



TOGETHER
for a sustainable future

OCCASION

This publication has been made available to the public on the occasion of the 50th anniversary of the United Nations Industrial Development Organisation.



TOGETHER
for a sustainable future

DISCLAIMER

This document has been produced without formal United Nations editing. The designations employed and the presentation of the material in this document do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations Industrial Development Organization (UNIDO) concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries, or its economic system or degree of development. Designations such as “developed”, “industrialized” and “developing” are intended for statistical convenience and do not necessarily express a judgment about the stage reached by a particular country or area in the development process. Mention of firm names or commercial products does not constitute an endorsement by UNIDO.

FAIR USE POLICY

Any part of this publication may be quoted and referenced for educational and research purposes without additional permission from UNIDO. However, those who make use of quoting and referencing this publication are requested to follow the Fair Use Policy of giving due credit to UNIDO.

CONTACT

Please contact publications@unido.org for further information concerning UNIDO publications.

For more information about UNIDO, please visit us at www.unido.org

The Colombian Institute for Technological Research at Bogotá

D03946

By Jaime Ayala Ramírez

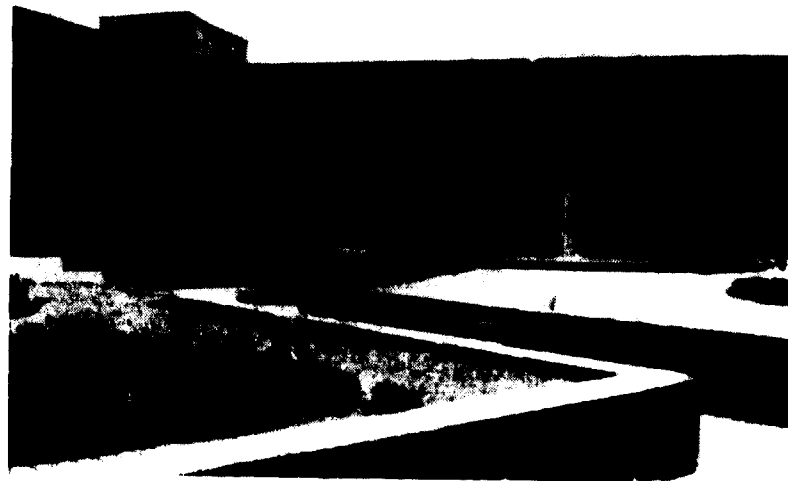
D03946

PROMOTION OF the industrial utilization of the agricultural products of Colombia has been the main aim of the Colombian Institute for Technological Research (IIT) since its inception in 1955. The Institute also seeks practical ways of improving the established industries of the country. Some examples from its interesting and varied programme which can include from 50 to 100 different projects each year are briefly outlined below.

Through experimental research, one project sought to develop a new formula for making spaghetti and macaroni. It developed a product that makes possible a 75 per cent substitution of domestic semolina wheat for imported wheat. The new formula of flour costs 30 per cent less than the traditionally imported raw material. It also has the advantage of being considerably higher in nutritional value, as the protein content is double that of the old product and has a value equivalent to milk casein. General consumption has been favourable, the taste acceptable, and the use of conventional production equipment is possible by making simple modifications.

This project followed a typical pattern. Possible domestic raw materials were classified and trial formulas concocted. The product was manufactured first on a laboratory scale, then on a pilot plant scale, and then in a small industrial plant. It was tested from the standpoint of usability, taste and acceptance. A feasibility study for a commercial plant using the new formula was prepared. The economic aspects of the project were analysed and finally, plans for promoting the commercial development of the product were drawn up.

Projects for which IIT has provided engineering and economic assistance and consultancy services include: the expansion of a plant for the production of caustic soda, sodium carbonate and bicarbonate; a new furnace for



General view of the Colombian Institute for Technological Research

producing foundry pig iron; a plant for processing grain; various plants for manufacturing ceramic products for use in construction; a plant for producing aromatic compounds; and a plant for the beneficiation of phosphate rock. These projects have involved market studies; technical-economic feasibility studies, proposals for adjudicating equipment contracts; inspection of newly delivered equipment and advising on start-up of new plants. Investments associated with projects completed by IIT in recent years are valued at the equivalent of more than US\$55 million, while projects still under execution involve investments over half this amount.

