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REGIONAL CO-OPERATION IN THE FERTILIZER INDUSTRY:
EXPERIENCE AND OPPORTUNITIES IN LATIN AMERICA *

by

Ing. Eduardo Gutierrez-Salgado **
UNIDO Consultant

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** Ing. Eduardo Gutierrez-Salgado is Technical Secretary, ADIFAL, Association for the Development of the Fertilizer Industry in Latin America.

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1. INTRODUCTION

In accordance with the recommendation of the Second General Conference of UNIDO held in Lima during March 1975 and the First Consultation Meeting on the Fertilizer Industry in Vienna on January 1977, this paper presents facts for regional co-operation in Latin America. Many opportunities for regional co-operation are cover in this paper, also includes a brief description of the objectives of several international entities located in the Region, with common interests.

Should be recognized the seriousness of the backlog in Latin America in terms of fertilizers production and usage, its dependence on imports notwithstanding its emerging as important nitrogen producer and all the assorted infrastructure problems that the Region is facing. In concequence, useless will be the efforts of regional co-operation and integration or implementation, if objectives are not practical, feasible and realistic.

ii. CONCLUSIONS AND RECOMMENDATIONS

1. CONCLUSIONS

It is a fact, that the Region imported during 1976-77 approximately 2.93 million tons of N P K nutrients and most probably will have to import about 3.75 million tons by 1981-82.

It is a fact, the backlog in Latin America in terms of fertilizer production and usage, which is due to its late start up in learning the benefits in improving crop yields through the application of chemical fertilizers.

It is a fact, the Latin America historical dependence on imported fertilizers.

It is a fact, that the Region registers one of the lowest consumptions ratios of N P K per hectare and equivalent to approximately 5 percent of the worlds total.

It is a fact, that the Regions has ample and important reserves of natural gas and oil, and is emerging as one of the largest nitrogen producers.

It is a fact, that nitrogen production capacity utilization may often be as low as 50 percent, and it is probable therefor that approximately 2.27 million tons of nitrogen, which converted into terms of anhydrous ammonia, represents at current prices a net loss of about 261 million dollars yearly through 1982.

It is a fact, that the Regions has a yearly deficit of approximately 80,000 tons of nitrogen which at current prices is valued in 92.7 million dollars; about 1.2 million tons of P₂O₅ through 1982 with an stimated value of 108 million and requires 1.5 million tons of K₂O curently valued in approximately 137.5 million. This represents a net foreign exchange loss to their economies of 338.2 million dollars per year through 1982.

It is a fact, that the dependence of the Region on imported fertilizers is largely benefited by producers located outside Latin America.

It is a fact, that several fertilizers projects have been inhibited due to out of proportion increments, dumping by producers and limited supply of basic feedstocks.

It is a fact, that due to assorted infrestructure problems within the Region and special interests of each Latin American country, agreements to liberalize trade barriers at all Regional levels, to allocate fertilizer production plants, preference in purchases and transportation all this through the premises and objectives of ALALC, questionable results have been obtained.

It is a fact, that for the first time Latin America fertilizers Congresses have been organized with great attendance and interest throughout the world.

It is a fact, that Regional buyers have obtained significant savings on imported fertilizers due to Adifal's proper advice regarding international market conditions.

It is a fact, that associates of Adifal are learning of Regional surpluses and requirements of fertilizers and basic raw materials.

It is a fact, that Adifal is giving current information regarding when and where to buy corresponding savings and benefits.

It is a fact, that joint purchasing and the establishment of multinational enterprises are unrealistic at this time.

It is a fact, the limited regional co-operation in training in fertilizer complexes, including plant operation and administrative procedures.

It is a fact, limited expertised and economic resources and development of technology, for market surveys, to identify reliable sources of supply, to operate plants and adequate personnel for international trading acquainted with the industry of fertilizers.

It is a fact, there are continuous changes of personnel in the fertilizers industry to its detriment.

It is a fact, the limited financing and human resources available in the Region to build and properly operate fertilizer plants.

And it is a fact, that the objectives of regional co-operation and its opportunities, must be practical, feasible and realistic.

