Economic & Policy Analysis Project
The Economic Wing -- MINFA
Islamabad

CHEMONICS
INTERNATIONAL
CONSULTING
DIVISION

PAKISTAN
ECONOMIC &
POLICY ANALYSIS
PROJECT

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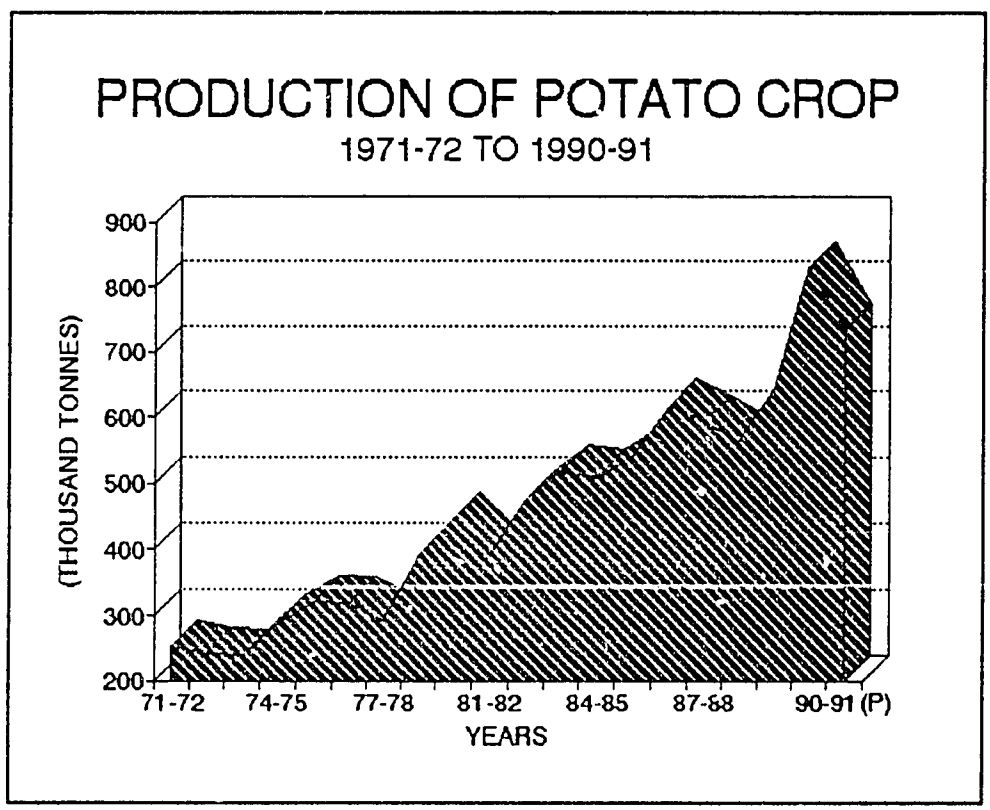
POTATO

SITUATION AND OUTLOOK REPORT FOR PAKISTAN



MINISTRY OF FOOD, AGRICULTURE
AND COOPERATIVES,ECONOMIC WING
COMMODITY SITUATION SECTION

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FOREWORD

Economic Wing of the Ministry of Food, Agriculture and cooperative has been publishing, among other things, Agricultural commodity Situation Reports focusing on economic research and analytical findings. The primary purpose of issuing "Commodity Situation Report and Outlook Information" is to compile a commodity specific publication summarizing relevant information related to the current situation and short-term outlook for a specific commodity. In these situation reports current official data, where-ever possible, is used, forecasts that have a proven record of being reliable, trade information from pakistan and International publications, crop conditions reports from professionals and projections from trends of reliable data basis is utilized. Normally these reports encompass information on crop areas, inputs, production, yield, weather, consumption and stocks of agricultural commodities.

2. Preparation and presentation of these Situation Reports by the Economic Wing is an attempt to relieve the policy makers and private business leaders to look at trends, patterns and summary data of existing economic information without having to decipher raw and jumbled data or review numerous sundry publications.

3. Institutionalizing the preparation, publishing and distribution of situation and outlook information in a form easy and comfortable to understand and utilize, will facilitate policy formulation and decision making relating to the use and supply of inputs, pricing policy and internal or external trade of the commodities.

4. The Situation Reports on "Potato Outlook" is a proto-type of the series of Commodity Situation and Outlook Reports being published by the Economic Wing. Onion is one of the important crop. There are four growing seasons of this crop in deferent agro-ecological zones. It has not been possible to stabilize its production. An analysis of the data of this crop presents a picture as if this crop is cyclic in character. When this crop is short in size it generates a measurable income but it drains away even cost of production when it is large in size.

5. The efforts of the research staff of the Economic Wing of MINFA which has made it possible to prepare and published this report or really commendable. Thanks are also due to the Chief of Party and Mr. Rao Shafiq-ur-Rehman, Research Economist of the EPA/Chemonics who have rendered every possible assistance in analyzing and tabulation of data.

6. Comments and suggestions, if any, to further improve the quality of the report on "Onion Outlook" will be appreciated.

(A. H. MAAN)
DIRECTOR GENERAL

SUMMARY

This report is a part of series of reports issued by Economic Wing of the Ministry of Food, Agriculture, and Cooperatives published periodically to provide guidelines to markets agents, farmers and the policy makers, they make use of such reports in their decision making process.

The salient findings of this report are as follows:

1. In nominal terms, wholesale and retail prices increased 7.77% and 7.62% respectively during 1971-72 to 1989-90.

2. In nominal terms, wholesale and retail prices have shown an increasing trend over the last decade, while the deflated prices had declining trend over the said period.

