

POTATO - I

PAKISTAN

Pakistan has unique but unsophisticated network of up to six or seven intermediaries between the growers and end user of potato. Because of so many layers and lack of adequate marketing infrastructure facilities, 30 to 40pc of the perishable products gets spoiled before reaching the ultimate consumer.

Pakistan is one of the largest potato producing country in the world. The production increased from 860 thousand ton (k), 1991-92, to 3141k ton in 2009-10, which was the highest in the history of potato production. Area under potato crop cultivation has increased, as against the set target, and crop was grown over an area of 138k hectare in 2009-10, rose from 76k hectares in 1991-92.

Potato production during 1992 to 2010 increased to 242 percent and area increased 91 percent while yield per hectare has remained the same, 15 ton per hectare during the last 18 years, table-2.

Potato is one of the main cash crops for the farmers and is also one of the main exportable horticulture commodities from Pakistan. It helps earning foreign exchange and also improves farmers' incomes.

The percentage of potato processing is steadily increasing. Pakistan is self sufficient in potatoes for household consumption and depends for more than 99pc on locally produced seed potatoes.

Potato ranks third among food crops after wheat and rice and fifth in total production in Pakistan. It produces high energy and nutritional value per unit

H I G H L I G H T S

- *Potato is the fourth most important crop having a high nutritive value and gives high returns to farmers.*
- *Pakistan is the seventh largest potato producing country in the world.*
- *Potato ranks third among food crops after wheat and rice and fifth in total production in Pakistan.*
- *It produces high energy and nutritional value per unit area than wheat, rice and maize.*
- *Potato production increased 242 percent during 18 years.*
- *The seed contributes to about 35 to 40 percent of the total cost of production.*

area than wheat, rice and maize. Although potato production in Pakistan has increased many folds but its per acre yield is far less than in other countries of the world.

It is estimated that about 315 million ton of potatoes are produced annually world over. In many parts of the world it is staple food of the people.

The total domestic production of potatoes was around 1.8 million metric ton in 1988-99, of which 280,000 metric ton was used as seed and 1.5 million metric ton was available for consumption, after post harvest losses. The production increased to 2.94 million metric ton in 2008-09. It further rose to 3.14 million ton in 2009-10 leaving significant surplus quantity for exports, table-1. During this period the area increased from 110k hectares to 145k hectares

during the last ten years.

Long term changes took place during 1988-89 to 1998-99. Potato production during the ten year 1989-99 was estimated an increase of 8.19 percent per annum on account of 4.09 percent annual expansion in its area and 3.9 percent improvement in production.

Per Capita Consumption

According to PARC, estimates per capita consumption of potato was about 11 Kg per annum.

Demand

The domestic demand of potato is about 1.5 million ton, including for keeping seeds for new crop leaving a surplus quantity of 1.9 million metric ton. Minfal said it is encouraging the private sector to export potato by value addition, i.e., processing into chips and other forms of snacks, for details of processed potato see IAR#156.

Target

The production target was fixed at 2,148.26k ton. The Minfal said that 127.75k (thousand) hectare of land was reserved to put under potato crop cultivation to achieve 2,148.26k ton of crop for domestic consumption and for export. However, production reached 2.94 million ton in 2008-09 and 3.14 million ton in 2009-10. The five year average production has also shown an increase of 941k to 2554k ton.

For the Rabi season 2010-11 the government has set potato production target of 2.64 million ton showing a 4 percent lower target. The target of potato

crop for 2009-10 was 2.749 million ton over a sowing area of 0.160 million hectares whereas the production exceeded the target and reached 3141.4k.

Provincial Shares in Area and Production

Punjab, Sindh, KP and Balochistan accounts for 83, 1, 10 and 6 percent of the total area and 83, 1, 9 and 7 percent of the production of potatoes in the country.

For 2010-11, province-wise potato production targets were:

Punjab will produce 307.6k ton over 137.1k hectares sowing area, Khyber Pakhtunkhwa 170.5k ton over 12.3k hectares sowing area and Balochistan 690.4k ton over 39.1k hectares sowing area.

The Punjab's share in total production is about 85 to 90 percent that comes from Autumn and Spring crops. The figure show that the major share in potato production during the last six year, 1999-2005, came from Punjab.

The area under cultivation of potato increased from 62k hectare to 137k hectare during 1991-92 to 2008-09. This resulted in an increase in production of potato from 696k ton to 3076k ton in the year 2009-10. The yield per hectare also increased from 11 ton per hectare to 21 ton per hectare during this period.

Total production in the Punjab was estimated an increase of 9.82 percent per annum due to increase of 4.88 and 4.74 percent in area and yield, respectively.

Punjab is regarded as a traditional area of potato production as vast farms in Dibalpur, Sahiwal, Pakpattan and Qasur are not only catering to the

Table - 1
Area and Production of Potato in Pakistan

Crop	2008 09		2009 10 (P)		%Change In Production
	Area (000 hectares)	Production (000 ton)	Area (000 hectares)	Production (000 ton)	
Potato	145.0	2941.3	149.0	3411.6	15.9

P: Provisional (July-March)

Source: Ministry of Food and Agriculture, FBS and Economic Survey.

