

INTERNATIONAL CROP INFORMATION SYSTEM Overview

Arlet Portugal, Associate Scientist

Dr. Graham McLaren, Head

**IRRI-CIMMYT Crop Research Informatics
Laboratory**

Outline

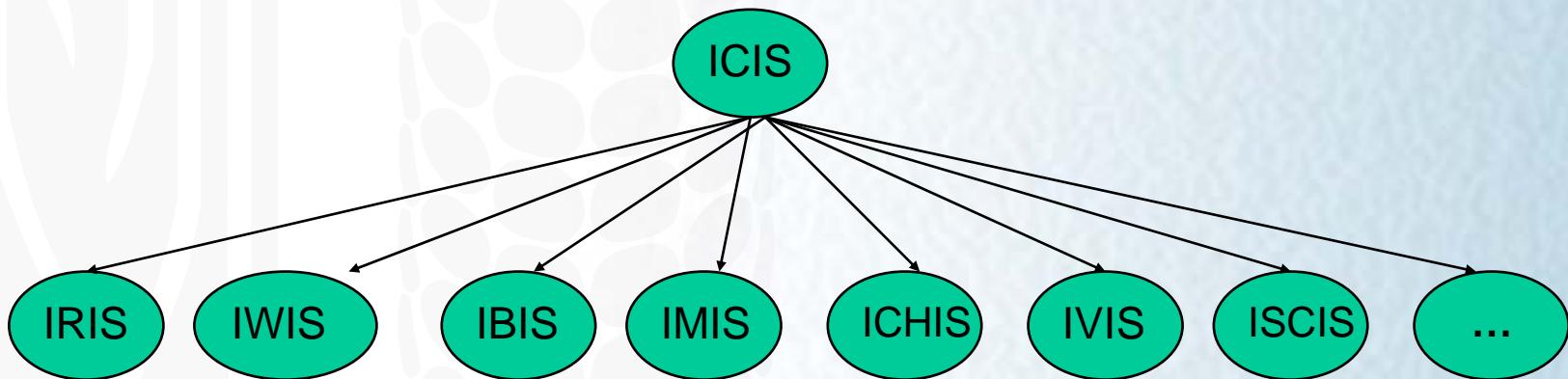
- What is ICIS?
- Components of ICIS
 - Genealogy Management System (GMS)
 - Data Management System (DMS)
 - Inventory Management System (IMS)
 - Gene Management System
- Dispersed Data Curation and Privacy
- Benefits of using ICIS
- ICIS Users' Team
- What is IRIS?
 - Survey of the IRIS database
 - IRIS Web Application
- ICIS Resources

The International Crop Information System

- ICIS is a computerized database system for general, integrated management and utilization of genealogy, nomenclature, evaluation and characterization data for a wide range of crops.
- ICIS is a public open source collaboration involving a number of CGIAR centers and non-CG partners.

What is ICIS? ...

- ICIS is an empty shell which must be implemented for each crop individually
- Aside from rice ICIS is also deployed for: Wheat, Barley, Maize, Beans, Chick Pea, Cow Pea, and dozens of vegetable crops.



ICIS COMPONENTS

PEDIGREE
ANALYSIS
SYSTEM

SET GENERATION
MODULE

GENETIC
RESOURCES
INFORMATION
SYSTEM

FIELDBOOK
SYSTEM

GENEALOGY
MANAGEMENT
SYSTEM

GENE
MANAGEMENT
SYSTEM

INVENTORY
MANAGEMENT
SYSTEM

DATA
MANAGEMENT
SYSTEM

GIS APPLICATIONS

GxE ANALYSIS
APPLICATIONS

[MMYT_{MR}

Components of ICIS

- Crop Data Management
 - Genealogy Management System (GMS)
 - Data Management System (DMS)
 - Inventory Management System (IMS)
 - Genetic Resources Information Management System (GRIMS)
- Genetics/Genomics (GEMS)
 - Adapting diverse public domain open source schemas & software: GMOD, Ensembl, GO, BASE plus in-house Perl/Java code, ...
- Integrating with GIS and other data

Genealogy Management System (GMS)

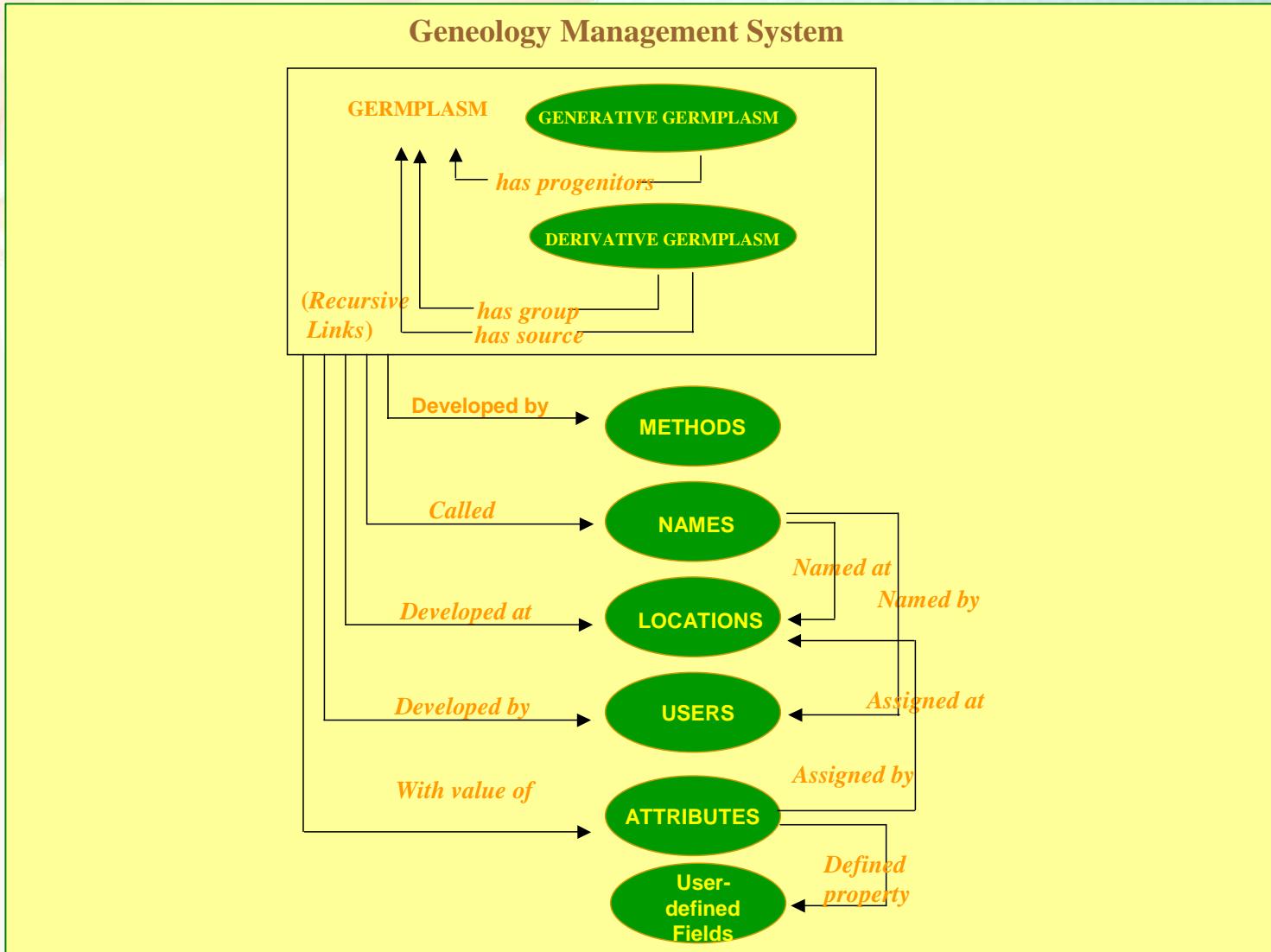
- GMS stores and manages information on genesis, genealogy, nomenclature and chronology of germplasm for a particular crop. It operates on the principle of unique identification of germplasm through system assigned Germplasm IDs
- It separates management of genealogy data from nomenclature so users are free to name germplasm as they like and the genealogy is always ‘computable’

Genealogy Management System

Structural Assumptions

- Accommodate all possible development methods
- Three development classes
 - Generative methods which increase genetic variability,
 - Derivative methods which focus variability,
 - Maintenance methods which retain genetic variability
- Germplasm can be classified into groups of derivatives from a specific generative process,
i.e. all the lines from a cross

GMS Model



GMS Applications

- Search Tool (GMS Search, Browse)
- Pedigree Input Tools (EPIT, GMS Input)
- Breeder's Tools (Set Generation)
- Analysis Tools (Coefficients of Parentage)

GMS Search

- The GMS SEARCH application is a tool for finding germplasm in the GMS, and displaying its corresponding information and/or any relevant information attached to it.

The screenshot displays the GMS Search application window. At the top, there is a search bar with options: "Search for:" (radio buttons for Name, GID, Attribute, Cross(Single)), "Name" (text input: apo), "Name Type" (dropdown: <Not specified>), and buttons for "Go" and "More". Below the search bar, a table shows search results:

Names (no. of hits : 1)	Method	Location	Unique ID
IRRI 132, IR2P 19122, NSIC RC 9, IR 55423-1, IR 55423-01, PBB RC 9, NSICRC 9, RC 9, MALAY 2, PBBEDSP		IRRI-INTERNATIONAL RICE RESEARCH INSTITUTE, LOS BIRIS 12-1426	

The main area contains two panes: "Tree" and "Germplasm Characteristics". The "Tree" pane shows a hierarchical list of germplasm accessions, starting with IR 55423 and including sub-accessions like UPL RI 5, C 171, SIGADIS, BLUEBONNET/BENONG, and others. The "Germplasm Characteristics" pane provides detailed information for the selected entry (IRRI 132):

- Preferred:** IRRI 132
- Date Named:** 2006- 2-27
- Name Location:** IRRI-INTERNATIONAL RICE RI
- Germ. Date Creation:** 1993- 7-23
- Germ. Location:** IRRI-INTERNATIONAL RICE RI
- Levels:** 1
- Generation No.:** C2N(F2,51)DSP
- GID:** 204538
- Unique ID:** IRIS 12-1426

Below these details are tabs for "Names/Attributes", "Relatives", "Neighborhood", "Lists", "study data", and "stocks". The "Names/Attributes" tab is active, showing tables for "Alternative Names" and "Attributes".

