THE MART/AZR PROJECT

HIGH ELEVATION RESEARCH IN PAKISTAN

Pakistan Agricultural Research Council

ARID ZONE RESEARCH INSTITUTE

Brewery Road, Quetta, Pakistan.

No. 1

THE SYSTEMS APPROACH IN PROJECT PLANNING AND IMPLEMENTATION

by

J.D.H. KEATINGE

1987

MART/AZR PROJECT RESEARCH REPORTS

This research report series is issued by the Management of Agricultural Research and Technology Project/Arid Zone Research Component (MART/AZR). This project is sponsored financially by the Mission to Pakistan of the United States Agency for International Development (USAID).

The project contract is implemented by the International Center for Agricultural Research in the Dry Areas (ICARDA) and Colorado State University (CSU) at the Pakistan Agricultural Research Council's Arid Zone Research Institute (AZRI).

This Institute has responsibility for undertaking dryland agricultural research in all provinces in Pakistan through its headquarters in Quetta, Baluchistan and its sub-stations at D.I. Khan (NWFP), Umerkot (Sind) and Bahawalpur (Punjab)

The principal objective of the MART/AZR Project is the institutional support and development of AZRI in the period 1985-1989. This series of research reports outlines the joint research findings of the MART/AZR Project and AZRI. It will encompass a broad range of subjects within the sphere of dryland agricultural research and is aimed at researchers, extension workers and agricultural policy-makers concerned with the development of the resource-poor, arid areas of West Asia and the Middle East.

Libraries, individuals and institutions may obtain single copies of this research report series free of charge and may request that their names be placed on a mailing list for periodic notifications of published papers by writing to the MART/AZR Project Office, P.O. Box 362, Quetta, Pakistan.

THE SYSTEMS APPROACH IN PROJECT PLANNING AND IMPLEMENTATION - ADVANTAGES, DISADVANTAGES AND LESSONS LEARNED BY ICARDA IN THE MART PROJECT AT THE ARID ZONE RESEARCH INSTITUTE

by

J.D.H. KEATINGE

Presented at the ICARDA/BARD/MART
Regional Farming Systems Workshop for West Asia
and North Africa at NARC, Islamabad on 7-10 April 1986

INTRODUCTION

The Arid Zone Research (AZR) component of the Management of Agricultural Research and Technology project (MART) was formally offered by USAID as a contract to ICARDA/Colorado State University (CSU) in mid-1985 and has since been implemented. The project has two principal objectives:

(a) to attempt to develop the institutional capability of AZRI through the provision of short- and long-term training opportunities and expatriate research advisers

(b) to develop and initiate an integrated agricultural research program for AZRI to help it fulfil its mandate to assist the areas of Pakistan in which dryland agricultural activities are an important source of livelihood to the community.

ORGANIZATIONAL STRUCTURE

A project designed to fulfil such wide ranging objectives inevitably faces severe initial organizational problems. For example, if the project were to be organized along traditional disciplinary lines it would be very difficult, with only inadequate information being available for Pakistan's arid areas, to prejudge (a) how many disciplines should be represented to be effective in problem solving and (b) which disciplines would be the most appropriate for selection for the expatriate advisers.

This type of problem was felt to be particularly relevant by the USAID and ICARDA project development team, in the context of arid zone agricultural research, as environmental variability and extremity of conditions makes appropriate disciplines even harder to predict. As a result it was decided, prior to November 1983, to recommend the adoption of a multi-disciplinary team approach to the consultants who had been nominated to prepare the draft technical proposal. Inclusion of this type of approach in the terms of reference of the design and implementation team implied a tacit recognition of the need to view the agricultural systems of the dry areas of Pakistan in an integrated rather than particulate manner so that the project could have a better chance to effectively address and overcome those major constraints to agricultural production which were likely to become evident later in the life of the project.

SYSTEMS APPROACH

In order to ensure that an integrated multi-disciplinary approach was incorporated in the draft technical proposal - ICARDA/CSU (the proposal consultants) selected four out of the six team members to be from a farming systems program. As a result, the technical proposal produced a wide ranging, but relatively integrated approach, based on a multi-site multi-environment plan restricted to N. Baluchistan. The disciplines selected at that time were by nature broadly based, to allow the project team maximum flexibility of emphasis in research topics which were, at the time in 1983, relatively undefined.

