

R8083

Integrated Crop Management Database Users manual



IACR-Rothamsted

*Integrated Approach to
Crop Research*

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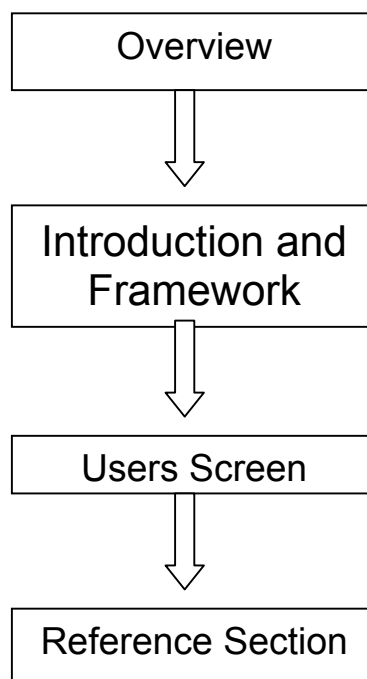
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1.0 ABOUT THIS MANUAL

This manual is divided into three sections:

- The **Introduction** provides the background information on the rationale for and development of the ICM database.
- **The screen-by-screen guide** details the main steps in searching, adding, editing and printing technology records. Details for installing the *Microsoft Access* database are included.
- **Reference** section contains additional information on tables and complete tables of Keywords, Search-terms and Agro-Ecological Zones. Also **definitions of terms used throughout the database**, acknowledgements, and contact names and addresses.

1.1 MANUAL GUIDE



INTRODUCTION

2.0 INTRODUCTION

The feasibility of Integrated Crop Management (ICM) in Bangladesh (DFID NRSP project R7600) found a perception that many technologies were available to farmers but that few were adopted. Further, with the anticipated shift from subsistence farming to production for sale, diversification in the range of agricultural products, and increased levels of production will demand a more flexible and pragmatic approach to 'knowledge' transfer. The project report proposed a decision-support system that would strengthen farmers' access to new technologies. This system would:

- Enable intermediaries to identify and use appropriate methodologies for consulting with rural people.
- Enable the needs and priorities expressed by rural people to inform technology development.
- Provide access to the 'pool' of information or farmer-useable technologies, which potential users can assess how close particular technical options are to on-farm application
- Provide an interface (or multiple interfaces) through which users can learn about technologies in the information pool, and through which the pool is updated. This interface must enable proficient users with experience of particular technologies to make it available to other users.

(Synthesis Review Section 2)

The ICM database (version 1.0) represents a step towards developing one of the key components of such a decision-support system. The database holds details of technologies to be accessed by scientists, farmers and extension personnel, namely the 'pool' of information on ICM technologies in rice-based cropping systems. This would provide information on new and current technologies available in-country, in research institutes, in-country at the farm level and in other countries - notably in the South Asia region (e.g. India, Nepal) at the farm level.

Project R7600 elaborated that ICM would require a more dynamic interaction between scientific institutions, extension services and farmers. It is intended that a decision support system will enable this interaction.

2.1 WHAT IS THE ICM DATABASE?

The ICM database contains records of technologies obtained from literature searches including examples of technologies currently being used by farmers in Bangladesh (in rice-based cropping systems), farmers in other countries and under research or evaluation. Each record has a unique number ID, which reduces the possibility of duplication of technology records within the database.

The ICM database has a simple design (2.5 About *Microsoft Access* Tables) that allows records to be searched, and according to password access, added and edited. Reports can be printed or exported to *Microsoft Word* and user defined searches, through named criteria (validation level, category and keywords) or search-terms.

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2.2 *HOW DOES THE ICM DATABASE WORK?*

The database is a *Microsoft Access 97* file. The CD contains *Microsoft Access* runtime for computers that do not support *Microsoft Access 97* or better. There is also a copy of the database on the CD that can be copied to the hard drive of computers that support *Microsoft Access 97* or better. Currently the database contains 400 ICM technologies through which it is possible to search.

2.3 *INFORMATION CONTAINED IN THE ICM DATABASE*

The technologies are drawn principally from Bangladesh and the surrounding region.

2.3.1 *Categories*

Technologies are grouped into three categories:

1. Commodity
2. Practices/ Techniques
3. Equipment

Commodity has twenty sub-categories, which are loosely based around type and use of the commodity as opposed to a strict botanical definition.

1. N/A
2. Cereals
3. Oleaginous / Oil producing plants
4. Vegetables
5. Root and tuber plants
6. Leguminous plants
7. Stimulant plants
8. Fruits
9. Herbs/ Spices
10. Fibre plants
11. Shrubs/ Trees
12. Sugar producing plants
13. Fodder crops
14. Essential oil plants
15. Flowers
16. Intercropping/ Mixed cropping
17. Rice-fish production systems
18. Fish products
19. Meat products
20. Milk products
21. Honey

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Practices/ Techniques technologies are divided in to nine sub-categories:

1. N/A
2. Land preparation
3. Crop establishment
4. Nutrient management
5. Irrigation
6. Weeding
7. Pest and disease
8. Crop harvest
9. Post-harvest

Equipment technologies have also been divided into seven sub-categories:

1. N/A
2. Land preparation
3. Crop sowing
4. Crop maintenance
5. Crop harvest
6. Post-harvest
7. Machines/ other

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2.3.2 Validation level

The technologies have a validation level that reflects progress toward on-farm application.

- *Validation level 1*: Validated in country (by farmers), pre-requisites for large scale implementation are understood and in place.
- *Validation level 2*: Validated in country (by farmers), but where specific logistical factors currently limit uptake.
- *Validation level 3*: Validated in region (by farmers) under similar environmental conditions.
- *Validation level 4*: Non-validated, i.e. developed/ tested under research conditions but not yet validated.

2.3.3 Descriptive information

The information describing technologies stored in the database includes:

- Short technology description
- Information including advantages and constraints
- Supporting diagnostic tools
- Owner / source of technology and country address
- Location of technology use/ validation (Agro-Ecological Zone (AEZ))
- Date of entry/ modification

2.3.4 Tables in the ICM Database

The database contains seven tables that are linked together as shown in Figure 1 and these are:

1. t Technology Sheets
2. t Category
3. t Commodity sub-Categories
4. t Practice/ Technique sub-categories
5. t Equipment sub-categories
6. Validation lookup ref
7. AEZ ref
8. Keyword list

For further details of each individual table see **Reference** section and also *Microsoft Access* documentation of the whole database (Access97db/documentor.doc).

2.3.5 About Microsoft Access Tables

Each table contains a number of fields in which data or information is stored, a list of fields for each table can be found in the **Reference** section. The *t Technology Sheets* table contains the information on the technologies found in the database. All the other tables in the ICM database enable *Microsoft Access* to determine the relationships between fields, tables, forms, queries and reports (for definitions of these refer to the **Reference** section). *Microsoft Access* then uses defined relationships between the tables to create the queries, forms, and reports to display information from several tables at once. The different tables and their relationships are shown in *figure 1*. A relationship works by matching data in key fields usually a field with the same name in both tables (represented by lines

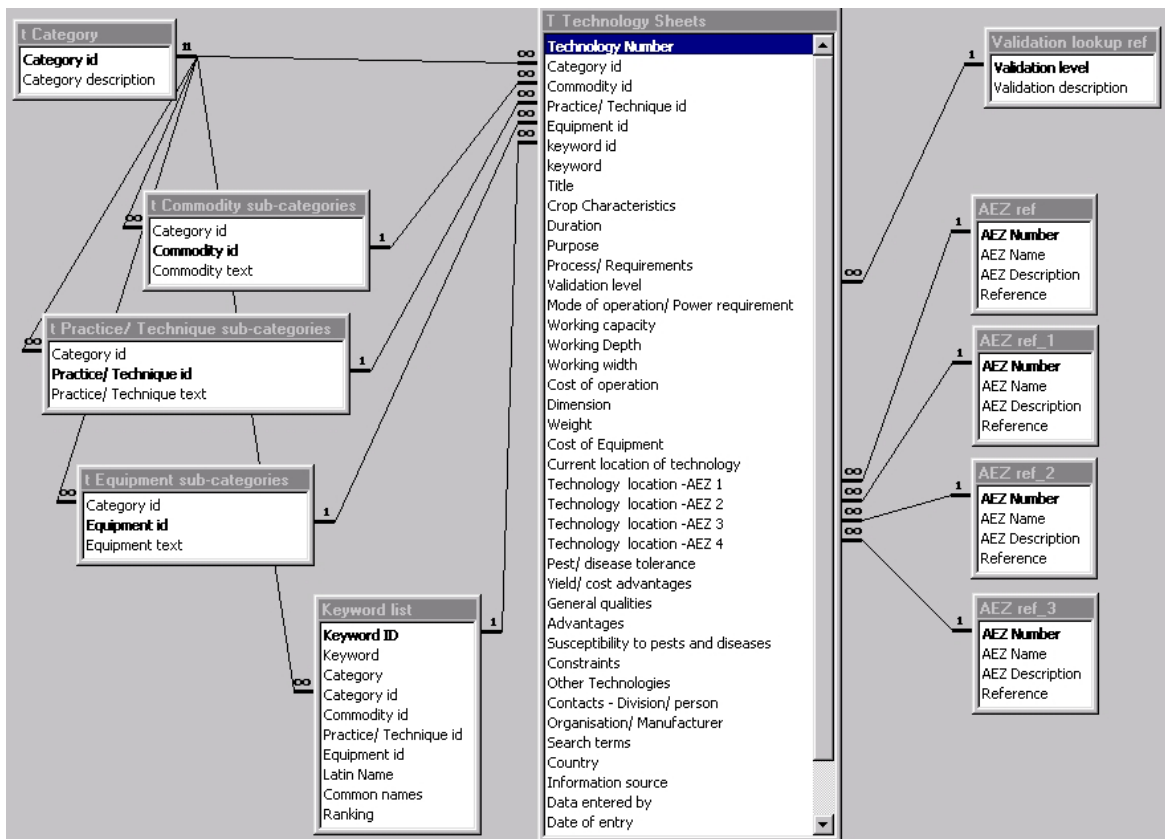
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between tables). In most cases, these matching fields are the primary keys from one table (highlighted in **bold**), which provides a unique identifier for each record, and a foreign key in the other table. For example, in *figure 1* the table **t Category** has two fields:

1. Category id
2. Category description

Category id in table **t Category** has a one-to-many relationship with other tables that also have a field called Category id, e.g. **t Technology Sheets**. A one-to-many relationship is the most common type of relationship. In a one-to-many relationship, a record in for example table, can have many matching records in table, but a record in **t Technology Sheets** has only one matching record in **t Category**.

Figure 1: The relationships between tables in the database.



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2.4 HOW TO INSTALL THE ICM DATABASE

The database can be installed with or without its own *Microsoft Access* program. The set-up program will install *Microsoft Access* and the database onto the **C drive**.

The CD contents are:

- Readme.txt
- ICM Manual
- Install folder
- Access 97db, also contains documentor.doc
- Endnote references database
- Password.txt
- MS 98 Patch folder- for problems that may develop with Access runtime and Windows 98.
- Floppy Disks folder- these are provided for computers that do not have a CD-ROM Drive.

2.4.1 To install ICM database Microsoft Access runtime version.

The following set-up method will put the ICM database onto the **START** menu program files. To start installing the **Microsoft Access Database Runtime version** (ICM Runtime):

1. Close all programs
2. Insert CD in to the CD-Rom drive.
3. Select **RUN** from the **START** menu. The following message will appear:
4. 'Type the name of a program folder of document and Windows will open it for you.'
5. Type **d:\install\setup** (where **d** is the **CD-Rom** Drive).
6. Select '**OK**', and then follow screen instructions to complete installation. On the installation folder screen either accept the default folder **C:\icm** or use the Browse button to select an alternative folder. Then click '**Next**'; follow instructions to complete set-up.

2.4.2 To install ICM database without MS Access runtime.

Using the above method but customise the set-up so that **ONLY** the **database (ICM Database)** is installed on to the computer and **NOT** the **ICM database runtime version (ICM Runtime)**.

