Dates Processing Plant

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Table of Contents

Summary

Dates are one of the most important cash fruit crops of Pakistan. Dates are cultivated over an area of 223.88 thousand acres in Pakistan with an annual production of 531.2 thousand tons in year 2009-10. Most of the Dates produced in Pakistan are cultivated in Balochistan and Sindh provinces. Dates grown in Pakistan have a huge national and international market demand.

Organic Dates can be grown easily in Pakistan. To enhance export magnitude of organic Dates in the international market our farmers must follow the Organic Sstandards. Organic Standards are the rules and regulations that define how an organic product must be made. These standards cover all aspects of food production, from animal welfare and wildlife conservation, to food processing, to packaging.

The problems associated with Dates export include low produce quality, lack of storage facilities, non-availability of quality packing, poor transportation facilities, high freight charges, weak role of export promoting agencies and inconsistent government policies.

The Dates processing project of 250 kg of Dates per hour on area of 4 kanal needs a capital investment estimated at Rs. 19.54 million for construction, purchasing machinery and equipments. In addition to this, a sum of Rs. 2.18 million is required as working capital, which would be used for purchasing of raw material. The total project cost is estimated at Rs. 21.72 million. This project suggests a plant with capacity of processing 250 kg of Dates per hour. This means that, total operational days of plant are calculated as 300 days per annum and a total of 600, 000 kg of Dates can be processed annually, if the plant runs at 8 hours per day.

The estimated income varies from 17 million to 28 million per annum from first to tenth year of the project. This is a profitable business enterprise due to continuous increasing demand of Pakistani Dates in the international market.

Introduction

Dates are believed to have originated around the Persian Gulf, and have been cultivated for thousands of years. They have been the staple food of the Middle East. The date palm (Phoenix dactylifera) is a palm in the genus Phoenix, cultivated for its edible nutritive sweet fruit. It is a medium-sized plant, 15–25 m tall, growing singly or forming a clump with several stems from a single root system. The leaves are 3–5 m long, with spines on the petiole, and pinnate, with about 150 leaflets; the leaflets are 30 cm long and 2 cm wide. The full span of the crown ranges from 6 to 10 m. Dates are oval-cylindrical, 3–7 cm long, and 2–3 cm diameter, and when unripe, range from bright red to bright yellow in color, depending on variety. Dates contain a single seed about 2–2.5 cm long and 6–8 mm thick.

The date palm is dioecious, having separate male and female plants. They can be easily grown from seed, but only 50% of seedlings will be female and hence fruit bearing, and dates from seedling plants are often smaller and of poorer quality. Most commercial plantations thus use cuttings of heavily cropping cultivars. Plants grown from cuttings will fruit 2–3 years earlier than seedling plants.

Dates are naturally wind pollinated but in both traditional oasis horticulture and in the modern commercial orchards they are entirely pollinated manually. Natural pollination occurs with about an equal number of male and female plants. However, with assistance, one male can pollinate up to 100 females. Since the males are of value only as pollinators, this allows the growers to use their resources for many more fruit producing female plants. Some growers do not even maintain any male plants as male flowers become available at local markets at pollination time. Manual pollination is done by skilled laborers on ladders. Dates ripen in four stages, which are known throughout the world by their Arabic names kimri (unripe), khlal(full-size, crunchy), rutab (ripe, soft), tamr (ripe, sun-dried).

Table 1: Dates Area under cultivation for last 10 Years

(Area '000' Acres)

YEAR	Punjab	Sindh	Khyber Pakhtoonkhaw	Balochistan	PAKISTAN
2000-01	28.17	57.08	2.47	106.5	**194.23**
2001-02	28.32	57.74	2.53	105.32	**193.9**
2002-03	20.92	62.46	3.06	105.97	**192.41**
2003-04	14.12	63.05	3.24	104.4	**184.82**
2004-05	14.31	65.34	3.39	118.92	**201.96**
2005-06	14.32	65.93	3.4	118.95	**202.61**
2006-07	14.56	72.31	3.43	118.99	**209.29**
2007-08	14.67	79.09	3.52	125.45	**222.73**
2008-09	14.77	80.08	3.54	125.69	**224.07**
2009-10	14.83	80.56	3.46	125.04	**223.88**

Source: Agricultural Statistics of Pakistan.