Table - 2
Potato Area, Production and Yield

Year	Punjab	Sindh	Khyber Pakhtunkhwa	Balochistan	Pakistan
		(Area '000' hectares)			
1991-92	61.9	0.6	7.9	5.2	75.6
1992-93	61.5	0.6	8.7	5.2	76.0
1993-94	64.4	0.6	8.5	5.8	79.3
1994-95	64.6	0.6	8.0	6.1	79.3
5-Years' Avg:	61.8	0.6	8.2	5.8	76.4
1995-96	63.1	0.6	7.9	7.3	78.9
1996-97	71.5	0.6	8.9	4.8	85.8
1997-98	88.9	0.8	10.2	4.8	104.7
1998-99	93.5	0.8	9.9	5.3	109.5
1999-00	93.7	0.9	9.9	6.0	110.5
5-Years' Avg:	82.1	0.7	9.4	5.7	97.9
2000-01	87.1	0.8	9.5	4.1	101.5
2001-02	91.7	0.4	9.4	3.7	105.2
2002-03	102.2	0.3	10.0	3.3	115.8
2003-04	97.1	0.4	9.4	2.8	109.7
2004-05	98.8	0.3	9.6	3.3	112.0
5-Years' Avg:	95.4	0.4	9.6	3.4	108.8
2005-06	104.5	0.3	9.8	2.8	117.4
2006-07	120.7	0.3	9.6	2.8	133.4
2007-08	142.0	0.3	8.9	3.1	154.3
2008-09	133.2	0.4	9.1	2.3	145.0
2009-10	127.2	0.4	8.7	2.2	138.5
5-Years' Avg:	125.5	0.3	9.2	2.6	137.7

(Production '000' ton)

1991-92	695.6	5.2	81.3	77.7	859.8
1992-93	757.1	5.2	92.0	78.5	932.8
1993-94	868.3	5.0	96.8	86.1	1056.2
1994-95	917.0	5.4	91.3	91.3	1105.0
5-Years' Avg:	761.9	5.2	88.1	85.8	941.0
1995-96	851.6	6.1	92.6	113.2	1063.5
1996-97	779.1	6.3	105.1	73.1	963.6
1997-98	1223.9	7.4	120.8	73.4	1425.5
1998-99	1604.0	8.1	118.2	80.1	1810.4
1999-00	1648.0	9.0	118.9	92.5	1868.4
5-Years' Avg:	1221.3	7.4	111.1	86.5	1426.3
2000-01	1479.7	7.5	118.9	59.6	1665.7
2001-02	1548.8	3.0	115.6	54.3	1721.7
2002-03	1761.9	2.5	133.7	48.2	1946.3
2003-04	1775.2	2.9	119.0	41.0	1938.1
2004-05	1849.8	2.5	125.1	47.5	2024.9
5-Years' Avg:	1683.1	3.7	122.5	50.1	1859.3
2005-06	1389.6	2.6	134.2	41.5	1567.9
2006-07	2407.5	2.7	129.6	41.8	2581.6
2007-08	2387.5	2.6	117.2	31.7	2539.0
2008-09	2782.7	3.0	121.0	34.6	2941.3
2009-10	2990.9	3.3	113.7	33.5	3141.4
5-Years' Avg:	2391.6	2.8	123.1	36.6	2554.2
2010-11 (Target)	3076.0	2.7	121.9	33.0	

(Contd.)

(Yield in ton per hectare)

1991-92	11.2	8.9	10.3	15.0	11.4
1992-93	12.3	8.8	10.6	15.1	12.3
1993-94	13.5	8.8	11.4	14.9	13.3
1994-95	14.2	9.0	11.4	15.0	13.9
5-Years' Avg:	12.3	8.7	10.7	14.8	12.3
1995-96	13.5	9.8	11.6	15.5	13.5
1996-97	10.9	10.0	11.8	15.2	11.2
1997-98	13.8	10.0	11.9	15.2	13.6
1998-99	17.2	10.1	11.9	15.1	16.5
1999-00	17.6	10.4	12.0	15.4	16.9
5-Years' Avg:	14.9	10.6	11.8	15.2	14.6
2000-01	17.0	9.4	12.6	14.5	16.4
2001-02	16.9	7.4	12.5	14.6	16.4
2002-03	17.2	7.3	13.4	14.4	16.8
2003-04	18.3	7.2	12.6	14.6	17.7
2004-05	18.7	8.3	13.0	14.4	18.1
5-Years' Avg:	17.6	8.4	12.8	14.6	17.1
2005-06	13.3	8.7	13.7	14.8	13.4
2006-07	19.9	9.0	13.5	14.9	19.4
2007-08	16.8	8.7	13.2	10.2	16.5
2008-09	20.9	7.5	13.3	15.0	20.3
2009-10	23.5	8.3	13.1	15.2	22.7

Source: Agriculture Statistic, 2009-10

requirement of the local population but also helping in fulfilling export orders.

Sindh's production target was fixed at 2.70k ton over an area of 0.31k hectares. The area and yield of potatoes in Sindh have increased by 2.38 and 1.50 percent resulting in production increase of 4 percent per annum. However, production decreased from 9.0k ton to 3.3k ton in 2009-10, showing a decrease to about 50 percent during the last ten years. During 1999-00 to 2008-09 the area decreased from 0.9k hectare to 0.4k hectare showing more than 50 percent decrease.

The target for Balochistan was set up at 32.97k ton on a sowing area of 3.22k ton. In Balochistan, only summer crop is cultivated and the production has reduced at the rate of 1.70 percent per annum because the area under the crop has reduced at the rate of 2 percent per annum.

The area of under cultivation potatoes was 5.2k hectare in 1991-92 that increased 7.3k in 1995-96, decreased to 2.2k hectare in 2009-10.

Khyber Pakhtunkhwa (KP) target was 121.89k ton over an area of 9.3k hectare. Climatic conditions are favourable in KP to grow all three crops of potatoes. Total production from these crops has increased at the rate of 4 percent due to 1.9 percent expansion in area and 2 percent rise in yield.

The area in KP increased from 8k hectare in 1991-92 to 10.2k hectare in 1997-98 9.3k that increased production from 81.3k ton, 1991-92, to 121.0k ton in 2008-09 that decreased to 113.7 in 2009-10, table-2.

Khyber Pakhtunkhwa province has traditionally been the main source of red potatoes which is harvested during July and August.

Seasons

The autumn is the main potato crop season. It is harvested from January to March and the prices during these months are quite low than the remaining months. The exports are mostly made from the autumn crop.

Seasonal Share

The shares of Autumn, Spring and Summer crops in the annual production are estimated at 75, 10 and 15 percent, respectively.

