growth and development are favorable for entire crop duration.

Accelerating the Development and Dissemination of Associated Technologies on Rice Production that are Resource Use Efficient

WATER SAVING TECHNOLOGY (WST) DEMONSTRATION FARM

TECHNOLOGY COMPONENT:

A. Adoption of Controlled Irrigation/ Alternate Wetting & Drying (AWD)

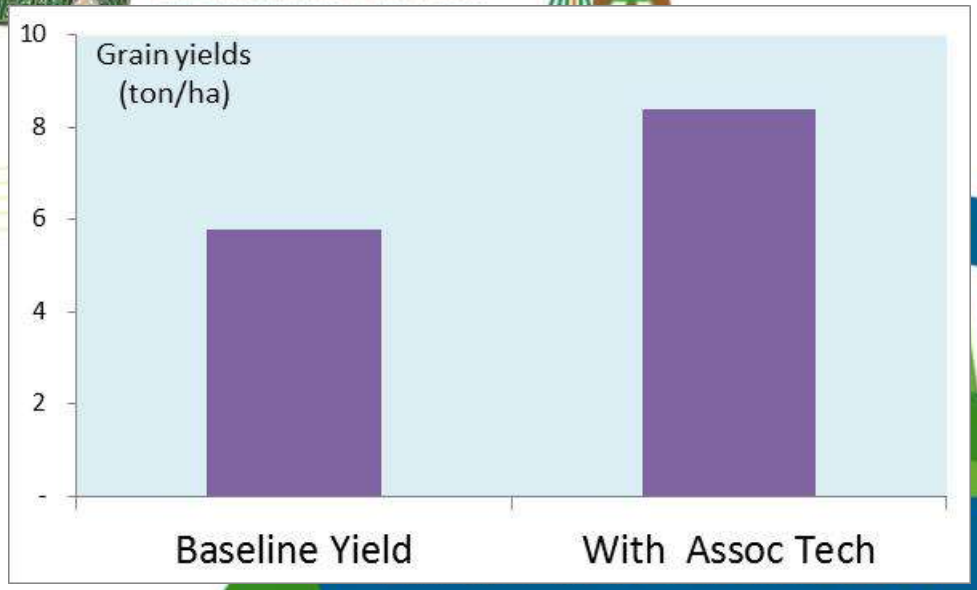
B. Use of Quality Seeds
Registered & Hybrid Seed
NSIC Rc222, Frontline Gold, NK 5017

C. Minus One Element Technique with Android APP

D. Mechanical Transplanter with 15 Days old seedling

This project is funded by: DA-BAR under the FSSP

Farmer Cooperator: ***LEONIDA A. BANIQUED***
Location: ***CENTRO 2, MALLIG, ISABELA***
Ecosystem: ***Irrigated with STW***



Findings:

- A well managed rice production with appropriate technologies will result to high yield.
- The MOET App set a target yield of 9.36t/ha and actual yield obtained was 9.38t/ha fresh weight.
- With AWD adoption, fuel consumed for irrigation was reduced, from 500 to 300 liters during the cropping season (2016 DS)

CONCLUSION

These findings and success stories suggest a promising outcome that will:

- improve yields and profitability, and
- increase the area harvested (through collective adoption of AWD at the system level)

if out scaling and up scaling the dissemination of associated technologies is done.

Acknowledgements

- **Ms. LOVELYN A. GASPAR and Staff**
  OIC-Res. Division/Sup. SRS/Regional Focal Person
  DA-Regional Field Office 02
  Tuguegarao City

- **ENGR. WILFREDO U. SALVADOR and Staff**
  Principal Engineer, Clustered Irrigation System
  (Tumauini, Mallig, Cabagan)
  Regional Irrigation Office 02
  Minante II, Cauayan City

- **DA – BAR for the funds**

REGION 2 FSSP TEAM

THANK YOU FOR YOUR ATTENTION!