Table 2: Province Wise Dates Production for Last 10 Years

(Production '000' Tonnes.)

YEAR	Punjab	Sindh	Khyber Pakhtoonkhaw	Balochistan	PAKISTAN
2000-01	97.9	266	6.6	242	**612.5**
2001-02	94.12	288.9	6.69	240.57	**630.28**
2002-03	62.11	317.1	8.15	237.68	**625.04**
2003-04	41.69	151.61	8.59	224.93	**426.82**
2004-05	42.71	318.23	9.3	252.16	**622.4**
2005-06	42.58	192.81	8.87	252.32	**496.58**
2006-07	43.16	201.02	9.97	172.13	**426.28**
2007-08	44.36	253.09	10.38	249.69	**557.52**
2008-09	44.61	261.95	11.34	248.59	**566.49**
2009-10	44.7	265.3	11.3	209.9	**531.2**

Source: Agricultural Statistics of Pakistan.

1. Project Cost

This project suggests a plant with capacity of processing 250 kg of Dates per hour. This means that total operational days of plant are calculated as 300 days per annum and a total of 600, 000 kg of Dates can be processed annually, if the plant runs at 8 hours per day.

The Dates processing project of 250kg of Dates per hour on area of 4 kanal needs a capital investment estimated at Rs. 19.54 million for construction, purchasing machinery and equipment. In addition to this, a sum of Rs. 2.18 million is required as working capital, which would be used for purchasing of raw material. The total project cost is estimated at Rs. 21.72 million.

2. Export Prospects

Dates are one of the most important cash fruit crops of Pakistan. Dates are cultivated over an area of 223.88 thousand acres in Pakistan with an annual production of 531.2 thousand tons in year 2009-10. Most of the Dates produced in Pakistan are cultivated in Balochistan and Sindh provinces. Major Dates producing areas in the country are Turbat, Panjgur, Gwadar, Khairpur, and D.I. Khan. Some important export markets for Dates are India, Canada, USA, Germany, UK, Denmark, Australia, Bangladesh, Nepal, Sri Lanka, South Africa, Dubai, Japan, China, South Korea, North Korea etc.

Dry or soft Dates are used directly or with fillings of almonds, walnuts, candied orange and lemon peel. They are used in Arab breads, cakes and other dessert items. Recent

innovations include chocolate-covered Dates and products like sparkling Dates juice, used in some Islamic countries, for special and religious occasions such as Ramadan.

Importance of exports in the development of an economy cannot be denied. This is particularly true in case of a developing economy like Pakistan. The commodity concentration and the supply side fluctuations in fruit exports are known to have serious consequences for overall export earnings. The overall market share of Pakistani Dates in the world is around 18%, which is a huge proportion. Dates grown in Pakistan have a huge national and international market demand regardless of the fact that major share of our export fetch low value because of substandard, irregular processing and lack of value addition. Organic Dates can be grown easily in Pakistan by following the org. standards.

3. Organic Standards

Organic standards are the rules and regulations that define how an organic product must be made. Anything labeled 'organic' that is for human consumption must meet these standards as a minimum. The standards cover all aspects of food production, from animal welfare and wildlife conservation, to food processing, to packaging.

Organic standards ensure that you can be certain that you are buying a genuine organic product that has been produced in line with standard principles. Imported organic foods must have been produced and inspected to equivalent standards. There must also be full traceability of organic ingredients back to the farmer.

