

THE 2nd MULTI-ENVIRONMENT TESTING FOR IRRIGATED LOWLAND RICE - STAGE 2 WET SEASON (MET2-IR, 2012 WS)

Introduction

IRRI breeding programs generate fixed and stable lines each season that are identified from pedigree nurseries as well as observational and replicated yield trials. Eventually, elite lines are advanced to multi-environment testing (MET) conducted via breeding networks. These networks, however, presently have limited geographical coverage and face challenges in terms of germplasm movement. Moreover, the materials tested through these networks are generally in the advanced stage of varietal development. An exhaustive MET system for early generation breeding products is so far lacking at IRRI and in the global rice breeding community. For this reason, a new MET system is being established at IRRI beginning in 2011 under the Global Rice Science Partnership (GRiSP), to be piloted for irrigated lowland rice.

Goal

- To establish a systematic, sequential, multistage, and multi-environment testing (MET) system for elite breeding lines, managed through one entity, in order to improve overall breeding efficiency.

Objectives

- To identify elite breeding lines with high and stable yields and wide adaptation across a target population of environments that can be the future mega-varieties;
- To be able to select superior breeding materials adapted to one or more specific environment(s) and agro-ecologies;
- To develop and deploy varieties and breeding products to specific market segments;
- To exploit genotype, environment, and genotype x environment (G X E) interaction contributions to varietal performance in releasing breeding products to one or more target environments;
- To generate earlier feedback to breeders on trait performance and identify trait packages needed for molecular breeding;
- To improve partnerships with public, NGO, and private sectors who may have roles to play at certain testing/variety development stages. .

Trial Composition

The MET2-IR trial is the second stage of testing for irrigated breeding lines from IRRI and collaborating NARES institution selected promising lines from MET Stage 1 for irrigated breeding lines under the overall MET concept. For 2012 wet season, the trial will consist of 140 test entries and 5 checks. The test entries will mostly include breeding lines developed by the various breeding programs (both hybrid and inbred) of IRRI and PhilRice. The designation, source and other information of each entry are provided in Table 1.

The check varieties and their corresponding entry numbers are as follows:

Designation	Classification	MET No.	Entry No.		
			Border	Module 1	Module 2
PSB Rc10	Very early	MT4901	901	96	36
PSB Rc82	Early	MT4902	902	97	37
NSIC RC222	Medium	MT4903	903	98	38
PSB Rc18	Late	MT4904	904	99	39
NSIC Rc124H (MESTIZO 4)	Late (Hybrid)	MT5432	905	100	40

Criteria for Selection of Entries

To fill the 140 entries needed for MET Stage 2, the following criteria are the basis for selection of entries from each module:

1. Very Early/Early Maturing Group (95 entries and 5 checks)
 - a. Top 10% of good performing entries across all locations (45)
 - b. Top 10 entries at 5 locations (50)

2. Medium/Late Maturing Group (35 entries and 5 checks)
 - a. Top 5% of good performing entries across all locations (10)
 - b. Top 5 entries at 5 locations (25)

Flow of Materials Across Seasons

The table below shows the flow of retaining, replacing and removing seeds across seasons from 2012 to 2016:

MET 2	2012		2013		2014		2015		2016	
Classification of Seeds	DS	WS	DS	WS	DS	WS	DS	WS	DS	WS
New	140		70	70	70	70	70	70	70	70
Retained		140	70	70	70	70	70	70	70	70
Dropped			55	55	55	55	55	55	55	55
Promoted to MET3			15	15	15	15	15	15	15	15

The Experimental Site

An experimental field uniform in soil texture, depth, and fertility should be chosen for the MET2-IR trial. It should not have been used previously for fertilizer experiments. It should also have adequate irrigation and drainage facilities. The area covers 0.5 hectare of land per site. It is suggested that the same area be utilized for the MET every season.

Experimental Design

The trial will be conducted using a **Row-Column Design with two replications**. This design is used to consider possible field variation. There are two modules, based on the flowering time of entries - Module 1 for very early/early flowering and, Module 2 for medium/late flowering, as follows:

Flowering	Classification
90 and below	Very early/Early
Above 90	Medium/Late

For each replicate, module 1 has 30 rows and 4 columns while module 2 has 15 rows and 4 columns.

