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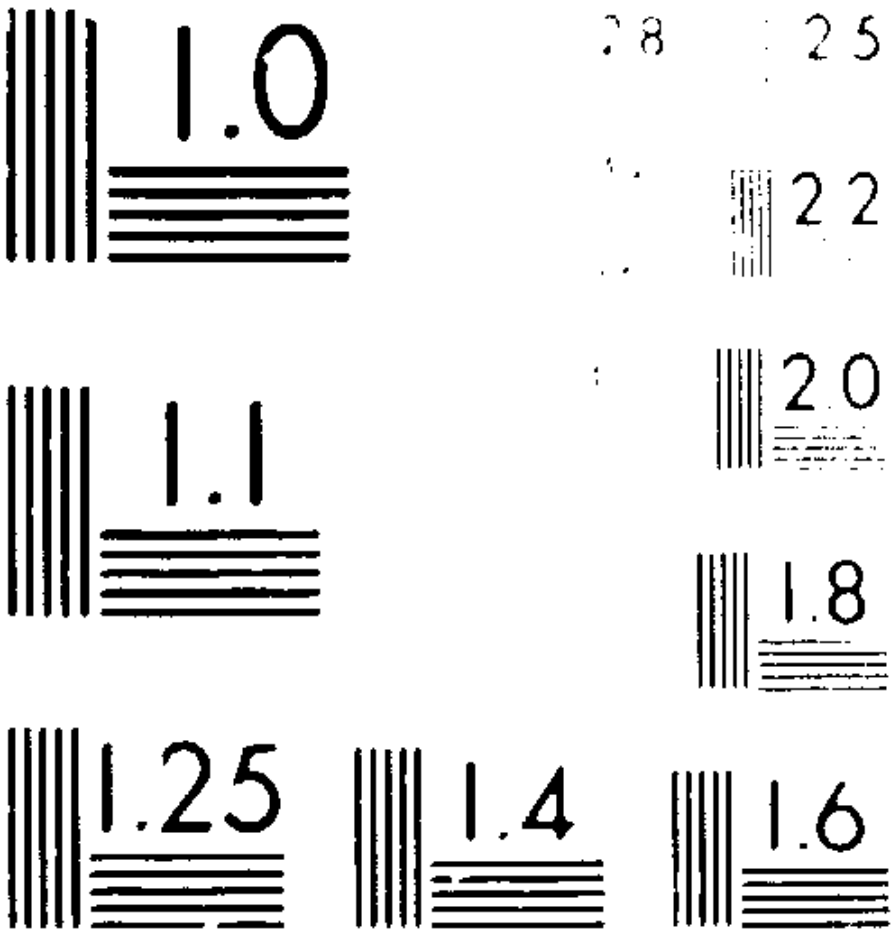
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United Nations Industrial Development Organization

First Meeting of the ad hoc Committee on
Co-operation among Developing Countries
in the Fertilizer Industry

Nairobi, Kenya, 11-13 March, 1980

CO-OPERATION AMONG DEVELOPING COUNTRIES IN THE FERTILIZER INDUSTRY*

Suggestions of Participants
received by the UNIDO Secretariat

* This document has been reproduced without formal editing.

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INTRODUCTION

1. The First Meeting of the ad hoc Committee on Co-operation among Developing Countries in the Fertilizer Industry is being convened in response to a recommendation of the Second Consultation Meeting on the Fertilizer Industry held in Innsbruck in November 1978.

2. As Working Papers for the Meeting, UNIDO invited participants to prepare a short report of their present activities and the opportunities to develop new forms of co-operation in the future.

3. This document contains the reports which were received from participants up to 6 March 1980.

I. SUGGESTIONS FROM COUNTRIES

Suggestions from Brazil - by R. Magalhaes

Aspects of co-operation among developing countries in the fertilizer industry:

A. Some aspects of technology transfer

1. Efficacy of technology transfer or which technology the country is willing to absorb.
   Which are the types of fertilizers the country needs? Which are the available raw materials? Ammonia: natural gas, heavy fuel oil, coal. Sulphuric acid: sulphur, pyrites gypsite. Phosphoric acid: sedimentary or igneous origin rocks. Interface industry/agriculture.

2. Efficiency of technology transfer or the way a specific technology is being transferred.

3. Brazilian experience in fertilizer technology transfer: sulphuric acid and phosphoric acid.

B. Technology development

1. Technology autonomy versus technology independency.

2. Technology generation and/or development in developing countries: research centres, government agencies, industrial companies, engineering firms etc.

3. Which technology suits developing countries? Which are available raw materials, processes?

C. Co-operation in the fertilizer industry

1. Feasibility studies.

2. Process, basic and detailed design.

3. Project management and start-up assistance.

4. Training in engineering and in plant operation.

5. Implementing co-operation.

D. Training

1. Training special courses developed to suit countries' needs (example: petroleum refining course in Brazil).

2. Technology available industrial companies and engineering firms in developing countries (different approach from genuine national companies and from subsidiaries of companies with headquarters in developed countries).

3. Making available technology from industrial companies through engineering firms.

4. Paying equipment and services with raw material and/or with finished products.

5. Joint ventures in fertilizer manufacture and in engineering.

Suggestions from China - by HUANG Hongning

In China, agriculture is the foundation of the national economy. Experience has shown that whenever agriculture did not develop faster, not only there was no upswing in our industry and economy as a whole, but also the people's livelihood would be affected.

In order to bring about a greater development of agriculture in China, practising scientific farming is of paramount importance. China has only 7% of the world's cultivated land in which roughly 25% of the world 's population has to be fed. Clearly, increasing the yield per hectare of land is the optimum solution and fertilizers play a key role in such a strategy.

Since the founding of new China, it has been therefore our Government's consistent policy to give high priority to the development of fertilizer industry. For the past thirty years,with the conscientious efforts of the cadres, technicians and workers who engaged themself in implementing this important policy, we have succeeded in building up a fertilizer industry consisting of large, medium and small sized plants spreading all over the country to support and serve agriculture. In 1978, China produced 42 million tons of standard fertilizers, i.e. measured in terms of 21% N and 18% P_2O_5; in terms of 100% nutrient, the production measured 7.6 million tons N, 1.03 million tons P_2O_5 together with small tonnages of K_2O and micro elements. This output of fertilizers is thousands times that of the pre-liberation days. Through these years with emphasis on self-reliance and on accumulation of experiences, we have gradually established a technical force capable of designing, building and operating fertilizer plants of different sizes, using different feedstocks and producing more than twenty varieties of fertilizers. Moreover, we have also developed research and development facilities and experience capable of tackling problems relative to fertilizer industry. Today we are able to manufacture equipment, instruments as well as catalysts required by fertilizer plants; nevertheless, we do not neglect acquisition of advance technology and equipment from abroad to elevate our technical level.

As is well known, our fertilizer industry is characterized by having a large number of small sized plants; in some provinces, nearly every county has its own small fertilizer plant. The historical background is as follows:

In the latter part of 50's, it became clear that sole reliance on foreign aid to develop our fertilizer industry could not satisfy our agriculture needs. In order to hasten the development of our fertilizer industry to serve agriculture better, we had to develop self reliance. Consequently, it was decided to design and build our own fertilizer plant, with equipment manufactured domestically.

Because the initiative of both the central and local authorties was given full play, the projected nitrogen fertilizer plants were standardized into large, medium and small sizes. The central authority financed the large and medium sizes and the local authorities the small sizes. Taking into account the resources then available, appropriate technology was adopted; coal was used as feedstock since it is found abundant in deposits and distributed in many areas in China. As final products, the large and medium-sized plants were designed to produce ammonium sulphate and ammonium nitrate, whereas the small sized ones produced ammonium bicarbonate and aqueous ammonia. For carrying out the design work, a design team was organized with experienced technicians coming from all over the country. At the beginning, the importance of having the equipment of fertilizer plants manufactured domestically was stressed; as a result this force undertook not only process and detailed engineering but also the design of machinery and equipment, thus laying a basis for, and giving an impetus to the machine-building industry to enter into the manufacture of fertilizer equipment.

The first group of fertilizer plants, built on our own designs and equipped with domestic equipment, went into operation in the early 60's.

As natural gas and petroleum became available and the relevant technology was mastered in later years, many new plants were built using natural gas or residual oil as feedstock and producing urea or co-producing ammonium chloride and soda ash as final products; both as regards the production and investment costs for these plants were lower than for the plants built previously.

In view of the above, our small-sized fertilizer plants possess the following features: they make use of local feedstocks with end-products supplying local demand; they are simple in process, low in investment outlay, appropriate to the local level of operator and maintenance skills and relative easy for local authorities to build in a rather short construction time. Consequently, a large number of this type of plants were built and put into operation in many provinces in subsequent years, thus easing the pressure on fertilizer supplies there. Some provinces and municipalities are even capable of manufacturing a complete set of equipment for small-sized fertilizer plants. However as a fertilizer, ammonium bicarbonate, has an inherent defect, i.e. it decomposes at ambient temperature. With this in mind, considerable research work on production as well as on application has been carried out with the purpose to cut down losses. Though some results have been obtained, further arduous work is still to be done.

In the period up to the early 70's, we built up a nitrogen fertilizer industry of considerable size on self-reliance. But the growth of population in China imposed heavy demands on agriculture, and this in turn exerted pressure on our fertilizer industry. Then our Government decided to embark on a programme to build thirteen large-scale nitrogen fertilizer plants, based on semi-turn-key contract with foreign contractors while continuing to build new plants and expand existing ones on self-reliance. A majority of the thirteen plants were designed to use natural gas as feedstock, available locally or from the near-by pipeline, and to produce urea as final product. A portion of the output from each of these plants is allocated for local consumption in the Province where the plant is located; the balance is shipped to other Provinces where fertilizer production is insufficient to meet regional demand. Urea is higher in nitrogen content and cheaper in transportation cost in comparison with other solid nitrogen fertilizers.