3.1 Conservation

The Soil Association was the first certification body to develop standards that ensured the environment on the farm was being carefully managed. Here are a few examples of the standards for conservation:

- Farmers should keep an up to date conservation plan for the whole farm, prepared by an advisor.
- Hedges must not be trimmed between 1st March and 31st August. This is to allow birds to nest.
- There should be an area of uncultivated strip of grasses and flowers around any field larger than two hectares. This is to provide habitats and food for birds, mammals and insects.
- Sites of conservation interest must not be damaged, except with permission, which will normally involve getting approval from an appropriate conservation agency.
- To allow wildlife to travel between habitats, there should not be any more than 200 m between any part of the arable field and a permanently non-cultivated area such as a hedge, ditch or beetle bank.

3.2 The Principles of Organic Agriculture

Agriculture is one of humankind's most basic activities because all people need to nourish themselves daily. History, culture and community values are embedded in agriculture. The principles apply to agriculture in the broadest sense, including the way people tend soils, water, plants and animals in order to produce, prepare and distribute food and other goods. They concern the way people interact with living landscapes, relate to one another and shape the legacy of future generations.

Organic agriculture is based on:

- The principle of health
- The principle of ecology
- The principle of fairness
- The principle of care

3.3 The Principles of Organic Production

Organic is a 'whole system' approach to farming and food production. It recognizes the close interrelationships between all parts of the production system from the soil to the consumer.

Following is a comprehensive set of organic principles that guides for the standards.

3.3.1 Agricultural Principles

- To produce food of high quality in sufficient quantity.
- To work within natural systems and cycles throughout all levels from the soil to plants and animals.
- To maintain the long term fertility and biological activity of soils.
- To treat livestock ethically, meeting their physiological and behavioral needs.
- To respect regional, environmental, climatic and geographic differences and (appropriate) practices those have evolved in response to them.

3.3.2 Environmental Principles

- To foster biodiversity and protect sensitive habitats and landscape features.
- To maximize use of renewable resources and recycling.
- To minimize pollution and waste.

3.3.3 Food Processing Principles

- To minimize processing, consistent with the food in question.
- To maximize information for the consumer on processing methods and ingredients.

3.3.4 Social Principles

- To provide a fair and adequate quality of life, work satisfaction and working environment.
- To develop ecologically responsible production, processing and distribution chains, emphasizing local systems.
- From these principles the practices that form the foundations of organic farming have been established:
    - encouraging biological cycles involving micro-organisms, soil fauna, plants and animals.
    - sustainable crop rotations.
    - recycling of nutrients using composted manure and vegetable waste.
    - cultivation techniques that enhance and protect the soil and its life.
    - avoiding soluble mineral fertilizers.
    - avoiding agrochemical pesticides, and
    - animal husbandry which meets their physiological, behavioral and health needs.

3.4 Organic Farming and the Environment

All food production causes some disruption to the natural environment.

Organic farming minimizes this disruption by:

- Limiting the types and quantities of pesticides and fertilizers used
- Building soil fertility and soil stability, and

- Maintaining and increasing ecological diversity within and around cropped land.

Ecological diversity is an essential part of a successful organic farming system. It is important to manage wildlife habitats as an integral part of an organic farm. This includes areas such as banks, hedges, ponds, species-rich pastures, areas of poor drainage and scrub land.

You should manage your organic farm:

- To be socially sustainable as well as environmentally sustainable with respect for good traditional and pastoral grazing systems, and sympathetically within the limitations of local climate and topography (such as mountain, hill and upland farming).

3.5 *Mineral Fertilizers and Supplementary Nutrients*

You should only use mineral fertilizers and supplementary nutrients to supplement and not replace methods of nutrient recycling.

You must plan your production system to minimize the need for brought-in nutrients.

With justification, you may use the phosphate (P) sources listed below:

- Natural rock phosphate, calcined aluminium phosphate rock, such as Redzlaag, but only where the soil pH is greater than 7.5.
- The cadmium content of rock phosphate is a potential problem. The cadmium content of the above materials must be no more than 90mg per kilogram of phosphate. You should use it as little as possible to avoid contaminating your organic land.

