



**TOGETHER**  
*for a sustainable future*

## OCCASION

This publication has been made available to the public on the occasion of the 50<sup>th</sup> 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](mailto:publications@unido.org) for further information concerning UNIDO publications.

For more information about UNIDO, please visit us at [www.unido.org](http://www.unido.org)



08313



Distr.  
LIMITED

ID/WG.281/3  
28 September 1978

ENGLISH

**United Nations Industrial Development Organization**

---

Second Consultation Meeting on the  
Fertilizer Industry

Innsbruck, 6-10 November 1978

Agenda item 4

**FAO FERTILIZER ACTIVITIES \***

prepared by

**Food and Agriculture Organization of the United Nations**

---

\* This document has been reproduced without formal editing.

14.78-5838

GLOSSARY

CARICOM	Caribbean Community Secretariat
ECE	Economic Commission for Europe
ECOSOC	Economic and Social Council
FAO	Food and Agriculture Organization of the United Nations
FDC	Fertilizer Data Centre
FIAC	Fertilizer Industry Advisory Committee (FAO)
GSF	Gesellschaft Für Strahlen un Umwelt - Forschung
IAEA	International Atomic Energy Agency
IFS	International Fertilizer Supply Scheme
MSA	Most Seriously Affected
SIDA	Swedish International Development Authority
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNIDO	United Nations Industrial Development Organization
WHO	World Health Organization

TABLE OF CONTENTS

	<u>Page</u>
Glossary	1
Introduction	3
Promotion of Fertilizer Use	3
Fertilizer Programme	3
FAO/UNDP Projects, etc.	4
Training in Fertilizer Use Development	5
International Fertilizer Supply Scheme (IFS)	7
Improvement of Fertilizer Distribution and Credit Networks	7
Economics of Fertilizer Use	8
Fertilizer Data Centre	8
Monitoring of Fertilizer Supply/Demand and Prices	9
International Policy	9
Environmental Problems	11
Forest Fertilization	12
Aquaculture Fertilization	12

## INTRODUCTION

Over the years FAO has placed increasing emphasis on the role of fertilizers in agricultural production in developing countries. FAO activities in the field of fertilizers are concerned with assisting developing countries in promoting the efficient use of mineral fertilizers and organic materials in a co-ordinated way. The activities range from helping to better ensure the supply of fertilizers to the developing countries and to their farmers at reasonable and stable prices, to assisting in providing the knowledge and infrastructure so that farmers may use fertilizers profitably to increase their crop production and incomes. These activities are carried out in close co-operation with other international organizations, governments and the fertilizer industry.

With a view to ensuring an integrated treatment of fertilizer policy issues within FAO and to augmenting the impact of its programmes, fertilizer work in FAO is co-ordinated by a Task Force on Fertilizers under the chairmanship of the Assistant Director-General, Agriculture Department. This document presents a brief but comprehensive review of the activities of FAO in the field of fertilizers, with emphasis on those carried out in 1977-78.

## PROMOTION OF FERTILIZER USE

FAO assistance in this field, under the Fertilizer Programme and UNDP-funded projects is focused on improving crop yields and farmers' incomes in developing countries by promoting the efficient use of fertilizers, and related inputs, particularly by small farmers.

### Fertilizer Programme

Since it was started in 1961, the Fertilizer Programme has operated in over 40 developing countries. Hundreds of thousands of field trials and demonstrations seen by millions of farmers have been carried out, and tens of thousands of extension personnel have been trained.

The programme is operated along a six phase plan, namely: 1. Project appraisal; 2. Fertilizer research; 3. Fertilizer and related input extension; 4. Fertilizer and related input distribution; 5. Training of personnel; 6. Co-ordination of fertilizer use development, including investment. Details are provided in the document "The FAO Fertilizer Programme: 15 Years in the Fields" available at this Conference.