2. RECOMMENDATION

Having identified the most important facts that have produce the backlog in the development of the Regions fertilizer industry in detriment to its economy, facts not only particular to Latin America. At a world level among countries with developing market economies who have undoubtedly similar problems to those of Latin America, it is highly recommended that in addition to the efforts currently being made, with the assistance and participation of all regional associations and similar, including enterprises, the back up of UNIDO and the World Bank, to form the "DEVELOPING COUNTRIES FERTILIZER PRODUCERS ASSOCIATION", whose purpose and objectives should be as follows:

-Being recognized that the origin of the fertilizers industry backlog in countries with developing market economies is the backwardness in making use of its raw materials, the lack of financing, the know-how and human expertise, including the increasing dependence on imports in detriment to their economies,

-It is necessary to improve the exchange of information about regional surpluses and requirements in order to avoid dumping.

-To exchange experiences in the rational use of fertilizers to minimize imports.

-To exchange experiences in the use of other fertilizers such as liquids and solutions to reduce dependence on the historical imported fertilizers.

-To improve expertise in plant operation and international marketing by financing the training of capable personnel.

-To improve the expertise in plant operations through dynamic agreements of co-operation in order to better the current yields of production.

-To improve the expertise in marketing research making use of the regions human resources.

-To establish a system of communication available to all subscribers, with the purpose of informing of current world tendencies and conditions which directly or indirectly might affect the agro-fertilizer industry.

1. BACKGROUND

1. The rapid growth of the world's population has created food production problems, such as in Latin America and in order to have better crop yields, it is necessary to improve the usage of water, insecticides, handling of agricultural equipment, the techniques of fertilizers application and its use, including an adequate infrastructure in transport and distribution, and availability of fertilizers.

2. Even though Latin America is emerging as an important fertilizer producer, it is still a net importer (Table 1); during the period 1976-77, the Region imported approximately 2.93 million tons of N P K nutrients and by 1981-82, the imports are estimated in 3.75 million.

1.1 FERTILIZER USAGE

3. The use of fertilizers in developed countries started over 100 years ago. According to statistics published in the FAO Production Yearbook, 1974 the developed countries during 1974 consumed an average of 109 kg of N P K nutrients per hectare whereas the developing countries average only 22; Latin America uses 36.3 kg.

4. In the Region the use of fertilizers in significant quantities just started in 1950 and when the countries of Latin America notice the benefits in terms of better crop yields, many agricultural programs including high quantities of fertilizers application were developed. At the same time, started the massive importation of different fertilizer products.

5. The above has caused a backlog in Latin America in terms of fertilizers production and usage. Hence, its historical dependence on imports, in benefit to those producers who are taking advantage of this market to dump their surplus.

NITROGEN

6. Currently, the world's consumption of nitrogen fertilizer is of approximately 49.57 million tons and 2.52 million in Latin America, representing 5 percent of the world's total and 25 percent of the consumption in countries with developing market economies. By 1981-82, the world's demand is estimated at 63.09 million tons of nitrogen and which represents an annual average increase of 6.5 percent; for the Region are estimated 3.49 million tons and 9.5 percent (Table 2). The Latin America deficit through the next five years will average 800,000 tons of nitrogen per year (Table 1).

PHOSPHATE

7. At present the world consumes approximately 26.28 million tons of P₂O₅ whilst the Region only 1.77, equivalent to 6.7 percent of the worlds total consumption and 40 percent of that, in countries with developing market economies.

8. The projected world demand of P₂O₅ for 1981-82, is of approximately 35.15 million tons including 2.67 in Latin America. The worlds consumption will increase at an average yearly rate of 6.4 percent and 7.7 in the Region (Table 3). The Region has a yearly deficit of over one million tons of P₂O₅ through the next five years (Table 1).

POTASH

9. During the current period of 1977-78, approximately 24.95 million tons of K₂O will be consumed through out the world and 1.31 in the Latin American region, equivalent to about 5 percent of the worlds consumption and 50 percent of that, which is consumed in countries with developing market economies. By 1981-82, world consumption is estimated in 29.64 million tons of K₂O and for the Region 1.84 (Table 4). It is estimated that Latin America, will import an average of 1.5 million tons of K₂O per year during the next five years (Table 1).

10. Through the period 1976-82, it is estimated that the worlds consumption will grow at an average annual rate of 5.6 percent and 11.7 in the Region.

