Management of Information in OFR Programmes

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Introduction

OFR programmes typically collect a great deal of data. Secondary information, surveys, trials, demonstrations, farmer assessments and adoption studies are all designed to collect relevant data. These data are collected at different times in different areas by different researchers of different disciplines. Yet all are part of an integrated research programme aimed at developing improved technology for target groups of farmers.

This implies the need to pay special attention the management of data and information in OFR programmes. A system is needed that will integrate the diverse data types and allow retrieval of past data and information in a way that allows logical and consistent progression of the programmes over years.

In eastern and southern Africa the need for good data records and retrieval systems is compounded by the high levels of OFR staff turnover as nationals leave for training and expatriate project staff get replaced or the project gets terminated.

An effective information management system is required to ensure that the great amounts of data collected effectively inform technical decisions about "*best bet*" research opportunities. Data from earlier work by other disciplines should be equally informative as current work by ones own discipline. That is the essence of the interdisciplinary and systems approach. But additionally, and relatedly, good information systems should assist with management decisions about how to deploy available resources within an OFR programme.

This paper presents some thoughts on the elements of information management systems and suggests what form such a system could take in the context of OFR programmes.

The Purposes of an Information Management System

At the general level an information management system should be seen as a mechanism for making use of available data. But it has to be tailored to provide for the needs of specific users. In this section we first consider some of the general characteristics of data management. Then we disuss the users and uses of OFR data, which leads us to suggestions about an appropriate information management system in the last section of the paper.

A. Data Versus Information

There is a distinction between data and information. Data are messages that are available but which have not yet been evaluated for their usefulness. Information relates to messages that help in making decisions or solving problems.

One of the major purposes of a data management system is to turn available data into useful information. Data may be turned into potential information by retaining it in an unprocessed and un-assessed form, so that it can be easily retrieved whenever there is a possibility that it might contribute to decision making. The other way of changing data into information is by processing it in such a way that it contributes to answering a particular question of interest.

Data of the first type might be yield data from 12 plots in a trial. These data have the potential to inform, about the effect of intended treatment. But they do so only after they have been analysed and assessed. An on-farm research programme can obtain a huge amount of data and at the same time provide very little information if the data remain unprocessed.

The solution would seem to be to ensure that all collected data is processed. But then the question arises how should it be processed, to answer what question? Sometimes data is collected for very specific purposes - such as yield data from trial plots and it is clear how these data should be processed to provide the required information about the tested treatments at that site in that year. However later on we may want to analyse these same trial data again. This may be in conjunction with data from similar trials over different years and information on rainfall availability, for example. These combined sets of data could then be used to answer questions about the proportion of years a particular recommendation is likely to be profitable.

Since all potential uses of data are unlikely to be immediately apparent there is value in storing data that might have potential use later. On the other hand it becomes cumbersome to store absolutely everything that is collected. It might be more convenient in many cases to retain the analysed information rather than the raw data, or to keep summary records of key information.

B. Potential Uses of Information

It is important to be clear about what information is to be used for. In an OFR programme information is needed first and foremost to help make decisions about what types of technologies to develop or adapt and recommend to target farmers. Another need for information coming out of an OFR programme is related to the lessons and experience gained from running the programme, which may be used to assist with future management. A further need is to know what has gone on before and why current activities are in place to help with decisions on how the programme should be developed.

We can therefore identify two main types of users of OFR information:
a) research scientists
b) research managers/coordinators

The needs of these two types of information users is rather different and the formats in which information is best stored and retrieved for each will be different.

Research scientists will require more detailed and focused information on specific issues, technologies and farmer circumstances. Managers require a much broader set of information on the scope of the overall research programme.

C. Information Formats

Some OFR programmes, such as ATIP in Botswana have relied on a system of research papers as the basis of an information system. ATIP produce and catalog the following types of papers:

Externally Published Papers articles and papers on ATIP that are published externally.

Research Reports published by the Government of Botswana and submitted to external review

Working Papers that have a particular methodological or empirical value and are worthy of circulation among OFR practitioners

Miscellaneous Papers conference papers, trip reports and the like

Progress Reports reporting results of research or methodological issues, which may be in draft form and are not reviewed

Reporting Documents required by the donor, including annual reports.

