THE ANIMAL PRODUCTION AND PASTURES PROGRAM
OF THE INTER-AMERICAN INSTITUTE OF
AGRICULTURAL SCIENCES

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THE purpose of this paper is to describe the activities of the Institute (IAIAS) in the field of animal production. In Spanish the Institute's name is Instituto Interamericano de Ciencias Agrícolas (IICA). As background, I shall also analyze certain aspects of stock farming in Latin America, of teaching in the basic and applied sciences related to animal production, of research on pastures, forage crops, stock breeding and management, of coordination at the international level and of the role of national institutions in the development of the livestock industry and the overall economy of these countries.

Stock Farming in Latin America

Stock production in the region as a whole is practically at a standstill, as shown by table 1. This situation has two equally serious and negative consequences. On the one hand, there is a decrease in the production of animal protein foodstuffs for the population. On the other hand, there is a progressive decrease in the surplus available for export, especially of meat, which is so important in the foreign trade of some countries. For example, cattle and sheep products represent more than 80% of the exports of Uruguay, the economy of which is based mainly on stock farming.

The standstill in animal production is not traceable to a single or simple cause and it is, therefore, not easy to change the situation. Quite the contrary, despite the fact that the potential resources of the region are not fully utilized, the development of stock farming is an extremely complex problem. The obstacles are usually of a socio-economic or technological nature. Since I cannot analyze this point at length, I will merely mention some of the aspects which illustrate the diversity of factors that affect the growth of animal production:

1. The present investment level is considered too low to make it possible to modernize and intensify traditional systems of production.

2. Some haciendas are too large, while others are too small, to be able to obtain maximum productivity.

3. The world meat market, while offering attractive long-range possibilities in view of constant population increases and growing potential demand for foodstuffs, does not at this time provide enough economic incentives to encourage stock farmers to increase their investments.

4. Domestic systems for marketing stock and other animal products, as well as the processing industries, are often inefficient.

5. Credit, prices, tax structures, inflation and unstable currencies are all factors that affect the level and type of investments made, often with a negative effect on any intensive, prosperous and productive stock farming effort.

6. There is no effective organization for the supplying of inputs to make it easier for producers to obtain seeds, fertilizers, drugs, machinery and equipment for the production and conservation of fodder and other elements that are necessary in stock and farm management.

7. Stock farms are not always organized and managed as real commercial enterprises. This makes it difficult to use technology effectively and to obtain better results under the particular economic conditions of each country.

8. In some zones, particularly the tropics, stock farmers do not have enough information and knowledge regarding the nature and control of diseases causing mortality or limiting stock production.

9. Although some progress has been made during the past decade, we still do not know enough about how best to manage and utilize

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2 Official Representative of the Inter-American Institute of Agricultural Sciences in the United States.

3 The Institute is the specialized agricultural agency of the Organization of American States, with headquarters in San José, Costa Rica.
TABLE 1. LATIN AMERICA—QUANTUM OF AGRICULTURAL PRODUCTION 1950-1963 *(INDEX 1958=100)*

<table>
<thead>
<tr>
<th>Item</th>
<th>1950</th>
<th>1959</th>
<th>1963</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A. Total</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agricultural production</td>
<td>74</td>
<td>103</td>
<td>111</td>
</tr>
<tr>
<td>Crop production</td>
<td>72</td>
<td>106</td>
<td>114</td>
</tr>
<tr>
<td>Livestock production</td>
<td>82</td>
<td>91</td>
<td>102</td>
</tr>
<tr>
<td><strong>B. Per inhabitant</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agricultural production</td>
<td>92</td>
<td>100</td>
<td>96</td>
</tr>
<tr>
<td>Crop production</td>
<td>90</td>
<td>103</td>
<td>99</td>
</tr>
<tr>
<td>Livestock production</td>
<td>102</td>
<td>88</td>
<td>89</td>
</tr>
</tbody>
</table>

*CEPAL (1964).*

native and cultivated pastures and other resources for feeding stock. It is well known that the nutritional requirements of animals vary according to their physiological conditions and that the production of forage fluctuates according to the botanical composition of pastures, the fertility of the soil and the characteristics of the climate, but it is necessary to determine, for each ecological zone, which overall forage program can economically meet the needs of animal maintenance and production on a year-round basis.