In 1977, the Fertilizer Programme was operational in 13 countries. The activities are supervised by FAO fertilizer experts but are carried out by national staff. The number of simple trials and multi-plot demonstrations laid out in fields of small farms totalled 8,116 in that year. A total of 11,422 field days were held based on these trials and demonstrations which were attended by 112,650 farmers. 137 training courses on the use of fertilizer and related inputs were held in all participating countries at national, district and village level attended by 3,426 national staff. Fertilizer distribution and credit schemes were conducted in 7 countries in which 10,415 small farmers participated. The purpose of these schemes is to develop national distribution and credit systems to serve small farmers. The total budget in 1977 was \$5.85 million of which recipient countries contributed \$1.95 million in the form of equipment and supplies.

In 1978 because of increased funding by donors, 6 more developing countries were brought into the Fertilizer Programme; raising the number to 19. The usual period of operations in a country is 5 years. More of these developing countries requesting the Programme will be included as operations are phased-out in other countries, or as more funds become available to do so.

The Fertilizer Programme trial and demonstration results are processed by computer using systems developed by FAO. These systems, generally referred to as "software" are available to FAO Member Governments on request.

Associated with the Fertilizer Programme are three FAO/PIAC working parties on fertilizer statistics, on the economics of fertilizer use, and on fertilizer marketing and credit. They consist of representatives of the fertilizer industry, governments, relevant FAO units and the Fertilizer Programme.

#### FAO/UNDP Projects on Fertilizer Use and Soil Management

These are either short-term projects involving an expert and a limited amount of equipment and fellowships, or medium-term pre-investment projects involving several experts and the necessary supporting equipment and fellowships. The projects

primarily involve applied research, but during recent years they have also included the promotion of fertilizer use through improvement of extension, distribution and storage facilities and services. In 1977, 25 experts were active under these projects in soil fertility, soil chemistry, soil management and soil analysis with a total UNDP contribution of US\$ 1.8 million.

#### Training in Fertilizer Use Development

In addition to the national training activities under the Fertilizer Programme FAO organizes regional and national meetings on fertilizer use development. The following example of some of those already held or to be convened in 1978 gives an indication of their source of funding, subject range and purpose.

Under the Fertilizer Programme two one-week workshops on advanced project management techniques were held in Africa and in Asia in 1977. Since 1976, an annual one-month fertilizer seminar for Fertilizer Programme English-speaking counterpart staff has been held in Wageningen in co-operation with the Netherlands Government and FIAC. In 1978, a two-month travelling seminar was held for French-speaking counterpart staff in co-operation with the French and Belgian Governments and FIAC.

Under the Fertilizer Programme with FAO/Norway Co-operative Programme funding three national seminars on the development of the use of mineral and organic fertilizers and related inputs were held in Sierra Leone, Upper Volta and Zambia in 1976-77. The FAO/Norway Government Co-operative Programme has earmarked for 1978 and 1979 funds to organize five similar national seminars in Asia. Two were held in 1978; one in India and one in Nepal.

In 1976-77 FAO, in collaboration with ESCAP, organized a series of national workshops on fertilizer marketing for small farms in nine countries in the Far East. The information obtained in the workshops on improvement needed in fertilizer distribution systems at the village level was presented to government representatives at national seminars and regional conferences in 1977 and 1978. National workshops for fertilizer dealers are planned for Asia and Latin America.

A FAO/FIAC Regional Seminar on Fertilizer Pricing Policies and Subsidies for government planners and policy makers was held in Bangkok in February 1978. The meeting recommended that similar Seminars be held in all regions. One is planned for Africa in 1979.

FAO has a programme for the promotion of the use of organic materials in agriculture in developing countries. As part of this activity a co-ordinated international programme on biological nitrogen fixation has been initiated in co-operation with UNEP. These materials are included in the extension work of the Fertilizer Programme and FAO/UNDP field projects whenever feasible. FAO has led two study tours on organic materials to China in which representatives of countries in Asia and the Far East region participated. The first tour to China in April/May 1977 was to study the recycling of organic wastes in agriculture, and the second in April/May 1978 was to study the use of azolla and bio-gas.

