



**Development of a Training Course on  
Water-Saving Technologies in Rice Production**  
(IRRI Ref. No. DPPC2002-39)

Completion Report

submitted to the

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## Foreword

This courseware material is a compilation of the background paper and PowerPoint presentation on the various topics covered in the training course on “Integrated Water Management in Rice Production—Technology Transfer for Water Savings.” This training course was developed as part of the ADB-supported project on “Development of a Training Course on Water-Saving Technologies in Rice Production” under its Pilot Demonstration Activity Program on Water Management Information Dissemination and Extension for Irrigated Agriculture (IRRI Ref. No. DPFC2002-39).

This material consists of three parts: general principles of rice production systems, water management practices with emphasis on water-saving technologies, and technology transfer and implementation.

The first part has seven modules that contain the morphology, growth stages, and development of the rice plant; fertilizer and nutrient management; weed control; and management under water-short conditions. In addition, crop diversification was added as an alternative production strategy for increasing the profitability of rice-based production systems under water-short conditions. The second part is composed of 10 modules, which include an overview of water scarcity, water-saving technologies, basic soil-water-plant relations, water balance and water requirement of the rice field, methods of water application (surface and pressurized irrigation), and others. The third part consists of seven modules covering relevant topics on technology transfer and implementation. This part introduces an approach to farmers’ participation in research and development and highlights the various diagnostic tools to better understand farmers’ water-related problems.

We hope that this courseware material will provide the information needed to disseminate water-saving technologies for adoption by rice farmers.

## I. Background and Objectives

“Water problems” are among today’s most acute and complex scientific and technical problems. They increasingly reach beyond national and regional borders and are becoming global in nature. In the Philippines, the water problems experienced every year have two opposite extremes: excessive water supply in the wet season and water shortage in the dry season. The excessive water supply, which is attributed to the high amounts of rainfall, causes flooding in the low-lying areas of both agricultural and urban areas, and the water shortage, which is due to low rainfall, causes severe water stress to agricultural crops, resulting in crop damage and low yields. These water problems, particularly the serious water shortage (or drought) that occurred in the late 1970s, mid-’80s, and late ’90s, have caused the concerned Philippine agencies, such as the National Irrigation Administration (NIA), Bureau of Soils and Water Management (BSWM), Philippine Rice Research Institute (PhilRice), and others, to institute plans and programs that would minimize damage to agricultural crops.

The main causes of the worsening water supply situation cannot be fully explained because of the intertwined effects of many factors, including natural occurrences (such as “El Niño” phenomenon) and environmental degradation. But, in more specific terms, it can be mentioned that some causes are brought about by the lack of water conservation efforts by all concerned; the increasing demand from an increasing population, leading to increased irrigation demand to produce enough food (particularly rice); and the competition for water from sectors such as cities, municipalities, and industry.

Rice is the most important staple food in Asia, and, because of its enormously high water requirements, is also the biggest consumer of irrigation water. To safeguard food (rice) security and enhance the conservation and use of scarce water resources, scientists have been doing research on water-saving irrigation technologies. As of now, several mature irrigation technologies that reduce the consumption of irrigation water (compared with the traditional practice of continuous shallow flooding) with no significant effect on yield have been developed. Some of these mature water-saving technologies are alternate wetting and drying (AWD), referred to simply as “controlled irrigation,” direct seeding (wet/dry), land leveling, and others that are ready for dissemination and adoption by farmers. A new water-saving technology called “aerobic rice”—a rice cultivation technique that is still being developed and tested jointly with farmers’ participation for water-short environments—is showing promising results. This technology could be employed in areas where water is scarce and/or expensive.

The implementation of these technologies in irrigated rice production systems has tremendous potential to (1) produce rice using less water, (2) increase water-use efficiency and water productivity, and (3) save on water that can be used to irrigate more land. However, these water-saving technologies have remained on scientists’ desks and little or no effort at extension or adoption by Asian rice farmers has been made. To remedy this situation in the Philippines, the International Rice Research Institute (IRRI), the NIA, and PhilRice began a project in 2001 on Technology Transfer on Water Savings, or “TTWS,” in Tarlac and Nueva Ecija provinces.