3. During 1989-90, Potatoes production increased by 28.86 percent over the previous year because of expansion in area by 26.20 percent and improvement in yield by just 2.97 percent.

4. During the last decade Potato production increased annually by 6.14 percent, solely due to expansion in area by 6.92 percent as yield dropped by -0.51 percent per annum.

5. During 1989-90, the total production was 830.9 thousand tonnes compared to 644.8 thousand tonnes in 1988-89. The production increased by 28.86%. During 1980-90 the provincial share in the total production was : Punjab 69.2%, Sind 1.3%, N.W.F.P 16.8% and Baluchistan 12.7%.

6. During 1980-90, production of the crop increased in all the provinces. Production increased due to an increase in yield as well as expansion in area. In Punjab, the increase was solely owing to expansion in area.

7. Okara, Sahiwal, Sialkot, Faisalabad, Jhang, Swat, Peshawar, Mansehra, kalat and Pishin,are the major Potato growing districts.

8. Major share in production came from Punjab, N.W.F.P and Baluchistan.

9. The export of potato declined from 7.3 thousand tonnes in 1982-83 to only 1 thousand tonnes in 1988-89, while in 1989-90 the quantity exported was 20.3 thousand tonnes.

10. The cause of low volume of export seems to be among other things the lack of proper infrastructural facilities and inadequatic market information.

POTATO

INTRODUCTION :

Potato is botanically known as Solamum Tuberosum. Potatoes main contribution in human diet is not energy in the form of calories but protein, vitamins and minerals. Potato is considered to be a well balanced diet because the protein-to-calories ratio in potato is higher than that of other root-crops, most cereals and plantains. Potato in general could be compared with other vegetables as far as vitamin content level is concerned, but is far richer in vitamin C and A relatively opeaking.

It is the largest commercial vegetable crop in Pakistan. It ranks first regarding yield per hectare and stands third in order of hierarchy regarding the volume of production as compared to the major food crops. Regarding the area brought under cultivation of various crops, potatoes crop ranks ninth. The demand for potatoes has grown more rapidly than the demand for most of the foods. Since average potatoes consumption is still less than other food items but the demand for potato will continue to grow rapidly in the future. Potato is an important export crop that enables this country to earn a lot of foreign exchange. The importance of the role played by this crop in agricultural development can not be belittled.

This report on potatoes is a part of series of reports on various commodities, which the Economic Wing of the Ministry of Food, Agriculture, and Cooperatives, has been publishing periodically to provide the most recent outlook into the commodity situation.

1. SOWING AND HARVESTING SEASONS

Potatoes is a Rabbi as wells as a kharif crop. It is widely grown in many parts of the country in three different seasons. They are autumn and spring crops in the plains and the third crop is obtained in the hilly areas of the Punjab, N.W.F.P and the Baluchistan. The autumn crop is sown in September to October in the Punjab and Sind, in August to October in N.W.F.P and in October in the Baluchistan. The spring crop is sown in January in the Punjab and Sind and in February-March in N.W.F.P and the Baluchistan. The hilly crop is sown in March-April in the Punjab and the Baluchistan and in April-May in N.W.F.P. The autumn crop in the hilly areas of the Baluchistan is sown between early March and mid-May.

Harvesting of the autumn crop is done in December-January in the Punjab, in January in N.W.F.P., in January-February in Sind and in February in the Baluchistan. The spring crop is harvested in May in all the provinces except that in the Punjab where it starts from the last week of April. The hilly crop is harvested during September-October both in the Punjab and N.W.F.P., but in the Baluchistan the harvesting is done in October. The autumn crop in the hilly areas of the Baluchistan is harvested in June-July.

2. VARIETIES GROWN IN PAKISTAN

There are a number of varieties grown in Pakistan. Four main varieties are (I) Malta (II) Patrones (III) Desiree and (IV) Ultimus. The first two varieties are white skin and also preferred for export, while the other two are of red-skin and are preferred for local consumption.

3. LONG TERM TREND OF POTATO PRODUCTION

Production of potato has increased from 253.7 thousand tonnes in 1971/72 to about 830.9 thousand tonnes in 1989/90. Inspite of an upward trend in its production, there had been ups and downs in its production during the period under consideration as shown in Figure 1. The average annual compound rate of growth of approximately 6.41 percent in production is very impressive as compared to the other crops in the last two decades. During 1971/74 the production registered a downward trend. The growth rate for different time period, viz., 1971-90, 1984/90 and 1988/90 was recorded to be 6.41%, 6.27% and 28.86% respectively. While the net availability of potato was noted to be 6.48%, 6.01% and 25.91% during the said period (See Annexure = 1).

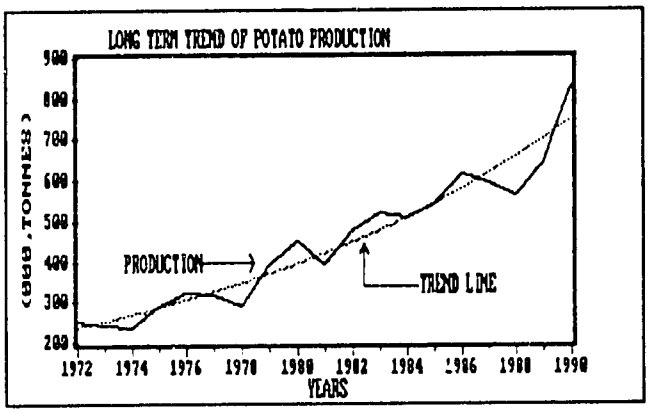

Figure 1

3.1 LONG TERM TREND OF POTATO AREA

Area sown under potato crop has increased from 23 thousand hectares in 1971/72 to about 80 thousand hectares in 1990. Figure 2. shows the long term compound trend for the nominal wholesale prices of potato. Area has a direct and very distinct relationship with production. It has moved in the same direction as production. The annual average compound growth rate during 1971/90, 1984/90 and 1989/90 are 6.92%, 5.50% and 25.20% respectively. The direction of compound trend line as compared with production line shows that area and production have a positive relationship and move in the same direction. The growth rate of area and production also indicate the same thing. The increase in production came primarily from the expansion in area.