***This fieldbook contains the plot randomization, field plan and data sheets for the MET2-IR 2012 for wet season.**

For each module, the test entries are randomly assigned plot numbers. Within each module, the 2 replicates have different randomizations. All five checks are randomly assigned in a replicate and are included within each column (checks are systematically arranged on every 6th row to help on PACP scoring). Different trial sets have different randomization of entries. The plot randomization of entries is given in Tables 2 and 3. There are 120 plots for Module 1 while Module 2, has 60 plots. The seed packets are arranged and numbered according to plot numbers.

The field layout in Figure 1 is provided for your reference. Please do not modify the design or the layout.

Prepare the field thoroughly at least one month before transplanting following the locally recommended standards. Lay out rows in beds before seeding. The experimental field should be properly labeled. The plot size for each entry is $10\text{ m}^2 = 2.0\text{ m} \times 5.0\text{ m}$ (10 rows with 20 cm distance between rows).

There should be no vacant rows between plots (entries). Number the plots consecutively from left to right in all replications. Place the stakes bearing the plot number at the first left-most row of each plot. Label all plots before distributing the seedlings for transplanting.

Apply molluscicide two times, i.e. once at four days before and another immediately after transplanting.

Nursery Establishment and Management

Initially all seeds are placed in an oven for breaking dormancy at 50°C for 5 days. A total of 100 grams of seeds for each entry are seeded, which should allow the planting of 2 replications each with 2 m width (10 rows) x 5.0 m length (25 hills). The seeds could be seeded in either wet or dry beds where they are grown for 21 days. The seedling beds are carefully kept free from insect and diseases and properly irrigated. After seeding, apply uniformly 1kg/100m² of Ammonium Sulfate (21-0-0 S) in the seedbed. If the seedlings show yellowing (N deficiency), apply another 1kg/100m² of Ammonium Sulfate (21-0-0 S) 10-12 days after seeding (DAS).

Prior to pulling, prepare tags to mark seedlings to be transported from seedbed to the field. After 21 days of sowing, each seedling of the entries are pulled out from the seedling beds, bundled, and tied with a G.I. wire marked with pot labels bearing the plot numbers. Distribute seedlings in the field corresponding to the lay-out. Check the entries and the plots for any possible mistake(s) before transplanting the seedlings. Alternatively, apply zinc sulfate in the nursery seedbed, or dip seedlings in 2-4 % zinc oxide suspension before transplanting. (If zinc sulfate is to be applied in the soil as basal, dipping is no longer necessary.)

The seedlings are transplanted into the field in 2-3 seedlings per hill following a spacing of 20 cm x 20cm. Keep some seedlings at the end of the plot near the plot label to replant missing hills.

Shallow water depth should be maintained starting from about 3 days after transplanting that is gradually increased to 3-5 cm until the hard dough stage. Replant missing hills within 7 days after transplanting to obtain a uniform plant population. Care should be taken to uniformly distribute fertilizers and plant protection chemicals.

The recommended fertilizer rates (kg/ha) for different test sites in the Philippines during the 2012 wet season are:

- Recommended at IRRI

Season	Stage	N ¹	P ²	K ³	Zn ⁴
DRY	Total	160	30	40	5
	Basal	60	30	40	5
	Mid Tiller	40	-	-	-
	Panicle Initiation	60	-	-	-
WET	Total	90	15	20	5
	Basal	30	15	20	5
	Mid Tiller	30	-	-	-
	Panicle Initiation	30	-	-	-

- For PhilRice – Nueva Ecija and Isabela

Season	Stage	N ¹	P ²	K ³	Zn ⁴
DRY	Total	150	60	60	5
	Basal	60	60	60	5
	Mid Tiller	40	-	-	-
	Panicle Initiation	50	-	-	-
WET	Total	90	60	60	5
	Basal	60	60	60	5
	Mid Tiller	15	-	-	-
	Panicle Initiation	15	-	-	-

- For PhilRice – Agusan

Season	Stage	N ¹	P ²	K ³	Zn ⁴
DRY	Total	60	40	70	5
	Basal	30	40	70	5
	Mid Tiller	15	-	-	-
	Panicle Initiation	15	-	-	-
WET	Total	60	40	70	5
	Basal	30	40	70	5
	Mid Tiller	15	-	-	-
	Panicle Initiation	15	-	-	-

