Distr: Limited
E/ECWA/AGR/84/3

17 April 1984
Original: English

First Draft

ECONOMIC COMMISSION FOR WESTERN ASIA
Joint ECWA/FAO Agriculture Division

CEREAL PRICE POLICY IN IRAQ

84-0279

The study on Iraq presented here was prepared by two consultants, Mr. Mohamed Al-Qaisy and Mr. Bustam Al-Janabi, in co-operation with the Joint ECWA/FAO Agriculture Division

FOREWORD

Pricing policies for agriculture are receiving increasing attention in the countries of the ECWA Region due to the very specific situation these countries have been facing for the last decade: the rapid demographic rate of growth together with an important increase in the per capita income induced a fast-growing demand for food products. On the other hand, the conjunction of ecological constraints and important rural-urban migration not compensated by significant increase in productivity limited the growth of food production. This situation was particularly sensible for cereals which presents the double characteristics of being the main staple food, with a un-elastic demand, and to be grown mainly on un-irrigated lands, so very affected by the aridity of the climate and the fluctuations of weather. Thus most of the ECWA countries have been more and more dependent on imports to meet their food requirements. This import policy was at the same time a consequence of the limited domestic supply as well as a way of limiting the increase in food prices resulting of the imbalance between the domestic supplies and the national requirements. Unfortunately, this protection of the urban consumers purchasing power very often leads to an unfavorable change in the agricultural terms of trade which in turn negatively affect the development of the domestic food production.

Thus price policy appears to be the key-stone of the national development strategy and is the result of the arbitration among different objectives such as food security, equitable income distribution, rationalization of the use of domestic potentialities and consumer welfare policy.

Recognizing the leading role of agricultural price policy for rural and national development and the prominent place of cereals in food security, the Joint ECWA/FAO Agriculture Division initiated a programme of pilot studies on cereal price policy in two countries presenting original aspects of the region's economic reality: Iraq, a planned economy with considerable natural endowments and agricultural potential; and Jordan, an open economy country, with modest financial and agricultural resources.

I. Ghandour

I. Ghandour
Officer-in-Charge
Joint ECWA/FAO Agriculture Division

CONTENTS

LIST OF TABLES

I. IRAQ'S ECONOMY AND THE AGRICULTURAL SECTOR

A. Outline of the national economy

1. Abundance of natural resources, which include oil, gas, sulphur and phosphate, in addition to the agricultural nature of the country; the arable land amounts to 29.6 million acres, mostly confined to the Tigris and Euphrates basins.

If one considers that the population of Iraq is 13.2 million (1980 census) and that the farmland area is greater than 438,000 square kilometres, one can affirm that the size of the population is well-suited to the available economic and natural resources. Indeed, the country differs from many other developing regions in that it does not have a population problem.

In addition, Iraq's geographic location makes it an intermediate connecting point between international sea and air communication lines.

2. The imbalance in the economic structure has been a more or less persistent characteristic of the Iraqi economy since the 19300 when oil began to be extracted and exploited by foreign petroleum companies which controlled oil production. The period was further characterized by the fact that the economics of oil extraction had little bearing on the Iraqi economy, being confined to the yearly royalties paid by these companies to the State and whatever was spent on extracting the oil from the well and transporting it to ports of export within Iraq, which required the employment of a limited number of workers. The production stages and other requisites such as the operations of refining, the petrochemical industry and marketing were all carried out by these companies abroad.

Since the July 1968 Revolution and the direct control over petroleum resources and exploitation by the State, together with the changes in petroleum prices in recent years, the State, too, has obtained a share,

making petroleum the principal source from which foreign-exchange reserves are derived and increasing its relative importance in the domestic product. Moreover, the investment of petroleum-derived funds in the execution of economic development plans will have a future impact on the balancing of the economic structure. This is confirmed by the indicators of development of economic sectors, in as much as great strides have been made in the building of the infrastructures of the Iraqi economy and in effecting structural changes in the various economic activities.

3. Central planning is based on the administration of the regional economy with a view to the achievement of the following central goals:

a) The consolidation of socialistic changes through the expansion and strengthening of the socialistic sector in the areas of industry, agriculture and services. The following are some examples of indicators of the growth of these sectors:

i) Industry: The control of the socialist sector over the processing industries is concentrated in the strategic and major industries, while private enterprise is confined to the consumer goods and small-scale industries and is placed under the leadership and guidance of the socialist sector. This is illustrated by the following indicators:

(a) The production growth rate reached 14.03 per cent during the period 1968-1974. It had been assumed that the rate would climb to 16.1 per cent during the subsequent period 1975-1981, but the war situation which began in 1980 lowered the rate to 14.2 per cent;

(b) The domestic product reached growth rates of 12.1 to 14.3 per cent for the periods 1968-1974 and 1975-1981, respectively;

(c) If we consider fixed-capital growth rates in this sector, we find that the average growth for the first period was 22.5 per cent and for the second period, 18.6 per cent;

(d) As for the share of the socialist industrial sector and the process of making this sector the leader in industry, its relative

importance in terms of processing industry production value rose from 31.7 per cent in 1968 to 39.3 per cent in 1974 and to 51 per cent in 1981; with regard to the domestic product, its share rose from 41.8 to 47.1 to 56.8 per cent for the same years; and

(e) Its share in capital formation, too, went from 50.4 to 97.6 to 97.7 per cent for the said years.

ii) The agricultural sector: The State has performed the task of radical, comprehensive agrarian reform to put an end to feudalism and to give priority to the expansion of socialist production patterns in agriculture. It has also accorded priority to the development of agricultural production and other agricultural services; however, the overcoming of accumulated natural and inherited problems requires effort and time coupled with long-term patience. These problems include the salinity of the land and a lack of organization of water resources, as well as the general level of farmer cadres and the difficulty of providing qualified elements during this short period.

Yet despite these difficult conditions, the sector achieved 9.9 per cent growth in terms of production value during the period 1968-1974; this figure rose to 22.1 per cent during the period 1975-1981. In addition, the domestic product in the area of agriculture showed a growth rate of 8.8 per cent during the period 1968-1974 and 20.9 per cent during the period 1975-1981, while fixed capital rose an average of 19 per cent during the period 1968-1974 and 35.4 per cent during the subsequent period, 1975-1981.

As regards the relative size of the share of the socialist sector in the value of agricultural production, this indicator climbed from 1.4 per cent in 1974 to 43.4 per cent in 1981; the sector's share in the agricultural domestic product went from 0.3 per cent in 1968 to 0.7 per cent in 1974, reaching 49.4 per cent in 1981.

iii) The commercial sector: Within the framework of the strengthening of the socialist approach, the relative importance of the share of the socialist sector went from 12.08 per cent in 1968 to 51.3 per cent in 1974,

subsequently rising to 52.3 per cent in 1981.

In the area of fixed-capital formation, the share of the socialist sector amounted to 57.5 per cent in 1968, 87 per cent in 1974, and 90.3 per cent in 1981.

Moreover, the amount appropriated for the socialist sector out of the aggregate value of import programmes was over 90 per cent for all the preceding years.

b) Raising the standard of living, which is dependent upon increased rates of growth of individual income and the redistribution of total income for the benefit of low-income groups.

The average individual income rose at a rapid rate from 95.5 Iraqi dinars in 1970 to 998 Iraqi dinars in 1980. This increase in revenue represented an instance of tangible, comprehensive progress in the standard of living.

c) Development of manpower and concern for human investment through concentration on the development of the education and training and health care sectors.

4. Coexistence of the socialist sector with private enterprise in all areas of industry, agriculture and services, provided, however, that the participation of private enterprise is bound by the guidance and leadership of the socialist sector. In addition, the size of this participation varies from sector to sector and in some cases within individual sectors. For example, at the same time that its average share in the industrial sector is falling off, we find that it is making substantial gains in participation in the transport and domestic trade sector.

5. Differences in standard of living between residents of towns and country, despite the efforts of the State to narrow this gap. This fact is illustrated by the following table;

Table 1. A comparision of family monthly expenses close up

(Percentage of families)

Family monthly expenses	1976		1979	
	Urban	Rural	Urban	Rural
Less than 50 Iraqi dinars	11.7	37.5	2.8	12.9
From 51 to 150 Iraqi dinars	66.9	55.2	51.7	69.1
Over 150 Iraqi dinars	12.2	7.3	45.4	8.0

There was an increase in average monthly consumer expenditures, going from 114.1 Iraqi dinars in urban areas and 74.8 dinars in rural areas in 1976 to an average of 166.9 Iraqi dinars in urban areas and 109.0 Iraqi dinars in rural areas in 1979.

As regards electricity consumption, 94 per cent of all families in towns had electricity in 1976, as compared with 25 per cent in the country; by 1979 the percentage had risen to 96.6 per cent for urban dwellers as opposed to 43.3 per cent for residents of rural areas.

The consumption of gas as a fuel by urban families rose from 54.5 to 71.2 per cent between the years 1976 and 1979 while the corresponding figures were 10.1 and 17.8 per cent for rural families.

B. Main features of the agricultural sector

The agricultural sector in Iraq is considered one of the important main sectors in view of the food products that it provides for the citizens and the primary materials that it produces for use in some local industries; in addition, it has a share in strengthening the trade balance through the exporting of agricultural products, the most important of which is dates.

In addition to the above the agricultural sector provides employment The number of persons employed in the sector amounts to some 31 per cent of the area's total labour force. Furthermore, the number of farming families

who rely on agriculture as the basis of their living resources still represents a high percentage of the population: 4.3354 million individuals, according to the 1977 census, amounting to 36.3 per cent of the total population of Iraq.

However, the sector suffers from great problems inherited from the past, in particular natural problems, such as the salinity of the soil and the lack of organization of water resources. These problems and the consequent lowering of productivity have kept the growth rate of the sector and its share in the domestic product down as compared with the other principal economic sectors, despite the goals set by the national development plans for increasing production, both as a whole and in terms of the two branches of plant and animal resources. Sizeable sums have been expended on the execution of large-scale projects involving irrigation, drainage and the construction of dams and reservoirs to provide water for arable land and the reclamation of saline land so as to increase the area of cultivated land. In this way this sector will play its part in raising the average national income and increasing individual incomes.

The following is a summary of the outstanding features of the agricultural sector in Iraq:

a) General one-sidedness in terms of production, i.e. the growing of grain represents more than 80 per cent of the country's total cultivated area;

b) Fluctuations in production, whether within a single season or between one season and the next owing to varying environmental and natural conditions, and inadequate reliance on modern scientific methods in agriculture, particularly with regard to the production of grains in the northern regions, where reliance is on rain-fed crops;

c) Growth rates in the agricultural sector have differed from the rates in other sectors especially in the period under consideration: the share of agriculture in the gross domestic product dropped from 23 per cent (not including petroleum) in 1970, to 18.7 per cent in 1977 and 20 per cent in 1978. If the gross product including petroleum products is taken

into consideration, one finds that the proportional share of agriculture dropped from 18.2 per cent in 1970 to 7.6 per cent in 1978. And yet the investment sums allocated to this sector have been great. However, the major portion of them have been directed toward large-scale projects that yield their returns only after a long time, such as irrigation, drainage and soil reclamation projects;

d) The coexistence of the socialist sector with private enterprise to varying degrees, even within the individual sector. One finds, for example, that the share of the socialist sector in total vegetable production is greater than 70 per cent, while its share in local production drops as low as 10 per cent;

e) Failure of local agricultural production to meet the growing demand for agricultural commodities, as a result of the rise in rates of consumption due to the rise in and the general level of income, and due to the following factors:

i) A decline in production and productivity of most of the principal agricultural crops as compared with the levels of productivity in other areas of the world. With respect to wheat, for example, per dunam productivity dropped from 207 kg in 1973 to 150 kg in 1975, climbing back up to 177 kg in 1980;

ii) Weaknesses in the infrastructures that assist in production activities; these are concentrated in the areas of transport, storage and marketing. The different environmental and climatic conditions that obtain in the area, together with the existence of a number of manners of agricultural ownership, have weakened the possibilities for controlling the volume of production and its structuring, and this warrants an examination of the role of price, price fluctuations and the effectiveness of price in changing the use of land and the structure of agricultural production.

C. Importance of grains within the agricultural sector

Grains (wheat, barley, rice and maize) are to be considered among the most important farm crops in terms of cultivated area, (in 1980 they accounted for 84 per cent of the total area of utilized land) and also in terms of their total production value as compared with other vegetable and market garden crops and the industrial crops produced in rural Iraq. Coupled with this is their importance as food for city and country dwellers alike, inasmuch as they are considered the basic, principal commodities on which the citizens live. This is particularly true to wheat, which goes into the baking of different kinds of bread, and of rice, which is used in the principal dishes eaten by Iraqi families.

Yet, in spite of the importance of the agricultural production of the various types of grains, this production is subject to sharp rises and falls in production quantities from one year to the next owing to the reliance of this type of farming on natural conditions for watering: it depends on rain and varying amounts of running water in the rivers and in the irrigated alluvial plain. Added to this is the decline in per acre crop productivity.

The following is a short summary of each of the crops mentioned above:

a) Wheat: This is considered one of the winter crops. It is grown in the northern rainy areas, where it depends basically on rainfall for watering. The area cultivated in these regions is estimated at 89 per cent of the total area of grain-growing land, and production amounts to approximately 70 per cent of the country's total production.

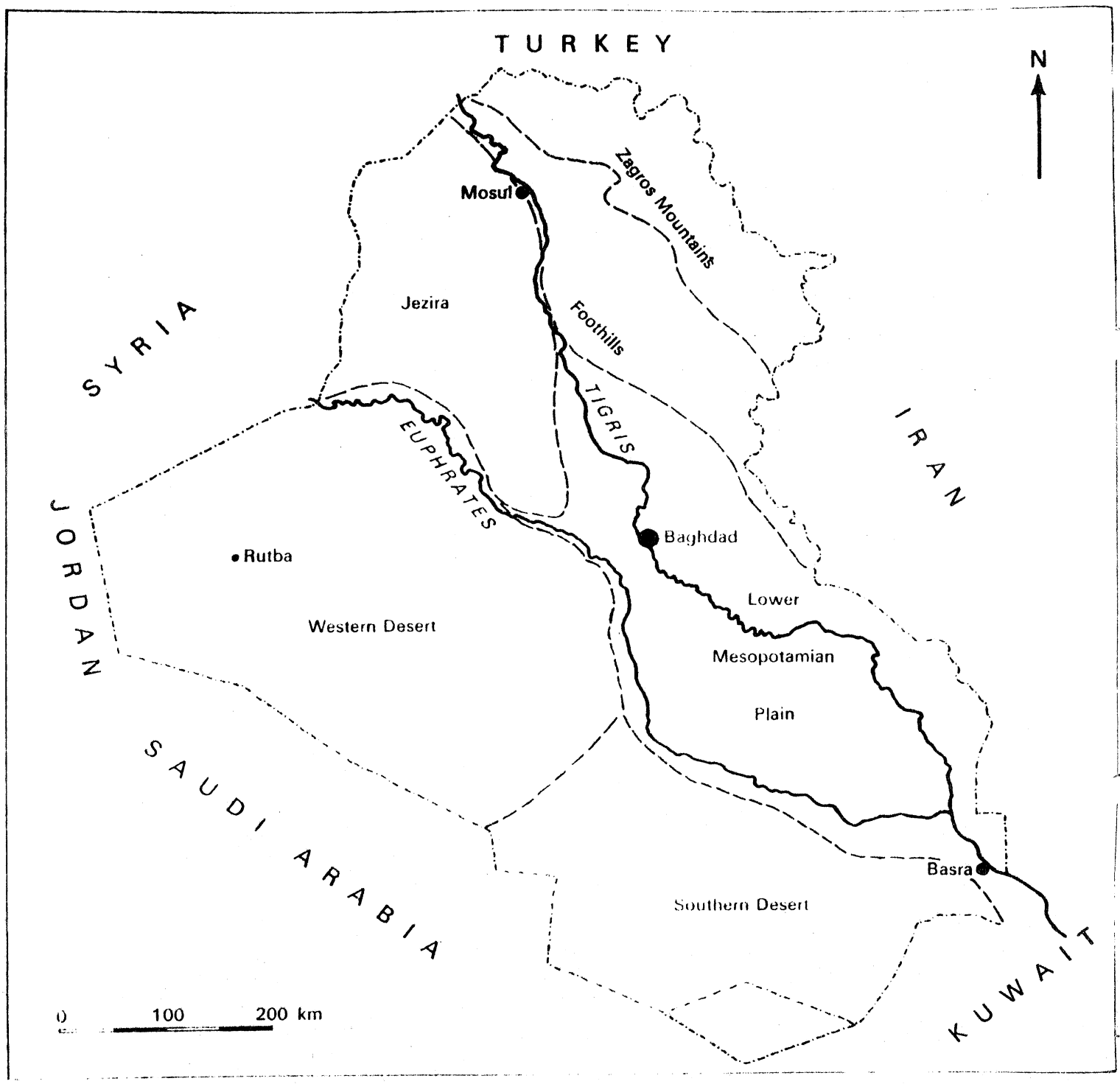
Farming in the remaining area (amounting to 11 per cent relies on irrigation; this is concentrated in the central and southern privinces;

b) Barley: Barley-growing does not differ from wheat-growing in its dependence upon rainfall. Rain-fed crops represented 62 per cent of the

total cultivated area in 1980; the remaining 38 per cent is divided among most of the country's provinces, though it is concentrated chiefly in the central and southern regions, which rely on irrigated farming. Barley, moreover, has greater resistance to salt in the less fertile land than wheat or vegetables.

c) Rice: Rice and paddy-growing rank third in importance after wheat and barley. Rice is considered one of the most important summer crops in terms of both area and production. Owing to the nature of its cultivation and its dependence upon irrigation with both naturally flowing and pumped water, one finds that rice is grown predominantly in the central and southern provinces. In the northern provinces, on the other hand, the cultivated area is small, as is the quantity produced, which does not suffice to meet the demand and the requirements of these provinces.

d) Maize: Maize, both the white and yellow varieties, is grown in the irrigated regions. We therefore find it concentrated mostly in the central provinces of Iraq. The cultivated area totalled approximately 78,000 acres in 1980, which amounted to one per cent of the total area utilized in that year. Maize thus came in third place in terms of importance.


TURKEY
N
Mosul
Zagros Mountains
Jezira
Foothills
SYRIA
TIGRIS
EUPHRATES
IRAN
Baghdad
Rutba
Lower
Mesopotamian
Plain
Western Desert
JORDAN
SAUDI ARABIA
Basra
Southern Desert
KUWAIT
0
100
200 km

II. CEREAL PRODUCTION POLICY

A. Agricultural policy and its goals for the period

One of the central goals of the policy of the Party and the Revolution in the agricultural sector is the liquidation of feudality and the reorganization of agricultural life in a manner that is in keeping with the building of a socialist countryside. This is reflected in the purport of the Agrarian Reform Law of 1980, which abolished the principle of payment to agricultural feulal landlords, or what is known as the feudal landlord's land option, based on the principle of non-recognition of feudal landlords' ownership of the land and land grants to the fellahin without the payment of any compensation. Owing to the shortage of agricultural land, the minimum required for agricultural ownership was lowered and the land was distributed in a manner in keeping with agricultural production conditions. Moreover, the National Development Plan gave concrete form to the exceptional importance of the agricultural sector based on considerations imposed by development conditions during the coming phase, the achievement of balanced growth of the different economic activities, and the attainment of self-sufficiency with respect to agricultural products, in view of what is available in terms of the natural environment, water resources and outstanding possiblilities for promoting agricultural growth.

The major objectives of agricultural policy contained in the 1976-1980 development plan can be summarized as follows:

a) The introduction of changes in the structure of agricultural production and cultivated areas. One of the goals of the plan is to increase the cultivated areas, especially the irrigated regions, and to achieve and create production level stability in wheat harvests to put an end to the phenomenon of sharp fluctuations to which production has been subject from year to year, and in the long range, to work toward supplying surplus crops to the Arab market.

In the area of animal production concentration is on the development of fish resources and the development of meat production. Essential goals are to produce fodder and to provide the main requisites for increasing animal wealth.

b) increasing plant and animal production and raising productivity. The goal of the plan is to effect an increase in agricultural production, in both its plant and animal divisions, averaging no less than 7 per cent a year during the plan year, in the light of computations of the balance between requirements and the development possibilities that actually exist, with concentration on grain and industrial crops in order to meet the growing demand for them.

c) Planning of agricultural production in the light of the controls provided by the food balance and economic and social factors expressed in terms of measurements of change in income, elasticity of demand and changes in consumption patterns, as well as the strengthening of the animal and vegetable protein food level.

d) Continued vivilizational development in rural society and narrowing of the gap between rural and urban life.

e) Emphasis on the leading role of the State farms, collective farms and cooperatives, and the need to develop these institutions in ways that will ensure increased production and the elevation of the levels of productivity as well as the continued strengthening of socialistic relationships in rural areas.

f) Increasing the efficiency of the investment directed toward the rural population, and development of the technical copetence of the labour force, using innovative means. Also, efforts aimed at formulating a practical approach including farmer training and guidance, for improving the technological level of agriculture in accordance with simplified methods that take into account the realities of the human environment in rural areas, and a choice of appropriate means for gleaning what is new in the way of

technological thinking and applying it with a view to solving production problems, managing production operations, and enabling the fellah to make use of machinery and the fruits of technological advancement with ever-increasing skill, so as to raise the productivity of work and to the land on an ongoing basis.

g) Emphasis on the successful operation of State farms and on improving their management and making them more economical by reducing the cost of their requisites and increasing production efficiency.

h) Expansion in the provision of basic services in country areas and the continued development of an adequate network of basic rural roads and the connecting of these roads with the major highways in accordance with the requirements of the development of the agricultural sector, so as to provide roads and basic means of communication between production centres and marketing centres, on the one hand, and to achieve the greatest possible degree of cultural interrelatedness between town and country, on the other.

i) The development of technological means in the area of mechanization; broader use of fertilizers, insecticides and fungicides; the use of the best water sources; and the placing of stress on the use of practical, effective means for preserving the soil from salinization, stripping and falling into disuse.

j) Preparation of the necessary cadres for the successful use of advanced technological means, provided, however, that this must be accompanied by the necessary scientific research and applied studies at research centres and experimental stations.

k) The continuation of land reclamation operations and the completion of drainage networks in the central and southern regions. It must be borne in mind that the desalinization of these two regions constitutes a task that is central to agricultural development and that there is an urgent need for dealing with this problem if one is to achieve the necessary increase in per acre productivity.

l) Utilization of irrigated and rain-watered lands in a way that yields the highest possible returns, so that it will be possible to achieve a yearly rate of no less than 7 per cent in agricultural production.

m) Farming of rain-watered lands on an intensified basis, and introduction of crop rotation with a view to producing grain crops, oil crops or vegetables, and animal fodder crops.

n) Efforts toward setting up a pricing-policy system on the agricultural market, the aim of which is to orient farmers toward producing agricultural products required in accordance with the plan and in the light of the indicators of the National Development Plan. It is evident that such a plan must provide for the following basic orientations:

i) Stabilization of prices of agricultural producers. The general outline of the Agricultural Production Plan refers to a decrease in farmers' incomes and the instability of this income owing to a reduction in per acre yield and fluctuations in prices and production. This variability and instability stem from fluctuations in agricultural production due to environmental reasons and shortcomings in the marketing set-up attributable to inadequate storage capacity.