1. Close all programs
2. Insert CD in to the CD-Rom drive.
3. Select **RUN** from the **START** menu. The following message will appear:
4. 'Type the name of a program folder of document and Windows will open it for you.'
5. Type **d:\install\setup** (where **d** is the **CD-Rom** Drive).
6. Select '**OK**', and follow screen instructions to custom set-up.
7. During custom set-up deselect options leaving only the **APPLICATION** (option 1) selected. The **APPLICATION** is the database!

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8. On the installation folder screen either accept the default folder **C:\icm** or use the Browse button to select an alternative folder. Then click '**Next**'; follow instructions to complete set-up.

Both of the installation methods will put the ICM database onto the **START** menu program files. It also provides the user with an easy method to compact the database (**Compact database**) and easy access to the **Readme.txt** file.

Alternatively to use the database on a computer with existing *Microsoft Access* software (*Microsoft Access 97* or better):

1. Load the CD in to the CD-Rom Drive
2. Open *Windows Explorer* or *My Computer* and select the CD-Rom Drive.
3. Select **Access 97db** folder
4. Copy or open the **ICM database**
5. The **Access97db** folder also contains the documented information about the tables, forms, reports, modules, queries and relationships in the database (i.e. **MS Access documentor.doc**).

2.4.3 Uninstalling ICM database

To uninstall the database and *Microsoft Access*

1. Open Control Panel in *Windows Explorer* on *My Computer* and double click on Add/Remove Programs.
2. Locate ICM folder in the list of programs and then click on the **Add/Remove** button.
3. The ICM database Setup wizard will initialise, click on the **Remove ALL** option and then click on '**Finish**'.

2.5 SCREEN DISPLAY

For the database windows to display correctly (i.e. all the forms to fit inside the screen area) please set the display settings of the computer screen to no less than **800 by 600 pixels**. Existing setting can be checked and/or changed by going to the **Start menu** and selecting:

- Settings
- Control Panel
- Display-Settings
- Desktop area

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3.0 SCREEN-BY SCREEN GUIDE

The following pages give a detailed guide to the database, including how to search, add and edit technology records. It is suggested that when using the database for the first time, some time is spent searching through the records to gain familiarity with the technology types available and the structure of the forms/database.

If the database was installed using the set-up option then open the database by selecting **Start / Programs / ICM database/ICM runtime** from the program list. If the database was copied across from the CD, then open it from the directory where it has been saved through *Microsoft Access* or *Windows Explorer*.

3.1 WELCOME SCREEN

The **Welcome screen** will appear (Screen 1). Using this form to decide whether to **search** the database or **add/edit records**.

Clicking on the green **search records** button opens the **SEARCH integrated crop management technology** form.

To **add/edit records** requires a **password** to be entered (supplied with the CD-Password.txt), if the password is typed incorrectly access to the add/edit form will be denied. After the password has been correctly entered, click **OK** button this will open up the **ADD/EDIT Integrated Crop Management Technologies** form.

To **exit** the database click the **quit database** button, this will quit the application.

Screen 1: Welcome Screen



3.2 SEARCH INTEGRATED CROP MANAGEMENT TECHNOLOGIES

Screen 2: SEARCH ICM Technologies

The technologies are viewed through a “tab-form”. The six-labelled **tabs** enable all tab technology information to be seen. The **technology title** at the top of the form (in black text) can be seen regardless of the tab page that is active.

Beneath the form, there are buttons for:

- Record Operations - moving through the records chronologically
- Filtering records (selecting technologies).
- Report Operations - reporting and printing technology records
- Exiting the form (return to Welcome page)

3.2.1 Record Operations

Buttons switch and move between the first and last technologies in the record set. Beneath the Record Operations Buttons is the standard **Microsoft Access buttons** for moving through the records. This also shows the **current technology number** and the **total number of records** in the database. The ‘<’ and ‘|<’ buttons moves through records from the end to the beginning of the record-set, whilst the ‘>’ and ‘>|’ buttons moves through records from the beginning to the end of the record-set.

3.2.2 Filtering Records

To filter records according to user defined criteria use **Filter by Criteria** button, which opens the **Criteria form**. A detailed explanation can be found in section 4.1 *Search using defined criteria*. Alternatively filter using the **Free-text Search** button that opens up the **User defined text Search form**. This allows the user to type in text, although the search is based on the text in the **Search Terms field**, this is explained in detail in the section 4.2 *Search using free-text*.

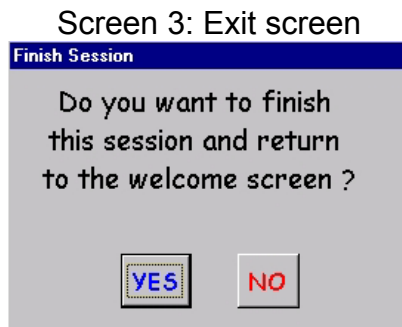
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3.2.3 Report Operations

Report operations allow all records, filtered records or just a single record to be printed. Clicking on either button opens up a print preview of the report. The first **previews a filtered report**, i.e. more than 1 record. The second button allows a preview of a filtered report containing a single record, i.e. **preview current record** only.

3.2.4 Exit the form

The last button on the right, will exit the form, it opens up the **Final Session** window requiring confirmation that searching the database is complete (Screen 3). Clicking the **Yes** button returns to the Welcome Form, clicking on **No** returns them to the **SEARCH Integrated Crop Management Technologies** form.



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3.3 TECHNOLOGY TITLE TAB.

The first tab page contains the information about the selected technology (screen 4) The table and fields are explained below.

Screen 4: SEARCH ICM Technologies -Technology tab

The screenshot displays the 'SEARCH Integrated Crop Management Technologies - READ ONLY' interface. The title bar indicates 'Rice Variety BR26'. The interface is divided into several sections:

- Navigation Tabs:** Technology Title (selected), Characteristics/ Purpose, Equipment, Advantages/ Constraints, Contact/ Source, Data Entry, Feedback.
- Technology number:** 1 of 400. Validation level: 4.
- Title:** Rice Variety BR26.
- Technology location- Agro-Ecological Zones:** Four drop-down menus, all currently set to 'N/A'.
- Current location of technology:** Aus areas throughout Bangladesh.
- Category description:** Commodity (Cereals), Practice/ Techniques (N/A), Equipment (N/A).
- Other Technologies:** A text input field.
- Keyword:** Rice.
- Search terms:** Rice, BRRI, BR26, long grain, tall, Bangladesh.
- Record Operations:** First, Previous, Next, Last buttons.
- To Filter Records:** Filter by Criteria, Free-text Search buttons.
- Report Operations:** Report, Print, Refresh buttons.
- Status:** Record: 1 of 400.

Technology number: the unique record number arranged by *Microsoft Access* that allows no duplicates, (the total number of technology records in the database is also displayed).

Validation level: Technologies are validated between 1 and 4 depending whether the farmer in Bangladesh or elsewhere is using the technology or if it is still a research tool, (see *Introduction* for explanation).

Title: The name of the technology.

Technology location- Agro-Ecological Zones (AEZ): Agro-Ecological Zone (AEZ): There are 4 fields each with drop-down lists that allow up to 4 AEZ where the technology is being practised in Bangladesh (for a full description see Table 3 in Reference Section).

Current location of technology: The location/s where the technology is being practised (in areas larger than 4 AEZs, or other countries).

Category description: (see **Introduction** for description).

Commodity, i.e. crops, fish, animals, etc.,

Practice/ Techniques, i.e. tillage, nutrient management, etc., and

Equipment, i.e. power tiller, seed drills

Commodities: Sub-categories of Commodity, e.g. cereals.

Practice/ Techniques: Sub-categories of practice/ techniques e.g. nutrient management.

Equipment: Sub-categories of equipment e.g. land preparation.

Keywords: Selected from a drop-down list. Each technology requires a keyword to enable more detailed searches to be made. A list of all the keywords currently in the database, stored in the **Keywords table**, can be found in the **Reference section**.

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Other Technologies: This field allows further searches on related technologies, with both obvious and not so obvious links (synergies) between the technology being viewed and others in the database and elsewhere in the literature.

Search terms: This field is used for the **free-text search**. An alphabetical list of words in the search term field is listed in the **Reference** section.

3.4 CHARACTERISTICS/ PURPOSE TAB

The fields contained on the second tab page of the ICM technologies form are shown in Screen 5 and described below.

Screen 5: SEARCH ICM Technologies – Characteristics/ Purpose tab

The screenshot shows a web-based form titled "SEARCH Integrated Crop Management Technologies- READ ONLY" for "Rice Variety BR26". The form has several tabs: "Technology Title", "Characteristics/ Purpose", "Equipment", "Advantages/ Constraints", "Contact/ Source", "Data Entry", and "Feedback". The "Characteristics/ Purpose" tab is active, showing five text input fields with the following labels: "Crop Characteristics:", "Duration:", "Purpose:", "Process/ Requirements:", and "Mode of operation/ Power requirement:". The first field contains the text "115cm tall, long slender grain.". At the bottom of the form, there are navigation buttons: "Record Operations" (First, Previous, Next, Last), "To Filter Records" (Filter by Criteria, Free-text Search), and "Report Operations" (Report, Operations, and a search icon). A record counter at the bottom left shows "Record: 1 of 400".

Crop characteristics: List the characteristics such as, height, seed colour, taste, of the crop to which the technology is designed.

Duration: States the duration of the crop for which the technology is designed, e.g. days from sowing to maturation.

Purpose: The basic purpose of the technology, which is relevant for equipment and practice/ techniques technologies.

Process/ Requirements: Information on the technology process or requirements for the technology that must be considered if it is to be used successfully.

Mode of operation/ Power requirements: Relevant to equipment technologies where the mode of operation or the power requirements may require conditions to be met.

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3.5 EQUIPMENT TAB

The fields on the third tab page contain information on equipment technologies (Screen 6) and are described below.

Screen 6: SEARCH ICM Technologies – Equipment tab

SEARCH Integrated Crop Management Technologies- READ ONLY

Rice Variety BR26

Technology Title	Characteristics/ Purpose	Equipment	Advantages/ Constraints	Contact/ Source	Data Entry	Feedback
------------------	--------------------------	-----------	-------------------------	-----------------	------------	----------

Working capacity:

Working depth:

Working width:

Dimension:

Weight:

Cost of operation:

Cost of equipment:

Record Operations:

To Filter Records:

Report Operations:

Record: 1 of 400

Working capacity: The output of the equipment in units per ha per hour.

Working depth: The soil depth range in which the equipment will work.

Working width: The width of the equipment, which for example can determine the number of crop rows per field.

Dimension: The physical dimensions of the equipment.

Weight: Various units are used.

Cost of operation: Cost in US dollars.

Cost of Equipment: Purchase price or cost of production.

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3.6 ADVANTAGES/ CONSTRAINTS TAB

The fields contained in the fourth tab page describe advantages that the technology might offer, or constraints of adopting the technology (Screen 7).

Screen 7: SEARCH ICM Technologies – Advantages/ Constraints tab

SEARCH Integrated Crop Management Technologies- READ ONLY

Rice Variety BR26

Technology Title | Characteristics/ Purpose | Equipment | Advantages/ Constraints | Contact/ Source | Data Entry | Feedback

Pest/ Disease tolerance:

Yield/ Cost advantages:

General qualities:

Advantages:

Susceptibility to pests and diseases:

Constraints:

Record Operations: First Previous Next Last

To Filter Records: Filter by Criteria Free-text Search

Report Operations: Print Refresh Export

Record: 1 of 400

Pest/ disease tolerance: Aimed at commodity technologies, this section describes information on known tolerance (resistance) especially of crops to some pests and diseases.

Yield/ Cost advantage: The yield or cost advantages that a farmer can expect on using the technologies.

General Qualities: Other information and general benefits of the technology, but not necessarily advantages over other existing technologies.

Advantages: Relative to existing technologies, which do not necessarily have to be in the database.

Susceptibility to pests and diseases: Aimed at commodity technologies, this section highlights known susceptibility to both pests and diseases and is the opposite of *Pest/ disease tolerance*.

Constraints: Other general constraints applicable to the technology, either to its adoption by farmers, or that will limit, target the technology to specific areas.

