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NEW HORIZONS IN AGRICULTURAL INFORMATION MANAGEMENT

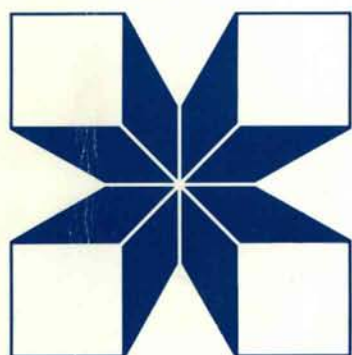
PROCEEDINGS

OF AN INTERNATIONAL SYMPOSIUM

MARCH 13-16, 1991

BEIJING, CHINA

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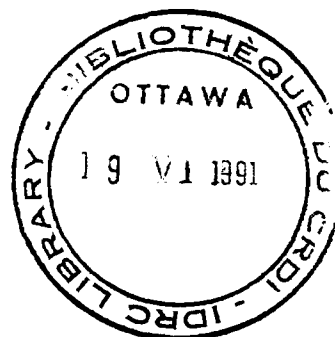
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Efficient Architecture and Development Strategy of Agricultural Information Systems in Developing Countries

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Abstract

Information on agricultural production, the economy, and science and technology should be considered major components of agricultural information work. Levels of production in developing countries are usually rather low. The lower the level, the greater the restraint that agriculture places on the national economy. The key task for developing countries is to enhance the agricultural information services for the realization of agricultural modernization. The author proposes ten points in respect to the development of a strategy for agricultural information work, i.e., rectification of the guiding principles; determination of the strategic objectives; reinforcement for a perfect agricultural information system; rational assignment of tasks and forces to information institutions at different levels; quick response to users whose demands are constantly studied by institutions concerned; stressing the modernization of information means; strengthening the establishment of a contingent of agricultural information specialists; enhancement of scientific research for agricultural information, reinforcement of international exchange and cooperation; and adoption of laws for developing the cause for agricultural information.

The levels of production are generally low in developing countries; the lower the level, the greater the restraint that agriculture places on the national economy.

Agricultural information is actually the activated knowledge of agriculture. Agricultural information work plays an important role in the modernization of agriculture in developing countries.

As to the efficient architecture of an agricultural information system in developing countries, the following factors should be taken into consideration:

First of all, agricultural knowledge must be provided in efficient ways. Agriculture deals with four aspects of knowledge, namely: agrobiological, agricultural environment, agricultural techniques and agricultural economics.

Next, features of agriculture in developing countries must be reflected appropriately. Most of the agricultural production is performed by hand. Agriculture in developing

countries is characterized by its monotony in structure, its low commodity rates for products and its deteriorated ecological environment.

Finally, users must be satisfied with information they receive. The major users of information are policy-makers from different levels of the government, staff from different agricultural institutions and those who themselves engage in agricultural production.

An agricultural information system with an efficient architecture must be built on the basis of the agricultural features of a particular country, aiming at the existing and potential demand of the information users and converting the information concerned into a productive force by effectively providing the users with particular information. The chief components of information work should be agricultural science and technology, production and economic information. Regional and professional establishments for information services can be organized with each having its own emphasis and closely cooperating with others to serve the common goal of realizing agricultural modernization.

Development strategy of agricultural information work chiefly deals with the problems of long-term projects. It is the outline of integral design that guides a sound development of agricultural information work. The following tentative proposition is made by the author, concerning a strategy for the development of agricultural information work in developing countries:

1. Rectification of the guiding principles. The value of information must be recognized and agricultural information work given sufficient stress. Agricultural information service is not a profitable enterprise. It should be regarded as one of the public services supported by the government.