Raising Productivity and Enriching Legacy of Heirloom/Traditional Rice Through Empowering Communities in Unfavorable Rice-based Ecosystem (Heirloom Rice Project)

COMPONENT 2. Enhancing Local Capacity and Enterprise Building in Farming Communities

PhilRice Counterparts: RMiranda, LMandia, JBatcagan, NSabigan, RCredo, JCordero, EMaraganas, and AAcierto

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Rationale

- Traditional rice cultivars passed down through generations, and are normally grown in small family farms.

- They are normally in demand locally and internationally due to their exceptional cooking quality, flavor, aroma, texture, color, and nutritional value.

- Thus, the project aims to enhance on-farm conservation of diverse farmer-preferred (heirloom/ traditional and climate-resilient) varieties to improve farm productivity and enhance local capacity for better market linkages.

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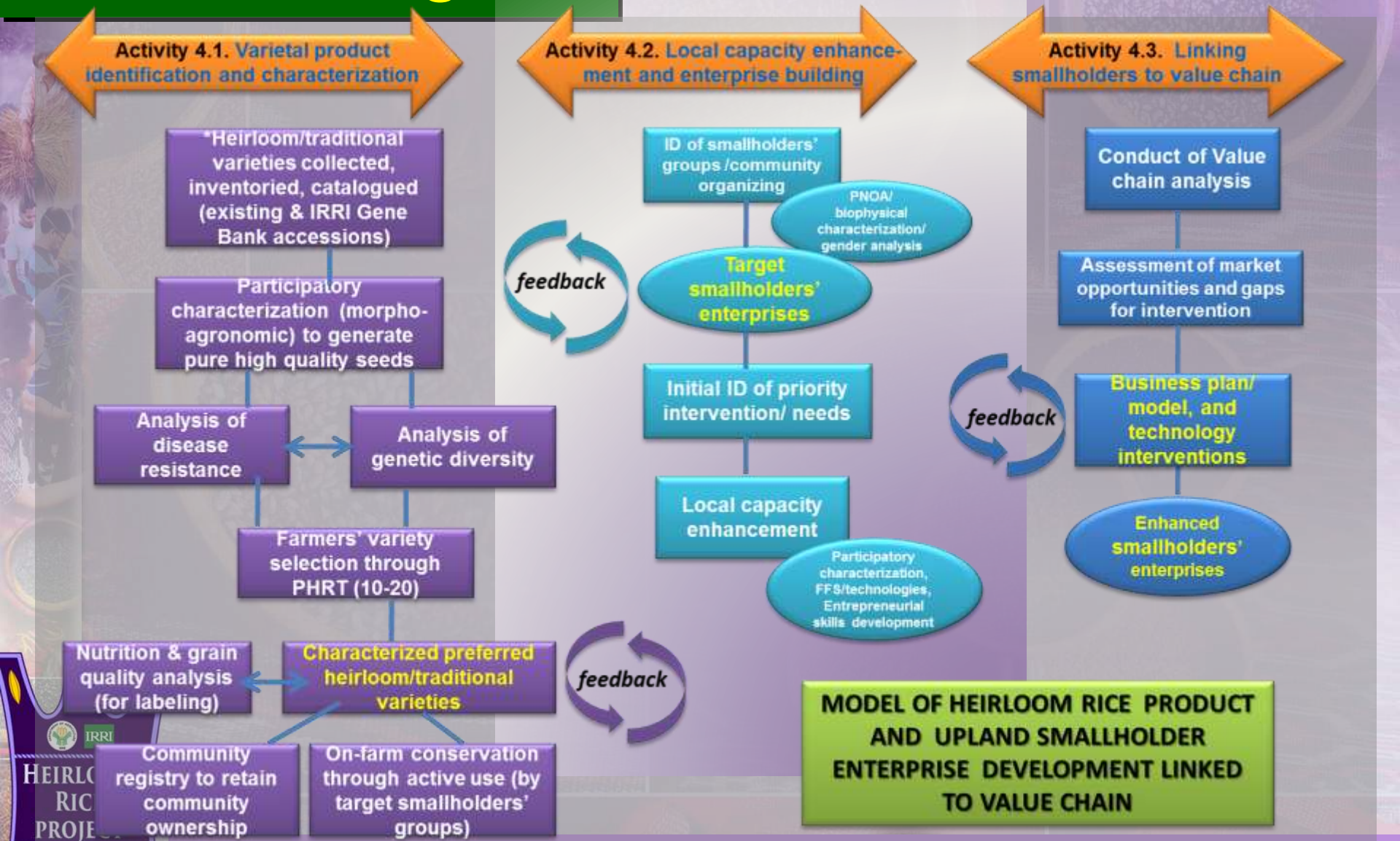
Objectives *(Component 2)*