Type	Name
REINN	NSIC RC 9
DRVNN	IR 55423-1
DRVNN	IR 55423-01
CVNAM	PBB RC 9
CVNAM	NSICRC 9
CVNAM	RC 9
CVNAM	MALAY 2
CVNAM	PBBG 9
ITEST	IR2P 19122
ACTRN	apo
ELITE	IRRI 132

Type	value
INNER	19122 PBL 005
MLS_DATE	29-JUN-2004

Browse

- It is a GMS application for viewing and changing GMS records. It can also compute the Coefficient of Parentage and display the mendelgram for the target germplasm.

```
MS-DOS:VICIS\EXES\BROWSE.EXE                               GID: 47997
PREFERRED_NAME (TYPE=CUNAM):AZUCENA
OTHER NAMES:
ITEST  IRTP 4209
GERMPLASM_ID =      47997 NO_PROGENITORS =      -1 METHOD = ALP( 251)
PROGENITOR_ID1 =      0 PROGENITOR_ID2 =      0 GERMPLASM_USER =      1
LOCAL_GERMPLASM =    38525 GERMPLASM_DATE =      0 LOCATION =      171
GERMPLASM_REFERENCE=   1 GERMPLASM_REPLACE =      0 ATTRIBUTES:
INGER  04209 PHL
LOCN  171 PHILIPPINES, PHL

-----
```

GEN.	NUMBER OF DESCENDANTS						
	TOTAL	GENERATIVE	DERIUVATIVE	ACCESSIONS	TESTS	RELEASES	TERMINALS
1	1	0	0	0	1	0	0
2	197	197	0	5	1	0	118
3	287	193	94	6	8	0	195
4	267	213	54	0	11	1	204
5	284	235	49	4	5	4	140
6	733	354	379	2	18	5	590
7	2049	154	1895	2	5	4	1713
8	1167	205	962	3	20	5	889
9	2194	314	1880	14	13	1	1775
10	1213	409	804	5	6	1	990
11	1134	381	753	1	7	0	980

SETGEN

GMS application for managing lists of germplasm for breeding, characterization or evaluation

- o genealogy
- o nomenclature
- o chronology

List Manager: germplasm list generator

SetGen - List Manager for UNKNOWN

List List Entry Edit GMS Batch Help

List Selector

CHECKS

SetOpen Lists

- INGER NOMINATION LIST
- INGER NURSERY
- SEED HEALTH UNIT
- CHECKS
- U02WSAYT
- U02WSF1
- U02WSF2
- U02WSF3
- U03DSF2
- U03DSF3
- U03DSF4
- U03DSF6
- U03WS-05
- U03WS-06
- U03WS-07
- U03WS-08
- U03WS-09
- U03WSF3
- U03WSF4
- U03WSF6A
- U03WSF6B
- U03WSF7

CHECKS (UPLAND CHECKS)

No. of tagged entries 0 No. of entries 4

Tag	Designation	Cross	Entry Code	Source	GID	Entry ID
	NSIC RC 9	UPL RI 5/IR 12979-24-1 (BROWNS APO)	?	204538	1	
	UPL RI 7	C 22/IR 26/C 22/OS 4	2	367004	2	
	CT 6510-24-1-2	P 2057-F4-88-3-1/IRAT 120/ISL 3	?	404133	3	
	UPL RI 5	SIGADIS/BPI 76-1	4	510241	4	

Edit Window

List Characteristics

Name Type Date Levels for Cross Expansion

Title

No. of tagged entries 0 No. of entries 30 Entry Code Naming Convention Other List Info

CHECKS (UPLAND CHECKS)

No. of tagged entries 0 No. of entries 30 Entry Code Naming Convention Other List Info

Tag	Designation	Cross	Entry Code	Source	GID	Entry ID
	IR 75517-23-1-1-B	IR 57893-10-S/IR 53236-275-1		USD02-10 OYT1	1161447	1
	IR 75517-3-1-1-B	IR 57893-10-S/IR 53236-275-1		USD02-10 OYT1	1161446	2
	IR 75506-25-1-2-B	IR 63825-40-1-1/NSIC RC 9		USD02-10 OYT1	1161452	3
	IR 75502-61-1-1-B	B 6144 F-MR-6-0-0/NSIC RC 9		USD02-10 OYT1	1161454	4
	IR 76538-124-1-B	D 17-12/IC 10-20		USD02-12 OYT2	1317593	5
	IR 76538-124-3-B	D 17-12/IC 10-20		USD02-12 OYT2	1317584	6
	IR 78566-170-2-B	MARAVILHA/IR 60080-46 A		USD02-12 OYT2	1317590	7
	IR 78566-170-1-B	MARAVILHA/IR 60080-46 A		USD02-12 OYT2	1317585	8
	IR 78560-152-2-B	CT 13382-9-4-M/IR 68703-AC-2		USD02-12 OYT2	1317582	9
	IR 78560-126-3-B	CT 13382-9-4-M/IR 68703-AC-2		USD02-12 OYT2	1314406	10
	IR 78538-124-2-B	D 17-12/IC 10-20		USD02-12 OYT2	1317588	11
	IR 78560-157-1-B	CT 13382-9-4-M/IR 68703-AC-2		USD02-12 OYT2	1317587	12

Central Final Locked

Sort by Type

A. Generate basic lists

Add a New List Entry

Designation	IR 64	GID																															
<input checked="" type="checkbox"/> Standardize Name																																	
Cross																																	
Entry Code	<input type="checkbox"/> ListName	<input type="checkbox"/> EntryCode	<input type="checkbox"/> Source																														
	HB101																																
Name Information for New Entry <table border="1"> <tr> <td>Germplasm Name</td> <td>IR 64</td> <td>Method No.</td> <td>101</td> <td>Name Type</td> <td>CROSS NAME</td> </tr> <tr> <td colspan="6"><input type="checkbox"/> Set as Root of Management Group</td> </tr> <tr> <td colspan="2">Germplasm Date and Location</td> <td>Date</td> <td>2008-07-25</td> <td>Location</td> <td>IRRI-INTERNATIONAL RICE RESEARCH INSTITUTE, LOS BANOS</td> </tr> <tr> <td colspan="2">Name Data and Location</td> <td>Date</td> <td>2008-07-25</td> <td>Location</td> <td>IRRI-INTERNATIONAL RICE RESEARCH INSTITUTE, LOS BANOS</td> </tr> <tr> <td colspan="2">Name Reference</td> <td>0</td> <td colspan="3"></td> </tr> </table>				Germplasm Name	IR 64	Method No.	101	Name Type	CROSS NAME	<input type="checkbox"/> Set as Root of Management Group						Germplasm Date and Location		Date	2008-07-25	Location	IRRI-INTERNATIONAL RICE RESEARCH INSTITUTE, LOS BANOS	Name Data and Location		Date	2008-07-25	Location	IRRI-INTERNATIONAL RICE RESEARCH INSTITUTE, LOS BANOS	Name Reference		0			
Germplasm Name	IR 64	Method No.	101	Name Type	CROSS NAME																												
<input type="checkbox"/> Set as Root of Management Group																																	
Germplasm Date and Location		Date	2008-07-25	Location	IRRI-INTERNATIONAL RICE RESEARCH INSTITUTE, LOS BANOS																												
Name Data and Location		Date	2008-07-25	Location	IRRI-INTERNATIONAL RICE RESEARCH INSTITUTE, LOS BANOS																												
Name Reference		0																															

