

POTATO CLUSTER PROFILE OKARA



Turn Potential into Profits

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TABLE OF CONTENTS

1. DESCRIPTION OF OKARA DISTRICT	3
1.1. GEOGRAPHICAL LOCATION.....	3
1.2. DEFINING THE PRODUCTS	3
1.3. CORE CLUSTER ACTORS.....	4
<i>1.3.1 Farmers.....</i>	<i>4</i>
<i>1.3.2 Seed Supplier</i>	<i>4</i>
<i>1.3.3 Cold Storage</i>	<i>4</i>
1.4. OTHER CLUSTER ACTORS.....	4
<i>1.4.1 Human Resource (Labor).....</i>	<i>4</i>
<i>1.4.2 Pesticide Suppliers.....</i>	<i>4</i>
<i>1.4.3 Research/Extension Service Institutes.....</i>	<i>4</i>
<i>1.4.4 Financial Institutes</i>	<i>4</i>
1.5. CURRENT SCENARIO OF POTATO PRODUCTION.....	5
<i>1.5.1 Potato Growing Season</i>	<i>5</i>
<i>1.5.2 Potato Varieties Grown in the Okara District</i>	<i>5</i>
2. ANALYSIS OF BUSINESS OPERATIONS	7
2.1. RAW MATERIALS.....	7
<i>2.1.1 Seed.....</i>	<i>7</i>
<i>2.1.2 Water.....</i>	<i>7</i>
<i>2.1.3 Fertilizer</i>	<i>7</i>
<i>2.1.4 Pesticide.....</i>	<i>8</i>
2.2. COST OF POTATO PRODUCTION	8
2.3. YIELD.....	8
2.4. PRICE FLUCTUATION.....	9
2.5. PESTS AND DISEASES OF POTATO CROP	10
3. SWOT ANALYSIS	10
3.1. STRENGTHS	10
3.2. WEAKNESSES	10
3.3. OPPORTUNITIES.....	10
3.4. THREATS.....	11
4. INVESTMENT OPPORTUNITIES.....	11
4.1. ESTABLISHMENT OF QUALITY SEED PRODUCTION FACILITY	11
4.2. ESTABLISHMENT OF COLD STORAGE FACILITIES.....	11
4.3. ESTABLISHMENT OF POTATO PROCESSING INDUSTRY	11

1. Description of Okara District

1.1. Geographical Location

District Okara is spread over an area of 4,337 square km & comprises three tehsils; Okara, Depalpur & Renala Khurd. District has hot climate in summer & cold in winter. Maximum temperature is 44 °C in May & June. Minimum temperature is 2°C in January. The average annual rainfall in the district is 220mm.

District Okara is bounded on the east by Kasur district, Sahiwal & Pakpattan on the west, Sheikhpura & Faisalabad districts on the north & Bahawalnagar District on the South. The Indian border also lies on the south-eastern side of District.

According to 1998 Population & Housing Census, total population of Okara district is 2232 persons, out of which 1167 thousands are males, 1065 thousands are females. Density of population in the district is 510 persons per square km.

1.2. Defining the Products

Wheat, rice, maize, sugarcane and cotton are main crops grown in the district. Main fruits grown are citrus, guava and mango, while the main vegetables include potatoes, onion turnip and cauliflower. There are 886 industrial units and type of industrial units include cotton ginning & pressing, dairy processing, deep freezer manufacturing, flour mills, food industry, oil mills, poultry feed, rice mills, seed processing, sugar, textile composite, textile weaving and vegetable ghee/ cooking oil.

Table 1. Area and Production of Agricultural Produce in Okara for the year 2006-07

	Area (Hectares)	Production (Tons)
Agricultural Crops		
Wheat	216,100	758,000
Rice	126,700	279,600
Maize	78,400	354,000
Sugarcane	23,500	1,088,900
Cotton	14,600	41,500
Fruits		
Citrus	5,325	49,471
Guava	3,266	28,914
Mango	1,231	13,843
Vegetables		
Potato	37,799	882,267
Onion	1,829	16,702

Source: Crop Area Production. MinFA 2007

1.3. Core Cluster Actors

1.3.1 Farmers

Potato farming is one of the most famous agricultural practices in the district. Several families with large land holdings ranging from 300 acres to 1500 acres and small land holders are involved in the potato farming that makes Okara district, the largest potato producer of Pakistan with total production of 882,267 tons during the year 2006-07.