With justification, you may use the potassium (K) (potash) sources listed below:

- Wood ash, only when added to composts and manure plant extracts, such as Kali Vinasse natural rock potash, if it has a relatively low immediate solubility in water and low chlorine content, such as Adularian rock potash, and sylvinite and kainite (natural potash sources)

With justification, you may use the seaweed sources listed below:

- Dried seaweed meal liquid seaweed, free from ingredients we don't allow washed up seaweed collected from the seashore by you for use on your land, and calcified seaweed, collected from the seashore by you for use on your land.

- With justification, you may use liquid feeds made from plants produced on your organic unit.

With justification, you may use the minor minerals listed below:

- Magnesium rock, for magnesium and calcined gypsum (calcium sulphate)
    - Gypsum rock for calcium deficiency
    - Epsom salts, for acute magnesium deficiency
    - Magnesium rock, including Kieserite
    - Clays, such as perlite and vermiculite.
- With justification, you may use stone meal, such as ground basalt.
- With approval, you may use sulphate of potash, which can contain magnesium salt, to treat severe deficiencies.
- As sulphate of potash is highly soluble we will allow you to use it only on soils susceptible to low potassium levels. These are generally the low clay soils, especially kaolinite clay, which have a lower cation exchange capacity. Your soil analysis must show a clay content less than 20%. Your soil analysis must show exchangeable K levels below index 2 (which is equal to 121mg/litre extractable K using the ammonium nitrate method).
- With approval, you may use the supplementary nutrients listed below to treat severe deficiencies:
    - Sulphur
    - the trace elements boron, copper, iron, manganese, molybdenum, cobalt, selenium,
    - zinc, sodium (in the form of granular rock salt)
    - basic slag
    - meat, blood, bone, hoof and horn meals, but only in propagating compost and not on
    - units where there are cattle or sheep
    - wool shoddy, only when not in direct contact with the crop

- fish meals and fish emulsions, provided they are free from substances we don't allow and only in protected cropping, propagating composts or for perennial crops
- calcium only from industrial lime from sugar production.

- With approval, you may use commercial fertilizers and liquid feeds suitable for organic use to treat severe deficiencies. You will need to tell us the ingredients and the nutrient analysis before we can approve them.
- Note – you will not need to provide us with details of the ingredients if we have already verified or certified it. We can give you approval either on a case-by-case basis or through a plan, provided we have details of why you need to use it and under what circumstances.

You must not use any other fertilizers, including:

- fresh blood
- guano
- chilean nitrate
- urea
- slaked lime and hydrated lime (calcium hydroxide CaO + H2O)
- quicklime and burnt lime (calcium oxide CaO).

- You must not use plant growth regulators.

3.6 *Heavy Metals in Soil and Manure*

Heavy metals and other metallic elements are naturally present in the soil and some are essential, in trace amounts, to plants and animals. You need to maintain a correct balance. Applying manure, fertilizers and mineral supplements should not increase the concentration in the soil beyond acceptable levels.

The level of heavy metals in manure and soil must **not** exceed those in the table below.

Maximum levels of heavy metals in topsoil and manure on a total dry matter basis

	In soil (mg/kg)	*In soil (kg/ha)*	*In manure (mg/kg)*	*In manure (kg/tonne)*
Zinc	150	336	1000	1
Chromium	150	336	1000	1
Copper	50	110	400	0.4
Lead	100	220	250	0.25
Nickel	50	116	100	0.1
Cadmium	2	4.4	10	0.01
Mercury	1	2	2	0.002
Arsenic	50	-	-	-

Note - we will expect you to test for these only if it is likely that these levels have been exceeded.