For this reason we feel that the stabilization of producer agricultural prices is important and indeed essential, owing to their effective role in stabilizing production.

ii) Better distribution of agricultural producer income. The Plan identified the problem of agricultural policy as residing in a lack of balance and harmony between the productive capacity of agriculture and a just distribution of income. For this reason, it considered that the task of improving income levels in rural areas must be carried out through agricultural pricing policy.

As for the question of equality between income arising from the agricultural sector and income arising from other economic sectors

this is one of the things that must be striven for with a view to developing and protecting agriculture and advancing its productive capacities. This was included among the objectives of the Plan aimed at striking a balance between the interests of producers and consumers, with stress placed on raising farmer income.

iii) Providing essential foodstuffs to the citizens at reasonable prices. One of the objectives of the Agricultural Development Plan was to make the outmost effort to satisfy a sizeable and continually increasing portion of the demand for foodstuffs and primary materials for industry. The need for making extraordinary efforts was stressed, along with the adoption of innovative, non-traditional approaches in order for self-sufficiency to be achieved on a long-range basis in the area of grains and basic commodities. The Plan further emphasized providing the citizens with foodstuffs at moderate prices while granting the farmers adequate prices, in a manner that would lead (in conjunction with the other measures to be taken) to increased production and productivity - for this is considered one of the fundamental tasks of agricultural pricing policy.

B. Policy implementation

Following this review of the central goals and tasks for the development of the agricultural sector, we cannot leave out an exposition of the means and methods adopted for achieving the objectives that have been outlined and for generalizing the results achieved during the last decade of the period under examination.

With a view to achieving the desired objectives, the State undertook to effect structural changes in conjunction with a policy of agrarian reform and investments in agricultural projects, in addition to approving a new price policy and support for production prerequisites which had a share in strengthening these measures, as listed below:

1. Organization of production

a) Reorganization and distribution of property

The operations of appropriating and distributing lands belonging to the large landed properties were effected, with conversion to smaller and medium-sized properties. This can be summarized as follows in terms of area:

Less than 10 dunams (6.17 acres): 2.8 per cent - toral area = 692,000 dunams (427,160 acres), distributed to 157,050 citizens;

Over 10 and up to 120 dunams (74 acres): 66.47 per cent - total area = 16.4 million dunams (10.1 million acres), distributed to 492,300 citizens;

Over 120 and up to 300 dunams (185 acres): 16.90 per cent - total area = 4.1 million dunams (2.53 million acres), distributed to 28,300 citizens;

Over 300 dunams (124 acres): 13.7 per cent - total area = 3.4 million dunams (2.1 million acres), distributed to 5,214 citizens.

At the same time, the number of co-operatives reached 1,951 by 1981, with a membership totalling 388,500. The area of the socialist sector (State and collective farms and co-operatives) also showed advancement: agricultural production rose from 1.4 per cent in 1974 to 43.4 per cent in 1981, while at the same time its share in the domestic product for the aggregate agricultural sector rose from 0.3 per cent in 1968 to 7 per cent in 1974, and subsequently to 49.4 per cent in 1981.

b) Volume of investments

The amount ultimately spent on investments in the agricultural sector from 1968 to 1974 came to 239.3 million Iraqi dinars, while for the period from 1975 to 1981 the same expenditures totalled 2,029.6 million Iraqi dinars. These expenditures included projects involving land reclamation,

irrigation, drainage, agricultural mechanization, etc.

c) Production

Production levels achieved clear-cut advances in all areas of production. Plant production, for example, which includes grain, industrial and oil-producing crops, vegetables and dates, amounted to 11.1 million tons in 1981, as compared with 3.2 million tons in 1975. As for animal production, in 1981 reached 558,000 tons, in addition to 933 million eggs.

Generally speaking, production in the agricultural sector developed from 200.8 million Iraqi dinars in 1968 to 354.9 million Iraqi dinars in 1974, i.e., at an average growth rate of 9.9 per cent;the value then rose to 1,280.1 million Iraqi dinars in 1981, which represents an average growth rate of 22.1 per cent for the period 1975-1981.

This quantitative increase in production is atributable to the relative advances made in farming efficiency and the increase in productivity, in view of the fact that total acreages continued to flucturate throughout the period. Indeed, modern methods were introduced in agriculture on a broad basis; use was made of covered farming (plastic and glass greenhouses were built); and there was broader use of pilot farming.

The domestic product, too, rose from 167.9 million Iraqi dinars in 1968 to 278.4 million in 1974, with an average growth rate of 8.8 per cent and then jumped to 977 million Iraqi dinars in the period from 1975 to 1981, growing at an average rate of 20.9 per cent.

d) Allocation of farmlands

State intervention in production and marketing policy in the agricultural sector takes on a variety of forms within the legal and regulatory frameworks in effect. In particular, the State approves the agricultural plans defined and decided upon by the Annual Agricultural Conferences and it takes central decisions relating to policy and measures pertaining to

marketing, especially as regards buying, storage and the amount of financial assistance to be granted for agricultural commodities; all of this is done in harmony with the directives of the yearly and five-year plans coming under the National Development Plans. Also included are the breeding and fattening of cattle, sheep, goats and poultry; the production of eggs for the table and for incubation, milk, wool, and fish; and also animal-resources services and everything related to disease control, treatment and veterinary medicine. The animal production plan includes the anticipated quantities of animal products, both for fattening and for breeding purposes, divided up among the Stat farms and farming co-operatives. The Plan usually outlines the dimension of plant and animal production side by side with aspects relating to agricultural services such as mechanization, equipment, and agricultural guidance and training.

In connection with the plant production plans, the areas in which farming is to be done during the farming seasons are defined and distributed according to the type of watering: irrigated or rain-fed. There is a further classification of areas according to the different organizations and the manner in which farming is conducted by the: i.e., whether they are State farms, collective farms, farming co-operatives or privately -owned farms. Also defined are the areas to be included under pilot farming methods for wheat, barley, rice and yellow maize: this means farm that are managed in accordance with the most modern recognized agricultural production methods. Naturally, this takes place in connection with the State farms and co-operatives. The Plan further includes those areas earmarked for fertilization, according to season and type of crop, all in keeping with the productivity goals set by the Plan and in a detailed manner for each crop, in general, and in particular according to the possibilities of the different provinces. The Plans yearly programmes additionally include the areas designated for growing in dunams, anticipated production in tons and yield in kilogrames per dunam.

The yearly plans are usually decided upon by the Annual Agricultural Conferences held early in the first quarter of every year. Preparation for this Conference takes place through the holding of small conferences on the provincial level which are organized by the farming organizations

jointly with the General Union of Farmer Associations in the province. Thereafter, the decisions of these regional conferences are co-ordinated at a general agricultural conference in which all the authorities and agencies take part: the Ministry of Agriculture and Agrarian Reform, the Ministry of Irrigation, the ministries of the other sectors such as Industry and Trade, and other concerned instrumentalities.

As to follow-up on the execution of the resolutions of the Conference and the Annual Plan for the agricultural sector, this is entrusted to the Ministry of Agriculture and Agrarian Reform and involves the preparation of a follow-up report covering the progress made in executing the Plan, what was achieved, the obstacles and difficulties that had to be coped within the execution of the Plan, and the recommendations made by the Conference.

e) Aid and taxes

The State grants large amounts of finacial aid to the fellahin in order to assist them in cultivating their land and developing their productive enterprises, and also to enable them to make use of mechanization. This is done through the Farmers' Co-operative Bank, which grants loans to farmers. During the period 1975-1981 these loans amounted to more than 373 million Iraqi dinars, as contrasted with 25.4 million Iraqi dinars during the period 1968-1974.

Furthermore, the State provides consumer price supports in order to stabilize and develop the prices paid to agricultural producers. There are also price supports for production necessities in order to make them available to the fellahin at moderate prices; these include seed and fertilizers for plant production, and fodder and eggs for poultry incubation. Finally, there are price supports for the requisites of pest control for cultivated fields, and for the prophylaxis and treatment of livestock and poultry.

All the activities of the agricultural sector which are related to plant and animal products have been exempted from farm taxes, and all such taxes still due and unpaid on farm taxes that were previously in effect

have been cancelled. In addition, hatcheries, incubators and poultry yards are included under the exemption from income tax in order to encouraging private enterprise to invest in agricultural undertakings.

2. Grain policy

a) Grain buying and marketing policy

Since 1973 the marketing of grain has been a monopoly of the Public Grain Company and takes place through its subsidiary, the Public Grain Trading Corporation. Grains constitute the cornerstone of agricultural production and farmer income, and thus require stabilization and adequate purchase prices; at the same time grains are among the crops whose consumption is basic to the life of the citizens. The marketing of grain thus necessitates price stabilization to meet the needs of the low-income segments of the population, and to reconcile the two sides of the bargain, so that buying takes place at sufficient prices that can evolve, and selling takes place cheaply at stable prices. This is effected through a policy of consumer price supports, estimated at approximately 40 per cent of the price at which the grain is purchased from the farmers.

In addition, the Public Grain Trading Corporation facilitates and simplifies the purchase and delivery of crops from the producer. This is done through buying centres scattered throughout the entire country in areas near the fields; there are 64 such grain centres. Furthermore, the Corporation takes on the costs of packing materials and transport for per ton lum-sum amounts, in order to encourage farmers to deliver crops to these centres.

It should be mentioned that minimum purchase prices are determined and published at the beginning of the agricultural season, subject to price revision in the direction of increasing prices to the maximum before harvesting. Also, in the event of a drop in production during the season in question, this procedure can have an effective impact on grain-producer stability.

The activities of the Public Grain Trading Corporation are not confined to the marketing of local grain products. It also makes grain available to the consumer, by effecting grain imports from foreign countries in order to meet the needs of the domestic consumer and to regulate grain stocks.

b) Grain storage policy

Owing to a number of factors, such as the seasonal nature of production and the consumers' continual need for grain throughout the year, grain requires storing and its flow onto local markets must be regulated so that it will be available to the consumer on a day-to-day basis.

Furthermore, because of sharp fluctuations in production from one year to the next and, in some cases, from one season to the next during a given year, it is necessary to provide adequate storage as a reserve in order to fill gaps that may occur as a result of drops in production. In addition, the importing time for grain that is brought into the country also requires that stores be kept in order to cover the actual import period - from the placing of orders to the arrival of shipments. Moreover, there is the farmer himself, who also needs his own storage areas in order to meet his grain needs, whether for preserving grain until the sowing season, for meeting the requisites of his own household consumption during the year, or for maintaining stores of surplus amounts of grain for sale and for safeguarding them against spoilage. This imposes on farming co-operatives the task of improving and developing storage methods in the fields and cultivated areas through the packing and sorting of harvests. This also necessitates specific storage-area design, particularly in areas that are remote from receiving centres and silos. The Farmers' Co-perative Bank programmes loans for the building of storage areas in rural areas by farmers.

It can safely be said that sound planning of storage requirements contributes toward a lowering of the rate of spoilage, a reduction of marketing costs and an increase in the supply available for consumption,

with a consequent rise in economic and social well-being on the national level.

The State has demonstrated its concern for storage areas and methods by building large grain areas in the capital and the major provinces, located in Basra, Mosul, Al-Hillah and Kut Al-Imara; in addition smaller silos have been distributed throughout the entire country.

III. CEREAL PRODUCTION AND PRICES

A. Extent of incentives and disincentives in agriculture

1. Comparison between the national and international levels of production and prices of main cereals

The data used in this section was obtained from the Central Statistical Organization in the case of Iraq, and from FAO in the other cases (unless a different source is given). As we are mainly concerned with the trend of evolution of the aggregates and not in their absolute level, we have used index numbers rather than real values for production and prices.

The index numbers allow an immediate comparison between any period and a reference one, or "base year" (index value: 100). The problem lies in the choice of this reference period which has to be representative of the item studies and suitable for the analysis purpose.

The chosen year, 1973, seems to be an average year for acreages and yields over the 1965-1980 period (except for acreage of barley which is below the average in 1973). For policy analysis purposes, 1973 is an interesting point because with the dramatic change in oil price, Iraq had increased financial possibilities for intervention into the economic process.

a) Production

Comparing the index numbers of production by groups for the period 1961-1980, one finds a divergent evolution between the periods 1961-1970 and 1971-1980. For the first period, the production of all crops together increased by an average annual exponential rate of growth of 6 per cent; for the second period production decreased by an annual average of 1.7 per cent.

The per capita production of food (all crops plus livestock production) decreased during the period 1970-1980 following the general evolution in other ECWA countries.

/...

As far as cereals production is concerned, the rate of growth was 4.6 per cent during the 1960's and -3.4 per cent during the 1970's. Nevertheless, the absolute value of the negative rate of growth for the 1970's is not significant, because of the large variation observed around the trend, and the fact that 1971/72 was an exceptionally good year for cereals.

For these reasons, it can be said that the trend for cereal production in Iraq for the 1970's was at least constant if not decreasing.

If we compare this with neighbouring countries with more or less similar natural conditions, we find that for the 1970's the cereals production increased by an annual average rate of growth of 3.5 per cent in Iran, 10.4 percent in the Syrian Arab Republic and 416 per cent in Turkey. World production increased by 2.7 per cent (Source: World Agriculture Statistics, FAO 1982). As a first approximation, we can say that Iraq showed a relatively bad performance in cereals production during the period under study.

b) Prices

If we look at the producers' prices for main cereals in Iraq (see the statistical annex), we noticed that they are characterized by the absence of a decrease in nominal terms (except in 1972) and, for barley, maize and rice, a period of stability following an increase in price. World prices did not show such stability and after a period of rising prices up to 1974/75, there was a depression which ended in 1979/80.

Concerning input prices, there was a tendency to reduce or at least stabilize chemical inputs through a subsidy policy. In 1974, there was a decrease of 30 per cent in the price of fertilizers and 50 per cent in the price of pesticides.

In the statistical annex, some ratios relevant to fertilizer prices and other inputs are compared with those prevailing in neighbouring countries in the period from 1976 to 1978. At that time if the monetary cost of fertilizers in Iraq was lower or comparable with those in the

neighbouring countries, the ratio price of fertilizer/price of wheat was unfavourable to Iraqi farmers.

The cost of mechanical inputs (tractor + diesel) was lower in Iraq than in the three other countries (Iran, Jordan and Turkey). Because unskilled manpower is comparatively much cheaper, the price ratio of tractor H.P/man-day was the highest of the countries, leading to less financial incentive for farm mechanization. The increasing cost of labour recorded in the late 19700 twisted that ratio in the favour of mechanized power.

In 1982, the price of fertilizers was ID 46.500 per ton of urea (subsidized at 50 per cent) and 85.875 for super phosphate (15 per cent subsidy). The differential in the subsidy was to cover the price increment which followed the drop in the national production due to the present conflict and importation at much higher prices (US $150-270 FOB in the Near East in 1981 for urea). In 1982, one kilo of fertilizer (super phosphate) was equivalent to 0.975 kg of the best quality wheat and 1.07 kg of maize. Compared with the value recorded in 1976, these ratios show a favourable evolution for farmers. Nevertheless the use of fertilizers is still a marginal practice for wheat and barley production and is much lower than the recommended fertilizing rates.

c) Evolution of production and prices of main cereals 1970-1980

Nominal prices are not a good indicator of comparison in long-run analysis because of inflation. In order to express prices in constant purchasing power the prices have been deflated by an inflation index.

Because farmers are concerned, and because the consumption pattern of the rural population is not the same as that of the urban population, a good inflation index would be one directly related to good consumed in rural areas. Alternatively taking the farmer as a producer rather than a consumer, it is possible to use as index the change in producer prices in the whole economy. But in the present analysis the choice was restricted

by non-availability of a typical inflation index in Iraq; and non-availability of the corresponding inflation index at the world level in order to make a comparision in real prices.

Thus, the inflation index used herein is the general consumer inflation index. The real prices obtained can be interpreted as prices at constant value of money or, if we do not take into consideration the influence of changes in the consumption pattern, indirect taxation, and the marketing system (i.e. if the consumer price index follows the evolution of general producer prices), they can be interpreted as relative producer prices compared with the whole economy's production.

We will compare now the evolution of the principal characteristics of production and the national and international prices for each commodity. Further we will analyse the correspondence between relative prices, both in Iraq and in the world, in order to see the appreciation of each commodity compared with others and to determine if Iraq followed the world tendencies or not. The following section presents a comparative study of production, domestic consumption (production + imports - exports) and the self-sufficiency ratio (production/domestic consumption) and prices.

Two price series are compared: (a) The local producer price in Iraq, deflated by the general consumer price index in order to keep a constant value of money (constant purchasing power of one Iraqi dinar; (b) The world average price of imported commodity, obtained by dividing the total value of world importations by their quantities. This price has been deflated by an index of inflation at the world level. The sources are:

For Iraq: Prices - Central Price Organization, Baghdad; Consumer price index - CSO abstracts.

For the world: Prices - FAO Trade Statistics (printouts); Consumer price index - ECWA, Statistical Unit.

The base year (index = 100) chosen is 1973, the turning point for the price of oil.

/...

i) Wheat:

a. Production

See Annex II, Table 5.

For the period 1970-1980, the coefficient of variation for wheat production (standard deviation/mean) is quite high i.e. 46 per cent when the coefficient of yield is 25 per cent and for acreage 23 per cent.

There are two reasons for a high coefficient of variation: An increasing or decreasing trend and a large variation around the trend.

Here, the trend evolution and the variation around the trend are combined owing to the fact that wheat, as mainly a dry farming commodity, is very affected both in yield and harvested area, by fluctuations in the weather.

The trend of production during the 1970's is decreasing, due to a decrease both in acreage and yield. This decrease in yield is alarming if we consider that the yield in Iraq is below the average of all ECWA countries and that this gap increased during the period under study. Among explanations that can be advanced is that the profitability of wheat production compared with other products cereals or vegetables) decreased, leading to less area sowed in wheat. Drops in yield can be explained by the fact that wheat production is confined to marginal land (poor soil, unirrigated). Furthermore, there has been less intensive production in terms of fertilizers or labour input. Experts also point to the exhausting of soil fertility owing to the use of improved varieties without the required amount of fertilizers. The farmers' reluctance to use fertilizers may be the sign of bad organization of agricultural services; this also affects the delivery of machinery services, seeds, etc and discourages the farmers from making efforts to imporve the production efficiency. Another explanation is that the decrease is part of the general trend in Iraqi agriculture: the rapid rural-urban migration has induced a decrease in production by creating a shortage of labour.

The drop in quantity produced has led to a deterioration of the self-sufficiency ratio (SSR) which was around 30 per cent in 1979 while the country was quite self-sufficient in 1970.

Annex II, Table 5 shows the variations in production, acreage, yield and price of wheat during the period.

b. Prices

In real terms (constant value of money), the price of wheat has decreased steadily in Iraq. The international evolution was a bit differnt, with a peak in the mid-1970s. The ratio local index/world index for prices shows that since 1973 the evolution of prices has been unfavourable to Iraqi farmers if we take world prices as a reference. As yields did not increase, the gross value of output per unit of land decreased in real terms in Iraq.

ii) Barley

a. Production

See Annex II, Table 5.

The coefficient of variation for barley production is 26 per cent for yield 19 per cent and for acreage 21 per cent. Barley shows more stability in its production than wheat, owing to a smaller variation in yield. This is due to the fact that a larger part of the barley crop is irrigated, so it is less dependent on rainfall; also barley is more resistant than wheat to fluctuations in the weather.

The production trend during the 1970s, if we do not consider the exceptional year 1972, increased smoothly as a result of two contradicting tendencies: an increase in area harvested and a decrease in yields. It is possible that barley took the place of wheat so that the increase in acreage of barley coincided with the decrease in acreage of wheat. This assumption will be tested in the next part of this paper when the price responsiveness of farmers is analysed. Barley is also a salt-resistant

crop which is grown on newly reclaimed land; perhaps this characteristic induced the divergent evolution in acreage.

Yields in Iraq are more or less comparable with the average for ECWA countries. Nevertheless, this increase in quantity produced is not sufficient to cover the needs of the country and Iraq, which was a net exporter of barley in the beginning of the period, is now a net importer. (SSR = 75 per cent in 1979).

b. Prices

In annex II, table 6 we see that in real terms the price of barley decreased in Iraq during the 1970s, but the deterioration was less than that observed for wheat and it followed more or less the evolution of international prices after a drop in 1974/75.

As in the case of wheat, the concommitance in the yield and price evolution leads to a decrease of the gross value of output per unit of land in real terms.

iii) Rice

a. Production

See Annex II, Table 5

For 1970-1980, the coefficient of variation for rice production was 40 per cent, 15 per cent for yield and 36 per cent for acreage. Acreage here seems to be the most important variable influencing production, which is consistent with the fact that, as an irrigated crop, the yield of rice is less dependent on weather conditions. Hence, the decreasing trend observed for the rice production, despite an increase in yield, is due to a dramatic reduction in areas harvested. The SSR was 20 per cent in 1979.

b. Prices

Here too, the deterioration of prices in real terms followed, more

or less, the international evolution of prices, except for the years 1974-1975 which were also years of reduced production. If we compare prices and yields we can say that, in contrast to barley and wheat, the gross value of output per hectare did not decrease in real terms. However, the land devoted to rice production decreased. The main reason for this was the willingness of the administration to discourage rice production in certain parts of the country in order to control the salinity of soil.

iv) Maize

a. Production

See Annex II, Table 5

Maize is a relatively new crop compared with wheat, barley and rice which are traditional products in Iraq.