Add a GMS Germplasm Record

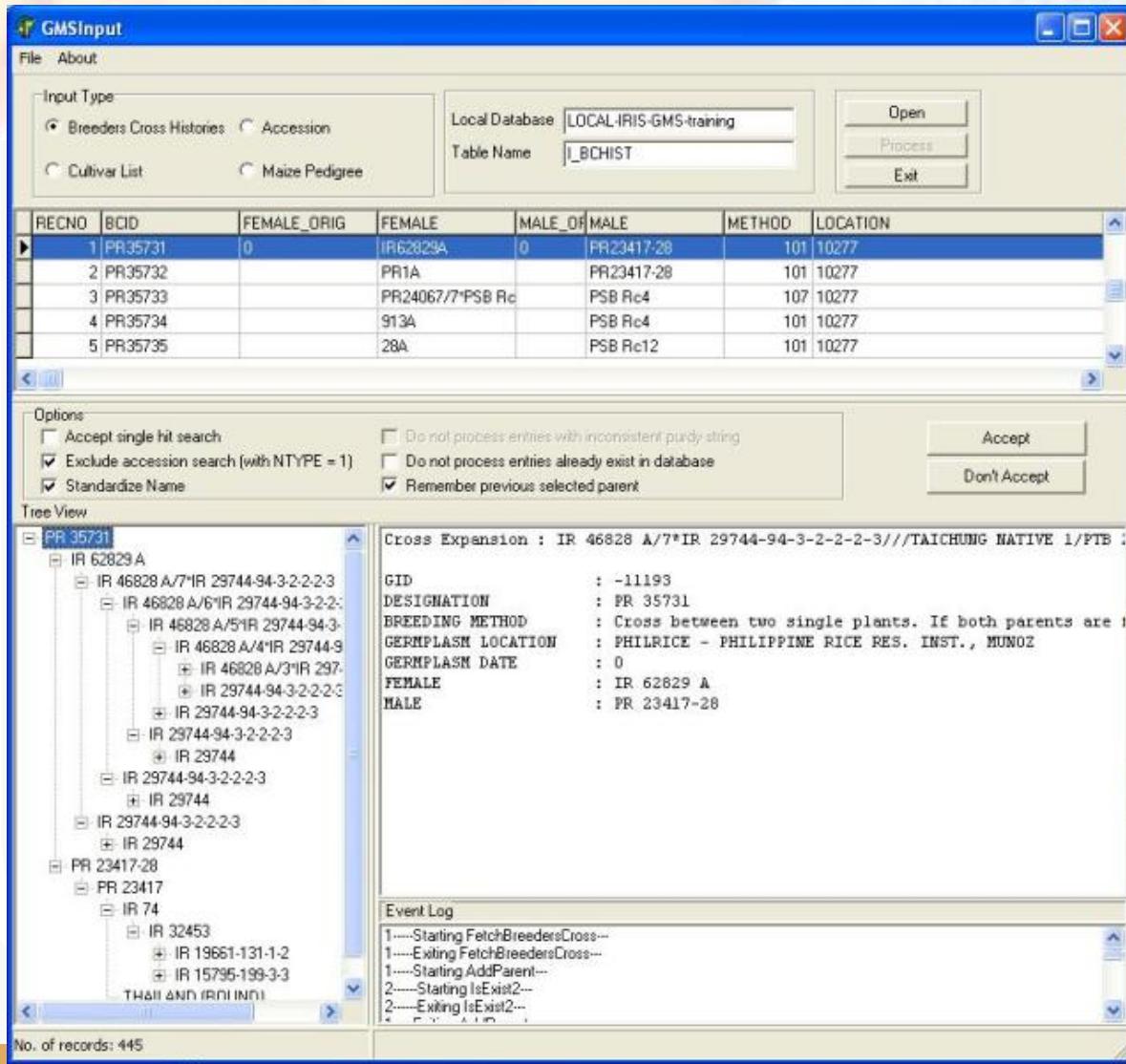
Germplasm Name	IR 64																																				
Preferred Name	IR 64																																				
Pref. Abbreviation																																					
Preferred Id																																					
<table border="1"> <thead> <tr> <th colspan="2">Names</th> <th colspan="2">Attributes</th> </tr> <tr> <th>Type</th> <th>Name</th> <th>Type</th> <th>Attribute Value</th> </tr> </thead> <tbody> <tr> <td>CRSNM</td> <td>IR 64</td> <td></td> <td></td> </tr> <tr> <td><input type="button"/> Add</td> <td></td> <td><input type="button"/> Add</td> <td></td> </tr> <tr> <td><input type="button"/> Edit</td> <td></td> <td><input type="button"/> Edit</td> <td></td> </tr> <tr> <td><input type="button"/> Remove</td> <td></td> <td><input type="button"/> Remove</td> <td></td> </tr> <tr> <td><input type="button"/> Pref.Id</td> <td></td> <td></td> <td></td> </tr> <tr> <td><input type="button"/> Pref Abbr</td> <td></td> <td></td> <td></td> </tr> <tr> <td><input type="button"/> Pref Name</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>		Names		Attributes		Type	Name	Type	Attribute Value	CRSNM	IR 64			<input type="button"/> Add		<input type="button"/> Add		<input type="button"/> Edit		<input type="button"/> Edit		<input type="button"/> Remove		<input type="button"/> Remove		<input type="button"/> Pref.Id				<input type="button"/> Pref Abbr				<input type="button"/> Pref Name			
Names		Attributes																																			
Type	Name	Type	Attribute Value																																		
CRSNM	IR 64																																				
<input type="button"/> Add		<input type="button"/> Add																																			
<input type="button"/> Edit		<input type="button"/> Edit																																			
<input type="button"/> Remove		<input type="button"/> Remove																																			
<input type="button"/> Pref.Id																																					
<input type="button"/> Pref Abbr																																					
<input type="button"/> Pref Name																																					
Breeding Method	GEN 101 C2W SINGLE CROSS																																				
Germplasm Date	2008-07-25																																				
Germplasm Location	IRRI-INTERNATIONAL RICE RESEARCH INSTITUTE, LOS BANOS																																				
Progenitors																																					
Female Parent	GAM PAI 30-12-15																																				
GID	109																																				
<input type="button"/> Add/Change																																					
Male Parent	TAICHUNG NATIVE 1																																				
GID	56																																				
<input type="button"/> Add/Change																																					
Other Progenitors																																					
<input type="button"/> Add																																					
<input type="button"/> Remove																																					
Mgt Group																																					
<input type="checkbox"/> Set as Root of Management Gr																																					
Reference No.	0																																				
<input type="button"/> OK <input type="button"/> Cancel																																					

B. Generate cross or selections lists

Generate Crosses for RICE

List Selector					
U03WSHB					
SetGen Lists					
<ul style="list-style-type: none"> <input checked="" type="checkbox"/> INGER NOMINATIONS <input checked="" type="checkbox"/> INGER NURSERY <input checked="" type="checkbox"/> SEED HEALTH UN <input type="checkbox"/> CHECKS <input type="checkbox"/> CROSS-LIST <input type="checkbox"/> U02WSA1T <input type="checkbox"/> U02WSF1 <input type="checkbox"/> U02WSF2 <input type="checkbox"/> U02WSF3 <input type="checkbox"/> U03DSF2 <input type="checkbox"/> U03DSF3 <input type="checkbox"/> U03DSF4 <input type="checkbox"/> U03DSF6 <input type="checkbox"/> U03WS-05 <input type="checkbox"/> U03WS-06 <input type="checkbox"/> U03WS-07 <input type="checkbox"/> U03WS-08 <input type="checkbox"/> U03WS-09 <input type="checkbox"/> U03WSF3 <input type="checkbox"/> U03WSF4 <input type="checkbox"/> U03WSF5A <input type="checkbox"/> U03WSF5B <input type="checkbox"/> U03WSF7 <input type="checkbox"/> U03WSHB <input type="checkbox"/> U04DSF1 <input type="checkbox"/> U04WSF2 <input type="checkbox"/> U05DSF3 <input type="checkbox"/> U05WSF4 <input type="checkbox"/> U05WSF4F <input type="checkbox"/> U06DSF5 					
Tag	Designation	Cross	Entry Code	Source	GID
CNA 4196	CNA 4196	HB001U	IURON12	70732	
IRRI 132	UPL RI 5/IR 12979-24-1 (BRO)	HB008U			
UPL RI 5	SIGADIS/BPI 76-1	HB004U			
WAB 326-B-B-7-H1	TOX 1785-19-18/WABC 165	HB005U			
FARO 41	IRAT 13/PALAWAN	HB003U			
YUNLU NO 28	IDSA 6/WUNENGDABAIGU-2HB007U				
IDSA 113	IDSA 113	HB002U			
WAB 634-B-3A 1-1	WAB 181-18/DR 2	HB006U			
IR 76561-AC 8-B	CT 13382-9-4-M/IR 70358-145	HB016U			
IR 72768-28-1-1	IR 60080-46 A/IR 65907-116-1HB010U				
IR 72768-12-1-1	IR 60080-46 A/IR 65907-116-1HB009U				
IR 75531-31-1-2-B	IR 70360-54-1-B/VIENG	HB015U			
IR 75516-30-1-1-B	IR 53236-275-1/CT 6516-24-3	HB012U			
Next Parent:					
Parents					
Female Parent		Male Parent			
CNA 4196		IR 76561-AC 8-B			
Naming Convention of Designation					
Plants Selected					
Prefix	No.	Use As	Start No	Suffix	
	1	<input checked="" type="radio"/> Variable	1		
<input type="checkbox"/> Include leading zeros					
Numeric Field Width 1					
Designation IR 78865-145-1 Derivative(s) -1					
Naming Convention of Entry Code					
Prefix					
<input type="checkbox"/> Include leading zeros Numeric Field Width 1 Suffix					
<input type="checkbox"/> ListName <input type="checkbox"/> EntryCode <input type="checkbox"/> Source <input type="checkbox"/> Entry Code(s)					
Naming Convention of Source					
Prefix					
<input type="checkbox"/> Include leading zeros Numeric Field Width 1 Suffix					
<input type="checkbox"/> ListName <input type="checkbox"/> EntryCode <input type="checkbox"/> Source <input type="checkbox"/> Source(s)					
Attribute Ok to All OK Cancel Cancel to All					

GMS Input



- The GMSInput tool is an application for loading large volumes of historical germplasm data into GMS. The input tool loads cross, cultivar or accession data to a local database that can later be uploaded to the CIMMYT central

Data Management System (DMS)

- DMS manages environmental data, germplasm characterization data and evaluation data for genetic resources and crop improvement projects.
- It is a data warehouse that accumulates and integrates data from a variety of sources.
- It handles any data structure and facilitates unambiguous annotation and linkage of data across studies via expandable controlled vocabularies

