THE PROCESS OF MODIFYING ICA'S AGRICULTURAL RESEARCH INSTITUTIONAL MODEL: A CONCEPT

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Until the early 1960's, the responsibility for agricultural research was vested in a special department of the Ministry of Agriculture (DIA).

Colombia was one of the first Latin-American countries to realize the incompatibility of research and the development, regulatory and control activities of a Ministry of Agriculture, and hence the need to transfer the responsibility for agricultural research from a ministerial department to a new institutional structure with increased autonomy, more flexible administration and more substantial financing. The Instituto Colombiano Agropecuario (ICA) was established in 1963, to take over the research activities of DIA and its assets.

In the early years after the establishment of ICA, a considerable effort was invested in widening the agricultural research program, strengthening the infrastructure of the research centres and experiment stations, and increasing the number of researchers sent abroad for post-graduate training, mainly in the USA. ICA also took over the Extension Service from the Ministry. In an accord with the Universidad Nacional the "Programa para Estudiantes Graduados en Ciencias Agrarias" a post-graduate School was established, which was to award M.Sc. degrees.

All these activities in research, education and extension were strongly supported—financially by the government, financially and technically by various foundations. However, research on some of the major commodities was being increasingly taken over by the private sector, either independently, or in so-called cooperation with ICA. This tendency was strengthened by the "cuotas de fomento", a system of taxation which provided ample funds for research in the institutions set up by the private sector.
In the course of the reform, the Ministry of Agriculture was completely restructured; its functions were confined to the direction, planning and evaluation of the activities of the agricultural sectors. Responsibility for the implementation of these policies was transferred from the Ministry to five Institutes, of which ICA was one. The functions assigned to ICA, since its inception in 1962, have expanded—from the exclusive concern with the three basic functions of research, education and extension, to include responsibility for control, regulatory and fiscal activities as well as rural development. This has resulted in a multiplicity of functions in a single institute, in which research is no longer the priority activity. The diversity and incompatability of these functions has impaired the efficiency of ICA and has contributed largely to the problems encountered by the organization.

In brief, ICA had been transformed into a miniature department of agriculture, without however having the political influence of a Ministry. The very situation that the research had attempted to escape from, when DIA was replaced by ICA, had been recreated within ICA, with all the problems inherent in this situation.

On one hand, the research activities of ICA were being curtailed by the competition of the private sector, and on the other hand the ability of ICA to conduct a nation-wide program of agricultural research efficiently was constrained by the organizational and administrative framework in which it was confined.

Since 1977, the institutional structure and functioning of ICA in general, and of the constraints faced by "investigaciones agropecuarias" in particular, have been analyzed and re-analyzed by Colombian and foreign experts.

Practically all these deliberations have resulted in the conclusion that
it is necessary to: "Separar las funciones de investigación y transferencia de tecnología de las de regularización, fomento y control, actualmente en el ICA".

The "Comisión de Trabajo" (ICA, 1980) states this in unequivocal terms: "La naturaleza de los problemas exige la adopción de soluciones radicales... para eliminar el origen o causa de los mismos". "Con base en las anteriores conclusiones, se considera más benéfico para el país que las funciones actuales del ICA se separen para ser ejecutadas en organismos diferentes. Esta será la mejor forma de asegurar el desarrollo, fortalecimiento y eficiencia de tales funciones".

However, for reasons of legal expediency, it was decided not to establish an independent research institute but to reorganize ICA into two "Subgerencias" with a common administration: "Investigaciones Agropecuarias y Transferencia de Tecnología, y Fomento y Servicios", respectively.

One need not have been a prophet to anticipate that this reorganization, would perpetuate the problems plaguing the research component of ICA.

Two years after the implementation of the reorganization, the difficulties faced by the "subgerencia" of research of ICA are analyzed in detail by Dr. Alarcón (1986) and confirmed by and large in my meetings with research workers at different levels of responsibility, as well as people from outside ICA.

These difficulties can be summarized in a single sentence "La Dirección General estaría expuesta a dos estilos de administración, una en la que impera el liderazgo sobre la autoridad, como es el caso de la investigación, y otro en donde debe suceder las acciones de fiscalización y control". When these two requirements clash in a single organization, inevitably "la autoridad impera sobre el liderazgo".
And one must regretfully conclude that a situation that everybody considers undesirable is being perpetuated.

Therefore, elementary logic, as well as experience accumulated all over the world would indicate that the time is overdue to separate, quoting Alarcón (1986): "Dos mundos que están en el actual ICA bajo un mismo sistema de dirección y administración, a pesar de tener actividades distintas y requerimientos de desarrollo institucional diferentes".