Despite the fact that maize is an irrigated crop, as rice is, we do not find the same stability in yield (coefficient of variation: 24 per cent)which is perhaps the proof of an improvement in know-how concerning production of this crop. The yield figure (annex III, graph IX) a peak in 1977, after which it remains more stable at an inferior level. Due to the fact that acreage increased dramatically in 1978, and without any other information, we can advance the opinion that in 1977 maize lost the characteristic of a new crop produced by pioneer farmers, and it became a more common commodity grown by less efficient farmers. The consumption of maize increased faster than the production and the SSR fell to 30 per cent in 1978.

b. Prices

Despite the decrease of price in real terms, the gross value of output per unit of land stayed more or less constant after an increase in 1975-1977.

d) The evolution of relative prices

If we compare the evolution of prices for each commodity in Iraq and in the world, we find that, in general, the local prices did not follow the increase in real terms shown by the world prices up to 1975, but decreased smoothly throughout all the periods. Since international prices dropped during the second half of the 1970s, by the end of the priod we find more or less the same parity as in 1973, except for wheat.

Now we will compare the evolution, both in Iraq and in the world, of relative prices (i.e. the price of wheat compared with the price of barley, etc.).

This comparison will show whether the evolution of comparative prices among commodities followed, or not, the world situation. In others worlds, it will show whether the planners took into account the respective valuation on the world market or followed only internal consideration when setting up the prices. This comparision with world relative prices will also help us in the determination of possible modifications in the actual price pattern. If the comparative study of costs and prices at the local level leads to the conclusion that the price of a commodity has to be revalued compared with another one, the fact that its local relative price was less than the world relative price is a positive argument in this direction.

Table 2. Price of commodity/price of wheat

(per centage)

Year	Barley		Rice		Maize	
	Iraq	World	Iraq	World	Iraq	World
1970	84	85	156	207	109	96
1971	84	98	156	191	109	99
1972	59	86	190	193	145	91
1973	75	97	170	220	109	92
1974	75	78	170	230	109	74
1975	72	82	185	212	119	80
1976	76	89	206	187	119	79
1977	83	103	198	226	127	86
1978	83	101	198	260	127	82
1979	82	93	186	219	120	79
1980	90	93	190	198	108	79

/...

Compared with wheat, we can say that barley and rice are undervalued according to world prices. The price of maize is overvalued. There is a tendency towards appreciation of the relative price of rice.

Table 3. Price of commodity/price of barley

(percentage)

Year	Maize		Rice	
	Iraq	World	Iraq	World
1970	129	113	185	245
1971	129	102	185	195
1972	247	106	323	225
1973	145	94	227	228
1974	145	95	227	295
1975	167	97	257	258
1976	157	88	271	209
1977	152	83	237	220
1978	152	82	237	259
1979	145	85	226	229
1980	119	85	210	213

The relative price of maize in Iraq is overvalued compared with world relative prices and does not follow its international depreciation. The relative price of rice is comparable, if not undervalued, with world prices.

The relative price of maize in Iraq is overvalued compared with the world price. The trend, following the international one, is unfavourable to maize, as seen Table 4 below.

Table 4. Price of maize/price of rice

(percentage)

Year	Iraq	World
1970	70	47
1971	70	52
1972	76	47
1973	64	41
1974	64	32
1975	65	38
1976	58	42
1977	64	38
1978	64	32
1979	64	37
1980	57	40

In summary, we can say that, according to the world situation.

a) The price of wheat is overvalued compared with barley and rice;

b) Barley is undervalued compared with wheat and maize;

c) The price of rice is undervalued compared with all the commodities but shows a tendency to a better evaluation;

d) The price of maize is strongly overvalued but its price, following the international trend has been decreasing compared with rice for the whole period and with barley after 1975.

2. Cost of production

Two kinds of cost of production are used: The average cost of production for the country; The cost of production of a typical farm.

The average cost of production is calculated by the Central Statistical Organization based on the results of a sample survey at the country level according to different types of irrigation (pumps, gravity, rainfall). It covers different types of farming techniques and localizations. The situation in 1982 is compared with the situation in 1975; meanwhile the observed variations are not only related to changes in prices but also to a change in the structure of inputs utilization following the modernization of the farming process.

The typical cost of production is related with the operating cost of production of an "optimal" farm in terms of input utilization (irrigation, fertilizers, machinery). We used the data elaborated by the Central Price Organization experts according to the information provided by the Ministry of Agriculture and the Federation of Farmers Co-operatives. The quantity of inputs used was cross checked with the study made by FAO/UNDP experts in 1975 for the Greater Mussayib Project. Assumptions were made on yields using the values expected by United Nations experts for the GMP.

Because of the non-availability of data on the quantity of inputs used, the imputed cost of production for each commodity, i.e. the cost without

any kind of taxes or subsidy, was computed on the typical cost structure for 1982. The full costs for each commodity have been fixed following the estimations made by CPO experts.

a) Average cost of production

Item rent and others is not important in the total cost because most of the land which was distributed through the agrarian reform was given free to farmers.

The rate of return is computed "with" and "without" labour. Except in large farms labour is entirely family labour; the cost without labour has been called cash cost. The rate of return to to total cost is the value of output minus the value of all inputs divided by the value of all inputs.

The rate of return to cash expenses is similar except in the computation of cost which does not take into account labour cost.

i) Wheat

See Annex II, Table 11.

The rate of return in the rainfed area to cash expenses is much higher than the one in the irrigated area, the differential in yield being not enough to cover the differences in cost of inputs. The rate of return to cash expenses in 1982 is better than in 1975; the situation is opposite for total cost, showing the large increase in cost of labour.

The profit or return per dunam is 15 Iraqi dinars (ID) for irrigated land and ID 12 in rainfed area (it was ID 4.5 and ID 3.6 respectively in 1975), which gives an average benefit per dunam of ID 13.6.

ii) Barley

See Annex II, Table 12.

The rate of return to total cost is negative for irrigated barley due to the important share of labour in the total cost (52 per cent). The

rate of return to cash expenses is much better and the difference with rainfed area is not very important.

The rate of return on both total cost and cash expenses in 1975 was better than in 1982 due to the poor improvement in yield and the cost increment. The benefit per dunam is ID 10 on irrigated land and ID 8 on rainfed (ID 5 and ID 4 respectively in 1975) which leads to an average benefit per dunam (without labour costs) of ID 8.

iii) Rice

See Annex II, Table 13.

The production of rice is more intensive than the production of wheat and barley, as shown by the importance of labour and machine costs. The yield permits an excellent rate of return (190 per cent on total cost and 448 per cent on cash expenses) which give a cash benefit per dunam of ID 92.

iv) Maize

See Annex II, Table 13.

As no survey was available at that time concerning average cost of production, we made an estimation based on cost of production on a pilot farm, taking into account that, if maixe production is more common now in Iraq compared with previous years, it is still a marginal crop grown by farmers who are more educated than average. We took as a basis maize harvested by hand but with utilization of fertilizers and improved seeds. Nevertheless our estimation is a broad one without any pretension of true representation of the Iraqi reality.

Under these assumptions, production of maize shows good rates of return (113 per cent on total cost, 316 per cent on cash expenses if there is no hired labour).

The benefit per dunam is ID 25.

Table 5 summarizes the rates of return on cash expenses (or rate of return to labour and management) and the monetary benefit per dunam for

the commodities under study:

Table 5. Rates of return and profit for grains

	Rate of return (Percentage)	Profit/dunam (Iraqi dinars)
Wheat irrigated	145	15
Rainfed	250	12
Total	218	14
Barley irrigated	114	10
Rainfed	175	8
Total	117	8
Rice total	448	92
Maize total	316	25

The ranking of commodities according to profitability is rice, maize, wheat, barley. However, rainfed barley presents a better rate of return than irrigated wheat. We have to keep in mind that, in the present situation, there is no cost for land and water, which is favourable to crop production requiring good soil and a large amount of irrigation water (rice and maize). Furthermore, these crops are the first beneficiaries of the subsidization of fertilizers.

In the following section, we will try to include all the costs of production at their "real" price.

b) Typical or optimal farmer's costs and cost of production in 1982

The imputed cost of labour in 1982 is ID 3 per eight-hour day, which is the minimum wage.

The cost of one hour of machine service is ID 3.5. The inputed cost of land has been estimated at ID 5 per dunam of rainfed land or salt-affected irrigated land (barley) and ID 10 per dunam of irrigated land. The preparation for market includes transport to the collecting centre.

As the farmer receives ID 3/ton for transportation service, we have added this amount to the purchase price of the commodity.

CIF prices for imported commodities are higher than they were before 1980 because of the additional cost of transportation by land owing to the closing of Basra, Iraq's only sea harbour. Also because of the present conflict the rate of subsidy on imported fertilizers is 50 per cent. When fertilizers were produced locally, the rate of subsidy was 15 per cent. The international price of fertilizers represents the opportunity cost as the best alternative use of the domestic production in a regular period.

We computed several ratios:

(a) R1 = imputed - Actual cash expenses/imputed cash expenses (land rent but without labour cost); where

R1, given in per cent, represents the importance of taxes and subsidies on the imputed cost. If R1 is positive, there are net subsidies, if negative net taxation;

(b) R2 = Domestic price/adjusted CIF price of a commodity; which gives the nominal rate of protection;

(c) R3 = Value added at actual prices and costs/value added at imputed costs and adjusted CIF price of the commodity; which gives the effective rate of protection.

i) Wheat

See Annex II, Table 14.

If the rates of return for actual costs are comparable for irrigated and rainfed wheat, the imputed costs are unfavourable to irrigated production. In fact R1 is 34 per cent for irrigated and 25 per cent for rainfed wheat, showing that irrigated production benefits more from the actual pattern of subsidies on inputs and land.

In 1982, the CIF price for wheat was ID 80. The transportation cost to the wholesale point (including handling charges) in ID 14.

/...

At the wholesale point, the ratio between the domestic producer price and the imported price is R2 = 90 per cent.

The ratio between actual and imputed values added (without cost of land, labour and capital) is 103 per cent for irrigated wheat and 96 per cent for rainfed wheat.

There is a small effective advantage given to irrigated farms and a small disadvantage to dry farming; therefore, we can accept the parity of both with the reference.

ii) Barley

See Annex II, Table 15.

Because of the small differential between irrigated and rainfed barley the rate of return is better for dry farming than for irrigated farming.

R1 is 18 per cent for irrigated land and 25 per cent for rainfed. As no fertilizers are used, this difference is due only to the inputed cost of land and the difference in yield.

The CIF price of barley is ID 70. Adding the transportation cost up to wholesale point, we obtain ID 87. The nominal rate of protection is 86 per cent.

R3 is 77 per cent for irrigated barley and 79 per cent for rainfed barley showing that barley production is disadvantaged by the actual pattern of prices and subsidies.

iii) Rice

See Annex II, Table 16.

We find quite a good rate of return, even on imputed costs. The ratio between actual and imputed cash expenses is R1 = 24 per cent. The CIF price of rice in 1982 is ID 187. The adjusted price at the wholesale point is ID 202. The nominal rate of protection is 74 per cent. The

effective rate of protection is 68 per cent showing that, in the present circumstances and according to the data, the production of rice is disadvantaged by the actual situation.

iv) Maize

See Annex II, Table 16.

The rates of return are good, but not as good as for rice. R1 is 34 per cent.

On the basis of ID 75 for CIF price plus ID 15 of transport and handling charges up to collection centres, the ratio R2 is 92, showing little distortion from the reference price.

The effective rate of protection is 96, showing that maize production is not affected by the actual pattern of taxes, prices and subsidies.

c) Review of results and impact on cereal farmers' income

Table 6. Optimal costs (percentage)

Commodity	Rate of return to management	Rate of return to cash expenses	R1	R2	R3
Wheat					
Irrigated	103	136	41	90	103
Rainfed	115	126	25		
Barley					
Irrigated	82	119	18	86	77
Rainfed	128	145	25		79
Rice	147	242	24	74	68
Maize	132	194	34	90	96

Notes: R1 = Imputed cost - Actual cost/imputed cost.
R2 = Domestic price/adjusted CIF price.
R3 = Actual value added/imputed value added.

/...

The table above summarizes the results obtained, comparing actual and imputed costs and prices for optimal farming in Iraq. The rate of subsidy on costs (R1) ranges from 18 per cent (irrigated barley) to 41 per cent (irrigated wheat) of the imputed cost. The nominal rate of protection (R2) is always unfavourable to farmers as local prices represent from 76 to 90 per cent of the imported commodity prices. But this situation is exceptional and related to the additional cost of transportation of imported goods owing to the present conflict. Without these problems of transport, parity between local and international prices can be expected for cereals.

The effective rate of protection (R3) divides the commodities in two groups:

a) Wheat and maize, with a coefficient greater than, or more or less equal to 100 per cent are advantaged or not affected by the actual pattern of prices and subsidies.

b) Rice and barley, with a coefficient smaller than 100 per cent, are disadvantaged by this actual pattern.

Nevertheless, we have to notice that, even though disadvantaged by prices and subsidies, rice and barley present good rates of return. This can be an indication of the natural advantage in Iraq for these productions.

If we go back to average costs of production, we see that on an average farm the rate of return and the average benefit/dunam for barley are low. From the point of view of economic efficiency and income policy, barley production has to be supported with higher prices in order to encourage the use of improved practices.

In the case of rice, since the rate of return is good, even on an average farm, support for production can take a form other than price supports. As far as farmer's income is concerned, taking into cosideration

that the average holding is 40 dunams (10 hectares) and the intensity of land use is fifty per cent, the benefits per average farm for cereal production as computed from the average costs and returns are:

Table 7. Farmer's income on an average farm (Iraqi dinars)

Commodity	Wheat		Barley		Maize	Rice
	Dry	Irrigated	Dry	Irrigated		
Profit/dunam	12	15	8	10	25	92
Farm income	240	300	160	200	500	1840
Monthly income*	40	50	27	33	83	306

* Based on a 6 months production period.

When employing advanced farm management on the same farm size, the benefits are:

Table 8. Farmer's income on an advanced farm

Commodity	Wheat		Barley		Maize	Rice
	Dry	Irrigated	Dry	Irrigated		
Profit/dunam	26	39	22	27	55	128
Farm income	520	780	440	540	1100	2560
Monthly income	87	130	73	90	183	427

If we consider as the opportunity cost of farm labour the wage of an unskilled worker in a construction compay (ID 7 per day) minus the rent in a popular house (ID 50 per month), the opportunity cost comes to be ID 125 per month (six days of work per week). When advanced farm management is not used, the average cereal farm icome is less than the opportunity cost for all the productions except rice. With advanced management, the

/...

farm income is still less than the opportunity cost for barley and un-irrigated wheat. Indeed, only grain production has been taken into consideration and the possibility of summer cash crop production on the fallow land has been neglected. But considering that in the rainfed area the remaining moisture in summer often is not sufficient for summer field crops if no irrigation is provided, in the long-run cereal dry farming is not economically viable under the prevailing prices and holding systems, even when using advanced management.

In the long-run, two actions have to be taken: (a) the adoption of advanced technology in cereal production (especially the use of fertilizers) and (b) the concentration of land in order to increase the average size of holdings. In fact, both measures are linked since the optimal use of modern technology necessitates a minimum field area. Given the institutional orientation of the farm economy within the socialist policy followed by the Government, farmers co-operatives are the keystone of such an improvement. Because it is understood that the co-operative movement did not fully succeed in mobilizing farmers in the past, the first step of a policy to improve the welfare of the farmers and the use of the country's agricultural potentialities would be to strengthen the ties between the farmers and the administrative staff of the co-operative for better understanding and mutual confidence.

In the short run, and as long as the productivity of cereal production does not increase significantly, farm-gate prices have to be increased in order to preserve the rural income from inflation and to stop the deterioration of the agricultural terms of trade.

B. Effect of a change in price on production

The aim of this section is to detect any effect of a change in the price of output on the supplied quantity; in other words, to determine the farmer's price responsiveness.

The basic assumption is the farmer's willingness to produce more of a commodity when its price goes up.

/...

This is not a trivial assumption in the sense that it supposes, a priori:

(a) The farmer's strategy is to maximize a target function directly expressed in monetary terms (profit or turn-over);

(b) He has at least one control variable on the production function;

(c) He can sell the extra production;

(d) He has good information on prices.

The first assumption is not fulfilled, for example, when the farmer's objective is to secure a certain level of income from the farming process; if he has already reached this point, an increase in the price of output will lead, ceteris paribus, to a decrease in production, the saved time being employed to other purpose (out-of-farming job, leisure...); an other case is when the marginal utility of money is low (rationed supply in an administrated retail market,[1/] or distant marketing centres).

The second hypothesis means that the farmer can increase at least one of the two components of production - acreage and yield (i.e. there are enough land, labour, fertilizers or water; the production pattern is not imposed by somebody else).

Assumption three and four are related to market organization.

Once the basic assumption is accepted, it remains to find out:

(a) At which type of price is the farmer responsive?

(b) What is (are) the control variable(s) he can use to increase production?

1/ In that case, demand greater than supply does not lead to price inflation (which would increase the demand for money) but takes the form of increased time consumption for research and quenes; i.e., marginal utility of time is greater than money due.

1. The choice of variables

a. Prices

We have different types of prices:

(a) The nominal price, which is the amount of money received for one unit of product;

(b) The real price, representing the purchasing power of the nominal price expressed in reference to a base year. The real price takes into account the inflation rate, the loss in purchasing power of the monetary unit;

(c) The relative price, i.e., the ratio between the price of the commodity and the price of another good, or panel of goods, taken as reference. The real price is a specific kind of relative price where the reference good is the panel of goods and services chosen to build up the inflation index.

The farmer may react to a change in nominal price, even if the real price remains the same or decreases. This is called "monetary illusion" and occurs for short periods when the farmers do not have good information on the economic situation. In the long run, the monetory illusion disappears and only variations in real and relative prices can affect production.

Relative prices, by construction, are not concerned with "monetary illusion" and can be used both in short-and long-term analysis. But some relative prices which are relevant in long-run analysis are not consistent with the short-run framework (no structural change in the economy) when the two commodities compared are not competing crops on the same land; even if the price of one of these goods become more attractive, technical constraints limit the substitution effects from the least valued to the most valued commodity. In the long run, this limitation to the substitution effect disappears partially, at least when the study copes with aggregated data at national level; even if the regions are strongly specialized in specific crops, we can expect in the regions where the crop grown is less valued a more important urban-rural migration or out-of-farming jobs

leading to a relative decrease in acreage and/or production and a better investment in favoured areas with increasing acreage and yield.

In any case, the commodities choosen in the calculation of relative price have to be carefully selected.

b. Production factors

Because aggregated data are used, we will not consider production factors in a narrow sense but acreage and yield (land is a production factor and yield is the resultant of several factors: labour, chemical inputs, seeds and weather). Both acreage and yield are command variables for farmers free of external constraints, but because of its relationship with a random variable (rainfall, natural events) it is less convenient to use yield as an indicator of the farmer's behaviour, even if it is possible, at least in theory, to separate the contributions of weather in the observed variations of yield. On the other hand if the farmer is not free to choose the land-use pattern (quota policy), yields remain the only variable through the allocation of labour among the different productions. For these reasons, if priority is given to the variations of land allocation in the study, special attention will be paid to yield in comparisions of competing crops.

2. Methodology

We will try give evidence of the role of price in the Iraqi cereals production pattern througb two different approaches: long-term and short-term adjustments.

For the long-term adjustment, we will just compare the observed trend in the real or relative price evolution and acreage or yield during the 1970s. Different types of trend functions have been fitted to data.

For the short-term adjustment, we have used a Nerlove type model:

$$Yt = a + b\ Y\ (t-1) + cPt + dwt$$

Where

Yt = Explained variable (yield or acreage) at time t;

/...

Pt = Price at time t (or t-1 when lagged);
wt = Weather index in t;
Yt-1 = Lagged explained variable which incorporates, in the Nerlove's approach, the long-run adjustment to the desired equilibrium. It can be interpreted more simply as a "flexibility factor".

The model is expressed in logarithmic or linear form and coefficients are computed using ordinary least squares.

Nominal, real and relative prices are used. As prices are announced before the sowing season, it is consistent to use non-lagged prices.

When the model is expressed in logarithmic form

$$\text{Log } Yt = a + b \text{ Log } Y(t-1) + c \text{ Log } Pt + d \text{ Log } wt$$

c represents the short-term price elasticity. When linear, the elasticity is given by $c \times \bar{P}/\bar{Y}$, where $\bar{P}$ and $\bar{Y}$ are the average values.

The basic assumption of price response will be supported by a positive price elasticity.

3. The data

The period under study covered 1970-1980. Data used for production characteristics are those published at the national level by the Iraqi Central Statistical Organization. Acreage is harvested area. Prices are producers' prices in Iraqi dinars. The deflator used to convert nominal prices into real prices is the consumer food price index published by the CSO. We have chosen the food index 1/ rather than the general inflation index because if the retail prices evolution follows more or less the producer prices, the real price obtained has two significations:

(a) Real price, in a narrow sense, expressed in food purchasing power (reference year for monetary unit: 1973;

(b) Relative price between the commodity under study and a complete set of food commodities;

1/ Exponential trend. Growth rate = 8.7 per cent. Cf figure at the end of this section.

The weather index is the rainfall level at Mosul station (in the north of Iraq). As no complete time series was available for potential irrigation water, we made the assumption that the level of rainfall in the northern part of the Euphrate's basin commands the availability of irrigation water.

4. The results

The results are presented in two parts: Long-term adjustment; and short-term adjustment.

As pointed out in the presentation above, for the long-run adjustment we will present the relative evolution among the four crops while for the short-run adjustment only competing crops (barley/wheat and maize/rice) will be analysed.

a) Long-run adjustment

Four kinds of trend functions have been adjusted on the data:

Linear : $Y = A + BT$

Inverse : $Y = A - B/T$

Log inverse : $\text{Log } Y = A - B/T$

Exponential : $\text{Log } Y = \text{Log } A + T \text{ Log } (1 + B)$

Where T is time index (1, 2, ..., T).

Prices are real prices.

Before presenting the long-run covariations, we have to stress that a convergence between the trends does not have any strong economic signification because many other factors may have played a more important role; It just gives an indication.

The presentation of results gives the type of trend (linear, exponential), the sign of the trend coefficient and its signification level (* = significant at 95 per cent; ** significant at 99 per cent, i.e. the probability that the trend coefficient is different from zero is greater

/...

than 95 or 99 per cent) and the related rate of growth expressed in exponential form.