Potato Varieties

The potatoes are broadly categorized into red skinned and white skinned. It is almost a native crop to Pakistan. A number of potato varieties have been introduced in Pakistan from time to time, mainly

originated from Holland. The prominent varieties are:

Red skin varieties are Desiree, Cardinal, Raja, Synphonia, Coroda and Barna.

White skin varieties are Sante, Santana and Diamont.

The existing varieties are for table purposes and there is a need to check quality of these varieties for the existing and future markets and may opt for changing varieties or introducing new varieties preferred by the local and foreign consumers. Also, the expanding markets for processed products like French Fries demands cultivation of suitable varieties like Atlantic, Bintje, Rose phurban, Rosetta raya and Spunta.

Potato Producing Districts

Districts of Okara, Sahiwal, Kasur, Sialkot, Sheikhpura, Jhang, Lahore, Narowal, Pakpattan, Gujranwala, TobaTek Singh, Dibalpur and Khanewal from the Punjab, Nowshera, Dir and Mansehra from the KP and Pishin, Killa Saifulla and Kalat from Balochistan are important potato growing districts, accounting for 78 percent of the total production of the potato crop.

Agro-Ecological Zones for Potato Production

- I. Irrigated plains of Sindh, Southern Punjab and Balochistan.
- II. Irrigated plains of Central Punjab and South East NWFP.
- III. Irrigated and rainfed plains of NWFP and

Northern Punjab.

- IV. Irrigated lower valleys of NWFP.
- V. Rained high valleys and hill sides of NWFP, Northern Punjab and Azad Kashmir.
- VI. Irrigated high valleys of NWFP, Northern Areas around Chillas and Azad Kashmir.
- VII. Irrigated high valleys of Northern Areas and NWFP around Mastuj.
- VIII. Irrigated high valleys of Balochistan, South and North Waziristan.

Major Potato Growing Seasons

Crop	Planting	Harvesting	Production Share
Spring	Jan-Feb	April-May	07.10%
Summer	March-May	August-Oct	15-20%
Autumn	Sept-Oct	Jan-Feb	70-75%

Important Potato Varieties being Grown in Pakistan

Red Skin	White Skin
Desiree	Diamant
Cardinal	Ajax
Kuroda	Hermes
SH-5	Lady Rosetta
Raja, Synphonia, Asterix	Sante

Prices

Due to floods potato prices had surged in the wholesale and retail markets and a 100 kg sack's price was soared to Rs4,500 and retail price reached Rs40 to Rs50 per Kg.

The government has fixed price of 50 kilogram

Table - 3
Potato Average Quality Retail Prices

Centre	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007-
	-99	-00	-01	-02	-03	-04	-05	-06	-07	08
Karachi	10.18	9.25	8.88	11.06	9.09	8.02	13.29	15.78	15.17	12.98
Lahore	9.16	8.38	11.18	13.11	11.52	11.01	17.57	20.91	19.22	16.95
Sialkot	8.46	8.00	11.67	13.92	11.21	10.46	19.75	21.42	20.50	18.02
Rawalpindi	9.55	8.89	11.29	13.43	11.60	10.74	17.83	23.22	20.74	18.84
Peshawar	7.68	8.11	8.64	10.67	9.26	8.22	13.96	18.54	17.22	16.56
Quetta	8.53	7.47	7.81	9.92	8.85	7.44	12.81	16.69	16.60	13.55
Islamabad	12.48	11.25	13.04	16.02	14.44	13.66	20.95	26.22	25.20	22.80

Source: FBS

bag at Rs1,500 which was to be provided to growers on “first come first served” basis. The officials asked the growers who had already booked potato seed to pay the remaining amount and lifted their booked quantity up to first week of October.

Prices of onion and potatoes have seen a massive increase during the past few months that started falling in December 2010.

Price of potato registered the highest decrease of 35 percent in December as compared with the previous month. However, the decrease in prices was attributed to the start of harvesting season of the crop in various parts of the country and imports from India.

Imports

Due to flood devastated Pakistan has imported potatoes from India as water washed away the bulk of country’s in potato crop.

The import of vegetables, including tomato, potato and onion, from India has increased as about 60 to 70 truck were coming daily from Amritsar, India, to Lahore via the Wahga border.

The demand of these three vegetables remained very high in Lahore, Karachi and other parts of the country during the whole year while consumption of tomatoes was considerably high in comparison to

potatoes and onions.

The import of the vegetables from India had filled the increasing gap between the supply and demand of these edible items in Lahore and other parts of the country.

There were two main reasons behind the high demand of these three vegetables. Firstly, there is a trend of purchasing these three commodities in bulk and storing them for one or more weeks. Secondly, these three items are used in most traditional Pakistani dishes.

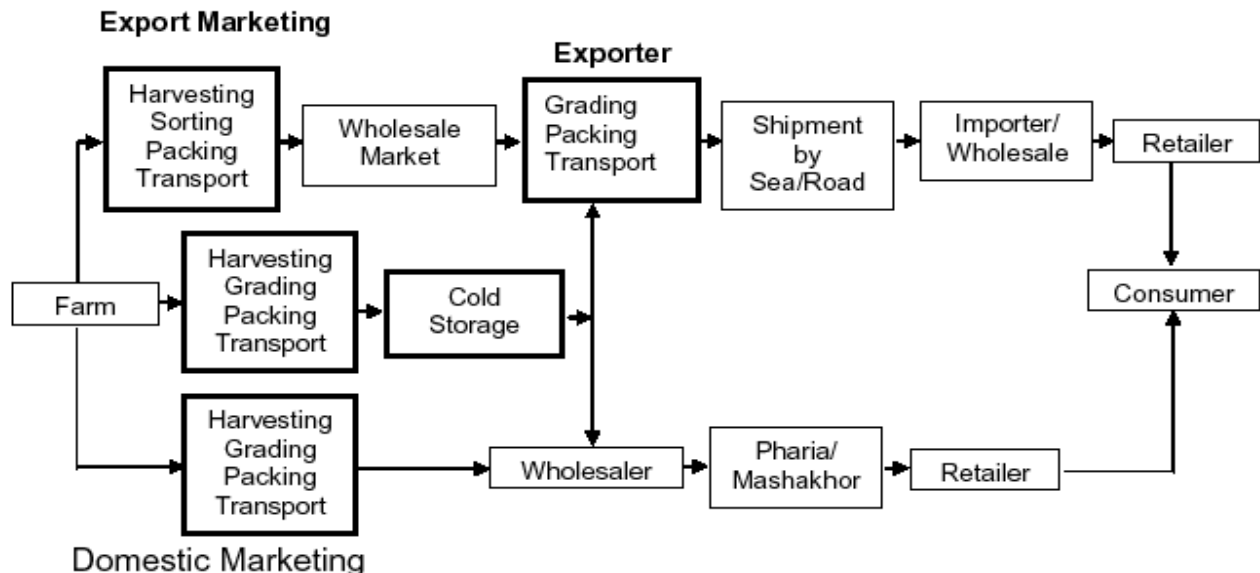
It was routine to import these three vegetables from India, but it was especially high this year as tomato crop had damaged due to floodwaters.