In implementing this programme, we kept to the principle of concentrating our resources strategically as in a revolutionary battle. From April, 1973, when the first contract was awarded to September, 1979, when the performance test run of the last plant was completed, it took a few months over six years to complete the construction of these thirteen plants, that is an average about two plants per year.

In the implementation stage, emphasis was placed on the selection of technology and equipment (which had to be fully proved), on the importance of quality of construction work and technical training programmes as well as on the recruitment of qualified and experienced workers, supervisory personnel and managerial staff from existing fertilizer plants, under the prevailing conditions in China at that time. As a result the majority of these plants built up to capacity operation in a reasonable time, and the plants finished later performed even better as they were able to benefit from the experience of the earlier plants.

During the initial production stage, the importance of high on-stream factor was highly stressed and a movement was launched to this effect. Meanwhile technical training programmes with the purpose to improve the skill of operators and maintenance workers were arranged. As a result, all the bottlenecks in these plants which affected adversely the attainment of high on-stream factors were identified and eliminated. Last year, seven of these plants, to which natural gas was available in adequate quantities had reached an on-stream factor of 90% with annual output exceeding three hundred thirty thousand tons of ammonia each. We shall make every effort to raise the on-stream factor to the highest levels achieved in other countries.

Besides these thirteen plants which were put in operation in the past three years, we have several other large scale nitrogen fertilizer plants with oil or coal as feedstock in the implementation stage. Even when these new plants will achieve full production and the renovation programme of our existing plants will be completed, supplies will still be inadequate to meet the growing needs of agriculture; we shall have to further develop our nitrogen industry and even to carry on importation to a certain extent...

Although we also adopted same approach for the development of our phosphate fertilizer industry as for our nitrogen industry the outcome was not as satisfactory as nitrogen industry. At present, our phosphate industry is lagging behind our nitrogen industry. It is because most of the phosphate rocks in China are of low grade and need to be beneficiated; in some remote areas there are some high grade rocks, but the mining and transportation facilities required are the main constraints.

At present, the ratio of nitrogen to phosphorus in our production programme is out of balance. It has been found that there are some areas, the utilization of nitrogen fertilizer applied is rather lows due to lacking of sufficient phosphorus in the soil. With further growth of population in China, the yield per hectare of our limited cultivated land will need to be higher and higher. It seems that the development of our phosphate industry has to speed up without delay. Moreover, at the present time, in China, only superphosphate and calcium magnesium phosphate are mainly produced; complex fertilizers in rather small amount and potash even less. All these will require us to put in more efforts for improvements in the coming years.

During the last two decades while our nitrogen industry was being developed, the experiences we accumulated and the technology we developed might be of some interest for the programme of co-operation among developing countries.

The opportunities of co-operation among developing countries are plentiful.

Let us join our hands and work together to further develop co-operation among developing countries.

Suggestions from the Fertilizer Association of India - by Satya Nand

Avenues for Technical Co-operation

Introduction

The Fertiliser Association of India (FAI) is the national representative body of the fertiliser industry in the country. It is continuously expanding its activities and reorienting them to meet the felt needs of the industry within the country.

Growth of activities

2. To start with the emphasis in the industry used to be on agricultural research and fertiliser use. Starting from the mid 60s, however, the Government accepted the policy of stepping up fertiliser consumption and its production within the country. The activities of the FAI were therefore expanded accordingly by setting up the Fertiliser Institute (which was later redesignated as Production and Technology Division). A few years later the Marketing and Distribution Division, subsequently redesignated as the Economics and Statistics Division, was set up. The youngest Division of the FAI is the Research & Development.

Genesis of FAI's Training Programme

3. Towards the end of the '60s it was felt that the rapid expansion in consumption and production of fertilisers in India anticipated during the coming decades could be hampered by lack of suitably trained personnel in various facets of the industry because of the non-availability of suitably trained manpower. FAI, therefore, considered it necessary to lay emphasis on training of personnel in the fertiliser industry by organising specialised training programmes. Starting with the Marketing Training programmes for middle level executives towards the end of the '60s today the FAI encompasses the whole gamut of the industry.

Current Activities - Training Programmes

4. It is now running courses for middle level managers in the fields of Agricultural Research, Fertiliser Promotion, Marketing & Distribution and Production. A broad outline of the Training Calendar for the year 1980 is attached as Appendix 1.

5. FAI is also running courses for personnel at the regional level for Salesmen, State government functionaries at the district level (on an experimental basis). Orientation Courses for senior graduates at the Agricultural universities and a Training Programme for Dealers is now being worked out.

Participation from Neighbouring Countries

6. It was gratifying that the response of the industry within the country fully justified the efforts put in by the Association in organising these training programmes. Once the courses were well established, it was decided to invite our friends in the industry in the neighbouring countries also to participate in these programmes. The response was indeed most encouraging. Over the years we have had participation in these training programmes from countries as far as Turkey in the West and Korea in the East. The participation is, not unnaturally, mostly from developing countries where conditions are more akin to those in India and, therefore, mutual interaction proves more purposeful and useful.

International Recognition

7. The training courses in the field of Marketing and Distribution and Agricultural Research have attracted attention of even international agencies. About this time last year, the Fertilizer Industry Advisory Committee (FIAC) of the F.A.O. made a token grant of $10,000/- to the FAI to be used to sponsor and meet travel and course expenses of people from our neighbouring countries to attend our training programmes. This programme has already been put into operation during the current year.

8. F.A.O. have also taken note of our activities and realising its potential have agreed in principle to consider our programmes in the field of Marketing and Agricultural Research as of regional importance. In consultation with the Government of India, F.A.O. have found a donor who will provide funds for bringing our compatriots from other developing countries in the regions to attend these courses. Modalities of this programme are now being worked out.

9. What was thus a small beginning is gradually growing to provide the nucleus for greater technical cooperation. We would very much like to see this cooperation grow further, for example, in the field of fertiliser production and technology where also we are already getting

some participation from our neighbouring countries. This is where UNIDO could play a more useful role on the lines of FAO.

10. Appendix 2 lists the foreign participants we have had in our various courses during the last 2 years.

Group Discussions

11. Apart from the training programmes we also organise regularly our annual seminar, group discussions and workshops on different subjects. In the years 1978 and 1979 we organised Group Discussions on various subjects as per details attached (appendix 3). Along side is also given participation from neighbouring countries in these group discussions. These group discussions have a duration of between 1½ to 2 days accompanied by plant/field visits. These are attended by executives who are specialists in their field and actually have to face operating problems. Sharing of practical experience, learning from the experience of their peers and deriving benefit from the mistakes of others helps in improving the efficiency of operations within the area influence of the participants concerned. It helps the process of this professional development and prepares them for shouldering higher responsibilities.

12. Group Discussions and Workshops have become exceedingly popular within the country. Interestingly enough executives vie with each other to get their management to sponsor them for these programmes. This is one field in which the participation from neighbouring countries could be much more that it has been so far. Fiscal limitations could probably be one major constraint and may be U.N. system can evolve a scheme of financing. To derive the maximum benefit from visits for a brief programme we have suggested to our friends in neighbouring countries that we would be very happy to arrange plant and field visits for such of their nominees who attend our group discussions so that participants can get more from their visit to the country. The suggestion has been welcomed and action initiated.

Think Tank Groups

13. One other activity needs to be mentioned. A couple of years ago we started a series of regular close door meetings of General Managers/ Plant Superintendents of fertiliser plants on a regional basis, i.e.,

East, South, North & West. These are called the "Think Tank Group Meetings" for want of a better word. These meetings are invariably held at a plant site and without any set agenda. The periodicity of these meetings is roughly once in 4 to 6 months for each region. Plant Managers review the over all management problems facing them whether these relate to the infrastructure, quality or supply of raw materials, plant and equipment, labour relations or management issues. No minutes of these meetings are kept. But some of the major observations are circulated to members of all the Groups for their information and follow up action. These meetings have proved to be exceedingly useful in providing a forum for a free and frank exchange of views on diverse subjects between managers at the top level. It is still in an experimental stage and it is difficult to say whether participation by our friends from the neighbouring countries in these meetings would be profitable.

14. It may not be out of place to mention that some of the major members of the FAI have recently offered to run training programmes for a large number of operating staff in a neighbouring country for a plant which will be commissioned sometime next year. Similarly, an offer has been made for a management contract to another country for a limited period for a plant which will go on stream later this year. This period will be used to train the nationals to take over the entire management of the plant at the end of the stipulated period.

Concluding Remarks

15. FAI has gradually over the years been extending its activities in a way that would foster cooperation between the neighbouring countries. This would be to the mutual benefit of all the countries concerned and help in upgrading technical knowledge and improving operating efficiency of the industry. It is necessary to build up a structure on this humble beginning.

F.A.I. TRAINING PROGRAMMES

Introduction

The training activity in the Fertiliser Association of India (FAI) which commenced on a modest scale way back in 1969 has gradually grown in its coverage in terms of the types of courses and the participation. We particularly cherish the participation in these courses from all segments of the industry from India and from our neighbouring countries. The courses have become so popular that often we have to carry forward nominations to subsequent courses. To facilitate members of the industry and our other constituents to plan their nominations to the courses, we have found it desirable to print this brochure in the form of an annual calendar. In it are briefly described the various types of courses that we hold with their approximate dates. We do hope that this will facilitate forward planning of nominations by our constituents including the fertiliser fraternity in the neighbouring countries.

