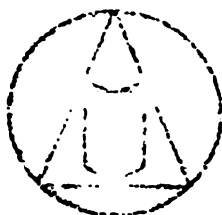


ROLE OF ICRAF IN AGROFORESTRY DEVELOPMENT

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ICRAF

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1. INTRODUCTION

In the recent history of development of agriculture and other landuse systems in the tropics, the 1970's will be well remembered as a period of re-evaluation of the values of age-old practices and recognition of the relevance of integrated, sustainable landuse systems to the socio-economic setting of the developing countries. It was during the early years of that decade that the year-round production potential offered by the favourable climatic conditions of the tropics was realized and multiple cropping was accepted (by policy planners and researchers) as a convenient agricultural system for the tropics. The irrelevance and infeasibility of the high-input-requiring technologies of modern agricultural innovations to the majority of farmers in the tropics also became increasingly evident, and therefore the search for resource conserving, socially acceptable farming systems was accelerated. In the meanwhile the seriousness of the maladies inflicted by man on the forest in his quest for food and tree products became more and more vivid, and at the same time the productive and protective value of trees on the farmlands and the landscape gradually earned due appreciation. Thus it became clear that systems of landuse, if they have to be acceptable and appropriate for the majority of farmers in the developing countries, should allow production of food and wood products at the same time from the same piece of land, be least dependant on high-value inputs, conserve the ecosystem and at the same time offer sustained production from the land, and be compatible with the socio-cultural aspirations and economic conditions of the farmers. Agroforestry, a new name for an old landuse system having some of the above attributes, thus came to the limelight towards late 1970's.

2. AGROFORESTRY

Agroforestry has been variously defined (see ICRAF Newsletter No. 1, p. 6;

August 1981). Whatever be the definition, it is generally accepted now that the term refers to landuse systems in which woody perennials are purposely combined with elements of agriculture - be they crops and/or animals - in sustainable production systems on the same piece of land either simultaneously or sequentially. The objective and rationale of most agroforestry systems are to optimize the beneficial effects of interactions of the woody components with the crop and/or animal component in order to obtain more preferred production pattern (in terms of total quality, diversity of end-products, and/or sustainability of production) from available resources, than is usually obtained with other forms of landuse under prevailing social, ecological and economic conditions.

Agroforestry systems abound around the world. Surveys conducted by ICRAF in 1978 indicate that some forms of agroforestry are prevalent in almost all the developing countries of the world. Elements of agroforestry principles can be found in many dominant landuse systems of the tropics such as shifting cultivation, taungya, homestead gardens, smallholder plantation crop production, and certain other commercial tree crop enterprises. However it is only recently that agroforestry has attracted the serious attention of researchers and development planners. But since then, the enthusiasm has become so overwhelming, surpassing the level of acclaim and attention bestowed on many other tropical landuse systems; the euphoria has gone to such an extent that agroforestry is being erroneously portrayed in some quarters as a totally new activity and even a panacea for all the evils of landuse practices in the tropics!

However, our knowledge on the attributes of agroforestry as a *landuse system* and quantitative information on the potentialities of agroforestry based on actual field observation and studies are far from satisfactory. It is

true that the national governments and international aid agencies have come forward with rather substantial amounts of money for agroforestry development projects in different parts of the world. But the difficulty caused by the lack of adequate quantitative information on agroforestry is compounded by the absence of appropriate methods to assess its suggested social, economic, biological and ecological advantages and potentials, and to compare it with other forms of landuse. Therefore, most of the development programmes on agroforestry are, necessarily, based on rather *ad-hoc*, intuitive, and trial-and-error approach. Thus it is evident that if the enthusiasm on agroforestry is to be harnessed, and if the suggested advantages are to be exploited to any discernible extent, it is necessary that the above-mentioned gaps in our knowledge are bridged. An international agency could be the most suited one to accomplish the task. This was the prime consideration for establishing the International Council for Research in Agroforestry in 1977.

3. ICRAF

ICRAF is an autonomous, non-profit making, international organization, governed by an internationally constituted Board of Trustees, supported by a group of donor agencies, and staffed by an international multi-disciplinary team of scientists representing various cognate disciplines. The Council, by its Charter, is charged with the responsibility of "promoting agroforestry systems to encourage and support research and training relevant to agroforestry; to facilitate the collection and dissemination of information relevant to such systems and to assist in the international co-ordination of agroforestry development", with the overall objective of "increasing the social, economic and nutritional well-being of people of developing countries".