- For DA – Bohol

Season	Stage	N ¹	P ²	K ³	Zn ⁴
DRY	Total	91	24	14	-
	Basal	22	24	14	-
	Mid Tiller	34.5	-	-	-
	Panicle Initiation	34.5	-	-	-
WET	Total	91	24	14	-
	Basal	22	24	14	-
	Mid Tiller	34.5	-	-	-
	Panicle Initiation	34.5	-	-	-

¹ In the form urea

² As P₂O₅ from triple superphosphate or solophos

³ K₂ from KCl

⁴ As ZnSO₄

For weed control, a pre-emergence herbicide (Sofit EC if available) and molluscicide may be applied uniformly in the experimental field immediately after transplanting following the recommended rate. Maintain a shallow water depth of 2-5 cm for at least 2 weeks after herbicide application. Subsequent hand weeding may be done if needed.

For disease and insect control, the experimental field should be well protected. Choose the appropriate cultural, chemical, and biological control to effectively manage insects and diseases. If available, carbofuran may be applied at around 15 DAT and at PI. Do prophylactic application of Benlate at PI and follow up spray 2 weeks later for sheath blight. Roguing should be done to remove off-type plants. Rogue the field repeatedly up to the hard dough stage or for as long as off-types can be identified. These off-type plants should be cut at the base.

At harvest, collect all the plants in a plot except the border rows, one on each side of the plot and two border rows, one on both ends of all the plots (The total number of plants harvested from a plot is 8 rows x 23 plants). The harvest from each plot is placed in clean cloth bags. Put the labels, bearing the entry number and plot number inside the bag. A vogue thresher is used to thresh the samples. Clean the thresher well after every sample. Put the label inside the bag after threshing. All threshed samples are dried in a batch dryer at 45°C for 4-5 days. In removing half and empty grains, clean the seed blower before processing each sample to avoid seed mixtures. Transfer clean seeds into labeled paper bags bearing the MET name, MET entry number, plot number, year, and season.

Data Collection

The general reference for data collection is the Standard Evaluation System for Rice (SES, 1996). The following agronomic data are collected:

Trait

Explanation

VG: Vegetative Vigor. Note: Several factors may interact, influencing seedling vigor (e.g. tillering ability, plant height, etc.) Use this scale for evaluating genetic material and varieties under stress and non-stress conditions.

1	Extra vigorous (very fast growing; plants at 5-leaf stag have 2 or more tillers in majority of population)
3	Vigorous (fast growing; plants at 4-5 leaf stage have 1-2 tillers in majority of population)
5	Normal (plants at 4-leaf stage)
7	Weak (plants somewhat stunted; 3-4 leaves; thin population; no tiller formation)
9	Very weak (stunted growth; yellowing of leaves)

ZN:

Zinc Deficiency

1	Growth and tillering nearly normal, healthy
2	Growth and tillering nearly normal, basal leaves slightly discolored
3	Stunting slight, tillering decreased, some basal leaves brown or yellow
5	Growth and tillering severely retarded, about half of all leaves brown or yellow
7	Growth and tillering ceases, most leaves brown or yellow
9	Almost all plants dead or dying

FLW (DAS): Days to flowering. Number of days from seeding to 50 % flowering. 50% of the main tillers of the whole population (in a plot) are flowering.

MAT: Days to maturity. Number of days from seeding to grain ripening (85% of grains on panicle of the whole plot are mature, i.e. color is yellow).

HT (cm): Plant height. Average of five samplings measured in centimeters from soil surface to the tip of the tallest panicle (awns excluded) and can be measured when 80% are mature. (i.e. HT1=height for sample 1, so on)

TILLER: Tiller Number. Average of five samplings taken from inner hills by counting the number of productive tillers (the same samples used in measuring plant height). (i.e. TILLER1=number of tillers for sample 1, so on)
Note: 2-3 seedlings per hill.

LDG: Lodging incidence. Percent of plants that lodged with at least 45 degree angle.

PACP: Phenotypic acceptability
Scale

1	Excellent = very good plant type, dense medium slender grains, no grain discoloration, without awns, no symptoms of diseases or deficiencies, medium to high tillering, comparable or better than the best check.
3	Good = good plant type, medium to high tillering, no symptoms of diseases and deficiencies, no grain discoloration, comparable to the check varieties
5	Fair = moderate tolerance to diseases and deficiencies, acceptable plant type, medium tillering and good grains.
7	Poor = poor plant type, awns, discolored grains, low tiller number, showing disease and deficiency problem
9	Unacceptable = very poor plant type, all plants have diseases and showing symptoms of deficiencies.