The objectives of the TTWS project were to develop strategies and methodologies for the transfer, adaptation, and adoption of water-saving technologies. Pilot-site testing of water-saving technologies was established in farmers' fields within the command area of a deep-well pump irrigation system in Tarlac Province and on the farms of shallow tubewell pump irrigation systems' users in Nueva Ecija. Integrated crops and water-saving technologies were developed and demonstrated in a farmer participatory mode. These pilot-site demonstrations have shown that rice could be grown using 30–40% less water without a significant yield reduction, and, in some cases, with better yield than with the traditional farmers' practice of continuous shallow flooding. The project successfully established an effective NIA-farmer-scientist partnership and a vision for widespread extension and adoption of water-saving technologies in the Philippines. The TTWS project is the Philippines' implementation of the Water Workshop of the International Irrigated Rice Consortium, which includes counterparts from China, India, and Thailand.

As a next step toward transferring water-saving technologies in the Philippines (beyond the pilot demonstration sites), the Asian Development Bank (ADB) took an interest in and provided funds for the "Development of a Training Course on Water-Saving Technologies in Rice Production" (under ADB's Pilot and Demonstration Activities, PDA, program on Water Management Information Dissemination and Extension for Irrigated Agriculture, IRRI Ref. No. DPPC2000-39) for the period February to April 2004.

The project aimed to disseminate and implement water-saving technologies for rice in order to mitigate the water crisis in the Philippines in particular and in Asia in general. The specific objective was to develop and implement a training course on water-saving technologies and knowledge transfer for irrigation system managers, extension officers, leaders of irrigator associations, and water-user groups.

## **II. Scope of Work/Description of Activities**

1. Training course. A training course titled "Integrated Water Management in Rice Production—Technology Transfer for Water Savings" was developed and given to 30 irrigation system managers, extension officers, leaders of irrigator associations, and water-user groups from various Philippine agencies and/or organizations. It was initially conducted at the Training Center of the International Rice Research Institute on 4-8 October 2004. Table 1 shows the distribution of the participants by agency.

It should be mentioned that the participants from NIA came from the 13 Regions, the Magat River Irrigation System (MARIS), and the Upper Pampanga River Integrated Irrigation Systems (UPRIIS).

The participants learned the basic theories and practices on water-saving technologies, how to extend information to rice farmers, and how to prepare action plans for following up training and extension of technologies in their mandated areas.

The training course was conducted initially at IRRI for 5 days. It consisted of the following three components:

- Water-saving technologies. This topic consisted of classes and field demonstrations of the various modules of controlled irrigation, crop establishment and management techniques (e.g., dry direct seeding, aerobic rice), and land preparation. (Duration was about 3 days.)
- Training the trainers. Training the participants on dissemination and extension of water-saving technologies, training on the use of extension and dissemination materials, and explanations on how to organize seminars, how to organize farmer schools, how to set up demonstration sites, etc. (Duration was about 1 day.)
- Development of a regional training plan. A planning workshop to develop plans for follow-up on technology dissemination in the mandated target areas of the participants. (Duration was about 1 day.)

### III. Expected Output

Three types of training materials were developed. These are listed in the project documents as follows:

- Courseware materials to be used in the training course: transparencies, PowerPoint presentations, reference manual, etc. This courseware will also be available through the Internet and on CD-ROM.
- A manual/book on water-saving technologies.
- Extension materials that trainees can use in the dissemination of water-saving technologies to rice farmers such as transparencies, brochures, posters, etc.
- Trained “water-savings officers” in the Philippines.
- Action plans for the wide-scale dissemination of water-saving technologies in the Philippines.

### IV. Accomplishment (Output)

#### 1. Development of a training course

The training course was titled “Integrated Water Management in Rice Production—Technology Transfer for Water Savings.” The training course contents are grouped into three parts: (a) principles of rice production, (b) water management practices with emphasis on water-saving technologies, and (c) technology transfer and implementation. The training course specifications and descriptions appear in Annex 1.

##### A. General Principles of Rice Production Systems (duration: ½ day)

This topic has enhanced the participants’ basic knowledge and understanding about the rice plant—its morphology, growth stages, and development. It also provided them with information on the different methods of growing rice (such as dry direct seeding, wet direct seeding, and transplanting), changes in weed flora and their control and management under different methods of growing rice with emphasis on water-short conditions, and the management of fertilizer under varying field conditions. A topic on crop diversification was added to provide alternatives to the rice-rice monocropping

system when the available water supply is inadequate to support a rice crop, particularly in the dry season when rainfall is very low.