Exports

Marketing System: Like other horticulture crops, potatoes trade is done by the private sector. However, government facilitates the system by providing physical infrastructure especially wholesale markets and communication, market intelligence, market promotion and regulatory measures for smooth business operations.

The flow chart of potatoes for export and domestic marketing can be seen in figure-1.

Figure - 1
Flow Chart of Potato



Potato Revolution

The yellow potato came in the market and not long after there came the velvet one variety was introduced. recently the orange potatoes brought the Jasmine Revolution in Tunisia started by a self immolating fruit vendor and thousands of e-savvy social net workers, crashed on to Egypt with full force and eventually forced the ruling despot out.

The current revolution saw Days of Rage and of Departure to varying degrees, in Sudan, Jordan, Algeria and Yemen. Revolutions were happened so fast that are running out of appropriate monikers.

The world potato export market is about 9 million ton per annum. The top 10 potato exporting countries of the world are: Netherlands, France, Germany, Belgium, Canada, Egypt, USA, China, Spain and Israel.

The world potato import was about 10 million ton per annum. The top 10 potato importing countries of the world are: Netherlands, Belgium, Spain, Italy, Germany, United Kingdom, Russian, Federation, United States of America, France and Portugal.

In Pakistan the potatoes harvest of the autumn crop is usually exported owing to its large size and depressed prices in the domestic market. The annual export of potato from the country averaged about 50,000 ton during the past 5 years. Yearly exports are given in table-4.

Table - 4
Export of Potato from Pakistan, 2000-07

Year	Quantity (ton)	Value (000/\$)	Price per (kg/\$)
2000-01	58,450	6,656	0.114
2001-02	56,987	6,091	0.107
2002-03	69,348	6,818	0.098
2003-04	56,042	5,346	0.095
2004-05	20,762	3,119	0.150
2005-06	15,397	2,664	0.173
2006-07	160,095	26,973	0.168

Source: FBS

Thereby pushing the prices upward in the domestic market and rendering export uneconomical. In 1998-99 Pakistan exported 122,290

ton potatoes. The potato export dropped to 91,059 ton in 1999-00 and further declined during the subsequent years. It is partly due to crop size and partly due to poor global marketing. No serious efforts have been made to identify and capture new markets. Also, generally when there is a bumper crop, efforts are concentrated on exports and vice versa. This adversely affects business credibility.

Per unit export prices were attributed to low quality. Potatoes for export are sourced from the wholesale market, manually graded and repacked according to exporters' choice and generally shipped through non-reefer open top containers. The repeated and rough handling, extended time between harvesting and product preparation for export, holding produce at relatively high temperatures and use of non-reefer mode of shipment adversely impacted the produce quality and as a consequence its marketability and sale price.

The projected target exports of potatoes from Pakistan over the next 5 years given in table-5.

Table - 5
Projected Potatoes Exports from Pakistan

Year	Volume (000 ton)	Value (000 US\$)
2005-06	75	8,000
2006-07	160	25,000
2007-08	170	30,000
2008-09	180	35,000
2009-10	200	40,000

Source: PHDEB

The export projections are based on the following assumptions: Consolidation of position in existing markets through strong market promotion access to new markets through delegations, promotions, FTAs, EHPs etc.

Pakistan Horticulture Development & Export Board (PHDEB) had made a Potato Export Marketing Plan- 2008, under which attention would be given to the potato production, especially cultivars, and export.

The due importance has not been given on these fifth main exportable commodity from Pakistan. It

could not keep pace the changing international market requirements. Further, there is hardly any physical infrastructure available for efficient post harvest management of potatoes.

As a result, exports have not established a clear trend. In fact, exports have declined over the time. The export decreased from 315,321k kg in 2008-09 to 245,329k kg in 2009-10. But due to increase in price per unit the total foreign exchange earnings increased from \$41.6 million to \$50.3 million during the period, table-6. There is need to concentrate on improving product quality, availability and post-harvest management in order to increase its exports.

Export Target

	(000 ton)	(\$/million)
Current Export (2006-07)	160	25
Target (2008 crop)	180	30

Allocation of Export Targets (Additional)

	(ton)
Sri Lanka	10,000
Malaysia	5,000
Mauritius	2,000
East Europe	2,000
Africa	1,000

Pakistan exports potato to Dubai, Malaysia, Singapore and Iran. Total export of fresh or chilled potatoes was 245.329 million kg in 2009-10 fetched \$50.267 million whereas \$41.635 million were earned by exporting 315.321 kg in 2008-09. Presently, the international market price ranges \$500 per metric ton.

The conventional cold storage facilities lack in automation and are thus manually manipulated. This causes temperature fluctuations which adversely affects produce physiology, and in turn its quality.

