

# 12 DEHYDRATED MALTA PRODUCTION



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## 1. INTRODUCTION

Malta or Malta Fruit (*Citrus sinensis*) is known as ‘The Citrus Treasure of Uttarakhand.’ It is a local winter fruit of Uttarakhand, used to make squash and other products. The fruit's peel is utilized in face masks to help reduce skin ailments. Malta is rich in Vitamin C and is an excellent substitute for other citrus fruits. This versatile fruit is also known to boost the immune system. It effectively treats various health issues, including pneumonia, high blood pressure, stomach and intestinal problems, and diseases related to Vitamin C deficiency.

Malta, a citrus fruit native to the Himalayan region, holds a special place in Uttarakhand's agricultural and cultural landscape. Known for its tangy and refreshing taste, Malta is widely grown in the hilly areas of both Garhwal and Kumaon. The fruit is prized for its flavor and nutritional benefits, making it a popular part of the local diet and economy.

Malta is rich in Vitamin C, antioxidants, and essential minerals. The fruit boosts immunity, aids digestion, and provides a refreshing burst of energy. The locals often consume it fresh or in the form of juice, which is particularly popular for its ability to rejuvenate and hydrate. Its high fiber content makes it an excellent addition to a healthy diet.

In Uttarakhand, Malta thrives in the hilly regions due to its favorable climate and soil conditions. The fruit trees are predominantly found in altitudes ranging from 1,000 to 2,000 meters. The villages of Garhwal and Kumaon cultivate Malta extensively, and the fruit is harvested in the winter months when it reaches peak ripeness. The farming of Malta has provided a sustainable source of income for many rural families in Uttarakhand, contributing to the state's agricultural development.

## 2. PRODUCT AND ITS APPLICATION

Dehydrated Malta fruit is produced by removing moisture from fresh Malta fruit, preserving its flavor, nutrients, and shelf life. The dehydration process can be done using various methods such as air drying, freeze-drying, or sun drying.

**As per the Market Overview, the Applications of Dehydrated Malta Fruit are :**

### 1. **Snack Food Production**

- **Dehydrated Malta slices or chunks** can be packaged as a healthy, ready-to-eat snack. This trend is popular among health-conscious consumers who prefer fruits without preservatives or artificial additives.
- **Fruit Mixes:** Dehydrated Malta can be mixed with other dehydrated fruits (like apples, berries, or bananas) to create fruit snack mixes.

### 2. **Beverage Industry**

- **Malta Fruit Powder:** The dehydrated Malta can be ground into a fine powder and used as a beverage flavoring agent. It can make fruit-flavored drinks, energy drinks, or smoothies.
- **Tea and Infusions:** Dehydrated Malta peel or pulp can be used to flavor herbal teas or fruit infusions, offering a tangy citrus taste to the product.

### 3. **Bakery and Confectionery**

- **Baked Goods:** Dehydrated Malta can be used in cakes, muffins, cookies, and other baked products to impart a fruity and zesty flavor. It can be used as an ingredient in fruit fillings for pastries or as an addition to bread mixes.
- **Candies and Gummies:** Dehydrated Malta can be rehydrated and used to produce fruit candies, gummies, and other confectionery items, giving them a natural citrus flavor.

### 4. **Cosmetics and Personal Care Products**

- **Natural Skin Care:** Dehydrated Malta, especially its peel, can be used in cosmetics and personal care products for its natural acidic properties, which are beneficial for skin exfoliation. It can be used in soaps, face scrubs, and masks to brighten and rejuvenate skin.
- **Essential Oils:** The peel of the Malta fruit can extract essential oils used in aromatherapy or incorporated into lotions and creams for their fragrance and therapeutic properties.

### 5. **Health and Nutraceutical Products**

- **Dietary Supplements:** The powder or slices of dehydrated Malta can be used as an ingredient in dietary supplements, especially those focusing on vitamin C, antioxidants, and immune health. This is popular for vitamin-rich capsules or powders.
- **Smoothie Mixes and Health Bars:** Dehydrated Malta can be added to health bars, protein bars, or smoothie mixes for added nutrition and flavor.