The lecture-discussions on this topic were supplemented by field exercises on integrated crop management (described in Annex 2) and other activities.

#### B. Water Management Practices (duration: 2 days)

The lecture-discussions on water management practices have enhanced the participants' knowledge and understanding of basic soil-water-plant relationships (with emphasis on the response of the rice plant to varying degrees of water supply and fertility levels), the components of the water balance in a rice field, determination of the evapotranspiration and field water requirement of the rice plant, water-saving technologies, surface and pressurized (drip and sprinkler) irrigation techniques, and instrumentation for field water management in AWD irrigation.

The field exercises on field instrumentation conducted at the IRRI experimental farm provided the participants with practical and hands-on experience with the installation and uses of the different instruments for monitoring and assessing field water status. In addition, a field visit to the agro-climatic station was also made to familiarize the participants with the different instruments used in monitoring climatic information and data that are needed in research and field operations. (For more details, please see Annex 3.)

#### C. Technology Transfer and Implementation (duration: 2 1/2 days)

This topic provided the participants with a basic knowledge and understanding of the processes and techniques involved in disseminating water-saving technologies. Further, it also discussed theories and practices in field surveys, strategic communications campaigns, project planning techniques, management of change, technology transfer and implementation, participatory planning and farmers' decisions, and diagnostic tools.

To provide the participants with hands-on experience in assessing water-shortage and delivery problems in a typical irrigation system, a field exercise with a focus-group discussion with farmers was conducted in the nearby NIA's Sta Cruz Irrigation System (SCRIS) in Pila, Laguna. Annex 4 describes the results of this exercise.

A workshop was also conducted to prepare and develop action plans for scaling up the dissemination of water-saving technologies for adoption by farmers. Annex 5 shows a sample of a scaling-up plan developed during the workshop.

#### D. Conducting field demonstrations (video and discussions)

A video was shown to demonstrate the processes undertaken in implementing the transfer of water-saving technologies in farmers' fields within the service area of a deep-well pump irrigation system. This system is operated and managed by the farmers through their P-38 Irrigation Service Cooperative. The video shown included (i) needs and opportunity assessment (NOA), (ii) conducting field demonstrations, and (iii) technology transfer on water savings (TTWS).

#### 2. Two types of training materials were produced:

- Course materials consisting of hard copies and a CD-ROM of all PowerPoint presentations, the reference manual, and various background papers. The reference manual consists of three parts: (a) principles of rice production, (b) water management practices, and (c) technology transfer and implementation. The reference material is submitted as a separate compilation.
- Extension materials that the trainees can use in disseminating water-saving technologies to rice farmers:
  - i. Posters: 5 ways to use water wisely (500 in English, 500 in Tagalog)
    - Controlled irrigation (500 in English, 500 in Tagalog)
  - ii. Flyers: 5 ways to use water wisely (20,000 in English, 20,000 in Tagalog)
    - Controlled irrigation (20,000 in English, 20,000 in Tagalog)
    - Aerobic rice (10,000 in English)
  - iii. Videos: Technology Transfer on Water Savings (TTWS): (200 copies)
    - Needs and Opportunity Assessment (NOA): (200 copies)
    - How to Conduct a Field Day: (200 copies)
    - Rice Knowledge Bank (IRRI product): (250 copies)
    - Controlled Irrigation Monitoring Tube: (100 pieces)

3. Trained “water-savings officers” in the Philippines consisting of 30 from the Philippine agencies (NIA, PhilRice, BSWM, ATI, leaders of IAs, and CLSU) and 5 staff of the Water Science Group of IRRI’s Crop, Soil, and Water Sciences Division. The names and addresses of the participants are listed in the attached “Directory of participants” (Annex 6). (Please see also the attached group photograph of the participants, including the training officers/staff, consultants, and guests.)

4. As an offshoot, three local follow-up training activities were scheduled already and were implemented by the trainees of the first course held at IRRI, backstopped by IRRI staff:

- i. *First*: A follow-up training course titled “Integrated Field Water Management in Rice Production—Technology Transfer for Water Savings” was successfully conducted at the Water Resources Management Center of Central Luzon State University in the

Science City of Muñoz, Nueva Ecija, 8-12 November 2004. The participants in this training course consisted of 35 instructors, professors, and researchers in water management and extension from 14 state colleges and universities (SCU), NIA-CMIPP, and CSWS-IRRI (Table 2). This training has enhanced the knowledge and skills of the participants in water-saving technologies. It is expected that the participants, particularly from the SCU and NIA-CMIPP, will hasten the dissemination of water-saving technologies through their students and in their extension programs. The modified training course/program and list of participants are shown in Annexes 7 and 8, respectively.