1.3.2 Seed Supplier

There are several firms dealing in the seed supplying business. Most of the potato seed is imported from Europe especially from Holland. There are some firms in public and private sector that supply locally produced seed. But the amount of local seed used is very low as compared to that of imported seed.

1.3.3 Cold Storage

Cold storage facility is of the most important factor in post harvest handling of the produce. There are several cold storages established in the potato growing area that are catering the storage needs of potato farmers. Some of the big potato farmers have established their own cold storages.

1.4. Other Cluster Actors

1.4.1 Human Resource (Labor)

The labor for agricultural operations of potato production including sowing and harvesting is available in the surroundings of the growing area. The average wages for the labor range from Rs. 150-180/ 8 hr.

1.4.2 Pesticide Suppliers

Pesticide is one of the integral input of potato production. Several generic and multinational companies provide pesticides through a network of distributors and whole sellers.

1.4.3 Research/Extension Service Institutes

Agriculture department has offices at Tehsil level in Okara districts for the service of the farmers. The departments render Agri extension services to growers and help them in getting more yield and passing latest information on potato growing technology.

1.4.4 Financial Institutes

Financial institutes including banks like Zarai Taraqiati Bank and several commercial banks have their branches all around the Okara district. The banks provide financial credit and different other service on varying market rates.

1.5. Current Scenario of Potato Production

Okara is the largest potato producing district of Pakistan with area share of 28.32% in the year 2006-07. The share of potato production has gradually increased from 24.46% in 2003-04 to 34.17% in 2006-07. The details of area and production share have been shown in the following Table.

Table 2. Comparison of the Potato Production and Share of Okara Districts

	2003-04		2004-05		2005-06		2006-07	
	Area (Hect.)	Prod. (Tons)	Area (Hect.)	Prod. (Tons)	Area (Hect.)	Prod. (Tons)	Area (Hect.)	Prod. (Tons)
Pakistan	109,705	1,938,098	111,951	2,024,817	117,459	1,567,882	133,435	2,581,554
Okara	24,523	474,078	26,927	552,365	31,001	445,458	37,799	882,267
% age (Okara share)	22.35	24.46	24.05	27.28	26.39	28.41	28.32	34.17
Yield (Tons/Hect.) Pakistan	17.67		18.09		13.35		19.34	
Yield (Tons/Hect.) Okara	19.33		20.51		14.37		23.34	

Source: Crops Area Production (By Districts) MinFA (Economic Wing)

1.5.1 Potato Growing Season

There are three growing seasons for potato i.e. spring, summer and autumn. The detail and production share is given in the following Table.

Table 3. Major Potato Growing Season

Crop	Sowing	Harvesting	Production Share
Spring	Jan-Feb	Apr-May	7.10 %
Summer	Mar-May	Aug-Oct	15-20 %
Autumn	Sep-Oct	Jan-Feb	70-75 %

Source: www.Pakkisan.com

1.5.2 Potato Varieties Grown in the Okara District

Several varieties of potato are being cultivated in the district. The most common and famous red & white skin varieties and characteristics of commonly grown potato varieties have been shown in the Table 4 and Table 5 respectively:

Table 4. Important varieties of Potato Grown in Pakistan

Red Skin	White Skin
Desiree	Diamant
Cardinal	Ajax
Asterix	Patrones

Lady Roseta	Santana
Kruoda	Sante
Rodeo	Multa
Lal-a-Faisal	
Raja Symphonia	
Ultimus	

Table 5. Major Varieties & Characteristics of Potatoes Grown In Pakistan

Variety	Shape	Color of Flesh	Cooking Type	Utilization	Common Scab
Diamant	Oval	Light Yellow	Mealy + Firm	French Fries	Just Resistible
Cardinal	Oval	Light Yellow	Mealy + Firm	French Fries + Crisps	Quite Resistible
Désiree	Long Oval	Light Yellow	Mealy + Firm	Fresh Consumption + French Fries	Susceptible
Santé	Oval	Light Yellow	Very Mealy + rather Firm	Crisps	Just Resistible
Raja	Oval	Yellow	Mealy + Firm	French Fries	Quite Resistible
Asterix	Long Oval	Fairly Yellow	Fairly Firm	Fresh Consumption + French Fries	Moderately resistant
Lady Roseta (Sugar Free)	Round	Pale Yellow	Floury	Crisps	Moderately resistant
Santana (Sugar Free)	Long Oval	Pale Yellow	Floury	Fresh Consumption + French Fries	Moderately resistant
Kuroda	Oval	Pale Yellow	Fairly firm	Fresh Consumption	Moderately resistant
Rodeo	Long Oval	Pale Yellow	Fairly firm	Fresh Consumption	Fairly Susceptible

Source: Agrico, Netherlands (Supplier of Potato Seeds) 2000.