- ✓ Strengthening existing community self-help groups (SHGs) of men and women farmers/indigenous people for better market linkages;
- ✓ Conduct Participatory Needs and Opportunities Assessment (PNOA/FGD), baseline surveys, and gender analysis of the farming activities and rice-based systems;
- ✓ Identification of priority interventions;
- ✓ Establishment of varietal performance trial for characterization of traditional/ heirloom varieties and participatory varietal selection (PVS);
- ✓ Establishment of demonstration farm for seed production of farmer selected and characterized varieties;
- ✓ Conduct of Trainings and Seminars through Farmers' Field School; and
- ✓ Provision of Identified Needs as Additional Interventions.

Methodologies



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Project Sites

Kalinga

- **Pasil**
  - Dangtalan
  - Balatoc
- **Lubuagan**
  - Upper, Lower, & Western Uma

Ifugao

- **Hungduan**
  - Hapao
- **Banaue**
  - Amganad
  - Balawis

Mountain Prov.

- **Barlig**
  - Kadaclan
  - Poblacion
- **Bauko**
  - Bila & Bauko

Benguet

- **Kibungan**
  - Poblacion
  - Palina

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Project Sites

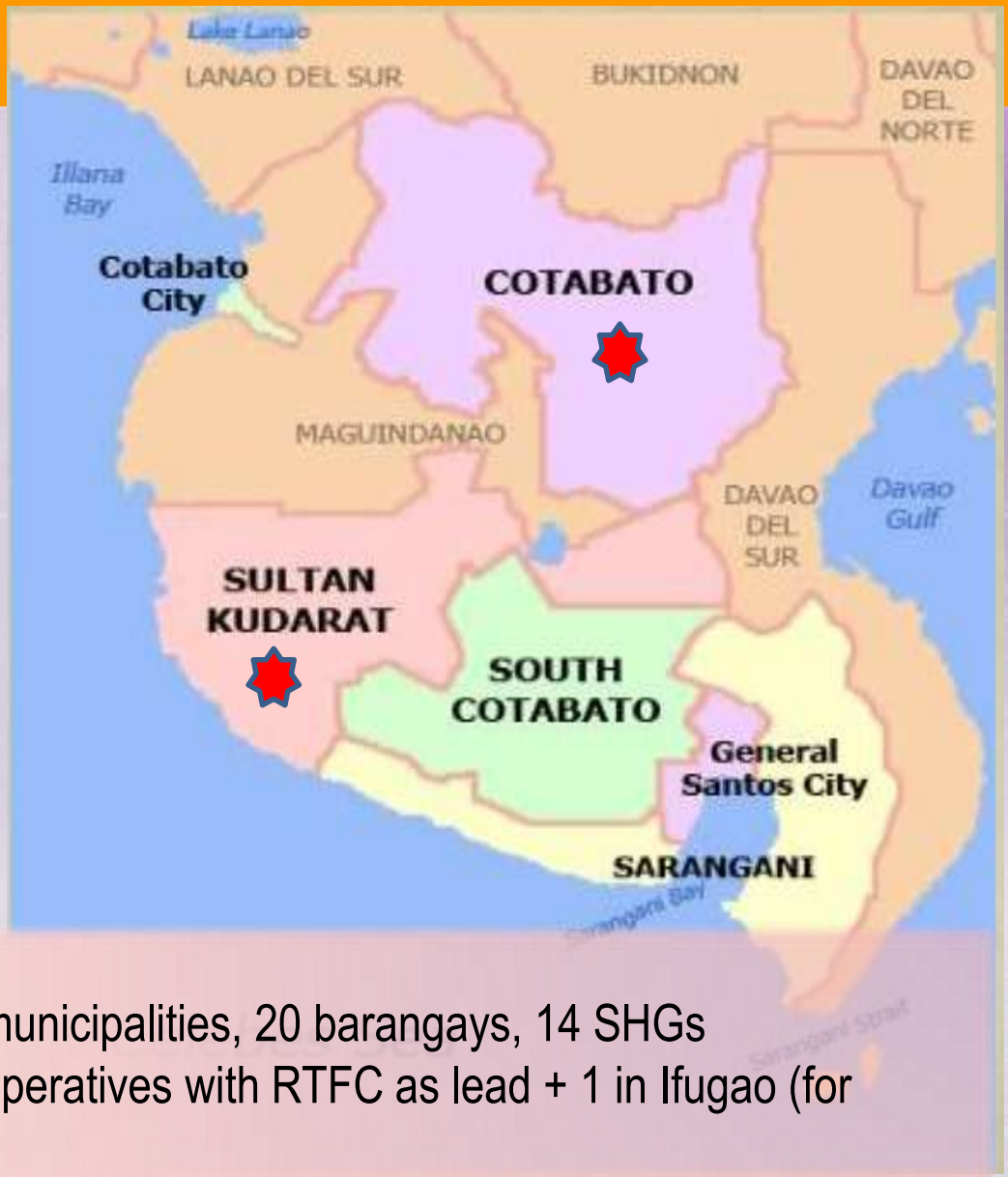
North Cotabato

Alamada
- Rangayen
- Upper Dado (new site)

Banisilan
- Wadya
- Malinao (new site)

Sultan Kudarat (2016 sites)

SNA
- Sewod
- Malegdeg



SUMMARY:

Project Sites: 5 Provinces , 9 municipalities, 20 barangays, 14 SHGs

Cooperatives: 3 registered cooperatives with RTFC as lead + 1 in Ifugao (for registration)

Farmer Beneficiaries: 457 FFS farmers in CAR and 160 FFS farmers in Region 12

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Results