### 6. **Food Preservation and Ingredient for Cooking**

- **Culinary Uses:** Dehydrated Malta can be used as an ingredient in sauces, soups, or marinades, providing a natural tangy and citrus flavor.
- **Preserves and Jams:** Malta fruit can be rehydrated to make fruit jams, jellies, or preserves, preserving the flavor for extended periods.

## 3. DESIRED QUALIFICATIONS FOR PROMOTER

A promoter should ideally possess horticulture, agriculture, or food processing knowledge and skills to succeed in dehydrated Malta fruit enterprise. Specific qualifications may include:

1. A background in agriculture, botany, food science, or a related field.
2. Practical experience in horticulture, especially vegetable cultivation and post-harvest management.
3. Training in food processing, specifically in dehydration technologies.
4. Business management skills for running a processing facility.
5. Knowledge of local market trends and export requirements for dried fruits.

Additionally, a commitment to sustainable farming practices and the willingness to keep updated on fruit and vegetable processing technology advancements will be beneficial.

#### **4. BUSINESS OUTLOOK AND TRENDS**

The setting up of a dehydrated Malta fruit production unit in Uttarakhand offers a promising business opportunity due to the state's ideal agricultural climate for citrus farming and the growing market demand for natural, healthy products. Uttarakhand's favorable weather conditions provide easy access to fresh Malta fruits, reducing transportation costs and ensuring a steady supply of high-quality raw materials. With the increasing consumer shift towards healthy snacks and functional foods, dehydrated Malta, rich in vitamins, fiber, and antioxidants, fits well into trends such as wellness, clean-label products, and convenient on-the-go options. Malta's rich Vitamin C content makes it a valuable ingredient for health supplements, smoothies, and health bars, tapping into the nutraceutical market.

The dehydrated fruit market also benefits from a rise in sustainability-conscious consumers, as dehydrating fruit helps extend shelf life and reduce food waste. There is significant export potential for dehydrated Malta in international markets, especially in regions with high demand for dried fruits and health-conscious products. In the food and beverage industry, dehydrated Malta can be used in various products such as fruit-flavored drinks, energy drinks, bakery goods, and herbal teas, while innovations in drying technology ensure high-quality output. As consumer interest in transparency and organic certifications grows, the business can stand out by offering natural, preservative-free products, with the potential for domestic and international growth.

#### **5. MARKET POTENTIAL AND MARKETING ISSUES**

The market potential for dried malta in Uttarakhand is substantial, driven by increasing consumer demand for natural and health-oriented products. Malta is widely used in food and beverage, pharmaceuticals, cosmetics, and nutraceuticals. The primary reason for substantial market potential is as follows:

- **Agricultural Region:** Uttarakhand's favorable climate for citrus cultivation makes it ideal for setting up a dehydration unit, ensuring a continuous supply of fresh Malta fruits.

- **Export Opportunities:** Dehydrated Malta can also be exported to international markets, especially to countries where citrus products are in demand in the food, beverage, and cosmetic industries.
- **Health-Conscious Consumer Trends:** With increasing demand for healthy snacks and natural ingredients, dehydrated Malta has the potential to cater to the growing health and wellness market.

#### **Marketing issues to consider:**

- **Seasonality of Malta Fruit:** Malta fruit is seasonal, which could create challenges in ensuring a consistent supply throughout the year. However, this can be addressed through proper supply chain management and cold storage for fresh fruit before dehydration.
- **Quality Control:** Ensuring the dehydrated malta fruit maintains its flavor, color, and nutritional value during dehydration.
- **Storage and Packaging:** Proper storage and packaging ensure a long shelf life and prevent spoilage.
- **Competition:** While the market for dehydrated fruits is growing, it is important to differentiate the product in quality, branding, and innovative packaging to stand out from competitors.
- **Branding and Promotion:** Building a brand in the health food sector is critical, and proper marketing strategies targeting health-conscious consumers and exporting nations will be necessary.