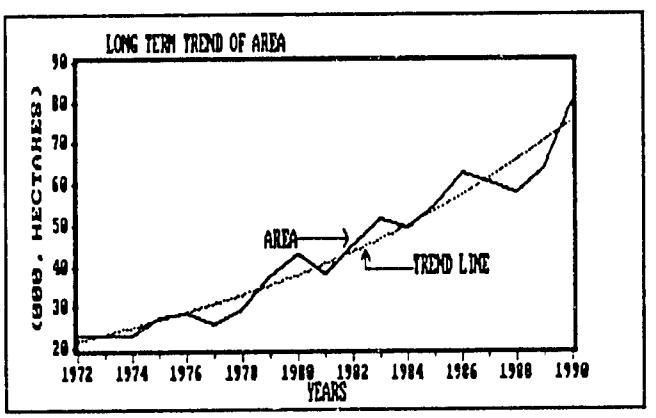

Figure 2

3.2 LONG TERM TREND OF POTATO YIELD

Yield per hectare during 1971/90 was registered to be very discouraging. The trend line had a negative relationship as shown in figure 3. As a matter of fact, the yield remained stagnant during 1978 to 1990. It is clear form the graph that the yield decreased from 11 tonnes per hectares in 1971/72 to about 10.4 tonnes in 1989/90, the compound growth rate during 1971/90, 1984/90 and 1988/90 were recorded to be -0.51%, 0.79% and 2.97% respectively, which are not so impressive. The increase in production came from the expansion in area, with very little contribution by yield increases. This presents a very gloomy picture in the face of efforts to increase the production to the new heights.

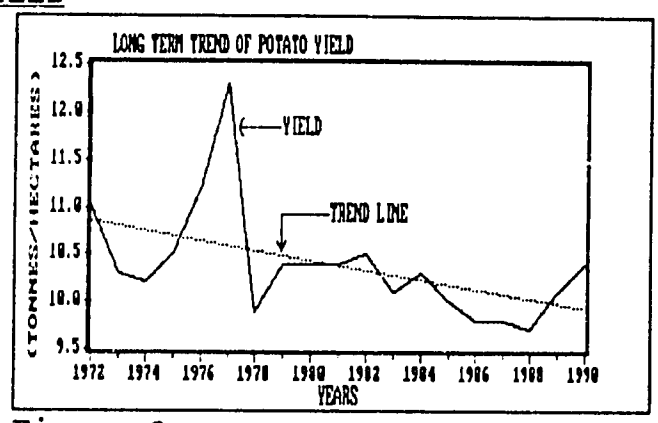

Figure 3

4. PROVINCE WISE PRODUCTION AND AREA OF POTATO

4.1 PRODUCTION SHARE : Potato production share by provinces shows that cropping pattern over time are changing as shown in figure 4, which gives the production shares of all the four provinces since 1947. During 1947/57, 1958/68, 1969/79 and 1980/90 the Punjab share were registered to be 84.2%, 61.1%, 66.2% and 69.2% respectively. The Punjab is the leading province regarding its production, the major portion of the production of the crop is obtained from the Punjab. In both the Punjab and Sind, the production remained almost constant with a few exceptions of course. The Baluchistan and N.W.F.P showed a increasing trend. The N.W.F.P was noted to be the second largest province who significantly improved its production (See Annexure = 3). All the provincial shares remained fairly stable in 1990.

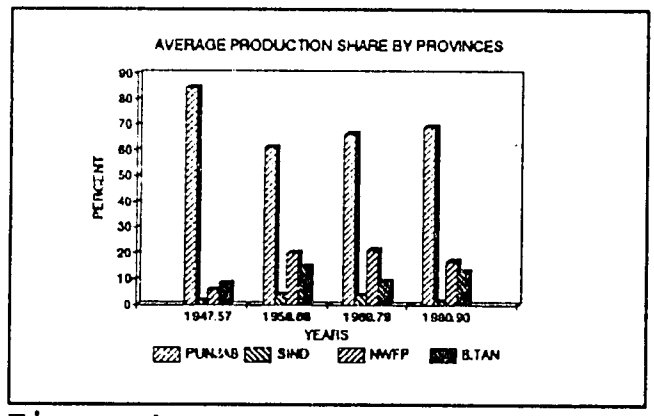

Figure 4

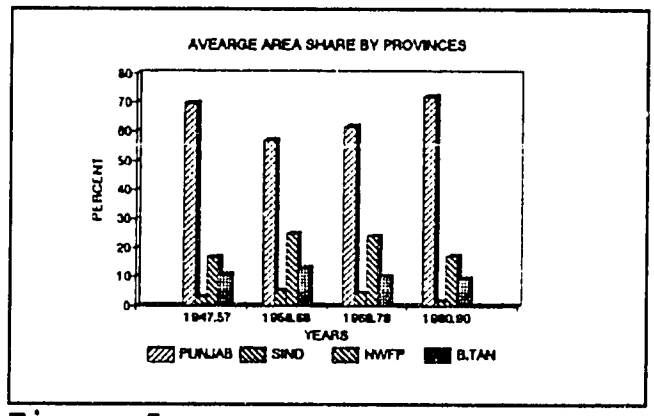

Figure 5

4.2 AREA SHARE : Figure 5 and Annexure = 3 depict that the area brought under the crop in

the Punjab increased while the production showed a decreasing trend. The area in Sind registered a downward trend during 1947/57, 1958/68, 1969/79 and 1980/90 from 2.9% to 5.2% to 4.4% and then to 1.5% respectively. The provincial shares show that the cropping pattern are changing overtime. Graphical presentation gives us a clear picture. It is crystal clear that production increased mainly due to an increase in area, while yield contribution in increasing the production was almost nil (See Annexure = 3).