- ii. *Second:* A 2-day Echo Seminar-Workshop on Integrated Water Management in Rice Production—Technology Transfer for Water Savings was organized by one of the participants (Engr. Fermin F. Flores, Officer-In-Charge of the Iguig-Amulung-Alcala Pump Irrigation System in Baculud, Amulung, Cagayan). This Echo Seminar-Workshop was conducted on 11-13 November 2004. It benefited 25 participants consisting of municipal agricultural officers (4), water masters (4), institutional development officers (3), irrigation superintendents (2), selected IA officers (2 from each of the Iguig-Amulung IA, Amulung-Alcala IA, and Lallo East IA), regional IDD staff (3), and regional O & M staff (2). (Please see attached Annex 9 for more details.)
- iii. *Third:* Training on Integrated Water Management in Rice Production—Technology Transfer for Water Savings was conducted by PhilRice in December 2004. It was organized jointly by the participants in the same training course held at IRRI on 4-8 October 2004 and by Mr. Jovino L. de Dios, a team member of the project. It involved about 30 participants from the local government units consisting of the municipal agricultural officers, provincial agricultural officers (PAO), and other stakeholders.
- iv. *Fourth:* Farmers and farmer leaders will be trained at the National Irrigation Administration in Tarlac in either the third or fourth week of January 2005.
- v. More follow-up training activities are being prepared (e.g., through NIA, PhilRice, BSWM, ATI). Training and extension materials are being incorporated into the regular curricula of the participating agencies. IRRI will use the training materials in intended courses.

## **V. Course Evaluation**

The training course was designed and developed to provide the participants with basic knowledge and skills on the principles and practices of water-saving technologies, and on the techniques in disseminating and transferring them for adoption by farmers.

To determine the effectiveness and relevance of the course, a structured questionnaire was developed and distributed to the participants of the initial training course held at IRRI on 4-8 October 2004 to answer while the training course was in progress to minimize errors due to the problem of recall. The questionnaire solicited the overall reaction of the participants as well as their comments on the course content and methods of delivery. In addition, they were also

requested to list three topics (out of the 28) that they considered as the strengths and weaknesses of the course. They were also asked to answer other relevant questions.

Of the 35 participants, 32 (91.43%) responded to the evaluation questionnaire. The following are the findings:

#### 1. Overall reactions to the course

The participants were asked to indicate their reaction using a scale of 5 = excellent, 4 = good, 3 = average, 2 = fair, and 1 = poor. Of the 32 participants that responded, 18 rated the course as excellent and 7 rated it as good, with an average of 4.72. Seven respondents, however, did not register their reactions to the course.

#### 2a. Strength of the course in terms of content

The participants were asked to list three topics (from the 28) that they considered as the strength of the course. There were 73 responses and, of these, the three topics with the highest score were (i) principles and practices of alternate techniques (13), (ii) aerobic rice: a new water-saving technique (8), and (iii) water scarcity: an overview (5). The participants also mentioned that the course was informative, very timely, and relevant to the present problems of NIA and applicable to technical persons/staff and farmers.

However, the participants listed the following topics as the weakness of the course and that should be improved: (i) exercise in computation of evapotranspiration, (ii) management and performance of irrigation systems, (iii) field demonstration on land leveling, and (iv) crop diversification.

#### 2b. Strength of the course in terms of methods of delivery

Just like in question 2a, the participants were requested to list three topics that they thought were the strength of the course in terms of the methods of delivery. The total number of responses was 68. They listed (i) field practice and demonstrations, with a score of 17 (out of 68 total responses), and (ii) lectures and (iii) PowerPoint presentations, each with a score of 8. Other strengths mentioned were excellent visuals used, strong videos, and dynamic and practical group discussions.

Some of the suggested things to be improved were (i) field trips to farms practicing water-saving technologies, (ii) very long lectures, and (iii) a too tight schedule.

3a. The participants were asked to rate the content of each of the 28 topics in the course using the same 1–5 scale. The overall average rating of all the topics was 4.36 and the standard deviation was 0.01.