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3.7 CONTACT/ SOURCE TAB

The fifth tab page contains information on the data source, including contact name and address (Screen 8).

Screen 8: SEARCH ICM Technologies – Contact/ Source tab

SEARCH Integrated Crop Management Technologies- READ ONLY

Rice Variety BR26

Technology Title	Characteristics/ Purpose	Equipment	Advantages/ Constraints	Contact/ Source	Data Entry	Feedback
Contacts - division/ person: Plant Breeding Division						
Organisation/ Manufacturer: BRRI, Gazipur						
Country/ Region: Bangladesh						
Information source: Hossain MG (1998) Advances in Agricultural Research and Technology in Bangladesh. Proceedings of a Technology Transfer Workshop, July 1996. BARC, TTU.						

Record Operations: First Previous Next Last

To Filter Records: Filter by Criteria Free-text Search

Report Operations: [Print] [PDF] [Export]

Record: 1 of 400

Contacts – division/ person: The contact for the technology. This may be either an individual or a department or division within an organisation.

Organisation/ Manufacturer: The name and address of the organisation or manufacturer, to facilitate dynamic feedback on the technology.

Country/ Region: The country or region in which the contact is located.

Information source: The literature reference for the technology, including the date of publication.

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3.8 DATA ENTRY TAB

The sixth tab page contains the information on who entered the data, when and the date of modification (Screen 9) This enables users to keep track of which copy they have and whether it has been updated. The fields are explained below.

Screen 9: SEARCH ICM Technologies – Data Entry tab

SEARCH Integrated Crop Management Technologies- READ ONLY

Rice Variety BR26

Technology Title | Characteristics/ Purpose | Equipment | Advantages/ Constraints | Contact/ Source | Data Entry | Feedback

Data entered by: SK White (IACR Rothamsted)

Date of entry: 10/07/00

Date of modification:

Record Operations: First, Previous, Next, Last

To Filter Records: Filter by Criteria, Free-text Search

Report Operations: Report, Print, Refresh

Record: 1 of 400

Data entered by: Name of the person who entered the data.

Date of entry: The date that the data was entered.

Date of modification: The date on which the data was modified.

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3.9 FEEDBACK TAB

The seventh tab page contains the information on who entered the data, when and the date of modification (Screen 10) This enables users to keep track of which copy they have and whether it has been updated. The fields are explained below.

Screen 10: SEARCH ICM Technologies – Feedback tab

The screenshot shows a web-based interface for the SEARCH Integrated Crop Management Technologies database. The title bar reads "SEARCH Integrated Crop Management Technologies- READ ONLY" and the specific record is "Rice Variety BR26". A navigation menu at the top includes tabs for "Technology Title", "Characteristics/ Purpose", "Equipment", "Advantages/ Constraints", "Contact/ Source", "Data Entry", and "Feedback". The "Feedback" tab is active. The main content area contains two large text input fields: "Farmer feedback" and "Comments". At the bottom, there is a "Record Operations" section with buttons for "First", "Previous", "Next", and "Last". To the right of these are "To Filter Records" and "Filter by Criteria" buttons, with a "Free-text Search" input field below. Further right is a "Report Operations" section with icons for a printer, a document, and a refresh button. At the very bottom, a status bar shows "Record: 1 of 400".

Farmer feedback: Feedback about the technology (both positive and negative) can be recorded here. This may be done at the time of interview or afterwards. The actual field size may eventually limit the amount that can be written.

Comments: Observations and comments by extension workers, scientists, etc. can be noted here. These can be both positive and negative.

4.0 FILTER RECORDS

There are two methods of searching the records in the database, using “defined criteria” or a free-text search in the ‘Search-term’ field found on the Technology Title tab page.

4.1 SEARCH USING DEFINED CRITERIA.

Clicking on **Filter by Criteria** opens up the Criteria form (Screen 11). This form will filter technologies in the database using the validation level, categories and the keyword list (refer to *Screen 4* and the **Introduction** section).

Screen 11: Filter by Criteria

Filter Records Using Validation Level or Category

To select one or a combination of criteria to filter records, please select the relevant check boxes.

Validation description

Commodity Keyword list

Commodity descriptions

Practice/ Technique descriptions

Equipment descriptions

Practice/ Technique Keyword list

Equipment Keyword list

OK Cancel

Check boxes

To search through the technologies using validation description and/ or category, check to tick the appropriate check box (Screen 11). Records can be searched using a combination of validation description and category description as well as either one or other. All fields on the form are **drop-down lists**, i.e. selected from a menu list activated by checking on the arrow button (see Screen 12).

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Select the **validation level** using the drop-down list provided (Screen 12).

Screen 12: Filter by Criteria - Validation selection

Filter Records Using Validation Level or Category

To select one or a combination of criteria to filter records, please select the relevant check boxes.

Validation description Arrow button for drop-down list

Category description

Commodity descriptions

Practice/ Technique descriptions

Equipment descriptions

Commodity Keyword list

Practice/ Technique Keyword list

Equipment Keyword list

OK Cancel

If a category is also required, click on the check box to enable the category description field and make a selection from the three categories in the drop-down list (Screen 13).

Screen 13: Filter by Criteria – Category selection

Filter Records Using Validation Level or Category

To select one or a combination of criteria to filter records, please select the relevant check boxes.

Validation description

Category description

Commodity descriptions

Practice/ Technique descriptions

Equipment descriptions

Commodity Keyword list

Practice/ Technique Keyword list

Equipment Keyword list

OK Cancel

Selecting **any of the three** Categories enables a sub-category choice, Commodities (Screen 14) Practices/ Techniques (Screen 15) and Equipment (Screen 16). This sub-category selection is not mandatory; i.e. the search can be performed on **ALL** Commodities, **ALL** Practices/ Techniques or **ALL** Equipment.

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Screen 14: Filter by Criteria – Commodity sub-Category

Filter Records Using Validation Level or Category

To select one or a combination of criteria to filter records, please select the relevant check boxes.

Validation description: Validated (by farmers in region / globally) ur

Category description: Commodity

Commodity descriptions: [Empty]

Practice/ Technique descriptions: N/A, Cereals, Oleaginous / Oil producing plants, Vegetables, Root and tuber plants, Leguminous plants, Stimulant plants, Fruits

Equipment descriptions: [Empty]

Commodity Keyword list: [Empty]

Practice/ Technique Keyword list: [Empty]

Equipment Keyword list: [Empty]

OK Cancel

Screen 15: Filter by Criteria – Practice/ Techniques sub-Category

Filter Records Using Validation Level or Category

To select one or a combination of criteria to filter records, please select the relevant check boxes.

Validation description: Validated in country (by farmers) pre-requisi

Category description: Practices/ Techniques

Commodity descriptions: [Empty]

Practice/ Technique descriptions: [Empty]

Equipment descriptions: N/A, Land preparation, Crop establishment, Nutrient management, Irrigation, Weeding, Pest and disease, Crop harvest

Commodity Keyword list: [Empty]

Practice/ Technique Keyword list: [Empty]

Equipment Keyword list: [Empty]

OK Cancel

Screen 16 Filter by Criteria – Equipment sub-Category

Filter Records Using Validation Level or Category

To select one or a combination of criteria to filter records, please select the relevant check boxes.

Validation description: Validated in country (by farmers) pre-requisi

Category description: Equipment

Commodity descriptions: [Empty]

Practice/ Technique descriptions: [Empty]

Equipment descriptions: [Empty]

Commodity Keyword list: [Empty]

Practice/ Technique Keyword list: N/A, Land preparation, Crop sowing, Crop maintenance, Crop harvest, Post-harvest, Machines/ other

Equipment Keyword list: [Empty]

OK Cancel

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Having selected a category and/ or sub-category by which to search the records the keyword list check box is enabled, which when ticked can narrow down the search to the keywords available in the drop-down list. Depending on the choice of category, the relevant keyword field is enabled after ticking the check box (Screen 17).

For example, if **Commodity** is selected from the Category description and **Fruits** from Commodity descriptions, the keyword list for Commodities (Screen 17) can be used to narrow the search further. The Keyword list currently shows **ALL** Commodities alphabetically and the appropriate word can be chosen from the list.

Not all of the commodities listed have relevant records in version 1.0 of the ICM database. Therefore some searches may return no records: a pop-up window will then prompt for the filter to be removed by clicking the appropriate button on the **SEARCH ICM Technologies** form.

Screen 17: Filter by Criteria – keywords (commodity)

Filter Records Using Validation Level or Category

To select one or a combination of criteria to filter records, please select the relevant check boxes.

Validation description [dropdown]

Category description [dropdown: Commodity]

Commodity descriptions [dropdown: Fruits]

Practice/ Technique descriptions [dropdown]

Equipment descriptions [dropdown]

Commodity Keyword list [dropdown]

Practice/ Technique Keyword list

Equipment Keyword list

- Amaranthus
- Bamboo
- Banana**
- Barley
- Bell pepper
- Betal leaf
- Betal nut
- Bitter aourd

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4.1.1 Example of filtering records by criteria

An example of how to filter is shown below (Screen 18-19). Here, validation level, category and keywords have been used to search technologies in the database (Screen 18). Therefore in this example, records filtered must contain the following:

Validation description: **Validated in country (by farmers), pre-requisites for large scale implementation are understood and in place.**

Category description: **Practices/ Techniques**

Practice/ Techniques description; **Land preparation**

Practice/ Techniques keyword list: **Land cultivation practices**

Screen 18: Filter by Criteria – keywords (Practice/ Techniques)

Filter Records Using Validation Level or Category

To select one or a combination of criteria to filter records, please select the relevant check boxes.

Validation description: Validated in country (by farmers) pre-requisi

Category description: Practices/ Techniques

Commodity descriptions: []

Practice/ Technique descriptions: Land preparation

Equipment descriptions: []

Commodity Keyword list: []

Practice/ Technique Keyword list: Land cultivation practices

Equipment Keyword list: Mulch practices

OK Cancel

To filter records the **OK** button must be checked, returning the **SEARCH ICM Technologies** form with the filtered records (Screen 19). Checking **Cancel** would also return the **SEARCH ICM Technologies** form and any filter action terminated.

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Screen 19: SEARCH ICM Technologies – Filtered records (using defined criteria)

SEARCH Integrated Crop Management Technologies- READ ONLY

Tillage (draft power)

Technology Title	Characteristics/ Purpose	Equipment	Advantages/ Constraints	Contact/ Source	Data Entry	Feedback
------------------	--------------------------	-----------	-------------------------	-----------------	------------	----------

Technology number: 202 of 4 (filtered records) Validation level: 1

Title: Tillage (draft power)

Technology location- Agro-Ecological Zones

N/A N/A

N/A N/A

Current location of technology: World-wide

Category description Commodities Practice/ Techniques Equipment

Practices/ Techniques N/A Land preparation N/A

Other Technologies: Rice-Wheat crop systems, Equipment Keyword: Land cultivation practices

Search terms: tillage, draft power, seedbed

Record Operations

First Previous Next Last

To Filter Records

Click to Remove Filter

Free-text Search

Report Operations

Record: 1 of 4 (Filtered)

The Technology number (in blue) is the unique number for the technologies, adjacent is the number of filtered records returned (in purple) using the search defined in the criteria form.

To remove the filter check **Click to Remove Filter**. All records are returned unfiltered.