ATIP have an impressive pile of papers on all sorts of topics. However it is virtually impossible to discern from all of this printed output how the research that was done was decided on nor and how it relates to all the other research that is reported on.

If information systems are going to be useful in guiding the technical input of research as well as the allocation or resources within a programme, they have to be able to integrate the myriad various activities into some meaningful whole. Summary databases containing key pieces of information can play this integrative role.

It is suggested in this paper that a useful information management system for an OFR programme would consist of a mixture of records of unanalysed data, analysed reports and summary databases. These are elaborated below.

Elements of an Information Management System

In an OFR programme three main types of data can be differentiated:

a) data for developing research ideas and supporting research rationale
b) data related to testing research ideas and identifying technologies that seem to offer advantages
c) data to develop extension messages and facilitate the use of the technologies.

For each of these data types we suggest that information needs to be retained and stored at different levels, for potential use by different users.

A. Research Rationale

1. Survey data

While surveys of different types may be conducted, the data collected in all types of surveys should ideally be stored in a standard format. This will allow researchers to access survey data for analysis at any stage. Unfortunately with the rapid development of

computer hardware and software, it is seldom that surveys conducted six years ago are stored in a format which allows their easy accessibility today.

The least that is required is a systematic recording of the data collected (questionnaires), together with information on whether that data was put onto computer. If so the computer and programme used and its current location should be recorded.

2. Survey Reports (cataloging and retrieving)
Without the above, researchers will have to rely on survey reports. These however seldom provide a complete analysis of the data collected in surveys. Nevertheless a system whereby researchers can access these reports should be standard. All survey reports from an OFR programme should be catalogued and systematically stored.

3. Decision Matrices
Failing 1 and 2 above, a record of how survey results led to particular research thrusts should be developed. This should be done in a standard form as the research proceeds. CIMMYT manuals suggest standard formats for going from problems to causes to interventions to treatments. Even if this was not done in a standard form previously, it might be possible to develop a standard format into which past and all future research progress can be summarised.

Often this information may exist in narrative form in one or more reports. But this is difficult to access and is unlikely to be used for that reason. Even though standard formats may be restrictive, if they make the information more accessible and therefore more likely to be used in future research planning, the standardisation becomes justified.

B. Trials/Demonstrations

1. Trials data
Many OFR programmes in the region are using MSTAT, which has the advantage of running on Apple as well as IBM machines. It should be possible to keep good records of trial data on MSTAT files. What is required is that these files are systematically catalogued and stored in a central place. What happens at the moment in most programmes is that the individual researcher has the files on a disk somewhere. Sometimes he does not even know where, let alone anyone else.

2. Trial reports (cataloging)
Producing reports of trials is pretty standard and a requirement in many programmes. Again a cataloguing system is necessary if these reports are going to provide useful information beyond the immediate researchers and seasons.

3. Trial summaries
In addition to cataloging of trial reports, it might be useful to maintain a standard summary of trial information by type, location and results. This could be simply done on a database with the following fields:

researcher	*year*	*locations*
title	*objective*	*problem*
trial management	*design*	*exp vars*
non-exp var levels	*other info*	
summary of main findings	*conclusions & implications*	

With this limited information set managers can quickly develop reports on the number of trials addressing a particular problem over the years and relate this to the results being obtained.

Or the number of farmer managed versus researcher managed trials can be assessed and be related to the conclusions and implications being developed. This balance over the years can be evaluated.

Individual researcher trial loads can be monitored, etc. etc.

Once set up this type of database does not take much effort to maintain. It provides newcomers with a quick and flexible way to see what has been happening in the programme and help them decide where they may want to go.

C. Messages and Utilisation

1. Messages
I don't know of any OFR programme that documents the messages that have been developed from their programmes. Since this is supposed to be the main output from OFR it seems to be essential to document message development as a way of monitoring progress.