5. PRICE VARIATIONS

Agricultural price changes can lead to a remarkably wide-ranging economic and social consequences. Within agriculture, producer price changes significantly affect production, both in its level and in commodity composition. Prices observed over time are the result of a mixture of changes associated with seasonal (climate), cyclical (economy) and demand trends (tastes, income, population growth). Various forms of price fluctuations will be dealt with in this report.

5.1 LONG TERM PRICE VARIATIONS :

Nominal wholesale and retail prices are easily available and collected on regular basis. These prices are collected from numerous markets all across the country. The fluctuations in these prices are depicted by figure 6 and 7. The trend lines of both the prices are giving us the upward trend over time. The prices have kept an upward pace for the duration since 1973. The trend of both of the prices of potatoes in nominal terms show a regular and upward moving trends. Prices change their direction almost every two to three years. In the long run, prices of potatoes fluctuate mainly due to changes in supply. The compound growth rate of wholesale prices during 1971/90, 1984/90 and 1988/90 were registered to be 7.7%, 5.77% and -43.09% respectively. However, the real prices, i.e. nominal prices deflated by the wholesale and retail prices index with base year 1980/81 = 100, have shown a downward trend. It is also observed that deflated prices in term of growth rate were less than the nominal prices in both the cases. During 1971/90 and 1984/90 the

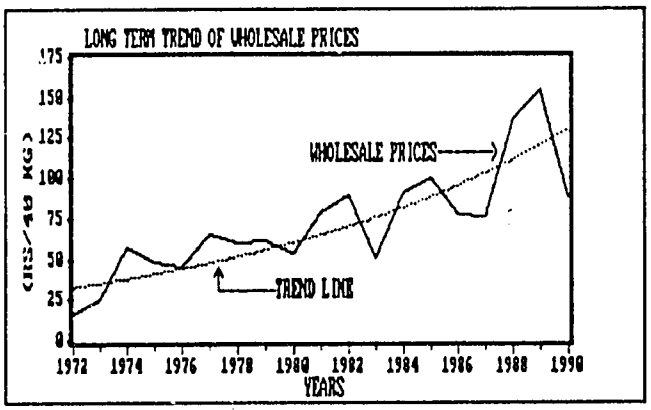

Figure 6

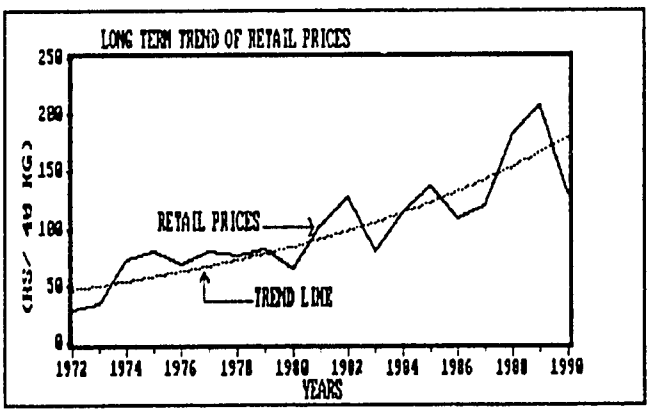

Figure 7

deflated prices had a negative change. The deflated prices were lower because of high inflation rate during the given period. (See Annexure = 2)

5.2 CYCLICAL FLUCTUATIONS

Cyclical fluctuations tell us about the nature of cycles i.e whether or not the production, area and prices were persistently higher or lower than the estimated trend. Cyclical behavior is the most important characteristics of the agricultural prices. Cyclical fluctuation termed as booms and busts prolong for years and thus give birth to the cycles.

In order to understand the cyclical behavior, of various variables we have used different measures. The measures are listed below.

(A) Potato production cycle
(B) Potato area cycle
(C) Potato wholesale prices cycle
(D) Potato retail prices cycle

(A) **PRODUCTION CYCLE :**

It shows a somewhat regular pattern. The recession time, on an average, is three to four years and expansion time, on an average, lasts for almost two years. During 1972-90, we observe four peaks of production level. For the most time, production levels were lower than their predicted or desired levels. The first cycle started in 1974 when the production level were the minimal, a production recovery took place and production reached its peak level in 1976, but declined the next year again. The first cycle completed in four years. The second cycle took three years to complete its duration. The third and last cycle took seven years to complete. Figure 8, shows that potato production remained below the trend line for most of this period. The present production cycle is below the trend and is increasing. It would continue to move upward until it attain its next peak in 1990/91.