✓ Organized/ strengthened existing 14 community self-help groups (SHGs) of men and women farmers/ indigenous people for better productivity and market linkages (11 SHGs-CAR; 3 SHGs-Region 12).

ADVANCED KNOWLEDGE

PALAYCHECK SYSTEM FOR HIGHLAND RICE PRODUCTION

- ✓ Seed Selection and Seedling Management
- ✓ Importance of Good Land Preparation
- ✓ Advantages of Synchronous Planting and Good Crop Establishment
- ✓ Essential Elements for Rice Growth and Natural Sources of Plant Nutrients
- ✓ Water Management
- ✓ Pest Management
- ✓ Harvest Management

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Results

✓ **Conducted Participatory Needs and Opportunities Assessment/ FGD For the provinces of Benguet, Mountain Province, Ifugao, Kalinga, and North Cotabato with IRRI, DA-CARFO, DA-R12, SCUs, and parter LGUs.**

ADVANCED KNOWLEDGE

PNOA/FGD instruments for project design and formulation of priority interventions

- ✓ **To determine suitable package of management technologies for the target environment**

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Results

Identified needs/requests during the conduct of PNOA and Value Chain Analysis

Trainings	Tools and other Inputs needed	Machineries and Infrastructures
✓ Rat, snail, earthworm and bird management; ✓ Rice-Fish Culture; ✓ Organic Farming; ✓ Mushroom Production; ✓ Book Keeping and Leadership Training; ✓ Pest and Disease Management	✓ Brush Cutters; ✓ Knapsack sprayers; ✓ Organic Fertilizers (Subsidized)	✓ Micro tillers/multi tillers; ✓ PVC pipes for water conveyance from river/creek to the field; ✓ Rehabilitation of damaged irrigation canal; ✓ Pathways from residential area to the field; ✓ Farm to Market roads; ✓ Multi-purpose drying pavements; ✓ Moisture meters; ✓ Weighing Scale; ✓ Customized Rice Mill (village); ✓ Processing Centers; ✓ Linkage to other Markets; ✓ Mini Threshers