This message documentation should be related to the types of problem areas identified and trials employed to get to the messages. Again a simple database would provide this and allow an analysis of the types of research thrusts that are most successful in producing

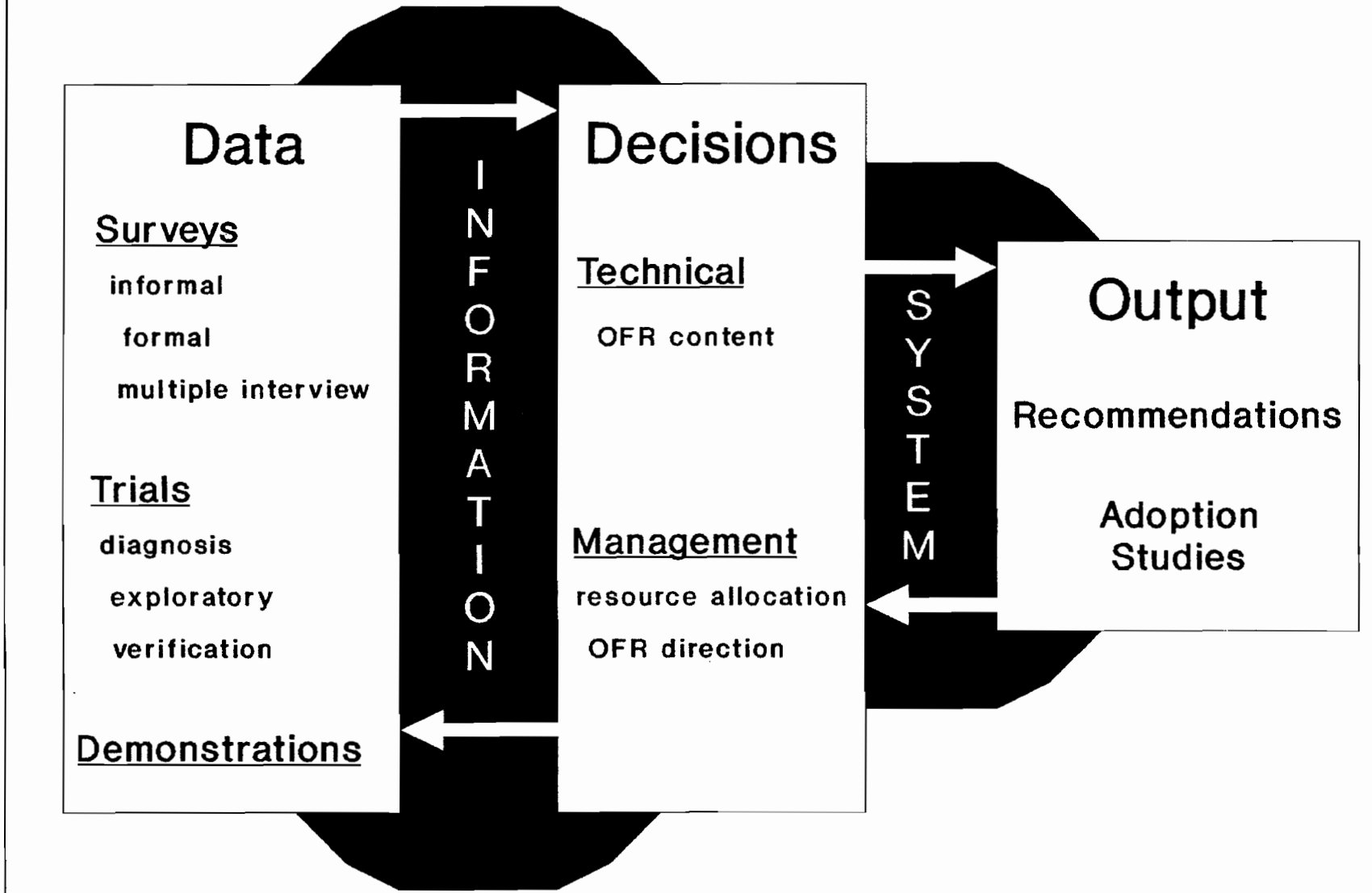
messages

2. Message source and use summary
An extension of the database suggested above would include data on the use of messages by cooperating farmers and other farmers by recommendation domain.

Conclusion

It is important to give some thought to an information management system early in the life of an OFR programme. However it is never too late to start. The summary databases can be built up from existing information in reports. Existing reports can be traced and cataloged. Data sets from surveys and trials can be located and systematically cataloged and stored.

Efforts in this direction may not pay immediate dividends, but are likely to contribute to more effective decision making at both the technical and management levels in the years to come. The rapid turnover of national and expatriate staff in OFR programmes means that institutional memory stored in the heads of researchers is quickly lost. This is a great disadvantage in any research endeavour. The development of an information management system can limit the damage somewhat. It is also more feasible than keeping OFR teams in place for 10-15 years.