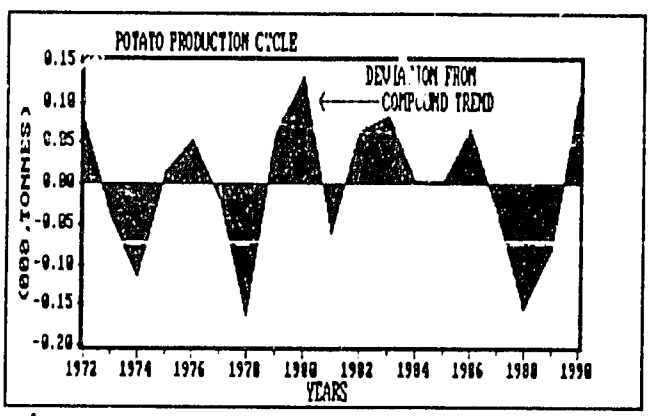

Figure 8

(B) **AREA CYCLE :**

Cyclical behavior of area under cultivation could be observed in figure 9, which

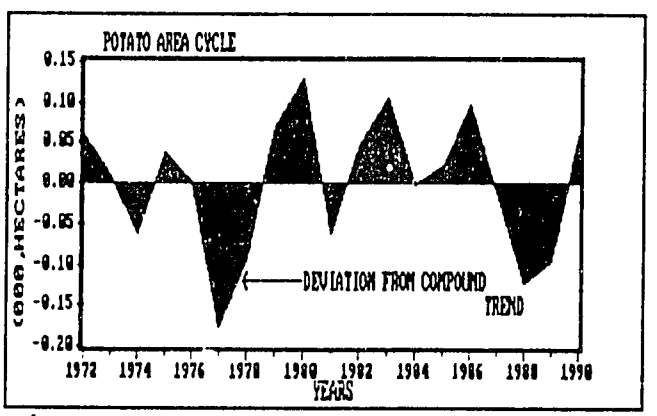

Figure 9

depicts that production and area cycles durations are almost the same. There were four peaks and four troughs during 1972-90. Increases and decreases in area occurred almost at regular intervals like the production cycles. So, these patterns confirm the fact that production is related with the area as shown in figure 10 (long term trend of production and area).

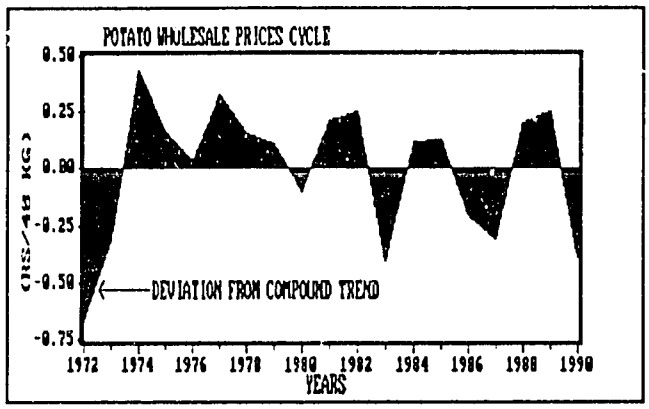

Figure 10

(C & D) Figure 10 and figure 11 show four cycles of prices of potato over the last eighteen years (1972-90).During 1972-73 prices remained below the trend line while during 1973-1979 prices remained above the trend line. The first cycle started in 1972 when the prices were the lowest, a price recovery took place and price level reached its peak level in 1975. The first cycle completed its duration from 1972 to 1980. The second cycle started in 1980 and ended in 1983. The third cycle followed a similar time pattern and lasted for three years, i.e from 1983 to 1986, while the fourth cycle was also of the same duration. One should not expect cycles to have a constant length or amplitude due to so many factors. Prices of potatoes and the production cycles of potatoes, moved diametrically opposite to each other, while there was a positive relationship between the area under the crop and the output of the crop as shown in figure 8. Cycles are thought to be generated by lagged responses to changes in prices external shocks and other variables.

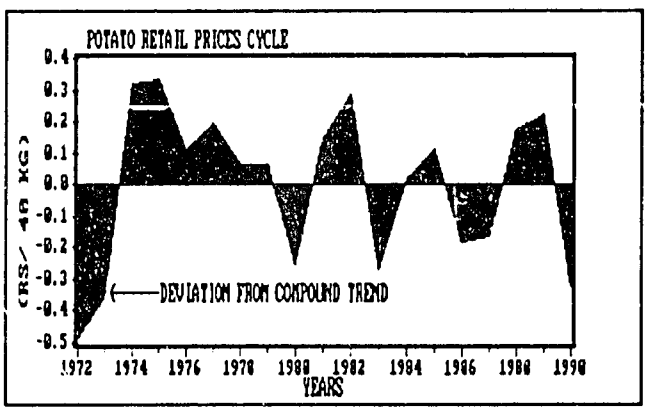

Figure 11

6. SEASONAL VARIATIONS IN PRICES

To observe seasonal fluctuations, it is necessary to observe minutely the relationship between prices of potatoes and the sowing and harvesting season. There is a clear indication of the presence of seasonal fluctuations in prices during 1972-90. Figure 12 shows that prices are the lowest during January to April due to supply of newly harvested crop.

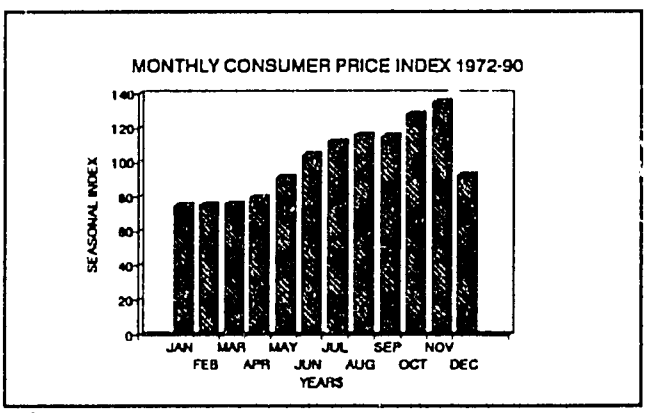

Figure 12

From April onwards prices start increasing. In May there is a slight decrease due to supply of the spring crop. Prices reach their peak level in November. It means that it price level gradually increases up to September and reaches its maximum level in the month of November. The price level progressively declines thereafter until December. Typically, therefore, prices are at the lowest level during January, February and March after the autumn crop has been harvested and is available in the market. They steadily star increasing thereafter to reach the peak level until October and November. Annexure 4 gives the information about the seasonal indices.