Methodology

2. Most of our training programmes are meant for personnel employed in the industry who have had a few years working experience in their respective fields. They are, therefore, expected to be familiar not only with the basics but also with the practical problems facing the industry. The basic approach in these courses, therefore, is on a brief introduction of the various subjects by experts in the respective fields. Thereafter the main emphasis is on discussion and exchange of views, pooling of knowledge between the members of the faculty and the participants on the one side and between the participants themselves on the other. The faculty leader acts only as a catalyst since the participants have varied experience under diverse conditions. Sharing of knowledge with each other has been found to be of tremendous advantage. Group syndicate discussions of case studies on live issues and role playing, which are a regular feature of the training programmes, stimulate individual thinking and maximum participation. This methodology ensures a practical bias to the course. Liberal use is made of audio-visuals and case studies.

Faculty

3. The faculty is drawn from the industry, fertilisers as well as others, Central and State Governments, Universities and other Research Institutes, Institutes of Management and other professional bodies. This ensures a blend between theory and practice as well as provides an opportunity for exchange of views over a much wider cross-section of experts.

4. Some other unique features of the courses need to be mentioned. These courses are regularly attracting participants from the neighbouring countries in Asia, starting from Turkey in the West right through to Korea in the East. We value this participation as, apart from other things, it helps us in understanding more clearly the developments in those countries and draw guidance from their experience. It also gives to our visitors a better appreciation of the developments in India, an experience which they can profitably draw upon.

5. Secondly, the growing participation in these courses from members of the States Department of Agriculture, cooperative marketing federations, agro-industries corporations and suppliers of other agricultural inputs has enhanced considerably the usefulness of these courses. The active participation by and cooperation of members of the Industry, Central Government, State Government officials and its agencies, Agricultural Universities and research institutes has helped in raising the status of these courses to a level which would not have been otherwise possible.

6. The main areas covered by our courses are Marketing and Distribution, Agricultural Sciences and Production functions. Details of each course are circulated nearly three months in advance of the course while inviting nominations.

7. Recognising the importance and efficacy of FAI courses, Fertiliser Industry Advisory Committee of FAO (FIAC) has donated an ad hoc sum of US $ 10,000 to help FAI invite additional participants from neighbouring countries. Indications also are that FAO are keen to encourage and support the FAI training activity as a regional activity.

Marketing

Marketing Management Development

8. Two courses are run every year in the months of April and September at Delhi and Bangalore, respectively These are meant for the Middle Level Executives in the marketing function who have spent a minimum of 4 to 5 years in the marketing and distribution of fertilisers with the manufacturers, marketers, cooperatives, agro-industries corporations or allied agencies like financial institutions connected with the financing of fertiliser marketing. The course covers a broad canvas of marketing principles and practices with a special emphasis on marketing and distribution of fertilisers.

9. The duration of this course is about a fortnight.

Logistics of Fertiliser Distribution

10. This course is meant for such executives in the industry and other marketers who are directly concerned with the formulation and execution of distribution policies and programmes of fertilisers in their respective organisations.

11 Participants are exposed to the latest theories and practices of planning and implementing of different distribution systems with particular reference to fertilisers in India. They are also provided an opportunity to discuss logistics problems in depth under the expert guidance of discussion leaders.

12. It is expected that the participants would have had a few years working experience in this particular function so that cross fertilisation of ideas between the participants from different organisations within the industry and outside can be of mutual advantage.

13. The duration of the course is one week.

Advertising in Fertiliser Marketing

14. This specialised programmes is meant for experts in this particular field in their respective organisations with a minimum of 4 to 5 years experience. Here again, the emphasis is on getting these experts together along with experts from other industries and professional bodies so as to provide a forum for wider interaction. The participants are exposed to the latest developments in the field of advertising which are relevant to fertilisers. They are also provided an opportunity to discuss all aspects of advertising in depth under the expert guidance of discussion leaders. This ensures effective cross fertilisation of their ideas.

15. The duration of the course is one week.

Training Programme for the Field Staff

16. In addition to the courses discussed above, which are run centrally, a number of courses are being run by the Regional Committees of the FAI for the field staff in the fertiliser industry, cooperatives and the State Governments. The emphasis is on more practical problems at the local level. About 8 to 10 such courses are being conducted every year.

Agricultural Sciences

Training Programme for Fertiliser Promotion Executives

17. A 2-week programme is run every year in the latter half of March for agronomists and promotion executives working in the fertiliser industry, cooperative marketing federations, agro-industries corporations, banks, etc. This course is meant for executives involved in fertiliser marketing and promotion with basic training in agricultural sciences and who have been in this field for 5 years or more.

18. Participants are exposed to the latest developments in the field of agricultural research and development pertaining to various crops in different

agro-climatic conditions with particular reference to fertiliser application and efficiency of usage. The main purpose is to provide to them an opportunity to update their scientific knowledge by exposition from the top scientists in the country to improve their effectiveness in the field.

Specialised Programmes on Management of Rainfed Areas, Salt Affected Soils and Management of Acid Soils

19. These are new programmes meant for industry agronomists and promotion executives with a minimum of 4-5 years of field experience. The participants are exposed to the latest developments in these problem areas with particular reference to choice of crops, reclamation techniques, water management and efficient fertiliser use.

20. They are organised in places where these problems exist. This enables the participants to learn different management techniques under actual field situation. The specialised programme on Management of Rainfed Areas is organised once a year and the others every alternate year.

21. The duration of these courses are three days in case of Management of Rainfed Areas and two days for the others.

Orientation Programmes for University Students

22. A series of 10 to 12 orientation programmes of 2-3 days duration for post-graduate students are being conducted in the campuses of various Agricultural Universities. The objective of these programmes is to provide to these participants, while still studying in the Universities, a panoramic view of the fertiliser industry in the country and familiarise them with broad developments in the fields of fertiliser production, consumption and usage. It is in the nature of an introduction of the subject to the corpus of people who will later man jobs in the State Departments of Agriculture, Agricultural Universities and the Agro-Input Marketing organisations and thus be actively participating in increasing the use of fertiliser in their respective areas.

23. These courses are run by our respective Regional Committees in the Universities in their areas.

Orientation Programmes for State Government Extension Staff

24. A beginning has been made with running special programmes of one day duration for agricultural extension officers on a districtwise basis in West Bengal by the Eastern Regional Committee of the FAI. The objective is to provide a line of communication between the Industry, State Governments and Commercial Banks at the grass root level where Government policies and activities of the input suppliers with regard to fertiliser usage and its promotion converge and are implemented It is felt that this additional channel of communication will considerably improve the effectiveness of the total effort being put in by the various agencies in promoting the use of fertilisers. It is hoped to extend this programme to other areas based on the pilot project in West Bengal.

Production Technology

25. Two residential courses are being run, both in Bangalore, one in June and the other in October for the past few years. Additionally one workshop of 2½ days duration for senior maintenance engineers has been planned this year.

Maintenance in the Fertiliser Industry

26. Proper maintenance of plant and equipment in a fertiliser complex can considerably improve its productivity. It has probably not received its due attention in some segments.

27. This course is meant for Middle Level Executives in the maintenance department of the ferti-

liser plants. It covers practical aspects of various facets of maintenance including predictive maintenance. Particular attention is devoted to actual case studies with particular reference to materials of construction, lubrication, planning and execution of various schedules of maintenance, etc.

28. The duration of the course is 11 days.

Instrumentation in the Fertiliser Industry

29. The course is meant for Middle Level Executives handling the instrumentation systems in fertiliser plants. It highlights the importance of instrumentation in the fertiliser industry with a view to optimising productivity, quality and control. It covers the entire gamut of theory and practice in instrumentation in the fertiliser industry with special emphasis on case studies. The participants are exposed to the latest developments in the field of monitoring and control systems.

30. This course is of 6 days duration.

Workshop on Maintenance Management

31. Industry recognises maintenance as a sophisticated complex function which, if well performed, contributes to the operating success and profitability of a plant. The success and effectiveness of the maintenance function is determined by the professional competence and managerial skills of the senior personnel. To achieve the objective it has been decided to organise a workshop for senior maintenance engineers of the level of maintenance superintendents/maintenance managers having 12-15 years experience in the industry. Basically, this workshop would provide a forum for exchange of information and sharing of experience at the higher levels of management. Besides, the senior engineers would be exposed to the latest sophisticated maintenance management, philosophy concepts and techniques.

32. The duration of the workshop is 2½ days

FAI Training Calendar 1980

Month	Function	Course	Duration days	R/NR	Location
March	Marketing	Advertising in Fertiliser Marketing	6	R	Bombay
March/April	Agricultural Sciences	Programme for Fertiliser Promotion Executives	13	R	Bangalore/Calcutta
April	Marketing	Marketing Management Development	13	R	New Delhi
May	Production	Maintenance Engineers	12	R	Bangalore/Madras
September	Marketing	Marketing Management Development	13	R	Bangalore
September	Marketing	Logistics of Fertiliser Distribution	6	R	Madras
September	Agricultural Sciences	Management of Rainfed Areas	3	R	Bangalore
September	Production	Instrumentation Engineers	6	R	Hyderabad/Baroda
September	Agricultural Sciences	Management of Salt Affected Soils	2	R	Karnal
September	Agricultural Sciences	Management of Acid Soils	2	R	Bhubaneswar
Regional Offices*					
Eastern Region					
January/February	Agricultural Sciences	Orientation Course—Agricultural Graduates	2	NR	Kalyani
March	Marketing	Salesmen	4	NR	Gauhati
April	Agricultural Sciences	Orientation Course—District Extension Workers	1	NR	Murshidabad
August	Agricultural Sciences	—do—	1	NR	Jalpaiguri
November/December	Agricultural Sciences	Orientation Course—Farm Graduates	2	NR	Hariaghata (WB)

