SET
Skills for Employment Tanzania

Training Manual

Spice Processing

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Swisscontact

Swisscontact works in Tanzania as a facilitator in skills development to complement government efforts in youth empowerment.

Economic, social, and academically disadvantaged youth are supported through tailor-made vocational skills development opportunities to increase their employment chances and entrepreneurship opportunities. Projects are guided by a unique youth and market-driven learning group model, which is focused on sub-sectors and jobs which have a potential to offer (self-)employment opportunities. These are agriculture/agribusiness, and other rural trades or services.

Swisscontact projects in Tanzania employ an Inclusive Markets system approach which considers the limits and opportunities of the existing vocational skills development system. Projects seeks to improve the prospects of self-employment among the youth through a sustainable and systemic contribution to improved access, relevance, and quality of vocational skills development. Since ownership is critical for sustainability, our projects apply a participatory approach which involves joint action planning with partners.

Introduction for Trainers

This training course is designed to help participants learn how to process spices for sale and home use. It focuses on simple, low-cost, and practical techniques to clean, dry, grind, blend, and package spices. Spice processing is an accessible and growing opportunity for income generation in many rural and peri-urban communities of Tanzania.

The course targets young people with little formal education or work experience, especially those who have never received skills training. It gives them useful knowledge and hands-on skills to start a small spice processing business, work with existing producers, or improve the value of spices already grown in their communities.

The course content is practical and relevant. It includes training on spice hygiene, preparation and preservation, as well as packaging, costing, and basic marketing. Over two-thirds of the course is practical. Training takes place in simple spaces with real tools and materials. Learners process real spices in small groups, following demonstrations and step-by-step instructions from the trainer.

This course is part of Swisscontact's effort to support youth livelihoods through practical, market-focused training that opens pathways for self-employment and improved income.

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1 Module 1: Introduction to Spice Processing

1.1 Overview of Spice Processing

What is spice processing?
Spice processing means **cleaning, drying, grinding, mixing, and packaging** spices. It takes a raw spice — like black pepper, cloves, turmeric, or ginger — and prepares it so that people can cook with it, sell it in shops, or use it for medicine or cosmetics.

Example: Fresh turmeric is a root. Spice processing turns it into turmeric powder used in curry.

Why process spice?
Processing spices adds value. It helps people earn more money, keep spices safe for longer, and reach more customers.

Here are some reasons why we process spices:

- **To increase value** – Ground or packed spices sell for a higher price than raw spices.
- **To keep the spice clean and safe** – Removing dirt, drying properly, and storing in containers helps avoid mould, bugs, and dust.
- **To make it easy to use** – People like to buy ready-to-use products like ground pepper or curry mix.
- **To reach more markets** – Packaged spices can be sold to hotels, shops, or exported to other areas.
- **To earn a living** – Processing can create jobs or help someone start a small spice business.

Spice processing value chain
The *value chain* is a simple map that shows **all the people involved from the farm to the final customer**. Each person adds some value to the spice.

Here is an example of the spice processing value chain:



1. **Farmer** – Grows the spice (e.g. black pepper or ginger)
2. **Transporter** – Moves the spice to the processor
3. **Buyer or broker** – Buys and sells the spice to others
4. **Processor** – Cleans, dries, grinds, and packages the spice
5. **Wholesaler** – Buys large amounts of processed spice

6. **Retailer or shop** – Sells spice to customers in small packets
7. **Consumer** – Buys the spice to cook food or use at home

Some processors also **sell directly to consumers**, shops, or online (e.g. Tiktok Shop, Instagram, market stalls).

1.2 Opportunities in spice processing

Spice processing offers many chances for **income, self-employment, and small business growth**. It is a good option for young people, especially in rural or peri-urban areas.

1.2.1 Employment opportunities

This training equips participants with the skills to process, package, and sell spices through small-scale operations. Graduates of the programme can generate income in various ways, both directly through spice processing and indirectly by offering related services or products.