Results

✓ **Priority interventions identified for designing training program and inter-disciplinary on-farm demo.**

ADVANCED KNOWLEDGE

PNOA/FGD instruments for project design and formulation of priority interventions

- ✓ Visioning Exercise
- ✓ Action Planning
- ✓ Inventory of Self-Help Group Assets and Intervention Prioritization
- ✓ Improvement of Postharvest Practices

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Results

Community Organizing, FGD, Gender Analysis, Participatory Needs and Opportunities Assessment

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Results

✓ **Establishment of variety performance trial of 10-20 heirloom varieties for characterization, purification, and PHRCP.**

ADVANCED KNOWLEDGE

- ✓ **Characterization, purification and seed production of selected HRVs**
- ✓ **PTD/PHRCP design for establishment and promotion**

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Results

FFS Participatory Varietal Characterization Plot, CAR

Benguet	Mt. Province	Kalinga	Ifugao
Gayyad	Waray	Unoy Lapoy	Innawi
Lamadya	Fiagsang White	Ulikan Red	Balikwadang
Kalinga	Pastillas	Chumalingan (Red)	In-ngudpur
Bongkitan	Ingudpor	Chumalingan (White)	Color
Balatinaw	Fiagsang Red	Allugit	Vallahang
Diket	Chorchor-os	Walay	Innawi long awn
Lablabi	Kuli-i	Tilopong	Bukig
Lasbakan	Kuyogyo	Unoy Suggo	Kamanga
Malonos	Ramenad	Allig	Imbuan
Talokitok	Fiangruwan	Oltan Red	Pinkitan
Gal-ong	Ominio	Yonga	Donaal
Kamporo	Akangan White	Ulikan	Pinidwa
Talangkay	Pinawid	Lapoy (Unoy)	Innawi
	Fingawan	Unoy Chong-Ak	Minaangan
	Sayong	Oltan White	
	Yumarin	Waray	
Yield Range: 2.65-3.10 t/ha	**2.2-2.9 t/ha**	**1.7-3.1 t/ha**	**2.24-3.9 t/ha**

Results

- ✓ 14 season-long Farmer Field School (FFS) and other capacity enhancement activities on crop production and enterprise management conducted in 9 sites in 5 provinces from CAR and Region 12.
- ✓ Achieved an average of 36 pax per FFS through the efforts of LGUs, SHGs and project staff.

ADVANCED KNOWLEDGE

- ✓ FFS Curriculum Guide
- ✓ PalayCheck for Highland Rice Production

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Results

Conduct of Farmer's Field School

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Results

Heirloom Rice Farmers' Field Day and Forum

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(a) Mountain Province; (b) Ifugao; (c) Kalinga; and (d) Benguet participated by a total of 619 pax.

Results

- ✓ Distribution of farm machinery and equipment such as panicle thresher, micro tillers, grain moisture meter, mini thresher, 1weighing scales , 26 knapsack sprayers, 420 super grain bags, and other identified training materials.
- ✓ Testing and Evaluation of proposed mechanical interventions.