Data
Surveys
informal
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multiple interview
Trials
diagnosis
exploratory
verification
Demonstrations
INFORMATION
Decisions
Technical
OFR content
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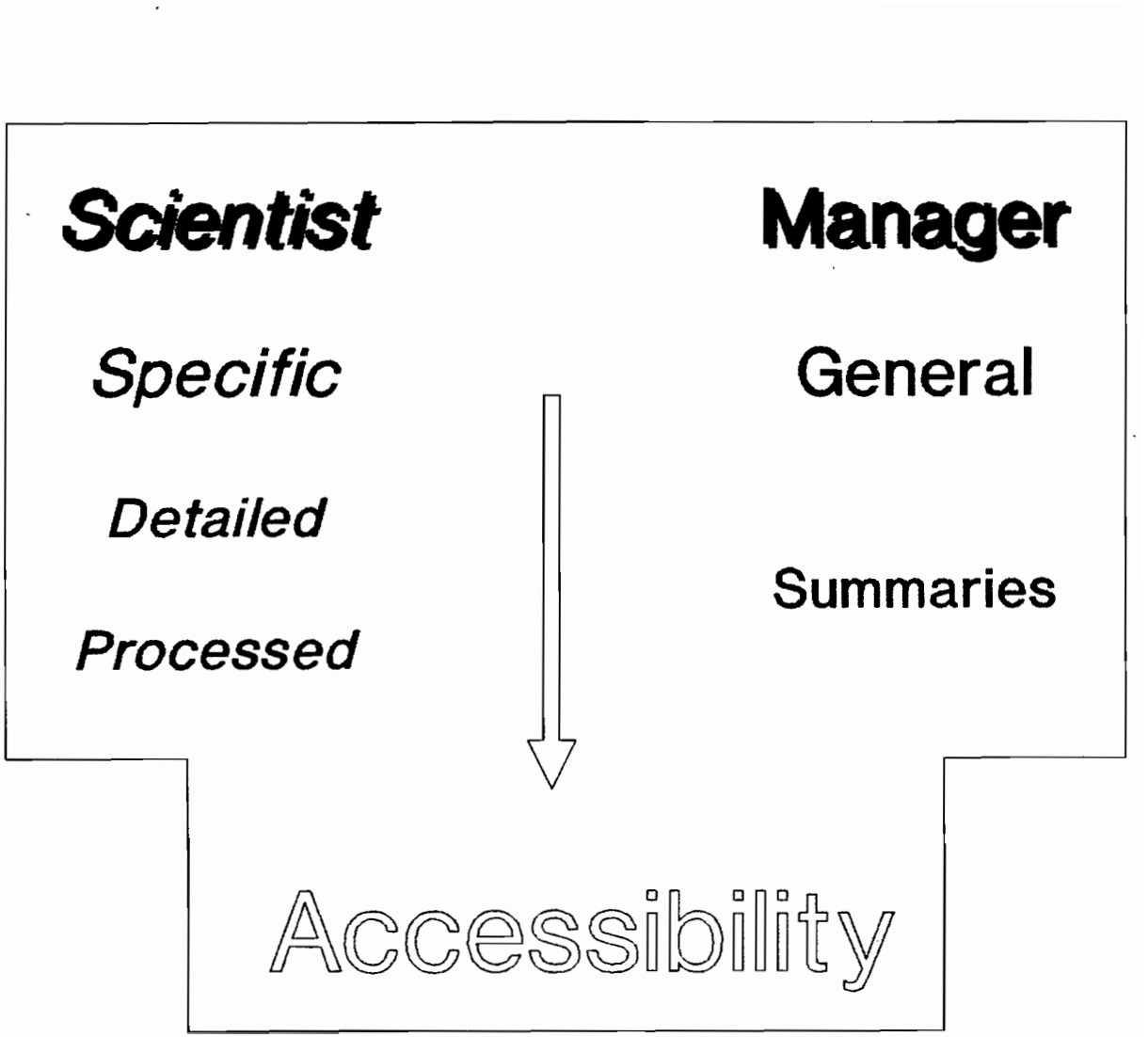
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Specific
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