10. The management of stock for different types of operations: steer fattening, calf raising, milk production, fat lamb or wool production, requires knowledge—which is still inadequate in many parts of Latin America—regarding the interaction of animals and the environment, that will make it possible to choose and organize the most efficient type and system of production for each zone.

11. The breeding and selection of the animals best suited to the conditions of each production environment is another component of livestock technology that calls for the development of effective and relatively simple methods that can be adopted by stock farmers. Although it is true that the quickest progress in animal productivity can now be obtained through better feeding and management, the importance of improving ordinary animal selection practices should not be underestimated. The mere introduction of scales and of the practice of weighing animals or milk can be a very important step toward technifying stock-farming operations.

The individual solution of each of these points constitutes in itself many problems. But the matter becomes even more complex in view of the need to solve these problems as a whole, in the framework of an organic and coherent plan for each country. What is needed is to integrate the management of the soil-plant-animal complex into a livestock-production system that will be efficient, in other words, highly productive and economically feasible. The experience obtained from efforts made to date has shown that the isolated solutions of any one of the points mentioned above does not lead to substantial and sustained progress because of the close interrelationship among the various components of an advanced livestock production system such as should flourish in the Latin American countries.

**Action of the Institute**

The convention by which the Institute was established assigns to it the basic objective of furthering the development of the agricultural sciences in the American Republics. Therefore, when I speak of the livestock programs of the Institute I am referring mainly to the teaching of animal science and pastures management and to research in these same fields.

The Institute uses different means for improving teaching and research, although they are all directed toward the same end, that is, the development and strengthening of national institutions. These means of action are: research and training centers such as the one in Turrialba, Costa Rica, serving the tropics, and the one in La Estanzuela, Uruguay, serving the temperate zone; international courses and technical meetings; and, most recently, regional cooperative programs. I shall now discuss each of these means used by the Institute.

**Turrialba**

The first step the Institute took, in connection with the improvement of animal production in Latin America, was to organize a Department of Animal Industry in Turrialba, where the first Graduate School for the Agricultural Sciences in the region was established.

Two decades ago, when the Animal Industry Department began its activities under the leadership of Dr. Jorge de Alba, agricultural education and research throughout the countries of the area was polarized around the fields of crop production, plant genetics and breeding. Most of the young professionals interested in teaching or research were attracted to the plant field. Some of the schools
of agronomy and veterinary medicine included animal husbandry in their curricula, but this subject was not usually taught with enough depth or a sufficient variety of subject matter to prepare competent specialists in the field of animal production. Thus, Turrialba played a pioneer role and its action in this respect has been highly successful.

Although the activity of an international center cannot be evaluated so much by its direct results as by its indirect effects, and though it is not easy to separate the influence and contribution of a single agency from the overall progress of a scientific discipline throughout a region, the rapid evolution, in recent years, of training in the animal sciences and of livestock research programs is, in many cases, the outcome of the program at Turrialba and of the work done by the alumni of its Graduate School, who now hold leading positions in their countries.

Another very important contribution of Turrialba has been the development, through many years of research, of know-how and practices regarding cattle breeding, management and nutrition, with special application to the production of meat and milk in tropical countries. About 55 theses and 150 publications have originated in the research done at Turrialba.

International Courses

International courses on pastures, animal production and related subjects constitute the second important step taken by the Institute in this field. These courses were mainly, though not exclusively, held in the countries of the temperate zone. During the fifties, intensive courses were taught in Argentina, Chile, Paraguay, Brazil and Uruguay, for professionals of those countries, mostly staff members of official institutions of training, research and extension.

The most significant outcome of these courses was the introduction of new concepts, ideas and knowledge on the management of natural and cultivated pastures. For many years, botanical studies of forage plants and floristic analysis of natural ranges had predominated in Latin America; little was known about the physiology and ecology of those plants, about the relationship between soil fertility and forage production or about the relationship between soils, pastures and grazing animals. For this reason the Institute placed particular emphasis on training in management and ecology of pastures, although courses were also taught in soil fertility, statistical methods and experimental techniques, animal nutrition and animal breeding and selection. The high level of competence of the professors who took part in these courses played an important role in their success. With the help of FAO and other agencies, the Institute was able to bring together outstanding specialists from the United States, Great Britain, New Zealand, Australia and Canada, where research and knowledge in the subject matters covered by the Institute's courses were already highly advanced.