#### **Marketing Strategy**

Manual and sun-drying methods have been in vogue for dehydration for a long time, but production is limited, and quality is not up to the mark. Hence, mechanically dehydrated malta has become very popular. Restaurants, eateries and dhabas, clubs, caterers, the food processing industry, and pharmaceutical companies are the primary consumers. There are perfect export markets as well, but the contemplated capacity of the project does not warrant this.

## **6. RAW MATERIALS REQUIRED**

The all-important raw material is fresh malta fruits. The requirement during the season, even at 100 %, will be 30 tons, and procurement should not be a problem. Bags made from food-grade plastic shall be required for inner packing and large-size bags for outer packing.

- Fresh Malta Fruits
- Water
- Preservatives (Optional)
- Polythene/Vacuum Sealed Bags

Malta to be of fresh and good quality

## 7. MALTA FRUIT DEHYDRATING PROCESS

The processing method for dehydrated Malta fruit is as follows:

### A. Selection and Cleaning

- **Selection:** Fresh, ripe Malta fruits are carefully selected, ensuring they are free from blemishes and damage.
- **Cleaning:** The fruits are thoroughly washed to remove dirt, pesticides, or any residues on the skin. This step is crucial for food safety and hygiene.

### B. Peeling (Optional)

- Depending on the desired end product, the **peel** may be removed. Some production units may dehydrate the whole fruit, including the peel, for added flavor and nutritional benefits, while others may focus on the pulp.
- If peeling is done, **manual or mechanical peelers** are used.

### C. Slicing

- After cleaning and peeling (if applicable), the **Malta fruits** are sliced into uniform pieces, typically thin **rings** or **half-moon slices**. The thickness of the slices is essential to ensure even drying.

### D. Blanching (Optional)

- **Blanching** is a short heat treatment (boiling or steaming) applied to preserve the fruit's color, flavor, and nutrients. It helps stop enzymatic activity that could degrade the quality of the dehydrated fruit.
- Some units may skip this step if they prefer a more natural or raw product.

### E. Dehydration

- The sliced Malta fruit is dehydrated using one of the following methods:
  - **Sun Drying:** This is a traditional method where slices are laid out in the sun to dry. However, this method is slower and requires favorable weather conditions.
  - **Air Drying:** Involves drying the fruit in a controlled environment using hot air to circulate the slices. This method is more controlled and efficient than sun drying.
  - **Freeze Drying:** The fruit is frozen, then the moisture is removed through sublimation. This method retains the most nutrients, flavor, and texture but is more expensive.

- **Hot Air Drying:** Using machines that blow hot air at specific temperatures (usually 50-70°C) removes moisture from the fruit slices, reducing their weight and volume.

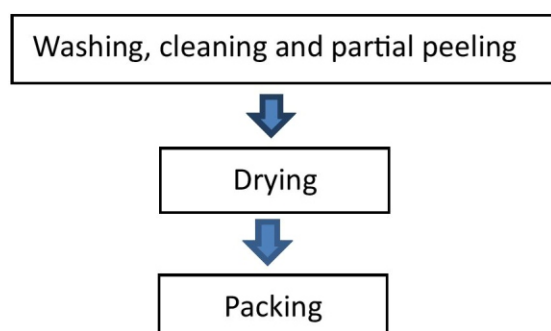
#### F. Cooling

- After dehydration, the dried Malta slices can cool to room temperature. This helps them stabilize and reduces any residual moisture that could lead to spoilage.

#### G. Packaging

- The dehydrated Malta slices are then carefully packed in **airtight packaging** (such as vacuum-sealed bags or food-grade plastic pouches) to maintain freshness, flavor, and shelf life.
- Packaging also includes labeling with product details, such as nutritional information, expiration date, and origin.