3.7 Controlling Weeds

- The best way to control weeds is by carefully designing and managing your whole farm system. To control weeds it is important to use good rotation design, manure management, well-timed soil cultivation and good farm hygiene.
- You should use these methods for controlling weeds:
    - balanced rotations which include weed-suppressing and weed-susceptible crops
    - sowing green manures
    - composting manure and plant waste, and aerating slurry
    - pre-sowing cultivation and stale seed bed techniques
    - selecting crop varieties for vigour and weed suppression
    - using re-cleaned seed
    - high seed rates and under-sowing, and
    - hygiene in the field and with machinery.

- You may use the following methods if suitable:
    - pre-germinating, propagating and transplanting
    - raised beds and no-dig systems
    - mulches, including plastic mulches but made only from polyethylene, polypropylene or
    - other polycarbonates
    - mixed stocking and tight grazing
    - pre-emergence and post-emergence mechanical operations, such as hoeing,
    - harrowing, topping, hand weeding, and
    - pre-emergence and post-emergence flame weeding.
- You must not use any agrochemical or hormone herbicide on any part of your organic or in-conversion holding, including:
    - on your crops
    - round the edges of fields
    - within or below hedgerows
    - on headlands and pathways
- You must not use steam or thermal pasteurization or sterilization of the soil for weed control.

3.8 Controlling Pests and Disease

- The best way to control pests and disease is by carefully designing and managing your whole farm system to achieve health, diversity and vitality in your soils and crops. You will then encourage natural growth and a balanced farm ecosystem.
- You should use these methods for controlling pests and disease:
    - creating fertile soils of high biological activity to provide crops with a balanced supply of nutrients
    - encouraging natural predators within and around crops by:
    - i. companion planting, under-sowing and mixed cropping, and
    - ii. leaving hedges, windbreaks, wildlife corridors and field margins uncultivated

- choosing resistant crops and varieties that are suited to your farm conditions
- grafting onto resistant rootstock
- carefully planning planting dates, and
- using good husbandry and hygiene practices to limit the spread of any pests or disease.

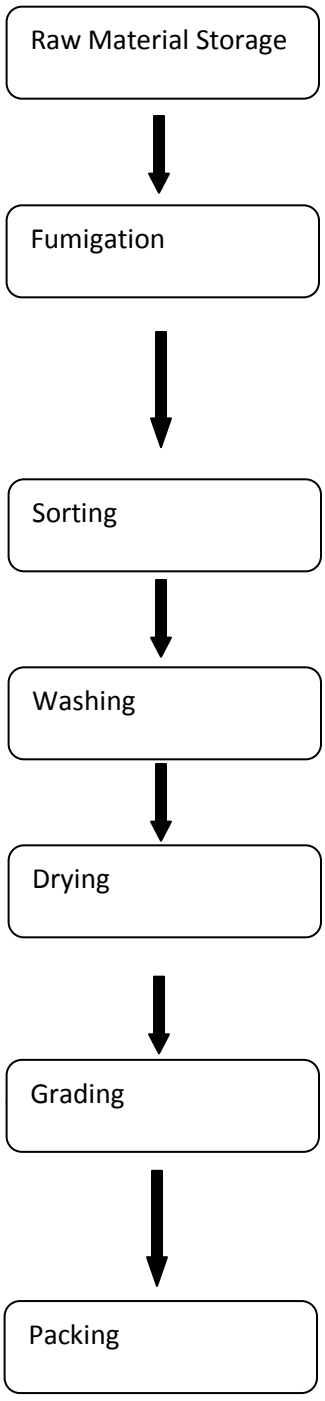
- You must ensure that any products you use for pest or disease control is approved for that specific use by the Pesticide Safety Directorate or other relevant body.
- Note - you can get a factsheet from us listing the products available and how you can use them under the present pesticide regulations.
- You may use the following products to control insect pests:
  - physical barriers, including fleeces and insect netting but made only from
  - polyethylene, polypropylene or other polycarbonates
  - pheromones in traps and dispensers, for monitoring pest levels or as attractants and
  - sexual behavior disrupters
  - quassia preparations from Quassia amara
  - preparations of Bacillus thuringiensis
  - sticky fly traps, free from insecticides we don't allow
  - biological pest control, but only using licensed, naturally occurring predators
  - granulose virus preparations
  - gelatine
  - hydrolysed proteins and diammonium phosphate, but only as attractants in traps which prevent substances from coming into contact with the crop or being released into the environment
  - quartz sand as a repellent.
- With approval, you may use pyrethrum preparations (made from pyrethrins extracted from Chrysanthemum cineriaefolium, which may contain a synergist).
- You may use the following products to control fungi:
  - beeswax, but only after pruning
  - lecithin, and

- licensed, naturally occurring biological control.