In all the proposals that have been made up to the present regarding the restructuring of the agricultural research service, "investigaciones agropecuarias" have inevitably been linked with "transferencia de tecnología", as if this was a foregone solution.

"Teniendo en cuenta la complementariedad entre la investigación y la transferencia de tecnología, es recomendable que estas acciones permanezcan bajo una sola institución" (ICA, 1982).

Experience has shown that the inclusion of research and extension in a single framework does not, in itself, ensure good collaboration or even coordination between the two functions.

The duty of research is to solve problems and provide new technology which can be promoted by the development authority. The linkage with the latter is exclusively concerned with policy and the consequent programming of research. Such a linkage does not require a common organizational framework.

Extension, by contrast, is an operational arm of development; its proper place is therefore, within a body directly responsible for agricultural development, with which it can, and should, form institutional bonds.
The differences of opinion on the proper place of extension appear to be due to some confusion regarding the terms "transfer of technology", "diffusion of innovations", "extension", "divulgación tecnológica", "asistencia técnica agropecuaria", which are usually considered as interchangeable.

"Transferencia de tecnología" is defined by the Comisión de Investigación Agropecuaria (1982) as "Acción conjunta de la investigación, la comunicación y la asistencia técnica integral que se debe prestar al usuario (gremios, empresas, agricultores y comunidad en general), implementada con servicios de crédito, mercadeo, organización y capacitación de la comunidad e infraestructura física".

Nobody, to my knowledge, is suggesting that these functions and the "equipos técnicos" (transferidores de tecnología) should be separated from the "División de Desarrollo Campesino". Therefore the title of the present "Subgerencia de Investigación y Transferencia de Tecnología Agropecuaria" is misleading as it implies a duplication of extension services in both "Subgerencias".

This is however not the intention; the activities involved in "transferencia de tecnología" carried out by the "Subgerencia de Investigación" are: field days, demonstration plots, conferences, seminars, short courses, professional literature. These are all legitimate activities of a research organization, but do not justify adding "Transferencia de Tecnología" to the title of the research institute.

AT REGIONAL LEVEL

The decentralization of research is based on a proposal by Ardila (1986) to divide the country into six eco-agricultural regions, each with a major regional centre and an appropriate network of experiment stations.
Each regional centre would have a dual function:

- Research on the specific problems of the region.
- Responsibility for one or more of the national commodity research programs, in accordance with the major commodities produced in the region.

The research structure should consist of a combination of research units based on commodities and on disciplines respectively. Research is carried out by multidisciplinary teams in which researchers specializing in commodities and disciplines participate on an ad-hoc basis; the disciplines would be required to provide the specialized support required by the commodities.

The research workers in the regional centres would belong to national professional departments (commodity or discipline) and would be seconded on an ad-hoc basis to the regional centres as members of interdisciplinary teams. Professional leadership and support would be provided by their respective departments; administrative control and support would come from the Director of the Regional Centre. The latter would be responsible to the Director General of the Instituto Colombiano de Investigaciones Agropecuarias, ICIA", a name that might be adopted for the new entity.

**FUNDING**

Funds for ICIA's activities should come from several sources:

a) "Presupuesto Nacional": The resources assigned by Government should cover: (1) Salaries of a critical core of personnel (scientific, technical and administrative), essential for the implementation of a balanced program of research, based on priorities, in the major commodities, and implemented in the regional centres. (2) Development of infrastructure and its maintenance.
b) "Ley 50 (Fondo para asistencia técnica al pequeño agricultor)". This fund, established specifically for technical assistance to small farmers, should finance research projects aimed specifically at solving the small farmers problems (pre-extension research, farming systems, on-farm research, mixed crops, small animals, etc.)

c) The Commercial Farmers Associations should provide funds for the specific projects they request.

d) COLCIENCIAS. For funding of long term research, basic research, exploratory research, etc. (The Director of COLCIENCIAS, Dr. Eduardo Aldana, indicated that COLCIENCIAS would consider such requests favourably).

e) Own resources. The income from farm produce at the regional centres. First multiplication of seed of new varieties, for example, could be an important source of income.

f) Bi-lateral agreements. Research projects of significance to other countries in addition to Colombia could be funded by international bodies (IICA, the International Institutes, U.N.D.P., and many others).

g) An important proposal is the establishment of a "Fondo Nacional de Investigaciones Agropecuarias y Recursos Naturales Renovables" which could complement government financing of research activities and compensate for the annual fluctuations in the resources for agricultural research. (Fonseca, 1983).