The process flow chart is as follows:



### 8. MANPOWER REQUIREMENT

| Sr. No       | Particulars                | No. | No of month in year | Wages/Salaries per month (Rs. In Lakhs) | Annual Expense (Rs. In Lakhs) |
|--------------|----------------------------|-----|---------------------|---|-------------------------------|
| 1            | Self-employed (Owner)      | 1   | -                   | -                                       | -                             |
| 2            | Skilled Labor (Processing) | 2   | 6                   | 0.1                                     | 0.6                           |
| 3            | Semi-skilled Labor         | 3   | 6                   | 0.06                                    | 1.08                          |
| 4            | General Labor (Packaging)  | 1   | 12                  | 0.1                                     | 1.2                           |
| <b>Total</b> |                            |     |                     |   | <b>2.88</b>                   |

### 9. IMPLEMENTATION SCHEDULE

| Sr. No.   | Activity   | Time Required (in months) |
|---|--|---------------------------|
| 1   | E M Registration & approval                          | 1                         |
| 2   | Financial/Loan from Banker or Financial Institutions | 2                         |
| 3   | Power connection/Building construction Six months    | 6                         |
| 4   | Machinery procurement & Trial run.                   | 2                         |
| 5   | Recruitment of Staff & Labour                        | 1                         |
| 5   | Actual commercial production                         | 1                         |
| <b>Total (some activities shall run concurrently)</b> |  | <b>13</b>                 |

## 10. COST OF PROJECT

| Sr. No                    | Particulars                     | Annual Expenses (Rs. in lakhs) |
|---------------------------|---------------------------------|--------------------------------|
| 1                         | Land                            | -                              |
| 2                         | Building (Rented)               | 0.30                           |
| 3                         | Plant & Machinery               | 1.65                           |
| 4                         | Equipment and Furniture Exp.    | 0.80                           |
| 5                         | Misc. Fixed Asset               | 0.02                           |
| 6                         | Preoperative & Preliminary Exp. | 0.05                           |
| 7                         | Working Capital                 | 64.31                          |
| <b>Total Project Cost</b> |                                 | <b>67.13</b>                   |

## 11. MEANS OF FINANCE

| Sr. No.      | Particulars             | Annual Expenses (Rs. in lakhs) |
|--------------|-------------------------|--------------------------------|
| 1            | Promoter's contribution | 26.85                          |
| 2            | Bank Finance            | 40.28                          |
| <b>Total</b> |                         | <b>67.13</b>                   |

## LIST OF MACHINERY & EQUIPMENT

### A. MACHINERY

| Sr. No              | Particulars                               | Unit | Price per Unit(Rs. in lakhs) | Total Amount (Rs. in lakhs) |
|---------------------|---|------|------------------------------|-----------------------------|
| 1                   | Farming Tools                             | 0    | 0.050                        | 0.050                       |
| 2                   | Fruit Peeling Machine (Automatic)         | 2    | 0.500                        | 0.500                       |
| 3                   | Electrically-operated Tray Drier-48 trays | 1    | 0.700                        | 0.700                       |
| 4                   | Weighing-scales, sealing machine, etc.    | 1    | 0.200                        | 0.200                       |
| 5                   | Washing Tank                              | -    | -                            | 0.200                       |
| <b>Total Amount</b> |   |      |                              | <b>1.450</b>                |



## B. FURNITURE & EQUIPMENT

| Sr. No           | Particulars                          | Unit | Price per Unit(Rs. in lakhs) | Total Amount (Rs. in lakhs) |
|------------------|--------------------------------------|------|------------------------------|-----------------------------|
| 1                |                                      | -    | 0.00                         | 0.00                        |
| 2                | Chair, Table and Work Tables         | -    | 0.00                         | 0.30                        |
| 3                | Storage cabinets, bins, freezer etc. | -    | -                            | 0.50                        |
| <b>Total Rs.</b> |                                      |      |                              | <b>0.80</b>                 |

The availability of raw materials and equipment from local manufacturers is a promising advantage for the entrepreneur. Choosing the right mix of products and suitable machinery and tooling to facilitate modern and flexible processes is essential. Here are some of the suppliers of business equipment an entrepreneur can consider:

### 1. Shiv Shakti enterprises

No. 666/2, Street No. - 8, Chander Lok, Shahdara,  
Delhi, India

### 2. Super Engineering Works

C-263, C Block, Sector 10, Noida, Uttar Pradesh 201301

### 3. Microtech Engineering

Snap Story, Block V, Krishan Vihar, Delhi, 110083

### 4. B.S. Engineering works

Superior Selections, Block RZ, Khayal, Vishnu Garden, New Delhi, Delhi, 110018

Besides these, online platforms such as India Mart, Trade Mart, Amazon, Flipkart, etc., can also be explored for online ordering.