2. Analysis of Business Operations

2.1. Raw Materials

2.1.1 Seed

The seed for the good quality potato is imported from Holland. There are individuals and some companies that import potato seed from Holland and provide to the local growers. These include:

- PEPSICO
- AGRICO
- Bari Seed

Different Public and Private Institutes/organizations working in seed potato production

Public Sector

- Tissue Culture, NARC.
- Plant Virology, Faisalabad.
- Potato Research Centre, Abbottabad.
- Potato Seed Unit, Deptt. of Agri. Gilgit.
- VSSPP, Quetta.
- Punjab Seed Corporation.

Private Sector

- Jaffar Brothers Ltd.
- A.G.B.C.
- Jabbar Combined International.
- Gilgit Area Marketing Association.
- Nangaparbat Potato Growers Association.

The price of the imported seed ranges from Rs. 3500-4500/bag of 25 kg while that of local seed developed by tissue culture is Rs.2100-2200/bag of 120 kg. The imported seed is multiplied by the farmers that can be used for sowing for 3 consecutive years. But the yield decrease every year.

2.1.2 Water

Canal water is available for irrigation in the district. At an average potato crop requires 16-17 irrigations. To meet the deficiency of the canal water tube well water is used. The excessive use of tube well water increases the pH level of soil. Humic acid is used to lower the pH at required level.

2.1.3 Fertilizer

Like other agricultural crops, potato requires the nutrients in the form of fertilizer. The per acre requirement of fertilizer is shown in following table:

Table 6: Per acre fertilizer requirement

Fertilizer	Qty
Urea	4-5 bags
Phosphorus	3 bag
Potash	2 bags

Some other micronutrient like Boron, Manganese and Zinc are also required in minor quantities.

2.1.4 Pesticide

The harmful pests like American larvae and Army larvae attack and damage the potato crop. Proper pesticide spray is the solution. The suppliers for different kinds of pesticides are available all over the region.

2.2. Cost of Potato Production

The cost of production of per acre potato crop has been shown in the following Table:

Table 7. Cost of Potato Production per Acre

Item	Cost Rs.
Land Lease	10,000
Seed bed preparation	3,500
Seed	18,000
Pesticide	3,000
Water	2,000
Fertilizer	8,000
Labor	2,500
Post harvest handling	3,500
Storage	1,000
Total	51,500

The charges for storage in cold storage ranges between Rs.200-225 / bag (120Kg).

2.3. Yield

Yield of potato crop depends on the variety and agricultural practices. However it ranges from 11-13 ton/acre (90-110 bags of 120kg). Potato is categorized into three grades. The detail is given in the following table:

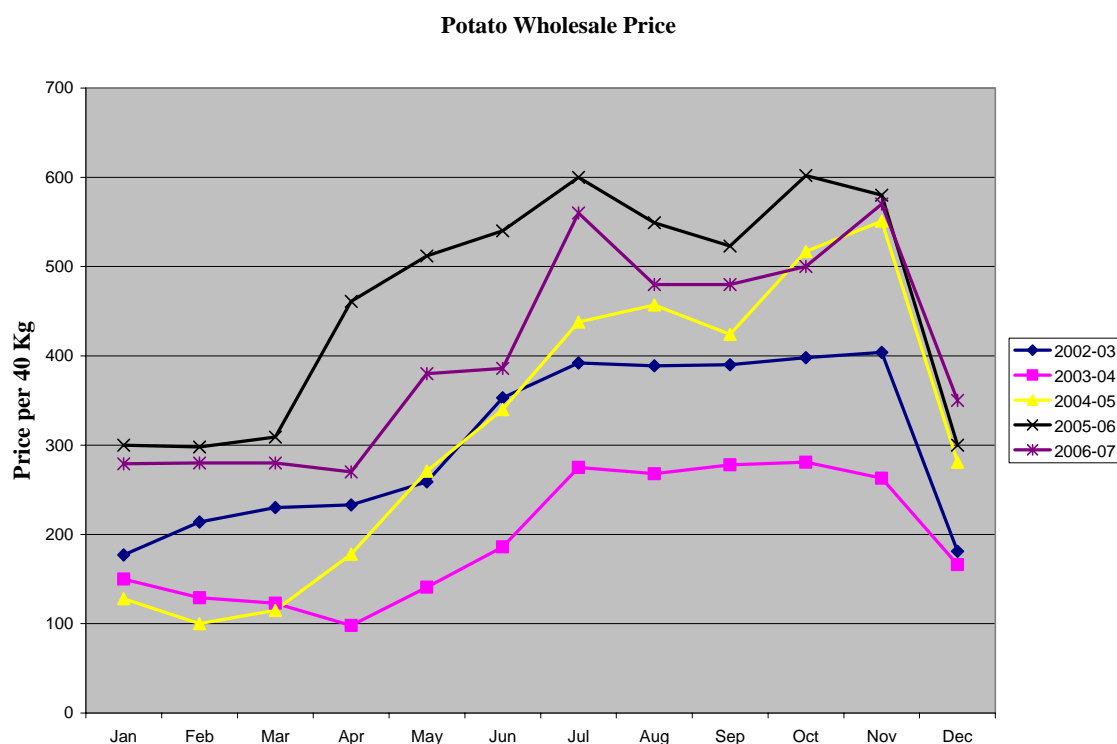
Table 8. Grades of Potato and Share in the Yield

Grade	Common Name	Size of the potato (Diameter)	%age in yield
1	Ration	>60mm	70%
2	Seed	60-35 mm	25%
3	Goli	<35 mm	5%

2.4. Price Fluctuation

The price fluctuation of the potato is one the limiting factor that discourages the farmers in sustainable potato farming. Normally the price is less in the month of February and March that gradually increases till September. The data of market price for the last year shows variable trend round year.

The average price for 40kg of potato ranges Rs.190-450. During the months of February and March the price is around Rs.150-170/40kg but in April and May it raises up to Rs.300 /40kg. Price fluctuation during 12 months has been shown in the following diagram:



2.5. Pests and Diseases of Potato Crop

Late blight (Phytophthora infestans.)

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

Diseases with Mycoplasma Pathogens

Recently mycoplasma was found a serious problem in major potato growing areas of Punjab. 45% reduction in yield was recorded in research trials.

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.

3. SWOT Analysis

3.1. Strengths

- Okara district has been blessed with fertile land and environment suitable for the cultivation of agricultural crops.
- Availability of good quality irrigation water
- The farmers of the district have progressive approach and tends to adopt latest trends of good agricultural practices
- Human resources for agricultural operations is available
- Road infrastructure and means of communication are available

3.2. Weaknesses

- Dependence on the imported seed as more than 90% of the seed is imported from Holland. Local seed produced by tissue culture technology has not proven to be as successful as imported seed in terms of yield and re-sowing.
- Lack of coordination between agricultural research /extension institutes and potato farmers
- No processing facility has been established from public/private sector in Okara district
- Lack of high yielding and disease resistance clones.
- No proper gene pool is available in the country.

3.3. Opportunities

- Increasing demand of quality fresh produce in domestic and international market
- Emphasis of Government of Pakistan on improvement of Agriculture sector

3.4. Threats

- Good performance of cotton crop recently introduced in Depalpur tehsil may cause switching over from potato to cotton
- Pest and disease attack causing reduction in the yield
- Fluctuating fertilizer price
- Huge variation in market price of potato

4. Investment Opportunities

The following areas have the potential of investment:

4.1. Establishment of Quality Seed Production Facility

Establishment of technologically advance facility for quality potato seed production has huge potential as there is no such facility in the private sector. The technology for seed production can be obtained by research & development in collaboration with research institutes or by joint venture with world's reputed seed providing companies.

4.2. Establishment of Cold Storage Facilities

The cold storage has special importance in the supply chain of potatoes. The establishment of the cold storage including Controlled Environment (CA) stores in the district is an attractive business opportunity that can help in year round sustainable supply of potatoes for domestic and industrial consumption.

4.3. Establishment of Potato Processing Industry

Currently there is no potato processing industry in the district. The establishment of potato processing units manufacturing potato chips, extruded products, nimko and potato powder & starch is a good business opportunity as raw material is easily available at relatively low cost round the year.