Under the FAO/SIDA Co-operative Programme a Regional Workshop on Organic Recycling was held in Bangkok in October/November 1976, for Asia and the Far East Region, in Buea, the Republic of the Cameroon in December 1977 for Africa, and in Alexandria, Egypt in October 1978 for the Near East. A similar workshop for Latin America will be held in Turrialba, Costa Rica in February 1979.

Under the FAO/Finland Co-operative Programme, an Expert Consultation on Soil and Plant Testing as a guide for improvement of soil fertility and fertilizer use was held in June 1977. As a follow-up activity, two research contracts were granted to present concrete models for setting up soil and plant testing services in developing countries.

Under the FAO/SIDA Co-operative Programme a Regional Workshop on Soil Management and Conservation was held for Latin America in Lima, Peru in October 1977. Alternatives to shifting cultivation with fertilizer inputs were discussed and demonstrated in the Amazon Plains at Yurimaguas, as part of this Workshop.

Under the FAO Regular Programme, an Expert Consultation on "Better Exploitation of Plant Nutrients" was held in April 1977 in Rome, for identifying possibilities for a more intensive and national use of plant nutrients in mineral fertilizers and organic materials, with emphasis on conditions in developing countries. Also under the Regular Programme a national training course on soil testing and management was held in Tanzania in October 1978. The course was mainly for extension personnel but also for individual technicians from research institutes.

Under the programme on biological nitrogen fixation, missions have so far visited 18 developing countries to develop action programmes on research, testing and training, for the introduction of plants and organisms capable of biologically fixing nitrogen into the crop production systems of these countries, to be funded by UNEP.



## INTERNATIONAL FERTILIZER SUPPLY SCHEME (IFS)

The International Fertilizer Supply Scheme (IFS) was established by the FAO Council in July 1974 in response to ECOSOC Resolution No. 1835-LVI, on emergency measures for the supply of fertilizer and pesticides. Its purpose was to help developing countries and in particular LSA countries, to overcome the critical fertilizer supply situation which developed towards the end of 1973. The IFS which is still in operation, particularly to assist LSA countries with balance of payments problems, is closely co-ordinated with the Fertilizer Programme.

The IFS assesses the fertilizer supply situation in developing countries, with particular reference to LSA countries; mobilizes financial resources to meet requirements in the procurement and shipment of fertilizer and pesticides to needy developing countries; and promotion of technical assistance in conjunction with fertilizer supplies through the Fertilizer Programme and FAO/UNDP fertilizer projects.

The agreement between FAO and the recipient government provides for the establishment of a counterpart fund from the sale of IFS shipments, to be used in consultation with FAO for the development of fertilizer use, e.g. the improvement of fertilizer storage, credit and extension systems. With a view to maximizing the economic impact of the assistance, FAO provides advice before and after the IFS shipment.

IFS resources are provided by donors in cash or kind. By July 1978, the IFS had provided US\$117.5 million worth of assistance to 51 developing countries, in the form of fertilizers and pesticides; pesticides accounting for a minor share of some \$2.5 million. Several recipient countries have contributed to the IFS by covering sea transport, insurance and superintendence costs amounting to \$1.25 million.

## IMPROVEMENT OF FERTILIZER DISTRIBUTION AND CREDIT NETWORKS

Reference was made earlier to the national workshops, seminars and regional conferences on this subject and the planned continuation of the programme in Asia, Africa and Latin America. The FAO/FIAC Working Party on Fertilizer Marketing and Credit has issued over 40 country case studies on fertilizer

marketing and credit and has published a Guide on the Marketing of Fertilizers based on these case studies. FAO staff are engaged in practical advisory work on the marketing of fertilizers in a number of developing countries. FAO also mounts or participates in UNDP and World Bank missions to assist in the improvement of fertilizer distribution and credit system and to prepare projects for financing by international/regional agencies. In 1977/78 such missions were carried out in India, Somalia, Zaire and Caricom countries of the Caribbean.