ADVANCED KNOWLEDGE

- ✓ Use of farm equipment
- ✓ Use of GPS in area measurement, altitude

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Results

Summary of Interventions (Equipment Distributed)

CAR and Region 12						
micro tiller	**knapsack sprayer (16 li. Capacity)**	**panicle thresher**	**weighing scale (60 kg)**	**moisture meter**	**super grain bag**	**mini thresher**
9	26	14	13	9	420	8

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Results

Testing and Evaluation of Machines

Mini-Thresher

Capacity: 469 kg/hr

Panicle Thresher

Capacity: 45 kg/hr

Micro tiller

Capacity: 600 sqm/hr

Other Activities

- On going development of a PalayCheck System for Highland Organic Rice Production, integrating the best farming practices in the area with new technologies package for each site;
- Hands on activities on Organic Foliar Fertilizer Fermentations (Fermented Fruit & Plant Juice, Oriented Herbal Nutrient, Snail & Fish Amino Acid) and Indigenous Micro Organism as supplemental source of plant nutrients;
- Post Harvest Training in collaboration with IRRI;
- Production area survey using GPS;
- Testing of New Varieties (Korean) for wet cropping season;
- Conduct of Training of Farmer-Trainers on Organic Heirloom Rice Production and Related Farming Technologies; and
- FFS Mass Graduation.

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HAVE an HEIRLOOM
RICE DAY!
FARMER

Supplying the Needs of a Highly Diversified Filipino Diet through

Palayamanan Plus

Rizal G. Corales
Presenter

Plenary paper. 29th Rice R & D Conference. Philippine Rice Research Institute (PhilRice), Maligaya, Science City of Muñoz, Nueva Ecija. September 7- 8, 2016

Rationale

- We love to eat & food is the basis of our social life

3 meals of rice a day

2 starchy snacks in between

The Filipino Diet

- We enjoy noodles mixed with meat, vegetables and flavorings

The Filipino Diet

- We love soups and stews made with meat and vegetables

The Filipino Diet

- We also love other meat and vegetable foods

The Filipino Diet

- We love fish, shrimps & other aqua foods

The Filipino Diet

- We consume lots of sugar and use high amounts of cooking oil

The Filipino Diet

- Our meal is laid before us and we eat simultaneously from all dishes at random

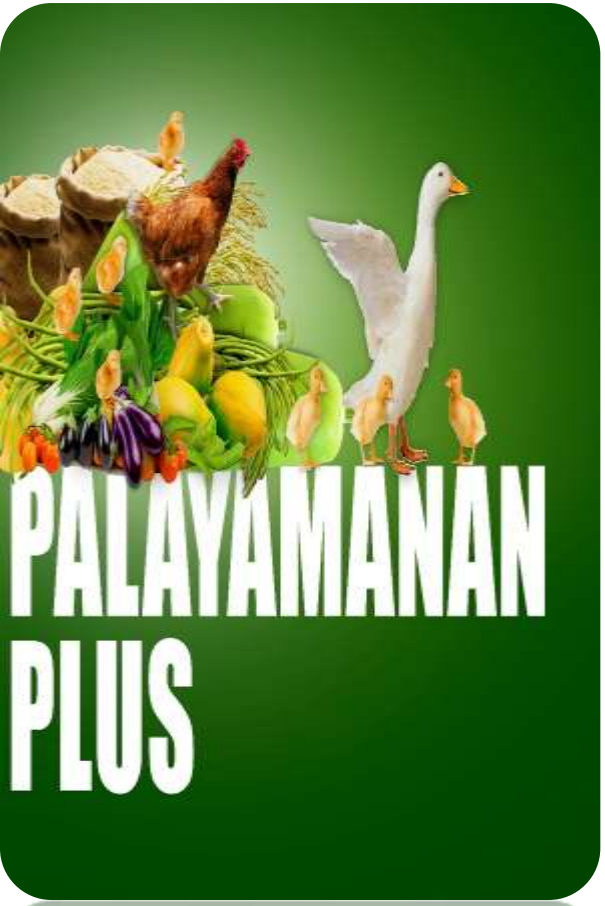
Breakfast

Lunch/Dinner

Rationale

- There are food production systems developed for small farmers, to ensure food security, strengthen local economies and allow consumers to connect with the origins of their food

- However, the benefits of these food systems were believed to be not equally shared, accessed and unaffordable especially to low-income families in the rural communities.



Rice-based production system employing diversification, intensification, and integration of several farming ventures with the end in view of ensuring the availability and accessibility of affordable food for a highly diversified diet to people all year round, and increase rice farmers' income in a sustainable manner.