Technical service projects are concerned with two types of activity: studies on quality control in production and trade of agrochemical products; and preparation of sample lots of products in the IIT pilot plants. The first mentioned activity includes: inspection of plants for manufacture of pesticides and fertilizers, product inspection in lots, taking of samples, analysis of active components, inspection of packing and packing materials, and study of the effect of storage conditions. Such services have been furnished to manufacturers, government organizations and large buyers such as agricultural associations (coffee, rice, cotton and the like). The IIT pilot plants are used frequently for preparing sample lots of products, for analysing methods of operation and processing used by industrial plants, and for studying the market acceptability of products. A typical example is the work done to develop pineapple as an export crop. This pilot plant work provided a basis for a feasibility study for pineapple-processing plant; samples prepared in the pilot plant were sent to various foreign countries and were favourably received.

Beginnings

These varied activities of IIT began on a small scale in 1955, when the organization was a part of the Agricultural Bank. The Bank signed a three-year contract with the Armour Research Foundation of Chicago, Illinois (now the Illinois Foundation of Technology Research Institute) in order to receive help in initiating its own activities and in establishing a firm basis for an organization fostering applied research.

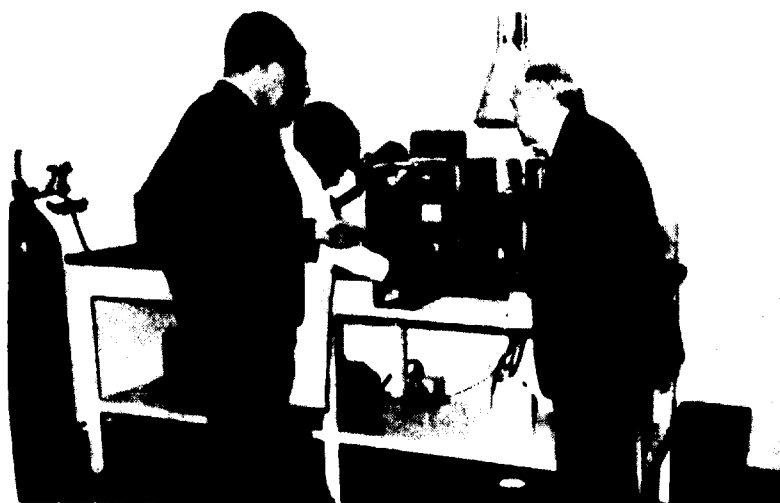
In 1958, the Institute was established as an autonomous, non-profit corporation with three new sponsors: the Bank of the Republic, the National Federation of Coffee Growers and the Colombian Petroleum Company, as well as the Agricultural Bank. Later the Industrial Development Institute became a sponsor.

Since becoming autonomous, the Institute has developed rapidly. At present it has a staff of 144, including 56 professionals in the fields of science, engineering and economics. The professional staff have received post-graduate degrees from outside the country and have brought back with them to Colombia valuable experience in their specialized fields.

Budget

In 1969, the budget was approximately equivalent to US\$610,000, of which 40 per cent was from sponsored funds and the remaining 60 per cent was derived from contract work carried out for the Government and private organizations.

IIT is in constant touch with international organizations and foreign Governments, through which it has obtained valuable contributions to aid its development. Foreign experts come to the Institute to work on specialized projects, and Colombians receive fellowships for study abroad. Essential equipment is frequently donated to IIT. Development programmes have been supported by donations from Denmark, the United Kingdom and the United States.



Inspection of the Atomic Absorption Spectrophotometer recently acquired by the IIT