#### ECONOMICS OF FERTILIZER USE

The FAO/PIAC Working Party on the Economics of Fertilizer Use monitors and annually issues a document on the economics of fertilizer use at the farm level. It has issued a number of country studies on the economics of fertilizer use and the publications "A Study on Fertilizer Subsidies in Selected Countries, 1975", "Fertilizer Subsidies - alternative policies, 1976" and "The Use of Direct Fertilizer Subsidies in Developing Countries, 1978". These publications were used in the FAO/PIAC Regional Seminar on Fertilizer Pricing Policies and Subsidies held in Bangkok in February 1978, mentioned earlier, and are available on request.

The Working Party is presently developing a systematic strategy to identify economic constraints to fertilizer use in developing countries for use by FAO and interested international and bilateral agencies.

#### FERTILIZER DATA CENTRE (FDC)

The FAO Fertilizer Data Centre (FDC) was established to meet the increasing requirements for fertilizer data by governments, international organizations, industry and other bodies. The over-all objectives of the FDC are:

1. To provide an integrated system of computerized data storage and processing that permits continuous updating of all aspects of basic information and desired indicators relating to fertilizers;
2. To serve as a focal point for data received from member countries in annual and quarterly fertilizer questionnaires and other official or unofficial sources of data;

3. To disseminate data in a timely and efficient manner through publications, computer printouts and computer readable tapes. The Centre issues FAO's Annual Fertilizer Review which contains world data by country and economic class on fertilizer production, consumption, trade and prices.

The FAO/FIAC Working Party on Fertilizer Statistics reviews these data and considers ways and means of dealing with difficulties in statistical data collection and reporting such as heterogeneous concepts and definitions used by different countries in supplying statistical data.

#### MONITORING OF FERTILIZER SUPPLY, DEMAND AND PRICES

A monthly account of the current situation and outlook on international fertilizer supplies and prices is contained in the "Food Outlook" publication of the FAO Global Information and Early Warning System on Food and Agriculture, which is issued monthly. This system was established as a major element of the International Undertaking on World Food Security, held in Rome in November 1974.

Following the request of the World Food Conference that the FAO Commission on Fertilizers, in collaboration with other concerned international organizations, undertake authoritative analysis of the long-term fertilizer supply and demand position, the FAO/UNIDO/World Bank Working Group on Fertilizers has been monitoring and forecasting world fertilizer supply and demand for the Commission.

The UNIDO Industrial Development Board at its Eleventh Session in May 1977, agreed that this Working Group would also be responsible for monitoring the growth of world fertilizer supply for future UNIDO meetings on fertilizers.

#### INTERNATIONAL POLICY

International fertilizer policy issues are considered by the FAO Commission on Fertilizers established in 1973. Its terms of reference are the following:

- (a) To obtain, review and disseminate on a regular basis information on prices, current and short-term availability of and demand for fertilizers, as well as production and consumption trends, export and import trends and medium and long-term forecasts for fertilizers.
- (b) To help in ensuring that all countries and developing countries in particular have at their disposal, in sufficient quantities and at reasonable prices, the nutrients required for their agricultural development and food production.

- (c) To help promote fertilizer production particularly in the developing countries as well as to encourage assistance to developing countries wherever feasible in the production of fertilizers and the development of infrastructure for distribution and marketing of fertilizers in co-operation with the appropriate United Nations organizations.
- (d) To review and consider (i) the main factors influencing fertilizer use, in particular pricing, credit, marketing, transportation and distribution policies; (ii) information on governmental measures adopted particularly in developing countries, to stimulate fertilizer consumption and promote its optimum use; (iii) difficulties and constraints in connection with fertilizer production, consumption and trade, and such policies and measures as are necessary to solve these, with a view in particular to improving the availability of fertilizers and its fertilizer production in developing countries.
- (e) To review FAO fertilizer activities and to facilitate their co-ordination with those of other agencies, such as UNIDO, UNCTAD and the World Bank.
- (f) To suggest programmes and measures specifically designed to achieve the general objectives of the Commission.
- (g) To report and submit recommendations to the Director-General and through him to the FAO Council, on policy issues arising out of its deliberations.