Data Management System

Functions

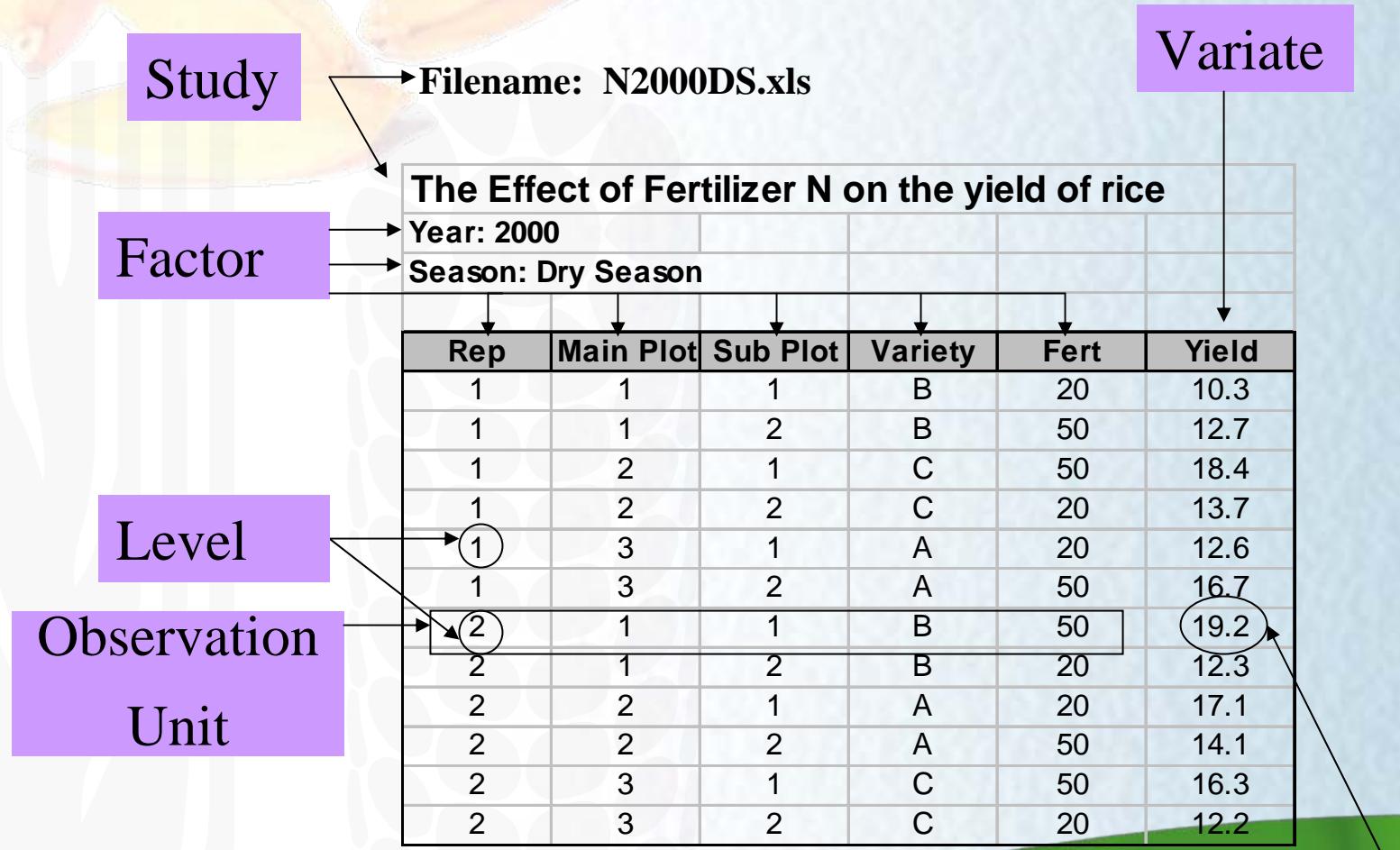
- Store structured germplasm evaluation and characterization data
- Document Data
- Link data to germplasm identifiers
- Link data to other descriptors (Locations, treatments, etc.)
- Facilitate structured searches

Data Management System

Structural Assumptions

- The data is collected in studies
- The data is in factorial structure
- Any experiment or survey design can be accommodated
- Multiple factorial hierarchies can be accommodated

Data Model of DMS



Data Model ...

Factor

Variate

Fert

Yield

PROPERTY *NITROGEN FERTILIZER*

GRAIN YIELD

SCALE *kg/ha*

t/ha

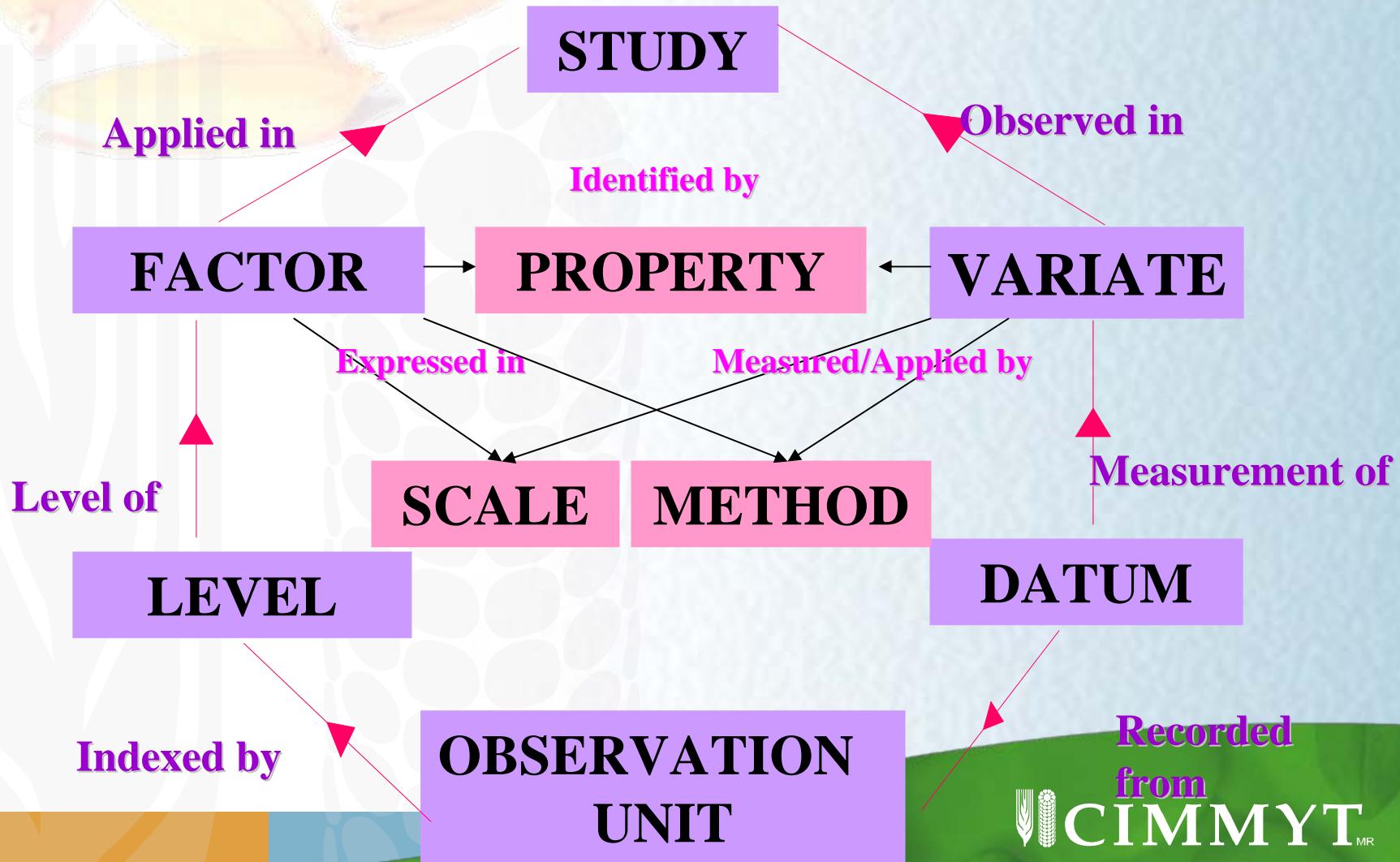
METHOD *Total Application*

Paddy Rice

Property, Scale and Method

- A property or trait is a measurable characteristic or feature of an experimental unit or experimental material (e.g., of a variety or environment), which is manipulated or measured in a study.
- Scale is the measurement unit a trait is expressed.
- A method is a technique of measuring or applying a trait.

Data Model



DMS Applications

- DATA ENTRY TOOL
- DATA QUERY TOOLS

ICIS WORKBOOK

The ICIS Workbook is a flexible tool for entering and retrieving evaluation, nursery trial, crop improvement data and even molecular data.

Microsoft Excel - Book1

File Edit View Insert Format Tools Data Window Help ICISworkbook

Study ▾ Setup ▾ Utilities ▾ Add-ins ▾ Help ▾

Microsoft Excel: U03WSF4

STUDY

A1	B1	C1	D1	E1	F1	G1	H1
1 STUDY	U03WSF4						
2 TITLE	Upland 2003 Wet Season F4 Nursery (Sison)						
3 PNAME	-1						
4 OBJECTIVE	Select F4 plants for the upland program						
5 START DATE	20030630						
6 END DATE	20030630						
7 STUDY TYPE	E						

CONDITION

A10	B10	C10	D10	E10	F10	G10	H10
10 ECOYSTEM	Type of Ecosystem	ECOSYSTEM	Type	Not Specified	C	Upland	STUDY
11 YEAR	Crop Year	YEAR	4-digit	Not Specified	N	2003	STUDY
12 SEASON	Crop Season	CROP SEASON	Season Code	Not Specified	C	WJ	STUDY
13 LOCATION	Field Site	LOCATION	Name	Not Specified	C	Sison Laguna	STUDY
14 INVESTIGATOR	Person Responsible	INVESTIGATOR	Name	Assigned Research	C	Lara, Marilene	STUDY

FACTOR

A16	B16	C16	D16	E16	F16	G16	H16
16 ENTRYNDO	Entry Number	CULTNAR	Entry Number	Not Specified	N		ENTRYNDO
17 ID	ICIS Germplasm Identifier	CULTNAR	ID	Not Specified	N		ENTRYNDO
18 DESIGNATION	Cultivar Name / Line Name	CULTNAR	Variety Name	Not Specified	C		ENTRYNDO
19 PLOT	Plot Number	PLOT	Plot number	Field Layout	N		PLOT

CONSTANT

A22	B22	C22	D22	E22	F22	G22	H22
22 SOILPH	Soil pH	SOIL PH	Previous	Not Specified	N	6	
23 SOILTEXT	Soil Texture	SOIL TEXTURE	INVER Code 14pt	Not Specified	N	40	

VARIATE

A27	B27	C27	D27	E27	F27	G27	H27
27 FLW	(No. of days from sowing to 50% flowering)	FLOWERING	No. of days	50% Flowering	N		
28 HT	Plant Height	PLANT HEIGHT	cm	At Maturity (Stages)	N		
29 VIG	Seedling Vigor	SEEDLING VIGOR	DES Score	Vigor Sp/All Breeding Stage	N		
30 PACP	Phenotypic Acceptability	PHENOTYPIC ACCEPTABILITY	DES Score	Acceptability All Maturity	N		
31 YLD	Plot Yield (gram/plot)	GRAIN YIELD	g/plot	Paddy Rice	N		

Y T_{MR}

Workbook File (Description Sheet)