- You may use rodenticides but only in tamper-proof bait stations and in places where there is no risk of contaminating products.
- Note - rodenticides must be labelled properly and you must store them under lock and key away from food.
- You may use the following products for general pest control:
  - plant oils such as mint, pine or caraway, but only as insecticides, acaricides,
  - fungicides or sprout inhibitors
  - steam to sterilise buildings and equipment
  - mechanical traps, barriers and sound
  - oils free from materials we don't allow.
- You may use wetting and sticking agents used in sprays. These must be approved products based on natural plant extracts/oils free from materials we don't allow.
- You must not use petroleum oils, paraffin oils or other mineral oils as pesticides.
- With approval of a detailed plan, you may use copper (Cu) products only if there is a major threat to your crops. You may only use up to 6kg Cu/ha/year and only the products listed below:
  - copper sulphate
  - copper hydroxide
  - cuprous oxide
  - copper oxychloride
  - copper ammonium carbonate, at a maximum concentration of 25g/l.
  - copper octanoate
- Your plan must include details of why you need to use copper and under what circumstances.
- With approval, you may use the following products only if there is a major threat to your crops.
- Azadirachtin extracted from Azadirachta indica (neem tree)

4. Flow of Dates Processing Plant

The processed dates are clean and free from contaminations. All procedures are performed with great care from transportation to finish product to ensure the quality. Following is the flow diagram:



Dates are kept in shade and well protected from dust, heat, attack of insects etc. to avoid flavor changes and weight losses etc.

This process is done to prevent dates from insects. Dates are kept in an air tight chamber and exposing them to a noxious gas for 72 hours. Methyl bromide (CH3Br) is most commonly used fumigant. This process can be carried out at atmospheric pressure and under vacuum. The penetration of gases is more intense under vacuum condition and time effective but expensive method (not for org.)

This is done manually. Fumigated Dates are sorted according to their condition and size.

Dates are passed through rotatory washing drums with water showering nozzles.

The washed Dates are dried using diesel or gas fired.

Dates are graded to produce homogenous quality and size according to the specifications of national / international market. Grading is done manually. It is market driven and rejected Dates are sold for by-products manufacturing.

The processed Dates are packed by the shrink wrap machine in plastic bags for additional protection and preservation of moisture, before being placed in boxes.

5. *Human Resource Requirements*

Table 3: Human Resource

		Salary/Month	Annual Salary
Positions	**Number**	**(Rs)**	**(Rs)**
Manager	1	40,000	480,000
Food Technologist	1	35,000	420,000
Accounts/Store Clerk	1	15,000	180,000
Skilled Labour	4	9,000	432,000
Semi-Skilled Labour	6	7,000	504,000
Security Guards	2	9,000	216,000
Driver	1	9,000	108,000
Total Payroll Staff	**16**		**2,340,000**

6. *Equipments and Machinery Requirements*

Table 4: Equipments and Machinery

Processing Machinery	**Price Rs.**
Dates Processing Plant	7,900,000
Transportation cost	225,000
Installation cost	95,000
Generator 10 KV	375,000
Transformer 50 KV	1,000,000
Total Cost of Processing Machinery	**9,595,000**