Pilot plant at the IIT

Inspection of pineapple processing at the IIT



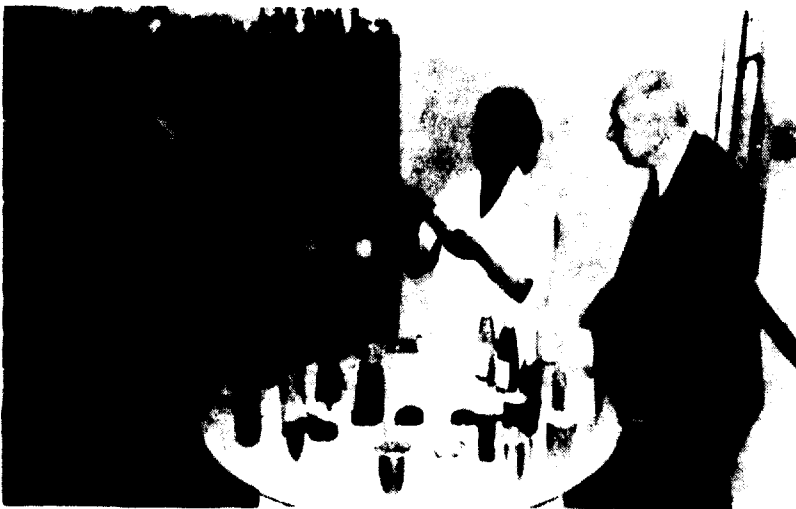
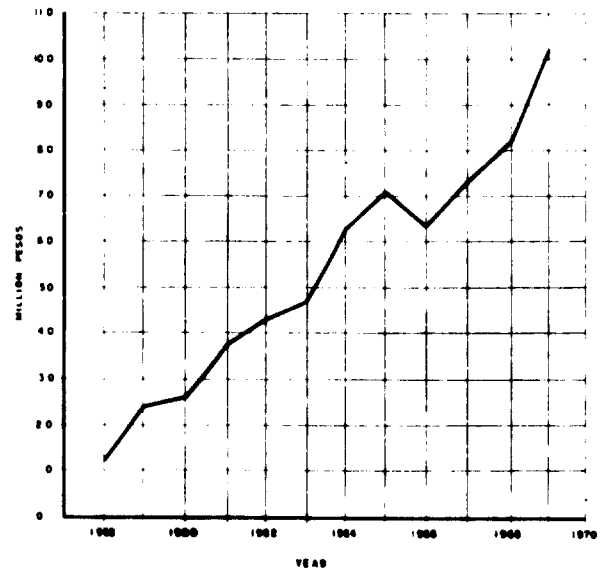


Laboratory at the IIT

A technical assistance programme sponsored by the United Nations also brought an important contribution to the work of the Institute. The first phase of this United Nations Development Programme (UNDP) Special Fund project was initiated in 1962 and completed in 1967.* During this period, the project provided for a total of 236 man-months in respect of a project manager and other internationally-recruited experts specializing in such fields as metallurgy, metal-working, food processing, leather technology and plastics. In addition, fellowships amounting to 119 man-months were awarded and laboratory and testing equipment supplied to IIT at a total cost of \$150,000.

Growth of budget of IIT, 1958-1969

INCOME



Preparation of samples of new food products for organoleptic tests

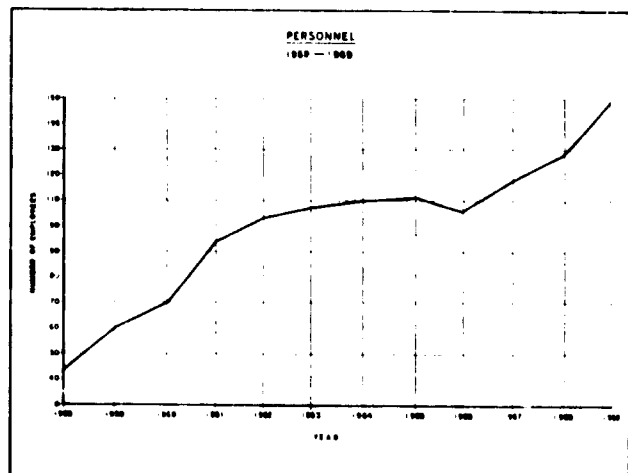
Laboratory at the IIT



The second phase of the project was commenced in 1968 and is scheduled for completion in 1971. This phase involves a UNDP Special Fund contribution of \$695,800 and the appointment of UNIDO as the executing agency. The allocation of the Special Fund contribution follows much the same pattern as that made in respect of the first phase: 224 man-months of expert service, 123 man-months of fellowships and the provision of equipment at a total cost of \$155,000.

* The *Industrial Research and Development News* first reported on the IIT prior to the completion of the first phase of the UN technical assistance programme that was rendered to the Institute (see "El Instituto De Investigaciones Tecnológicas (IIT)" IRDN Vol. II, No. 1 (1967) pp. 55--56).