	A	B	C	D	E	F	G	H
1	STUDY	N2000DS						
2	TITLE	Effect of Fertilizer N on the Yield of Rice						
3	PMKEY							
4	OBJECTIVE:							
5	START DATE:	20000401						
6	END DATE:	20000601						
7								
8	CONDITION	DESCRIPTION	TRAIT	SCALE	METHOD	DATA TYPE	VALUE	LABEL
9	Year		TIME OF MEASUREMENT/ OBSERVATION	4-digit	Not Specified	N	2000	N2000DS
10	Season		SEASON	Season Code 0-1	Not Specified	C	DRY	N2000DS
11								
12	FACTOR	DESCRIPTION	TRAIT	SCALE	METHOD	DATA TYPE		LABEL
13	Rep		REPLICATION	Replication No.	Field Layout	N		
14	Main Plot		BLOCK IN LAYOUT	Block number	Field Layout	N	04	
15	Sub Plot		BLOCK IN LAYOUT	Block number	Field Layout	N		
16	Variety		VARIETY	Variety Name	Not Specified	C		N or C
17	Fert		NITROGEN FERTILIZER	kg/ha	Total Application	N		
18								
19	CONSTANT	DESCRIPTION	TRAIT	SCALE	METHOD	DATA TYPE	VALUE	
20								
21				1003	9	30		
22								
23	VARIATE	DESCRIPTION	TRAIT	SCALE	METHOD	DATA TYPE		
24	Yield		GRAIN YIELD	Kg/ha	Paddy Rice	N		
25								
26								
27								
28								

Workbook File . . .

columns of variate names

						observation range		RowTag
	A	B	C	D	E	F	G	H
1	Rep	Main Plot	Sub Plot	Variety	Fert	Yield		Row Tag
2					kg/ha	t/ha		
3	1	1	1	B		20	10.3	
4	1	1	2	B		50	12.7	
5	1	2	1	C		50	18.4	
6	1	2	2	C		20	13.7	
7	1	3	1	A		20	12.6	
8	1	3	2	A		50	16.7	
9	The next block is the second replication							1
10	2	1	1	B		50	19.2	
11	2	1	2	B		20	12.3	
12	2	2	1	A		20	17.1	
13	2	2	2	A		50	14.1	
14	2	3	1	C		50	16.3	
15	2	3	2	C		20	12.2	
16								
17								
18								
19								
20								
21								
22								
23								
24								

◀ ▶ ↻ ↺ Description Observation

Observation Sheet

Sample Workbook Files

	A	B	C	D	E	F	G	H																									
1	STUDY	OYT2000WS																															
2	TITLE	Observational Yield Trial 2000 Wet Season																															
3	PMKEY	1																															
4	OBJECTIVE	-																															
5	START DATE	0																															
6	END DATE	0																															
7	STUDY TYPE	E																															
8																																	
9	CONDITION	DESCRIPTION	PROPERTY	SCALE	METHOD	DATA TYPE	VALUE	LABEL																									
10	SEASON		CROP SEASON	Season Code 0-1	Not Specified	N	1	STUDY																									
11	YEAR			Year (YYYY)	Not Specified	N	2000	STUDY																									
12	NURSERY		NURSERY	Nursery Type	Not Specified	C	OYT	STUDY																									
13																																	
14	FACTOR	D	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	ROWTA				
15	ENTRYNO		1	ENTRYNO	DESIGNATION	SOURCE	GRPNO	GID	LODGING	TILLER	PLTHGT	MATURITY	FLW	GRNELON	AROMA	BB1_S	BB1_BLAST	GLH	CHALK	GRS	GRNLTH	GELTEMP	AMYLOSE										
16	DESIGNATION		2	A8354	IR 77470-1-7-2-5-2	T19694	840540		1	13	97	116	82						7	9													
17	SOURCE		3	A8353	IR 77470-1-7-2-4-5	T19692	846541		1	13	102	112	80						7	9													
18	GRPNO		4	A8352	IR 77470-1-7-2-4-4	T19691	840542					115	83						7	9													
19	GID		5	A8351	IR 77470-3-3-4-5-2	T19690	846543		1	12	95	112	78						7	9													
20			6	A8349	IR 77470-3-3-4-5-1	T19689	846544		1	12	100	112	80						S	9													
21	CONSTANT		7	A8348	IR 77470-3-3-4-4-2	T19688	840545		1	14	97	109	78						7	9													
22			8	A8347	IR 77470-3-3-4-4-1	T19688	846546		1	13	101	109	78						7	9													
23	VARIATE		9	A8346	IR 77470-3-3-4-1-2	T19686	840547		1	14	97	109	78						7	9													
24	LODGING	LODGING	10	A8345	IR 77470-3-3-4-1-1	T19685	846548		1	14	95	109	78						7	9													
25	TILLER	NO. OF TILLER	11	A8344	IR 77470-3-3-3-4-2	T19684	846549		1	13	98	109	78						7	7													
26	PLTHGT	PLANT HGT	12	A8343	IR 77470-3-3-3-2-2	T19682	846550		1	13	97	108	77						7	9													
27	MATURITY	DAYS TO MAT	13	A8342	IR 77470-3-3-3-2-1	T19681	846551		1	13	97	109	78						7	9													
28	FLW	DAYS TO FLW	14	A8341	IR 77470-3-3-3-2-1	T19680	846552		1	14	94	109	79						7	9													
29	GRNELON	GRAIN ELONG.	15	A8340	IR 77469-4-3-4-1-1-1	T19679	846553		1	14	94	112	81						7	9													
30	AROMA	AROMA	16	A8339	IR 77469-4-2-3-1-5-2	T19678	846554		1	15	95	112	82						7	9													
31	BB1_S	Bacterial	17	A8338	IR 77469-4-2-3-1-5-1	T19678	846555		1	13	96	112	82						7	9													
32	BB1	BACTERI	18	A8337	IR 77469-4-2-3-1-3-2	T19678	846556		1	13	93	111	80						7	9													
33	BLAST	BLAST	19	A8336	IR 77469-4-2-3-1-2-2	T19675	846557		1	12	95	112	82						7	9													
34	GLH	GREENING	20	A8335	IR 77469-4-2-3-1-2-1	T19674	846558		1	13	94	112	81						7	9													
35	CHALK	CHALKIN	21	A8334	IR 77968-2-10-3	T19658	8465505		1			119	84						1	7													
36	GRNLTH	GRAIN LENGTH	22	A8333	IR 77968-2-10-1	T19657	8465507		1			117	82						1	5													
37	GRS	GRAIN WIDTH	23	A8332	IR 77968-2-8-2-2	T19653	8465508		1			118	82						1	9													
38	AMYLASE	AMYLASE	24	A8331	IR 77968-4-6-4-5-4	T19652	8465509		1			118	86						1	9													
39	AMYL	AMYL	25	A8330	IR 77968-6-3-6-4-2	T19619	8465510		1			114	84						7	9													
40	AMYL	AMYL	26	A8329	IR 77967-2-1-1-6-1-2	T19639	8465535		1			123	92						7	9													
41	AMYL	AMYL	27	A8328	IR 77967-2-1-1-6-1-1	T19817	8465540		1			118	86						1	9													
42	AMYL	AMYL	28	A8327	IR 77967-2-1-1-6-1-0	T19816	8465541		1			114	84						7	9													
43	AMYL	AMYL	29	A8326	IR 77967-2-1-1-6-1-1	T19815	8465542		1			117	84						7	9													
44	AMYL	AMYL	30	A8325	IR 77969-6-3-6-4-2	T19619	8465509		1			118	86						1	9													
45	AMYL	AMYL	31	A8307	IR 77969-8-3-6-3-6	T19817	8465510		1			114	84						7	9													
46	AMYL	AMYL	32	A8367	IR 71598-2-17-2-2	A7204	505209		1	15	90	110	76						7														
47	AMYL	AMYL	33	A8366	IR 70440-35-1-3	A4926	505252		1	14	107	116	84						7														
48	AMYL	AMYL	34	A8365	IR 70423-16-2-2	A4994	505264		9	15	102	110	79						7														
49	AMYL	AMYL	35	A8364	IR 70416-133-3-2	A4854	505292		7	12	99	110	78						7														
50	AMYL	AMYL	36	A8383	IR 70418-21-4-2	A4849	505289		1	11	112	104	72						7														
51	AMYL	AMYL	37	A8362	IR 70416-15-2-2	A4040	505291		1	11	116	108	73						7														
52	AMYL	AMYL	38	A8361	IR 70415-241-4-3	A4844	505295		9	12	116	110	78						7														
53	AMYL	AMYL	39	A8360	IR 70415-195-2-1	A4843	505296		7	12	109	108	76						7														
54	AMYL	AMYL	40	A8359	IR 70415-159-2-3	A4842	505297		9	14	115	110	79						7														

Description \ Observation /

Sample Workbook Files . . .