In later years, when the countries had more advanced research programs in pastures and animal production, the international courses, which were of some 8-weeks' duration, were supplemented with 1-week symposia on very specific subjects, particularly experimental techniques.

All these courses and symposia contributed toward the improvement of national teaching and research programs and also helped enrich the Spanish bibliography in this field with the addition of handbooks prepared with the material produced by the professors and lecturers.

La Estanzuela

At the beginning of this decade, the Institute took a new step in its animal production program. In 1961 it organized, in cooperation with the Government of Uruguay, a Research and Training Center for the Temperate Zone, in La Estanzuela, Uruguay. Two circumstances were particularly decisive in the establishment of this Center at La Estanzuela. In the first place, La Estanzuela, located in southwestern Uruguay, is in the midst of one of the most important stock-farming areas of Latin America and of the world. Most of the best grasslands of Argentina, Paraguay, Brazil and Uruguay are within this vast region. Another important reason was the fact that Uruguay was at that time interested in transforming La Estanzuela, a Plant Science Institute, into an Agricultural Research Center of broader scope and particularly with greater emphasis on animal production, in view of the influence of this industry on the economy of the country.

The Regional Animal Production Program established in La Estanzuela under the sponsorship of the Institute, with the participation of FAO and financial assistance of UNDP, had two basic ingredients: graduate training and research. The training plan included basic and applied subjects connected with pastures
management and forage production, animal nutrition and management, and genetics and breeding. The research program was made up of various projects on beef production, sheep production, milk production, pastures management, animal nutrition and fodder conservation and utilization of pastures.

Other programs were organized at the same time, such as the programs on soil fertility, agroclimatology and plant ecology, which were an essential complement to the training and research on pastures. An agricultural economics program was also undertaken, mainly for the purpose of studying the productivity and profitability of different production systems with different levels of technology.

The program in La Estanzuela replaced the international courses mentioned earlier, and enabled the Institute to provide training of greater depth and duration. With a minimum residence requirement of 18 months, and, above all, with the introduction of research as a fundamental part of training, which had not been possible with the shorter courses, more than 25 specialists were trained in 5 years. These specialists were equipped with a sound scientific background and with the capacity to identify and analyze the problems of animal production in their respective countries.

However, the most significant outcome of the La Estanzuela program, perhaps, has not been so much the training of a select group of professionals from the five countries of the Southern Zone as the influence it has had in furthering the improvement of training and research in animal husbandry among the institutions of the region.

Within a period of 7 years, Uruguay transformed a plant science institution with a staff of only six professionals into an outstanding Agricultural Center with over 50 well-trained, competent scientists possessing up-to-date knowledge in their fields. La Estanzuela now has programs of animal production and pastures, soils fertility and climatology and ecology, which enable it to identify and investigate the country’s technical problems in animal production; something that was not possible at the beginning of this decade.

With the Institute’s assistance, Argentina created its first Graduate School in the Agricultural Sciences in 1967, and is already offering the first graduate course in animal production, with three majors: nutrition, genetics and animal management, and production and utilization of pastures. Chile is taking the first steps toward the creation of its own Graduate School and Paraguay is organizing a Livestock Research Center.

During the next 10 years the institutions of training and research of this vast stock-farming region will, no doubt, make great progress. What role has the La Estanzuela program played in this evolution? It is difficult to measure, but I believe that the purposes that led the Institute to establish the Research and Training Center for the Temperate Zone, that is, the improvement of research and teaching in the applied sciences for animal production, have been fulfilled.

Regional Cooperative Programs

As national institutions and programs developed and grew stronger, the direct action of the Institute in training and research gave way to indirect action of an innovating, catalytic and stimulating nature, with a multiplying effect. At present the Institute is experiencing this transformation and is implementing, in the Institute’s three Zones of operation—Northern, Southern and Andean—cooperative programs in training, research, rural development and agrarian reform. This is being done, of course, without detriment to the permanent activities of the main center in Turrialba. These cooperative programs have the following features:

a. They group together the institutions of more than one country located in the same geographic area, with similar characteristics,

b. Each program works with the same kind of institutions, for example: schools of agronomy, research centers, agrarian reform institutes and so forth,