YLD: Plot yield (g) adjusted to 14% moisture content (excluding borders)
Adjusted yield = (plot yield/no. of harvested hills)*standard harvested hills*MF
Where MF= (100-MC at harvest)/86

NO_PLANTS: Number of plants harvested. Standard number of hills to harvest = 184.

MC: Moisture Content (in %). Weigh the samples and test the moisture content for yield data calculation. Note: Upon weighing, measure also MC.

Grain quality characteristics will be measured to selected entries:

AMY: Amylose content of grain. In percent

GELTEMP: Gelatinization Temperature

GELCON: Gelatinization Consistency after milling.

Scale	(mm)	Gel consistency type
1	80-100	Soft
3	61-80	Soft
5	41-60	Medium
7	36-40	Hard
9	Less than 35	Hard

GRL: Grain length in mm. Distance from the base of the lowermost sterile lemma to the tip (apiculus) of the fertile lemma or palea. In the case of awned varieties, the grain is measured to a point comparable to the tip of the apiculus.

GRS: Grain shape. After harvesting, cleaning and dehulling.

Scale	Shape	Ratio
1	Slender	Over 3.0
3	Medium	2.1 to 3.0
5	Bold	1.1 to 2.0
9	Round	Less than 1.1

CHK: Chalkiness of endosperm. Percent in Kernel Area. Evaluate a representative milled sample for the degree (extent) of chalkiness that will best describe the sample with respect to: a. white belly; b. white center; and c. white back.

Scale

0	None
1	Small (less than 10%)
5	Medium (11% to 20%)
9	Large (more than 20%)

Data are to be recorded in electronic field books. Protocol on data gathering will be provided later.

Data Reporting

Data can be reported to the INGER Coordinator -- electronic copy (sent as e-mail attachment) or hard copy (via courier).

An excel file for data recording corresponds to a trial-year-set number combination. A set number refers to a specific testing site. Examples of excel files are:

- a. MET2-IR 2012/Set No. 6- _____ (PHILRICE Nueva Ecija, Philippines)

The data sheet names and data to be entered in each sheet are summarized below:

Excel file sheet name	Data to be entered
LOCATION and EXPT-DESC (experiment-description)	Test site data, names of cooperators and data about agronomic practices
WEATHER-OBS (weather-observation)	Monthly weather data
PEST-OBS (pest-observation)	Pest type, pest name and degree of pressure
EXPT-OBS (experiment-observation)	Entry data (plant height, days to heading, etc.)

In excel data sheets, only rows and columns important to cooperators are shown. Hidden rows and columns are for INGER use only. For example, in sheet LOCATION and EXP-DESC, rows 2-3 and columns c-t are hidden while in sheet WEATHER-OBS, rows 1-13, 19, 33-34 and columns h-i are all hidden.

Please fill-out the excel data sheet and send to IRRI as an email attachment to: a.galang@cgiar.org or a.tabanao@irri.org.

You may send printed data sheets of this field book to:

INGER Coordinator
Plant Breeding, Genetics and Biochemistry Division
International Rice Research Institute (IRRI)
DAPO Box 7777
Metro Manila, Philippines

Table 1. Particulars of entries in the 2nd MET Stage 2 - Irrigated Lowland Rice Wet Season (2012)