The six disciplines selected were farming systems agronomist, soil moisture specialist, germplasm evaluation specialist, range and livestock management specialist, agricultural economist and extension/

communication specialist. From these titles it is evident that the usual disciplinary oriented scientists would have some difficulty showing the same required range of flexibility. For example, a soil physicist might be expected to have expertise in the soil moisture field, but it is unlikely that he would have comparable experience in agro-meteorology, engineering hydrology, tillage expertise, etc. all of which could be required to make a functional soil moisture specialist working in the dry areas of Pakistan.

RESEARCH SCOPE AND COOPERATIVE WORK

With hindsight in the implementation phase, it seems most unfortunate that in the development of the project paper/PC1 out of the technical proposal (P.I.D.) that economic and political considerations caused a reduction in the permissable number of expatriate advisers so that the job description of the soil moisture specialist had to be incorporated with that of the agronomist. The point at hand is that, a flexible broadly-based scientist is probably of more use in such a situation than a disciplinary scientist, but the scope of the job description and allocated task can be too wide and difficult to (a) find a person with the right qualifications and experience and (b) actually expect any single person to cover the work required by such a wide scope with any chance of success.

Furthermore, it is perhaps a truism, but one seldom appreciated, that to expect scientists to work cooperatively one must allow them sufficient "breathing space" to work at that cooperation, it does not just happen. If, as in the case of the soil moisture specialist - agronomist the scope of work is too wide then cooperative work with team members may suffer.

PROFESSIONAL ISOLATION

At the time of the contract negotiation (April 1985) one of the minor points of contention was whether the funding agency would provide a chance for the expatriate advisers to travel once a year overseas to attend a professional conference. This request was eventually denied and it encapsulates one point which the adoption of a farming systems integrated approach may cause for a team member - problems of professional isolation. In a traditional disciplinary set-up there are usually fellow scientists with whom professional problems can be discussed and that help each other bring to light new disciplinary innovations. This function of interchange cannot work between a livestock scientist and a germplasm evaluation specialist to the same extent. However, there is obviously some compensatory cross fertilization of ideas.

RECRUITMENT AND PERSONALITIES

Following the signing of the contract (May 1986) the critical task of staff selection and recruitment was undertaken. This proved to be a much more difficult task than was envisaged due principally to the difficulty in combining suitability of experience, breadth and depth of professional qualification and proven ability to work as a cooperative team member. This latter factor cannot be overemphasized in its importance as the interplay of personal and professional relationships in a team situation has a greater tendency to cause disruption than a more structural disciplinary model where boundaries of responsibility are to a greater extent defined.

TEAM MANAGEMENT AND SIZE

Team size is also an important element in overall productivity and the degree of integration of the research goals. In the case of the AZRI project the number of expatriate advisers is close to ideal (5). If the team is smaller than three it lacks the critical mass to make a proper impact. If it is bigger than eight it is almost impossible to manage well enough, to prevent fragmentation into smaller working groups.

The issue of quality of team management is also an important criterion in the eventual efficiency of the systems approach. One of the primary responsibilities of the project manager is to ensure that work plans and execution of those plans is performed in an integrated manner. The manager has to have (a) time to help his scientists work together and (b) have a comprehensive overview of the project's goals and the research means by which they can be obtained. It is of course desirable that each team member be aware of his other colleagues' research and to be able to see where the project is going.

These duties of the project manager are, of course, additional to the usual gamut of bureaucratic activities and consume quite a large proportion of his time. It is therefore over-optimistic to expect the project manager to also act as a full-time team scientist covering a vital disciplinary area as is usually the case. If this is the situation either the science or the team management is sure to suffer.

TEAM DEVELOPMENT AND THE DIAGNOSTIC PHASE

At the beginning of the implementation phase of the project

the normal requirement of the systems approach is to go through a phase of problem diagnosis. This is usually brought about by a combination of formal and informal surveys of the farming community and by adopting agronomic, livestock and rangeland management trials aimed at highlighting the principal constraints to productivity.