The topics with an average rating of above 4.50 was as follows: Water scarcity: an overview (4.87); Aerobic rice: a new water-saving technology (4.61), Principles and practices of alternate wetting and drying: a water-saving technique (4.58); Group activity: inventory of water-shortage/delivery problems (4.57); Rice growth and development (4.53); Soil-water-plant relationships and water balance of rice fields (4.52); and Farmer group discussions: uses and methods (4.52).

3b. Just like in question 3a, the participants were asked to rate each of the 28 topics on their usefulness to their work in terms of extremely useful, very useful, useful, somewhat useful, and not useful. The overall average rating of all the topics was 4.17 and the standard deviation was 1.72.

The topics with an average rating of 4.30 and above were Water scarcity: an overview (4.58); Principles and practices of alternate wetting and drying: a water-saving technique (4.57); Field demonstrations and exercises on instrumentation for field water measurement (4.50); Aerobic rice: a new water-saving technique (4.50); Group activity: inventory of water-shortage/delivery problems (4.40); Principles of sound field water management (4.38); Technology transfer and implementation: the TTWS model (4.37); Group activity: inventory of water-saving options and constraints (4.35); Soil-water-plant relationships and water balance of rice fields (4.33); and Focus-group discussions: uses and methods (4.30).

3c. In terms of presentation, the participants used the same measuring scale. The overall average rating of the presentations was 4.28 and the standard deviation was 0.28.

The topics with an average presentation rating of 4.40 and above were Water scarcity: an overview (4.72); Principles and practices of alternate wetting and drying: a water-saving technique (4.50); Focus-group discussions: uses and methods (4.55); Group activity: inventory of water-shortage/delivery problems (4.53); Group activity: inventory of water-saving options and constraints (4.48); Rice growth and development (4.47); Aerobic rice: a new water-saving technique (4.47); Technology transfer and implementation: the TTWS model (4.43); Values grid in water-saving technology: an introduction (4.43); and Field demonstrations and exercises on instrumentation for field water measurement (4.40).

4. What other topics should be added? The participants listed 16 topics, and the ones that were very relevant but not related to the topics discussed in the course were Economic aspects: How much in monetary terms can be saved from the water-saving techniques?; Crop protection (insect pest management); More examples on integrated crop management systems (including a practical approach to nutrient management); and Detailed (and simple illustrations) procedures in conducting social science research on water management from stakeholder/problem analysis up to impact design evaluation. Moreover, the participants suggested other topics: a detailed explanation on the computation of evapotranspiration to show the differences among the four methods of computation, dry land preparation and methods of irrigation for aerobic rice production, and educational tours of areas adapting water-saving practices.

5. What topics should be left out? The participants listed the following: topics on planning can be structured by introducing techniques of data gathering that were already proven for proper planning; a demonstration on land leveling as it can be included in sound field water management; weed management; and the pressurized irrigation system (drip), which could be saved for separate training.

6. Impact. The participants were asked the following questions: Do you feel confident enough to share what you have learned from this workshop? Following this workshop, would you be willing to share what you have learned with colleagues? Will this workshop be helpful to your work? Would you recommend this workshop to other people? Thirty-one participants responded YES. Some of their reasons follow:

- Aerobic rice and water-saving techniques are very important for mitigating problems of water scarcity and improving crop production.
- The course will be incorporated in the system management workshop required (by) for NIA viability, which is very important for farmers.
- To conserve soil and water resources.
- This course is a complete package of integrated water management.
- To help implement the project.
- To obtain awareness on how to use irrigation water whereby a large area will be benefited.

6a. Do you think that the action plan(s) that you developed could be implemented at your project site? Twenty-two responded YES but 2 responded NO because of financial constraints.

7. Additional comments from the participants about the course follow:

The subject matter was all equally important. However, subject matter directly related to aerobic rice and alternate wetting and drying should be given more emphasis. The peripherals should be left out to avoid “overloading” of information.

The presentations should be concise and cover only the most important issues/findings, etc. This would shorten the presentations and avoid boredom.

## Summary

The training course titled “Integrated Water Management in Rice Production—Technology Transfer for Water Savings” that was developed consisted of three parts: (1) principles of rice production, (2) water management practices with emphasis on water-saving technologies, and (3) technology transfer and implementation. It included a workshop for the development of a regional training plan for technology dissemination in the mandated target areas of the participants.