Lack of humidity controls inside cold storages further compounds the problem. The sucrose content of stored potatoes increase which is disliked by the foreign consumers. This limits export periods as well its volumes. There is a need to develop CA storage facilities so that potatoes maintain their quality and are exported over the extended periods.

The destination-wise exports of potato are given

in table-6. Potatoes from Pakistan are mainly exported to Srilanka, followed by Afghanistan. Both these markets are very convenient because, unlike Malaysia consumer, Sri Lanka and Afghanistan consumers are less quality conscious. However, local production of potato in Sri Lanka is also expanding every year. This combined with Government policies to protect local farmers through increased tariffs are also important factors to be considered by the Pakistani exporters.

Pakistan has signed FTA with Sri Lanka, according to that Pakistan can export potatoes 1000 ton duty free of which 2/3rd during June-July and 1/3rd during October-November. These are lean crop months and prices in the domestic market are high. Therefore, no immediate relief from the FTA can be expected, However, it may have some impact in the long run. In the short run local production will continue to exert pressure on imports.

Annual imports of Sri Lanka are over 60,000 ton and Malaysia over 100,000 ton potatoes. Pakistan's share is 60 percent and 14 percent, respectively. The share in Sri Lanka can be increased to 75 percent, i.e. an additional 15,000 ton and in case of Malaysia up to 50 percent, i.e. an additional 43,000 ton; total 58,000 ton additional quantity.

East Europe and Africa Regions should be considered as potentially new markets for export of potatoes from Pakistan. Following have been identified as target markets:

East Europe	ton/imports/p.a
Russian Federation	150,000
Portugal	250,000
Czech Republic	75,000
Romania	45,000
Africa	
Algeria	100,000
Morocco	50,000
Tanzania	40,000

Mode of Sale and Price Calculations

Potato exports are made both on pre-agreed prices and also on consignment sale basis. Exports to Afghanistan are on FOT basis. The FOB price per 10 kg pack was estimated at Rs97.25 or \$1.64.

Table - 6
Potato Export from Pakistan

Countries	July - June 2009-10			July - June 2008-09		
	000.KG	000 Rs	000.\$	000.KG	000 Rs	000.\$
Fresh or Chilled	245,329	4,315,408	50,267	315,321	3,288,024	41,635
Afghanistan	126,192	2,384,054	27,770	212,098	2,075,520	26,282
Australia	6	110	1	-	-	-
Bahrain	195	3,705	43	45	638	8
Bangladesh	-	-	-	11	610	8
China	56	1,022	12	-	-	-
Iran (Islamic R.)	10,572	168,456	1,962	201	2,229	28
Kuwait	-	-	-	13	134	2
Malaysia	18,686	302,549	3,524	25,505	275,895	3,494
Maldives	20	283	3	-	-	-
Mozambique	-	-	-	0	4	0
Myanmar	4	73	1	-	-	-
Oman	-	-	-	163	1,383	18
Qatar	48	873	10	357	3,086	39
Russian Federation	892	18,319	213	84	1,235	16
Saudi Arabia	-	-	-	104	1,280	16
Singapore	2,155	37,121	432	2,733	35,903	455
South Africa	-	-	-	15	141	2
Sri Lanka	86,081	1,392,056	16,215	67,071	814,960	10,320
Thailand	204	3,779	44	-	-	-
U.S.America	-	-	-	0	1	0
Ukraine	-	-	-	50	400	5
United Arab Emirates	213	2,811	33	6,871	74,604	945
United Kingdom	7	199	2	-	-	-

Source: TDAP

The new market explored for export of potato is Russian Federation. To fulfill the Russia's terms of importing potatoes from Pakistan, a private sector company has installed the country's first automated state of the art potato cleaning plant in Karachi. The locally assembled plant was set up at a cost of about Rs 5 million. It would be utilised for value addition in potato and making them acceptable in the international market. It would not only do sand washing but would also help in grading process.

According to the exporters Russia is a big market for Pakistan and this is a good opportunity for Pakistani exporters to capture this market.

The demand for potato in Russia is increasing and Pakistan was expected to export 120,000 to 125,000 metric ton potato to Russia that could bring millions of dollars in the country.

Russia imported potatoes from Pakistan due to the impact of a hot summer last year. Potatoes are

one of the staple foods in Russia and one of the main ingredients in preparing food.

Pakistan has been exporting potatoes since the second week of January to Russia and to Commonwealth of Independent States (CIS) such as Azerbaijan, Belarus, Turkmenistan, Uzbekistan and Kazakhstan. This is the first time that Pakistan has exported potatoes to Russia and CIS.

About 2,5000 ton of potatoes were shipped by sea going directly to Russia while other potatoes were loaded into trucks bound to Southern Russia which passed through Afghanistan and Iran, that are politically disturbed countries.

Santa is the variety of potato being exported to Russia and CIS. This variety is also popular in other countries. It has a very good color and good shelf life. It can be stored for a long time.

The quality of this variety is exceptionally good in the current year and the prices are around \$320 per metric ton FOB.

In future Pakistan expects to export not only to Russia and CIS but also to the Middle East, Sri Lanka, Malaysia, Indonesia, Singapore and even Union Island.

Presently, Russia is importing potatoes from Egypt. The markets are full of Egyptian potatoes and potatoes from Pakistan will be a new phenomenon. The potato season in Egypt started earlier than Pakistan. But due to political unrest in Egypt demand of Pakistani potato may increase further.

For Pakistani potatoes, which is just a beginning, exporters should remain very careful in exporting potatoes. No doubt Russia is a big market for Pakistani potatoes but transporting potatoes takes almost one month which is a challenge in exporting potatoes to Russia.