However, if all the team positions are not filled reasonably close to the time of project implementation problems of imbalance of research emphasis can easily be created. For example, it has taken 12 months of the implementation phase of this project to find a suitable agricultural economist. Consequently the research program for the 1986/87 season will be less likely to be entirely appropriate than if an economist had been present from the start of the implementation phase.

THE SYSTEMS APPROACH AND TERMS OF REFERENCE

A further problem of the diagnostic phase in the systems approach, which may be common to all organizational systems, is that of restrictive terms of reference. For example, the project paper and thus the contract under which the ICARDA team is operating specifically excludes study of the irrigated agricultural system per se. However, it is evident that irrigated agriculture exists in arid areas and has some impact on associated agricultural sectors, such as livestock, etc. and perhaps more importantly may act as an alternative investment opportunity to a farmer. For example if no reference is made to irrigated agriculture it would be possible to design a technology suitable for, say, dryland cropping, which would be more productive given additional investment by the farmer. However, that technology may never be adopted by farmers if investing that

additional money into an alternative more attractive proposition existed such as sinking a tube well.

Clearly, the scope of project responsibility needs to be limited, but terms of reference should not preclude examination of the interactions with other systems and possible alternative sources of capital investment.

A further example of terms of reference problems is being considered by the project and AZRI at present. The original technical proposal on which the project is based was envisaged to be restricted in the first years of the project to N. Baluchistan. The idea being to allow a critical mass of research effort to be developed to have the greatest chance of real impact in the agricultural system. However, AZRI is a Federal institute and has substations in each of the other provinces in Pakistan. As the project's mandate is to strengthen AZRI, these substations cannot be ignored and should be an integral part of the research process. This idea is in theory correct, but as this incorporates radically different ecological zones and their associated cropping and livestock patterns it is quite likely that a team of five people or even the whole staff of AZRI are rendered scientifically impotent when faced with such a wide scope of reference. Clearly, priority areas have to be decided upon but in this decision the influence of politics and other related matters inevitably have to be considered.

THE SYSTEMS APPROACH, POLITICS AND PRAGMATISM

When the project technical proposal was drawn up in 1983 considerable emphasis was placed on finding sites close to Quetta with

(a) as much environmental variability between sites as possible (altitude, precipitation, temperature, etc.) and (b) to be located close to sites with long-term meteorological data to account for the expected gross variability in year to year conditions.

Of the principal meteorological recording sites in N. Baluchistan that have long-term records, Quetta, Kalat and Muslimbagh can be used as convenient project areas without difficulty. However, others such as Chaman and Pishin are at present, due to the political climate of Baluchistan, considered unsuitable for frequent visits by foreigners. This problem is unavoidable and therefore it is essential that project planning criteria have to be flexible to account for, or work around, difficulties such as members' security, etc. It is essential that a pragmatic attitude is adopted or it is unlikely that the project will survive.

A further area where a pragmatic attitude has to be adopted in the systems approach is in a realistic assessment of what can be achieved within the available resources. There is a considerable temptation, when using a systems approach, for scientists to try to study everything and this results in an unfocused collection of a mass of data which can then be rarely used satisfactorily for problem solving. In the systems approach it is necessary to permit an initial wide scope of study, but from that scope priority areas then need to be identified, and resources should then be channelled to a large extent to those areas. This identification of priorities is probably one of the hardest jobs that a project manager and his team must do. Their eventual measure of success will probably be in direct proportion to the correctness of their choice of priorities.

CONCLUSIONS

1. In a complex environment or group of environments, as represented in the arid areas of Pakistan, careful consideration of the best type of approach to project planning and implementation is necessary.

2) Where relatively little is known about an environment or its problems an inter-disciplinary approach is probably the most efficient manner in which constraints to production can be identified and addressed.

3) To make an inter-disciplinary approach work requires: integrated planning and execution, timely recruitment, an achievable scope of scientific responsibility, time to allow cooperative linkages between scientists to work, good project management and team oriented people.

4) Terms of reference should be as flexible as possible within a systems context but the definition of research priorities needs to be made as early but as carefully as possible.

5) Project planning cannot be rigid but where feasible need to accommodate external pressures - political, economic, etc. and as such should attempt to reach strictly obtainable goals only.