N P K NUTRIENTS

11. At present, the world consumes a total of 88.67 million tons of N P K nutrients and the Latin American region only 4.49 equivalent to 5 percent of the world total consumption and about 50 percent of that which is consumed in countries with developing market economies. A world demand of 127.86 million tons of N P K as nutrients are anticipated for 1981-82, including an estimated 8.0 million tons for the Region.

1.2 FERTILIZER PRODUCTION

12. Production of chemical fertilizers in the Latin American region, started about 25 years ago and yet is not sel sufficient.

NITROGEN

13. Due to the ample reserves of natural gas located in Latin America, the Region is emerging as important producer of nitrogen. Has had enough production capacity to cover nitrogen demand, however due to assorted infrastructure problems, this has not been sufficiently utilized since capacity utilization may often be as low as 50 percent. According to Table 6, through 1982 the Region will lose production capacity equivalent to an average of 2.27 million tons

of nitrogen per year, which converted into terms of anhydrous ammonia, at current prices (US \$95.00 per metric ton, f.o.b.) has a value of approximately 261 million dollars.

PHOSPHATE

14. The Region has a deficit and its industry basically depends on imported phosphate rock. Deposits of economic importance have been found in Brazil, Colombia, Mexico, Peru and Venezuela; some of them are currently exploited and others, at the planning stage. At present production capacity is of approximately 400,000 tons of phosphorus (P) or 0.91 million tons of P₂O₅ (Table 7). Large projects being developed in Brazil and Mexico, will double the Regions production capacity before 1982.

POTASH

15. There is very little potash content in the Chilean nitrate; potassium deposits of economic importance have not been found in the Region.

1.3 DEPENDENCE ON IMPORTS OF FERTILIZERS

16. As has been pointed out, the Region through the next five years will have the following deficits (Table 1):

NITROGEN-the Region has a deficit of approximately 80,000 tons of nitrogen per year and at current prices (US \$95.00 per metric ton of NH₃, f.o.b.) have a value of \$92.7 million dollars.

PHOSPHATE-nearly 1.2 million tons of P₂O₅ per year will be the Regions deficit through 1982. This tonnage in terms of phosphate rock with 30% P₂O₅ at US \$27.00 per metric ton, f.o.b., has a value of approximately \$108 million dollars or 141 million at \$118.00 per metric ton of P₂O₅ as H₃PO₄, f.o.b.

POTASH-since the Region is not a producer, through the next five years the imports will amount to 1.5 million tons of K₂O per year. At a price of US \$55.00 per metric ton of KCl, f.o.b., the above tonnage is valued in 137.5 million dollars.

17. The Region will import approximately 338.2 million dollars worth as anhydrous ammonia, phosphate rock and potassium chloride.

1.4 EFFECT OF HIGH PRICES OF FERTILIZERS, ON FERTILIZER USAGE AND AGRICULTURAL OUTPUT.

18. The slowness in learning the benefits of increasing crop yields by applying

fertilizers to soil, the backlog in building fertilizers production plants to cover domestic requirements and the previous assorted infrastructure problems, have created an economic dependence of the Latin American region in benefit to countries with developed market economies and under some circumstances, become instruments of international politics.

19. The Latin American region have been exposed to wide fluctuations of the international market including, both price and availability with its economic consequences.

20. Early during the last decade, prices for anhydrous ammonia varied slightly, from \$60 to 70 dollars per ton, f.o.b. It was not until 1967, when price increased above those mentioned, however declining to less than \$30 dollars during 1967, amidst world wide dumping. At the same time 1972 represents the beginning of wild price increases and speculation leading to prices of about \$500.00 dollars per ton. From 1975 to the present days, anhydrous ammonia prices have declined and forecasts indicate the trend will continue. It should be mentioned that all nitrogen base fertilizers such as urea, ammonium sulphate and ammonium nitrate have followed similar patterns of the supply-demand law.

21. Phosphate products have also experienced pricing cycles. As an example, during 1967 phosphate rock was contracted at approximately \$3.00 dollars per ton, f.o.b. or even less and seven years later, prices reach levels of about \$80.00 per ton.