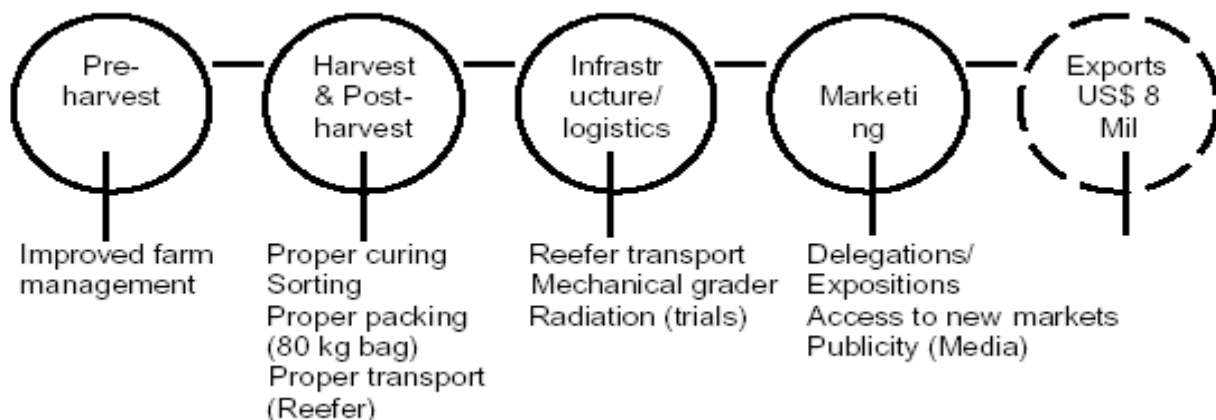
Pakistani exporters are now waiting how the Russian consumers will respond to the new imported variety of potatoes. Pakistani growers are planning to make their plans once they have the result on the demand of their potatoes in Russia.

Delay in Potato Exports to Russia

The latest position is that potato exports to Russia have been badly affected by the disruption of commercial activities at Port Said in Egypt. According to exporters, 200,000 ton of potatoes were expected to be exported to Russia during the current season; however, because of suspension of commercial activities at Port Said, many shipments were delayed for weeks, which may cause cancellation of more orders. All Pakistan Fruit and Vegetable Exporters, Importers and Merchants Association said that the delays, caused by political unrest in Egypt, have prompted Russian importers to review their trade options to imports potato from Pakistan.

Pakistan has exported 75,000 ton of potatoes during the current season but exporters fear that the 200,000 ton target may need to be revised downwards to 150,000 ton. The export of Pakistani fruits and vegetables to Bahrain has also been affected

**Figure - 2
Product Flow**



from this situation.

The PFVA sent a delegation to Moscow to explore opportunities of exporting potatoes to Russia.

In January, 2011, 25,000 ton had been exported fetched around \$7.5 million at an average price of \$300 to \$315 per ton.

Exporters are optimistic that potato exports during current season (Jan to May) will be higher, particularly on strong demand from Russia where crop is short.

According to official figures, last year potato export was about 0.8 million ton. This included 135,000 ton to Singapore, Malaysia, Sri Lanka and Gulf States in reefer containers by sea. The balance of 0.565 million ton were exported over land route to Afghanistan, Iran and Central Asian States.

The country is expected to harvest around three million ton potato in 2010-11 season as against 2.3 million ton last year and after meeting domestic demand of around 1.5 million ton, a surplus of around 1.5 million ton will be available for export.

However, last year prices hovered around \$250 to \$300 per ton whereas current season has made a debut over \$300 per ton on higher potato prices in the world market owing to strong demand from Russia.

The most important factor for the low yield per acre was diseases. More than 18 potato diseases are reported in the country, of which 13 are of common occurrence.

Proper cold storage facilities with modern technique of washing to remove mud are urgently needed because potato is stored for twelve months.

Better potato yield can be achieved by the use of better utilization of quality seeds by the growers, improved storage facilities made available by the individual efforts of exporters and growers at their respective places and gradual use of modern technology by them to save a substantial proportion of production which is wasted.

Constraints

Limited market of Afghanistan, Sri Lanka and Malaysia. Lack of market promotion, no attempt was

made for market expansion, access to new potential markets. Lack of physical infrastructure, i.e, grading plants and CA storage.

Transportation by non-reefer modes, inland and export and lack of R&D support.

There is a need to consolidate position in the existing markets especially Malaysia through market promotion and by supplying quality produce shipped by reefer containers, and also identify new markets.

Sale of Virus Free Potato Seed

The seed contributes to about 35 to 40 percent of the total cost of production in the country. Formal certified seed production is limited and faces technical, economical and managerial problems.

India has already developed its own potato seed and it has helped a lot to cut growers' cost of production and get more exportable surplus.

Association's Chairman complained that a sizable quantity of potato is smuggled to neighbouring countries and this harms regular exporters who pay all taxes and duties to the national exchequer. If proper monitoring is done at borders to check smuggling it would help to give better price to the growers, who will in return increase their production.

The CM suggested that the farmers should grow those varieties of potatoes which have demand in the world market and for this purpose the growers should be educated, guided and giving varieties of seeds.

There is strong demand in the world market for long white varieties of potato but in Pakistan red variety and some other varieties are grown. The long white potato variety is in strong demand from chips and French fries making industries the world over.

Presently, potato seeds are imported from Holland and other European countries, which are costly and there is a need to make indigenous research to produce quality seed of such popular varieties which are in great demand in other countries.

Lack of availability of sufficient quantities of good seed and low purchasing power of the farmers forces them to rely on seed sources of low quality or own production for which most of them do not have the proper skills.

The inadequate storage facilities and an underdeveloped processing industry leads to volatility

in prices as not all excess production can be stored or processed for consumption during the off season. For achieving success in potato cultivation, farmers must have the proper variety and virus free seed stock because virus causes degeneration of the crop in subsequent generation. Thus regular replacement of seed with virus free seed stock is essential failing which crop yield will reduce by more than 50 percent.

Punjab Seed Corporation (PSC) has started the sale of virus free potato seed prepared through modern tissue culture technology (TCT). The limited quantities of Caroda, Santee, Burna and Easterx are also available in addition to red varieties of desiries, cardinal and white variety Diamante.