Palayamanan Plus Components

Crop Enterprises

Mushroom Enterprises

Livestock Enterprises

Aqua culture

Ensuring food availability

Diversification

- Diversified crops such as cereals, legumes, root crops, vegetables, and fruits.
- Diversified livestock to provide meat, milk, eggs and other food products
- Diversified aquaculture to provide different fish species, crustaceans and mollusc
- Diversified mushroom species (*Vovariella, Pleurotus, Ganoderma, Calocybe, Cuprinus*)

Ensuring food availability

Intensification

- Crop combinations are altered in time and space to increase productivity and availability
- Use of early maturing rice varieties
- Short duration crops like mungbean, melon or young corn can be planted during the fallow period after rice
- Fruit, forage, & forest trees as border or windbreak plants

Ensuring food availability

Intensification

- Some vegetables and other cash crops can be planted on bunds simultaneous with the rice crop.
- Intercropping or relay cropping also enhances crop intensification
- Duck and fish, and vegetables can be integrated with the rice crop (Rice-Duck, Rice-Fish and Sorjan Production System).

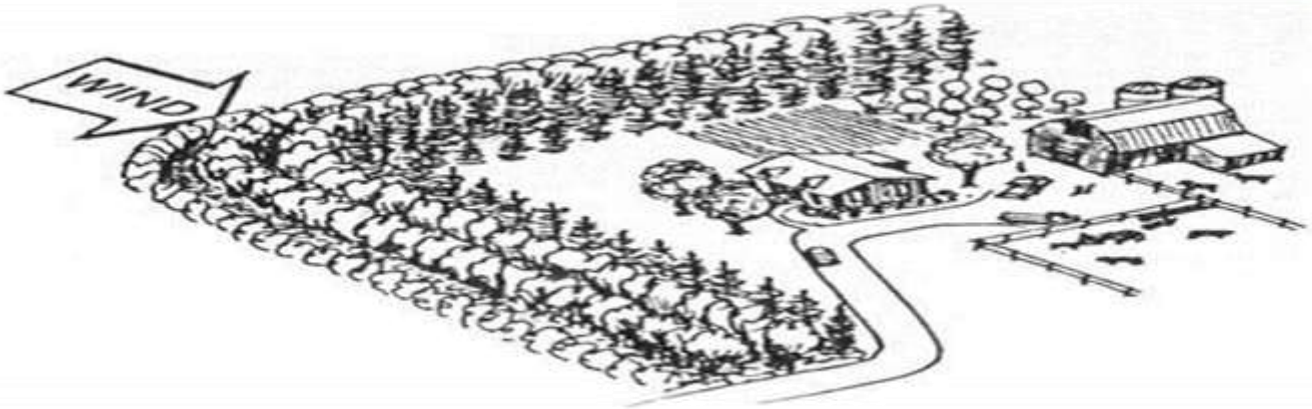
Ensuring food availability

Integration

- Product development and processing to contributes in the year-round availability and variety of micronutrient-rich foods, stimulate demand for farmers' crops and products and give consumers additional choice.

Multifunctionality

- Multifunctional approach of *Palayamanan* Plus recognizes interconnectedness of agriculture's different roles and functions in producing not only commodities to sustain the needs of a highly diversified diet but also non-commodity outputs such as environmental services and landscape amenities.



Complete Filipino Diet

Where are we now?

- PhilRice Branch Stations

- Rice-Based Communities
  - Batac City, Ilocos Norte
  - Quirino, Isabela
  - San Fabian, Pangasinan
  - Maria Aurora, Aurora
  - Talavera, Nueva Ecija
  - Guagua, Pampanga
  - San Rafael, Bulacan
  - Cabadbaran City, Agusan del Norte

Our partners

- PhilRice Branch Stations
- SUCs : ISU, PSAU, BASC
- GAs: DA-Rice Program, DA-BAR, ATI, PCC, NDA, BFAR, DA-RFUs
- Provincial & Municipal LGUs

Department of Agriculture

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