Growth in personnel at IIT, 1958-1969



Organization

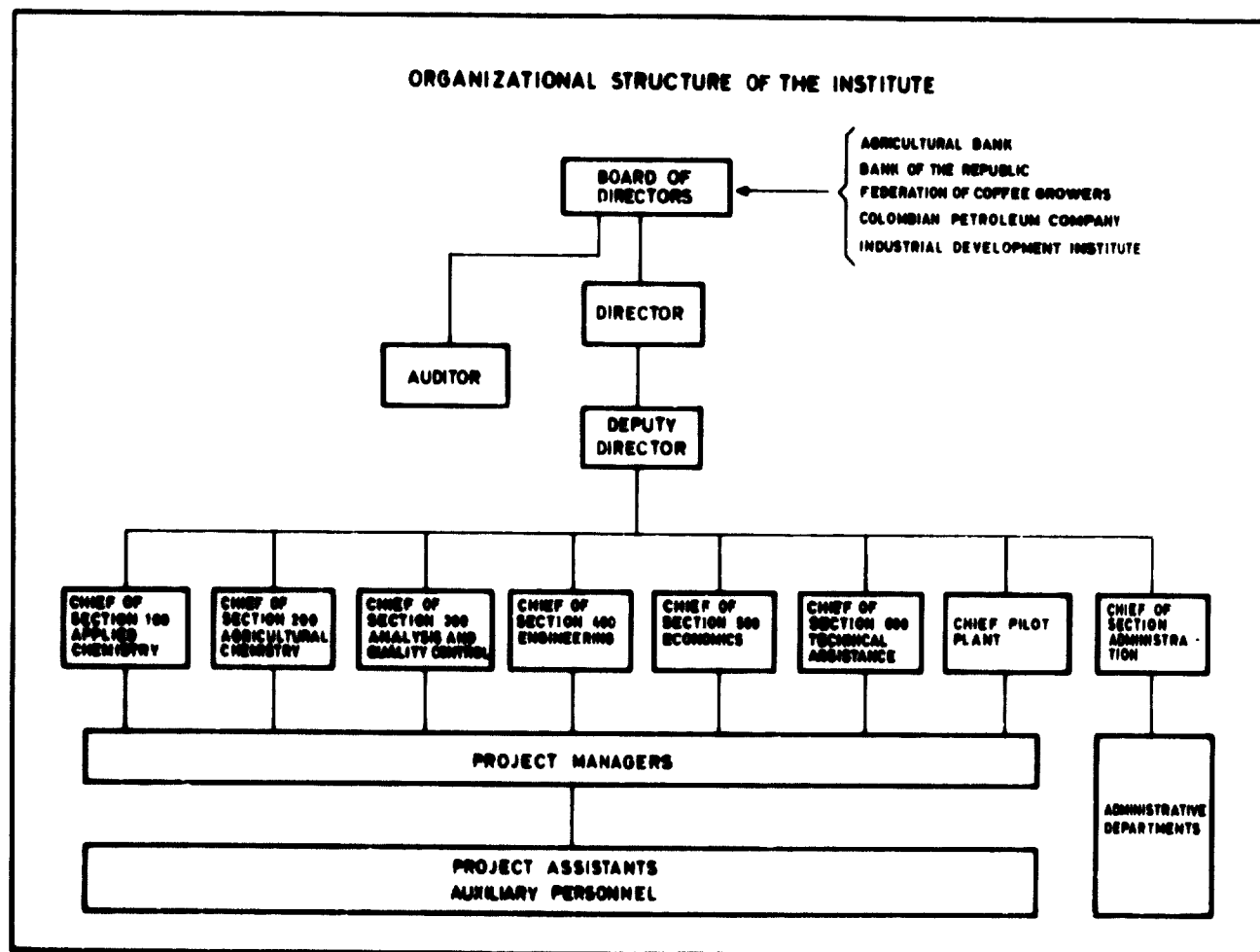
Technological activity of IIT involves three main endeavours: experimental research in laboratories and semi-industrial pilot plants to adapt or develop new products or processes; engineering and economic assistance and consultancy service for new investment undertakings and

for the enlargement or improvement of established industries; and technical services such as chemical or physical analyses, practical experiments, and small-scale production for industry and commerce. Institute scientists expend their efforts on a wide range of undertakings including projects involving: food, chemicals (especially agrochemicals and petrochemicals), mechanical engineering, and the manufacture of ceramics for use in construction.

Seven departments and an administrative section make up the Institute's structural organization. According to its major objective, each project the Institute accepts is assigned to one of the seven departments and is the responsibility of a project manager in that department. The manager collaborates with as many other departments as is necessary to fulfil the objectives of the project.

The first laboratory

In the early years of IIT, the organization was housed in an office building belonging to the Agricultural Bank. Conditions were cramped and the staff had to adapt itself to the available working area. The years spent under these cramped conditions, however, provided an opportunity for formulating plans and projections for new facilities that would be both practical and flexible.