The training course was initially conducted at the Training Center of the International Rice Research Institute (IRRI) on 4-8 October 2004. It had participation by 30 irrigation system managers, and extension and training officers from the National Irrigation Administration (NIA), Bureau of Soils and Water Management (BSWM), Agricultural Training Institute (ATI), Philippine Rice Research Institute (PhilRice), and Central Luzon State University (CLSU). In addition, five research staff and a research collaborator of IRRI’s Crop, Soil, and Water Sciences Division attended the course.

A follow-up training course with a modified curriculum (program) was conducted at the Water Resources Management Center of CLSU on 8-12 November 2004. Thirty-four instructors and professors of agricultural engineering (water management) and extension and staff from 14 state colleges and universities (SCU), NIA–Casecnan Multipurpose Irrigation and Power Project, and IRRI (CSWS) participated in the training course. It should be mentioned that this was organized and managed jointly by the staff who attended the course at IRRI and our partners from CLSU.

A 2-day echo seminar on this course was organized by Mr. Fermin Flores, a participant in the initial training course at IRRI, and was conducted on 11-12 November 2004 at the NIA regional office, Tuguegarao, Cagayan. It benefited 33 participants composed of IA officers, NIA officials, and agricultural technologists from local government units.

This training course has provided the participants with a well-balanced course on theories and practices in rice production, water-saving technologies, technology transfer, and technology dissemination and implementation. The participants in the initial training conducted at the IRRI Training Center rated the course as informative, very timely, and relevant to their work and to the needs and problems of NIA, the agency responsible, among others, for the operation and management of the Philippine national irrigation systems. They rated all the topics as good to excellent. The principles and practices of alternate wetting and drying, and aerobic rice technology, were identified as the major strengths of the course. These are very important techniques for mitigating the problem of water scarcity and they created awareness about an available technology that will improve crop production. In addition, the topics Water scarcity: an overview; Soil-water-plant relationships and water balance in rice fields; and Focus-group discussions were also cited as among the strongest topics of the course.

Further, the participants commented that the 5-day training was excellent and that the course content was aptly designed for the current scenario. They rated the methods of delivery as good to excellent. But, they pointed out that field practice and demonstrations, PowerPoint

presentations, and lectures are the most preferred methods of delivering or teaching the different topics. The participants suggested, however, that field trips to farms practicing water-saving technology should be conducted and a more detailed explanation on the exercise on the computation of evapotranspiration and water requirements should be made. Moreover, the participants suggested that economic aspects should also be added to the course to enable the participants to appreciate the economic benefits that could accrue to the adoption of water-saving technologies.

**Table 1.** Distribution of participants by agency in the training course conducted at IRRI 4-8 October 2004.

<b>Agency</b>	<b>No. of participants</b>
1. National Irrigation Administration (NIA)	15
2. Irrigator Associations and Water User Groups (IA/WUG)	5
3. Agricultural Training Institute (ATI), Department of Agriculture (DA)	2
4. Bureau of Soils and Water Management (BSWM), DA	3
5. Philippine Rice Research Institute (PhilRice)	3
6. Central Luzon State University (CLSU)	2
7. International Rice Research Institute (IRRI)	5
<b>Total</b>	<b>35</b>

**Table 2.** Distribution of participants in the training conducted at CLSU from November 8-12, 2004.

<b>Institution</b>	<b>Number of Participants</b>
1. Nueva Vizcaya State University (NVSU)	2
2. Benguet State University (BSU)	2
3. Isabelita State University (ISU)	2
4. Aurora State College of Technology (ASCOT)	2
5. Mariano Marcos State University (MMSU)	2
6. Tarlac College of Agriculture (TCA)	2
7. Cagayan State University (CSU)	2
8. Quirino State College (QSC)	2
9. Camarines Sur State Agricultural College (CSSAC)	2
10. Don Mariano Marcos Memorial State University (DMMMSU)	2
11. Nueva Ecija University of Science and Technology (NEUST)	2
12. Bulacan State Agricultural College (BASC)	2
13. Pampanga Agricultural College (PAC)	2
14. National Irrigation Administration- Casecan Multi-Purpose Irrigation and Power Project (NIA-CMIPP)	2
15. Central Luzon State University (CLSU)	6
16. International Rice Research Institute (IRRI)	2
<b>Total</b>	<b>34</b>

## **VI. Project Team, Training Staff, Resource Persons and Support Staff**

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