Study

1	STUDY	IURON-1999							
2	TITLE	International Upland Rice Observational Nursery-1999							
3	PMKEY	-2							
4	OBJECTIVE	Gid							
5	START DATE	0							
6	END DATE	0							
7	STUDY TYPE	-							
8									
9	CONDITION	DESCRIPTION	PROPERTY	SCALE	METHOD	DATA TYPE	VALUE	LABEL	
10									
11	FACTOR	DESCRIPTION	PROPERTY	SCALE	METHOD	DATA TYPE		LABEL	
12	MONTH		MONTH	Month	Not Specified	N		MONTH	
13	TRIALNO								
14	ICIS								
15	LOC								
16	COU								
17	YEAR								
18	NURS								
19	2	61	10712004	EGY	1999032		15	30	
20	3	61	10091042	CHN	1999032				407
21	4	61	10070020	CHN	1999032	3	19	24	35
22	5	51	10712004	EGY	1999032		19	32	6
23	SUNS	6	51	10091042	CHN	1999032			438
24	MINT	7	51	10070020	CHN	1999032	5	25	31
25	MAX	8	41	10712004	EGY	1999032	22	31	
26	RAIN	9	41	10091042	CHN	1999032			327
27	RAIN	10	41	10070020	CHN	1999032	4	27	32
		11	31	10712004	EGY	1999032		20	30
		12	31	10091042	CHN	1999032			108
		13	31	10070020	CHN	1999032	4	26	31
		14	21	10712004	EGY	1999032		18	31
		15	21	10091042	CHN	1999032			176
		16	21	10070020	CHN	1999032	2	23	27
		17	11	10712004	EGY	1999032		15	28
		18	11	10091042	CHN	1999032			72
		19	11	10070020	CHN	1999032	3	21	28
		20							125
		21							11
		22							
		23							

Description **Observation**

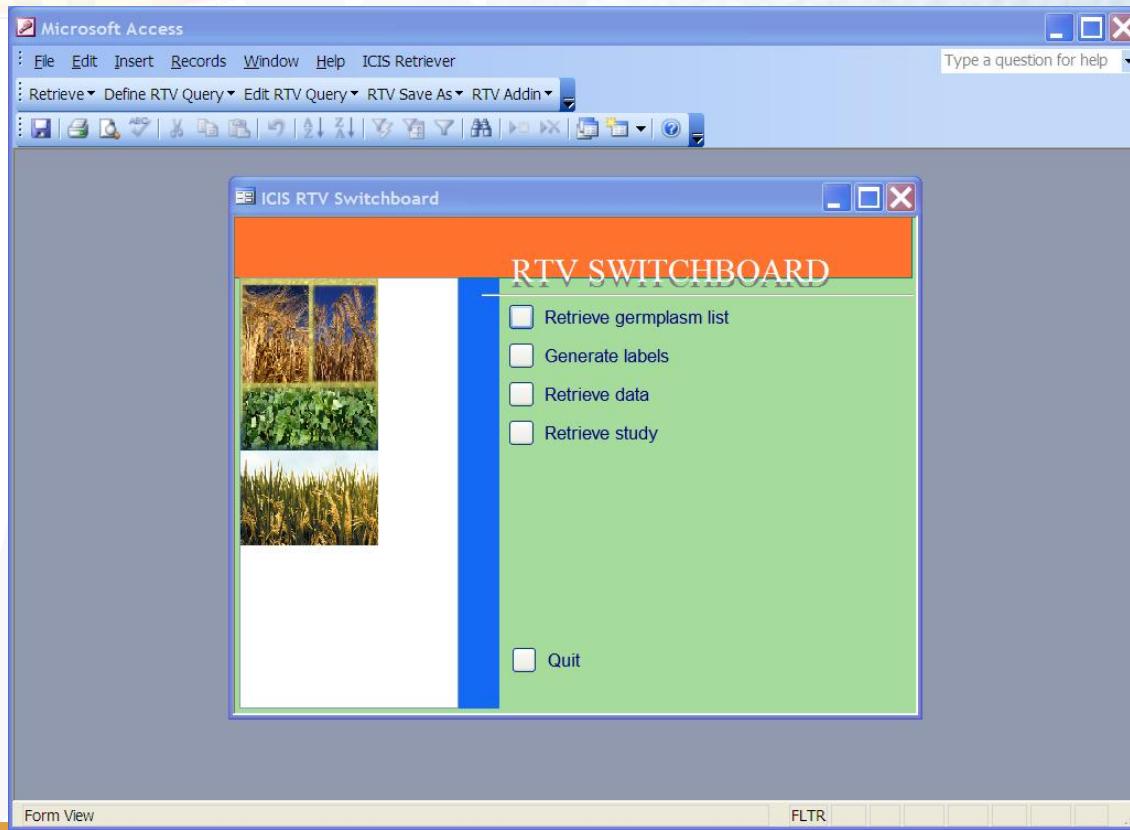
Sample Workbook Files . . .

	A	B	C	D	E	F	G	H	I	J	K	L		
1	STUDY	PBGB_SUB1_BC1F1												
2	TITLE	From genes to farmers' fields: enhancing and stabilizing productivity of rice in submergence prone environments												
3	PMKEY	0												
4	OBJECTIVE													
5	START DATE	1	PRIMER_ID	PRIMER	DESIGNATION	GID	ALLELE_ID	ALLELE	ALLELE NAME	ALLELE_ID	ALLELE	ALLELE NAME	Row Tag	
6	END DATE	2					ALLELE2	ALLELE2					ALLELE_NO	
7	STUDY TYPE	3	59 RM490	IR 81213:47		2452183				1257107	A			
8		4	59 RM490	IR 81213:74		2452184				1257107	A			
9	CONDITION	5	59 RM490	IR 81213:126		2452185	140893	B		1257107	A			EL
10	INSTITUTE	6	59 RM490	IR 81213:140		2452186				1257107	A			
11	INVESTIGATOR1	7	59 RM490	IR 81213:129		2452187	140893	B		1257107	A			
12	INVESTIGATOR2	8	59 RM490	IR 81213:141		2452188				1257107	A			
13	INVESTIGATOR3	9	59 RM490	IR 81213:142		2452189				1257107	A			
14	SUPERVISOR1	10	59 RM490	IR 81213:152		2452190				1257107	A			
15	SUPERVISOR2	11	59 RM490	IR 81213:170		2452191				1257107	A			
16	DNA_METHOD	12	59 RM490	IR 81213:175		2452192	140893	B		1257107	A			
17	<td>13</td> <td>59 RM490</td> <td>IR 81213:216</td> <td></td> <td>2452193</td> <td></td> <td></td> <td></td> <td>1257107</td> <td>A</td> <td></td> <td></td> <td></td>	13	59 RM490	IR 81213:216		2452193				1257107	A			
18	FACTOR	14	59 RM490	IR 81213:220		2452194	140893	B		1257107	A			EL
19	PRIMER_ID	15	59 RM490	IR 81213:242		2452195				1257107	A			
20	PRIMER	16	59 RM490	IR 81213:244		2452196	140893	B		1257107	A			
21	DESIGNATION	17	59 RM490	IR 81213:261		2452197	140893	B		1257107	A			
22	GID	18	59 RM490	IR 81213:289		2452198	140893	B		1257107	A			
23	ALLEL_NO	19	59 RM490	IR 81213:337		2452199				1257107	A			
24	<td>20</td> <td>59 RM490</td> <td>IR 81213:382</td> <td></td> <td>2452200</td> <td></td> <td></td> <td></td> <td>1257107</td> <td>A</td> <td></td> <td></td> <td>0</td>	20	59 RM490	IR 81213:382		2452200				1257107	A			0
25	CONSTANT	21	59 RM490	IR 81213:394		2452201	140893	B		1257107	A			
26	<td>22</td> <td>59 RM490</td> <td>IR 81213:395</td> <td></td> <td>2452202</td> <td>140893</td> <td>B</td> <td></td> <td>1257107</td> <td>A</td> <td></td> <td></td> <td></td>	22	59 RM490	IR 81213:395		2452202	140893	B		1257107	A			
27	VARIATE	23	59 RM490	IR 81213:396		2452203	140893	B		1257107	A			
28	ALLEL_ID	24	59 RM490	IR 81213:398		2452204				1257107	A			
29	ALLEL	25	59 RM490	IR 81213:420		2452205				1257107	A			
30	ALLEL_NAME	26	59 RM490	IR 81213:438		2452206				1257107	A			
31	<td>27</td> <td>59 RM490</td> <td>IR 81213:442</td> <td></td> <td>2452207</td> <td>140893</td> <td>B</td> <td></td> <td>1257107</td> <td>A</td> <td></td> <td></td> <td></td>	27	59 RM490	IR 81213:442		2452207	140893	B		1257107	A			
32	<td>28</td> <td>59 RM490</td> <td>IR 81213:452</td> <td></td> <td>2452208</td> <td>140893</td> <td>B</td> <td></td> <td>1257107</td> <td>A</td> <td></td> <td></td> <td></td>	28	59 RM490	IR 81213:452		2452208	140893	B		1257107	A			
33	<td>29</td> <td>59 RM490</td> <td>IR 81213:462</td> <td></td> <td>2452209</td> <td>140893</td> <td>B</td> <td></td> <td>1257107</td> <td>A</td> <td></td> <td></td> <td></td>	29	59 RM490	IR 81213:462		2452209	140893	B		1257107	A			
34	<td>30</td> <td>59 RM490</td> <td>IR 81213:474</td> <td></td> <td>2452210</td> <td>140893</td> <td>B</td> <td></td> <td>1257107</td> <td>A</td> <td></td> <td></td> <td></td>	30	59 RM490	IR 81213:474		2452210	140893	B		1257107	A			
35	<td>31</td> <td>59 RM490</td> <td>IR 81213:482</td> <td></td> <td>2452211</td> <td></td> <td></td> <td></td> <td>1257107</td> <td>A</td> <td></td> <td></td> <td></td>	31	59 RM490	IR 81213:482		2452211				1257107	A			
36	<td>32</td> <td>59 RM490</td> <td>IR 81213:494</td> <td></td> <td>2452212</td> <td>140893</td> <td>B</td> <td></td> <td>1257107</td> <td>A</td> <td></td> <td></td> <td></td>	32	59 RM490	IR 81213:494		2452212	140893	B		1257107	A			
37	<td>33</td> <td>59 RM490</td> <td>IR 81213:495</td> <td></td> <td>2452213</td> <td>140893</td> <td>B</td> <td></td> <td>1257107</td> <td>A</td> <td></td> <td></td> <td></td>	33	59 RM490	IR 81213:495		2452213	140893	B		1257107	A			
38	<td>34</td> <td>59 RM490</td> <td>IR 81213:498</td> <td></td> <td>2452214</td> <td>140893</td> <td>B</td> <td></td> <td>1257107</td> <td>A</td> <td></td> <td></td> <td></td>	34	59 RM490	IR 81213:498		2452214	140893	B		1257107	A			
39	<td>35</td> <td>59 RM490</td> <td>IR 81213:505</td> <td></td> <td>2452215</td> <td></td> <td></td> <td></td> <td>1257107</td> <td>A</td> <td></td> <td></td> <td></td>	35	59 RM490	IR 81213:505		2452215				1257107	A			
40	<td>36</td> <td>59 RM490</td> <td>IR 81213:634</td> <td></td> <td>2452216</td> <td>140893</td> <td>B</td> <td></td> <td>1257107</td> <td>A</td> <td></td> <td></td> <td></td>	36	59 RM490	IR 81213:634		2452216	140893	B		1257107	A			
41	<td>37</td> <td>59 RM490</td> <td>IR 81213:646</td> <td></td> <td>2452217</td> <td></td> <td></td> <td></td> <td>1257107</td> <td>A</td> <td></td> <td></td> <td></td>	37	59 RM490	IR 81213:646		2452217				1257107	A			
42	<td>38</td> <td>59 RM490</td> <td>IR 81213:691</td> <td></td> <td>2452218</td> <td></td> <td></td> <td></td> <td>1257107</td> <td>A</td> <td></td> <td></td> <td></td>	38	59 RM490	IR 81213:691		2452218				1257107	A			
	<td>39</td> <td>59 RM490</td> <td>IR 81213:74</td> <td></td> <td>2452184</td> <td></td> <td></td> <td></td> <td>1257107</td> <td>A</td> <td></td> <td></td> <td></td>	39	59 RM490	IR 81213:74		2452184				1257107	A			
	<td>40</td> <td>59 RM490</td> <td>IR 81213:126</td> <td></td> <td>2452185</td> <td>140893</td> <td>B</td> <td></td> <td>1257107</td> <td>A</td> <td></td> <td></td> <td></td>	40	59 RM490	IR 81213:126		2452185	140893	B		1257107	A			
	<td>41</td> <td>59 RM490</td> <td>IR 81213:129</td> <td></td> <td>2452187</td> <td>140893</td> <td>B</td> <td></td> <td>1257107</td> <td>A</td> <td></td> <td></td> <td></td>	41	59 RM490	IR 81213:129		2452187	140893	B		1257107	A			
	<td>42</td> <td>59 RM490</td> <td>IR 81213:140</td> <td></td> <td>2452186</td> <td></td> <td></td> <td></td> <td>1257107</td> <td>A</td> <td></td> <td></td> <td></td>	42	59 RM490	IR 81213:140		2452186				1257107	A			