Coupled with the World Food Conference request that the FAO Commission on Fertilizers undertake an analysis of long-term fertilizer supply and demand, which it now does on a regular basis, was the request that the Commission "provide the elements of a world fertilizer policy which would include the over-all aim of avoiding cyclical imbalance between supply and demand, help ensure that fertilizer prices are stabilized at reasonable levels and would enable developing countries to obtain fertilizers they need for their food and agricultural production".

The Commission in pursuing these objectives has, in addition to reviewing the short and longer-term supply/demand situation and costs of production which help to guide member countries' policies and forward planning to maintain a reasonable balance between supply and demand, have considered a number of price stabilization measures to dampen the effect of short-term fluctuations in demand and supply on international market prices. These include international commodity agreement including buffer stocks for fertilizers, long-term contracts, barter agreements, and an option proposal.

The Commission on Fertilizers concluded that an international commodity agreement for finished fertilizers probably would not be a feasible proposition. It, however, noted that such commodity agreements for raw materials, particularly for phosphates, was to be considered by UNCTAD under the Integrated Programme for Commodities. FAO collaborated with UNCTAD in preparing the documentation for the preparatory meetings held on phosphates in December 1977 and June 1978, in Geneva under the UNCTAD Integrated Programme for Commodities.

The other price stabilization measures so far considered by the Commission are being pursued. A model for long-term fertilizer contracts between buyers and sellers has been prepared and is under review by the Commission. Model arrangements for barter agreements are being prepared for consideration by the Commission at its next session. At its last session the Commission approved the option proposal.

The Commission, the FAO Council and Conference requested the Director-General of FAO to make the arrangements with fertilizer producers/exporters to implement the option proposal. These arrangements will be reviewed by the Commission at its next session to be held in Rome, 22-25 January 1979.

The Commission is also responsible for the surveillance of the International Fertilizer Supply Scheme (IFS) which is an important element of international policies to better ensure that the developing countries and in particular the LSA countries, obtain fertilizers they need for their food and agricultural production.

#### ENVIRONMENTAL PROBLEMS

FAO participated in the multi-agency UNEP project of "The Mediterranean Programme Activity: Pollutants from Land-based Sources in the Mediterranean" together with ECE, IAEA, UNESCO, UNIDO and WHO, which terminated in 1977. It developed a methodology to assess the pollution of such bodies of water by agriculture, including fertilizers.

An FAO/IAEA/GSF Co-ordinated Programme of Research on agricultural nitrogen residues with particular reference to their conservation as fertilizers and behaviour as potential pollutants in the form of undesirable nitrate in food, feed or water was initiated in 1975 in co-operation with 20 developed

and developing countries. The programme is reviewed regularly by a co-ordinating committee which last met in Sao Paulo, Brazil in July 1978. Useful progress has been made in studying these issues. The investigations will be continued until 1980, when another review of the programme will be undertaken.

#### FOREST FERTILIZATION

Although forest fertilization has proved to be a successful undertaking from a technical stand-point, there is still a need for a great deal of both basic and applied research in this field. FAO has developed mathematical models to help forecast rates of return to forest fertilization with varying price relationships.