The farmers are facing many problems such as diseases and pests and majority of farmers are lacking knowledge of the right technique. The lack of credit facilities are one of the main hurdles creates problem in purchasing inputs particularly for small farmers.

Poor post harvest handling, lack of transport and storage facilities, causes losses and reduction in quality and quantity. Whatever cold storage space is available is not up to the standard and handling of potatoes is not satisfactory.

Moreover, the farmers and consumers always face severe cyclical shortage that results big fluctuations in price, sometimes there is surplus production and at another time acute shortage. This situation results in an unreliable income and inhibiting the consumers to include potato in their regular diet.

For product promotion, delegations, products should be displayed in international expositions. Product information should be available on website, international media and pamphlets, leaflets etc. should be distributed.

For market promotion TDAP should send delegation especially to East Europe, for introducing Pakistani potatoes to Malaysia and East Europe.

For improving varieties research is necessary to grow disease free varieties and shelf life could be enhanced. New cultivars including cultivars suitable for processing should also be developed. For value addition french fries, dehydrated potatoes and potato flour should be encouraged to exported.

Development of physical infrastructure like

grading plants and CA storage facilities in the production areas include:

Shipment by reefer containers

Effective disease/pest management- potato wart (*Synchytrium endobioticum*), ring rot (*Clavibacter michiganensis*), nematodes (*Globodera rostochiensis*, *Globodera pallida*), Bacterial wilt (*Ralstonia solanacearum*), *Rhizoctonia solani*, *Streptomyces scabies*, *Fusarium* and Tuber moth.

By taking these measures the net gain in revenue will be higher at least by 10 percent than the proportionate increase in volumes due to improvement in quality and presentation of potatoes.

Pakistan is trying hard to enlarge its share in the existing and penetrate into the new markets. It should be kept in mind that the competitors like Holland, Peru, India and Australia are better organized in terms of product quality, logistics and market promotion.

Infrastructure Development

Packing house facilities and CA storage. Irradiation and Cold chain system, establishment of Potato Research Centre at Okara for R&D support.

Facilitation

Facilitation include creating awareness, organizing, seminars, workshops, printed matter (posters, leaflets), media and videos.

Training of the trainers of farmers, farm labour, pre harvest contractors, exporters, traders, transporters, cold storages, processing plants operators and staff of line departments.

Regulation

National grades and quality standards, pre-shipment inspection, certification, national and international, accreditation at national and international level and HACCP.

Controlled Atmosphere Facility

The government to establish CA facility for fruits and vegetables to increase lives of perishable goods. The CA facilities would be established in different

cities of the country with a total cost of Rs2.229 billion.

The project envisages establishment of modern CA storage facilities and advance ventilated cold storage rooms for fruits and vegetables at Peshawar, Quetta, Gilgit and Multan etc.

The CA is an advanced commonly used technique to store and keep fruit and vegetable products fresh for a much longer time as compared to conventional cold storage practices.

About 25 to 40 percent fruits and vegetables are wasted during post harvest process such as storage, transportation and sale to markets as the available storage system lacks the modern facilities. The establishment of CA facilities will save this wastages.

The storage facilities would be built in collaboration with Chinese firm Beijing Fruitong Sciences and Technology Company through procurement of needed machinery and its installation. The scheme would increase shelf life of agricultural produce like apple, pear, banana, strawberry, cherry, pomegranate, lemon, lechi, chillies, guava and mango.

Once the cold storage facility is established, the private sector would be invited to operate it and it is expected that the storage facility would also be extended to FATA where this facility is badly needed.

For the establishment of this project, which is expected to be completed in five years (2010 to 2015) the government of China would provide Rs1.862 billion as grant and local component for this scheme includes Rs366.878 million. The Ministry of Food and Agriculture is the sponsoring agency for this project and the Pakistan Agriculture Research Council (PARC) Islamabad would be the executing agency for it.

The project involves direct employment of 96 personnel for its implementation and the storage facilities would also generate indirect employment opportunities in private sector.

The advance storage facilities would be available at selected locations in provinces with sufficient capacity to store about 34k ton of fruits and vegetables per annum.

According to the plan, CA rooms would be

established in Peshawar, Quetta and Multan, each having 5,000 ton of storage capacity of fruits and vegetables while in Gilgit the CA room will have 1,000 ton of storage capacity and would be used to store cherry.

While the advanced ventilated potato storage rooms would be established in Okara, Daska and Karachi having 6,000 ton of potato storage capacity.

Presently, the country has traditional cold storages. The CA and Advanced Ventilated cold storages are advanced technologies to store agricultural products in their original shape. Moreover, Chinese experts would train Pakistani scientists and engineers to operate and maintain this technology on permanent bases.

Moreover, a Programme Implementation Unit (PIU) of the project would be set up in the PARC for execution of the scheme. The government has allocated Rs609.9 million in the Public Sector Development Programme (PSDP 2010-11). With the completion of this project, it would help reduce post harvest losses of fruits and vegetables and contribute towards food security, self reliance and enhancing export of fruits.

Automated Potato Cleaning Plant

Conceding to Russia's terms of importing potatoes from Pakistan, a private sector company has installed the country's first automated potato cleaning plant in Karachi. The locally assembled plant is estimated to have a cost of about Rs5 million and has the ability to grade potatoes based on their size.

Previously, washing plants use was limited because exposure to water reduced life of the vegetable. With the establishment of this plant, Pakistan may help access to the large Russian market, leading to a significant increase in the export volume, which is currently 0.8 million ton per year.

Since the plant can clean up to five ton of potatoes per hour, it would open up the possibility of earning up to \$80 extra per ton of potatoes exported, because of savings in time and labour.

Chase International company would set up the plant. Pakistan has an annual surplus of 1.3 to 1.5 million ton potato which is usually exported to Sri

Lanka and Malaysia but most of the other countries refuse to import the potatoes from Pakistan because of the excessive amount of dust on the surface of the product.

Cleaning potatoes is a time consuming process, required up to 100 workers for a 30 ton batch. The plant can also clean onions; allows the removal of up to 80 percent dust particles and also reducing wastage significantly.