Western Region					
January	Agricultural Sciences	Orientation Course—Agricultural Graduates	3	NR	Parbhani
January	Agricultural Sciences	Fertiliser Industry Introduction Programme—Agricultural Graduates	1	NR	Nagpur
February	Agricultural Sciences	Orientation Course—Agricultural Graduates	3	NR	Navsari
March	Marketing	alesmen	5	NR	Baroda/Ahmedabad
May	Marketing	Dealer Training Programme	2	NR	Parbhani/Akola
September	Marketing	Salesmen	5	NR	Indore/Bhopal
November	Agricultural Sciences	Fertiliser Industry Introduction Programme—Agricultural Graduates	1	NR	Dhulia
December	Agricultural Sciences	Orientation Course—Agricultural Graduates	3	NR	Akola
Southern Region					
February	Agricultural Sciences	Orientation Course—Agricultural Graduates	2/3	NR	Madurai
April	Marketing	Salesmen	6	NR	Bangalore
September	Agricultural Sciences	Orientation Course—Agricultural Graduates	2/3	NR	Bangalore
October	Marketing	Salesmen	6	NR	Madurai/Coimbatore
Northern Region					
February	Marketing	Salesmen	5	NR	New Delhi
July/October	Agricultural Sciences	Orientation Course—Agricultural Graduates	3	NR	Ludhiana

Note R/NR — Residential/Non-Residential

* Details may please be obtained from Regional Offices

FAI Training Programmes		No. of participants from abroad *
1) Marketing Executives (April 1978)	- 18th in the series	1 - South Korea 2 - Saudi Arabia 9 - Sri Lanka
2) " (September 1978)	19th "	2 - Afghanisthan 2 - Nepal 1 - Jordan
3) " (April 1979)	20th "	7 - Sri Lanka 2 - Bangla Desh 1 - South Korea 1 - Nepal 2 - Afghanisthan
4) " (September 1979)	21st "	1 - Iran
Logistics of Fertiliser Distribution		
1) Logistics programme (held in April 1978)	- 6th in the series	9 - Sri Lanka
2) " (September 1978)	- 7th "	2 - Afghanisthan 1 - Nepal
" (April 1979)	- 8th "	8 - Sri Lanka 2 - Bangla Desh 1 - Afghanisthan 1 - Nepal
4) " (September 1979)	- 9th "	Nil
Advertising & Sales Promotion		
1) Advertising programme (held in February 78)	- 4th in the series	9 - Sri Lanka 1 - Nepal 1 - Iraq 1 - Bangla Desh
2) " (held in February 79)	- 5th in the series	7 - Sri Lanka 2 - Afghanisthan
Programme for Maintenance Engineers		
1) Programme held in June 1978		1 - Saudi Aratia 1 - Indonesia
2) "	June 1979	1 - Kuwait 1 - Malaysia
Programme for Instrument Engineers		
1) Programme held in October 1978		1 - Malaysia 1 - Egypt
2) "	" 1979	2 - Kuwait 1 - Malaysia

* other than Indian participants

Group Discussion	No. of participants from abroad and name of the country *
1978	
1. Operation and Maintenance of Steam Turbines and Centrifugal Compressors held in Hyderabad on March 16-17, 1978	
2. Stream Days in Ammonia and Urea Plants held in Tuticorin on April 26-28, 1978	1 from Bangla Desh
3. Stream Days in Phosphoric Acid and Complex Fertiliser Plants held at Kandla on August 10-12, '78	
4. Fertiliser Promotion, Warehousing and Retail Network held at New Delhi on March 27-28, 1978	
1979	
1. Lowering Cost of Production in Ammonia-Urea Plants held at Baroda on March 23-24, 1979	
2. Lowering Cost of Production in Phos-acid and Complex Fertiliser Plants held at Cochin on November 14-16, '79	2 from Bangla Desh
3. Fertiliser Use in Drylands held at New Delhi on August 17-18, 1979	
Workshops	
1979	
1. Maintenance Management in Fertiliser Industry for Senior level maintenance engineers held at Madras on April 26-28, 1979	1 from Malaysia

* other than Indian participants

Suggestions from Indonesia - by H. Hasan Kasim

There are three areas in which my company, P.T. Pupuk Sriwidjaja (Pusri), is presently working in cooperation with other countries which may be of interest to this meeting.

Pusri was the first fertilizer plant in Indonesia and commenced operation of its 100,000 ton per annum urea plant in 1964. Today, we have installed capacity of 1.6 million tons of urea per annum and have been in a constant phase of expansion since 1970. During such period the Government of Indonesia was also creating other state owned fertilizer companies, and we were requested to organize a Trainig Center in Palembang to help train ammonia, urea, utilities and maintenance personnel for such plants. In this effort, we were assisted by the World Bank which permitted us to use funds from our Pusri III loan to purchase a carmody simulator and other equipment required for the Training Center. We have joined with the Institute of Technology in Bandung to prepare the training materials and their instructors conduct the theory classes at the Center.
Pusri personnel conduct the practical and on the job training.

The Training Center consists of many facilities as described in Attachment A, and we can accomodate about 250 students at one time.
We also provide housing, meals and other amenities for the students in Palembang.

We are pleased to report that we have trained not only Indonesians, but have conducted such a program for 45 trainees of the Ashuganj Fertilizer and Chemical Co. of Bangladesh (AFCC). In february 1980 we were asked by AFCC to train additional personnel in the chemical laboratory, utilities and automotive maintenance and this training will begin in early March of this year.

We believe the Center performs a useful function since it is difficult to find place, apart from vendor shop, where the kind of practical and theoritical training which we provide in Palembang, is otherwise available.

We are of course pleased to receive trainees from other developing countries which do not yet have in - country facilities where such training can take place.

A second activity in which Pusri is currently engaged is to act as the Government of Indonesia's nominee to participate in the joint ASEAN Industrial Project, namely, P.T. Asean Aceh Fertilizer in which we are a 60% shareholder . The grass roots project will consist of a 1000 T/D ammonia plant, a 1725 T/D urea plant and all related utilities. It will be gas based and will be constructed in Lhokseumawe, North Aceh Province.

This is indeed an intresting project since the other shareholders are nominees of the Governments of Malaysia, the Philippines, Singapore and Thailand. The governing document for the formation and stucture of P.T. Asean Aceh Fertilizer was the Basic Agreement on Asean Industrial Projects which was concluded by the Economic Ministers of the five (5) Asean Countries in December, 1978. The Joint Venture Agreement for the Aceh project incorporated the basic concepts of the agreement between the Ministers. The shareholders are represented both on the Board of Directors and on the Supervisory Board.
Although the President Director and Technical Director are from Indonesia, the Commercial Director is from the Philippines and he is currently living in Jakarta and is fully engaged for the project. Each shareholder has at least one member on the Supervisory Board.

All the shareholders have pledged full cooperation in purchasing the product based on their domestic needs, and a pricing formula has been established which tries to do justice both to the company as a producer and to the shareholders as consumers. The Ministers' Agreement established a floor and ceiling prices formula for all Asean projects.

The project will be financed by loans from the Overseas Economic Co-operation Fund and the Export - Import Bank of Japan. The project should be released for construction by mid 1980, with completion expected in 1983. The ASEAN Malaysia Fertilizer Project will be patterned after the Indonesian example.

In connection with the Aceh project, I should like to report on a third area of co - operation, namely transfer of knowhow. Since Pusri was successful in completing all of its plants both early and within budget, and is presently running these plants at or near rated capacity, Pusri was engaged by Aceh Fertilizer to act as their Technical Advisors for the project, at least through the selection of the successful bidder. In this connection, we prepared the Invitation to Bid, cleared it with the OECF on an expedited basis, will meet with the bidders during clarification and site visits, and will assist in the evaluation of the proposals, selection of the successful bidder and the contract negotiation.

Thus, we are now engaged in training personnel of other countries in our ammonia - urea Training Center, are co - operating which 4 other ASEAN countries in the implementation of the Aceh Project, and are making available to Aceh everything that we have learned in the past 20 years when we started to build our first fertilizer plant.

For the future, we know there will be other ASEAN Fertilizer projects in which we will participate, and we forsee the possibility of establishing on a co - operative basis with other countries, receiving terminals for bulk fertilizers, which will make it easier and cheaper to deliver the product. This will likely be the next logical steps in the ASEAN region, and we have begun to explore these possibilities with our near neighbors.

DESCRIPTION OF PUSRI TRAINING CENTER

The training Center consists of :

1. An auditoium with a sound system and a seating capacity for about 50 trainees.
2. Six classrooms, each with a maximum capacity of 35 seats.
3. A special room where plant control board simulators are located.
4. A large room where Ammonia, Urea plants models are located.
5. Offices for members of the training staff.
6. Library.

and we can accomodate about 250 students at one time.

Following equipment are available at the Training Center building to be used during classroom training :

1. A Universal Process Trainer Carmody Simulator.
2. A Foxboro Simulator for training of instrument Maintenance trainees.
3. Plant models for Ammonia and Urea Plants.
4. Overhead projectors, slide projectors, film projector
5. Video cassette recorder/player.
6. Display of the equipment & instruments from the plant.

Beside those mentioned above, for non Indonesian speaking trainees we can provide them with English texts or training materials.

Suggestions from Mexico - by E. Gutiérrez

Mexico's co-operation may be offered through Instituto Mexicano del Petroleo and Fertimex in the following fields:

(a) geological, mining, beneficiation of rock, and potassium;

(b) NH_3, ammonium sulphate and nitrate, sulphuric nitric and phosphoric acids, normal and triple superphosphate BAP and NPK plants for training, etc.

Suggestions from Senegal - by A. Bernos

Il existe déjà au Sénégal la "Société Industrielle d'Engrais au Sénégal" (S.I.E.S.) qui exploite depuis 1968 une usine d'engrais d'une capacité de 120/130.000 T/An d'engrais complexes NPK destinés essentiellement aux besoins du pays.