22. All the above is of a great concern to net importer countries or regions such as Latin America since fertilizers demand is in proportion to agricultural production and related to population increase; Latin America as a whole has a growth rate of 3 percent per year. Consequently, the countries of the Region must decided, if during international fertilizers crisis they should be importers and not develop domestic fertilizer projects, and to keep their position of net importers, or importers of agricultural products.

2. PRESENT FORM AND MECHANISM FOR CO-OPERATION IN LATIN AMERICA.

23. In Latin America there exist several organizations with the same common objective: regional co-operation. ALALC or LAFTA (Latin American Free Trade Association), the Central America Common Market, the Cartagena Agreement-Andean Group Countries the SELA (Latin America Economic System) and ADIFAL (Latin American Association for the Development of the Fertilizer Industry).

24. The above indicated organizations cover basically the following: agreements to liberalize trade barriers (tariffs, import controls, etc.) at all

Regional levels; agreements to allocate production plants; preference in transportation and exchange of information.

2.1 ALALC

25. Agreements were made to liberalize trade barriers for fertilizers however, due to international market conditions and the Region being unable to reach selfsufficiency in production, for practical purposes very little has been achieved. Imports are being made to the Region on equal terms independent of its origin.

2.2 ADIFAL

26. A newly born association, only two years old and a result of the recent fertilizer crisis, and is a technical consultancy association on fertilizer affairs. To Adifal are associated over 30 companies, private or state owned, with its official residence in Mexico City. The following are its more important objectives: to study and suggest policies of production and consumption, in order to avoid scarcity and over production; gathers and publish information about developments in the fertilizer industry and coordinate supply programs among its associates.

27. So far, in Adifal has implemented the following forms of co-operation: three Latin American Congresses; every two weeks all associates are informed via telex about current international fertilizer prices; a bulletin is published every month; valuable marketing advice is being given about international prices with important savings for the buyer, including advice as when and where to buy; exchange of information about fertilizers regional requirements; an Adifal/Isma Conference is being organized regarding the use of fertilizers; on behalf of its associates, Adifal have obtained quotations with economic benefits; and very soon an agreement for Regional co-operation will be made with ANDA from Brazil.

2.3 SELA

28. The SELA was formed during October 1975 to establish a permanent system of economic and social co-operation, and coordination, with the purpose among others of conciliating the better use of human, natural, technical and financing resources of the Region through the formation and promotion of Latin American multinational companies; to stimulate reasonable levels of production and supply of agricultural products. To perform the above mentioned, SELA has organized several Action Committees such as the Action Committee to Produce Fertilizers and Raw Material with the following objectives: Regional co-operation to promote and increase production of fertilizers and raw materials; to stimulate the efficient use of fertilizers; to make the Region selfsufficient in production;

to promote the exchange of marketing and technical information; to strengthen negotiating capacity through joint purchases and to promote the establishment of multinational companies.

29. This Action Committee has done numerous research works and has held meetings with several international organizations, to implement in a short term their objectives. SELA and ADIFAL have discussed and compared activities in order to complement strategies and avoid duplicity.

2.4 CO-OPERATION AMONG STATE OWNED ENTERPRISES.

30. Regional co-operation among state owned and private enterprises is at present being performed. Technicians from Venezuela have visited several times mexican facilities to learn how to operate anhydrous ammonia and urea plants including administrative training; Costa Rica has received the visit of Colombian engineers to learn bulk blending procedures. Through ADIFAL, Mexico is showing to Argentina its liquids fertilizers application program which has the objective of reducing Mexico's dependence on imported nitrogen base solid fertilizers.

3. OPPORTUNITIES FOR INCREASED CO-OPERATION AMONG LATIN AMERICAN COUNTRIES.

31. The efforts of any association, system or organization to promote regional co-operation and integration or implementation are useless, if their objectives are not practical, feasible and realistic.

3.1 TRADING

32. Trading among ADIFAL members is at a most unsatisfactory level.

3.2 MARKET SURVEYS

33. At world level ADIFAL has prepared for all its associates, an anhydrous ammonia survey. The purpose of this work is to show who is who in the industry, what is being done, who and where is the production, and its short term future. However, it is recognized that due to limited human and economic resources, surveys as the above mentioned will be limited.