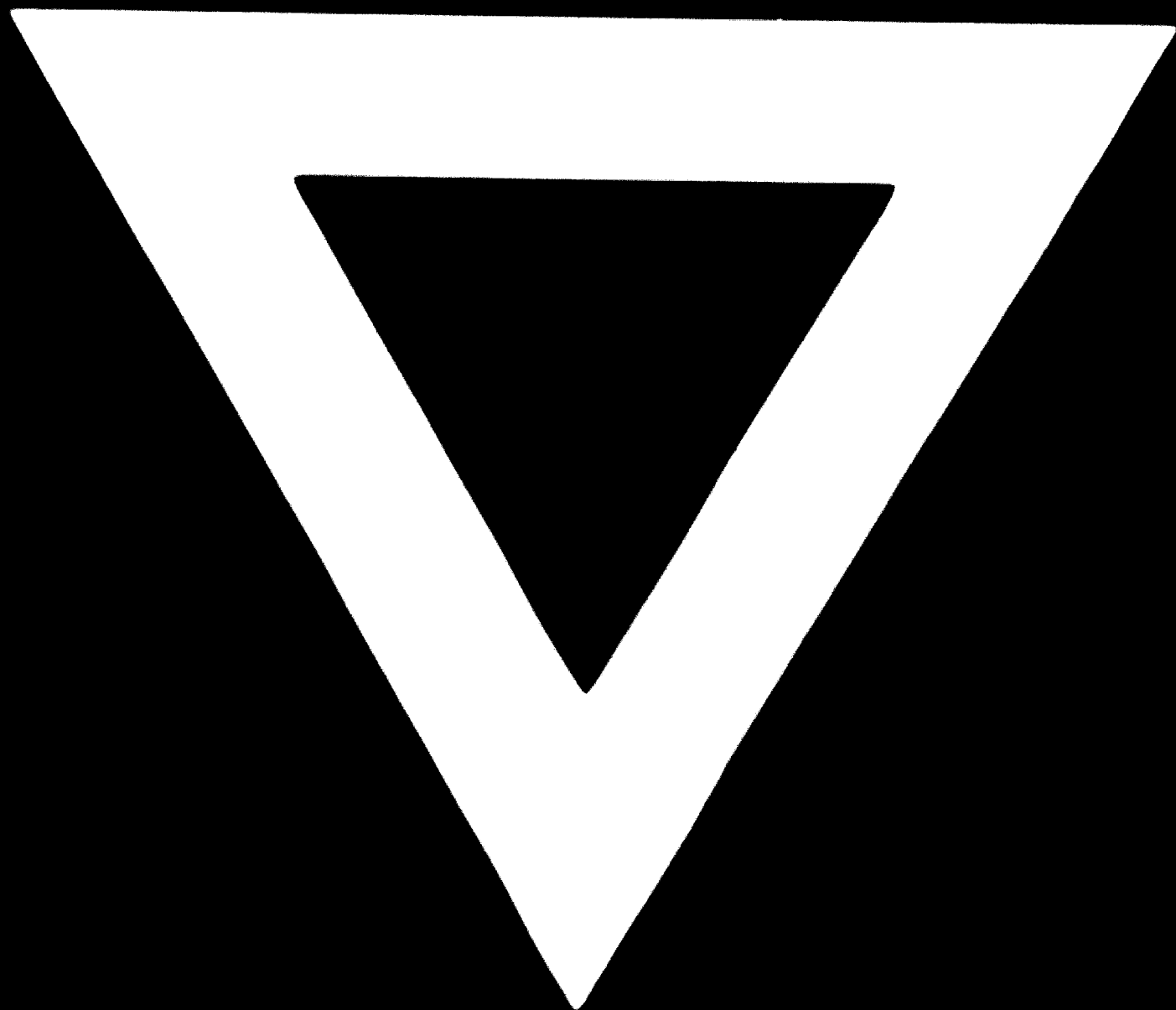
#### AQUACULTURE FERTILIZATION

The application of chemical fertilizers and organic materials in fish-ponds has shown that the levels of production in brackish water and freshwater ponds can be increased considerably with their use. FAO has been promoting in developing countries the production and distribution of aquaculture inputs, especially fertilizers, fish seeds and feeds, which are of critical importance in aquaculture development.



12

**B - 10**



**79. 11. 13**