En 1977 a été mis à l'étude un projet orienté vers les exportations et susceptible de couvrir, entre autres, les besoins de l'Afrique Occidentale Francophone et Anglophone.

La Société créée à cet effet a pour raison sociale, "Industries Chimiques du Sénégal" (I.C.S.)

La conception technique est définitivement arrêtée et les ultimes pourparlers sont actuellement en cours pour le financement. La décision finale de réalisation pourrait intervenir à la fin du 1er semestre 1980.

Le démarrage est prévu aux deuxième semestre de 1983.

1 - Conception et exploitation

Le Gouvernement du Sénégal qui participera pour 25 % au Capital de la Société a confié le leadership du projet à une Société française "Entreprise Minière et Chimique" (E.M.C.) qui prendra une participation importante dans le capital.

A ce titre cette Société a mené à bien :

- les études préliminaires
- le rapport de faisibility
- les dossiers d'appel d'offres et le dépouillement des offres.

En outre elle assurera l'engineering ainsi que la coordination des travaux pendant la construction ; elle sera chargée du démarrage des ateliers et de la formation du personnel.

Enfin pendant la période de fonctionnement E.M.C. sera liée aux I.C.S. par des contrats d'assistance technique et de commercialisation.

Il est prévu de réaliser une étroite symbiose avec la Société S.I.E.S. déjà installée au Sénégal. Les installations de la S.I.E.S. seront utilisées, en particulier pour la formation du personnel et la mise au point des process de fabrication à partir des phosphates bruts de Taïba.

2 - Participations

Les promoteurs des I.C.S. se sont efforcés de donner au projet une orientation régionale et de se réserver en même temps des garanties tant pour l'écoulement des produits finis que pour l'approvisionnement des matières premières.

C'est ainsi que dans le cadre régional la Côte d'Ivoire prendra une participation au Capital. Des pourparlers sont en cours avec le Cameroun et le Nigéria dans le même but, le Nigéria étant par la suite susceptible de fournir de l'ammoniac au Sénégal en contre partie d'une livraison d'acide phosphorique pour alimenter l'usine d'engrais qu'il a décidé de construire. (1)

Parmi les autres partenaires avec lesquels les négociations sont achevées ou très avancées, figurent :

- les Indes qui seraient acheteurs d'acide phosphorique
- la Pologne qui serait liée par contrat pour la fourniture de soufre
- la Compagnie Sénégalaise des Phosphates de Taïba, fournisseur de phosphate
- la SIES qui sera alimentée en acide phosphorique par les ICS et fera bénéficier cette dernière de l'expérience de 10 ans acquise dans son usine de Dakar.
- l'International Finance Corporation (I.F.C.-)
- La Banque Islamique de Développement (B.I.D.)

3 - Description du projet

1-1 Capacité des ateliers :

Les capacités de l'usine sont les suivantes :

atelier sulfurique :		1.700 t/j	H_2SO_4 à 100 %
atelier phosphorique :		600 t/j	P_2O_5
atelier d'engrais :		880 t/j	TSP (0.46.0)
	ou	606 t/j	DAP (16.48.0)
	ou	555 t/j	MAP (10.54.0)

correspondant à une consommation de 300 t/j de P_2O_5

acide phosphorique en l'état : la capacité disponible s'élève à 300 t/j P_2O_5 dont l'utilisation sera la suivante :

100 t/j P_2O_5 pour les besoins de la SIES à destination du marché local

200 t/j P_2O_5 pour l'exportation.

1-2 Matières premières :

Phosphate : il sera fourni par le gisement sénégalais de Taïba. L'usine s'efforcera d'utiliser un mélange de phosphate à haute teneur et de phosphate brut avec pour objectif d'augmenter la proportion des produits bruts par une adaptation progressive des installations.

soufre : il sera importé sous forme pulvérulente ou granulée.

ammoniac : il sera importé par un Terminal portuaire de 10.000 t de capacité de stockage, relié à l'usine par un pipe-line de 20 Km.

1-3 Zone géographique de Commercialisation :

Les zones sur lesquelles la production pourra être écoulée sont :

pour les engrais :

l'Afrique de l'Ouest

l'Afrique Equatoriale et Centrale

l'Océan Indien (Madagascar et la Réunion)

pour l'acide phosphorique en l'état :

les Indes et la Pologne.

4 - Financement

Les besoins de financement s'élèvent à environ 260 millions de dollars qui se décomposent ainsi :

Capital	: 40 % soit	104 M. U.S.D.
Crédit Long Terme	: 45 % soit	117 M. U.S.D.
Crédit Moyen Terme	: 15 % soit	39 M. U.S.D.
Total	100 % soit	260 M. U.S.D.

Le capital étant couvert par les actionnaires énuméré s précédemment, les Crédits à Long Terme sont négociés auprès des organismes financiers internationaux en particulier :

International Finance Corporation
Banque Européenne de Développement
Caisse Centrale de Coopération Economique (France)
Deutsche Eutwicklungsgesellschaft (Allemagne)
Banque Africaine de Développement (BAD)

Banque Arabe de Développement pour l'Afrique (BADEA)

Fonds Koweitien de Développement

Fonds Spécial de l'OPEP

etc...

Les Crédits à Moyen Terme seront fournis sous forme de Crédits fournisseurs.

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(1) Des relations se sont déjà établies entre le Sénégal et le Nigéria dans le domaine des engrais. La SIES livre, en effet, des engrais au Nigéria et d'autre part lui apporte une assistance technique en organisant des stages de perfectionnement à Dakar pour les techniciens du service entretien de l'usine de la "Federal Superphosphate Fertilizer Co Ltd" de Kaduna.

II. SUGGESTIONS FROM REGIONAL AND INTER-REGIONAL ASSOCIATIONS

Suggestions from ADIFAL, Asociacon para el Desarrollo de la Industria de los Fertilizantes de America Latina - by J. Cordero

IFAL PAST ACTIVITIES

ANTECEDENTS

ADIFAL was created after the oil crisis of 1974, which seriously affected the economy of Latin American consumers of fertilizers and raw materials; and also the planning of the manufacturers who predicted a steady growth of the demand according to the fast desapearance of inventories, exhorbitant price increase and shortage of most of the available raw materials. Investments in new capacities was substantial, and once the situation was normalized and the prices started to lower, it was realized that a tremendous network of false information, speculation and interest had been manipulated in order to create a histerical demand for the benefit of a few brokers and producers.

Since that time, among other organizations, ADIFAL was founded, mainly in order to analize all available information and recommend its members how to maneuver under the circumstances.

An important group of Latin American fertilizer manufacturers and commercial organization, gathered to discuss that situation and how to prevent future problems of the same kind. It was decided that a permanent institution was in order, under a secretariat residing in Mexico City.

OBJECTIVES:

Main objectives of the organization are as follows:

a) To study and suggest production and consumption policies, to avoid shortage or oversupply or multiplicity.

b) To gather and distribute pertinent information on the behavior of the fertilizer industry and related industries.

c) To make international marketing studies in order to inform the members on time to take the appropriate decisions according to their own interest.

d) To coordinate supply programs among its members in order to stablish appropriate levels of prices of fertilizers.

e) To mediate before third persons outside of the latin ameri.an area for the solution of problems affecting the members.

f) To act as legal, technical and economical consultant whenever be requested.

g) To participate as mediator among its members in those matters related with the objective of the Association, when requested by interested parties.

h) To promote the technical cooperation, the adoption of trade patterns - or standards -, the interchange and publication of cientific reports and propitiate the development and diffusion of technology in those activities related with the fertilizers industry.

i) To analize and inform about the shipment and storage situations of fertilizers.

j) To promote within its possibilities and those of the managers of associated enterprises, the knowledgment, and the direct relation in the widest and most complete possible way in order to promote and establish the bonds among latinamerican fertilizer producers.

k) To create practical ways of multilateral information on spare parts - in stock and raw materials helping in every instance as a compensation chamber for the supplying of equipment and raw materials among the members who have so determinate.

l) To carry out the related activities to those been stated.

ADIFAL's administration was restructured in 1978 in order to broaden its activity towards other regions outside Latin America. In that order, the articles of association were modified to associate manufacturers and brokers with participation of foreign capital, and also from countries outside America.

PAST ACTIVITIES

The First Latin American Congress on Fertilizers was organized in Acapulco, México.

The second in Caracas, Venezuela.

The third congress in El Salvador. And in 1978, we organized the First Meeting ADIFAL-ISMA in Mexico City under the theme "Fertilizer Use", with a great success in attendance and number of countries represented. This was our first important effort to a better communication and action between organizations of different areas.

The fourth congress in Buenos Aires, Argentina under the logo: "Regional Cooperation" in november of 1979. In this meeting we gathered delegates of 22 countries, including some people from England, Italy, Germany, Kuwait, United States and Spain.

ADIFAL has always had the idea of cooperation between regional association as one of the solutions to a better use of the installations, normalization of the products promotion of the use of fertilizer, rationalization of prices; and difusion of the available information and experience among developing countries.

FUTURE PROGRAMMES

Several technical seminars will be organized on fertilizer use for basic products: coffee, sugar cane, wheat, corn and banano will be the first to be held during 1980 and 1981.

The idea is to interchange experiences and recommendations from the different countries all over the world producing such basic crops, and to publish the conclusions that will arise from these meetings.

Other technical seminars in manufacturing and marketing areas are planned, but in a more limited number of people invited because of budget problems.

As it is usual in these type of organizations, the main limitation to fulfill our programs is the economical problem of our budget and also high cost of transportation of most of our members going to different parts of the world to attend the numerous meetings of the fertilizer industry.