MET No.	Module No.	Entry No.	Fixed Name	Origin	Group/Scientist
MT4004	1	1	HHZ 8-SAL 6-SAL 3-Y2	IRRI	Green Super Rice/ J. Ali
MT4008	1	2	HHZ 1-Y4-Y1	IRRI	Green Super Rice/ J. Ali
MT4017	1	3	HHZ 8-SAL9-DT 2-Y1	IRRI	Green Super Rice/ J. Ali
MT4018	1	4	HHZ 12-Y 4-DT 1-Y 1	IRRI	Green Super Rice/ J. Ali
MT4019	1	5	HHZ 12-DT 10-SAL 1-DT 1	IRRI	Green Super Rice/ J. Ali
MT4209	1	6	ZGY 1	IRRI	Green Super Rice/ J. Ali
MT4279	1	7	ZH 1	IRRI	Green Super Rice/ J. Ali
MT4280	1	8	TME 80518	IRRI	Green Super Rice/ J. Ali
MT4284	1	9	SAGC-02	IRRI	Green Super Rice/ J. Ali
MT4285	1	10	Hua 565	IRRI	Green Super Rice/ J. Ali
MT4026	1	11	IR 10N198	IRRI	Irrigated/P. Virk
MT4036	1	12	IR 08N195	IRRI	Irrigated/P. Virk
MT4038	1	13	IR 09A228	IRRI	Irrigated/P. Virk
MT4041	1	14	IR 09N532	IRRI	Irrigated/P. Virk
MT4049	1	15	IR 09N533	IRRI	Irrigated/P. Virk
MT4050	1	16	IR 09N538	IRRI	Irrigated/P. Virk
MT4053	1	17	IR 10M120	IRRI	Irrigated/P. Virk
MT4054	1	18	IR 10M122	IRRI	Irrigated/P. Virk
MT4055	1	19	IR 10A125	IRRI	Irrigated/P. Virk
MT4075	1	20	IR 09A178	IRRI	Irrigated/P. Virk
MT4087	1	21	IR 10M121	IRRI	Irrigated/P. Virk
MT4088	1	22	IR 10M123	IRRI	Irrigated/P. Virk
MT4105	1	23	IR 08A104	IRRI	Irrigated/P. Virk
MT4110	1	24	IR 08N158	IRRI	Irrigated/P. Virk
MT4133	1	25	IR 10A152	IRRI	Irrigated/P. Virk
MT4146	1	26	IR 08N184	IRRI	Irrigated/P. Virk
MT4148	1	27	IR 06N119	IRRI	Irrigated/P. Virk
MT4149	1	28	IR 09A235	IRRI	Irrigated/P. Virk
MT4150	1	29	IR 09A220	IRRI	Irrigated/P. Virk
MT4152	1	30	IR 09N495	IRRI	Irrigated/P. Virk
MT4154	1	31	IR 03A159	IRRI	Irrigated/P. Virk
MT4158	1	32	IR 09N500	IRRI	Irrigated/P. Virk
MT4161	1	33	IR 10N118	IRRI	Irrigated/P. Virk
MT4171	1	34	IR 10A110	IRRI	Irrigated/P. Virk
MT4179	1	35	IR 06M150	IRRI	Irrigated/P. Virk
MT4180	1	36	IR 09N502	IRRI	Irrigated/P. Virk
MT4188	1	37	IR 06M143	IRRI	Irrigated/P. Virk

Table 1. Particulars of entries in the 2nd MET Stage 2 - Irrigated Lowland Rice Wet Season (2012)