7. RELATIONSHIP

The relationship between the following variables have been dealt with:

(a) Potato production vs area
(b) Potato Production vs wholesale prices
(c) The Impact of This Year's Prices on Production Next Year

The main objective of this exercise is to confirm or reject the existence of correlation between the variables in question.

(A) Figure 13 shows that the production of potato increased at the rate in line with an increase in area sown under the crop. The production of the crop and the area over which the crop was sown went hand in hand throughout the period under consideration i.e 1972-1990.

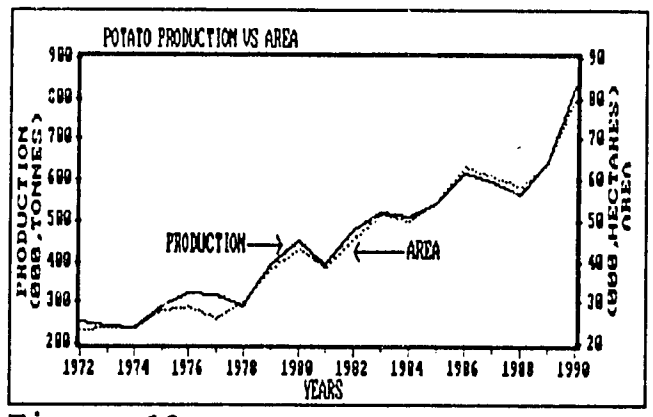

Figure 13

(B) The price series depict secular variations that present a classical example of the cob web theorem where current production decisions are based on price expectation which in turn are based on last years prices. This type of response on the part of producers give birth to production cycles i.e a boom followed by a bust and on and on. This type of relationship is vividly visible in Figure 14 where the wholesale prices and the production of potatoes are inversely related to each other.

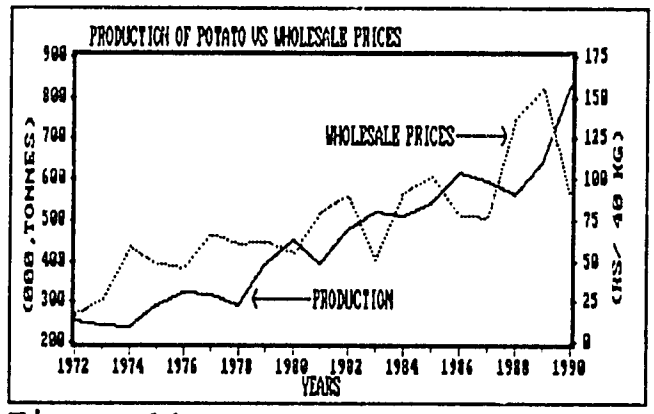

Figure 14

(C) This relationship is a time lagged relationship and shown in figure 15. For example, the first bar for 1972 shows the deviation of the wholesale prices that year from trend and the second bar shows the deviation of potato production from trend in 1973. The relationship is often seen in situations where farmers have inadequate information about the prices they can expect to receive at the time they make most of the production decisions. In such situations, there is a strong tendency to base this year's production decisions on last year's prices. The information presented in figure 1,6,8 and 10 appear to be a near classic example of the result of this simplistic decision model- production decisions this year are based on the prices received last year.

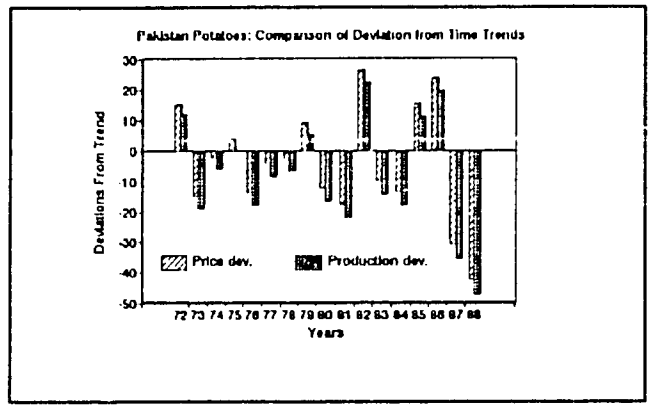

Figure 15

8. EXPORT OF POTATO :

The annual exports of potatoes from Pakistan to the rest of the world are given in Annexure = 1. It can be observed from the data available from 1971/72 to 1989/90 that annual exports of potato have fluctuated quite widely. Export pattern are not consistent with the production level. Maximum quantity of about 41.3, 23.3 and 20.3 thousand tonnes was exported during 1979/80, 1978/79 and 1989/90 respectively. Since than the annual exports have reduced drastically, mostly it ranged between 1 thousand tonnes to 12.5 thousand tonnes.

Conclusion : Persistent seasonal variation in potatoes production level and secular as well as seasonal price variations demand a close watch on the situation of this crop on the part of Economic Wing. Furthermore, the authorities concerned should formulate and recommended the polices which should suggest farmers education program in order to enable them to base their current production decision on future expected prices rather than previous year prices with the objective to mitigate the year to year fluctuations in the production of not only potatoes but all the crop which behave like it, secondly, policies should also aim at giving incentive to the producers to enhance the production not only to meet the domestic requirements but also for export purposes and reserve as food security stocks. It is worth mentioning that white-skin not red-skin potatoes are liked most in foreign countries, therefore, as for as production is concerned, this point must be given due consideration by the producers, this will enable the country to increase her foreign exchange earning through the export of this commodity. It has been a regular phenomenon to observe a consistent drop in supply of potatoes in August which intern leads to an abrupt short-term increase in the price level of this commodity.