By the establishment of ICRAF, agroforestry has been institutionalized on an

international scale, and the first step in imparting agroforestry its duly deserving identity independent of both forestry and agriculture has been accomplished. But in order to tackle the real problem and initiate activities deemed most appropriate to provide relevant answers, it is necessary to develop and focus on a strategy.

4. ICRAF FOCUS AND STRATEGY

Agroforestry being a large and diffuse subject and ICRAF being a small organization, it has been deemed necessary to focus initially on developing an understanding of the functions and potential role of agroforestry as a *landuse system*, rather than to engage in *ad-hoc* and piece-meal studies and activities on various components and problems related to agroforestry. The strategy envisages the building up of a multi-disciplinary team of scientists and the development, through this team, of methods on how to identify social, economic and ecological constraints in landuse systems and how to assess potentials of agroforestry technologies to overcome these constraints ("diagnostic methodology").

There are two major rationales for ICRAF's focus and strategy:

- 1) Agroforestry as a field of systematic and scientific study is new and complex, to say the least. Methodological approaches to carry out research aiming at improving existing, or designing new, agroforestry systems are lacking. Even if much of the methodologies available in agriculture, forestry, rural sociology and economy, soil science, etc., are relevant also for the study of agroforestry they must be integrated into a new package approach, taking into account the long-term, complex, highly interactive, multiple output characteristics of agroforestry landuse. For the very same reasons, scientific development of agroforestry technologies will be very time-, land-, and money-consuming. An *ad hoc*, trial-and-error approach

will be prohibitively slow and costly. Agroforestry systems that are brought to the stage of field trials or, even more, to large scale implementation must therefore have a very high probability of success. This can only be achieved if the design of the system is based on truly inter-disciplinary methods of analysing potentials and identifying constraints.

ICRAF's diagnostic methodology will provide such a tool to national research organizations engaged in the development of landuse systems.

ii) ICRAF is a *Council* with global mandate to promote, initiate and support research for development of agroforestry in developing countries. It is not, however, an *institute* with an infrastructure and resources to carry out technology-generating research on its own. ICRAF's work and achievements are often erroneously compared to those of the international agricultural institutes in the CG-system. It suffices to mention that each individual CG institute has a budget which is fifteen to twenty times that of ICRAF's budget and that most of the institutes have commodity-oriented mandates for limited ecoclimatical regions, to realize that ICRAF's scope or operation must be quite different.

The most efficient way for ICRAF to make a significant research contribution to agroforestry development has therefore been deemed to be by focusing on identifying methods which can be used by field research institutes in developing countries.

To fulfill ICRAF's mandate and strategy it will, in addition to the development of methodologies, also be necessary to have a strong and *efficient programme for dissemination* of our capacities, e.g. the diagnostic methodology. Furthermore, it is expected that ICRAF will act as a *centre for documentation and information on agroforestry*. To

lend credibility to the advice that ICRAF will provide on agroforestry designs and technologies, a systematic *build-up and critical evaluation of agroforestry know-how* must also be given high priority.

5. ICRAF'S PROGRAMME

The programme of work that has been developed for ICRAF is aimed at achieving the strategy and objectives outlined above. The programme thus provides a logical and flexible planning and budgeting framework, and is expected to give the required impetus to the scientists and organizations engaged in research and development of landuse practices in developing countries. The programme consists of seven separate but closely linked units. They are:

1. Management and Administration
2. Information Services
3. Training and Education
4. Agroforestry Systems (Research and Evaluation)
5. Agroforestry Technology (Research and Evaluation)
6. Field Station, Machakos
7. Collaborative and Special Projects

The relationships among the different programmes in relation to the Council's objectives are indicated in Fig. 1.

5.1. Information Services

This programme, together with the Training and Education programme provides the major channel for dissemination of ICRAF's knowledge and capacities. It aims at establishing ICRAF as a leading documentation and information centre on agroforestry in developing countries, and ensuring that the results of ICRAF's work are properly documented and efficiently disseminated through relevant publications and other means.

5.2. Training and Education

Here "training" refers to relatively short-term study of general or particular practical aspects of agroforestry undertaken in order to impart a higher level of technical or professional skill, whereas "education" refers to the broader longer-term studies at various levels undergone to achieve a technical or professional qualification.