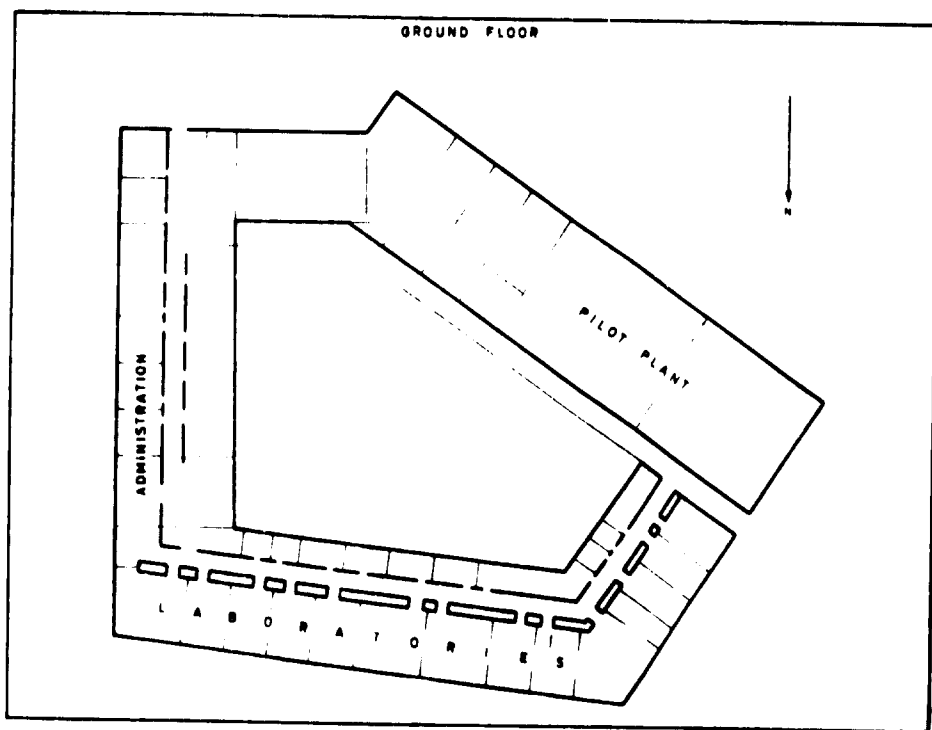


The new building

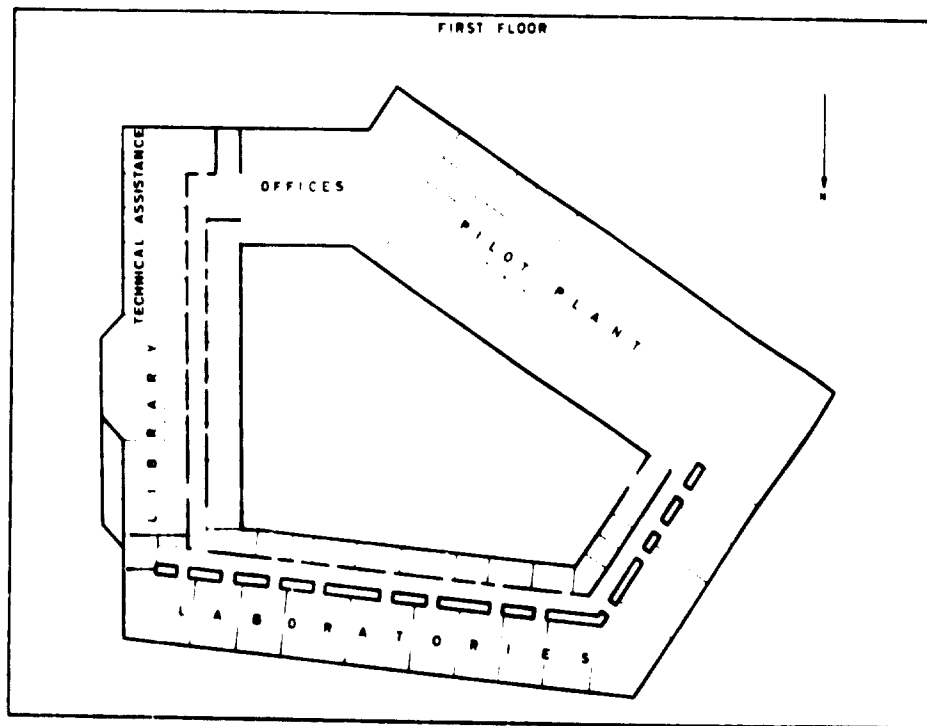
The new building has completely functional design with adequate possibilities for expansion. The principal laboratories and offices are located on two floors and the workshops and pilot plants occupy a three-storey section that includes the library. The building is situated near the centre of the city, close to the National University and government

buildings and is within a few blocks of a shopping district and a residential area.