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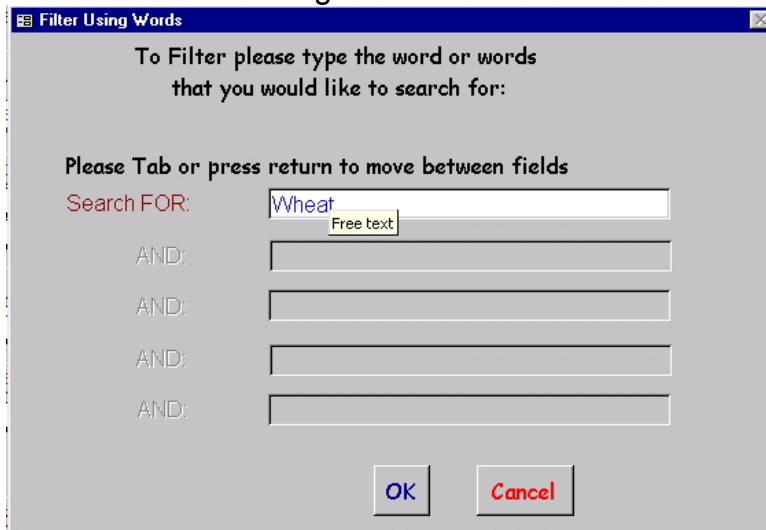
4.2 SEARCH USING FREE-TEXT SEARCH

To search records by the **Search-terms field**, click on the **Free-text Search** button. This will open the **Filter Using Words** form, where the user can define the search. For a list of words/ phrases present in the Search-term field, refer to the list in the **Reference section**. It is possible to type up to 5 words/ phrases into separate fields, on the form. Each subsequent field will be enabled only when text has been entered into the current field. The cursor has to be moved between the fields after they are enabled, by pressing **Tab** or **Enter**.

4.2.1 Example of a Search Using the Free-Text Search

In the example in Screen 20 the database is searched by 'Wheat'. After clicking **OK** to apply the filter or **Cancel** to terminate the Search, both buttons return to the **SEARCH ICM Technologies** form.

Screen 20: Filter Using Words



The screenshot shows a dialog box titled "Filter Using Words". The text inside the dialog box reads: "To Filter please type the word or words that you would like to search for:". Below this, it says "Please Tab or press return to move between fields". There are four input fields. The first field is labeled "Search FOR:" and contains the text "Wheat". Below the first field is a small label "Free text". The other three fields are labeled "AND:". At the bottom, there are two buttons: "OK" and "Cancel".

On return to the SEARCH ICM Technologies form (Screen 21), there are 25 records containing the word 'wheat' in the Search terms field (filtered from 400).

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Screen 21: SEARCH ICM Technologies - Filtered records (using free-text)

SEARCH Integrated Crop Management Technologies- READ ONLY

Mixed cropping Chickpea and Wheat.

Technology Title	Characteristics/ Purpose	Equipment	Advantages/ Constraints	Contact/ Source	Data Entry	Feedback
------------------	--------------------------	-----------	-------------------------	-----------------	------------	----------

Technology number: 74 of 25 (filtered records) Validation level: 4

Title: Mixed cropping Chickpea and Wheat.

Technology location- Agro-Ecological Zones

Low Ganges River Floodplain	N/A
N/A	N/A

Current location of technology:

AEZ: 12 e.g. Lower Ganges floodplain soil




Category description	Commodities	Practice/ Techniques	Equipment
Commodity	Intercropping/ Mixed cropping	N/A	N/A

Other Technologies: Keyword: Intercropping/ Mixed cropping

Search terms: intercropping mixed cropping, chickpea, wheat,

Record Operations: First Previous Next Last

To Filter Records: Apply Filter... Click to Remove Filter

Report Operations:   

Record: 1 of 25 (Filtered)

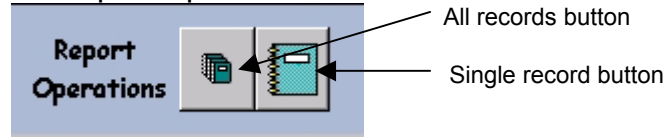
To remove the filter use the **Click to Remove Filter** button. This returns all 400 of the original record-set.

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5.0 REPORTS

The *Report Operations* buttons (Screen 22) opens the report page so that technology records can be printed or exported into *Microsoft Word*. The first button will open up a report for all selected records (filtered or non-filtered, i.e. up to 400 records!), whilst the larger report button can be used to view the current record on the SEARCH ICM Technology form.

Screen 22: Report Operations buttons



The report contains information arranged under all six-tab headings on the **SEARCH ICM Technology** form. Most technology reports fit onto one page, but if there is a large amount of information the report may extend to a second page. The number of pages to be printed/ exported to *Microsoft Word* is shown in the top right-hand corner (Screen 23). For the report to print exactly, the page size on the printer must be set to A4. For the exact margin settings necessary to print the report as a single page, please see the **Reference section**.

Screen 23: Reports

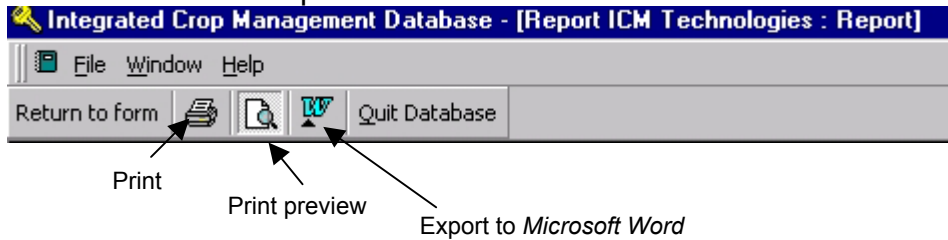
Integrated Crop Management Technologies - Report		28 January, 2002 05:31 PM		Page 1 of 500	
Technology Title: Technology number 1 Validation level: Non validated i.e. developed / tested under research conditions (in region/global); but not yet validated.					
Title: Rice Variety: ER26		Category: Cereals	Commodity: Cereals	Equipment: N/A	Practice / Techniques: N/A
Current location of technology: All areas throughout Bangladesh		Technology location: AZ, 0, 0, 0, 0	Keyword: Rice		
Other Technologies:					
Search terms: Rice, ERRI, ER26, long grain, tall, Bangladesh.					
Characteristics and Purpose of Technology					
Crop Characteristic: 115cm tall, long slender grain.					
Duration:					
Purpose:					
Process/Requirements:					
Mode of operation / Power requirement:					
Equipment					
Working capacity:		Weight:			
Working depth:		Cost/operation:			
Working width:		Cost/equipment:			
Dimensions:					
Advantages of the Technology and Constraints to the Technology					
Pest/disease tolerance:		Advantages:			
Yield/contaminant levels:		Susceptibility to pests and diseases:			
General qualities:		Cost/benefit:			
Contact and Source where the Technology was referenced from					
Contact - District/person: Plant Breeding Division		Country: Bangladesh			
Organisation/ Main contact: BRRI, Gazipur					
Information source: Hossain MG (1998) Advances in Agricultural Research and Technology in Bangladesh. Proceedings of Technology Transfer Workshop, July, 1998. BARC, TTU.					
Data entry details					
Date entered by: SK White (ICR Rothamsted)		Date of modification:			
Date of entry: 10 July 2000					

The date and time is printed at the top of each page, to allow tracking of subsequent changes to the technology data record.

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5.1 REPORT MENU BAR

Screen 24: Menu Bar for Reports



The **Return to form** button on the report menu bar closes the report and opens the **SEARCH ICM Technologies** form. If previously a filter had been applied it will have been removed when the SEARCH ICM Technologies form closed to open the Report. Reports are opened in **print preview** therefore to print records click the **print** button. This will print to the default printer for the computer.

To export the report to **Microsoft Word**, use the appropriate button as pictured in Screen 24. If the version of **Microsoft Word** is older than **Microsoft Word 97**, then some of the features in the report may not be supported.

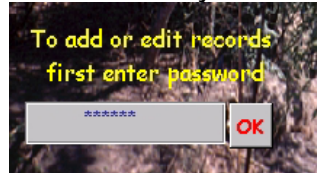
To exit the database, check the **Quit Database** button (this closes **Microsoft Access**).

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6.0 ADDING AND EDITING TECHNOLOGIES IN THE ICM DATABASE.

To gain access to this form requires the password provided with the CD (Password.txt), which should be typed into the relevant field on the **Welcome** form (Screen 25).

Screen 25: Password Entry on Welcome Screen

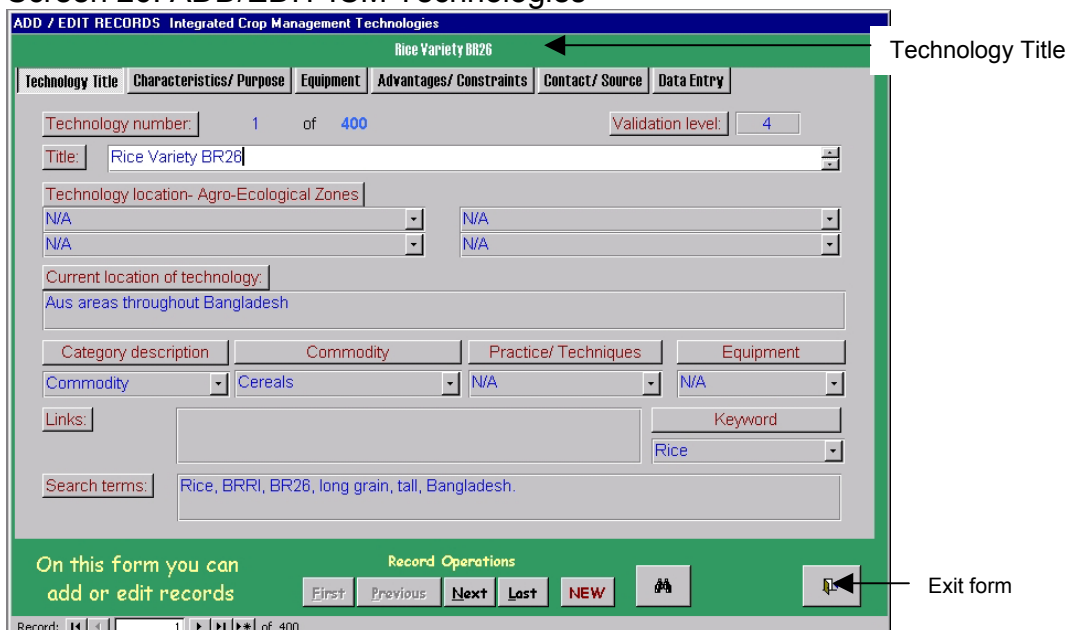


6.1 ADD/ EDIT INTEGRATED CROP MANAGEMENT TECHNOLOGIES FORM

The **ADD/EDIT ICM Technologies** form has the same tab pages as the **SEARCH Integrated Crop Management Technologies** form previously described. The **technology title** above the form (in white text) is visible regardless of which tab page is being viewed (Screen 26).

The appearance of the form is similar to the SEARCH ICM Technologies form. The only difference is that every field is *enabled*, allowing changes to be made to the data. Once a change has been made to one of the fields (accidentally or otherwise), *Microsoft Access* accepts the change with **NO** warning. Therefore care must be taken to not accidentally change data. Before entering new technologies, the database can be searched to check that the technology does not already exist in the database. Information entered should be factual, enabling users to clearly evaluate technologies for their own requirements.

Screen 26: ADD/EDIT ICM Technologies



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Beneath the form (Screen 26) there are buttons for:

- Record Operations- moving through the records chronologically
- Adding “**NEW**” records
- Finding records (but not filtering records)- Binocular button
- Exiting the form (return to Welcome page)

6.1.1 Record Operations

The record operations (Screen 26) are the same as those on the **SEARCH ICM Technologies** form allowing for switching or moving between the first and the last technologies in the existing data set. Beneath the record operations (on the left) are standard **Microsoft Access** buttons for moving through the records. This shows the **current technology number**, together with the **total number of records** in the database. The '>', '>|', '<' and '|<' buttons move forwards and backwards through the record-set respectively.

6.1.2 New Records

Clicking on the **NEW** button (Screen 26) enters new records. This brings up a blank form (Screen 27) and a prompt for information to be entered into the relevant fields. **Microsoft Access** will automatically assign a unique technology number. The total number of technologies in the database will update after closing the form. The technology-number cannot be edited or duplicated. If the technology is deleted that particular number will cease to exist. Although there should be no reason to delete technologies from the database as these provide a record of what is available to farmers, extension workers and scientists.