Table 9. Long-run adjustment: wheat

Variable	Function	Trend	Growth rate
Price	Lin	- **	3.5
Acreage	Lin	-	1.9
Yield	Exp	- *	3.3
Production	Exp	-	5.1

The signs of the trend coefficients for acreage and production are not significant at the 5 per cent level. Yield trend has the same sign as real price, giving an indication of the possible price effect.

Table 10. Adjusted data: barley

Variable	Function	Trend	Growth rate
Price	Inv	- **	2.0
Acreage	Lin	+ *	3.7
Yield	Exp	- **	3.9
Production	Inv	-	0.2

Yields and prices have the same trend orientation, but acreage shows a significant divergent evolution. As far as production is concerned, there is no significant trend evolution over the whole period, but after 1973, it shows a positive significant trend (Cf. figures at the end of the section).

Table 11. Adjusted data: maize

Variable	Function	Trend	Growth rate(percentage)
Price	Lin	- **	2.9
Acreage	Lin	+ **	18.0
Yield	Lin	+ **	7.0
Production	Lin	+ **	25.4

/...

Here we have a total opposition between real price evolution and other variables. Nevertheless, the specificity of maize as a newly introduced crop is an acceptable explanation for such a divergence.

Table 12. Adjusted data: rice

Variable	Function	Trend	Growth rate (Percentage)
Price	Lin	- *	1.4
Acreage	Lin	- *	4.5
Yield	Lin	+	2.0
Production	Lin	-	2.7

We observe for rice a significant co-evolution between price and acreage.

Table 13. Relative prices

Variable	Function	Trend	Growth rate (Percentage)
Barley/wheat			
Price	Lin	+	1.5
Acreage	Lin	+ **	5.7
Yield	Lin	-	0.7
Production	Lin	+ **	5.2
Maize/wheat			
Price	Exp	+	0.5
Acreage	Exp	+ **	20.0
Yield	Exp	+ **	10.6
Production	Exp	+ **	32.0
Rice/wheat			
Price	Exp	+ **	2.1
Acreage	Lin	-	2.7
Yield	Exp	+ **	5.4
Production	Exp	+	2.5

/...

Table 13 continued

Variable	Function	Trend	Growth rate(percentage)
Maize/barley			
Price	Lin	-	0.9
Acreage	Exp	+ **	13.8
Yield	Exp	+ **	11.3
Production	Exp	+ **	25.6
Rice/barley	Lon Inv	+ *	0.6
Price	Long Inv	+ *	0.6
Acreage	Exp	-	8.0
Yield	Lin	+ **	6.2
Production	Lin	-	2.5
Rice/maize			
Price	Exp	+ *	1.6
Acreage	Exp	- **	19.2
Yield	Inv	- **	4.6
Production	Inv	- **	22.4

The trend analysis of relative variables shows a significant co-evolution between price and yield for rice/wheat and rice/barley. Rice/maize shows a total divergence between price and the production characteristics. We have also a long-run divergence for rice/barley between price and acreage.

It has to be noted that for our main command variable, acreage, no significant co-evolution with price has been revealed.

b) Short-run adjustment

For short-run analysis, we adjusted on the data collected at the macro level a model linking together the explained variable (acreage or

/...

yield, both in absolute value or compared with competing crop) with the explanatory variable: lagged explained variable, price and weather index.

In the presentation of results we give the regressors (coefficients) and R2, coefficient of determination which gives the share of exogenous variable variations explained by the model. The level of signification of coefficients is indicated by asterisks (* = 90 per cent; ** = 95 per cent; *** = 99 per cent). Nevertheless, for statistical reasons, the signification levels may be optimistic because the presence of the lagged endogenous variable in the model does not allow the utilization of simple tests on the residual terms (Durbin-Watson, for example) and the variance of estimators can be under estimated. For the purpose of clarity, only significant results are presented. Prices are nominal, real and relative prices, lagged or not. As these prices do not represent the same economic reality, we have to be careful when interpreting the results. A good statistical result obtained with non-lagged nominal prices (announced before the sowing season) is, from an economic point of view, easier to accept than the same result with non-lagged real price as the latter implies an anticipation of the inflation rate by the farmers. Nevertheless, this assumption is not too strong as far as there are no too large year-to-year variations in the inflation index.

According to the results, we have a significant positive correlation in the short-term between acreage of wheat and real price; acreage of maize and nominal price, lagged or not, and between yield of maize and lagged nominal price. All the positive results are affected by the presence of multi-collinearity among explanatory variables (Table 14).

Two consequence of this phenomena are:

(a) Loss of precision in the computation of coefficients (value of price elasticity, for example);

(b) Perhaps some regressions neglected, because estimated value for price elasticity found to be not significantly different from zero were, in reality, significative .

/...

Table 14. Short-run adjustment data

Explained Variable	Model a/	Lagged Expl.Var.	Price Type b/	Price Coefficient	Weather	R2	
WHEAT							
Acreage	1	- 0.44 *	N	- 20.35 *	0.80		0.52
Acreage c/	2	- 0.82 **	R	1.01 *	0.16	0.48	
Acreage	2	- 0.72 **	NL	- 1.05**	0.42 *	0.65	
Yield	2	0.23	N	- 0.88***	0.40**	0.69	
BARLEY							
Acreage c/	2	0.78 **	R	- 1.05**	0.26	0.60	
Yield	2	--0.19	N	- 0.56**	0.11	0.60	
MAIZE							
Acreage c/	2	0.24	NL	2.03**	-0.33	0.89	
Acreage c/	1	0.30	N	0.70**	-0.03	0.81	
Acreage	2	- 0.06	RL	- 5.71**	-0.79	0.54	
Yield c/	2	0.12	NL	0.94**	0.04	0.82	
RICE/MAIZE							
Acreage	2	0.39 **	L	- 4.34**	0.64	0.87	

Notes:

a/ Linear model = 1 Log model = 2

b/ N = Nominal; R = Real; L = Lagged (-1)

c/ Indication of collinearity among explanatory variables

Nevertheless, this last remark cannot lead to optimism concerning the price responsiveness of the farmer, at least as revealed by our data, because there are many regressions where the observed effect of price do not follow our basic assumption, i.e. where an increase in price leads to a decrease in acreage or yield. It is of interest to note that there is no significant positive connexion between relative prices and relative acreage, at least according to the data.

/...

The relationship between acreage of rice/acreage of maize and relative price does not have the expected sign. The positive price elasticity shown by the ratio acreage barley/wheat with lagged price (0.6) has not been selected because significant at the 85 per cent level only; in addition the equation has a poor explanatory power (R2 = 0.35).

Our data leads to the rejection of the basic assumption concerning the farmers' price responsiveness in Iraq. It does not mean that this assumption has to be neglected, but if not, than other analyses need to be done, using other data (at the micro-level) and other methodological approachs.

A similar study has been done by the Training Institute of the Ministry of Planning on three summer crops, rice, maize, cotton.[1/] The aim of the study was to measure the supply price elasticity both in the short and long-run through the acreage sensibility to a change in price. In order to compute these elasticities, a Nerlove-type model was fitted on 1966-1980 time series data. The data were at both national and regional (governorate) levels.

In its formulation, this model differes from the one used in our study:

a) The explained variable (At) is the sowed acreage (and not the harvested area).

b) The explanatory variables are:

Pt-1: Relative price of the crop at time t-1 (producers price deflated by price of competing crops)

At-1: Acreage sowed at time t-1

T = trend variable

Rt = River flow during the period of crop planting (water availability)

DY = Standard deviation of yield for the three last years

1/ I. Mamadi; M.S. Rahdi; S.B. Dawood, Econometric Study of Farmers Response. (Training Institute, Ministry of Planning, Government of Iraq.)

/...

Dp = Standard deviation of price for the the last three years.
Yt-1 = Yield at time t-1

To a certain extent, DY and DP capture the risk of growing the commodity. The results concerning the two cereals are shown in table 15 below:

Table 15. Data indicating price responsiveness for rice and maize

	Ao	Pt-1	At-1	T	Yt-1	Rt	Dy	Dp	R2
Rice a/	-27.70	0.94	0.43	0.25	-	9.41	-0.18	-0.22	0.83
Maize b/	-1089	47.72	28.24	-	49.42	119.46	-	-11.55	0.97

Note: a/ Double logarithmic equation

b/ Logarithmic for explanatory variable. In thousand dunams.

All the coefficients have the expected sign. In the two equations, coefficients for prices are highly significant (level of confidence: 0.99).

The short-run price elasticity is 0.94 for rice and 1.02 for maize. The correspondent long-run elasticities are 1.56 and 2.55. This study shows that farmers are price responsive for these crops.

The divergence among the two studies can be explained by:

a) The nature of the explained variable. Planted area is less affected by chance than harvested area which relies on sowed area but also on yield (if yield is poor, the field is not harvested and used for grazing), availability and cost of labour or machinery at harvest time, etc.

b) The set of explanatory variables is more sophisticated in the latter study which leads to a better measure of price effect.

c) The size of the sample. In our study, we found a strong presumption of multi-collinearity among our explanatory variables. This characteristic leads to a high sensibility of coefficients value to the

/...

size of the sample of data. On the other hand, our period of time shows better homogeneity in terms of institutional framework, while the period chosen by the Planning Institute covers different administrative regulations in the setting-up of prices. Yet the results are very encouraging and show a strong probability for positive price responsiveness of the Iraqi agricultural economy. Unless the divergences in results obtained with the two models are related to the statistical quality of the data, the fact that price responsiveness cannot be caught by an unsophisticated model proves that this price response is weak compared with the other factors constraining the agricultural production. In other words, support prices are possible planning tools for increasing production but are far from sufficient. Investment and extension programmes and administrative reforms are needed in order to (a) increase the technical possibilities of production and (b) allow more flexibility to the farmers in the decision-making process. As little information has been made available on the individual farm economy, it is not possible here to clearly identify the bottlenecks restraining the production changes. In a broad approach, labour shortages not compensated by more advanced technology is one of the restrictions. The money allocated to agricultural investments is not the point (investments in agriculture increased from ID 339 million in 1968-1974 to ID 2,030 million in 1975-1981) but rather the distribution of these investments and the organization of agricultural services.

IV. AGRICULTURAL CREDIT AND MARKETING CHANNELS

A. The agricultural credit system

The Agricultural Co-operative Bank is the most important establishment supplying the agricultural sector with credit. The Bank, created in 1940, had in 1981 a capital of ID 150 million. Through 47 branches, it offers services to the socialist sector, co-operatives and individual farmers. Since 1980, the interest rate has ranged between 0.5 and 3 per cent. Before 1980, the highest interest rate was 6 per cent (individual loans).

The Bank handles almost all aspects of credit in agriculture, from long-term loans for investment programmes to seasonnal loans for current inputs and cash facilities. In addition to providing credit facilities for agricultural production and marketing, it tries to encourage the use of savings accounts by the rural population by offering an interest rate of 4 per cent on deposits. However this activity is still marginal and all the money loaned by the bank has a governmental origin.

The allocation of funds is determined each year following the Annual Agriculture Conference resolutions. It is not a rigid allocation and the planned credit allocation can be changed (in 1979 the planned amount for individual farmers was ID 150,000 and the expanded amount ID 2,217,034, i i.e. 148 per cent of the initial funds).

1. Credit utilization

Table 16 and the diagram for 1968/69 to 1980 shows that the total amount of agricultural credit increased at a higher rate after 1977 with an important change after 1979, both in the amount of credit provided and in the structure of credit allocation. Following the orientations given by the 10th Annual Agriculture Conference in order to strengthen the private sector in agriculture, the Agricultural Bank increased the volume of credit

Table 16. Expenditure amounts and number of transactions 1976-1980 (Thousands of Iraqi dinars)

Year	Total		State enterprises		Individual farmers		Co-operatives	
	Amount	Transaction (Am/Trans.) a/	Amount (% of total) b/	Transaction (Am/trans.) a/	Amount (Od) b/	Transaction (Od(Od) a/	Amount (Od) b/	Transaction (Od) a/
1976	13895	4461 (3.1)	2350 (17)	3 (783.3)	1359 (10)	2124 (0.6)	10186 (73)	2334 (4.4)
1977	13228	3187 (4.2)	1075 (8)	2 (357.5)	1176 (9)	1343 (0.9)	10977 (83)	1842 (5.9)
1978	21262	3701 (5.7)	3570 (17)	7 (510)	1480 (7)	1438 (1.0)	16211 (76)	2256 (7.2)
1979	31681	4405 (7.2)	8250 (26)	16 (515.6)	2217 (7)	1688 (1.3)	21214 (67)	2701 (7.9)
1980	98623	20226 (4.9)	15258 (16)	24 (635.7)	59293 (60)	17474 (3.4)	24072 (24)	2728 (8.8)

Compiled from Agricultural Bank Annual Report, 1980.

a/ Average value per transaction in thousands of Iraqi dinars.

b/ Percentage of the total amound distributed.

to private farmers by 2,500 per cent, while the part allocated to the socialist sector increased by 84 per cent and to co-operatives by 13 per cent.

This dramatic shift in supply of credit was used by the private sector mainly for buying agricultural machinery, increasing meat production (mostly poultry for which incentives for investment were important: 30 per cent interest rate, financing of the total cost by the bank, exemption of taxes on all imported equipment), and for farm buildings.

Table 17. Credit utilization 1979-1980 (percentage)

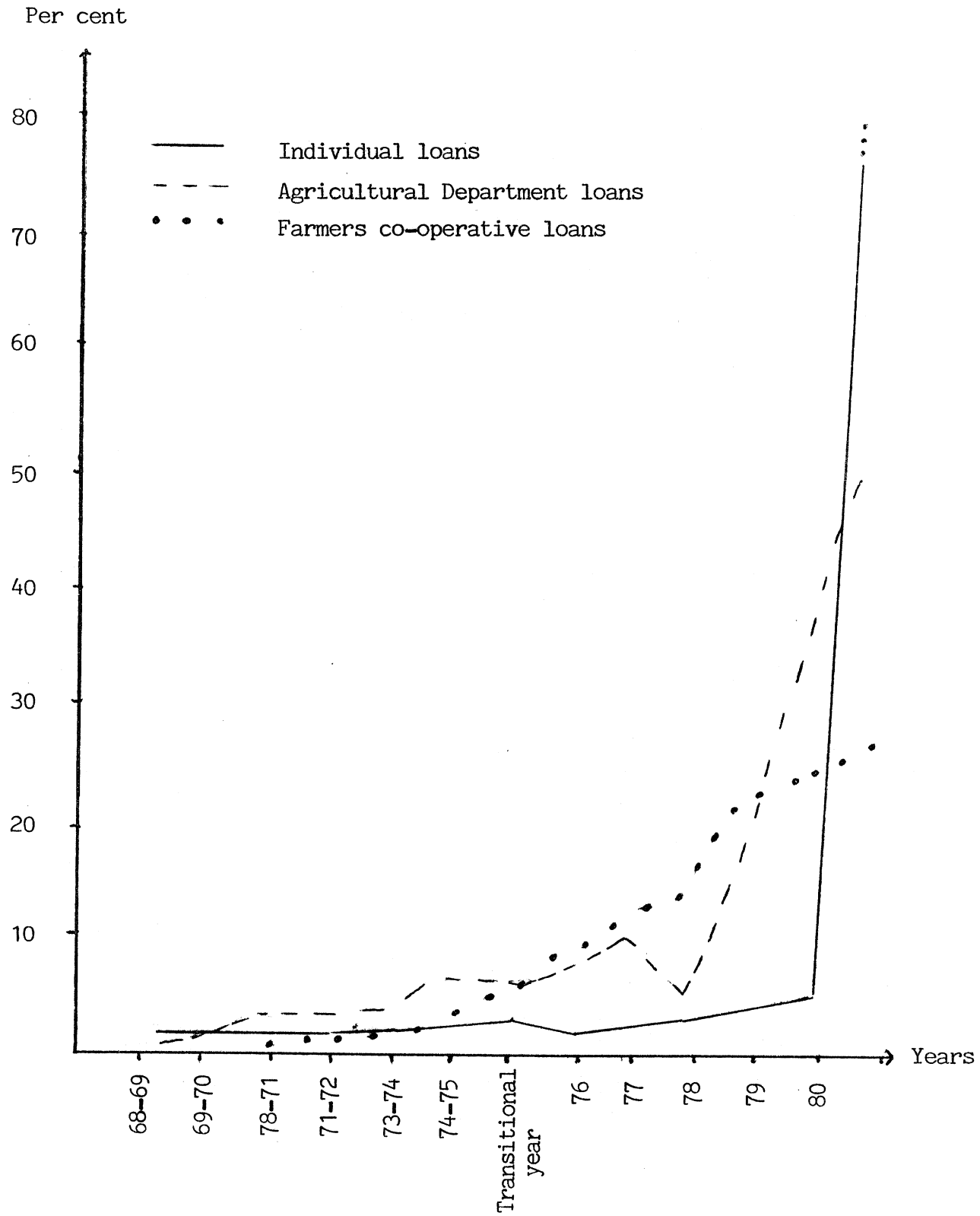
Years	1979		1980	
	Co-operative	Private	Co-operative	Private
Agricultural supply	31	11	42	--
Agricultural marketing	25	-	5	1 -
Machinery service	7	-	8	-
Machines and infl.	6	4	9	50
Animal projects	16	50	20	41
Orchards	7	35	12	7
Others	8	0	4	1
Total	100	100	100	100

Source: Agricultural Bank Annual Report 1979-1980.

The utilization pattern of credit is different between co-operatives and private farmers. It appears from the data that private farmers do not use credit for seasonal credit (purchase of fertilizer, seeds, cash facilities) but for investment. The co-perative sector is more ready to use (or has better access to) short-term credit which is the main part of its debt as shown in the table 18:

/...

Loans: Change in funds allocated, 1968 - 1980
(per cent)



Source: "Agriculture is everlasting oil" (Ministry of Agriculture, 1981)

Table 18. Long, medium and short-term credit 1979-1980

(percentage)

Year	Co-operative			Individual		
	Long-term	Medium-term	Short-term	Long-term	Medium-term	Short-term
1979	5	26	69	2	79	19
1980	9	27	64	41	55	4

Source: Agricultural Bank, Annual Report 1979, 1980

Loans for marketing purposes are mainly given to State establishments.

2. Access to credit facilities

When credit is needed, the project is presented through one of the 47 branches of the Bank. Once the project is accepted (By the Head Office in Baghdad; or by the director of the branch for up to a certain amount, e.g. ID 32,000 for a seasonal loan to the private sector), the credit is generally given in kind (checks for the suppliers) in several instalments. Before giving the next instalment the bank determines if the previous credit was used in the right way. Farmers in co-operative societies can receive credit directly from the co-operative administration, the Bank giving the global amount directly to the co-operative manager.

The cost of credit should not be an obstacle for the use of borrowed capital; the interest rate against the full value of agricultural machinery actually ranges between 2 and 3 per cent, for poultry 3 per cent, for establishing new orchards 2 per cent. The interest rate paid for projects in the Plan is 0.5 per cent (in 1980, the inflation rate was 16.5 per cent). Even before 1980, when interest rates were higher (up to 6 per cent), financial costs were not very important (negative in real terms).

Providing a guarantee should not be an obstacle either. Private farmers who do not have a real estate guarantee can have their loans secured by personal bail (in that case, the credit does not cover the full

/...

cost of the investment but 85 to 90 per cent of it).

Furthermore, Bank provides insurance facilities to the borrowers (harvest, machines, life insurance). If there is a bad harvest, the payment can be postponed by one year and additional credit provided.

The waiting period for obtaining a loan can be very short (24 hours in the case of a cash advance to a co-operative). Despite the above, according to a statement made by the Director General of the Agricultural Co-operative Bank in the 1980 Annual Report, access to credit facilities was not easy for a large number of individual farmers (lack of guarantees, poor estimation of land value, difficulties owing to procedures and rules, heavy centralization, scarcity or credit). Thus the private sector was comparatively deprived of sufficient facilities, despite its willingness to invest and use borrowed capital to a rather large extent.

It appears, therefore that the wider use of credit facilities is not attributable to the traditional farmers especially in cereal sectors but rather to a new kind of small-scale agriculture which is highly intensive. This type of agriculture has been encouraged recently by the administration which has providing land free of charge for market-gardens, orchards, poultry products and products for industry.

Another reason for the dramatic change in the credit supply is the recent tendency to encourage the ownership of agricultural machines rather than the use of tractor-service organizations.

B. Marketing procedures

It is a known fact that the operation of marketing and the growth and development of markets are directly linked with the size and density of the population and its standard of living. It is for this reason that we provide the following indications of the size and density of the population of Iraq and the development of individual incomes during the period from 1970 to 1980.