The funds should be made available to program directors and project leaders in accordance with the approved budget, and subject to rules and procedures suitable for a research organization. For example,
transferring funds on a monthly basis (1/12 of the approved budget) may be suitable for a body with regulatory functions, but is a sure recipe for frustration and failure for a research project.

PLANNING OF RESEARCH

"PLANIA" has been developed by ICA's research workers as an effective and relatively simple method for assigning priorities between commodities, problems within commodities and between regions (IICA, 1978). It is not based on mathematical models, which give a false appearance of scientific and objective appraisal, but on intuitive appraisals (which are perfectly legitimate). It is however essential, that these appraisals should not be made only by the researchers concerned, but should be based on consensus in which researchers, farmers' representatives, extension workers and agricultural faculty members interact in appropriate "consejos asesores".

These "consejos asesores" already exist, but they have been largely ineffective, as evidenced by this quote from the Comisión de Trabajo (1980) that proposed the creation of two entities: "Los mecanismos de coordinación externa previstos a través de comités y consejos, buscando dar mayor participación a los usuarios para comprometer las acciones del ICA a sus necesidades, en general no han cumplido eficazmente dicho propósito, ya que en la práctica la mayoría de estos son inoperantes por falta de poder decisorio, no disponer de recursos y a la falta de liderazgo y de doctrina para desarrollar su acción."

Since 1980, the situation does not seem to have changed, and the direct result of the lack of "mecanismos de coordinación externa previstos a través de comités y consejos" has been "una situación de pérdida de imagen institucional" and the "amplia brecha entre lo que quiere y necesita el productor agropecuario y los temas de investigación en curso" (Ardila, 1986).
The "consejos asesores" in which the representatives of the "usuarios" (as well as the other relevant bodies) participate in the planning of the research programs for the respective commodities, is the major mechanism for mobilizing public support for the research institution. The activation of these committees should be the responsibility of the deputy director of research; the committees should be given "poder decisorio" on priorities within the approved budget, without which a research project cannot be initiated. As to "liderazgo para desarrollar su acción" this should be the responsibility of the heads of the respective research departments, who must realize that without public support, their ability to do relevant research will be weakened and their efforts -even if successful- will not be appreciated. To paraphrase a dictum from the bible "Good research should not only be done, it should also be seen to be done".

LINKS WITH THE UNIVERSITY

One of the very important achievements of ICA was the establishment in 1964 of a graduate school in agronomy, veterinary medicine and animal husbandry, under the direction of ICA and the academic aegis of the National University. In addition, specific contracts were signed ensuring the coordinated functioning of the university's agronomic colleges and ICA's experimental centres and stations. Following this agreement 31 ICA researchers were appointed as chaired professors of the National University's faculties, and research activities of faculty staff were encouraged.

The graduate program started to function in 1967; the program had academic autonomy and was subordinate administratively to ICA, whilst the degrees were conferred by the National University. The controlling authority consisted of the University President, the Director of ICA and members of both institutions. The students were assigned as
research assistants to ICA's departmental programs, and they chose subjects for their thesis research from current ICA research projects. The research itself was carried out at the National Centre, or at one of the regional experiment stations.

For an outsider, like this consultant, it is incomprehensible that a program that is not only in the national interest, but is of advantage to the Faculty of Agriculture, the research institution and the students involved, should have been allowed to lapse. Instead of progressing to a post-graduate school (which should have high priority) the system, which had improved the teaching program of the faculty through the participation of ICA researchers in professorial assignments, ensured a higher quality of undergraduate thesis work under the tuition of research specialists, provided the faculty staff with improved research facilities, and all this at a considerable saving in government expenditure—was inactivated, apparently for reasons of institutional prestige. A new accord is being negotiated between the University and ICA, but should agreement not be achieved, arbitration would probably be indicated.

LINKS WITH THE EXTENSION SERVICE

We have already discussed why research and extension should not be included in the same institutional framework. The need for close links between these two activities is axiomatic, but in reality (and Colombia is no exception) cooperation between research and extension has seldom been achieved.

Research results frequently gather dust in files in the offices of the research institutes, or take very long to reach the farmers. One of the major reasons for this situation is deficient links between research and extension. Marcano (1982) points out that "interaction is assumed
between the dissemination and research organizations, but often there is no such interaction; in some cases there is actual antagonism. This is true even when both services serve within a common framework, whether a Ministry or a national institute.