◀ ▶ ↻ Description \ Observation \ markers \ Data Matrix \ Protocol_Sub1 /

Retriever

- The ICIS Retriever is an application in MS Access that retrieves study data based on the specified property (trait), scale and method.



Sample Query

Main Query

ICIS International Crop Information System

This tool allows you to create and run a query

Search Name: High_Yielding_RYT

Description: High yielding varieties

Date Created: 7/29/2008 4:20:23 PM Last Run: 7/29/2008 4:38:50 PM

Filters Query Variables

VARIABLE	DATA TYPE	OPERATOR	VALUE
NURSERY	C	=	RYT

PROPERTY	SCALE	METHOD
NURSERY	Nursery Type	Not Specified

FILTERS:

VARNAME	OPERATOR	VALUE	TRNAME	SCNAME
GRNYLD	>=	8000	GRAIN YIELD	Kg/ha
NURSERY	=	RYT	NURSERY	Nursery Type

QUERY VARIABLES:

VARNAME	TRNAME	SCNAME	TMNAME	DATA
STUDY	STUDY	Name	Not Specified	C
DESIGNATION	GERMPLASM IDENTIFICATION	Variety Name	Not Specified	C
GID	GERMPLASM IDENTIFICATION	GID	Not Specified	N

Retrieve View

High_Yielding_RYT : Table

GRNYLD	NURSERY	STUDY	DESIGNATION	GID
9312	RYT	RYT19930	IR58025A/IR29723	503465
9007	RYT	RYT19930	IR58025A/IR34686	503466
8686	RYT	RYT19930	IR61979-138-1-3-2-2	95095
8678	RYT	RYT19950	IR65469-100-2-3-3-2-2	94885
8667	RYT	RYT19930	PSBRC18	82290
8569	RYT	RYT19930	IR62164-14-2-2-2-3	94767
8475	RYT	RYT19930	IR45	20640
8457	RYT	RYT2002DS	IR 74646-96-2-3-3	923298
8418	RYT	RYT19930	IR54883-240-1-2-1	145977
8401	RYT	RYT2002DS	IR 75217 H	537879
8368	RYT	RYT2003DS	IR 73435-8-2-2-1	734428
8330	RYT	RYT19930	IR62161-173-3-1-2-3	155639
8312	RYT	RYT19960	IR71092H	91412
8309	RYT	RYT2004DS	IR 80814 H	1189195
8282	RYT	RYT19930	IR43	19541
8280	RYT	RYT19930	PSBRC10	76174
8278	RYT	RYT2005DS	IR 82362 H	1385803
8271	RYT	RYT19960	IR71102H	91454
8255	RYT	RYT19930	IR60913-42-3-3-2-2	90266
8223	RYT	RYT19810	IR18272-27-3-1-2-2	99765
8217	RYT	RYT19960	IR71100H	91444
8205	RYT	RYT19790	IR9860-26-2-2-2	167009
8203	RYT	RYT19930	IR59586-151-3-2-2-2	87544
8201	RYT	RYT19790	IR9852-22-3	44685
8196	RYT	RYT2003DS	IR 72903-121-2-1-2	652291
8192	RYT	RYT2005DS	IR 81958 H	1329206
8190	RYT	RYT19930	IR56383-35-3-2-1	81425
8178	RYT	RYT2002DS	IR 77266 H	762620
8170	RYT	RYT2002DS	IR 75287-19-3-3-3	967269
8170	RYT	RYT19950	IR65469-161-2-2-3-2-2	95088

Record: 4 of 61

Inventory Management System (IMS)

Manages inventory information for germplasm entities:

- o where they are stored,
- o what quantities are in storage and
- o what quantities are expected,
- o what quantities are reserved and
- o what quantities are available for use.

A lot is defined by the combination of the sample, the storage location and unit (e.g. 100 grams of IR 64 stored in Tray Number 101, Short Term storage of Genebank)

IMS Application

- Inventory Tracker

Inventory Tracker

File Inventory Security Help

List Selector

CHECKS >>> Total Entries: 4 <<<

Tag	GID	Entry ID	Source	Desig	Group Name
x	204538	1	?	NSIC RC 9	UPL RI 5//R 12979-24-1 (BROWN)
x	367004	2	?	UPL RI 7	C 22//R 26//C 22//OS 4
x	404133	3	?	CT 6510-24-1-2	P 2057-F4-88-3-1//RAT 120//SUAKO
x	510241	4	?	UPL RI 5	SIGADIS/BPI 76-1

Inventory Filters

Location : ... Clear Locations

Inventory Units :

Germplasm Scope

Exact GID
 Derivative Neighborhood
 Management Neighborhood

Barcode Data

LotID : Weight :

Inventory Details >>> Total Entries: 4 <<<

Tag	GID	Desig	Lot ID	Entry ID	Lot Location	Lot Units	Avail. Bal.	Actual Bal.	Remarks	No. of Resel
	204538	NSIC RC 9	8		LT,Tray No 626	g in Al foil	120	120	lot created Feb 1 2005	0
	510241	UPL RI 5	19	4	LT,Tray No 626	g in Al foil	120	120	lot created Feb 1 2005	0
	404133	CT 6510-24-1-2	18	3	LT,Tray No 626	g in Al foil	120	120	lot created Feb 1 2005	0
	367004	UPL RI 7	17	2	LT,Tray No 626	g in Al foil	120	120	lot created Feb 1 2005	0

< > Retrieve

Gene Management System (GEMS)

- GEMS will manage classical genetic information and molecular characterization.
- The specific functions of GEMS are:
 - - 1. unique identification of genetic variants including molecular polymorphisms, sequences and traditional genes;
 - 2. management of nomenclature of molecular variants;
 - 3. identification of sources of different molecular variants;
 - 4. identification of loci and alleles including molecular and physical mapping positions;
 - 5. linkage of genes to traits and products

GEMS Catalog

Gene Management System

SEARCH Marker Name Allele Name Primer Marker Type

MARKER DETECTOR	
	RM16083
	RM16084
	RM16085
	RM16086
	RM16087
	RM16090
	RM16093
	RM16094
	RM16095
	RM16096
	RM16099
▶	RM161
	RM16100
	RM16101
	RM16102
	RM16103
	RM16104
	RM16105
	RM16106
	RM16107
	RM16108
	RM16109
	RM16110
	RM16111
	RM16112

MARKER DETAIL FOR MARKER DETECTOR ID: 12

Marker Detector	RM161
Marker Type	SSR
Forward Primer	tgcagatgagaaggcgccctc
Reverse Primer	tgtgtcatcagacggcgctccg
User's ID	
Location	Unknown
Date	20080103

Other Name(s)
RM161

MOLECULAR VARIANTS OF RM161

mvid	chr	pos	molecular variant name	status	mvtype	weight
1 1	101.4	180		Synonym	0	
5 1	101.4	167		Synonym	0	
11 1	101.4	177		Synonym	0	
15 1	101.4	186		Synonym	0	
24 1	101.4	165		Synonym	0	
26 1	101.4	184		Synonym	0	
31 1	101.4	166		Synonym	0	

+ S

MARKER DETECTOR PROTOCOL INFORMATION :