MET No.	Module No.	Entry No.	Fixed Name	Origin	Group/Scientist
MT4194	1	38	IR 06M144	IRRI	Irrigated/P. Virk
MT4195	1	39	IR 06M139	IRRI	Irrigated/P. Virk
MT4196	1	40	IR 09A136	IRRI	Irrigated/P. Virk
MT4201	1	41	IR 10M136	IRRI	Irrigated/P. Virk
MT4205	1	42	IR 10N269	IRRI	Irrigated/P. Virk
MT4206	1	43	IR 10A134	IRRI	Irrigated/P. Virk
MT4213	1	44	IR 07A234	IRRI	Irrigated/P. Virk
MT4217	1	45	IR 09N503	IRRI	Irrigated/P. Virk
MT4220	1	46	IR 06M141	IRRI	Irrigated/P. Virk
MT4232	1	47	IR 06N155	IRRI	Irrigated/P. Virk
MT4234	1	48	IR 08M119	IRRI	Irrigated/P. Virk
MT4237	1	49	IR 10N108	IRRI	Irrigated/P. Virk
MT4241	1	50	IR 10N186	IRRI	Irrigated/P. Virk
MT4243	1	51	IR 10A155	IRRI	Irrigated/P. Virk
MT4257	1	52	IR 09A152	IRRI	Irrigated/P. Virk
MT4268	1	53	IR 08N138	IRRI	Irrigated/P. Virk
MT4276	1	54	IR 10N237	IRRI	Irrigated/P. Virk
MT4289	1	55	IR 08N136	IRRI	Irrigated/P. Virk
MT4297	1	56	IR 05N412	IRRI	Irrigated/P. Virk
MT4299	1	57	IR 08N134	IRRI	Irrigated/P. Virk
MT4320	1	58	IR 06N211	IRRI	Irrigated/P. Virk
MT4324	1	59	IR 09N528	IRRI	Irrigated/P. Virk
MT4536	1	60	PR37160-8-5-1-1-1-1	Philippines	PhilRice
MT4538	1	61	PR37160-13-7-1-1-1-1	Philippines	PhilRice
MT4543	1	62	PR37990-3B-15-2	Philippines	PhilRice
MT4546	1	63	PR40083-1B-3-2	Philippines	PhilRice
MT4547	1	64	PR37275-7-30-8-1-1-2-2-2	Philippines	PhilRice
MT4553	1	65	PR37949-3B-3-5-1	Philippines	PhilRice
MT4554	1	66	PR37152-2-2-4-1-1-1	Philippines	PhilRice
MT4556	1	67	PR37934-3B-8-2-1	Philippines	PhilRice
MT4566	1	68	PR37246-2-3-2-1-1-2-2	Philippines	PhilRice
MT4567	1	69	PR37252-2-1-1-1-2-2	Philippines	PhilRice
MT4574	1	70	PR37951-3B-37-1	Philippines	PhilRice
MT4604	1	71	PR37275-7-14-5-1-2-2-1-2	Philippines	PhilRice
MT4226	1	72	IR 09N522	IRRI	Irrigated/P. Virk
MT4622	1	73	PR37951-3B-37-1-2	Philippines	PhilRice
MT4634	1	74	PR37942-3B-5-3-2	Philippines	PhilRice

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MET No.	Module No.	Entry No.	Fixed Name	Origin	Group/Scientist
MT4639	1	75	PR37139-3-1-3-1-2-1	Philippines	PhilRice
MT4640	1	76	PR37934-3B-23-2-1	Philippines	PhilRice
MT4641	1	77	PR37866-1B-1-4	Philippines	PhilRice
MT4648	1	78	PR37939-3B-1-2	Philippines	PhilRice
MT4650	1	79	PR40078-B-12-2	Philippines	PhilRice
MT4706	1	80	PR37160-13-4-1-1-1-1	Philippines	PhilRice
MT4712	1	81	PR37273-5-16-5-2-1-2-1	Philippines	PhilRice
MT4720	1	82	PR35769-B-1-1-2-3-4	Philippines	PhilRice
MT4722	1	83	PR35769-B-37-3-1-2-1	Philippines	PhilRice
MT4737	1	84	PR35805-B-9-2-3-2-3	Philippines	PhilRice
MT4748	1	85	PR30245-10-414	Philippines	PhilRice
MT4756	1	86	PR34005-2B-7-1-3-1-2	Philippines	PhilRice
MT4779	1	87	PR38046-PB-10-9-4-2-1	Philippines	PhilRice
MT4809	1	88	PR37952-B-1-1-2	Philippines	PhilRice
MT4066	1	89	IR 10F388	IRRI	Submergence/B. Collard
MT4094	1	90	IR 10F360	IRRI	Submergence/B. Collard
MT4095	1	91	IR 10F407	IRRI	Submergence/B. Collard
MT4137	1	92	IR 10F339	IRRI	Submergence/B. Collard
MT4138	1	93	IR 10F328	IRRI	Submergence/B. Collard
MT4248	1	94	IR 09F436	IRRI	Submergence/B. Collard
MT4249	1	95	Ciherang	IRRI	Submergence/B. Collard
MT4901	1	96	IRRI 104	IRRI	
MT4902	1	97	IRRI 123	IRRI	
MT4903	1	98	IRRI 154	IRRI	
MT4904	1	99	IRRI 105	IRRI	
MT5432	1	100	NSIC Rc124H (MESTIZO 4)	IRRI	
MT4327	2	1	IR 06N233	IRRI	Irrigated/P. Virk
MT4353	2	2	IR 07A179	IRRI	Irrigated/P. Virk
MT4363	2	3	IR 05N419	IRRI	Irrigated/P. Virk
MT4377	2	4	IR 09N142	IRRI	Irrigated/P. Virk
MT4390	2	5	IR 10N251	IRRI	Irrigated/P. Virk
MT4398	2	6	IR 04A115	IRRI	Irrigated/P. Virk
MT4404	2	7	IR 06N234	IRRI	Irrigated/P. Virk
MT4406	2	8	IR 05N170	IRRI	Irrigated/P. Virk
MT4413	2	9	IR 10N230	IRRI	Irrigated/P. Virk
MT4414	2	10	IR 10N226	IRRI	Irrigated/P. Virk
MT4447	2	11	IR 04A409	IRRI	Irrigated/P. Virk