Problem of Quality Seed

Expensive and rapid degeneration of quality seed due to its multiplication in spring season is usually of virus vector *Myzus persicae*. Total quantity of imported seed and about 30 to 40pc (1500 ton) of locally produced certified seed has to pass through spring season for further multiplication.

Spread of Fungal Diseases

Late blight (*Phytophthora infestans*) was found major yield limiting factor in high hills and is also a serious problem in plains, it may reduce the yield up to 70 percent.

Diseases with Mycoplasma Pathogens:

Recently mycoplasma was found a serious problem in major potato growing areas of Punjab that resulted a 45 percent reduction in yield.

Soil Borne Diseases

Monocropping in hilly areas and lack of crop rotation in other potato growing areas of Pakistan are major causes for spread of soil borne diseases.

- Cyst nematode.
- Rhizoctonia, Verticillium, Scab and Softrot.

Lack of high yielding and disease resistance clones. No proper gene pool is available in the country. Lack of coordination in seed producing agencies.

There is very little coordination among public and private seed producers.

Allergic to cooked Potato

Some allergic to cooked potato children of

Belgian researchers has identified food that may be responsible for severe eczema, vomiting and other allergic reactions in infants and young children with cooked white potatoes.

I don't think it's really frequent, but a study done by Dr. Liliane F. A. De Swert of the University Hospital Gasthuisberg in Leuven, says that it is important to be aware it can cause severe allergic problems in young children.

Children with an allergy to cooked potatoes will develop atopic dermatitis (eczema) that produces skin inflammation and interferes with the skin's ability to retain adequate moisture.

Most food induced allergic reactions in children can be explained by allergies to cow's milk, eggs, peanuts, soy, fish and wheat, the report indicates. Raw potatoes have also been known to cause allergic reactions in adults and young children, but this is the first study to link cooked white potatoes to severe allergy symptoms, De Swert said.

The finding is particularly important since potatoes are often one of the first solid foods eaten by infants, usually at four to six months of age, the authors noted.

De Swert and her team studied eight children, aged 3.5 months to about two years, who were suspected of being allergic to cooked potatoes.

Two of the eight children had immediate reactions to potato and six experienced an improvement in their eczema after they were put on a potato-free diet. For comparison, the study also included nine children with allergies to cow's milk.

Results of various experiments, including a potato challenge, in which a small amount of cooked potato was applied to the inside of the child's lower lip, and a skin prick test, using extracts of homemade cooked and uncooked potato, indicate that the children were indeed allergic to cooked potato, the researchers reported.

For example, five children had immediate allergic reactions to the potato challenge including vomiting or wheezing and all of the children who underwent the skin prick test had immediate skin reactions, according to the report.

Also, after potato was eliminated from their diet, the children experienced a 50pc reduction in the extent and intensity of their eczema, and had fewer complaints about the eczema, study findings indicated.

Allergy to cooked potato does not seem to be long-lasting, however, as seven of the eight children outgrew their allergy by 6 years of age, according to the researcher.

Thus, people should not panic about their young child eating cooked potato, De Swert said. However, when children have allergic symptoms that cannot be explained by the more common milk, egg or peanut allergies, I think we should look for potato allergy also she said.

She cautioned that “parents should think all children with eczema will have this.” They should just be aware that the problem exists, especially if they notice a flare-up of the child’s allergy symptoms when they start to feed the child a potato dish, she said.

In the present study, it did not seem to be difficult for mothers and their children to avoid potato once they were aware of the allergy; said De Swert.

Different Public and Private Institutes/ Organizations Working in Seed Potato Production

Public

- Agricultural Biotechnology, NARC, Islamabad.
- Plant Virology, AARI, Faisalabad.
- Hazara Agriculture Research Station, Abbottabad.
- Potato Seed Unit, Deptt. Of Agri. Gilgit.
- VSSPP, Farm, ARI, Quetta.

Association, Gilgits

- Punjab Seed Corporation, Sahiwal.

Private

- Syko International Company Lahore.
- Bari traders Lahore.
- Okara Potato, Vegetable & Fruit Growers Co-operative Society.
- Bhatti Brothers Lahore.
- Nangaparbat Potato Growers
- Hammad & Company, Sahiwal
- Haji Sons Lahore
- Stamex International, Lahore
- AGB Seed Company Lahore
- Trade channels, Lahore.
- Punjab Agri. Farms, Lahore.

Latest

Potato exports to cross 1m ton

The potato exports may cross 1.0 million MT during the export season, end by June 2011 that has broken all the previous export records. This year potato crop is a bumper one, therefore, 1.0 million MT target was fixed. Potatoes will be exported by road and sea. Despite great scope of export the government has not extended helping hand to boost exports, complained exporters. The government earns high revenue from the potato export by sea but through the road export is totally undocumented and deprived the opportunity to earn the revenue.

The government should formulate policies from the next year and fix rates of all items of fruits and vegetables, which are currently at a very low side because the exporters aimed at avoiding taxation. Otherwise losses suffered by the national exchequer would continue, said a vegetable exporter, Abdul Wahid.

Vegetables are exported by road, specially, to countries like Iran, Afghanistan, Central Asian States and many countries of the region. The exports of fruits and vegetables have almost become equal to sea trade and regulating this sector would accrue huge financial benefit to the country’s economy.

The growing demand of Pakistani potato in Russian and Central Asian States markets is the result of aggressive marketing strategy pursued by the members of the association at their own expenditure.

As a consequence of effective marketing strategy, export of potato to Russia which hardly stood at 5,000 metric ton has now peaked to the level of 80,000 metric ton during the current year and there stand bright prospects of permanent demand of Pakistani vegetables and fruits in coming days ahead, said Wahid.

The other major reason of high revenue earning was spike in potato prices in the international markets, which currently stand at \$500 per metric ton, which is far higher as compared to previous year’s rates of \$350 per metric ton.