Description	**Spec. / Quantity**
Plastic Crates	2x1 sqfts / 2800
Washing Tub	concrete tank with tiles
Washing drums	stainless steel, 2.5x5 sqfts / capacity 250 per batch
Sorting/Packing Table	18x6 sqfts
Rejection Channel	on both sides of the table
Fumgation Room's Rack	channel 4"x2", Angle Iron 2'x2"
Rack Capacity	400 crates / 2000kg Dates/Room
Trays for Oven Feeding	stainless steel, 2x1 sqfts / 100
Oven Firing Chamber	5x5 sqfts
Insulation	Glass Wool
Burner	Gas Fired
Hot Air Dryer	7x4 sqfts
Shrink Wrap Machine	Heaters & Blowers / 4

7. Land & Building

Table 5: Land Requirement

Land	Total Cost Rs.
4 Kanal	2,000,000

Table 6: Building Requirement

	Area (Sq. Ft)	Construction Cost	Total Cost
Processing Hall (80x16)	1,280	1500	1,920,000
Fumigation Rooms 7 (15x12)	1260	1500	1,890,000
Warehouse	1,000	1400	1,400,000
Store cum Generator Room	100	1200	120,000
Office 3 (14x12)	504	2,000	1,008,000
Wash Rooms	240	1200	288,000
Total Construction Cost of Building			**6,626,000**

8. Project Detail

Account Head	**Total Cost (Rs)**
Land	2,000,000
Building and Civil Works	6,626,000
Plant and Machinery	9,595,000
Furniture/Fixture & Equipment	170,000
Office Vehicle	1,000,000
Pre-operational Expenses	150,000
Total Fixed Cost	**19,541,000**
Cash	500,000
Raw Material Inventory	1,150,000
Up-Front Insurance Payment (year 1)	528,450
Total Working Capital	**2,178,450**

Total Investment	**21,719,450**

Financing	**Rs.**
Equity 40%	8,687,780
Debt 60%	13,031,670

9. Projected Income Statement

Rs.

	Year-1	Year-2	Year-3	Year-4	Year-5	Year-6	Year-7	Year-8	Year-9	Year-10
Revenue	67,500,000	70,875,000	74,418,750	78,139,688	82,046,672	86,149,005	90,456,456	94,979,279	99,728,242	104,714,655
Cost of Goods Sold										
Date Cost	22,500,000	23,625,000	24,806,250	26,046,563	27,348,891	28,716,335	30,152,152	31,659,760	33,242,747	34,904,885
Fumigation Cost	2,250,000	2,362,500	2,480,625	2,604,656	2,734,889	2,871,634	3,015,215	3,165,976	3,324,275	3,490,488
Packing & Transport Cost	4,500,000	4,725,000	4,961,250	5,209,313	5,469,778	5,743,267	6,030,430	6,331,952	6,648,549	6,980,977
Export & Freight Charges	4,500,000	4,725,000	4,961,250	5,209,313	5,469,778	5,743,267	6,030,430	6,331,952	6,648,549	6,980,977
Payroll (Production Staff)	936,000	982,800	1,031,940	1,083,537	1,137,714	1,194,600	1,254,330	1,317,046	1,382,898	1,452,043
Machine Maintenance	197,500	207,375	217,744	228,631	240,062	252,066	264,669	277,902	291,797	306,387
Direct Electricity	1,800,000	1,980,000	2,178,000	2,395,800	2,635,380	2,898,918	3,188,810	3,507,691	3,858,460	4,244,306
Diesel Cost	960,000	1,056,000	1,161,600	1,277,760	1,405,536	1,546,090	1,700,699	1,870,768	2,057,845	2,263,630
Total cost of sales	37,643,500	39,663,675	41,798,659	44,055,572	46,442,028	48,966,175	51,636,735	54,463,047	57,455,122	60,623,693
Gross Profit	**29,856,500**	**31,211,325**	**32,620,091**	**34,084,116**	**35,604,644**	**37,182,830**	**38,819,721**	**40,516,232**	**42,273,120**	**44,090,961**
Operating Expense										
Payroll (Admin)	1,404,000	1,474,200	1,547,910	1,625,306	1,706,571	1,791,899	1,881,494	1,975,569	2,074,347	2,178,065
Administrative Overheads	675,000	708,750	744,188	781,397	820,467	861,490	904,565	949,793	997,282	1,047,147
Amortization (Pre-operational Expenses)	100,000	100,000	100,000	100,000	100,000		-	-	-	-
Insurance Expense	530,000	754,820	690,001	650,123	605,312	598,031	512,053	485,231	450,325	425,315
Depreciation	1,407,800	1,367,800	1,367,800	1,367,800	1,367,800	1,367,800	1,367,800	1,367,800	1,367,800	1,367,800
Total	4,116,800	4,405,570	4,449,899	4,524,625	4,600,149	4,619,220	4,665,912	4,778,393	4,889,755	5,018,326
Operating Profit	**25,739,700**	**26,805,755**	**28,170,193**	**29,559,490**	**31,004,494**	**32,563,610**	**34,153,809**	**35,737,839**	**37,383,365**	**39,072,635**
Non-Operating Expense										
Interest expense on long term debt	1,485,765	1,145,820	936,850	789,420	575,430					
Interest expense on Running Finance										
Export Development Fund/WHT (1.3%)	877,500	921,375	967,444	1,015,816	1,066,607	1,119,937	1,175,934	1,234,731	1,296,467	1,361,291
Total	2,363,265	2,067,195	1,904,294	1,805,236	1,642,037	1,119,937	1,175,934	1,234,731	1,296,467	1,361,291
Earnings Before Tax	**23,376,435**	**24,738,560**	**26,265,899**	**27,754,255**	**29,362,457**	**31,443,673**	**32,977,875**	**34,503,108**	**36,086,898**	**37,711,344**
Tax	5,844,109	6,184,640	6,566,475	6,938,564	7,340,614	7,860,918	8,244,469	8,625,777	9,021,725	9,427,836
PROFIT AFTER TAX	**17,532,326**	**18,553,920**	**19,699,424**	**20,815,691**	**22,021,843**	**23,582,754**	**24,733,407**	**25,877,331**	**27,065,174**	**28,283,508**