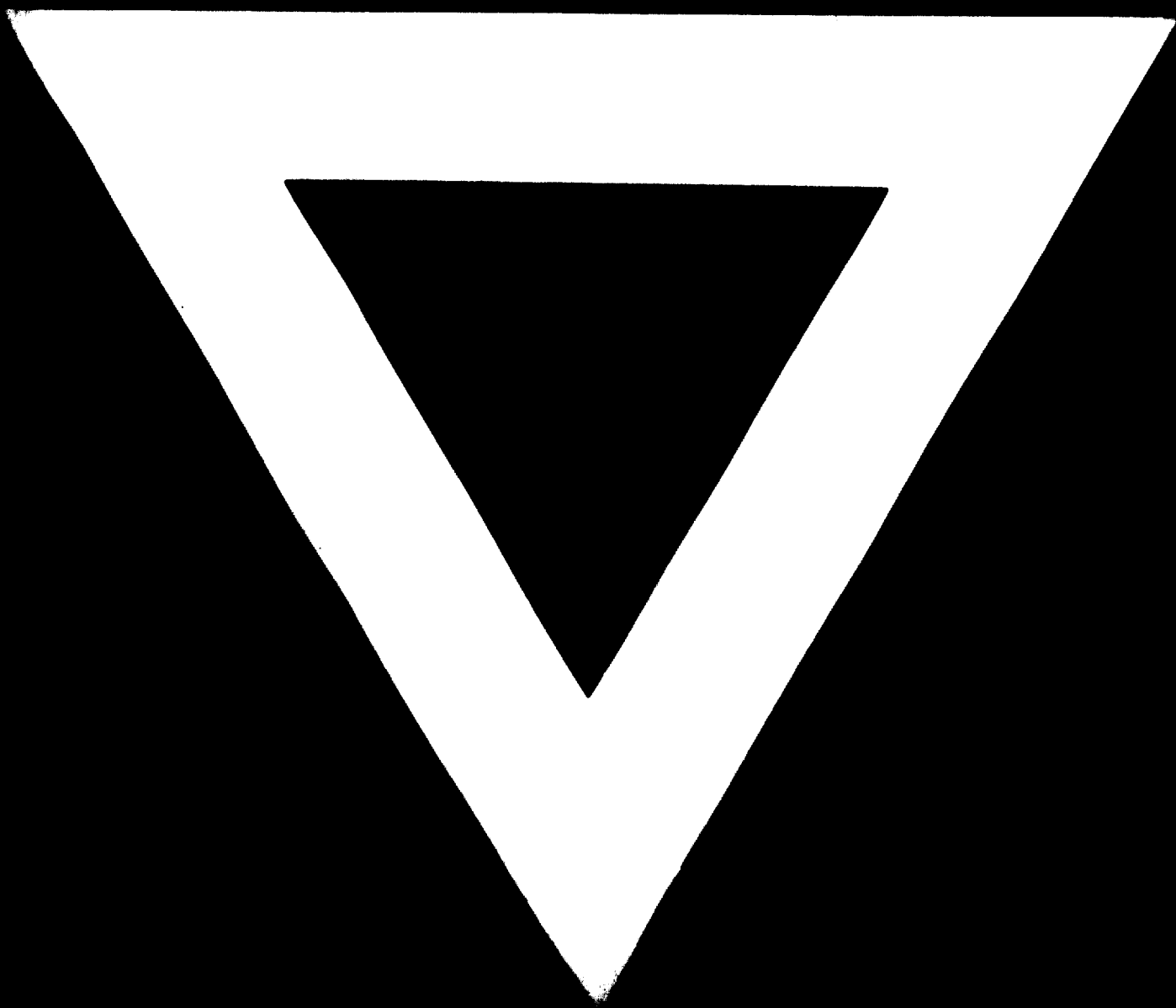
IIT believes that its projects, when carried through to a satisfactory conclusion, will bring technical, economic and social advancement to the people of Colombia. Through applied research, the Institute seeks to promote as fully as possible the utilization of agricultural products and the improvement of the industries of the country.



Plan of ground floor of IIT



Plan of first floor of IIT



74.10.17