Screen 27: ADD/EDIT ICM Technologies – New records

ADD / EDIT RECORDS Integrated Crop Management Technologies

Technology Title	Characteristics/ Purpose	Equipment	Advantages/ Constraints	Contact/ Source	Data Entry
------------------	--------------------------	-----------	-------------------------	-----------------	------------

Technology number: .toNumbi of Validation level: []

Title: []

Technology location- Agro-Ec: Integrated Crop Management Database

N/A

N/A

Current location of technology: []

Category description: [] Commodity: [] Practice/ Techniques: [] Equipment: []

Links: [] Keyword: []

Search terms: []

On this form you can add or edit records

Record Operations: First Previous Next Last NEW [Binocular Icon]

Record: 401 of 401

Binocular
(Find) button

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6.1.3 Data entry in essential fields on the NEW technology form

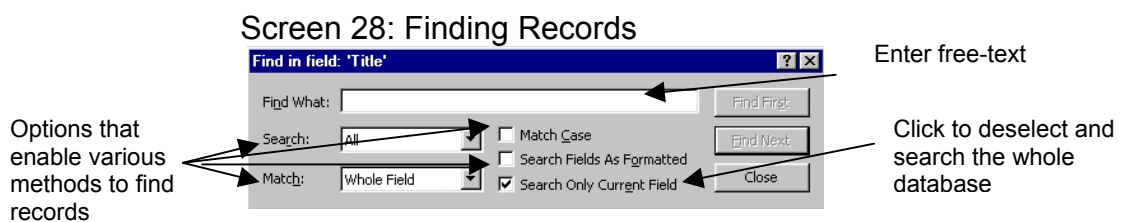
The fields listed below must be completed so that the relationships defined between the database tables can operate (see **Introduction**). Fields not filled in correctly can cause errors within the Microsoft Access database, which can be irreversible.

1. *Validation level* (drop-down list with 4 selections)
2. *Category description* (drop-down list with 3 selections).
3. *Commodity description* (drop-down list with 21 selections). If an option from **Commodity** sub-category is selected then **N/A** must be selected from *Practice/ Techniques* sub-category and *Equipment* sub-category. Failure to do this will mean that *Microsoft Access* will be unable to use the relationships and tables correctly (see Introduction for explanation) and will cause irreversible errors within the database.
4. *Practice/ Techniques* (drop-down list with 9 selections). If an option from **Practice/ Techniques** sub-category is selected then **N/A** must be selected from the *Commodity* sub-category and *Equipment* sub-category (see Commodity description for explanation).
5. *Equipment sub-category* (drop-down list with 7 selections). If an option from **Equipment** sub-category is selected then **N/A** must be selected from the *Commodity* sub-category and *Practice/ Techniques* sub-category (see Commodity description for explanation).
6. *Keyword* (drop-down list with 132 selections - see Reference section for list)
7. *Search terms*. Search-terms appropriate to the technology are required. The technology title should be included in the Search-terms field for every new technology and where possible with the use of existing search terms, although this list can be updated. An existing alphabetical list of Search-terms supplied for all records currently entered in the database can be found in the Reference section. Not included in the list but that can be found in the Search-terms field is the technology title, i.e. for Commodities the varietal name.

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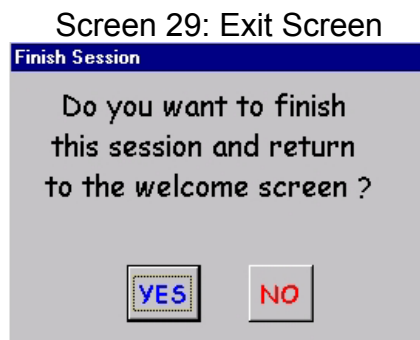
6.1.4 Finding Records

The 'binocular' button (see Screen 27) can FIND a particular record using free-text, but not text restricted to those in the Search-terms list. Checking the **binocular** button brings up a small window (Screen 28). Enter the word/ phrase by which to search the database in the 'Find What:' field and then click on **Find First** button. This action returns one record at a time, to find another record click the **Find Next** button. Finding a record is not the same as filtering records and therefore this method differs from the filter buttons on the **SEARCH ICM Technologies** form. By default *Microsoft Access* will only search the current field (the field in which the cursor is place prior to clicking the binocular button). Therefore to search for a word/ phrase in every field, i.e. all six tab pages, this option must be deselected (Screen 28). The other options can enable the search to be refined.



6.1.5 Exit the form

The 'door' button (Screen 26) exits the form. It opens up the **Final Session** window (Screen 29) allowing confirmation that adding/editing records in the database are complete. Clicking on **Yes** returns to the Welcome Form. Clicking the **No** button returns the **ADD/ EDIT Integrated Crop Management Technologies** form.



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6.2 TECHNOLOGY TITLE TAB

In addition to the necessary information required (highlighted in **bold**) other fields might be filled if data is available (Screen 30).

Screen 30: ADD/EDIT ICM Technologies – Technology Title tab

The screenshot shows the 'ADD / EDIT RECORDS Integrated Crop Management Technologies' interface. The title bar reads 'Paddy Dryer'. The interface is divided into several sections:

- Navigation Tabs:** Technology Title (selected), Characteristics/ Purpose, Equipment, Advantages/ Constraints, Contact/ Source, Data Entry, Feedback.
- Technology number:** 400 of 400. Validation level: 2.
- Title:** Paddy Dryer.
- Technology location- Agro-Ecological Zones:** Four dropdown menus, all set to N/A.
- Current location of technology:** An empty text field.
- Category description:** Equipment. **Commodity:** N/A. **Practice/ Techniques:** N/A. **Equipment:** Post-harvest.
- Other Technologies:** A text field containing 'Dryer' and a 'Keyword' dropdown menu.
- Search terms:** paddy dryer, air system, engine.
- Record Operations:** First, Previous, Next, Last, NEW, Find a record (magnifying glass icon).
- Footer:** Record: 400 of 400.

Technology number: Microsoft Access automatically assigns this number and therefore no action is required.

Validation level: Assign a validation level between 1 and 4 using the drop-down list, (see **Introduction** for explanation);

- **Validation level 1:** Validated in country (by farmers), pre-requisites for large-scale implementation are understood and in place.
- **Validation level 2:** Validated in country (by farmers), but where specific logistical factors currently limit uptake.
- **Validation level 3:** Validated (by farmers) in region under similar environmental conditions.
- **Validation level 4:** Non-validated, i.e. developed/ tested under research conditions but not yet validated.

Title: The name of the technology, this must be clear so there is no misunderstanding. If the technology is a crop, the varietal name is also required.

Technology location- Agro-Ecological Zone (AEZ): There are 4 fields each with drop-down lists that allow up to 4 AEZ where the technology is being practised in Bangladesh (for a full list refer to **Table 3, Reference** section).

Current location of technology: The location/s where the technology is being practised in other countries or in Bangladeshi areas that are larger than 4 AEZs.

Category description: This field must be filled in, there are 3 categories, which are selected from the drop-down list (see **Introduction** for description).

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1. **Commodity**
2. **Practices/ Techniques**
3. **Equipment**

Commodity: These technologies are all commodities and should be placed into one of the following sub-categories. The sub-categories Flowers (14), Fish products (17), Meat products (18), Milk products (19) and Honey (20) are currently not in the keyword list. If the technology

If the technology is the category Practice/ Techniques or Equipment, then **N/A** has to be chosen from the drop-down list (for an explanation refer to 6.1.3).

0. **N/A** i.e. for Practice/ Techniques and Equipment technologies
1. **Cereals** i.e. Rice
2. **Oleaginous / Oil producing plants** i.e. Mustard crops
3. **Vegetables** i.e. Brinjal/ Aubergine
4. **Root and tuber plants** i.e. Carrot
5. **Leguminous plants** i.e. Chickpea
6. **Stimulant plants** i.e. Betal leaf
7. **Fruits** i.e. Banana
8. **Herbs/ Spices** i.e. Chilli
9. **Fibre plants** i.e. Jute
10. **Shrubs/ Trees** i.e. Coconut palm
11. **Sugar producing plants** i.e. Sugarcane
12. **Fodder crops** i.e. Napier grass
13. **Essential oil plants** i.e. Lavender
14. **Flowers** i.e. Roses
15. **Intercropping/ Mixed cropping** i.e. rice-upland crop production systems
16. **Rice-fish production systems**
17. **Fish products**
18. **Meat products**
19. **Milk products**
20. **Honey**

Practice/ Techniques: These technologies are practices or techniques and must be put into one of the following sub-categories. If the technology is in the category Commodity or Equipment, then **N/A** has to be chosen from the drop-down list (for an explanation refer to 6.1.3).

1. **N/A** i.e. for Commodity or Equipment technologies
2. **Land preparation** i.e. ploughing,
3. **Crop establishment** i.e. seeding mechanisms
4. **Nutrient management** i.e. fertiliser management
5. **Irrigation** i.e. drip irrigation
6. **Weeding** i.e. hand weeding
7. **Pest and disease** i.e. spraying pesticides
8. **Crop harvest** i.e. manual harvest
9. **Post-harvest** i.e. par-boiling rice

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Equipment: The technologies that are equipment must be placed in to a sub-category of equipment. If the technology is a Commodity or Practice/ Techniques category, then **N/A** must be chosen from the drop-down list (for an explanation refer to 6.1.3).

1. **N/A** i.e. for Commodity or Practices/ Techniques technologies
2. **Land preparation** i.e. ploughs
3. **Crop sowing** i.e. seed drill
4. **Crop maintenance** i.e. mechanical weeder
5. **Crop harvest** i.e. combine harvester
6. **Post-harvest** i.e. maize sheller
7. **Machines/ other** i.e. tractor

Keywords: Keywords are selected from a drop-down list, stored in a separate table within the database. Technologies require keywords to enable the search to be refined further. A list of all the keywords currently in the database can be found in the **Reference** section. The table can be updated if new technologies are added to the database to which the current keyword list is irrelevant.

Other Technologies: This field represents obvious and not so obvious links (synergies) between the technology being viewed and other technologies that are not necessarily in the database.

Search-terms: This field is used for the free-text search and must include the technology title. Before adding text to the Search-term field it is advised to check the current list of words (alphabetical list in **Reference** section). The words already in the Search-term list are derived from every field on the six tab pages that were thought to be relevant to the technology.

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6.3 CHARACTERISTICS/ PURPOSE

The second tab page requires Information on the Characteristics or the Purpose of the technology, the fields are described below (Screen 31).

Screen 31: ADD/EDIT ICM Technologies – Characteristics/ Purpose tab

ADD / EDIT RECORDS Integrated Crop Management Technologies

Paddy Dryer

Technology Title | Characteristics/ Purpose | Equipment | Advantages/ Constraints | Contact/ Source | Data Entry | Feedback

Crop Characteristics:

Duration:

Purpose:
Used to dry wet paddy

Process/ Requirements:

Mode of operation/ Power requirement:
Hot air blowing system, diesel engine driven-3HP.

On this form you can add or edit records

Record Operations

Find a record

First Previous Next Last NEW

Record: 400 of 400

Crop characteristics: List characteristics of the crop (height, seed colour, taste, etc.), which may be sought after by farmers.

Duration: List information about the crop duration, for example, if the variety has a short duration.

Purpose: Information on the basic purpose of the technology, this being relevant to Practices/ Techniques and Equipment technologies.

Process/ Requirements: Information on the technology process or requirements for the technology that must be considered if it is to be used successfully.

Mode of operation/ Power requirements: Relevant to equipment technologies where the mode of operation or the power requirements may require certain conditions to be met.

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6.4 EQUIPMENT TAB

The third tab page contains information on equipment technologies (Screen 32) and the information required and the fields are described below.

Screen 32: ADD/EDIT ICM Technologies – Equipment tab

ADD / EDIT RECORDS Integrated Crop Management Technologies

Paddy Dryer

Technology Title	Characteristics/ Purpose	Equipment	Advantages/ Constraints	Contact/ Source	Data Entry	Feedback
Working capacity:		1.50 ton/day				
Working depth:						
Working width:						
Dimension:		182 x 182 x 122 cm				
Weight:						
Cost of operation:						
Cost of equipment:		US\$ 550				

On this form you can add or edit records

Record Operations: First Previous Next Last NEW

Find a record

Record: 400 of 400

Working capacity: The capacity of the equipment to do work units in ha/ hour.

Working depth: The soil depth range in which the equipment will work.