10. Key Assumptions

Table 7: Production Assumptions

Capacity of processing plant (kg/Hour)	250
Production Capacity per year kg (100%)	600,000
Production Capacity utilization kg (75%)	450,000
Hours operational per day	8
Days operational per month	25
Days operational per year	300
Raw material per kg Rs.	50
Packing Cost per kg Rs.	10
Fumigation Cost per kg Rs.	5
Export & Freight Charges per kg Rs.	10
Sale price per kg Rs.	150

Table 8: Expense Assumptions

Administrative Overhead (% of Total Revenue)	1
Electricity per Month (Rs)	150,000
Diesel per Month (Rs)	80,000
Machine maintenance cost (% of machine cost)	2

Table 9: Growth Related Assumptions

Electricity growth rate	10%
Wage growth rate	10%
Date purchase price growth rate	5%
Machine maintenance growth rate	5%
Sales price growth rate per annum	5%

Table 10: Depreciation Assumption

Depreciation Method	**Straight Line Method**
Building depreciation rate	5%
Machinery & Equipment depreciation rate	10%
Office Equipment depreciation rate	10%
Furniture & Fixtures depreciation rate	10%

11. Disclaimer

The content of the information memorandum does not bind NBP in any legal or other form as the purpose of this report is to provide a general idea and information to NBP staff to assist them evaluate the feasibility reports submitted by the clients, and for the farmers and organizations interested to establish Dates Processing Plant. The data and info reported in this document is gathered from various sources and is based on certain assumptions. In spite of taking due diligence in compiling this report, the contained information may vary due to any change in any of the relevant factors e.g. agro-climatic conditions, plant management, market prices, inflation, export policies, energy crisis etc. and the actual results may differ substantially from the presented information. NBP does not assume any liability for any financial or other loss resulting from this document in consequence of undertaking this Project.