Protocol: PCR Recipe | PCR Condition | Gel Recipe | electrophoresis

1

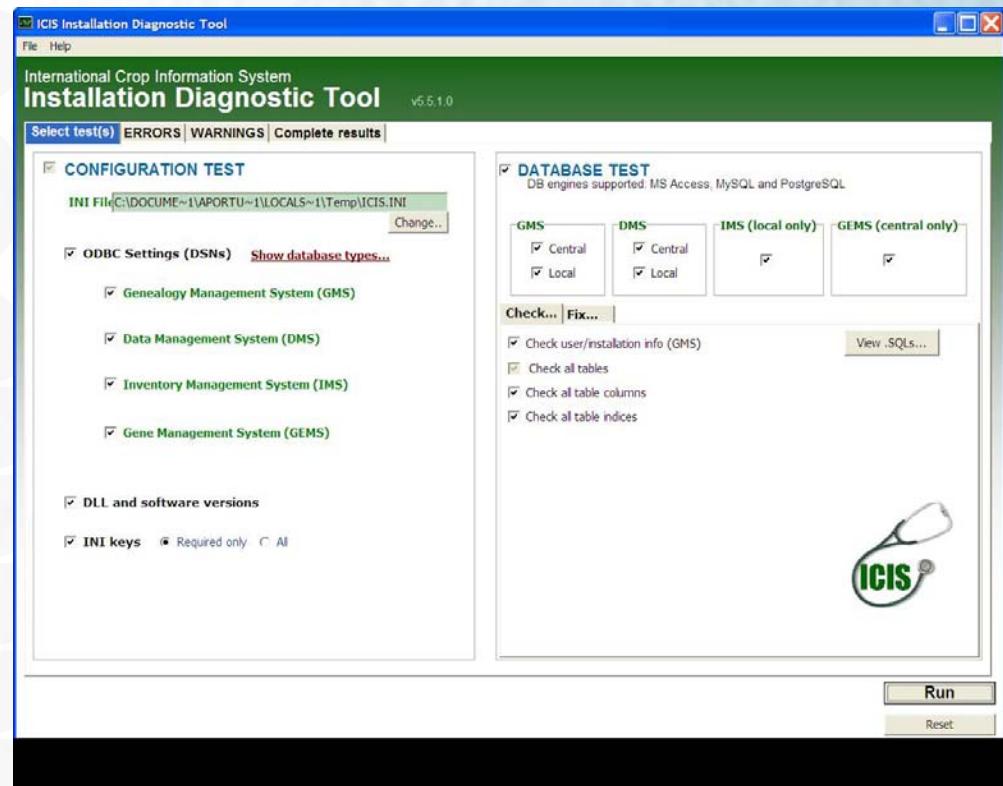
Chemical	Initial Concentration	Volume
DNA		5
H ₂ O	-	9.5
Buffer	11	2
MgCl ₂	-	-
dNTPs	10	2
Taq	3-4	0.5

+ B+

Supporting Tools

- Installation Diagnostic Tool

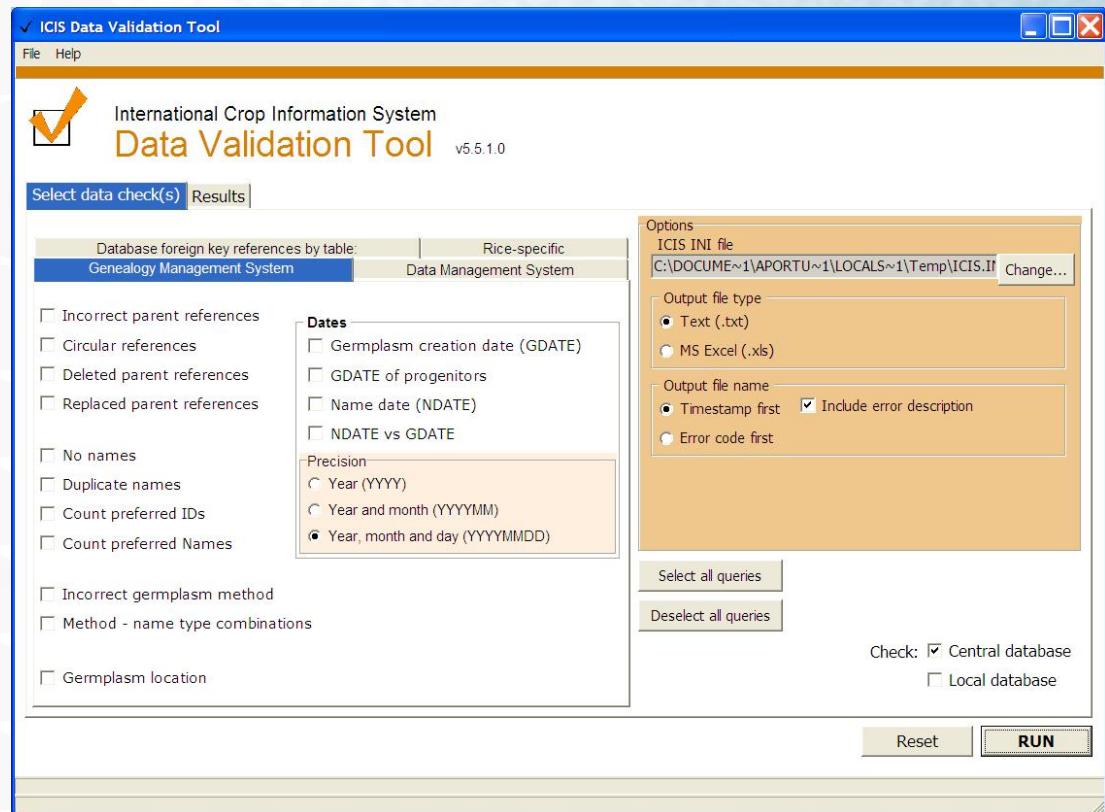
The ICIS Installation Diagnostic Tool tests the different components of your ICIS installation to determine the cause of error situations. This is useful in troubleshooting when your ICIS application is not functioning properly.



Supporting Tools ...

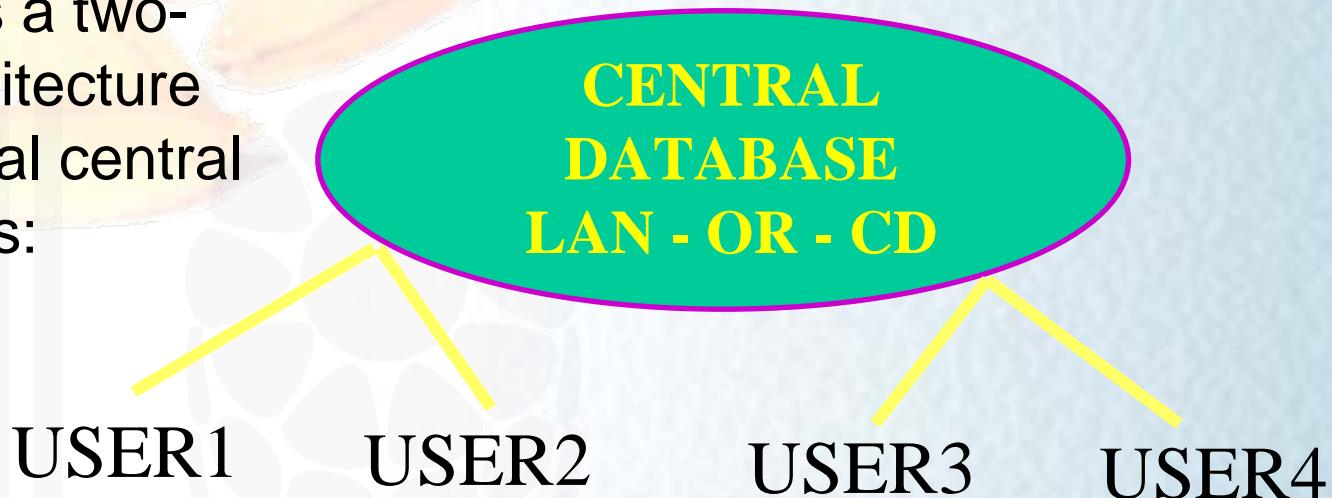
- Data Validation Tool

The ICIS Data Validation Tool is an application that searches ICIS databases for data errors that might render it meaningless. This is useful in making sure that published data are always of excellent quality.



Dispersed Data Curation and Privacy

ICIS uses a two-level architecture with a local central databases:



LOCAL
DATABASE
on PC

1. User is unaware that there are two databases
2. Unique identification of germplasm is retained by a combination of unique UserID+LocalGid
3. The user can retain most recent data for privacy
4. The user gets a new central database after update

BENEFITS OF ICIS - *Within Institutes*

- **Unified data model for genetic resource data and germplasm characterization and utilization data**
- **Collaborative software development**
- **Institutional memory**
- **Powerful Research Tool**
bringing information to germplasm
 - Breeders
 - Genetic Resource Specialists
 - Pathologists
 - Geneticists
 - Physiologist

The ICIS Users Team

- MARDI – Rice genetic resources
- Bayer Cropscience – Hybrid rice breeding
- University of Agricultural Sciences, Bangalore - Sorghum
- Philrice, Philippines - Rice
- CNRRI, China - Rice
- Ubon RRC, Thailand - Rice
- SARSBN (Faisabad, Chinsura, Cuttack ... Rice
- ICARDA – Barley and chickpea
- Nunza – breeding for 25 vegetable crops world-wide
- Grain Biotech Australia - Wheat
- Agriculture and Agri-Food Canada - Wheat
- University of Queensland - Wheat

INTERNATIONAL RICE INFORMATION SYSTEM



What is IRIS?

- IRIS stands for the International Rice Information System which is the rice implementation of the International Crop Information System



IRIS GERMPLASM DATA SOURCES

600MB, 2.4M Germplasm Entries, 2.8M Names

- o IRGC - 120 000
- o GRIN - 18 000
- o IRRI Crosses 90 000
- o Crosses from National Programs 100 000
- o Released varieties 8 000
- o Breeding lines 1 200 000
- o Functional Genomics Mutants 40 000

IRIS PHENOTYPIC DATA SOURCES

800 MB, 618 Studies, 7.2M data points

- o IRRI breeders evaluations
- o IRGC characterization
- o INGER multi location testing
- o MAPPING Projects
- o FG Mutant Screening



<http://www.iris.irri.org>

Wildcard text queries from multiple entry points, with multiple constraints

Genetic Maps, Genome Annotation, Mutant Stocks, EST Clones, Gene Arrays, Proteomics, Metabolomics & Molecular Variation Data



Germplasm Genealogies, Populations, Genetic Resources, Traits & Field Evaluation Data



Links with External Databases

ICIS Resources

Documentation – <http://cropwiki.irri.org>

Download FTP site – <ftp.cgiar.org/icis>

Development – <http://cropforge.org>