The population of Iraq in 1980 was approximately 13,200,000. As for the standard of living and the average individual yearly income, these showed a marked rise over the same period: from ID 95.5 in 1970, the average individual income rose to ID 318.4 in 1975, and then continued to advance to ID 998.00 by 1980. It goes without saying that the increase in the number of inhabitants and in their incomes accounts for the rise in demand for goods and services, including agricultural crops and products. 1/

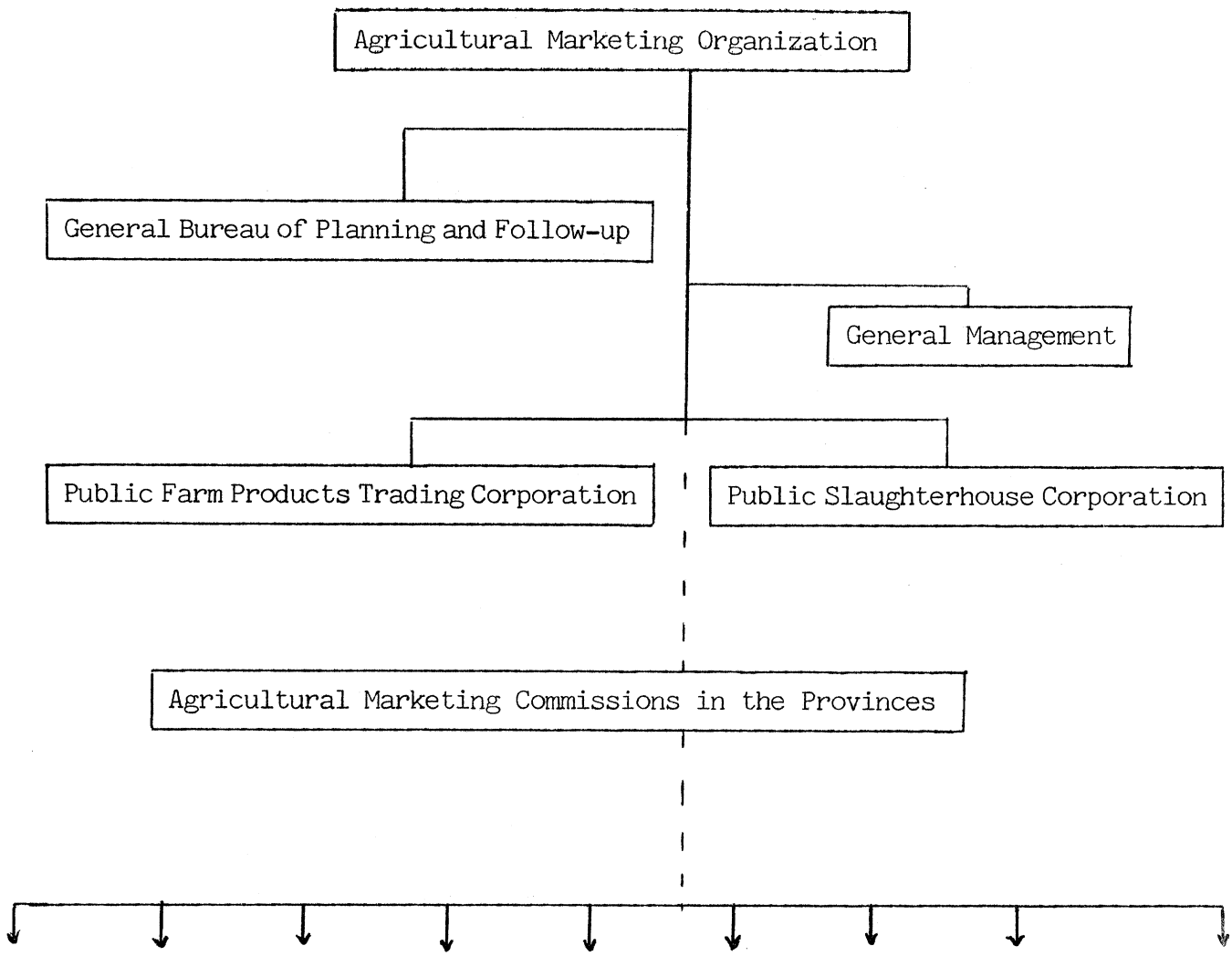
This has resulted in the growth of wholesale markets as a function of the growth of concentrated population areas in order to meet the population's food needs.

This sizeable increase in the demand for agricultural food produce has not been accompanied by the same degree of development in the area of marketing prerequisites.

The wave of development and radical change has included the organizational structures and the procedures and methods of agricultural marketing, including the development and creation of institutions specializing in agricultural marketing, such as the Public Grain Organization, which is placed under the Ministry of Trade, and the Public Agricultural Marketing Organization. It has also laid the foundations and provided the basis for the regulation of marketing methods and for the creation of modern, refrigerated storage areas as well as silos for grain storage, which are scattered throughout the country's different provinces.

Given below is the organizational structure of the Agricultural Marketing Company, which is subordinated to the Ministry of Agriculture and Agrarian Reform, together with a brief explanation of the marketing methods and procedures for the basic farm crops, namely: vegetables, fruits, different kinds of meat, eggs, fish, dates and grain.

1/ In 1971-72, the total food expenditure income elasticities were 0.75 for the total population, 1.08 for rural and 0.75 for urban. The cereals expenditure elasticities were respectively 0.36, 0.97 and 0.46.



In Baghdad the Central Pricing Commission for Agricultural Products, which is placed under the Trade Regulaion Board, is in charge of pricing for fruits and vegetables for the Governorate of Baghdad. On it are represented all the interested agencies, such as the Ministry of Trade, the Central Organization for Prices, the professional organizations, and both the General Union of Agricultural Co-operative Associations and the Baghdad Chamber of Commerce.

At the provincial level, it is the public agricultural organization in the province that takes charge of regulating marketing activity, along with supervision of wholesale markets, refrigerated and frozen storage

/...

storage areas, etc. The subsidiary pricing commission in each provincial Wholesale Marketing Director, the Director of Domestic Trade, a representative of the Union of Co-operative Farming Associations in the province, and representatives of other interested agencies.

1. Marketing of cereal production

Since 1973 the Public Grain Trading Corporation has had a monopoly on the marketing of the local production of wheat, barley and field rice. Marketing instructions are issued on a yearly basis by the Trade Regulating Board. These instruction are prepared by the Supreme Committee for Agricultural Marketing on which there are representatives of the Ministry of Agriculture and Agrarian Reform, the Public Grain Trading Corporation, and the General Union of Agricultural Co-operative: Association and the Public Establishment for Transport and ordinary goods. The instructions serve as a basis for defining methods and procedures which are based on type, variety and quality and whereby charges per ton for transport from the marketing centres. are added to the producer prices which are determined by the Trade Regulating Board.

At present there are 64 such centres for wheat and barley, and 32 for paddy rice. Located at these centres are testing laboratories under the control of the Public Grain Trading Corporation. There is also a subsidies marketing committee set up at the government level to regulate marketing operations for agricultural products.

All this means that the operations of receiving the produce from the farms, testing it and paying its price, all take place at the marketing centres.

After that, the grain is transported to the storage centres, whether silos or specially prepared yards, by private carriers whose charges are established under special contracts in each province. The silo or storage-yard management is in charge of receiving the produce and filling out the forms which are used for paying the amounts of the advances made

by the Public Grain Trading Corporation to the General Farming Co-operation Organization. In addition to the grain costs, the Grain Corporation incurs the costs of bagging, transport charges from the farm to the marketing centres, loading and unloading charges, and transport from the marketing centres to the silos or specially prepared storage areas.

Recently the Grain Marketing Committee has been authorized to abolish some marketing centres so that producers may deliver the produce to the silos directly for the purpose of reducing marketing costs. For the same reason the Public Fodder Establishment has the task of receiving wheat and barley earmarked for its requirements from the marketing centre directly.

The purposes for which the different grains are used can be summarized as follows:

a) Wheat: Fifty per cent of the wheat is used for the purposes of making flour and different kinds of bread; for this use is made of wheat of the "Sabir Bey" variety, grade B containing few impurities. Out of the remaining 10 per cent which is coarse wheat, is used for whole-grain purposes and for bulgur (cracked wheat);

b) Barley: The two varieties, dark and light, are used for fodder, either for the socialist sector or the owners of fodder-producing factories, operators who sell barley, animal breeders, etc;

c) Paddy rice: The operations of crushing and polishing in grinding mills are carried out and the rice is prepared for domestic consumption after packing by the Public Grain Trading Corporation. As for the determination and publication of prices, this is done by a decision of the Trade Regulation Board at an early point in the production season, at levels that are adequate for the producers, after considering changes in planted areas, production costs and world prices. The purpose of this is to raise producer income and encourage production. The product is sold to consumers at stable, low prices designed to provide the citizens with basic foodstuffs;

d) Yellow maize: A monopoly on the marketing of yellow maize has been granted to the Public Grain Trading Corporation since 1975, through the farmers' co-operatives, by the Supreme Marketing Committee which has subsidiary committees at the provincial level. From 1978 to the present the marketing of crops has been entrusted to the public agricultural organizations in the producing provinces, in conjunction with the General Union of Farmers' Associations. They buy the produce from the producers in accordance with guidelines, specifications and prices determined by the Trade Regulation Board, whereupon they chop and dry the produce in yellow-maize silos and sell it to the public fodder establishment.

2. Retail marketing of cereals

Grains pass through several stages before they are used for consumption or for other purposes. Since wheat provides a typical example of grain marketing and it is subject to more production processes than the other cereals , this paper will concentrate on the description of its distribution network from wholesale to retailers and consumption points.

Wheat is processed and marketed through several channels according to annual plans prepared by the Grain Board and its public establishment sub-ordinates namely the Establishment of Technical Flour Mills and the Establishment for Bakeries and Ovens.

Wheat is usually supplied as input for future processes of flour mills, cracked wheat, Burghul and Halma and fodder factories. The responsibility for production and distribution of flour rests with the Public Establishment for Technical Flour Mills which also supervises the production and marketing activities of the flour mills belonging to the private sector. The latter plays a dominant part in flour production and the socialist sector is aiming at increasing its share of this activity.

The flour mills are supplied according to production capacities. The production of the flour mills can be divided into the following products:

(a) Fodder made from the foreign materials which are extracted before grinding (dogging)

(b) Flour grade zero and grade one;

(c) Fooder made from the by-products after grinding (bran).

The flour is packed in containers of 50 kg and 85 kg. The 50 kg grade one is sold at ID 1.590 (ID 31.8 per ton); the price of grade zero is fixed at ID 2,180 (ID 43.6 per ton). The price of wheat is usually fixed ex-silo to which must be added the cost of transportation which fluctuates according to location. The price is heavily subsidized so that the price paid at the mills does not exceed more than 40 per cent of the total cost per ton (production costs and normal profit margins). The ultimate consumer price of bread is supported to the same extent and the difference is covered by the government budget. The subsidy which is given on the raw-material and not on the final product may lead to the posibility of wastes in consumption and may encourage alternative uses of flour other than for human consumption.

After production the flour is transported from the mills to bakeries in the following ways:

a) The flour production of the Public Establishment of Industrial Flour Mills is transported by its own vehicles to government bakeries which are entirely supplied by the public establishment. The surplus of production is sold to private bakeries;

b) Private contractors also carry out transportation of flour between mills and bakeries. This cost is borne by the agents and bakeries.

The distribution to private bakeries is made according to plans based on geographical locations. The flour agents are located throughout the provinces according to the size of the population, the location of flour mills, and consumption needs. In each governorate the designated agents supply flour on a weekly basis. Their quotas are intended to be used for making bread for household purposes.

In some governorates the Public Establishment for Flour Mills has marketing centres. They are not flour mills but have surplus production; these centres have the task of distributing flour according to plan using their own vehicles or those of the Public Establishment for Land Transport.

All of the bakeries are subject to control by the inspection department of the Grain Board by means of periodic visits where product samples are checked. Technical advice is provided by the Grain Board concerning machine utilization and investments.

As regards pastry producers, they are also supplied with grade one flour at subsidized prices. If they produce both bread and pastries; the standing instruction is that to 50 per cent of their production capacity should be allocated to pastries,

As far as other cereals are concerned, barley is supplied to fodder factories according to their production capacity. Yellow maize is supplied to fodder factories directly by farmers or through the provincial agricultural organizations. Paddy rice is processed in the rice mills attached to the silos near the production area. The greater part of these belong to the Public Establishment for Cereal Trade. Foreign materials are extracted and then the rice is packed for transportation to wholesales and retailers of both the socialist and the private sector.

V. CONCLUSIONS

Government intervention in the domestic market began in the year 1969 with the creation of the State Organization for Wholesale Marketing. The price and marketing policy was based on State control over both the domestic and export markets. The private sector for wholesaling of fruits and vegetables was abolished; the State Organization assumed the responsibility and opened three markets (Risafa, Kadimmiyya and Doura) for undertaking the wholesale operation. In 1970 this organization was replaced by the Fruits and Vegetables Marketing Administration.

In 1973 the marketing of grains was taken over by the Public Grain Company and since then it has held a monopoly through a subsidiary, the Public Grain Corporation. The Central Pricing Commission, which was formed in 1975, determines the price of grains, fruits and vegetables. The Commission is responsible for determining the wholesale and retail prices for fruits and vegetables on a weekly basis. The prices for grains are announced before the sowing season; prices may later be adjusted depending on the supply situation. The role of Public Grain Corporation is not limited to the marketing operation; it also imports grain and distributes grain to the consumers.

In 1981 and 1983, amendments were made in the 1975 resolution. Private enterprise in fruits and vegetable markets is now encouraged and under the new policy the role of prices in determining supply and demand is more visible.

A. Objectives of agricultural price policy

The central objective of the price policy in Iraq, as documented in the last development plan 1975-1980, was a price policy which would be conducive to achieving the objectives of the agricultural sector and the overall objectives of the plan. The policy lines proposed by the plan for achieving these objectives included, inter alia, the following:

(a) Stabilization of prices for agricultural products;

(b) Better distribution of farm income;

(c) Providing essential food commodities at a reasonable price.

B. Policy evaluation

In theory government policy has been to increase agricultural production, especially cereals, through stable and high farm prices. At the same time, it has been the cornerstone of government policy to provide cheap bread to the consumers through a subsidy programme. It is estimated that this consumer price support is approximatly 40 per cent of the price received from the producers. A preliminary analysis is provided here in order to show the direction and impact of some of the policy variables in effect for last decade or so.

The previous performance of the agricultural sector provides a good indicator of the success of some of the declared policy variables. We have attempted to compare the production index number for the agricultural sector in the 1960s and 1970s. The data reveals that during the 1960s agricultural production achieved an impressive growth rate of 6 per cent per year, while in the 1970s the production witnessed a negative growth rate of 1.7 per cent per year. One cannot pinpoint the decline in production to the then investment policies. The total investment in the agricultural sector was ID 339.3 million during the period 1968-1974, which increased to ID 2,029.611 million during 1975-1981. This monumental increase in investment during the late 1970s coincided with the marked decline in agricultural production, especially in cereal production.

One can conclude that the performance of Iraq's farm sector has been poor, and it was particularly poor in the late 1970s. There are a variety of factors that prove to be binding for a sound development pattern for agriculture. We have identified the five most pressing areas which require the immediate attention of the policy designers:

a) Price policy in the 1970s failed to provide the necessary incentives. There was a clear tilt towards protecting consumer interests, even under the situation where urban incomes were rising proportinally more than rural incomes. The new policy should provide adequate incentives for producers, promote optimum allocation of resources among crops, and allow Iraq to make efficient use of its international trading opportunities;

b) Though the Iraqi farmers seems rational, as far as price response is concerned, it seems any near future price adjustment under the current low level of productivity might only have a marginal impact. A well-designed extension programme geared to providing better farm management practices would be of greater value to the farm economy;

c) The marketing and distribution system in Iraq can be explained as, at best, inadequate. Food supplies are inadequate partly because of a faulty marketing mechanism, and partly because of a lack of proper processing and storage facilities. The new policy should facilitate market integration, which requires, inter alia, increasing competitive efficiency, a better distribution system, better dissemination of market information and improvement in the transport, storage and processing facilities;

d) Since new technology is becoming available, the current size of holdings can be a constraint in realizing economies of scale;

e) The rural exodus of labour to the urban areas provides a constant drain on the agricultural sector considering its current low level of technology. The labour opportunity cost in the other sectors is simply not comparable. A comparison of income earned from cereal farming with wages earned by an unskilled worker in town supports this. The monthly income of a typical farmer holding 40 dunams of unirrigated land ranges from ID 27 to ID 40 (barley and wheat) and from ID 33 to ID 306 on irrigated land (the higher income being generated by rice production). The opportunity cost as net income for an unskilled worker is estimated at

ID 125 per month. With the exception of rice, cereal production provides considerably lower income than other opportunities. Even when advanced farm management is used, production of barley and unirrigated wheat leads to returns lower than opportunity cost. This income differential jeopardizes the development of the agricultural sector unless further increases in farm-gate prices take place. The actual prices seem quite reasonable when compared to adjusted international prices valued at the official exchange rate. But taking into consideration that the exchange rate does not reflect the purchasing power parity of the local currency,[1/] farm-gate prices have to be increased in order to stop the deterioration of the agricultural terms of trade and to protect farmers from inflation. Nevertheless, the impact of better prices would be highly diluted if they were not accompanied by actions in favour of the adoption of advanced technology and a productivity increase. Vegetable and fruit production prove that in Iraq farmers are able to positively respond to higher demand when technology and financial incentives are provided.

In summary, one can say that as far as long-run objectives are concerned, price policy will not be sufficient to increase cereal production unless action is taken to promote advanced production technology. In the short-run cereal prices have to be increased in order to stop the deterioration of the agricultural terms of trade and to restore the cereal farmers purchasing power. Looking at the relative prices of cereals, it is suggested that the price of barley should be increased because: (a) it is the most penalized crop among cereals; and (b) its consumption is planned to increase at a higher rate owing to the development of national poultry production and animal fattening.

1/ 18 per cent of over valuation according Pick's Currency Handbook.

A N N E X I

MARKETING OF FOOD COMMODITIES OTHER THAN GRAINS

A N N E X. I

The following paragraph contains a summary of the most important measures put into effect for the organization and regulation of fruit and vegetable marketing:

a) In 1970 the Fruit and Vegetable Marketing Authority was created. To it was transferred the ownership of the wholesale markets in the capital and the other provinces.

b) In 1974 an end was put to the role of private enterprise in the wholesale markets with regard to the marketing of vegetables in Baghdad, while fruits were left to private enterprise.

c) In 1975 it was resolved that wholesale and retail prices were to be set in accordance with principles and controls determined by the Trade Regulation Board. This involved the creation of a Central Pricing Commission in Baghdad in addition to subsidiary commissions at the provincial level. Represented on them are the interested instrumentalities in the Ministry of Agriculture and Agrarian Reform, the General Union of Co-operative Associations and the Chamber of Commerce. These commissions are in charge of determining wholesale and retail prices for fruit and vegetables on a weekly basis, and the Public Agricultural Marketing Company is required to purchase surplus from farmers daily at the minimum wholesale price.

In 1981, the 1975 resolution was amended. The most important amendments contained in the new resolution involved the abolition of the principle of public action for selling and the definition of the crops on which the Public Agricultural Marketing Organization is required to purchase surpluses in accordance with the decisions of the Trade Regulating Board, whose definition initially included the following five crops: tomatoes, potatoes, onion, garlic and okra.

In May 1983, a new regulation governing marketing of agricultural and animal products was issued. The following is a summary of resolutions taken by the Trade Regulation Board aiming at protecting farmers and consumer interests in a way that will promote the development of the agricultural sector.

A. Fruits and vegetables

All producers and suppliers of fruits and vegetables are obliged to market their products in the wholesale markets belonging to socialist sector or sales offices of the private sector authorized to deal with wholesale business. The marketing system does not allow dealing outside these markets.

Sales offices are to be set up in the wholesale markets belonging to the socialist sector and rented out to the private sector and co-operative societies. The role of the public agricultural marketing organization in Baghdad and the public agricultural organizations in the provinces is confined to the general administration of the wholesale markets; then also undertake wholesale marketing by means of sales offices not exceeding 20 per cent of the total selling points.

The authorized sales offices carry out their transactions under the following rules:

(a) The sales office is permitted to act as purchaser and wholesale seller and may open shops of retail business outside the wholesale markets;

(b) The office charges a commission of up to 4 per cent based on the value of the products sold by the wholesaler. The commission is to be paid by the retailer;

(c) The loading charges are borne by the buyer and the unloading charges are determined at 50 fils for each lot;

(d) The charges for packages are determined as follows:

(i) Canvas bags at 150 fils each are paid for by the buyer;

(ii) Plastic or wooden containers are delivered against a deposit equal to their value.

(e) A quality rebate not exceeding 3 per cent to the buyer (the green grocer) in order to make up for differences in weight and specifications.

A permanent commission, the Central Pricing Commission for Agricultural Food Products, is established in Baghdad. It is linked to the trade regulating board and headed by the Deputy Minister of Agriculture and Land Reform. It is composed of the following members: the Central Organization for Prices, the Ministry of Trade, the Public Organization for Agricultural Marketing, the General Federation of Co-operative Farmer Associations, the Baghdad Chamber of Commerce and the Inspection and Control Section of the Ministry of Agriculture.

A sales committee is also established in each governorate for pricing fruits and vegetables; it is headed by the Deputy Governor and composed of the following members: the Public Agricultural Organization, a branch of the General Federation of Co-operative Farmers Association; the Director of Internal Trade in the Governorate, the Representative of the People's Council.

The Central Pricing Commission and the subsidiary commission in the governorates have the following tasks:

a) Fixing price rates for fruits and vegetables which are controlled. The first level represents the minimum price (the opening price for bidding) the second level represents the maximum price for the consumer (the retail price) and according to the bidding process adopted the price cannot reach the maximum ceiling.

b) The pricing commission in fixing prices are provided with the following guidelines to ensure adequate profits for encouraging the producers to increase production:

(i) Cost of production with adequate profit;

(ii) Historical prices:

(iii) The seasonality of demand production of supply;

(iv) Periodicity of production and the importance of the product and the natural circumstances governing its production.

(v) Transportation costs and charges for marketing services between production and consumption points.

c) The fruit and vegetable prices are to be applied for a period of one week or less and are published in appropriate media;

d) The Central Pricing Commission is granted the authority to:

(i) Centrally fix the prices of certain basic fruits and vegetables for the entire country, so as to eliminate price gaps on these crops and avoid negative repercussions that might arise from distributing operations and the flow of these crops on the local markets;

(ii) Fix the prices of imported fruits and vegetables so that they are not lower than the officially determined prices of domestically produced fruits and vegetables, provided that they are similar to them in terms of quality and specifications;

(iii) Fix the prices of all imported animal products on the basis of their total cost plus a profit margin not to exceed 10 per cent of the cost;

(iv) Undertake purchases through the public Agricultural Marketing Organization and the Agricultural Organization in the provinces of the surpluses of fruits and vegetables crop which have not been disposed of during the periods designated for their sale at the minimum prices (potatoes, tomatoes, dry onions and dry garlic) according to the following conditions:

a. It ascertains the compliance of the produce with the general specification for agricultural crops;

b. It determines the basis of the quality of the produce at the time of purchase and in accordance with the grades and prices decided by the Pricing Commission;

c. It follows the time of purchase decided by the Ministry of Agriculture and Agrarian Reform; and

d. When part of the products does not meet the standards, it is destroyed at the request of the owner.

(v) The produce is disposed of in accordance with the following priorities:

a. Distribution to the various markets throughout the country on the basis of actual need;

b. Storage of produce for subsequent re-offering at the time when need exists, in keeping with available storage capacities and the nature of the produce;

c. Exportation of produce to the foreign markets, at foreign demand costs; and

d. Transfer of the produce to facilities operated by the socialist sector for processing.