Working width: The width of the equipment, which for example can determine the number of rows that will fit into a field.

Dimension: The equipment dimensions, height, length, width, etc.

Weight: The weight of the equipment.

Cost of operation: Cost of operating equipment.

Cost of Equipment: Cost of purchasing equipment.

SCREEN-BY-SCREEN GUIDE

6.5 ADVANTAGES/ CONSTRAINTS TAB

The fields on the fourth tab page (Screen 33) contains information that describe advantages and constraints of the technology that may be encountered if the technology is adopted.

Screen 33: ADD/EDIT ICM Technologies – Advantages/ Constraints tab

The screenshot shows a web-based form for editing records in the Integrated Crop Management Technologies database. The title bar reads "ADD / EDIT RECORDS Integrated Crop Management Technologies". The main heading is "Paddy Dryer". Below this is a navigation menu with tabs: "Technology Title", "Characteristics/ Purpose", "Equipment", "Advantages/ Constraints" (which is selected), "Contact/ Source", "Data Entry", and "Feedback". The form contains several text input fields with labels: "Pest/ Disease tolerance:", "Yield/ Cost advantages:", "General qualities:" (with the text "Different sizes are available." entered), "Advantages:", "Susceptibility to pests and diseases:", and "Constraints:". At the bottom, there is a green bar with "Record Operations" (First, Previous, Next, Last, NEW) and "Find a record" (with a magnifying glass icon). A status bar at the very bottom shows "Record: 400 of 400".

Pest/ disease tolerance: This field targets commodity technologies (predominantly crops) and describes information on the known tolerance or resistance to pests and diseases.

Yield/ Cost advantage: Information on the yield or cost advantages that a farmer can expect with the technologies- not just the short-term benefits.

General Qualities: General information, including technology benefits and synergies with other technologies, but not necessarily advantages over other existing technologies.

Advantages: Advantages of the technology over existing technologies, for example, able to withstand drought, frost, waterlogging, etc.

Susceptibility to pests and diseases: This field targets commodity technologies and the information intended highlights known susceptibility (as opposed to resistance) to both pests and diseases.

Constraints: Constraints of the technology either to its adoption by farmers or that will help target, limit the technology to specific areas (e.g. prone to drought, waterlogging, etc.).

SCREEN-BY-SCREEN GUIDE

6.6 CONTACT/ SOURCE TAB

Information on contacts and the technology source (e.g. literature reference) are contained within the fifth tab page (Screen 34).

Screen 34: ADD/EDIT ICM Technologies – Contact/ Source tab

ADD / EDIT RECORDS Integrated Crop Management Technologies

Paddy Dryer

Technology title	Characteristics/ Purpose	Equipment	Advantages/ Constraints	Contact/ Source	Data Entry	Feedback
Contacts - division/ person:	<input type="text"/>					
Organisation/ Manufacturer:	The Comilla Co-operative Karkhana Ltd., Ranir Bazaar, Comilla, Bangladesh.					
Country/ Region:	Bangladesh					
Information source:	Bangladesh Academy for Rural Development, Kotbari, Comilla, Bangladesh.					

On this form you can add or edit records

Record Operations: First Previous Next Last NEW

Find a record

Record: 14 of 400

Contacts – division/ person: The contact for the technology. This can be either an individual or a department or division within an organisation.

Organisation/ Manufacturer: The name and address of the organisation or manufacturer. This will facilitate feedback on the technology.

Country/ Region: The country or region that the contact is located.

Information source: The literature reference for the technology, including the date of publication.

SCREEN-BY-SCREEN GUIDE

6.7 DATA ENTRY TAB

The sixth tab page contains information on who entered the data, when and the date of modification (Screen 35). This enables users to monitor the copy of the database.

Screen 35: ADD/EDIT ICM Technologies – Data Entry tab

ADD / EDIT RECORDS Integrated Crop Management Technologies

Paddy Dryer

Technology Title	Characteristics/ Purpose	Equipment	Advantages/ Constraints	Contact/ Source	Data Entry	Feedback
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Data entered by:

Date of entry:

Date of modification:

On this form you can add or edit records

Record Operations:

Find a record

Record: of 400

Data entered by: Name of the person who entered the data.

Date of entry: The date that the data was entered.

Date of modification: The date on which the data was modified.

SCREEN-BY-SCREEN GUIDE

6.8 FEEDBACK TAB

The sixth tab page contains information from those who have used the technology as well as observations and comments from extension workers, scientists and farmers (Screen 36).

Screen 36: ADD/EDIT ICM Technologies – Feedback tab

ADD / EDIT RECORDS Integrated Crop Management Technologies

Paddy Dryer

Technology Title	Characteristics/Purpose	Equipment	Advantages/ Constraints	Contact/ Source	Data Entry	Feedback
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Farmer feedback:

Comments:

On this form you can add or edit records

Record Operations: First Previous Next Last NEW

Find a record

Record: 14 of 400

Farmer feedback: Feedback about the technology (both positive and negative) can be recorded here. This may be done in the field or afterwards. The actual field size may eventually limit the amount that can be written.

Comments: Observations and comments, both positive and negative, by extension workers, scientists, etc. can be noted here. These can be.

REFERENCE SECTION

7.0 REFERENCE SECTION

7.1 KEYWORD LIST

Information contained in this table enables a search to be targeted. The table contains the keyword number (column 1, table 1). For the Commodities category the table also contains the Latin name and any common names.

Table 1: Keyword list

No.	Keyword	Category	Latin Name	Common names
1	Amaranthus	Commodity		Datasak
2	Bamboo	Commodity		
3	Banana	Commodity	Musa spp	
4	Barley	Commodity	Hordeum vulgare	
5	Bell pepper	Commodity	Capsicum grossum L.	
6	Betal leaf	Commodity		
7	Betal nut	Commodity		
8	Bitter gourd	Commodity		Corola, Uchey
9	Blackgram	Commodity	Vigna mungo	Mash, Urdbean, Urid
10	Bottle gourd	Commodity		Lao
11	Brinjal	Commodity		Aubergine, Egg plant
12	Broccoli	Commodity		
13	Cabbage	Commodity		
14	Cardomon	Commodity		Alach
15	Carrot	Commodity		
16	Cassava	Commodity	Manihot esculenta	Manioc, Yuca, Tapioca, Mandioca, Guacamote
17	Cauliflower	Commodity		
18	Celery	Commodity		
19	Chickpea	Commodity	Cicer arietinum	Garbanzo, Gram, Bengalgram
20	Chilli	Commodity		
21	Chinese cabbage	Commodity		
22	Coconut palm	Commodity		
23	Coriander	Commodity		Dhonia
24	Cotton	Commodity	Gossypium spp.	
25	Country bean	Commodity		Bean
26	Cowpea	Commodity	Vigna unguiculata, V. sinensis, V. cylindrica, V. catjang, Vsesquipedalis	
27	Cucumber	Commodity		Shasha
28	Cumin	Commodity		Jira
29	Date palm	Commodity		
30	Dhaincha	Commodity		
31	Elephant foot	Commodity		Oi Kachu
32	Garlic	Commodity		

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33	Ginger	Commodity		
34	Groundnut	Commodity	Arachis hypogaea	Peanuts, Goober pea, Pistache de terre, Earthnuts
35	Indian spinach	Commodity		Puisak
36	Jackfruit	Commodity		
37	Jute	Commodity	Corchorus capsularis, C. olitorius	
38	Kenaf	Commodity	Hibiscus cannabinus and H. sabdariffa	Mesta
39	Kheshari	Commodity	Lathyrus sativus	Grass pea, Vetchling, Chickling vetch, sweet pea
40	Khira	Commodity		
41	Kholkhol	Commodity		Olkopi
42	Kushum	Commodity		
43	Lentil	Commodity	Lens culinaris	
44	Lettuce	Commodity		
45	Linseed	Commodity		Tishi
46	Lobanga	Commodity		
47	Maize	Commodity	Zea mays	
48	Mankachu	Commodity		
49	Mesta	Commodity		See Kenaf
50	Millet	Commodity	Pennisetum spp.	
51	Mungbean	Commodity	Vigna radiata	
52	Mustard	Commodity		
53	Napier	Commodity		
54	Niger	Commodity	Guizotia abyssinica	Gargan
55	Okra	Commodity		Lady's finger
56	Onion	Commodity	Allium cepa	Cebolla, Lunu, Bulb onion
57	Palm	Commodity		
58	Papaya	Commodity		
59	Pea	Commodity	Psium sativum	Garden pea
60	Pearl Millet	Commodity	Pennisetum typhoides	Bulrush millet, cattail millet
61	Pigeonpea	Commodity	Cajanus cajan	Arahar, Congo bean, Angola pea, Red gram, Yellow dhal
62	Pineapple	Commodity		bread wheat, durum wheat
63	Pointed gourd	Commodity		Potol
64	Potato	Commodity	Solanum spp.	Aloo, Papa, Pomme de terre, Batata
65	Pumpkin	Commodity		Sweet gourd
66	Radish	Commodity		
67	Rape	Commodity		
68	Red amaranthus	Commodity		Lalsak
69	Rib gourd	Commodity		Jhinga

REFERENCE SECTION

70	Rice	Commodity	Oryza sativa	Aus, Aman, Boro, Hybrid
71	Safflower	Commodity	Carthamus tinctorius	Kushum
72	Sesame	Commodity	Sesamum indicum	Till, Sim-sim, Bene, Benne, Sesamo, Ajonjoli
73	Sharifa	Commodity		
74	Shasha	Commodity		
75	Snake gourd	Commodity		Chichinga
76	Sorghum	Commodity	Sorghum bicolor, S. Guinea, S. Caudatum, S. Kafir, S. Durra	Jower
77	Soybean	Commodity	Glycine max	Soya, Soja
78	Spinach	Commodity		
79	Squash	Commodity		
80	Sugarcane	Commodity		
81	Sunflower	Commodity	Heliantuhus annus	
82	Sunnhemp	Commodity	Crotolaria juncea	
83	Sweet potato	Commodity	Ipomoea batatas	
84	Teasel gourd	Commodity		
85	Tomato	Commodity		
86	Turmeric	Commodity		
87	Turnip	Commodity	Shalgom	
88	Vegetables	Commodity		
89	Watermelon	Commodity		
90	Wheat	Commodity	Triticum aestivum, Triticum turgidum	
91	White gourd	Commodity		
92	Yam	Commodity	Dioscorea spp.	Shakaloo
93	Yard long bean	Commodity		
94	Intercropping/ Mixed cropping	Commodity		Mixed cropping
95	Rice cropped systems	Commodity		
96	Rice-fish culture	Commodity		
97	Rice-fish systems	Commodity		
98	Rice-Wheat systems	Commodity		
99	Triple/ double cropped Rice Systems	Commodity		
100	Chemical control of plant growth	Practice/ Technique		
101	Fertiliser practices	Practice/ Technique		
102	Green manure practices	Practice/ Technique		
103	Harvest techniques	Practice/ Technique		
104	Insect control	Practice/ Technique		
105	Irrigation practice	Practice/ Technique		
106	Land cultivation practices	Practice/ Technique		
107	Mulch practices	Practice/ Technique		
108	Nutrient management systems	Practice/ Technique		
109	Plant disease control	Practice/ Technique		
110	Plant nutrient diagnosis techniques	Practice/ Technique		

REFERENCE SECTION

111	Planting techniques/ Systems	Practice/ Technique		
112	Produce storage techniques	Practice/ Technique		
113	Seeding mechanisms	Practice/ Technique		
114	Weed control practices	Practice/ Technique		
115	Weeding techniques	Practice/ Technique		
116	Chemical application equipment	Equipment		
117	Digger	Equipment		
118	Drill	Equipment		
119	Drill- Plough	Equipment		
120	Dryer	Equipment		
121	Duster	Equipment		
122	Harvesters	Equipment		
123	Irrigation equipment	Equipment		
124	Land maintenance	Equipment		
125	Land preparation	Equipment		
126	Mowers	Equipment		
127	Planting equipment	Equipment		
128	Ploughs	Equipment		
129	Produce preparation	Equipment		
130	Sprayer equipment	Equipment		
131	Sprayer-Duster	Equipment		
132	Sprinkler equipment	Equipment		
133	Sugarcane Technology	Equipment		
134	Thresher	Equipment		
135	Thresher -Winnower	Equipment		
136	Tractor	Equipment		
137	Transportation	Equipment		
138	Water linked equipment	Equipment		
139	Weeding equipment	Equipment		

REFERENCE SECTION

7.2 SEARCH-TERMS

The words below can all be found in the Search-terms field in the database. Additionally the TITLE of each technology is added to the Search-terms field, for example, the **variety** names of crops.