ANNEXURE = 1

YEAR	PRO (000,TNS)	AREA (000,HEC)	YIELD (P.H.TNS)	POPULATION (MILLION)	EXPORT (000,TNS)	NET AVAIL-ABILITY (000,TNS)	NET FOR P.PERSON (KG)
1971.72	253.7	23.0	11.0	63.34	2.6	251.10	3.96
1972.73	241.3	23.4	10.3	65.89	3.2	238.10	3.61
1973.74	238.8	23.4	10.2	67.90	0.0	238.80	3.52
1974.75	289.5	27.7	10.5	69.98	0.0	289.50	4.14
1975.76	320.8	28.6	11.2	72.12	3.2	317.60	4.40
1976.77	318.0	25.7	12.3	74.33	12.5	305.50	4.11
1977.78	293.5	29.8	9.9	76.60	7.7	285.81	3.73
1978.79	392.4	37.7	10.4	78.94	23.3	369.07	4.68
1979.80	448.5	42.9	10.4	81.36	41.3	407.24	5.01
1980.81	394.3	38.0	10.4	83.84	4.9	389.45	4.65
1981.82	476.6	45.3	10.5	86.44	3.2	473.39	5.48
1982.83	518.1	51.5	10.1	89.12	7.3	510.80	5.73
1983.84	509.8	49.6	10.3	91.88	3.5	506.34	5.51
1984.85	543.3	54.5	10.0	94.73	2.7	540.64	5.71
1985.86	618.4	62.9	9.8	97.67	1.3	617.10	6.32
1986.87	594.3	60.5	9.8	100.70	2.5	591.81	5.88
1987.88	563.2	58.1	9.7	103.82	0.2	563.00	5.42
1988.89	644.8	63.9	10.1	107.03	1.0	643.80	6.02
1989.90	830.9	80.0	10.4	110.36	20.3	810.60	7.35
PERIOD	AVERAGE ANNUAL % CHANGE						
1971/72-1989/90	6.14%	6.92%	-0.51%	3.05%	-2.56%	6.48%	3.43%
1984/85-1989/90	6.27%	5.50%	0.79%	3.05%	19.58%	6.01%	2.95%
1988/89-1989/90	28.86%	25.20%	2.97%	3.11%	1930%	25.91%	22.11%

Note : Trend growth rates are computed using the semi logarithmic trend equation fitted to the time series data based on the least squares method.

ANNEXURE = 2

NOMINAL AND DEFLATED PRICES (40/KG)

YEAR	WHOLESALE PRICE INDEX (1980-81=100)	CONSUMER PRICE INDEX (1980-81=100)	WHOLESALE PRICES		RETAIL PRICES	
			NOMINAL	DEFLATED	NOMINAL	DEFLATED
1971.72	29.60	31.02	16.42	55.49	28.00	90.27
1972.73	34.27	34.02	25.09	73.22	34.40	82.30
1973.74	45.50	44.22	57.52	126.42	72.40	77.79
1974.75	56.26	56.04	47.80	84.96	79.20	129.20
1975.76	61.09	62.57	44.95	73.58	68.80	126.57
1976.77	68.37	69.94	65.68	96.06	80.80	98.37
1977.78	73.80	75.38	59.51	80.63	76.40	107.19
1978.79	78.72	80.39	61.43	78.04	82.40	95.04
1979.80	88.42	89.00	54.08	61.16	64.80	92.58
1980.81	100.00	100.00	79.43	79.43	104.00	64.80
1981.82	107.36	111.10	89.25	83.13	128.80	93.61
1982.83	113.11	116.29	50.30	44.47	80.40	110.76
1983.84	124.44	124.76	91.33	73.39	115.20	64.44
1984.85	130.90	131.83	100.29	76.62	136.80	87.39
1985.86	136.95	137.57	77.55	56.63	109.60	99.44
1986.87	143.80	142.52	75.57	52.55	120.40	76.90
1987.88	158.21	151.49	136.34	86.18	182.40	79.48
1988.89	173.50	167.23	154.89	89.27	207.20	109.07
1989.90	186.16	177.33	88.15	47.35	129.20	116.84
PERIOD	AVERAGE ANNUAL % CHANGE					
1971/72-1989/90	9.30%	9.05%	7.77%	-1.53%	7.62%	-0.22%
1984/85-1989/90	7.33%	6.08%	5.77%	-1.56%	5.83%	5.04%
1988/89-1989/90	7.30%	6.04%	-43.09%	-46.96%	-37.64%	7.13%

Note : Trend growth rates are computed using the semi logarithmic trend equation fitted to the time series data based on the least squares method.