Furthermore the Marketing Agricultural Organization is instructed to extend aid and facilities to the private sector in order to encourage it to invest more in the agricultural sector. In addition it gives support to exportation such as bank facilities to finance export operations or subsidies to support prices for exported products, and other similar incentives.

B. Chicken and eggs

Chicken and eggs are marketed by the Public Agricultural Marketing Company in the following manner:

(a) The agricultural organizations in the provinces receive their share of chicken and eggs in accordance with a weekly plan. These products are delivered by lorry and stored in refrigerated or freezer storage houses until the distribution stage;

(b) The agricultural organizations distribute the products to the retail sales agents that belong to them within the province, either directly or through distributors; and

(c) In Baghdad there is a wholesale sales centre located inthe Al-Waziriya district at a distance of 7 kilometres from the centre of the city. It has refrigerated and freezer warehouses with a 600 ton capacity and a slaughterhouse for killing chickens having a capacity of 4000 chickens per hour, which is equivalent to 50 tons per day. At this centre, sales are made to retail sales agents, some of whom do distributing to various retail shops for a commission.

As regards the marketing of the products of private enterprise, and in particular chicken, they are sold at public action and after slaughter in the private slaughterhouses, provided, however, that the price must not go below the minimum consumer price fixed by the Trade Regulation Board. Moreover, the Public Agricultural Marketing Company is required to buy up any surplus at the minimum prices, which are adequate prices that are higher than the prices for imported chicken, so as to support and encourage the investment of private capital in this area.

C. Fish

There is a public corporation for producing fish and a private corporation in which it holds an interest, 51 per cent of whose shares

belong to the company Ar-Rafidin, Ltd. The Public Agricultural Food Products Trading Company, which is subordinate to the Public Agricultural Marketing Company, markets the products of both corporations along with the fish which they import in accordance with the same distribution methods and procedures as in the case of chicken and eggs.

Local fish is not subject to any restrictions or supervision on the part of the State, either at the production stage or at the marketing stage; instead, it comes under private enterprise, including freedom to determine prices. The opposite is true of fish produced and imported by the Public Agricultural Food Products Trading Company: its prices are fixed by the Trade Regulation Board. There also exists a private market for local fish, located in the Al-Karkh section of the city of Baghdad, in the area known as "Ash-Shaykh Ma'ruf".

The storage of sea fish and its sale to retail sales agents in Baghdad takes place in the Al-Abidi district, which is located at a distance of 10 kilometres from the centre of town. The storage capacity there is 6 tons, including the warehouses available at the neighbouring slaughterhouse located in the nearby Al-Fudayliya district. There are approximately 1700 retail vendors for freshwater fish, to which are added more than 600 retail sales agents for sea fish. The Al-Obeidi complex is considered the only centre for fish marketing in Baghdad.

More recently under the new regulations of the Trade Regulating Board, the Agricultural Marketing Organization is given the following tasks:

a) To continue the import and marketing of red meat, chicken, sea fish and eggs. This includes importing live animals for slaughtering in the socialist sector;

b) To purchase, in Baghdad and in the provinces, the surplus of local chicken meat (frozen) at the official price and in accordance with the technical specifications;

c) To establish, through the Agricultural Marketing Organization and the provisial agricultural organization, a sales office in the wholesale market for river fish. Its role is to continue the general administration and supervision of each market without fixing prices which are left free to the forces of supply and demand provided that the sales operation takes place in the form of comparative bidding only in the wholesale markets;

d) To set up, through the Ministry of Agriculture and Agrarian Reform, mixed sector companies for marketing chickens;

e) To encourage the private sectors to continue marketing local live animals and to market animal products by means of sharing in the establishment of slaughterhouses for cattle and chickens and to develop ordinary, chilled and frozen stores refrigrated transport.

D. Dates

Dates represent one of the main foods and are also included among the requisites for the production of goods by the country's processing industries, such as date molasses, syrup, alcohol and fodder for animals. In addition, palm leaves are used in other industries.

The Permanent Date Organization receives commercial dates from the receiving centres in the country's provinces in co-ordination with the General Union of Farmers' Associations, the subsidiary unions and the competent agricultural authorities.

Since 1981, producers have been free to sell their products to private enterprise, and the price decided by the Trade Regulation Board each year have been considered the minimum that the Date Organization is required to pay for its purchases in the event that producers are unable to sell their produce. Private enterprise has also been granted permission to engage in exporting as a competitor of the Date Organization.

Large warehouses exist in a number of provinces in the central region and Basra; there are approximately 40 warehouses having a combined storage capacity of some 132,000 m^2.

/...

Refrigerated warehouses have been developed and optimum utilization of partial capacities in them has been ensured. Coolstorage rooms have been built; there are 24 in Baghdad and 16 each in Babul, Ash-Shamiya and Diyala.

The Organization performs the jobs of packing, processing and domestic marketing as well as exporting. The packing stage includes the process of compressing, packaging and packing the dates after they have been steamed, washed, packed and pitted. Generally, these operations take place in accord with the times of major contracts and are distributed among the production units on the Organization's plantations.

Marketing directed toward foreign markets takes place under contracts and agreements entered into between the Organization and the importing agencies, while marketing for the domestic market, including industries, is done in accordance with the agreements and programmes set up for that purpose.

Recent instructions for marketing dates are as follows:

a) Allow the private sector the opportunity to export by means of assistance and exemption in order to encourage an increase in the qualities exported. The Export Organization has the task of issuing the quantity export licence;

b) Allow producers to sell dates in the fruits and vegetables wholesale market and also use the private sector in the wholesale trading of dates. Private enterprise is encouraged to set up an industry for date processing.

c) Allow the industrial establishments to purchase dates directly from producers at the official prices without mediation of the Date Organization.

A N N E X II

T A B L E S

Table 1. Aggregate of agricultural production (Millions of US dollars at constant prices) and indices of production (1969-1971 = 100) for the period 1971-1980[a/]

Year	Aggregates of agricultural production				Indices of production		
	Crops	Livestock	Total agriculture	Total food	Crops	Total agriculture	Total food
1969-1971	325.8	283.1	607.9	586.2	100	100	100
1971	308.4	275.5	583.9	563.0	95	96	96
1972	483.5	283.5	768.7	750.7	148	126	128
1973	303.9	330.6	634.5	611.1	93	104	104
1974	328.8	342.2	671.0	646.5	101	110	110
1975	258.1	353.6	611.7	590.7	79	101	101
1976	335.9	410.1	646.o	725.5	103	123	124
1977	320.7	436.7	757.4	735.4	98	125	125
1978	355.4	468.8	824.2	800.9	109	136	137
1979	364.2	500.9	865.1	840.8	112	142	143
1980	428.5	517.0	945.5	922.0	132	156	157

a/ USDA, World Indices of Agricultural and Food Production, (Washington, D.C., 1981)

Table 2. Landuse by major crops [a/]

Major crops	Area (Millions of hectares)
Field crops	3.727
Vegetables	0.192
Orchards	0.195
Woodlands	1.520
Forage crops	0.100
Grazing (uncultivated lands)	36.040

a/ A.W. Al-Dahiri, Economics of the Agricultural Sector in Iraq (1976).

Table 3. Change in per capita share of three land categories as the population of the country increases a/ b/

Year	Population (Millions)	Land categories (Millions of hectares)		
		Arable 12.0	Under cultivation 6.0	Annually cropped 3.5
		Per capita (ha)	Per capita (ha)	Per capita (ha)
1947	4.816	2.49	1.25	0.73
1957	6.340	1.90	0.95	0.55
1965	8.097	1.48	0.74	0.43
1970	9.356	1.28	0.64	0.37
1980	13.072	0.9o	0.46	0.27

a/ A.W. Al-Dahiri, Economics of the Agricultural Sector in Iraq (1976)

b/ FAO, FAO Production Yearbook, vol. 35 (1976)

Table 4. Distribution of land holdings in Iraq, 1982 a/

Size of holding	Land area (Thousands of hectares)	Total area (Percentage)	No. of holdings
Less than 2.5 ha	0.173	2.8	157,050
2.5 - 30 ha	4,100	66.47	492,300
30 - 75 ha	1,025	16.90	28,300
More than 75 ha	0,850	13.70	5,214
Total	6,148	99.87	682,864

a/ Central Report, Ninth Regional Conference of the Arab Baath Socialist Party (Baghdad, Iraq, January 1983).

Table 5. Evolution of production and consumption of main cereals

Item	Average	1965-1967	1970-1972	1978-1980
Wheat	Production (Thousands of tons)	897	1561	857
	Yield (Tons/ha)	0.51	1.01	0.65
	Yield ECWA countries	1.09	1.27	1.32
	Area harvested (Thousands of hectares)	1761	1540	1316
	Domestic consumption (Thousands of tons)	1023	1267	1325 a/
Barley	Production (Thousands of tons)	831	698	624
	Yield (Tons/ha)	0.74	1.17	0.81
	Yield ECWA countries	0.91	0.90	0.89
	Area harvested (Thousands of hectares)	1118	598	768
	Domestic consumption (Thousands of tons)	227	294	819 a/
Rice	Production (Thousands of tons)	223	244	166
	Yield (Tons/ha)	1.83	2.62	2.96
	Yield ECWA countries	4.47	4.89	5.21
	Area harvested (Thousands of hectares)	122	93	56
	Domestic consumption (Thousands of tons)	227	293	608 a/
Maize	Production (Thousands of tons)	4	13	63
	Yield (Tons/ha)	1.00	1.63	1.47
	Yield ECWA countries	3.24	3.61	3.57
	Area harvested (Thousands of hectares)	4	8	43
	Domestic consumption (Thousands of tons)	4	19	150 a/

Sources: Iraq: CSO Abstracts;
ECWA countries: FAO print-outs (unpublished).

a/ : Average on 1977-1979

Table 6. Iraq cereal farm-gate prices, 1970-1983
(ID/ton)

Year	Wheat*	Barley	Maize	Rice*
1970	38.5	32.5	42	60
1971	38.5	32.5	42	60
1972	29	17	42	55
1973	44	31.5	42	75
1974	44	31.5	48	75
1975	46	31.1	55	85
1976	46	35	55	95
1977	48	40	61	95
1978	48	40	61	95
1979	51	42	61	95
1980	63	57	68	120
1981	74	65	81	137
1982	88	72	80	150
1983	100	85	-	-

Source: Central Organization for Prices.

* First grade.

Table 7. Farm gate prices and price-index expressed in constant ID at 1973 food purchasing power
(nominal prices per ton deflated by food price index)
(base 100: 1973)

	Wheat		Barley		Maize		Rice	
Year	Real price	Index	Real price	Index	Real price	Index	Real price	Index
1970	44.56	101.27	37.62	119.42	48.61	115.74	69.44	92.59
1971	42.78	97.22	36.11	114.64	46.67	111.11	66.67	88.89
1972	30.62	69.60	17.95	56.99	44.35	105.60	58.08	77.44
1973	44.00	100.00	31.50	100.00	42.00	100.00	75.00	100.00
1974	39.96	90.83	29.97	95.15	43.60	103.80	68.12	90.83
1975	38.08	86.54	27.32	86.72	45.53	108.40	70.36	93.82
1976	34.25	77.84	26.06	82.73	40.95	97.51	70.74	94.32
1977	33.04	75.08	27.53	87.39	41.98	99.96	65.38	87.18
1978	31.29	71.12	26.08	82.78	39.77	94.68	61.93	82.57
1979	29.45	66.92	24.25	76.98	35.22	83.86	54.85	73.13
1980	31.58	71.77	28.57	90.70	34.09	81.16	60.16	80.20

Table 8. Comparison of Iraqi farm gate price index and intermatopma; price index deflated by the respective general consumer price indexes

(Base 100: 1973)

Year	Wheat		Barley		Maize		Rice	
	Iraq	World	Iraq	World	Iraq	World	Iraq	World
1970	100	83	113	72	100	87	91	77
1971	97	81	109	82	97	88	88	70
1972	69	77	54	68	92	77	77	67
1973	100	100	100	100	100	100	100	100
1974	93	155	93	124	93	125	93	160
1975	89	136	85	115	97	119	96	130
1976	78	110	80	101	86	95	95	93
1977	75	85	33	90	88	79	87	86
1978	72	81	80	84	84	73	83	95
1979	69	85	76	82	76	73	75	82
1980	73	86	88	82	73	74	82	77

Source: Iraq prices: Central Organization for Prices
World prices: FAO (average import prices)
Consumer Price Index: Central Statistical Organization.
Consumer Price Index: ECWA Statistical Unit

Table 9. Comparison of inputs prices in selected countries.

1. Price of farm inputs

Country	Year	Super phosphate US¢/Kg	Diesel US¢/Litre	Tractor US$/HP	Labour US¢/Hour Skilled	Labour US¢/Hour Unskilled
Iraq	1976	37	3	70	59	25
Iran	1978	37	4	131	247	107
Jordan	1978	66	5	172	115	83
Turkey	1978	46	10	118	132	72

2. Price ratio relevant to fertilization: One kg nutrient is equivalent to...

Country	Year	Plant nutrient US¢/Kg	Wheat Kg	Maize Kg
Iraq[a/]	1976	37	3.1	1.9
Iran	1978	34	2.1	2.0
Jordan	1978	58	1.9	2.9
Turkey	1978	46	3.3	2.9

a/ Phosphate only

3. Price ratio relevant to farm mechanization

Country	Year	1 unskilled man-day equivalent to: Rice or Wheat Kg	Maize Kg	Milk litre	Diesel litre	1 tractor HP equivalent to: Maize Kg	Cotton Kg	Man-day
Iraq	1976	17 (W)	11	7	66	368	225	35
Iran	1978	10 (R)	50	21	214	771	273	15
Jordan	1978	22 (W)	33	-	133	860	-	26
Turkey	1978	11 (R)	36	21	58	738	274	21

Source: EDI, June 1981

Table 10

Wheat

Year	Production (Thousands of tons)	Index	Acreage (Thousands of hectars	Index	Yield Kg/Ha	Yield Index
1970	1236	129	1759	152	704	85
1971	822	86	948	82	868	105
1972	2625	274	1915	166	1372	166
1973	957	100	1156	100	828	100
1974	1340	140	1633	141	820	99
1975	845	88	1400	122	600	72
1976	1302	136	1499	130	868	105
1977	696	73	858	74	811	98
1978	910	95	1496	129	600	73
1979	685	72	1078	93	632	76
1980	976	102	1374	119	71o	86

Barley

1970	682	148	673	145	1016	102
1971	432	94	396	85	1092	110
1972	980	212	726	156	1348	135
1973	462	100	464	100	996	100
1974	533	115	519	112	1280	129
1975	437	95	567	122	772	78
1976	579	125	576	124	1008	101
1977	458	99	536	116	854	86
1978	617	134	714	154	864	87
1979	571	124	760	164	752	76
1980	682	148	830	179	822	83

Table 10 (Cont'd)

Maize

Year	Production (Thousands of tons)	Index	Acreage (Thousands of hectars	Index	Yield Kg/Ha	Index
1970	6	32	5	50	1204	63
1971	16	84	9	90	1730	91
1972	18	95	10	100	1700	93
1973	19	100	10	100	1911	100
1974	15	79	8	80	1785	93
1975	23	121	9	90	2480	130
1976	55	289	17	170	3168	166
1977	82	432	32	320	2602	126
1978	75	395	33	330	2285	120
1979	59	311	23	230	2687	141
1980	56	295	24	240	2514	132

Rice

1970	180	115	75	117	2416	99
1971	307	196	109	170	2812	115
1972	268	171	94	147	2851	116
1973	157	100	64	100	2449	100
1974	68	43	31	48	2026	83
1975	61	39	30	47	2026	83
1976	163	104	52	81	3266	133
1977	199	127	63	98	3138	128
1978	172	110	55	86	3143	128
1979	158	101	59	92	2684	110
1980	167	106	55	86	3009	123

Table 11. Average cost of production (in Iraqi dinars)

Wheat

Item	1982			1975		
	Irrigated	Rainfed	Total	Irrigated	Rainfed	Total
Labour	9.6	2.51	4.28	0.55	0.32	0.38
Machines	7.8	2.75	4.01	1.96	0.81	1.06
Seeds	1.9	1.83	1.84	0.96	0.89	0.90
Fertilizers	0.5	0.17	0.26	0.40	-	0.10
Rent & others	0.2	0.09	0.12	0.27	0.05	0.09
Total per dunam	20.0	7.35	10.51	4.14	2.07	2.53
Yield Ton/dunam	0.3	0.2	0.225	0.205**	0.135**	0.150
Cost per ton	66.67	36.75	46.71	20.20	15.33	16.87
Cash cost per ton	34.67	24.20	26.70	17.51	12.96	14.33
Price of output/ton	85.0*	-	-	39.5	-	39.50
Rate of Return (percentage)						
- On total cost	27	131	82	96	158	134
- On cash cost	145	250	218	126	204	176

* Average for different grades.

** Estimates.

Table 12. Average cost of production (in Iraqi dinars)

Barley

Item	1982			1975		
	Irrigated	Rainfed	Total	Irrigated	Rainfed	Total
Labour	9.7	2.5	6.09	0.56	0.32	0.48
Machines	6.7	2.6	4.67	1.11	0.66	0.90
Seeds	1.9	1.7	1.79	0.85	0.76	0.81
Fertilizers	0.3	0.2	0.23	0.05	-	0.01
Rent and others	0.2	0.1	0.16	0.20	0.04	0.15
Total per dunam	18.8	7.1	12.94	2.77	1.78	2.35
Yield Ton/dunam	0.236	0.176	0.206	0.220*	0.165*	0.193
Cost per ton	79.53	40.34	62.82	12.59	10.78	12.18
Cash cost per ton	33.60	26.19	33.25	10.05	8.85	9.69
Price of output/ton	72	-	-	31.8	-	-
Rate of return (percentage)						
- On total cost	-9	78	15	152	195	161
- On cash cost	114	175	117	216	259	228

* Estimates

Table 13. Average cost of production (in Iraqi dinars)

Rice and maize

Item	Rice 1982			Maize 1982 *
	Pumps	Gravity	Total	Irrigated
Labour	21.41	15.69	18.33	11
Machines	22.11	4.74	13.34	6.5
Seeds	4.36	4.08	4.21	1.5
Fertilizers	3.09	2.03	2.62	3.2
Rent & others	0.47	0.27	0.35	0.3
Total per dunam	51.44	26.81	38.85	22.5
Yield Ton/dunam			0.750	0.600
Cost per ton			51.80	37.5
Cash cost per ton			27.36	19.2
Price of output/ton			150	80
Rate of return:				
- On total cost			190	113
- On cash cost			448	316

* Estimates

Table 14. Optimal cost of production (Iraqi dinars)

Wheat

Item	Irrigated		Rainfed	
	Actual cost	Imputed cost	Actual cost	Imputed cost
Land rent	-	10	-	5
Labour	4.8	4.8	1.13	1.13
Irrigation	6	6	-	-
Tractor services	11.1	11.1	9.35	9.35
Fertilizers	5.28	10.9	4.85	6.85
Seeds	3.06	3.06	3.60	3.60
Pesticides	-	-	0.05	0.05
Preparation for market	4.4	4.4	2.98	2.98
Total cost per dunam	36.64	50.26	21.96	28.96
Yield ton/dunam	0.80	-	0.535	-
Cost per ton	43.3	62.83	41.0	54.1
Cash cost per ton	37.3	56.33	38.9	52.0
Price of output	88	-	88	-
Rate of return (percentage)				
- On total cost	103	40	115	63
- On cash cost	136	56	126	69

Table 15. Optimal cost of production (Iraqi dinars)

Barley

Item	Irrigated		Rainfed	
	Actual cost	Imputed cost	Actual cost	Imputed cost
Land rent	-	5	-	5
Labour	4.5	4.5	1.13	1.13
Irrigation	4.96	4.96	-	-
Tractor services	10.85	10.85	8.75	8.75
Fertilizers	-	-	-	-
Seeds	2.8	2.8	3.36	3.36
Pesticides	-	-	0.05	0.05
Preparation for Market	3.6	3.6	2.69	2.69
Total cost per dunam	26.71	31.71	15.98	20.98
Yield ton/dunam	0.650	-	0.485	-
Cost per ton	41.1	48.8	32.9	43.3
Cash cost per ton	34.2	41.8	30.6	40.9
Price of output	75	-	75	-
Rate of return (percentage)				
- On total cost	82	54	128	73
- On cash cost	119	79	145	83

Table16. Optimal cost of production (Iraqi dinars)