KEY: If '- ' follows word/s, the 'word - ' itself can be searched for, e.g. animal -
If '/' follows word/s, the 'word / ' acts as a stem to any subsequent words, e.g. animal drawn potato digger.

Table 2: Search-terms

	No.	Words
A	1	adaptable
A	2	adjustable to different cob sizes.
A	3	agricultural
A	4	air blowing system/ air system
A	5	Alu
A	6	Aman
A	7	amaranth
A	8	animal -/ drawn potato digger
A	9	application/ dehusker
A	10	arecanut
A	11	attach to ridger or cultivator
A	12	Aus/ B. Aus
A	13	auto separator/ autoclave
A	14	Automatic - potato planter/ rice huller
B	15	back filling
B	16	bacterial blight
B	17	leaf role
B	18	bag holding device
B	19	BAN machine
B	20	Bangladesh
B	21	BARI
B	22	barley
B	23	basal
B	24	batch dryer
B	25	bean
B	26	bed planting systems
B	27	bell pepper
B	28	bench type
B	29	big tuber
B	30	bin dryer
B	31	BINA
B	32	bio-fertilisers
B	33	biological/ control
B	34	birds
B	35	BJRI
B	36	blackgram
B	37	blade harrow/ blade hoe

REFERENCE SECTION

B	38	blast
B	39	blower
B	40	boiled paddy
B	41	bollworm
B	42	border disc
B	43	bore holes
B	44	boron
B	45	bottle gourd
B	46	bran/ cleaner
B	47	breeding
B	48	brinjal
B	49	briquettes
B	50	broadcast seed/ broadcast seedlings
B	51	BRRl
B	52	bulk dryer
B	53	bullock
B	54	bund former
C	55	cane
C	56	capsicum
C	57	cardamom
C	58	cassava chipping machine
C	59	cauliflower
C	60	centrifugal pump
C	61	cereals/ cereal crops
C	62	char and flood areas
C	63	chemical control/ chemical sprays
C	64	chickpea
C	65	chilli
C	66	chipping
C	67	chisel plough
C	68	chlorophyll meter
C	69	clay
C	70	clean husked paddy
C	71	cleaning/ cleans produce
C	72	cocoa
C	73	coconut/ Cocos nucifera L.
C	74	coconut coir
C	75	combined harvester
C	76	commodity
C	77	cono weeder
C	78	continuous flow grain dryer
C	79	control
C	80	conveyor attachment
C	81	copra moisture meter
C	82	corn
C	83	cotton/ drill
C	84	cows
C	85	cowpea
C	86	crops/ crop protection/ crop rotations
C	87	cropped rows/ cropping systems

REFERENCE SECTION

C	88	cropping systems
C	89	cucumber
C	90	cultivator
C	91	cutting
C	92	cutting and transplanting sugarcane
C	93	cyst nematodes
D	94	daincha
D	95	dairies
D	96	deep placement
D	97	deep ploughing/ deep plowing
D	98	deep wells
D	99	defers ripening
D	100	destoner
D	101	diesel engine
D	102	digging
D	103	digs holes
D	104	direct - drilling/ seeding/ sowing
D	105	disc - harrow/ plough
D	106	disease
D	107	ditches/ ditching/ ditcher
D	108	domestic
D	109	dormancy
D	110	double cropping
D	111	double cross hybrid
D	112	draft power
D	113	drainage
D	114	drill plough
D	115	drilling rig
D	116	drip irrigation/ drip irrigation system
D	117	drum
D	118	dry land
D	119	dry - seedbed/ seeding
D	120	dryer
D	121	duck foot cultivator
D	122	duration
D	123	dwarf
E	124	early - crushing/ fruit/ maturing/ sowing/ variety
E	125	earthing/ earthing up
E	126	easy adoption
E	127	efficient
E	128	elevator-conveyor system
E	129	engine/ engine driven
E	130	erect
E	131	erosion
E	132	extraction
F	133	fast growing
F	134	fertiliser - application/ applicator
F	135	fertiliser/ fertilizer
F	136	fertiliser drill cum line marker
F	137	fespo plough

REFERENCE SECTION

F	138	field - boundaries/ crops
F	139	fine tiller
F	140	fish culture
F	141	flooding
F	142	flour mills
F	143	fodder
F	144	fogging machine
F	145	foot sprayer
F	146	fuel
F	147	furrow/ furrows/ furrower
G	148	gall
G	149	garden/s / fruit gardens
G	150	ginning percentage/ ginning percentage indicator
G	151	grain/ grain cleaner
G	152	gram/ green gram/ Bengal gram
G	153	grass cutter
G	154	groundnut -/ decorticator/ digger/ digger-shaker-windrower/ drill/ planter/ thresher
G	155	grubber
G	156	gunny bags
G	157	gur
H	158	hand compression sprayer
H	159	hand rotary duster
H	160	hand tube well
H	161	harambha thresher
H	162	hard pans
H	163	harrow/ harrowing
H	164	harvesting/ harvest - crops/ technology
H	165	herbicides
H	166	high - yield/ of straw
H	167	hill agriculture
H	168	hull/ hulled rice/ huller
H	169	husk removal/ husk winnower
H	170	hybrid/ progeny
H	171	hydraulic power sprayer
H	172	hydro-cooler
I	173	inorganic fertilisers
I	174	insecticide/s / dispersion/ granular insecticides
I	175	installing wells
I	176	integrated - nutrient management/ crop management/ weed management/ pest management
I	177	intercropping/ intercropped
I	178	inverted T drill
I	179	INM/ ICM/ IPM/ IWM
I	180	Irrigated/ irrigation
J	181	jet sprinkler
J	182	juice
J	183	Jute
K	184	kenaf
K	185	Kharif

REFERENCE SECTION

K	186	khesari
K	187	knapsack power sprayer cum duster/ knapsack sprayer
L	188	laboratory model gin
L	189	ladies fingers
L	190	land leveller/ preparation/ landscape
L	191	large scale shelling
L	192	large seeds
L	193	laser leveller
L	194	leaf - colour/ management
L	195	legumes
L	196	lentil
L	197	leveling/ levelling
L	198	linseed
L	199	lint
L	200	Lodging
L	201	long - grain/ panicles
L	202	lowland rice weeder
M	203	machine/ mechanical/ motor
M	204	maize - / sheller
M	205	Manual
M	206	manure/s / farmyard manure/ green manure
M	207	medium - height/ seeds/ tuber
M	208	mill/ milling unit
M	209	millet
M	210	mixed cropping
M	211	mixing
M	212	moisture content
M	213	moth balls
M	214	mould board plough
M	215	mower
M	216	Mulch/ straw mulch
M	217	multi-crop/ multi crop seed cum fertiliser drill/ multi crop thresher
M	218	multiple cropping systems
M	219	Mungbean
M	220	mushroom dryer
M	221	Mustard
N	222	naphthalene balls
N	223	natural enemy
N	224	nematodes
N	225	nursery
O	226	oat
O	227	offset disc harrow
O	228	oil expeller
O	229	oil seeds
O	230	okra
O	231	onion
O	232	orchard/s
O	233	organic - / matter
P	234	paddle thresher
P	235	paddy - / cleaner/ dryer/ reaper/ stem

REFERENCE SECTION

P	236	pathogenic
P	237	pea
P	238	peanut - / sheller
P	239	pearl millet
P	240	peg type weeder
P	241	pepper
P	242	pest/s
P	243	pesticides application
P	244	photosensitive/ photo insensitive
P	245	pigeonpea
P	246	plantation crops
P	247	planting -/ seeds
P	248	ploughing/ plowing
P	249	polisher
P	250	post hole digger/ post-milling
P	251	potato - / digger elevator/ grader/ harvest/ placement/ planter/ ridges
P	252	poultry
P	253	powder form
P	254	power - / ghai/ sprayer/ thresher/ tiller/ wheat thresher
P	255	precision farming
P	256	pressing method
P	257	prickly sesban
P	258	primary
P	259	prior to hulling
P	260	processed
P	261	propeller pump
P	262	propionic acid
P	263	puddler cum leveller
P	264	puddling
P	265	puisak
P	266	pulse/s
P	267	pulverisation
P	268	pumping
P	269	PVC trays
Q	270	quality seed
R	271	rabi
R	272	radish
R	273	rainfed/ rainy season
R	274	raised bed planting machine
R	275	raised seedbed
R	276	rapid
R	278	ratooner/ ratooning
R	279	raw paddy
R	280	reaper windrower/ reaper-binder
R	281	rear - / blade/ mounted reaper
R	282	recycling waste
R	283	red pepper
R	284	reduced tillage
R	285	reduces in grain breakage

REFERENCE SECTION

R	286	regrowth
R	287	relay/ crop/ planting
R	288	removes impurities
R	289	residual
R	290	residue/s /management
R	291	resistance
R	292	reversible plough
R	293	revolving drum
R	294	rice - / huller
R	295	ridge/s
R	296	ridger
R	297	road side
R	298	root knot
R	299	rope making machine/ rope twister
R	300	rotary -/ tiller/ weeder/ rotavator
R	301	rower pump
R	302	rows
S	303	safflower
S	304	saline
S	305	second cropping/ secondary
S	306	seed/ seedlings
S	307	seed - / bed preparation/ cane treatment unit/ fertiliser drill/ drill/ bed
S	308	seeding - / attachment
S	309	seedlings blower machine
S	310	self propelled
S	311	semi mounted plough
S	312	semi-automatic sugarcane planter
S	313	Semi-dwarf
S	314	separator
S	315	sesame
S	316	sewage
S	317	shaking
S	318	shallow water/ shallow well
S	319	shelf life
S	320	shellac manufacturing
S	321	shelling
S	322	short - / grain
S	323	simultaneous threshing and winnowing
S	324	single pass system
S	325	slow release
S	326	small - / field/ seeds
S	327	snakegourd
S	328	sodic
S	329	soil crust breaker
S	330	soil pan
S	331	solarization
S	332	sorghum
S	333	sowing/ sow late
S	334	soybean

REFERENCE SECTION

S	335	spatial
S	336	sprayer/ spraying
S	337	spring type
S	338	sprinkler
S	339	stem rot
S	340	stirrup pump
S	341	stony soil/ subsoil
S	342	straw
S	343	submersible pump
S	344	sugar
S	345	sugarcane - / crusher/ cutter palnter/ planter/ ratoon culture/ seed/ sett cutting machine
S	346	sugarcane and fertiliser placement
S	347	summer - / tomato
S	348	sunflower - / thresher
S	349	surface - /application/ seeding
S	350	sweet- /gourd/ potato
S	351	sorghum
T	352	tall
T	353	tannery effluent
T	354	tara pump
T	355	temporal
T	356	terracing
T	357	thresher cum winnower/ threshing
T	358	tillers
T	359	time efficient
T	360	timing
T	361	tolerance/ tolerant
T	362	tractor - / attachment
T	363	traffic lanes
T	364	trailer
T	365	transplant/ transplanting/ transplanter
T	366	transporting - / produce
T	367	treadle pump
T	368	treatments
T	369	tree duster
T	370	triple
T	371	twice culture
T	372	twin knapsack sprayer
T	373	two phase nursery method
U	374	unhulled paddy
U	375	unpolished
U	376	unspoiled produce
U	377	upland seeder
V	378	vegetables
V	379	vertical conveyor reaper
V	380	vertical turbine pump
W	381	waste water
W	382	water - / courses/ loss
W	383	weed control