3.3 PREFERENCE AGREEMENTS

34. Eventhough ADIFAL has proposed the giving of preferences to Regional producers, results are not encouraging. It is reported that on several tenders, Regional products have not given any preference. Also, is recognized that

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better results are obtained when direct negotiations are made. Central America is given relative preference to Mexican anhydrous ammonia and Brazil as well.

35. Must be pointed out, that negotiations between countries of the Region takes longer than necessary and could have been easily concluded with the participation of a third party located in country outside the Region.

3.4 SOURCES OF SUPPLY

36. Currently, the largest production capacity is located in Mexico followed by Venezuela. In addition, to the anhydrous ammonia and urea being exported from the mentioned countries, phosphoric acid and triple superphosphate are available within the Region nevertheless this are being exported, mostly, outside Latin America. Regional producers must compete with out of the Region products, since tariff preferences are not in forced. Whenever Colombia or Central America have fertilizer formulas for export must face full world competition.

3.5 DIRECTORIES

37. In order to know the Latin American capacities and to be acquainted with all its facilities, ADIFAL on behalf of its associates is preparing a directory listing Regional producers, capacities and range of products, also a directory which covers detailed information regarding ports and dock facilities.

3.6 EXPERTISE IMPROVEMENT

38. Within Latin America there exists very considerable expertise, but due to administrative changes these are frequently neglected. ADIFAL is preparing a directory of experts on fertilizers at all levels. However, it should be upon the consciences of those responsible each country the destiny of or company, in selecting amongst its human resources, the best and avoid if possible frequent changes otherwise it will be in the detriment of their fertilizer industry.

3.7 JOINT VENTURES

39. International market conditions including availability of equipment to build plants also availability of basic raw materials, fertilizers price variations, over supply and dumping from outside the Region including the special interests of each country in Latin America, joint ventures are not easily performed.

3.8 WORLD SOURCES OF SUPPLY

40. ADIFAL has been active in participating at all international and world level

plants, to improve its knowledge of sources of supply, collect and distribute information on prevailing world fertilizer prices. Notwithstanding, Latin America is a net importer of fertilizers, attempts to make joint purchases of raw materials and finished fertilizers from outside the Region, are negligible. Each country or enterprise prefers to carry out their imports in accordance to domestic regulations by law.

4. OPPORTUNITIES FOR CO-OPERATION WITH COUNTRIES OUTSIDE THE REGION.

41. The fertilizer industry demands large capital investments and for many countries this is a burden to their economies. It should also be recognized, that the building of fertilizer plants takes time. There are countries within the Region that are obliged to export substantial amounts of raw materials such as anhydrous ammonia and phosphoric acid, due to transformation capacity. Whilst at the same time, purchasing on world market finished fertilizers. And outside the Region, there exists large fertilizers producers notwithstanding they are net importers of basic feedstocks. Mexico has studied the possibility of exchanging anhydrous ammonia for urea with producers located in the United States and Spain.

42. It is a must to improve experience and expertise of personnel dealing with international markets and plant operations. This can be achieved by exchange of personnel, training courses, attendance to seminars and conferences at international and world levels.

TABLE 1. LATIN AMERICA: N P K SUPPLY DEMAND BALANCE
(million metric tons)

<u>YEAR</u>	<u>N</u>	<u>P2O5</u>	<u>K2O</u>	<u>TOTAL BALANCE</u>
1975-1976	-0.78	-0.65	-0.94	-2.37
1976-1977	-0.83	-0.93	-1.17	-2.93
1977-1978	-0.80	-1.10	-1.28	-3.18
1978-1979	-0.68	-1.28	-1.40	-3.36
1979-1980	-0.76	-1.30	-1.53	-3.59
1980-1981	-0.85	-1.12	-1.67	-3.64
1981-1982	-0.93	-1.01	-1.81	-3.75

Source: FAO/ UNIDO/ WORLD BANK WORKING GROUP ON FERTILIZERS.