Table 1. Particulars of entries in the 2nd MET Stage 2 - Irrigated Lowland Rice Wet Season (2012)

MET No.	Module No.	Entry No.	Fixed Name	Origin	Group/Scientist
MT4471	2	12	IR 10N225	IRRI	Irrigated/P. Virk
MT4479	2	13	IR 09N272	IRRI	Irrigated/P. Virk
MT4488	2	14	IR 10N304	IRRI	Irrigated/P. Virk
MT4807	2	15	PR37285-17-31-12-1-1-2	Philippines	PhilRice
MT4817	2	16	PR37921-B-3-4-2-1-2	Philippines	PhilRice
MT4818	2	17	PR37704-2B-6-1-2-1-1	Philippines	PhilRice
MT4829	2	18	PR38012-3B-3-1	Philippines	PhilRice
MT4830	2	19	PR37921-B-3-2-2	Philippines	PhilRice
MT4833	2	20	PR36905-B-1-4-1-1	Philippines	PhilRice
MT4835	2	21	PR35251-2B-5-5-3-1-1	Philippines	PhilRice
MT4836	2	22	PR37286-18-15-6-1-1-2-2	Philippines	PhilRice
MT4841	2	23	PR37246-2-3-2-1-1-2-1	Philippines	PhilRice
MT4843	2	24	PR37952-B-4-1-3	Philippines	PhilRice
MT4867	2	25	PR35786-B-3-3-2-1-1	Philippines	PhilRice
MT4874	2	26	PR36831-31-1-1-1-1-1	Philippines	PhilRice
MT4879	2	27	PR37952-B-1-1-5	Philippines	PhilRice
MT4886	2	28	PR36933-B-1-36-1-1-1	Philippines	PhilRice
MT4889	2	29	PR34859-B-4-1-1-2-1(G)	Philippines	PhilRice
MT4896	2	30	PR37405-PB-4-9-5-3-7	Philippines	PhilRice
MT4444	2	31	IR 10F403	IRRI	Submergence/B. Collard
MT4457	2	32	IR 10F336	IRRI	Submergence/B. Collard
MT4489	2	33	IR 10F290	IRRI	Submergence/B. Collard
MT4494	2	34	IR 10F203	IRRI	Submergence/B. Collard
MT4509	2	35	IR 10F354	IRRI	Submergence/B. Collard
MT4901	2	36	IRRI 104	IRRI	
MT4902	2	37	IRRI 123	IRRI	
MT4903	2	38	IRRI 154	IRRI	
MT4904	2	39	IRRI 105	IRRI	
MT5432	2	40	NSIC Rc124H (MESTIZO 4)	IRRI	
MT4901	ch	901	IRRI 104	IRRI	
MT4902	ch	902	IRRI 123	IRRI	
MT4903	ch	903	IRRI 154	IRRI	
MT4904	ch	904	IRRI 105	IRRI	
MT5432	ch	905	NSIC Rc124H (MESTIZO 4)	IRRI	