Suggestions from the Arab Federation of Chemical Fertilizer Producers - by F. Al Maayouf

AFCFP is an Inter-Arab Organization concerned with the promotion and development of cooperation and coordination of technical, manpower, and commercial relations and activities in the field of fertilizer industry and its raw materials among Fertilizer Producers and consumers in the Arab Region, and does not have the transaction of commercial business or the pusuit of gain.

The Secretariat General started its activities on 6/4/1976 in the country of domicile - Kuwait. The Federation has realised, since its start, the importance of cooperation with Sub-Regional, Regional, and Research and Development Centers concerned with the Fertilizer industry and its raw materials all over the World, as a means of strengthening co-operation among developing countries. During this short period of the work of the Federation, we have succeeded to achieve the following:

1- Exchange of Membership with Regional Associations and Federations:

* FAI and FMA are observer members in our Federation.
* We have made contacts with ADIFAL to exchange membership.

2- Membership of AFCFP in International Organizations:

* AFCFP is a Consultative Member in UNIDO (24/4/1976).
* AFCFP is an Affiliate Member in ISMA (2/12/1976).
* AFCFP is a liaison Member in FAO (1/4/1976).

3- Information Dissemination:

* AFCFP started in January 1978 to introduce a second Language in the Monthly News Bulletin which contains the news of the fertilizer industry and the related activities in the Arab Region, and to circulate it to all federations, asscciations, organizations, Research Centers and many fertilizer companies and institutions all over the World. This in addition, to its circulation to all associations, Ministries, Companies, Universities, Public Libraries and all concerned with fertilizer industry in the Arab Region. The Bulletin now contains three languages: Arabic, English and French.
* Towards the end of 1978, we published the pilot issue of our Quarterly Journal "Technology and Development" and the first issue was published in March 1979. This journal is published in two languages and circulated with the Monthly Bulletin. The Journal, in every issue, contains a detailed article about one of our member companies, in addition to the technical articles written by Arab and International Experts.

4- Joint-Activities with Regional and International Institutions:

1- The Fertilizer Association of India (FAI):

This association provides us with its publications about the fertilizer industry in India. From our side, we publish the news of this industry and the information about seminars, meetings and training courses in India in our Monthly Bulletin.

We purchase their technical publications anddistribute to our member companies. FAI is a very experienced and active association and its experience is quite valuable to developing countries.

2- Fertilizer Manufacturers Association (FMA):

This association provides us with the news of the fertilizer industry in U.K. and has helped us to promote our federation activities among its members.

3- United Nations Industrial Development Organization (UNIDO)

UNIDO has helped our federation in many fields:

* Training:
  - Organization of a training course in Romania in 1978 for three weeks for engineers and technicians from member companies.
  - Organization of a training course in Sweden in 1979 for two weeks in collaboration with Sandvik (Federation Member), on corrosion and attended by engineers from member companies and from Developing Countries.
  - We receive training opportunities manual of UNIDO, and circulate to our member companies the training programs related to fertilizer industry.
* Information Collection:
  UNIDO provides us with copies of all its publications and we circulate the information related to fertilizer industry to all our member companies.
* Field Studies:
  UNIDO, UNDP, IDCAS and AFCFP cooperated in the field study about the fertilizer industry in the Arab Region mid 1977 and a report was produced which contained certain recommendations regarding problems of this industry.
* Seminars and Meetings:
  - We attend meetings organized by UNIDO about the various aspects of the fertilizer industry.
  - UNIDO collaborated with us in helding the "Raising Productivity Seminar in Fertilizer Plants" Baghdad, March 1978.

4- International Phosphate Industry Association (ISMA):

We have very close relation with ISMA. since we are a member in this association and our chairman of the Board Mr. A. Al-Nouri is vice-president for Middle East in ISMA Executive committee .

- We receive all publications of ISMA.
- We receive regularly their statistical reports, which help

us very much in our efforts in information dissemination about the fertilizer industry to all concerned in the Arab Region.

- Issue of joint-papers and reports about the fertilizer industry in the Arab Region.
- Support of ISMA to our activities, like seminars and meetings taking place in the Region.

5- Food and Agricultural Organization (FAO):

We are a liaison Member in FAO and they send us their publications and Bulletins regularly.

- Cooperation in the field of experimental stations on fertilizers in the Arab Region. AFCFP donated 100 tons urea to Sudan Experimental Station.
- Cooperation in the field of statistics on fertilizers in the Arab Region: Production - Export - Import and Consumption.
- Attendence of FAO Annual Meetings and participation in FAO/FIAC programme through our member companies.

6- United Nations Development Programme (UNDP):

UNDP has helped our federation in collaboration with IDCAS to work out a long term programme for the coming three years by sponsoring a consultation meeting for experts from Arab Countries and representatives of all Arab and International Organizations concerned with the Development of the fertilizer industry in the Arab Region, in December 1978 in Amman, Jordan. This programme will start early this year.

7- ADIFAL:

We have started contacts with this association and exchange of Bulletins and publications. Also, we look forward to the exchange of membership which would enable us and them attend Annual Meetings.

8- International Fertilizer Development Center (IFDC):

We exchange Bulletins and Journal and we receive technical reports and papers.

9- The Potash Institute - Switzerland:

We exchange pulications and receive their Bulletins and news leaflets regularly and publish their news in our Monthly Bulletin.

10- Other Associations and Research Centers:

We distribute our Monthly Bulletin and Journal to all Fertilizer Associations, Companies and Research Centers in many countries in the World.

5- Other Activities:

1- The Federation held an International Seminar on Productivity of Fertilizer Plants in collaboration with IDCAS and UNIDO in Baghdad, March 1978, and at the same time, The First International Chemical Fertilizer Fair, attended by a big number of participants from countries all over the World.

2- The Federation has done a lot of contacts with Financial Institution in the Arab Region to support and help developing countries in their fertilizer programmes.

6- Future Activities:

* UNDP Programme: (1980 - 1983)

This programme, with a budget of more than 2 Million Dollars from UNDP and IDCAS, includes a lot of activities, like seminars, meetings, study tours, and training workshops.

* Joint - Meetings:

- We are now collaborating with ISMA to held the Raw Materials Committee in Kuwait, early 1981.
- We are looking forward for more cooperation with ISMA in the field of statistics, reports, forcasts about the fertilizer industry in the Arab Region.

* Information Dissemination:

The Secretariat General is planning to increase and improve the level of information dissemination about the fertilizer industry and its raw materials in the Arab Region and the World, such that we will be able to reproduce thousands of copies of our Monthly Bulletin, Quarterly Journal, Statistics, Reports and send it to all concerned with the fertilizer industry in the developing countries, and the Arab Region.

Suggestions from IFDC[1/] - by L.B. Williams

IFDC has many requests from developing countries to cooperate on fertilizer-related projects. The best way to inform the ad hoc committee on IFDC's suggestions for practical forms of cooperation between developing countries is to describe a select number of activities that IFDC is presently pursuing in several countries to encourage the development and use of fertilizers.

IFDC Mission

The mission of IFDC is to ensure that appropriate fertilizer technology and know-how are available to the developing countries and to encourage the proper use of fertilizers to increase food production.

IFDC's overall program objectives are focused on the development of improved fertilizers and, as appropriate, the expanded or more efficient use of currently available materials. Special emphasis is placed on developing more effective fertilizer materials for food crops grown under tropical or subtropical conditions. Where technically feasible, emphasis is also placed on employing indigenous raw materials and production capabilities. In broad general terms, IFDC programs have developed along fertilizer research and development and market development assistance.

Activities

IFDC has been involved in eight major areas of activity with cooperating countries and organizations. In view of the time limit, I will mention a few specific examples of the work being carried out in each area.

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1. The International Fertilizer Development Center (IFDC), a public, nonprofit, international organization, registered in the State of Alabama, U.S.A., under the U.S. "International Organization Immunities Act" and having its registered office at Muscle Shoals, Alabama, U.S.A., 35660, was established in 1974 for the specific purpose of improving fertilizers and their use for developing countries.

I. Training

Group training programs are divided broadly into three classifications: (a) fertilizer marketing, (b) fertilizer production and technology, and (c) fertilizer efficiency research. The objective of each type of training is:

A. Fertilizer Marketing Training

1. Increase the participant's breadth of knowledge of the fertilizer industry from production or procurement to the end user (farmer) with particular emphasis on marketing concepts and the elements of marketing systems.
2. Demonstrate how to analyze, develop, adapt, or modify system(s) to fit conditions in a participant's country to meet the needs of farmers.
3. Develop plans for specific marketing improvements in the participant's work responsibility area.

B. Fertilizer Production and Technology Training

1. Provide the participants with a broad overview of traditional and emerging granulation technologies;
2. Provide instruction related to granulation processes, process design, and operating techniques suited to regional climate and requirements;
3. Discuss fundamentals of fertilizer granulation plant organization and management; and
4. Address fundamentals of formulation, inventory control, quality ensurance and control, safety, and environmental protection.

C. Fertilizer Efficiency Research Training

1. Develop and improve skills of research workers in conducting fertilizer trials at experiment stations and farmers' fields.
2. Impart the necessary techniques to conduct trials and to process, analyze, and interpret data generated from trials.
3. Enable participants to test new fertilizer materials and methodologies in field research.

D. Examples of Training Conducted by IFDC are:

1. Colombia--A training program focusing on materials handling at the port and in the plant was carried out for MONOMEROS.
2. Brazil--Formal training was given to seven staff members from CEFER in tne basic principles of fertilizer research and development.