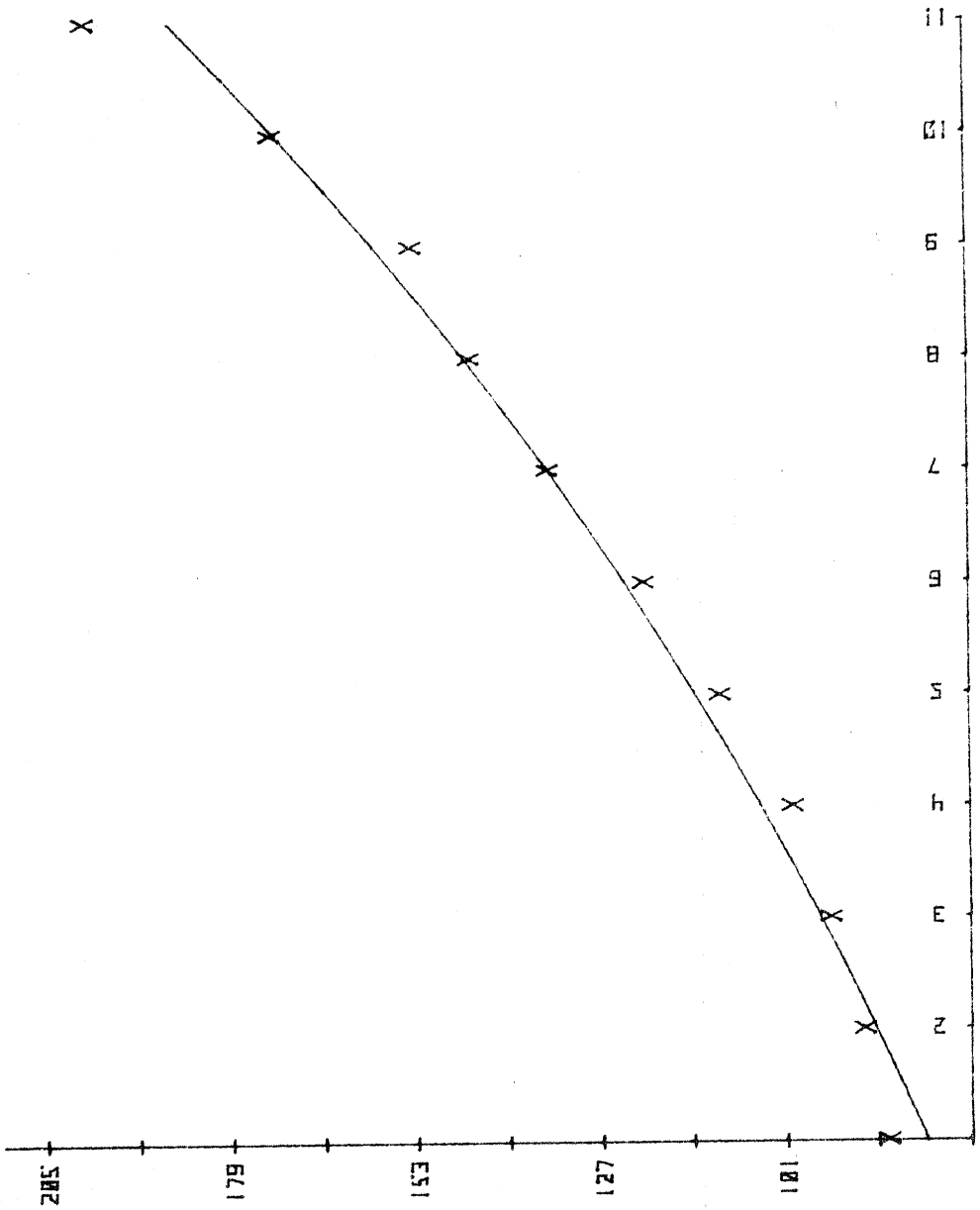
Rice and maize

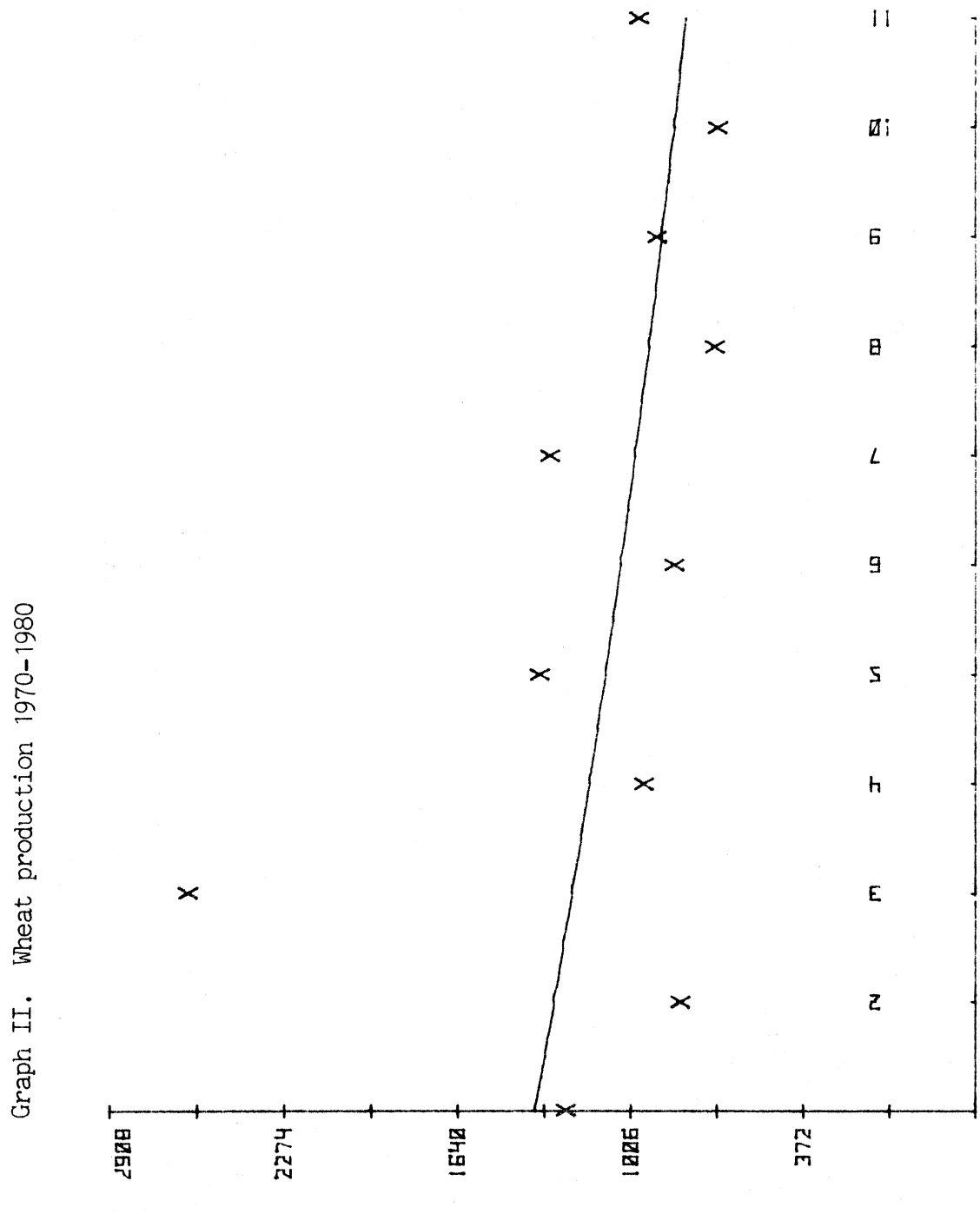
Item	Rice		Maize	
	Actual cost	Impted Cost	Actual cost	Imputed cost
Land rent	-	10	-	10
Labour	20.1	20.1	7.5	7.5
Irrigation	13.25	13.25	4.8	4.8
Tractor services	22.25	22.25	9	9
Fertilizers	4.0	7.00	5.9	10.5
Seeds	4.0	4.00	1.6	1.6
Pesticides	1.40	1.40	1.4	1.4
Preparation for market	7.75	7.75	5.53	5.53
Total cost per dunam	72.75	85.75	35.73	50.33
Yield ton/dunam	1.20	-	1.00	-
Cost per ton	60.6	71.5	37.73	50.33
Cash cost per ton	43.9	57.7	28.2	42.8
Price of output	150	-	83	-
Rate of return (percentage)				
- On total cost	147	110	132	65
- On cash cost	242	160	194	94

A N N E X III

G R A P H S

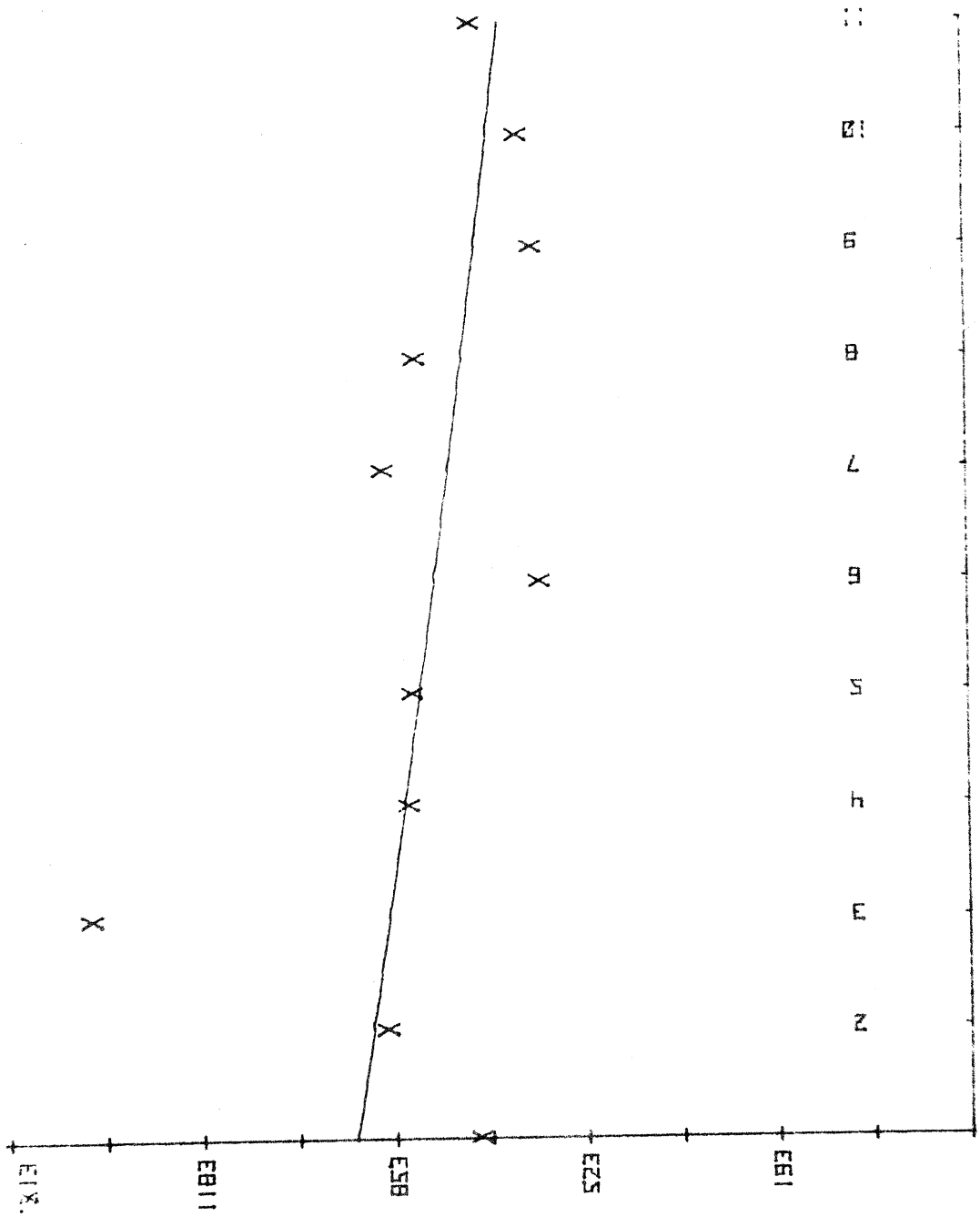
Graph I. Consumer price index for food 1970-1980

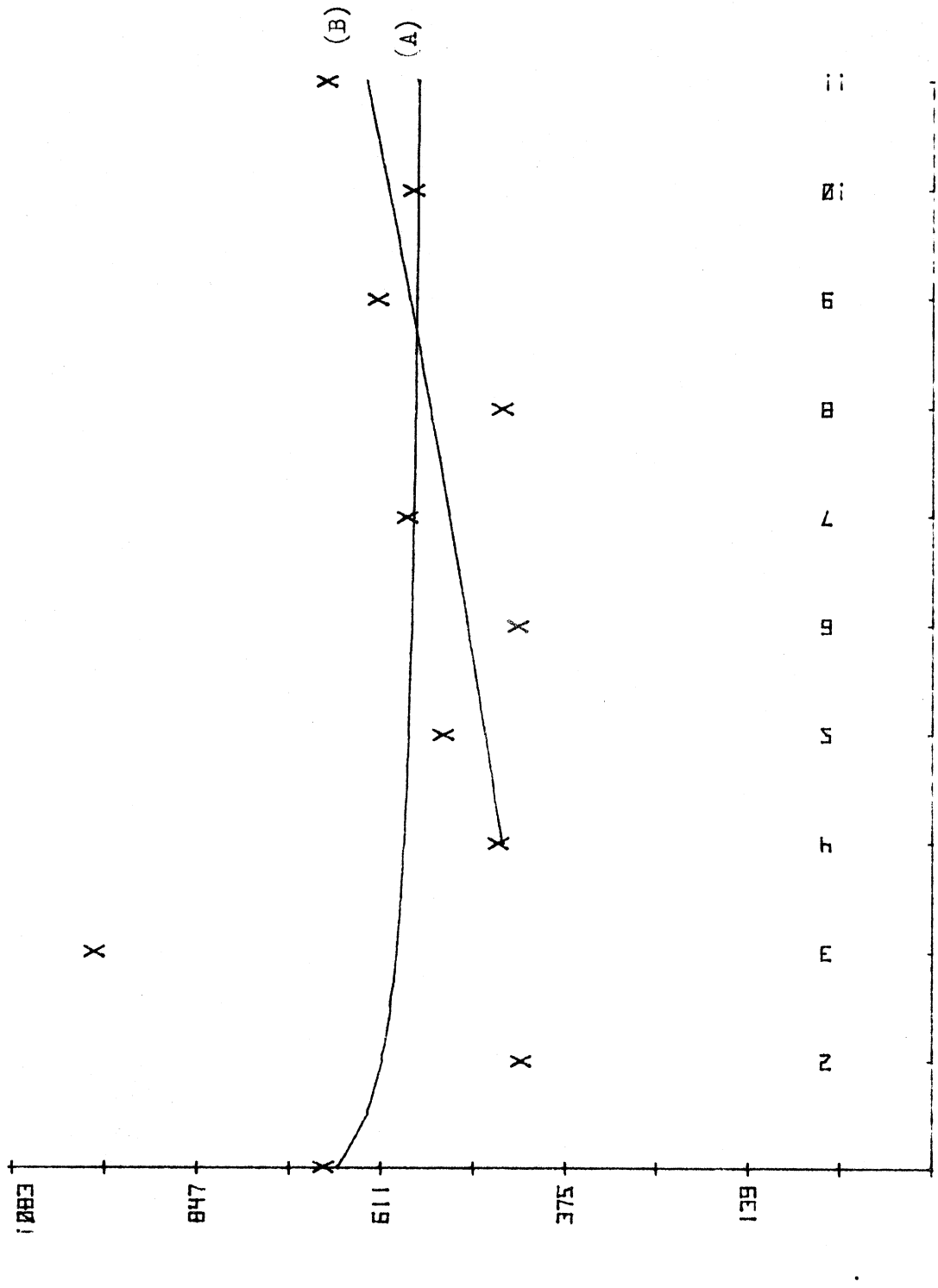




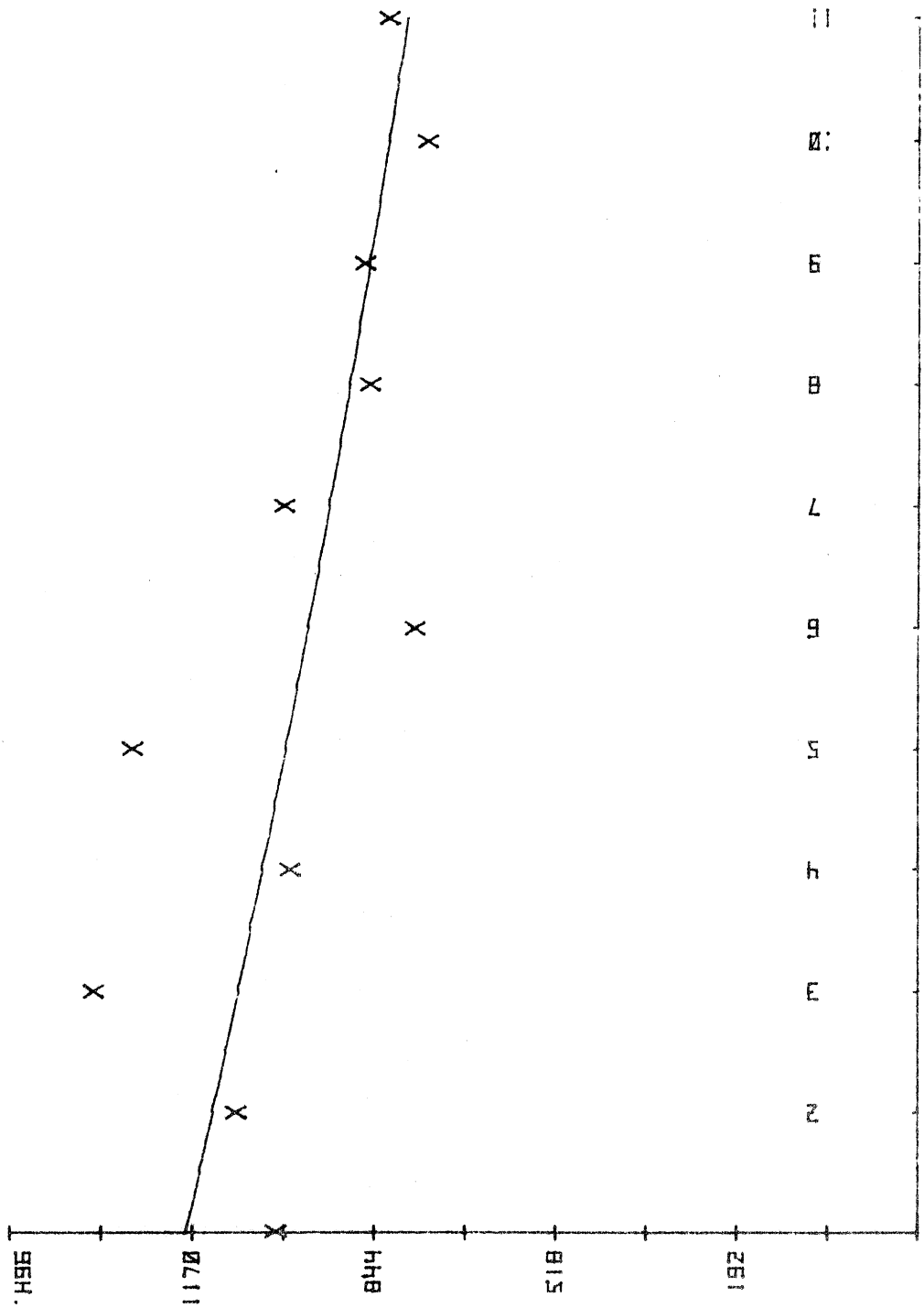
Graph II. Wheat production 1970-1980

Graph III. Wheat yield 1970-1980

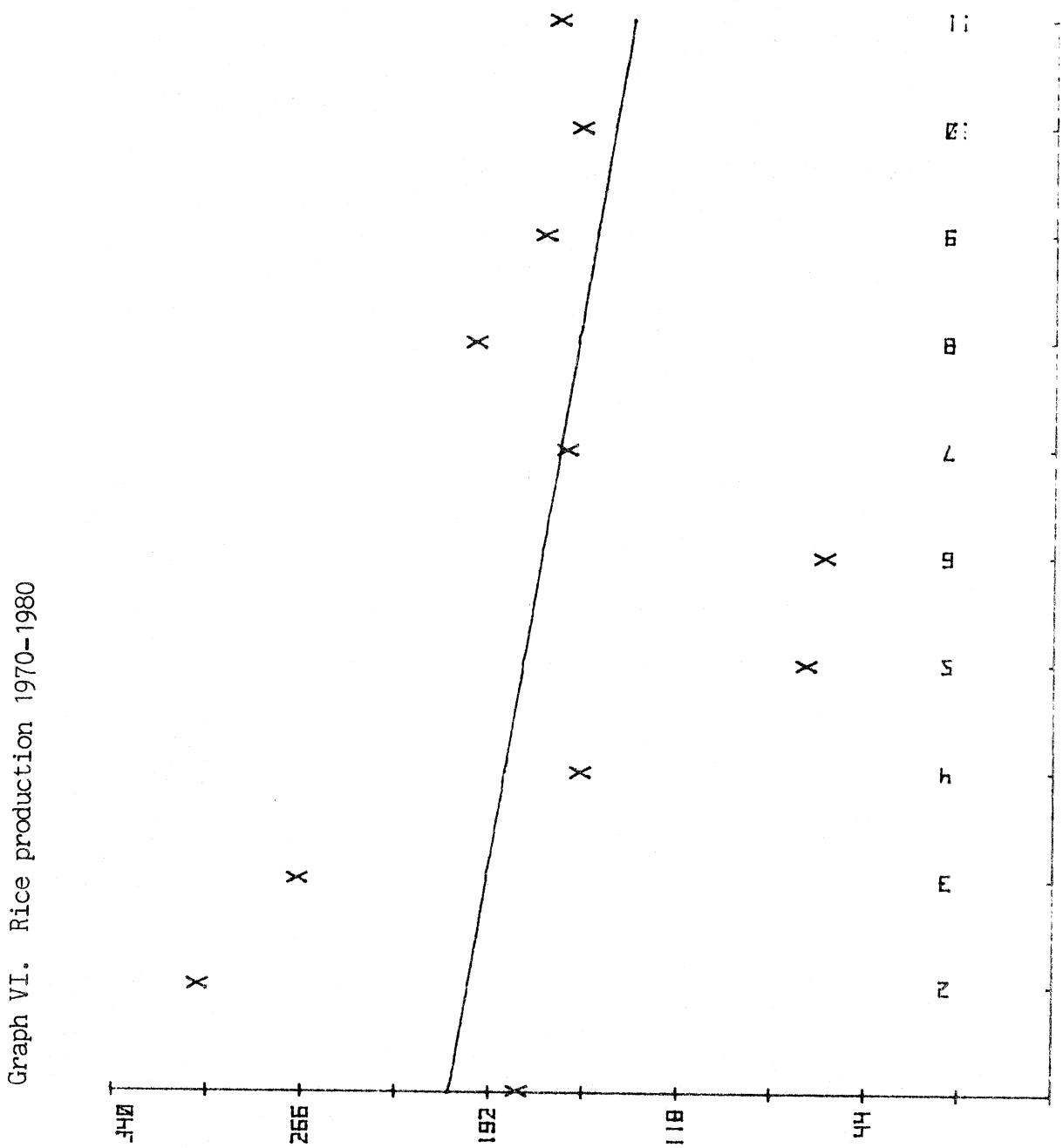




Graph IV. Barley production 1970-1980 (A) and 1973-1980 (B)