TABLE 2. WORLD CONSUMPTION OF NITROGEN FERTILIZER
(million metric tons of nitrogen)

YEAR	REGIONS:		CENTRALLY LATIN AMERICA		TOTAL WORLD
	DEVELOPED	DEVELOPING	EUROPE	AMERICA	
1975-1976	19.18	5.55	16.54	2.04	43.30
1976-1977	20.01	6.55	16.97	2.32	45.85
1977-1978	20.92	7.50	18.63	2.52	49.57
1978-1979	21.58	8.39	19.85	2.72	52.54
1979-1980	22.47	9.17	21.28	2.96	55.88
1980-1981	23.52	9.94	22.85	3.22	59.53
1981-1982	24.51	10.81	24.28	3.49	63.09

Source: FAO/ UNIDO/ WORLD BANK WORKING GROUP ON FERTILIZERS.

TABLE 3. WORLD CONSUMPTION OF PHOSPHATE FERTILIZER
(million metric tons of P₂O₅)

<u>YEAR</u>	<u>REGIONS:</u>		<u>CENTRALLY PLANNED</u>	<u>LATIN AMERICA</u>	<u>TOTAL WORLD</u>
	<u>DEVELOPED</u>	<u>DEVELOPING</u>			
1975-1976	12.20	2.16	8.17	1.51	24.04
1976-1977	12.84	2.53	9.14	1.77	26.28
1977-1978	13.49	2.91	9.83	1.96	28.19
1978-1979	14.04	3.27	10.51	2.14	29.96
1979-1980	14.58	3.65	11.33	2.33	31.89
1980-1981	15.01	3.91	12.05	2.51	33.48
1981-1982	15.45	4.21	12.80	2.67	35.13

Source: FAO/UNIDOWORLD BANK WORKING GROUP ON FERTILIZERS.

TABLE 4. WORLD CONSUMPTION OF POTASH FERTILIZER
(million metric tons of K₂O)

	REGIONS				World Total
	Developed	Developing	Centrally Planned	Latin America	
1975-1976	10.45	0.91	9.02	0.95	21.33
1976-1977	11.90	1.17	9.49	1.20	23.76
1977-1978	12.46	1.30	9.88	1.31	24.95
1978-1979	12.71	1.45	10.36	1.43	25.95
1979-1980	13.05	1.59	10.94	1.43	27.14
1980-1981	13.44	1.73	11.45	1.56	28.32
1981-1982	13.88	1.86	12.06	1.84	29.64

Source: FAO/ UNIDO/ WORLD BANK WORKING GROUP ON FERTILIZERS.

TABLE 5. WORLD CONSUMPTION OF N P K NUTRIENTS
(million metric tons)

	REGIONS				World Total
	Developed	Developing	Centrally Planned	Latin America	
1975-1976	41.83	8.62	33.73	4.49	88.67
1976-1977	44.75	10.25	35.60	5.29	95.89
1977-1978	46.85	11.71	38.34	5.79	102.69
1978-1979	48.33	13.11	40.72	6.29	108.45
1979-1980	50.10	14.41	43.55	6.85	114.91
1980-1981	51.97	15.58	46.35	7.43	121.33
1981-1982	53.84	16.88	49.14	8.00	127.86

Source: FAO/ UNIDO/ WORLD BANK WORKING ON FERTILIZERS.

TABLE 6. LATIN AMERICA: NITROGENOUS FERTILIZERS: PRODUCTION CAPACITY AND SUPPLY CAPABILITY (million metric tons of nitrogen)

<u>YEAR</u>	<u>PRODUCTION CAPACITY</u>	<u>SUPPLY CAPABILITY</u>	<u>DIFFERENCE</u>
1975-1976	2.52	1.25	1.27
1976-1977	3.12	1.49	1.63
1977-1978	4.03	1.72	2.31
1978-1979	4.07	2.04	2.03
1979-1980	4.40	2.20	2.20
1980-1981	4.89	2.37	2.52
1981-1982	4.89	2.56	2.33

Source: FAO/UNIDO/WORLD BANK WORKING GROUP ON FERTILIZERS

TABLE 7. LATIN AMERICA: PHOSPHATE FERTILIZERS: PRODUCTION CAPACITY AND SUPPLY CAPABILITY (million metric tons of phosphate)