Researchers blame extension services for being more often a barrier than a link between research and the farmer; extensionists state that researchers present results that often have little relevance to conditions on the farm.

Cooperation between the two services can and should be achieved by activating a number of measures:

a) Joint planning of research and extension programs, in the "consejos asesores" (see above); these should also be the forum for joint decisions on technological innovations to be adopted, and the strategy of diffusion.

b) Cooperation in the field. There is one area in which the activities of the research worker and extensionist should converge: in the field. It is now commonly accepted that the task of the researcher is not concluded when he has found a solution to a given problem in the laboratory or the fields of the experiment station, leaving the adaptation of research results to the extensionist. The research worker must be responsible for testing his proposals under the conditions in which they can to be applied -by pre-extension research, research on farming systems, and on-farm verification trials. This is the ideal opportunity for involving the extensionist in the research work as a partner. The research worker then receives help in his experimentation at field-level, from people who know the local conditions and the farmers; the extensionist will feel that he is not only a messenger between
research and the farmer, but that he is personally contributing to the solution of problems he will have to diffuse.

c) Joint location for both services. An ideal solution is to have the regional extension service located on the campus of the regional research centres, where they should have their own building and facilities.

THE FRAGMENTATION OF RESEARCH

The government of Colombia has decreed several times in the past that the responsibility for all agricultural research would be vested in a national research institute; however the tendency is for associations of producers of the major commodities to establish their own research facilities, and several, such as coffee and sugar-cane, have already done so.

The fragmentation of agricultural research among many bodies reflects the lack of confidence of the various sectors involved in the ability and the desire of the national research institute to respond to their needs. Another reason is the absence, or ineffectiveness, of formal channels that would enable them to influence and orient the research programs of the national institution (a point that has already been discussed).

The advantages that accrue to certain narrow sectorial interests when agricultural research is fragmented among a number of semi-public and private bodies are offset by the damage that inevitably is caused to the overall national research effort, due to reduced public and political support, and competition for human and financial resources. Nor is it possible for government to define and implement a research policy that is consistent with overall national interests. It is therefore
in the national interest to maintain the integrity of the national research system. This objective should be possible to achieve if (a) all legitimate sectorial interests are taken into account by ensuring adequate representation of all sectors concerned in the process of defining research policy and priorities at the national and regional levels; (b) channeling all the funds available to these sectors to the national research institution.

Whether the trend towards the fragmentation of research is inevitable, as postulated by Piñeiro et al. (1982), is difficult to predict. It will depend largely on whether government policy is aimed at strengthening public research, and the ability of government to implement its decisions. It will also depend on the measure of trust that the private sectors feel they can place in the desire and ability of the national research institution to provide answers to the technological problems with which they are faced.

In conclusion, I would like to thank all the people whom I had the privilege of meeting and who were generous with their time and attention. Among these were:

ICA: Gerente General, Secretario General, Subgerente de Investigación y Transferencia, Director del Proyecto ICA-Banco Mundial, Jefes de las Divisiones de Investigación, Director de la Oficina de Planeación, Coordinador de la Unidad de Cooperación Técnica de la Oficina de Planeación, Jefe de la División de Desarrollo Campesino, Director Regional 1 de Investigación y Director del CNI Tibaitatá.

SAC: Secretario General.

COLCIENCIAS: Director General.

Universidad Nacional: Decano de la Facultad de Agronomía.
By their frank comments, they made it possible for the consultant to understand the situation and to complete his assignment in the short time at his disposal.

I also enjoyed participating in a seminar, in which I had the opportunity to discuss my views on the organization of agricultural research in developing countries with the rank and file of ICA.

My very special thanks are due to Dr. Enrique Alarcón, who besides organizing my mission in the most efficient way, made me feel at home, and rapidly solved my personal problems. With him, I was able to clarify all aspects of ICA's organization and functioning that constituted a problem to a short-term visitor.

If the people from all ranks of ICA whom I had the pleasure and privilege of meeting are a representative cross-section of ICA's staff, I can say that I have rarely met during my "career" as a consultant, such a group of capable and motivated people. It is very important to make it possible for them to devote themselves to the problems of Colombia's agriculture, without the frustrations and difficulties caused by an inappropriate organizational and administrative structure.

Decisions on the future of agricultural research in Colombia have to be made, and it is highly desirable that the "temporary" situation which has existed for two years, should be terminated as soon as possible, and a national research institution be established worthy of Colombia, and which the farmers of this country deserve.
REFERENCES