The programme provides for short-term training courses, fellowships of varying duration, on-the-job training, etc., and aims at developing training materials, and initiating and co-ordinating on a cooperative basis with other institutions agroforestry education at degree level.

5.3. Systems Research and Evaluation

Being the key aspect of ICRAF's "systems approach", the programme is expected to develop a methodological capability to diagnose agroforestry-related landuse problems, design appropriate agroforestry systems and evaluate the systems for their efficacy. Under this programme, it is also envisaged to inventory and evaluate agroforestry systems around the world and identify potentials for their improvement.

5.4. Technology Research and Evaluation

Increasing the knowledge on agroforestry technology and components of systems is the main thrust of this programme. The main approaches are collection and evaluation of existing knowledge on agroforestry and data relevant to it, and development of methods to study agroforestry and its component technology.

5.5. Field Station

The Field Station is being established on a piece of land given free of cost to ICRAF by the Government of Kenya, in Machakos District, about 70 km from Nairobi, having an upland semi-arid climate. The objectives

are to serve as a field base for research on methodology development and for testing and evaluating components of technology and management, to establish demonstration plots on agroforestry and to support training programmes.

5.6. Collaborative and Special Projects

As the name indicates, this programme aims at initiating a network of collaborative projects on agroforestry research covering the major ecological and socio-economic regions in the developing countries. It is envisaged in this programme to test ICRAF's diagnostic methodology in a wide spectrum of ecological and socio-economic environments, and to collaborate with scientists and institutions to initiate as well as assist in research and development of appropriate agroforestry systems around the world.

6. WHAT CAN ICRAF OFFER?

With the adoption of the strategy and the programme of work outlined above, the relevant question is what does ICRAF have to offer to countries seeking help, and to donors wishing to help them? Unlike other international agricultural research centres, ICRAF does *not* have a tangible physical commodity such as a particular crop species which it is helping to develop. ICRAF's commodity is a *capability* to do the following:

- we will have an ability to diagnose a situation which may have ecological, political or regional boundaries, and in which agroforestry may be currently practised, or deemed to have role, and to advise whether the best general landuse is to be found in agriculture, in forestry or in agroforestry;
- we will have the ability to monitor and evaluate an agroforestry development programme specifically in relation to the effectiveness of the technology. This will benefit not only

the development programme *per se* but will assist ICRAF in refining its own research activities;

- we will have an ability to identify restraints and potentials and to design appropriate research to generate appropriate technology. Coincident with this will be our capacity to advise on research generally, and to identify existing technology which can be used directly. We shall also encourage and conduct such research;
- we will have, through our own research activities, developed field research methodologies appropriate to the problems identified by our diagnostic studies. We will advise other research agencies on these methodologies. If desired we would assist in monitoring such research;
- we will have the capacity to provide training and documentation appropriate to our area of expertise and advise on educational matters in relation to agroforestry;
- we will organize, either through our own initiative or on behalf of a donor, workshops and seminars and will, as deemed desirable, publish and distribute the proceedings.

ICRAF is prepared to carry out any of these functions for a donor or for a country. ICRAF is a research council and will not undertake development programmes *per se* but as stated it has a direct and vital contribution to make to the development process.

An international Board of Trustees has the responsibility of ensuring that ICRAF follows the dictates of its Charter and the strategy outlined above which the Board has unanimously approved. At present there are seven senior scientists and an Administrator on staff with four more senior

scientists to join before the end of fiscal year 1982.