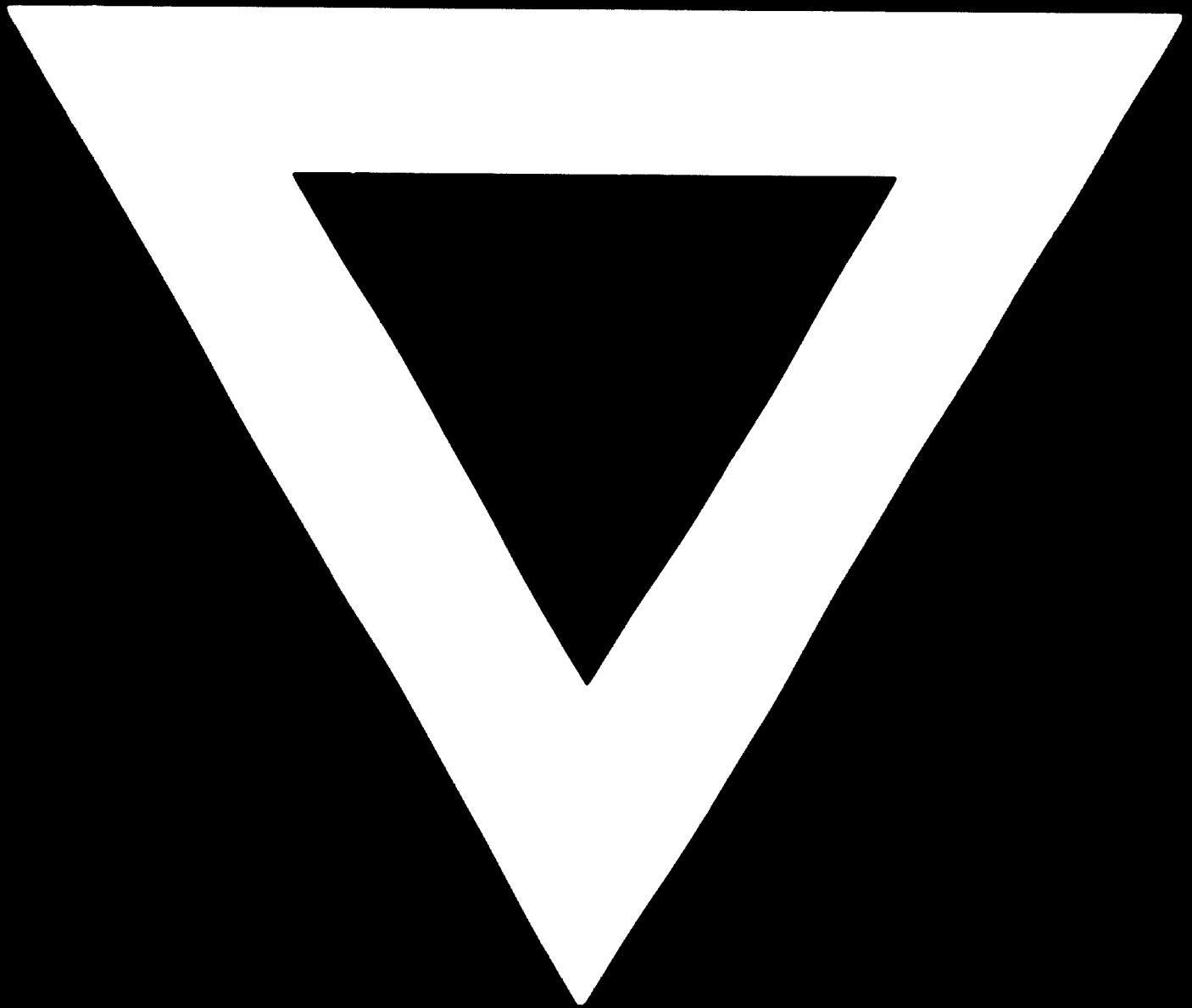
<u>YEAR</u>	<u>PRODUCTION CAPACITY</u>	<u>SUPPLY CAPABILITY</u>	<u>DIFFERENCE</u>
1975-1976	0.38	0.38	--
1976-1977	0.40	0.38	0.02
1977-197 ^a	0.40	0.37	0.03
197 ^a -1979	0.40	0.37	0.03
1979-1980	0.45	0.45	--
19 ^a 0-1981	0.84	0.60	0.24
19 ^a 1-1982	0.84	0.72	0.12

Source: FAO/UNIDO/WORLD BANK WORKING GROUP ON FERTILIZERS.

Note: One ton of phosphate = 2.29 tons of phosphate 205.



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