2. Determination of the strategic objectives. The chief purpose of agriculture is to regulate the relationships between the human race and other living beings, and their environment, and to provide people with agricultural products, high in yield, quality and utility and low in cost. In China, efficient utilization of natural resources, effective maintenance of stable ecosystems, and strict control of the birth rate are considered the three major premises to promote agricultural production and reform rural living conditions. Probably, these premises could be a meaningful reference for other developing countries. A steady increase in agricultural production, raising people's consumption level of agricultural products and improving the environment must be kept in mind when strategic objectives are being determined.

Library management, informative investigation and exploitation are major aspects of information work. In accordance with the principles of "seeking truth from facts," overall planning and all-around considerations, and advancing step by step, the integral design could be worked out to present definite objectives. In the meantime, experiences from other countries must be studied and absorbed by specialized staffs, with the

foreign experiences combined with the reality of the local country in order to hasten the development of agricultural information service.

3. Reinforcement for a perfect agricultural information system. An agricultural information center should be set up by the state in order to centralize the leadership and coordinate the work nationwide. Under this national center, there should be regional and professional establishments, with the regions divided into provincial and county-level information institutions and the professional entities into plant and animal production information institutions. The regional and the professional institutions should be developed in a coexisting and coordinated way.

Additionally, agricultural information organizations run by the people should also be encouraged.

4. Rational assignment of tasks and forces to information institutions at different levels. The national center of agricultural information should serve the whole country, providing it with information about the existing levels and trends of agricultural production at home and abroad, study strategic subjects of agricultural development in the whole country, and organize exploiting programs of agricultural information that would influence the whole country. As to the institutions at the provincial or prefectural level, in addition to accepting the coordinate tasks assigned by the national center, they have to closely study their local situation and problems and offer appropriate information services. The regional institutions should make a special effort to carry out synthetic services, and the professional institutions professional services.

Sufficient personnel, resources and financial support must be provided to ensure the fulfillment of the tasks, and the government is duty-bound to offer this support.

5. Quick response to the users whose demands are constantly studied by the institutions concerned. Since information is demanded by users, information services would be valueless without users. The users' demands consist of two aspects, i.e., the demand for macroscopic policy-making and the demand for microscopic decision-making. Predictive information must be promptly provided based on a study of inherent relationships of causes and effects that change with time, place and situation. The reliability of the prediction comes from the precise systematic investigation of the users' demands. The chief yardstick to measure the efficiency of information work is the number of users and the degree of their satisfaction.

6. Stressing modernization of the information process. It is required for the information service to shorten the time which the user takes to get what he needs. For this reason, modernized facilities for collecting, storing, searching and transmitting information must be employed as much as possible. Since finances in developing countries is limited, although the extensive establishment of small specialized databases may be possible, it is difficult to attain searching with remote terminals. Over the years, the presence of CD-ROM manifests that information can be rapidly searched with a

computer without the need for electronic communication facilities. This is an economical and effective approach for the development of information work.

It is quite important for developing countries to pay much attention to the exploitation and application of CD-ROM.

7. Strengthening the establishment of a contingent of agricultural information specialists. Agricultural information bachelors, masters and doctorates should be trained in universities under a definite plan. Simultaneously, on-duty personnel should be trained to renew their knowledge and strengthen their ability.

8. Enhancement of scientific research for agricultural information. As agriculture is greatly influenced by natural elements, agricultural information work also has its own features, governing rules, lessons from practice which must be learned and summarized continually, and the practical materials must be sublimed to theories in order to guide the advancement of the work.

9. Reinforcement of international exchange and cooperation. Developing countries have their own areas of superiority. On the basis of independence, self-reliance, equality and mutual benefit, the international exchange and cooperation can be smoothly carried out, which contributes a lot to international information circulation and the sharing of information resources. Efforts must be exerted in two directions, in order to reinforce international exchange and cooperation. Problems of common interest should be studied in a cooperative way in order to jointly exploit the information resources.

10. Adoption of laws for developing the cause of agricultural information. In order to promote the advance of agricultural information work, support and projects from the government must be ascertained in form of laws.

The way out for agriculture is its modernization which calls for enhancement of the information work.