3. The third annual Fertilizer Marketing and Distribution Course was conducted at IFDC in 1979; a fourth course is scheduled for this year.
4. Nigeria--IFDC and IITA conducted a 4-week course titled "Fertilizer Use in the Tropics" at IITA.* This course will be conducted again in 1980 in Colombia and Kenya.
5. Mexico--A 5-week course on all phases of the fertilizer industry--manufacturing, marketing, planning, management, research and new processes--was conducted at IFDC in 1979 for personnel from the fertilizer industry in Mexico.
6. Philippines--IFDC and IRRI collaborated by sponsoring a 4-month course on "Rice Management and Fertilizer Use" at IRRI.

II. Improving Plant Production Capabilities

A. With Monomeros Colombo-Venezolanos (MONOMEROS) studies have been done to improve handling of fertilizer materials at the port and in the plant. Reviews are being conducted of equipment recommendations for premix operation for granulation, pipe-cross reactor, and pollution control.

B. A study was made to determine the feasibility of process modification of the superphosphate plant located in Kaduna, Nigeria.

III. Assistance for Plants Under Construction

A. IFDC engineers assisted Companhia Riograndense de Adubos (CRA) of Brazil in the design, installation, and startup of a production unit using the pipe-cross reactor.

B. Engineering assistance was provided P.T. PUSRI in the conversion of the PUSRI I facility from prilled to granular urea.

C. In Malaysia assistance was given FPM Bhd. Sdn. (joint venture Felda KPM Niaga Bank and Behn, Meyer) in solving technical and design problems involved in granulating various grades of NPK fertilizers containing kieserite and urea as sources of nitrogen and magnesium. Invitations to bid for construction of such a plant have been released.

IV. Assistance in Establishing Industry Strategy

A. Bolivia--A study was conducted to determine the feasibility of establishing a bulk-handling and bulk-blending facility as a means of reducing fertilizer costs to the farmer.

*Course name has been changed to Fertilizer Efficiency Research in the Tropics.

B. Haiti--A study was carried out to determine the role fertilizer could play in agriculture and the feasibility of establishing a bulk unloading and blending facility.

C. Nigeria--A study was carried out to evaluate the suitability of various nitrogen sources of fertilizer for Nigerian agriculture.

D. Thailand--A study was carried out with the specific objective of determining the potential for developing an ammonia-urea complex in that country.

E. The report Fertilizer Distribution in Bangladesh was published in 1979 and provides a general overview of the fertilizer situation with emphasis on storage and distribution.

F. A fertilizer sector study of Mexico was completed in late 1979. The report describes the production, distribution, and marketing facilities of the fertilizer industry in the country.

G. A fertilizer marketing study was completed in February 1980 for Nigeria. The study includes a prototype marketing system to handle production from a proposed nitrogen plant at Port Harcourt.

V. Establishing and Maintaining an Information Base

A. A report is nearing completion showing typical capital investment production costs and raw material requirements for various sizes and types of fertilizer facilities located in the developing and developed world.

B. The World Fertilizer Situation and Outlook--1978-1985 was published.

C. An update of the 1967 Fertilizer Manual has been completed. This was done in cooperation with UNIDO.

D. IFDC with assistance from The Sulphur Institute prepared and published in 1979 a report titled Sulfur in the Tropics.

E. A study was made to determine the system required for marketing phosphate rock in Malaysia.

F. ASEAN--A fertilizer industry regional planning study. This is an update of the regional planning study conducted in 1975 jointly by IFDC and The World Bank. Alternative supply strategies and effects on costs are considered.

VI. Engineering Technology Research

A. A study was made to determine the best ways to use Brazilian Araxa phosphate rock to make triple superphosphate.

B. Studies have been carried out in Egypt, Senegal, Upper Volta, and Sri Lanka to determine the feasibility of using indigenous phosphate rock.

VII. Field Projects (Agronomy and Marketing)

A. Agronomic assistance to SODEVA of Senegal was provided to analyze fertilizer response data from experiments conducted on peanut and millet over the past 25 years. Technical recommendations for more efficient fertilizer use were made.

B. Bangladesh Agricultural Development Corporation (BADC) has contracted with IFDC for fertilizer distribution and marketing consultancy services. An extensive field study on factors influencing farm-level adoption and demand for fertilizers is underway in Bangladesh.

C. In cooperation with CIAT, IFDC staff members have been positioned in Colombia to study ways to more efficiently utilize phosphate on the acid soils of Latin America.

D. An IFDC soil scientist is posted at IRRI as part of a joint IRRI/IFDC effort to study the fate and efficiency of N from conventional and experimental fertilizers applied to lowland rice.

E. A study was carried out in Guatemala to examine how small farmers make decisions to buy fertilizers.

F. Field studies are underway in Malaysia, Indonesia, the Philippines, and Thailand relative to fertilizer policy.

VIII. Meetings, Seminars, and Workshops

IFDC staff members have attended numerous meetings and given many papers. Examples of these activities are as follows:

A. A paper on "Changing Patterns in the Fertilizer Sector and Their Possible Impact on the Caribbean Basin" was written and presented at the SIECA Seminar held in Guatemala City.

B. A paper on "Possibilities for Improving Nitrogen Fertilizer Efficiency for Rice" was presented at the American Chemical Society Meeting in Honolulu.

C. Papers on "Unusual and Unique Fertilizer Needs in Developing Countries" and also, on "Small-Scale Fertilizer Plants in the People's Republic of China" were presented at a meeting of the American Institute of Chemical Engineers. These papers were part of a symposium on fertilizer technology in developing countries.

D. A 3-day workshop was held at IFDC Headquarters titled "Sulfur in the Tropics." Fifteen people from six countries participated.

E. A 4-week workshop at IFDC was coordinated with the India Council for Agricultural Research (ICAR) to develop a program for increasing N efficiency on rice in India.

Recommendations

1. Personnel to manage the fertilizer industry in developing countries is one of the principal constraints; capable personnel will be required to build capability in development and use of fertilizers. Fertilizer training should continue on an accelerated basis. When possible, training should be site specific for requirements.
2. Assistance for improving manufacturing facilities should continue.
3. Assistance must be given to developing countries in establishing an information base for planning.
4. Consideration should be given to the establishment of regional fertilizer centers. The centers could provide a base for training, research, and interchange of information.
5. Assistance to individual countries for problem solving on agronomic and marketing problems should continue.

When possible personnel for rendering the assistance should be drawn from developing countries having the required expertise.

Suggestions from ISMA, International Phosphate Industry Association

- by K.L.C. Windridge

ISMA - the International Phosphate Industry Association - is a non-commercial association of fertiliser manufacturers. It is the only fertiliser industry association with a worldwide membership comprising all sectors of the industry and associated businesses. Member organisations are located in 67 countries, including 39 developing countries (see attached list). Although traditionally oriented towards serving the phosphate fertiliser and phosphate rock industries, ISMA now admits nitrogen and potash producers as ordinary members, together with phosphate producers, even though they may not produce any phosphate materials. (The name "ISMA" originates from its formation in 1926 as the International Superphosphate Manufacturers' Association. "ISMA" was registered as the official name of the Association in 1975. Its Secretariat is located at 28 rue Marbeuf, 75008 Paris, France.)

ISMA has 3 classes of members : ordinary, affiliate and associate. Ordinary members comprise fertiliser manufacturers and phosphate rock producers. Affiliate members comprise other fertiliser raw materials producers, as well as national and international associations of producers. These associations may be of a commercial or a non-commercial nature, and the latter type include, for example, ADIFAL, ANDA, AFCFP, and FAI. Associate members are organisations which do business with the fertiliser industry but which do not produce fertiliser materials (e.g. trading, shipping, engineering and consultant companies) or governmental bodies associated with fertiliser materials research and development (e.g. IFDC, TVA, USBM, USGS, CEFER (Brazil) and NFDC (Pakistan)).

The Ordinary members of ISMA, comprising a large proportion of world nitrogen, phosphate and potash production capacity, are represented in a governing Council and in 4 basic committees : Agricultural, Technical, Economics and Raw Materials. Each committee has various working parties. These bodies are responsible for conducting the activities of the Association. These activities are of 3 kinds : the organisation of conferences and meetings; the collection, discussion and dissemination of documentary information; and the assistance of intergovernmental agencies such as FAO, UNIDO, UNCTAD and the World Bank, either directly or through the FAO Fertiliser Industry Advisory Committee (FIAC). The Secretariat of ISMA carries out the programme of activities determined by the Council and Committees in accordance with an annual budget which is financed by members' subscriptions and conference fees.

Most ISMA activities aim to serve the whole of the membership rather than the developed or developing countries taken as separate groups. ISMA conferences are normally open to all members and provide opportunities for all levels of management to meet from all countries of the world. An annual conference is held on the occasion of the Annual General Meeting and has become the fertiliser industry's premier international business meeting. A biennial technical conference has similarly become the industry's foremost international forum for the presentation and discussion of the latest developments in the science and technology of fertiliser production. Agricultural meetings are held annually in different member countries to provide members' agronomists and agricultural economists with an international occasion for the discussion of their particular problems.

Similarly, the preparation of reports and statistics is designed to provide a general service. Committees select topics for consideration, papers are invited and discussed, information is gathered and presented, and the results are communicated to all members (occasionally restricted to ordinary members or to members of particular committees). Data sources are normally ISMA members, and ISMA statistics constitute an original input for FAO, World Bank, TVA, etc., as well as for commercial organisations such as British Sulphur Corp., A.D. Little, Stanford Research Institute, etc. which are affiliate members. ISMA statistics are not limited to historical production, consumption, trade and production capacity data. Annual prospective supply/demand surveys are made and presented as world forecasts for phosphate rock, phosphoric acid, phosphate fertilisers and sulphurous raw materials. Plant by plant production capacity lists are compiled for phosphoric acid and, recently, for ammonia.

