Strategy for the implementation of integrated farming systems

Objekttyp: **Chapter**

Zeitschrift: **Veröffentlichungen des Geobotanischen Institutes der Eidg. Tech. Hochschule, Stiftung Rübel, in Zürich**

Band (Jahr): **113 (1993)**

PDF erstellt am: **03.07.2024**

sources possible. Private contribution in form of investment or workdays on individual or group basis are encouraged. Investment from collectives is taken from the gross revenue of various sectors of agriculture. The government also allocated funds, totalling 267'000'000 yuan RMB for the past seven years. Another 9000 million yuan RMB have been raised from other sources through either state or local channels.

The funds from the state and collectives go mainly to planting and nursery activities. There are special plans to govern the use of the state funds which are put into key projects. Preference is given to those who have the best chance for success, and contracts are signed and payments by instalments requested. From time to time, assessment takes place when rewards and punishment are duly meted out. This approach functions well, guaranteeing proper use of funds and resources.

5. STRATEGY FOR THE IMPLEMENTATION OF INTEGRATED FARMING SYSTEMS

There is no universal answer to these problems. Each should be carefully examined in the context of the given conditions and existing environment.

A strategy for the implementation of integrated farming can generally be divided into the following steps: 1) preparatory work, 2) site selection, 3) diagnostic, 4) design, 5) experiment, 6) development and .0, 7) evaluation an redesign.

Preparatory work includes national reconnaissance, collection of data, and preliminary diagnostic survey of the existing land use system.

A quick reconnaissance type of survey, assisted by aerial photographs is often used to design an ecological farming system on the macro-scale. At the local or watershed level, further survey or investigations are needed to obtain basic information for formulating an action plan on the meso-scale. Valuable existing data, maps and reports should not be overlooked in order to save time, money or efforts. There is a general tendency in survey and planning to collect more data than necessary in one area and insufficient information in another. Therefore, before data collection, preparatory work should determine what is really needed, how it can be collected and where to get it.

Data required for ecological design varies for different management objectives, but can generally be categorized as follows:

1) Physiographical data including location, elevation, soils, geology, land forms, slopes, drainage patterns, etc.
2) Land use and cover types including forest, grass range land, cultivated lands, orchards, wildlife reservations, recreation areas, water areas, eroded areas, land capabilities, etc.
3) Climate and hydrology including precipitation, wind, evaporation, temperature, streamflow, sediment, etc.
4) Socio-economic data including demography, land tenure, farming systems, education infrastructures, human resources, farm enterprises, rural employment, production, income, marketing, transportation, credits, labour, etc.
5) Institutional and cultural data including policy and administration, legislation, extension services, farmer's organizations, community and private groups, traditions, religions, cultural practices, acceptance to innovations, group actions, etc.
6) traditional knowledge and existing models of integrated farming, their potential and limits are particularly important for the diagnostic and design of an ecological farming system.
7) Management oriented data including, environment impacts, land management, techniques, treatment needs, infrastructure requirements, research and training needs, unit cost, sectorial cost, cash flows, work schedule, financial arrangements, expected benefits and results, etc.

To the above surveys and analyses, multi-disciplinary teams of professionals and technicians are often needed.
The general techniques employed for such field-oriented surveys include simple statistics and sampling, interpretation of aerial photographs, mapping and design of questionnaires, most of which can be taught and learned by sub-professionals or technical assistants.
In some experimental stations, computers can be employed for storing most of the basic data for future use. For instance, periodic surveys on land use, farm incomes, and erosion/sediment data will provide clear pictures of changes. The effect of watershed management work over time can thus be evaluated.
The diagnostics and design of an ecological farming system should be developed and applied at different scales. There are at least three levels in the hierarchy of land use systems, namely,

- micro: the household management unit (e.g. the family farm, farmyard animals, or other elementary land management units)
- meso: local community or ecosystem (e.g. a neighbourhood, village or small watershed)
- macro: region, country, ecozone.

Another important factor is the definition and selection of the local land use system. In selecting or developing locations or research sites, the following should be taken into consideration: severity of problems, regional representativeness, priority by land use systems, priority by region, potential and limits of ecological farming as well as the acceptance of the people, etc.

In the diagnostic stage we shall look at how well the system works, its limits, problem generating syndromes and leverage points?

1) Physiographical problems (e.g., steep slopes, heavy rains, excessive run-off, problem soils, etc.)
2) Resources use problems (e.g., shifting cultivation, forest destruction, fire, overgrazing, uncontrolled mining, poor road construction, etc.)
3) End problems (e.g., erosion, sedimentation, flood, water pollution, water shortage, etc.)
4) Socio-economic and other problems (e.g., illiteracy, low acceptance or innovation, labour shortage, land tenure, poor infrastructure, etc.)

Detailed surveys or investigations should be centred on the major land use problems identified during preparatory missions or preliminary investigations.
Based on the results of the diagnosis of the land use system, a design for land use should be made in accordance with the objectives, guidelines, hypotheses, available resources and people's acceptance, etc. The following points should be considered in the design:

1) Characteristic features of the prototypes.
2) The best overall development strategy for the system.
3) Problems and potential to be addressed by the design.
4) Functions should be performed separately or in combination.
5) Locations within the landscape where these functions should be performed.
6) Species components or component combinations best suited for the desired functions.
7) Number of each required to achieve the objectives of the design.
8) Precise arrangement of the plant and animal components envisaged (simultaneously in space and/or sequentially in time).
9) Management steps necessary to achieve the performance objectives.

The contents of the design may vary, but some general principles are suggested.

1) As concise as possible. The design is prepared mainly for practical use and not purely for academic study. An abstract or summary (including recommendations) should be put at the beginning of the report, leaving technical details, methodology, drawings and maps at the end or attached as appendices.
2) As practical as possible. Land use problems should be analysed; objectives, goals, and work progress be clearly set; responsibilities of each agency or sector should be well defined; budgetary sources should be identified; expected results, benefits and financial viabilities estimated; and strategies described. The report should present alternatives and be flexible for necessary adjustment.
3) As illustrative as possible. Charts, simple diagrams and photos should be included. 'A picture is worth a thousand words'.

Before implementing the design on a big scale it is necessary to carry out on-station and on-farm research trials and to study the feedback from these trials.

The suitability of the design should be assessed, the economic, ecological and social effects should be evaluated. The successful on-station and on farm experiments shall become demonstration models.

Development and diffusion of the integrated farming system into meso- and macro-scales. For the implementation of the concept of integrated farming in an area larger than the farm scale units, following an initial phase at householder level diagnosis and design, a full scale landscape planning exercise was conducted. An overall ecological farming plan for integrated development within the watershed was developed along with a detailed design for the rehabilitation and productive use of degraded lands between farms and other interstitial areas. It is necessary to examine differences between land use systems in different landscape zones within an area, to determine whether opportunities exist for complementary production.

For the successful implementation of the integrated farming system concept on a macro-scale level, it is necessary that the having representatives of all levels participate. If there are many organization involved, one agency should be designated to initiate the work. The primary responsibility of this agency should be managing the system or it should have an invested interest in products of the area.

A management committee should be organized involving representatives of essential agencies and local communities, with the organizer as the convener. The committee thereafter monitors the design, survey, analysis and final reporting. If required, the committee will be involved in implementation and evaluation. At the end of the planning, the agencies should agree to an overall plan consisting of work schedules, staff needs, and budget. Sometimes a liaison office is needed in the field to represent the management committee.

This kind of jointly coordinated planning and decentralized implementation proves effective in many countries. The work is done more effectively and fruitfully than piecemeal or independent approaches.