Primary Opportunities
These are direct income-generating activities related to processing and selling spices:

- **Processing and packaging spices:** Turning raw spices into packaged, ready-for-sale single spice products such as ground black pepper, whole cardamom, or cinnamon sticks.
- **Spice mix production:** Creating unique spice blends tailored to local tastes and selling them as value-added products.
- **Paste production:** Producing garlic and ginger pastes for home cooks, caterers, or restaurants seeking convenience.

Secondary Opportunities
These are indirect or support activities that also create income, often requiring lower startup costs or offering support to other spice processors:

- **Buying and selling raw or processed spices:** Acting as a middleperson—buying dried spices from farmers and selling to processors or retailers.
- **Grinding and packaging services:** Offering services to others who grow or buy spices but do not have access to grinding machines or packaging tools.
- **Training and advisory services:** Sharing expertise by helping others learn about spice quality, grading, packaging, or business setup. This can include mentoring, workshops, or informal coaching.
- **Product development in related areas:** Expanding into spice-based product development such as:
  - Natural cosmetics or soaps using turmeric, cinnamon, or clove oil

- Herbal health products or remedies
- Food products like spice syrups, curry powders, or marinades

Spice processing can also lead to **employment opportunities**, where small businesses grow to include staff for tasks such as peeling, packaging, marketing, or delivery.

By exploring both primary and secondary opportunities, spice processors can build sustainable livelihoods, adapt to changing markets, and grow their businesses over time.

1.2.2 Demand for spices

The **demand for spices is growing**. People want spices for:

- **Local markets** – homes, restaurants, hotels, shops
- **Regional markets** – other towns and regions in Tanzania and neighbouring countries
- **International markets** – exports to other countries

Because of this, people who process spices can sell to **many types of customers**.

1.2.3 Health benefits of spices

Many spices are not only used for flavour and aroma but also have health-promoting properties. This is one reason why they are popular in traditional medicine and home remedies. Understanding these benefits can help in marketing and product development.

Common Health Benefits of Spices

- **Black pepper:** Aids digestion, helps relieve cough and cold, may improve nutrient absorption.
- **Cardamom:** Helps with digestion and bad breath; may support heart health and reduce inflammation.
- **Cloves:** Known for pain relief, especially toothache. They are also antibacterial and help with digestion.
- **Cinnamon:** May help regulate blood sugar, improve circulation, and reduce inflammation. Used for colds and flu.
- **Turmeric:** Powerful anti-inflammatory and antioxidant. Supports joint and skin health and is used in many traditional medicines.
- **Ginger:** Used for nausea, colds, and digestive problems. It helps with inflammation and may ease joint pain.
- **Garlic:** Supports heart health, boosts immunity, and helps fight infections. Also believed to reduce blood pressure.

How This Helps Spice Processors

Knowing the health benefits of each spice can help processors:

- Create value-added products like health-focused spice mixes or teas
- Market products more effectively to health-conscious customers
- Develop packaging and labelling that explains the benefits to consumers
- Explore partnerships with herbal medicine shops, wellness markets, or pharmacies

These benefits increase the value of spices beyond just flavour—making them attractive to a wide range of customers.

1.2.4 Different product forms

Spices can be processed in different ways. This gives more choices for business:

- **Dry spices** – like black pepper powder, ground turmeric, or cinnamon sticks
- **Wet pastes** – like ginger paste or garlic paste
- **Spice mixes** – like pilau mix, tea masala, or curry powder
- **Oils and extracts** – like clove oil or cinnamon oil, and extracts such as vanilla extract

Some products are used for **cooking**, others for **medicine**, **cosmetics**, or even **aromatherapy**.

1.2.5 Develop extended product ranges

Spice processors in rural Tanzania can grow their businesses by making more types of products from the same raw spices. This helps to reach more customers, make better use of materials, and earn more income.

Creating different products also helps small businesses compete in the market by offering something unique or useful.

Why develop more products?