c. The programs are directed by regional committees, made up of national authorities and representatives of the Institute; deans in the training programs, research directors in the research programs and so forth. The Institute provides technical advice and liaison with other agencies, and is also responsible for providing the Executive Secretariat of the Program and for partially financing its activities,

d. All the programs are of a cooperative nature, that is, the participating institutions exchange technicians, materials and information, carry out joint training programs or research projects, and analyze institutional problems such as curricula, research programming, institutional administration and financing.
The creation of these regional cooperative programs is part of a new strategy of international cooperation that appears to be more in tune with the present needs and expectations of the countries, but it will be some time yet, and we will have to acquire more experience, before we can have really well-articulated and effective programs.

As an example of the kind of action the Institute can take in the field of animal production, by using this new modality of cooperative programs, I shall mention only two projects recently put underway in the Northern Zone.

During the past 4 years, the Central American countries and the Institute have been carrying out intense, systematic studies on the situation of research and agricultural extension in the countries of the region, and the prospects of achieving closer cooperation. This concern arises from the fact that most of these countries have limited technical resources and face agricultural problems that are similar from the technological standpoint. The Institute conducted several studies and drew up a basic plan for the regional integration of research in Central America at the program level. The countries established a Central American Permanent Committee on Agricultural Research and the preliminary stage of analysis, studies and exchange of ideas has already been completed and work has begun on the operative phase. Three projects that will be carried out in a coordinated manner by all the countries were recently set up. Two of them deal with the improvement of animal production: One is the Central American Project on the Improvement of Beef Cattle, which has the following objectives: to “define, measure and evaluate the environmental and genetic factors affecting meat production and to achieve stock improvement, through coordinated research and the application of adequate techniques, in order to make it possible to increase output at profitable levels” (IAIAS, 1969).

The other is a Central American Project on the Improvement of Pastures and Forage Crops. Its objective is: to “define, measure and evaluate the factors influencing the production of pastures and, through coordinated research, to achieve the solution of the problems affecting the efficient utilization of the pastures in the Central American area, in order to make beef-cattle production a more profitable activity” (IAIAS, 1969).

Plans for the Future

The Institute plans to strengthen its action in the field of animal production in accordance with the recommendations of a committee of three specialists appointed by the Director General. The Committee’s Report (IAIAS, 1969) recommends increasing the staff of animal production specialists, both in the Turrialba Center and in the three operative Zones of the Institute, and directing action mainly with a view to:

“Clarifying the functions of agricultural policies in the establishment of a favorable climate for livestock development.

—Furthering training in animal science at all levels.

—Improving livestock research.

—Reinforcing livestock development programs.”

Coordination of International Agencies

Considering the complexity of the problem, as I have pointed out above, and the multiple action that must be carried out in a synchronized manner in order to further the development of the livestock industry, this should be a worthwhile field in which to coordinate the programs of the various agencies interested in the improvement of animal production in Latin America.

I believe that, if the activities of the international agencies and of the national institutions were harmoniously combined into a series of national plans covering all the fundamental aspects of livestock development and put into effect for as long as necessary to produce a transformation in the stock-farming economy of each country, all the technical and financial resources now being applied to this sector in isolated and independent efforts and actions would be much more effective and have a better chance of success.

The Role of National Institutions

Whatever may be the orientation and the nature of the programs of the international agencies, I believe that they must always, by every possible means, work to further the development and strengthening of national institutions and to offer national technicians the best possible opportunity to become the architects and the leaders of national programs. It must always be kept in mind that the improvement of agriculture and rural develop-
ment as a whole is fundamentally the responsibility of each country's institutions. The great number of agricultural technicians, at various levels, and the tremendous variety of scientific and technological information that are needed to increase agricultural production and modernize rural living in Latin America must be originated, multiplied and disseminated through the institutions of teaching, research and rural development of the countries themselves.

The success of any program of foreign aid is conditioned to the existence in the country of an institutional substratum with the organization and capacity to maintain a sustained effort in all aspects of development programs. This is why the creation and strengthening of national institutions is so important to us and is the basis of the policies and programs of the Inter-American Institute of Agricultural Sciences.

Literature Cited


IAIAS. 1969. Inter-American Institute of Agricultural Sciences, Washington, D. C.