ANNEXURE = 3

PROVINCE WISE SHARE OF PRODUCTION, AREA AND YIELD

PRODUCTION

PERIOD	PUNJAB	SIND	N.W.F.P	B.TAN
1947.57	81.39	9.66	7.66	1.30
1958.68	60.15	23.75	8.85	7.24
1969.79	39.33	39.15	9.48	12.03
1979.90	27.79	41.90	8.29	22.02

AREA

PERIOD	PUNJAB	SIND	N.W.F.P	B.TAN
1947.57	60.08	26.48	9.49	3.95
1958.68	49.68	34.25	9.09	6.98
1969.79	34.11	48.72	8.21	8.97
1979.90	27.77	50.54	7.12	14.57

YIELD

PERIOD	PUNJAB	SIND	N.W.F.P	B.TAN
1947.57	46.45	12.31	31.05	10.19
1958.68	33.01	18.57	26.36	22.06
1969.79	25.99	17.70	26.00	30.31
1979.90	22.60	18.46	25.81	32.95

ANNEXURE = 4

MONTHLY CONSUMER PRICES OF POTATO

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AVG
1971.72	0.45	0.48	0.52	0.58	0.50	0.64	0.73	0.73	0.72	0.75	0.76	0.74	0.63
1972.73	0.69	0.71	0.64	0.67	0.81	1.21	1.25	1.40	1.32	1.59	1.79	1.35	1.12
1973.74	1.18	1.15	1.39	1.71	1.95	1.61	1.80	1.85	2.13	2.20	1.65	1.42	1.67
1974.75	1.32	1.46	1.37	1.11	1.35	1.24	1.34	1.62	1.88	2.03	1.57	1.19	1.46
1975.76	0.93	0.98	1.06	1.00	1.21	1.58	1.84	2.02	2.35	1.99	2.14	1.90	1.58
1976.77	0.97	1.08	1.25	1.45	1.38	1.30	1.66	1.74	1.63	1.52	1.96	1.45	1.45
1977.78	1.00	1.16	1.16	0.98	1.07	1.96	1.88	2.30	1.94	2.20	2.20	1.09	1.58
1978.79	1.12	1.08	0.84	0.60	0.86	0.96	1.33	1.20	1.11	1.24	1.08	0.92	1.03
1979.80	0.73	0.60	0.68	0.76	0.95	1.18	1.32	1.28	1.37	2.43	3.07	1.30	1.31
1980.81	1.42	1.52	1.44	1.98	2.31	2.73	2.98	3.22	3.49	3.57	3.68	1.67	2.50
1981.82	1.36	1.34	1.25	1.08	1.55	1.59	1.66	1.53	1.64	1.34	1.23	0.91	1.37
1982.83	0.86	0.79	1.02	1.14	1.38	1.64	1.84	1.88	2.13	2.24	3.58	2.21	1.73
1983.84	1.51	1.47	1.63	2.55	3.16	3.20	3.34	3.06	2.97	3.44	2.23	1.66	2.52
1984.85	1.64	2.03	2.22	2.53	2.53	2.42	2.51	2.70	2.41	2.34	2.38	1.62	2.28
1985.86	1.42	1.55	1.48	1.41	1.53	1.92	2.23	2.27	1.89	1.58	1.99	1.60	1.74
1986.87	1.35	1.36	1.35	1.70	2.44	2.91	3.16	3.27	3.41	4.38	4.91	3.78	2.84
1987.88	2.58	2.28	2.47	2.86	3.48	4.33	4.59	5.06	5.41	5.47	6.48	4.39	4.12
1988.89	3.50	2.98	2.38	1.99	2.30	1.91	2.61	2.38	1.98	3.24	3.39	2.23	2.57
1989.90	2.15	2.35	2.16	2.03	2.29	2.67	4.02	4.15	4.02	4.16	4.65	4.21	3.24

INDEX

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1971.72	70.47	75.27	81.91	91.68	78.59	101.09	114.74	116.22	113.82	118.06	120.83	117.33
1972.73	61.51	63.38	57.54	60.26	72.24	107.90	111.75	125.31	117.70	141.78	160.33	120.30
1973.74	70.44	69.12	83.36	102.28	116.87	96.20	107.91	110.59	127.79	131.81	98.52	85.12
1974.75	90.71	100.58	93.79	76.49	92.51	84.95	92.09	111.31	128.93	139.50	107.79	81.36
1975.76	58.91	61.86	67.16	63.33	76.29	99.85	116.05	127.84	148.60	125.48	134.90	119.73
1976.77	66.94	74.53	86.26	100.06	95.23	89.71	114.55	120.07	112.48	104.89	135.25	100.06
1977.78	63.36	73.50	73.50	62.09	67.79	124.18	119.11	145.72	122.91	139.39	139.39	69.06
1978.79	108.91	105.02	81.69	58.35	83.63	93.35	129.34	116.69	107.94	120.58	105.02	89.47
1979.80	55.90	45.95	52.07	58.20	72.75	90.36	101.08	98.02	104.91	186.09	235.10	99.55
1980.81	56.78	60.78	57.58	79.17	92.37	109.16	119.16	128.76	139.55	142.75	147.15	66.78
1981.82	99.03	97.57	91.02	78.64	112.86	115.78	120.87	111.41	119.42	97.57	89.56	66.26
1982.83	49.83	45.77	59.10	66.06	79.96	95.03	106.62	108.93	123.42	129.79	207.44	128.05
1983.84	59.96	58.37	64.73	101.26	125.48	127.07	132.63	121.51	117.94	136.60	88.55	65.92
1984.85	72.01	89.13	97.48	111.09	111.09	106.26	110.21	118.55	105.82	102.74	104.50	71.13
1985.86	81.65	89.12	85.10	81.07	87.97	110.40	128.22	130.52	108.67	90.85	114.42	92.00
1986.87	47.62	47.97	47.62	59.96	86.07	102.65	111.46	115.34	120.28	154.50	173.19	133.33
1987.88	62.67	55.38	60.00	69.47	84.53	105.18	111.50	122.91	131.42	132.87	157.41	106.64
1988.89	135.97	115.77	92.46	77.31	89.35	74.20	101.39	92.46	76.92	125.87	131.69	86.63
1989.90	66.39	72.57	66.70	62.69	70.72	82.45	124.14	128.15	124.14	128.46	143.59	130.01
AVG	72.58	73.77	73.63	76.81	89.28	100.83	114.36	118.44	118.56	128.93	136.56	96.25