- To sell to different types of customers – homes, small shops, hotels, and markets
- To use all of the spice harvest, including lower grades of spices
- To meet local needs for health, cooking, and beauty
- To add value and charge a better price

Examples of new product ideas

- **Different pack sizes for different buyers**
  - Very small sachets (e.g. 50g) for village shops and customers with low income
  - Medium-size packs for households and local vendors

- Large bulk packs for hotels, restaurants, or food sellers

- **Better packaging for special markets**
  - Reusable jars or small glass bottles for tourist lodges and gift shops
  - Simple, clean packaging for supermarket shelves in town
  - Custom labelling for special orders

- **Spice mixes for local foods**
  - A curry mix for chicken or vegetables
  - A pilau mix using local taste preferences
  - Tea masala for selling with milk and sugar at market stalls

Tips for local processors

- Ask customers what they want or like
- Start small – test new products in your local market
- Use clean, attractive packaging to make the product look good
- Write clear labels showing name, use, and weight
- Work with other small businesses (e.g. herbalists or beauty salons) to reach more people

By making new products from the same spices, rural processors can build a stronger business, serve more markets, and create jobs and income in their communities.

1.3 Benefits and challenges of spice processing

Any job or income opportunity has both pros and cons, or benefits and challenges. When thinking about starting a spice processing business, these are the benefits and challenges to anticipate:

- **Benefits**
  - Income generation
  - Expanded opportunities into other occupations
  - Developing knowledge and skill
  - Business and market expansion opportunities
  - Opportunity to network with other processors and businesses: develop business profile
  - Awareness and application of health benefits of spices
  - Cooking and enjoyment of food based on understanding of spices
  - Space for innovation and creativity
  - Flexible working hours around family or other commitments

- **Challenges**
  - Travel to sources of raw materials
  - Busy times during harvesting periods
  - Price fluctuations of raw and processed spices: fluctuation in income
  - Seasonal fluctuation in spice processing and income
  - Health risks due to spice dust in the processing environment.
  - Responsibility for all aspects of production and processing.
  - Sales and marketing may be difficult for some personalities

1.4 Basic requirements of spice processing

To start and run a spice processing business, certain things are needed. These can be grouped into **seven important areas**.

1. Business legal requirements
To run a business legally in Tanzania, registration is important. This shows that the business is real and allows it to grow. The key requirements are:

- **Business name registration** – registered business name with BRELA (Business Registration and Licensing Agency)
- **Tax registration and TIN** – register with TRA (Tanzania Revenue Authority) which issues a Tax Identification Number for the business.
- **Business licence** – from the local government office
- **Product certification** – register products with TBS (Tanzania Bureau of Standards)
  (More detail in Module 5)

2. Premises
A spice processor needs a place to work. This place should:

- Be **clean and closed** (not open to dust or animals)
- Have **electricity and clean water**
- Have **space** for receiving, drying, grinding, packaging, and storage
- Be **safe and secure**

The place can be small but must be organised. It can be a space in a home, or a specific space away from the home.

3. Equipment and tools
Basic equipment is needed to process spices. Examples:

- **Weighing scale** (digital) – to measure spice amounts
- **Drying trays or mats** – for sun drying
- **Grinder** – to make powder
- **Sieves** – to remove dirt or get fine powder
- **Packaging materials** – bags, bottles, labels

- **Sealer** – to close packets

Good tools help produce good products.

4. Raw materials
Raw spices are the starting point. They must be, clean, food quality and dry or easy to dry. Examples:

- Black pepper
- Cardamom
- Cloves
- Cinnamon
- Ginger
- Turmeric

Knowing when and where to buy spices is important for the business.

5. Processing knowledge and skills
The person doing the work must know:

- How to clean, dry, grind, and pack the spices
- How to check quality
- How to keep records
- How to store spices safely

These skills can be learned by training and practice.

6. Marketing and selling
A business must sell its product to make money. This means:

- Knowing who the customer is
- Promoting the products (e.g. on Facebook, at markets)
- Talking to shops, hotels, or food producers
- Creating simple labels and prices

Good marketing helps a small business grow.

7. Business skills
Running a business needs more than processing skills. It also needs:

- **Planning** – what to produce and when
- **Budgeting** – knowing how much money is needed
- **Keeping records** – sales, expenses, stock
- **Pricing** – deciding the right price
- **Saving and reinvesting** – keeping money to grow

These skills help the processor to stay in business and make a profit.