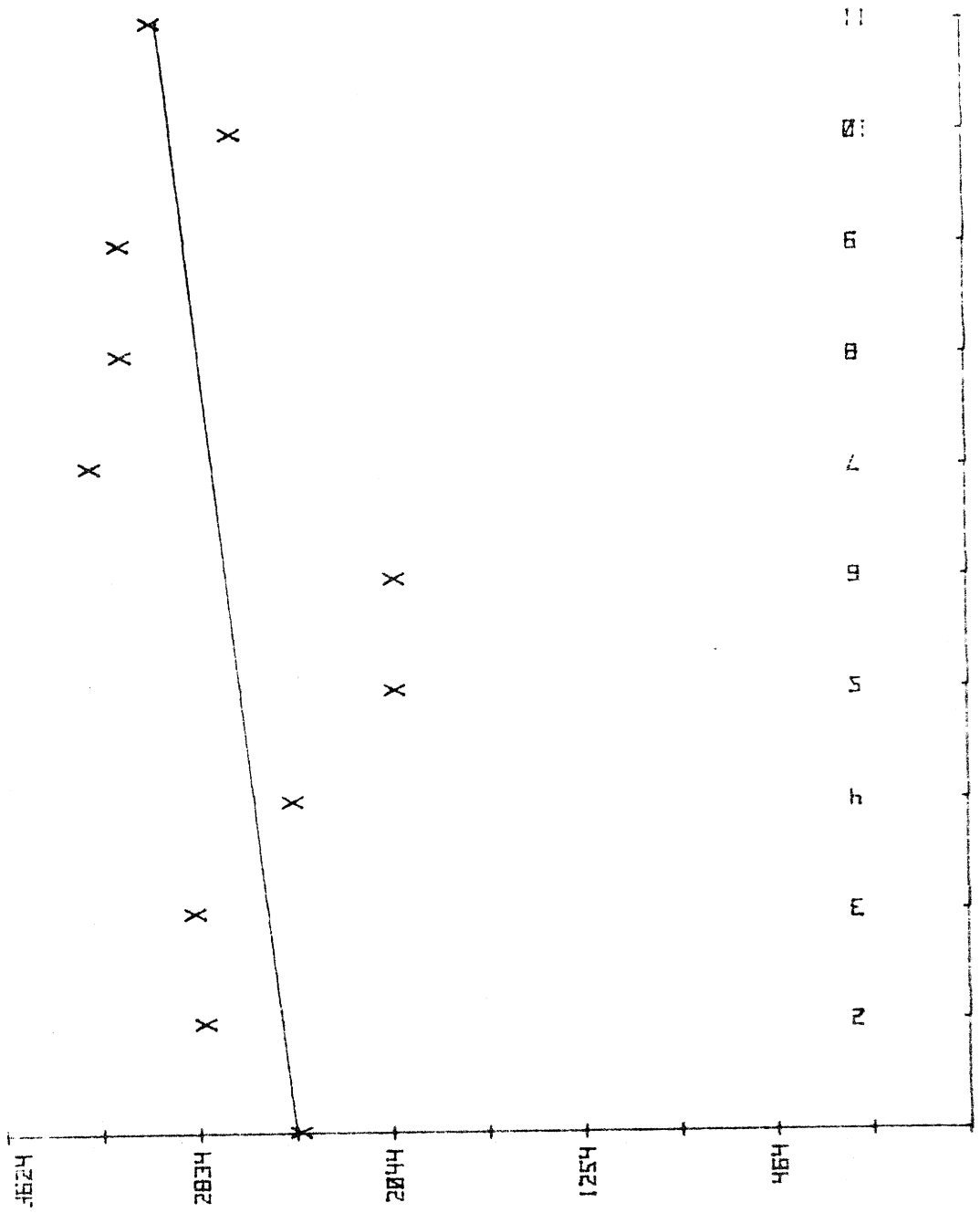


Graph V. Barley yield 1970-1980

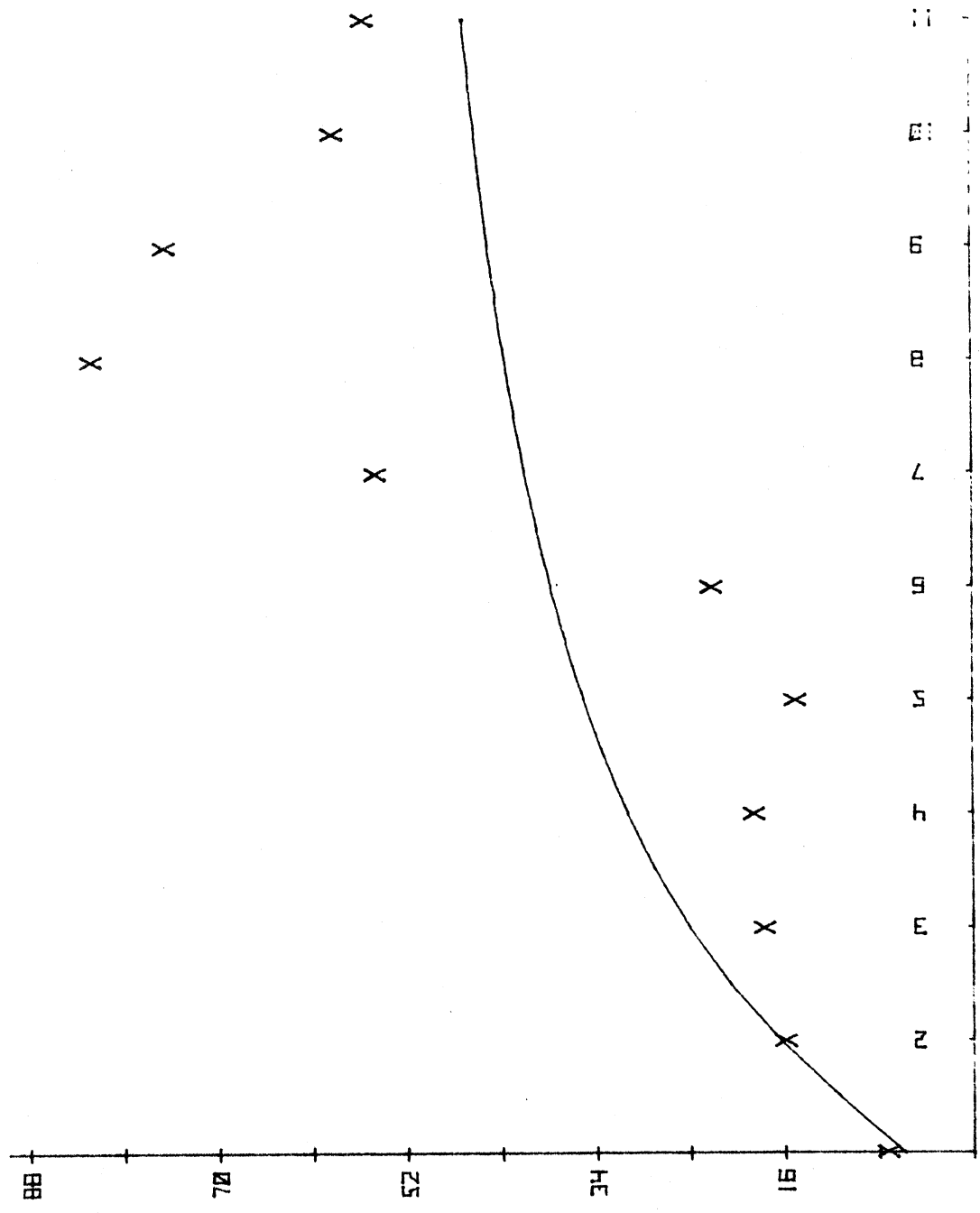


Graph VI. Rice production 1970-1980

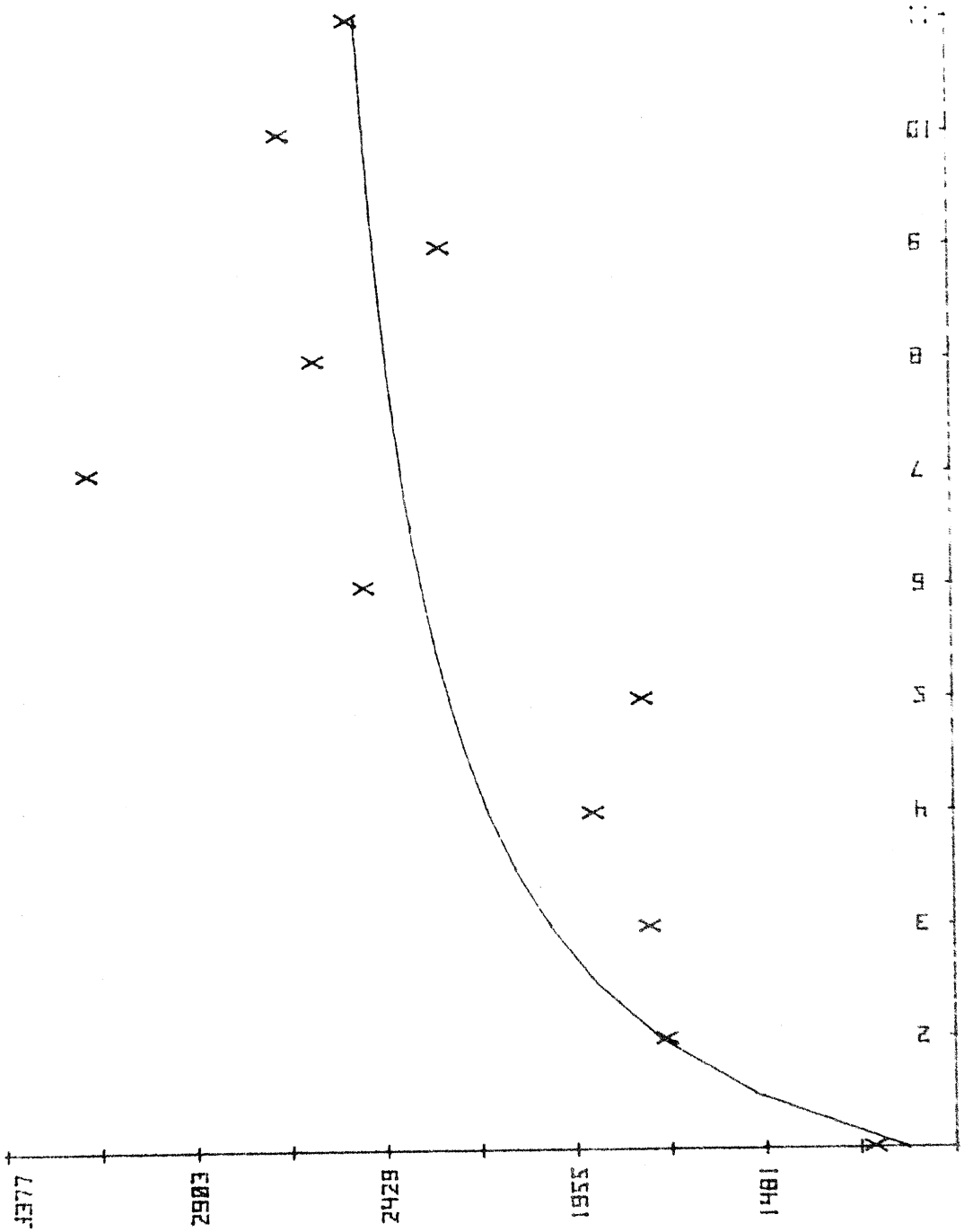
Graph VII. Rice yield 1970-1980



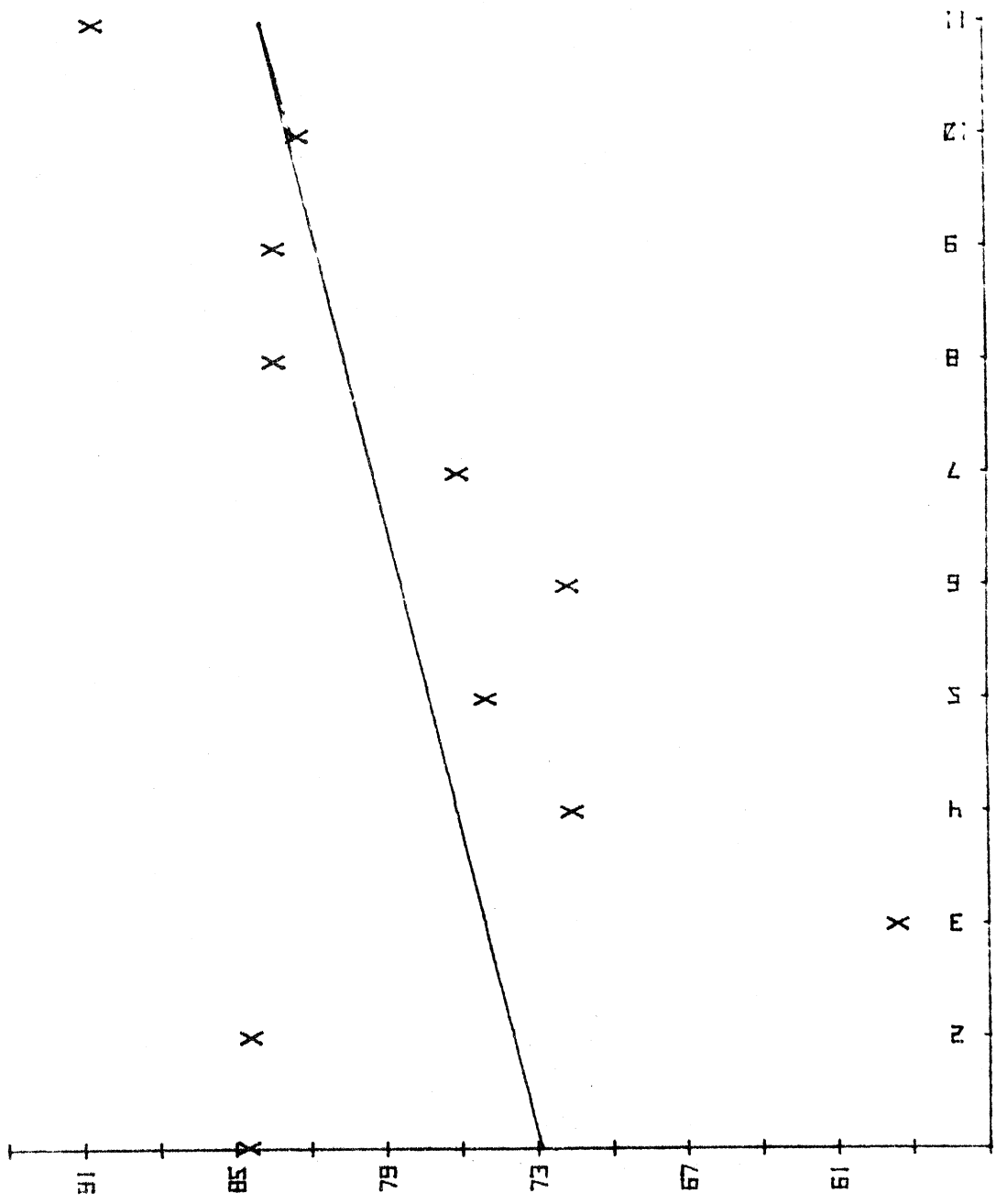
Graph VIII. Maize production 1970-1980



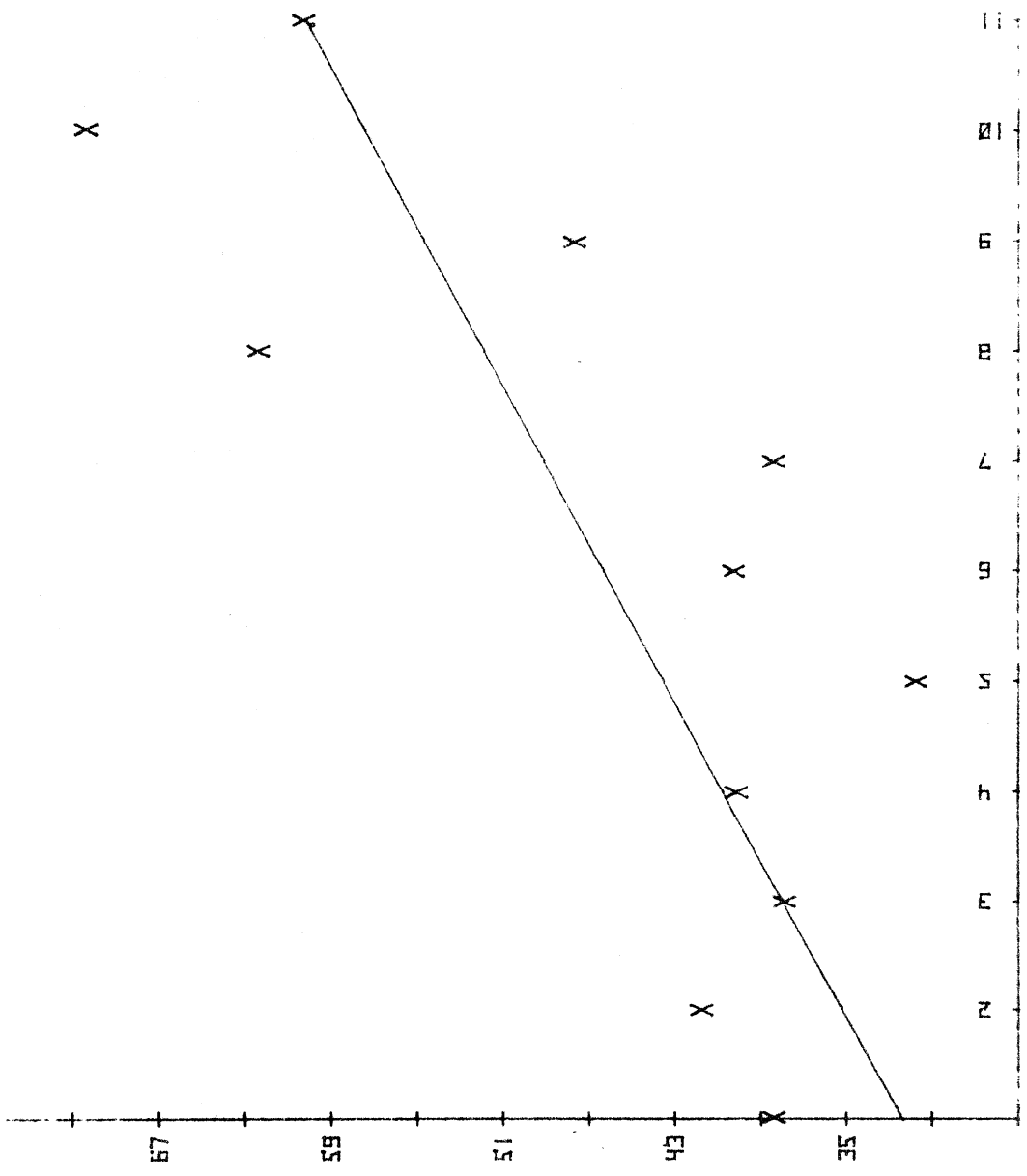
Graph IX. Maize yield 1970-1980



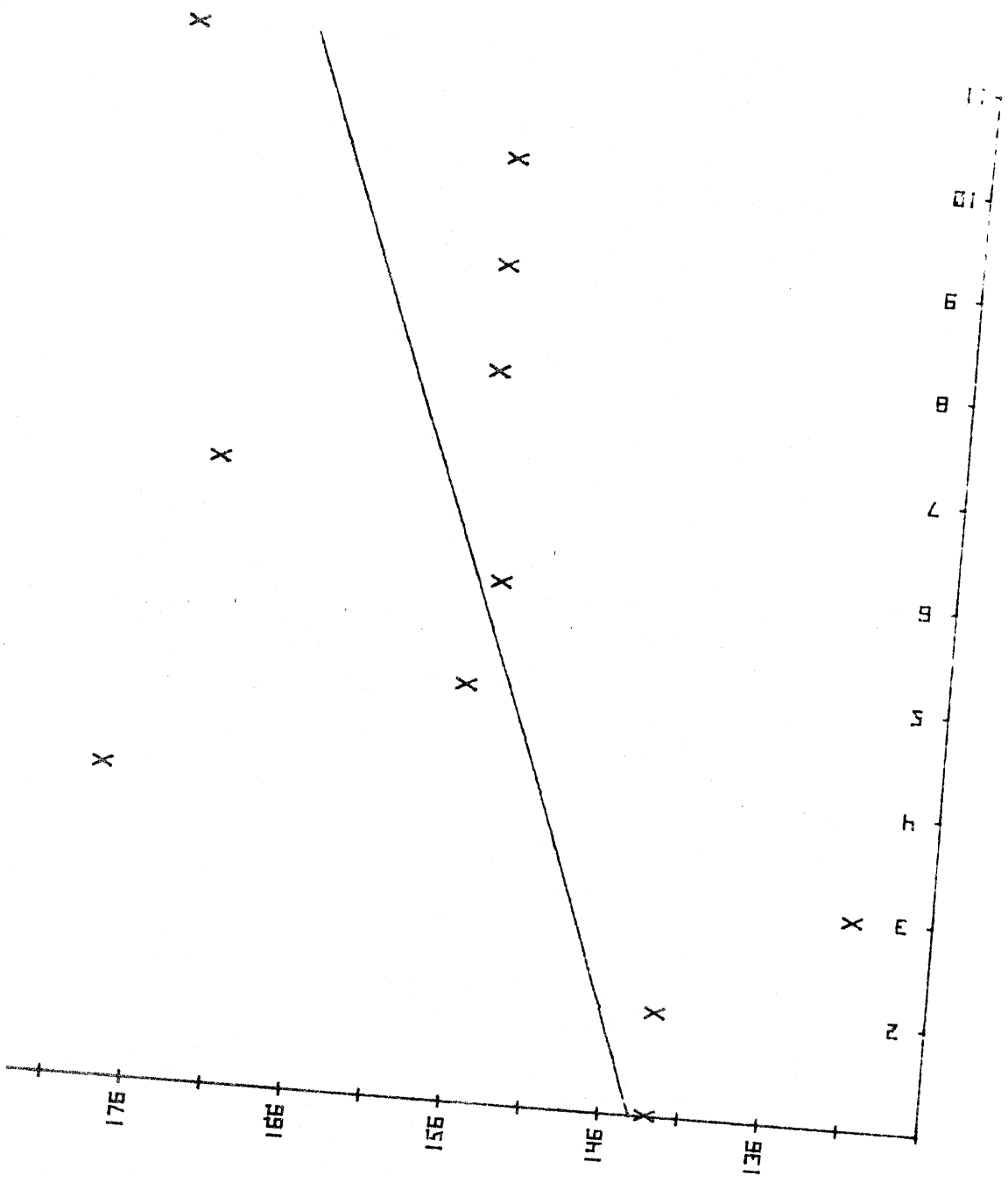
Graph X. Relative price barley/wheat, 1970-1980 (percentage)



Graph XI. Relative acreage barley/wheat, 1970-1980 (percentage)



Graph XII. Relative price rice/maize, 1970-1980 (percentage)



Graph XIII. Relative acreage rice/maize, 1970-1980 (percentage)