ISMA considers that a large part of its assistance to the fertiliser industry in developing countries will continue to be in the form of activities like those mentioned above which unite producers in both developed and developing countries in collaborative and mutually beneficial information exchange and discussion. ISMA considers that great care should be taken by those who are responsible for running the industry not to encourage the growth of an institutional division between the developed and the developing countries at the level of professional aid and collaboration. Such a division could adversely affect the spirit of collaborative goodwill between producers in the two groups of countries, without which the necessary exchange and transfer of knowledge and experience would be harder to achieve.

Nevertheless, it is obvious that the developing countries face special problems and that one of the most useful approaches to their solution is the exchange of experience among countries facing similar problems. ISMA has recognised this by adopting a regional policy which encourages members in different parts of the world to organise regional activities within the framework of the total programme of the Association. Where regional or national associations are already active in the developing countries, their members are often also members of ISMA, and in this case they may be considered as the appropriate vehicles for the local organisation of collaborative regional activities. As indicated previously, these regional and national fertiliser associations are mostly affiliate members of ISMA.

Some examples of collaboration with such associations are as follows :

- ANDA/ISMA Seminar on Fertiliser Technology, Sao Paulo, Brazil, April 1975. 18 papers, of which 12 were non-Brazilian and arranged by ISMA.
- FAI/ISMA Seminar on Technology of Compound Fertilisers based on urea, and Use and Beneficiation of low grade phosphate rock, New Delhi, India, December 1975. 21 papers, of which 10 were non-Indian and arranged by ISMA
- ADIFAL/ISMA Conference on Fertiliser Use, Mexico, June, 1978. 34 papers, of which 12 were arranged by ISMA.
- Arab Fertilizer Seminar, Khartoum, scheduled for December, 1979, but postponed. ISMA has collaborated with AFCFP in preparing a paper on "Constraints to increased use of fertilizers in the Arab Region", based on member surveys conducted by both organisations.
- FAI 25th Anniversary Seminar, New Delhi, December, 1980. ISMA plans to arrange several papers for this occasion.

ISMA has held several of its own meetings in developing countries, and such locations will be increasingly important in its programme. Some examples are :

- 1st ISMA regional Middle East meeting, Istanbul, December 1978
- 47th Annual Conference, Rio de Janeiro, May, 1979
- 5th Enlarged Council Meeting, Dakar, November, 1979
- 2nd Symposium on Phosphorus in Agriculture, Mohammedia, Morocco, March, 1979
- 49th Annual Conference, Singapore, May, 1981

ISMA is progressively adjusting the composition of its Executive Committee to allow more representation from developing countries. It has elected regional Vice Presidents from Brazil, Hispano-America, North and West Africa and the Middle East.

The contribution of ISMA to the main intergovernmental agencies concerned with fertilisers takes two forms : information and expertise on the one hand, and

financial assistance on the other. The latter has been limited to the FAO Fertiliser Programme and related activities. Since the Programme began in 1961, ISMA has contributed over $1 million through FIAC, of which it is a founder member. Participation in the various FAO/FIAC fertiliser working parties includes the provision of information and statistics, the attendance of specialists, assistance with the organisation of meetings, etc. Through FIAC, ISMA also assists the UNIDO/FAO/World Bank Fertiliser Working Group, particularly with supply and demand forecasts for phosphate rock, phosphoric acid and sulphur.

ISMA has contributed to UNIDO regional fertiliser meetings and to its Fertiliser Industry Consultations. It invites UNIDO attendance at its general and technical conferences. It plans to contribute, jointly with APEA, to the UNIDO Seminar on Fertiliser Plant Safety, New Delhi, December 1980.

ISMA has provided UNCTAD with statistics and factual data for the preparation of documentation presented to various meetings on phosphates within the context of the Integrated Commodities Programme.

ISMA does not seek to influence questions of policy within these agencies, for it recognises that its role is at the professional fact-finding level. Its membership is too heterogenous for it to constitute a lobby for any particular sector of the industry.

It should also be added that ISMA does not have, and does not envisage any programme of research, training, extension or field promotion of its own, although it occasionally contributes expertise to the programmes of other organisations. The greatest asset of ISMA is the goodwill of its members, and this enables it to act as an intermediary between member enterprises to arrange plant visits, training assistance and bilateral exchanges of experience.

LIST OF DEVELOPING COUNTRIES WHERE ISMA HAS MEMBERS

Algeria
Argentina
Brazil
Colombia
Cuba
Ecuador
Egypt
India
Indonesia
Iran
Iraq
Jordan
Korea (South)
Kuwait
Lebanon
Libya
Malaysia
Mexico
Morocco
Nauru
Pakistan
Philippines
Saudi Arabia
Senegal
Swaziland
Syria
Tanzania
Thailand
Togo
Tunisia
Turkey
Uruguay
Venezuela
Nigeria

III. SUGGESTIONS ON FUTURE ACTIVITIES AND MODUS OPERANDI OF THE AD HOC COMMITTEE - by E. Gutiérrez

Within the scope of Cooperation among Developing Countries in the Fertilizer Industry, in addition to install new capacity or to improve the present one, and as a result, what is of priority importance, is to produce the food required by our countries. Food and not including the supply of fertilizers, very frequently has been a mistaken political instrument against the economies of Developing Countries with its consequential effects.

In the achievement to stimulate, encourage and improve the production of food, the fertilizers weather chemical or natural, are a must.

Some Developing Countries have accumulated extraordinary experience in the fertilizer industry and being this First Meeting a propitious opportunity, herewith, are presented in whole a resumé of suggestions for future activities of the Ad Hoc Committee on Cooperation among Developing Countries in the Fertilizer Industry.

1. To stimulate in Africa, the development of the fertilizer industry and the consumption-use of fertilizers, a Regional Association and a Regional Fertilizers Development Center, should be organized.

2. To encourage and coordinate the Cooperation among Developing Countries, meetings with interested associations, federations and fertilizer development centers including the Committee of Fertilizers from the Organization of African Unity, should be organized and then, to analized or select from the following areas of action:

A. Joint Ventures on:

---exploitation of natural resources,
---plant production,
---expanding production capacity,
---marketing, trading, purchasing and distribution.

B. Feasibility Projects about:

---exploitation of natural resources,
---plant location,
---establishing of plants,
---expanding of production capacity,
---infraestructure.

C. Advisory and Assistance on:

---preparing contracts,
---selection of technology,
---contracting technology,
---technology transfer,
---contract negotiations,
---commisioning of plants,
---selection of equipment,
---preparing of specifications for tenders and bids,
---evaluation of tenders and bids results,
---start-up of operations,
---trouble shouting,
---supervision during construction,
---preparing operation manuals,
---maintenance programs,
---training capacity,
---financing,
---alternative sources of supply,
---trading.
---quality control,
---pollution,
---legal,
---by-laws for Associations and Development Centers.

D. Training on:

---exploitation of natural resources
---beneficiation of phosphates and potasium salts,

---operation of plants,
---marketing and administration.

E. Preparing of Assistance Programs:

---on specific subjects, requested by the interested party or parties.

F. Promoting:

---Regional Associations,
---Regional Fertilizer Development Centers,
---fertilizer projects,
---agro-industries,
---auxiliary industries such as: chemicals, spare parts, bag plants,
---exchange of information,
---exchange of technical and administrative personel,
---visiting of plants.

G. Studies about:

---prices and tariff policies,
---incentives to the industry,
---reduction of imports through the use of alternative materials
---estimulate consumption,
---financing,
---use or improvement of available infraestructure,
---marketing and distribution,
---handling of materials,
---storage,
---transportation,
---development programs.

H. In addition to the above sggested areas of action and cooperation:

---to monitor and surveil the industry growth, the gathering of information on a world wide basis to produce an inventory on present and actual plant capacity, its location and including future developments. Also realistic statistical data on supply and demand.

From the benefit of having, in this First Meeting, the attendance of

the representatives from the most important fertilizer organizations in Developing Countries, and personalities with recognized experience, we shoul be able:

1. In order to make the Ad Hoc Committee operative, its modus operandi should be established. And,

2. being authentic with our thoughts about the objectives of the Ad Hoc Committee and the purpose of this First Meeting, from the suggested areas of action and others, we should be able to unite our ideas in elaborating a Program of Action to be performed before the coming Third Consultation Meeting on the Fertilizer Industry.

To encourage and stimulate the Cooperation among Developing Countries in the Fertilizer Industry, the Ad Hoc Committee on Fertilizers should have a -modus operandi- and due the preceding premise, it is suggested the following one:

1. The Committee should have a Headquarters and this to be located at UNIDO in Vienna.

2. The Committee should report to UNIDO-Negotiations Section-Division of Policy Coordination.

3. The objectives of the Committee will be the ones agreed during the Second Consultation Meeting on the Fertilizer Industry and described in paper ID/WG.281/19.

4. The activities of the Committee will be directed by UNIDO and its members, and managed by a Chairman or Coordinator whom will be appointed by UNIDO and its members.

5. The Chairman or Coordinator of the Committee should be a citizen from a Developing Country with significative experience and acquaintance with the world fertilizer industry.

6. The Chairman or Coordinator will report to UNIDO.

7. The Chairman or Coordinator will be considered Consultant to UNIDO.

8. The residence of the Chairman or Coordinator should be its country.

9. The programme of the Committee will be established by its members.

10. The Chairman or Coordinator should, during the First Meeting of the Ad Hoc Committee, prepare a program of assistance on Cooperation.

11. The Chairman or Coordinator should be appointed during the First Meeting of the Ad Hoc Committee in Nairobi.

12. The Chairman or Coordinator should prepare for UNIDO and its members, a quaterly progress report.

13. Members of the Committee, on their account, will cover for expenses incured at their home office, such as: telex, mail, telegraph, telephone and stationary, including secretarial staff.

14. The Chairman or Coordinator will received from UNIDO, an extra -bonus fee- of 10 days per month in addition and independently, to its traveling authorized by UNIDO.