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W	384	weeds/ weeding
W	385	wet land/ wetland cultivation
W	386	wet seeding/ wet-seeded
W	387	wheat - / stem/ thresher
W	388	wheat thresher
W	389	white polished rice
W	390	wide swath boom
W	391	windrowing
W	392	winnower
Y	393	yield
Z	394	zero tillage/ zero-till

REFERENCE SECTION

7.3 AGRO-ECOLOGICAL ZONES

The information in the table below provides the agro-ecological zone name and description for each of the thirty AEZs

Table 3: Argo-Ecological Zones

AEZ Number	AEZ Name	AEZ Description
0	N/A	N/A
1	Old Himalayan Piedmont Plain	Developed in an old Tista alluvial fan extending out from the foot of the Himalayas. A complex relief pattern; broad and narrow floodplain ridges; linear depressions predominantly permeable sandy loams and sandy clay loams; acidic soils.
2	Active Tista Floodplain	Includes the active floodplains of Tista, Dharla and Dudkumar rivers. Complex patterns of low, generally smooth ridges; inter-ridge depressions; river channels and cut-off channels; irregular grey stratified sands and silts; moderately acidic soils.
3	Tista Meander Floodplain	Occupies most of Tista floodplain and Atrai, Little Jamuna, Karatoya, Dharla and Dudkumar rivers. Areas have broad floodplain ridges; level basins. Ridges have permeable, olive brown, loamy soils; basins have grey, heavy silt loam or clay loam soils.
4	Karatoya-Bangali Floodplain	A floodplain comprising of Tista and Brahmaputra sediments; areas have broad floodplain ridges; level basins; ridges have grey silt loams and silty clay loam; basins have grey or dark grey clays; soils are moderately acidic.
5	Lower Atrai Basin	A low lying area between the Barind Tract and Ganges River Floodplain; region occupied by smooth, low-lying basins; soils predominantly dark grey, heavy, acidic clays.
6	Lower Purnabhaba Floodplain	Region is occupied by basins and bills separated by low floodplain ridges; dark grey, mottled red, strongly acid, heavy clays occupy both ridge and basin areas; acid basin clays dominate.
7	Active Brahmaputra - Jamuna Floodplain	A belt of unstable alluvial land along the Brahmaputra-Jamuna rivers; land is both formed and eroded by shifting river channels; irregular relief of broad and narrow ridges and depressions; soils are sandy and silty alluvium; slightly alkaline.
8	Young Brahmaputra and Jamuna Floodplain	An area of Brahmaputra sediments; complex relief of broad and narrow ridges; inter-ridge depressions; partially infilled cut-off channels and basins; ridges have permeable silt loam to clay; basins have loam to impermeable clays; slightly acid to neutral.
9	Old Brahmaputra Floodplain	A large area of Brahmaputra sediments before the river shifted to its present Jamuna channel about 200 years ago; comprises of broad ridges and basins; ridge soils predominantly silt loams to silty clay loams; basins have clay soils.
10	Active Ganges Floodplain	Area of unstable alluvial land within and adjoining Ganges river; has irregular relief of broad and narrow ridges and depressions; complex mixtures of calcareous sandy, silty and clayey alluvium.

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11	High Ganges River Floodplain	The Western part of the Ganges River Floodplain; predominantly high land and medium highland. Complex relief of broad and narrow ridges and inter-ridge depressions (silt loams and silty clay loams), separated by smooth broad ridges and basins (clays).
12	Low Ganges River Floodplain	Eastern half of the Ganges River Floodplain; predominantly low-lying; area has typical meander floodplain of broad ridges and basins; ridges have silt loams and silty clay loams; lower sites have silty clay loams to heavy clays; mostly calcareous soils
13	Ganges Tidal Floodplain	An area of tidal floodplain; greater part having smooth relief and large areas of salinity; generally on river banks, grey, slightly calcareous, heavy soils; the extensive basins have grey to dark grey, noncalcareous, heavy silty clays.
14	Gopalganj-Khulna Bils	An extensive low-lying area between the Ganges River floodplain and Ganges tidal floodplain; consists of level low-lying basins and low ridges along rivers and creeks; soils are grey and dark grey acidic heavy clays; peat found at 25-100cm depth.
15	Arials Bil	A low lying basin between the Ganges and Dhaleshwari Rivers; soils are dark grey, acidic heavy clays; the floodplains major soil type is a noncalcareous dark grey.
16	Middle Meghna River Floodplain	An abandoned channel of the Brahmaputra river on the border between greater Dhaka and Comilla districts; includes islands-former Brahmaputra chars, within the Meghna river and parts of the mainland; grey loamy soils on ridges; dark grey clays in basins
17	Lower Meghna River Floodplain	A transitional area between the Middle Meghna River and Young Meghna Estuarine floodplains; slightly irregular relief; No elevation difference between ridges and depressions; soils relatively uniform; higher areas have silt loams; low areas have ZCL.
18	Young Meghna Estuarine Floodplain	Area of Young alluvial land in and next to the Meghna estuary; almost level; very low ridges and broad depressions; major soils grey to olive; deep calcareous silt loam and silty clay loams are stratified or at a shallow depth.
19	Old Meghna Estuarine Floodplain	A large low lying area between the south Surma-Kushiyara and Young Meghna Estuarine floodplains; smooth almost level floodplain ridges and shallow basins; silt loam soils predominate on highlands; silty clay to clay in lowlands; non-calcareous soils.
20	Eastern Surma-Kushiyara Floodplain	Area formed on sediments of the rivers draining into the catchment area from the hills, and are the relatively higher parts of Surma-Kushiyara Floodplain; has smooth, broad, ridges and basins; ridges have grey, heavy silty clay loams; basins have clays.
21	Sylhet Basin	Area on the lower Western side of Surma-Kushiyara Floodplain; smooth broad basins; narrow ridges of higher land along rivers; soils are non-calcareous, grey silty clay loams and clay loam on higher parts that dry out seasonally; grey clays in wet basins.

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22	Northern and Eastern Piedmont Plains	A discontinuous narrow strip at the foot of the Northern and Eastern Hills; has merging alluvial fans sloping gently outwards into smooth low-lying basin; grey Piedmont soils and non-calcareous grey floodplain soils; mostly acidic loams through to clays.
23	Chittagong Coastal plains	The plain land in the greater Chittagong district and eastern part of Feni district; landscape has piedmont, river, tidal and estuarine floodplains; very saline during Oct. to May; soils are grey silt loams, silty clay loams, noncalcareous or acid sulphate
24	St Martin's Coral Island	Small and distinctive region on St Martin's Island has gentle undulating old beach ridges, inter-ridge depressions, surrounded by sandy beaches; soils developed on old and young coral beach sands; calcareous alluvium in the area.
25	Level Barind Tract	Area developed over Madhupur clay; level landscape; locally irregular near river channels; grey, silty, puddled topsoil with a plough pan; overlying grey, heavy, Madhupur clay or merges with porous silt loams or silty clay loam subsoils.
26	High Barind Tract	The south western part of the Barind Tract; Madhupur clay has been uplifted and cut into by deep valleys; topsoils have puddled silt loam to silty clay loam and at varying depth porous silt loam with mottle plastic clay; grey terrace and valley soils.
27	North-Eastern Barind Tract	A discontinuous area on the north-eastern margins of the Barind Tract; slightly higher than the adjoining floodplain; topsoils are silty or loamy; subsoils are clay loams to clay subsoil, grading to strong mottled clay; weathered underlying Madhupur clay.
28	Madhupur Tract	Area developed over the Madhupur Clay giving complex relief and soils; landscape has level upland, broadly dissected terraces associated with either shallow or broad deep valleys; 11 general soil types - deep and shallow red brown terrace, acid basin clay
29	Northern and Eastern Hills	Area has the countries hill regions; complex relief; steep slopes; few low hills have flat summits; major hill soils have yellow-brown to strong brown, permeable, friable, loamy, strongly acid; soils relate to underlying sedimentary rocks and erosion.
30	Akhoura Terrace	Small area of the eastern border of Brahmanbaria and Southwest corner of Habiganj districts; has level upland dissected by mainly deep broad valleys; upland has strong brown clay grading into red mottled clay; valleys have silty clay loams to clays.

REFERENCE SECTION

7.4 DATABASE TABLES

The information below lists the tables and the fields they contain. For information on how each table relates to each other see Figure 1 for the relationships.

7.4.1 Table 1: T Technology Sheets

Technology Title	Characteristic / Purpose	Equipment	Advantages/ Constraints	Contact Source	Data Entry
Tab page 1	Tab page 2	Tab page 3	Tab page 4	Tab page 5	Tab page 6
Fields					
Technology Number	Crop Characteristics	Working capacity	Pest/ disease tolerance	Contacts - Division/ person	Data entered by
Category id	Duration	Working Depth	Yield/ cost advantages	Organisation/ Manufacturer	Date of entry
Commodity id	Purpose	Working width	General qualities	Country	Date of Modification
Practice/ Technique id	Process/ Requirements	Cost of operation	Advantages	Information source	
Equipment id	Mode of operation/ Power requirement	Dimension	Susceptibility to pests and diseases		
keyword id		Weight	Constraints		
keyword		Cost of Equipment			
Title					
Validation level					
Current location of technology					
Technology location -AEZ 1					
Technology location -AEZ 2					
Technology location -AEZ 3					
Technology location -AEZ 4					
Other Technologies					
Search terms					

REFERENCE SECTION

7.4.2 Table 2: Keyword list

Fields
Keyword ID
Keyword
Category
Category id
Commodity id
Practice/ Technique id
Equipment id
Latin Name
Common names
Ranking

7.4.3 Table 3: Validation lookup ref

Fields
Validation level
Validation description

7.4.4 Table 4: t Category

Fields
Category id
Category description

7.4.5 Table 5: t Commodity

Fields
Category id
Commodity id
Commodity text

7.4.6 Table 6: t Practice/ Technique id

Fields
Category id
Practice/ Technique id
Practice/ Technique text

7.4.7 Table 7: t Equipment id

Fields
Category id
Equipment id
Equipment text

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7.4.8 Table 8: AEZ ref

(See Table 3 for table contents of AEZ ref table)

Fields
AEZ Number
AEZ Name
AEZ Description
Reference

7.5 MARGINS

To check the margins ensure that your computer has the following page settings for A4 sheets as default for the computers default printer.

Page size

Top	= 10mm
Bottom	= 10mm
Left	= 10mm
Right	= 10 mm

Columns Tab

Number of Columns	=1
Row Spacing	= 0 cm

Column size

Width	= 27.596cm
Height	= 18.097cm

Same as Detail check box . = 'Tick'

7.6 DEFINITIONS

Table: A collection of data about a specific topic eg products. Using a separate table for each topic means data is stored only once, which makes the database more efficient and reduces data-entry errors. Tables organise data into columns (called fields) and rows (called records). Data can be added, edited or viewed in the table.

Queries: Used to view, change and analyse data in different ways. Also used as the source of records for forms and reports. A query retrieves data from one or more tables and displays the results in a datasheet, table, form, report or query using the defined relationships between the different tables. For examples, a select query can group records, calculate sums, counts, averages and totals. There are five types of queries, Select query, Parameter query, Crosstab query, SQL query and Action query.

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Forms: These have many purposes, but most of the information on a form comes from an underlying record source. Other information on the form is stored in the forms design. A link can be established between the form and its record source by using 'controls', e.g. a text box.

Reports: Effectively present the data in a printed format, giving the user control over the size and appearance of everything on a report, displaying the information in any way required. Most of the information in a report comes from an underlying table, query or SQL statement, which is the source of the report's data. Other information in the report is stored in the report's design. A link can be created between a report and its record source using 'controls' e.g. text boxes.

Free-text: User types any word in to the field.

Keyword: Describes a technology can only be used from the drop-down list, should a user wish to add to the list, this must be done through the Keyword Table.

AEZ: Agro-Ecological Zone used to categorise broad areas of land into units and is based on:

- Physisography (land forms and soil parent materials)
- Soils
- Depth and duration of seasonal flooding
- Length of rainfed kharif and rabi growing periods
- Length of pre-kharif period and unreliable rainfall
- Length of the cool winter period
- Frequency of occurrence of extremely high (>40 °C) summer temperatures

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7.7 CREDITS

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