FIGURE 1. FIELD PLAN FOR ROW-COLUMN DESIGN FOR TWO MODULES FOR MET STAGE 2 - IRRIGATED LOWLAND RICE

Module 1. Very early/Early
Rep. 1

1001	1060	1061	1120
1002	1059	1062	1119
1003	1058	1063	1118
1004	1057	1064	1117
1005	1056	1065	1116
1006	1055	1066	1115
1007	1054	1067	1114
1008	1053	1068	1113
1009	1052	1069	1112
1010	1051	1070	1111
1011	1050	1071	1110
1012	1049	1072	1109
1013	1048	1073	1108
1014	1047	1074	1107
1015	1046	1075	1106
1016	1045	1076	1105
1017	1044	1077	1104
1018	1043	1078	1103
1019	1042	1079	1102
1020	1041	1080	1101
1021	1040	1081	1100
1022	1039	1082	1099
1023	1038	1083	1098
1024	1037	1084	1097
1025	1036	1085	1096
1026	1035	1086	1095
1027	1034	1087	1094
1028	1033	1088	1093
1029	1032	1089	1092
1030	1031	1090	1091
3001	3030	3031	3060
3002	3029	3032	3059
3003	3028	3033	3058
3004	3027	3034	3057
3005	3026	3035	3056
3006	3025	3036	3055
3007	3024	3037	3054
3008	3023	3038	3053
3009	3022	3039	3052
3010	3021	3040	3051
3011	3020	3041	3050
3012	3019	3042	3049
3013	3018	3043	3048
3014	3017	3044	3047
3015	3016	3045	3046

Module 2. Medium/Late
Rep. 1

Rep. 2

2001	2060	2061	2120
2002	2059	2062	2119
2003	2058	2063	2118
2004	2057	2064	2117
2005	2056	2065	2116
2006	2055	2066	2115
2007	2054	2067	2114
2008	2053	2068	2113
2009	2052	2069	2112
2010	2051	2070	2111
2011	2050	2071	2110
2012	2049	2072	2109
2013	2048	2073	2108
2014	2047	2074	2107
2015	2046	2075	2106
2016	2045	2076	2105
2017	2044	2077	2104
2018	2043	2078	2103
2019	2042	2079	2102
2020	2041	2080	2101
2021	2040	2081	2100
2022	2039	2082	2099
2023	2038	2083	2098
2024	2037	2084	2097
2025	2036	2085	2096
2026	2035	2086	2095
2027	2034	2087	2094
2028	2033	2088	2093
2029	2032	2089	2092
2030	2031	2090	2091
4001	4030	4031	4060
4002	4029	4032	4059
4003	4028	4033	4058
4004	4027	4034	4057
4005	4026	4035	4056
4006	4025	4036	4055
4007	4024	4037	4054
4008	4023	4038	4053
4009	4022	4039	4052
4010	4021	4040	4051
4011	4020	4041	4050
4012	4019	4042	4049
4013	4018	4043	4048
4014	4017	4044	4047
4015	4016	4045	4046

Rep. 2

FIGURE 2. RANDOMIZATION PLAN FOR MODULES 1 & 2 OF MET STAGE 2 - IRRIGATED LOWLAND RICE (SET 6) 2012 WS

Module 1

REP 1			
15	26	34	29
77	84	75	97
56	41	58	38
96	72	28	7
79	85	71	37
901	901	901	901
62	66	92	78
91	12	10	39
53	61	17	18
95	50	24	23
8	48	54	63
902	902	902	902
42	67	16	22
31	14	51	70
30	68	76	19
21	73	83	20
35	46	55	47
903	903	903	903
82	89	27	69
52	57	100	40
9	36	65	44
74	33	4	98
81	25	45	80
904	904	904	904
64	59	3	5
88	11	99	60
94	6	2	1
87	13	32	43
93	86	49	90
905	905	905	905

REP 2			
47	1	45	9
65	86	42	29
5	96	10	84
81	37	13	3
73	92	15	39
901	901	901	901
98	89	83	31
82	94	61	44
16	97	78	91
53	32	63	34
57	69	75	68
902	902	902	902
90	76	74	59
77	25	27	22
80	49	14	21
72	52	19	55
51	30	28	79
903	903	903	903
23	85	35	100
36	88	18	48
71	41	93	33
26	7	40	17
11	4	38	95
904	904	904	904
8	12	24	20
43	70	64	6
66	58	60	54
2	67	46	56
87	62	50	99
905	905	905	905

Module 2

REP 1			
9	5	37	36
4	26	14	20
901	901	901	901
3	27	16	29
40	18	31	7
902	902	902	902
12	15	19	8
6	32	35	30
903	903	903	903
28	1	21	25
11	17	2	38
904	904	904	904
10	23	13	24
33	34	39	22
905	905	905	905

REP 2			
33	1	39	30
35	38	10	37
901	901	901	901
24	34	26	6
5	12	21	22
902	902	902	902
20	13	32	4
15	11	31	27
903	903	903	903
16	9	8	2
36	18	28	29
904	904	904	904
25	14	17	40
23	7	3	19
905	905	905	905