## 12. SALES REALISATION

| Sr. No | Product                | Sales in Percentage | INR             |
|--------|------------------------|---------------------|-----------------|
| 1      | Dehydrated Malta Fruit | 100.00%             | 18000000        |
|        | <b>Total</b>           | <b>100.00%</b>      | <b>18000000</b> |

## 13. PROFITABILITY CALCULATION

| Sr. No | Particulars       | Annual Expenses (Rs. in lakhs) |
|--------|-------------------|--------------------------------|
| A.     | Sales realisation | 180.00                         |

|       |                                 |        |
|-------|---------------------------------|--------|
| B.    | Cost of production              |        |
| i)    | Raw materials                   | 56.25  |
| ii)   | Utilities                       | 0.22   |
| iii)  | Manpower Cost (Salaries/wages)  | 5.28   |
| iv)   | Administrative expenses         | 0.07   |
| v)    | Packaging Cost                  | 0.30   |
| vi)   | Material Lost Cost              | 0.20   |
| vii)  | Selling & distribution expenses | 0.06   |
| viii) | Repairs & maintenance           | 0.00   |
| ix)   | Rent                            | 0.30   |
| x)    | Interest                        | 4.93   |
| xi)   | Misc. expenses                  | 0.00   |
|       | Total (B)                       | 67.61  |
|       | Gross profit/loss (A – B)       | 112.39 |
|       | Less: Depreciation              | 0.29   |
| C.    | PBIT                            | 112.10 |
| D     | Income-tax                      | -      |
| E     | Net profit/loss                 | 112.10 |
| F.    | Repayment (Annual)              | -4.51  |
| G     | Retained surplus (E-F )         | 116.61 |

#### 14. BREAK-EVEN ANALYSIS

| <b>Fixed cost</b>               |              |
|---------------------------------|--------------|
| Land & Building Rent            | 0.30         |
| Depriciation                    | 0.29         |
| Interest                        | 4.93         |
| Manpower                        | 1.58         |
| <b>Total Fixed cost</b>         | <b>7.10</b>  |
| <b>Variable cost</b>            |              |
| Raw materials                   | 56.25        |
| Utilities                       | 0.22         |
| ManPower                        | 3.70         |
| Administrative expenses         | 0.07         |
| Selling & distribution expenses | 0.06         |
| <b>Total Variable cost</b>      | <b>60.30</b> |
| <b>Contribution margin</b>      | <b>66%</b>   |
| Break-Even Point in Value       | 4.69         |

#### 15. STATUTORY/GOVERNMENT APPROVALS

For a dehydrated kiwi business, the following licenses and approvals are required:

1. FSSAI License: Ensure compliance with food safety regulations.
2. Trade License: Obtain from the local municipal authority.

3. GST Registration: For the sale of goods and services.
4. MSME Registration: To avail of government subsidies and support.

## **16. TRAINING CENTERS AND COURSES**

Entrepreneurs looking to enter kiwi farming and dehydration can pursue relevant courses at the following institutes:

1. FCI Institute of Management, Dehradun, Uttarakhand.
2. National Institute of Food Technology Entrepreneurship and Management (NIFTEM), Haryana.

Uttarakhand farmers can capitalize on the growing demand for dehydrated fruits and secure a sustainable and profitable business by cultivating kiwi and engaging in dehydration.

The Swayam portal (link: <https://swayam.gov.in/>) can also be accessed for enhanced learning on business commerce, accounting, production, marketing, and areas of entrepreneurship. Entrepreneurship programs that help run businesses successfully are also available from institutes like the Entrepreneurship Development Institute of India (EDII) and its affiliates all over India.

## **Disclaimer**

Only a few machine manufacturers are mentioned in the profile, although many are available in the market. The addresses given for machinery manufacturers have been taken from reliable sources, to the best of knowledge and contacts. However, no responsibility is admitted, in case any inadvertent error or incorrectness is noticed therein. Further the same have been given by way of information only and do not carry any recommendation.