7. SUMMARY

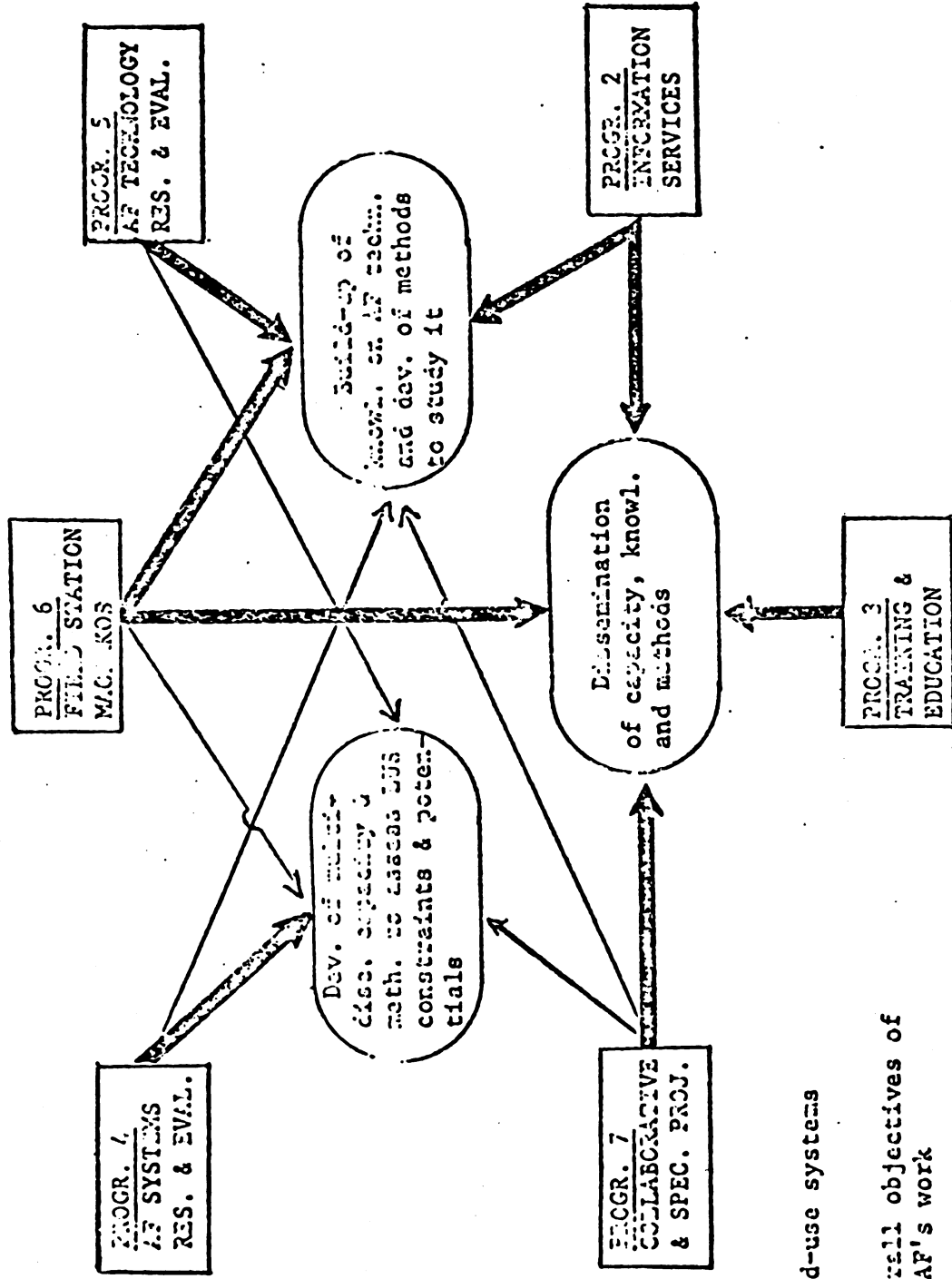
Agroforestry is a form of landuse, little-studied scientifically, which can help the individual farmer/landuser to have sustainable production of both food and tree products simultaneously from the same piece of land. Multiple output agroforestry systems can enhance total productivity, and they can be environmentally sustainable and desirable unlike many present-day tropical agricultural systems.

The International Council for Research in Agroforestry (ICRAF) is the international organization established by a group of donor countries to promote and assist national governments in developing necessary research in agroforestry. It is also concerned with agroforestry information, training, and education in this field.

Agroforestry being such a vast and complex subject and ICRAF being a Council, the strategy of ICRAF is to focus on developing a landuse diagnostic methodology and capability to assess whether or not agroforestry system can in any specific situation be better than any existing landuse system. There is, also, a need to develop methodologies for establishing the kind of research to be carried out at the national level on developing appropriate agroforestry technology. This strategy is reflected in the Council's work programme, which identifies six major programme units, each connected to one another: these are Information Services, Training and Education, Systems Research and Evaluation, Field Station, and Collaborative and Special Projects. With the implementation of this programme, it is anticipated that ICRAF will be able to play the catalyzing and coordinating role that is expected of it for promoting agroforestry research and development on a global scale.

ICRAP's Programmes in Relation to the Council's Overall Objectives

Figure 1:



LUS = Land-use systems

○ = Overall objectives of ICRAP's work

□ = Programmes

→ = Role of progr. in fulfilling ICRAP's collective (primary/secondary)