2 Module 2: Introduction to Spices

2.1 Introduction to spices

Spices are parts of certain plants that are used to add flavour, colour, and aroma to food. They can also be used for medicine, preservation, and traditional treatments. Spices are usually dried before they are stored, sold, or ground into powder They are important in cooking, culture, and business.



Spices can be classified in different ways:

Plant Part	Flavour	Trading
•Which part of the plant the spice originates from	•The type of flavour of the spice	•The trading volumes and prices of the spices

Classification by plant part

Spices can come from different parts of a plant, such as:

- **Seeds and berries:** e.g. cardamom, cumin, black pepper, mustard, fennel
- **Roots:** e.g. ginger, turmeric, galangal
- **Bark:** e.g. cinnamon, cassia
- **Fruits or berries:** e.g. black pepper, chilli, allspice
- **Flowers or buds:** e.g. cloves, saffron

Seed	Bulb	Bark	Fruit	Rhizome	Pod	Bud	Berry
Cumin Coriander Fenugreek Fennel Mustard	Garlic	Cinnamon	Cardamom Chilli	Turmeric Ginger	Vanilla Tamarind	Clove	Black pepper Juniper

Classification by flavour

- **Pungent/hot spices:** black pepper, ginger, chili, mustard, garlic, mustard
- **Aromatic spices:** cardamom, cumin, cloves, coriander, fenugreek, cinnamon, nutmeg.
- **Coloured spices:** turmeric, saffron, paprika.
- **Mild spices:** paprika, coriander

Classification by trading volume and price:

Spices can also be classified by the quantities in which they are traded, and their price. For example, saffron is the most expensive spice, and because of its size, weight and price, is traded in small volumes.

Macro spices	Micro spices
Commonly used in large volumes; widely available and lower in price.	Used in smaller amounts; often high-value or less commonly available.
Examples: • Black pepper • Turmeric • Ginger • Chillies • Coriander • Cumin	**Examples:** • Cardamom • Cloves • Nutmeg • Cinnamon • Saffron • Star anise • Vanilla
Characteristics: • High demand • Grown in larger quantities • Used in many dishes or products • Lower to medium price range • Often sold in bulk	**Characteristics:** • Used in small quantities (strong flavour or aroma) • Higher price per kg • More sensitive to handling and storage • Sometimes imported or grown in limited regions

Classification by Trade

In international trade, spices are grouped and classified using systems such as the International Trade Centre (ITC), International Standards Organization (ISO), and the Harmonized System (HS Codes). These codes are used worldwide for customs and trade. Each spice has its own HS code, which ensures that buyers, sellers, and governments all use the same classification when trading across borders.

For example:

- **Black pepper** – HS Code 0904.11 (whole) / 0904.12 (crushed/ground)
- **Cloves** – HS Code 0907.00
- **Cinnamon** – HS Code 0906.11 (true cinnamon) / 0906.20 (cassia)
- **Cardamom** – HS Code 0908.30
- **Turmeric** – HS Code 0910.30

Knowing these codes is important for young people planning to sell spices internationally, as it helps with customs clearance, export documentation, and meeting market standards.

2.1.1 Spices used fresh

Some spices are used in their **fresh form**, not dried. These spices are often chopped, crushed, or blended before use.

Examples of fresh spices:

- **Garlic** – Used in cooking for flavour and health. Can also be turned into paste.
- **Ginger** – Used fresh in tea or food. Can also be dried or made into paste.
- **Turmeric** – Fresh turmeric root is bright yellow. It can be grated or sliced and used in food or medicine.
- **Chilli** – Fresh chillies are used in sauces or chopped into dishes for heat.
- **Tamarind** – A sour fruit used in cooking. Usually sold fresh or as paste.

Fresh spices are often strong in flavour and aroma but they spoil quickly, so they must be stored well or used soon after harvest.

2.1.2 Spices needing processing

Some spices **must be processed** before they are ready to use or sell. Processing helps improve:

- Shelf life (how long they last)
- Safety and cleanliness
- Ease of use
- Value in the market

Basic steps in spice processing:

1. **Sorting** – Remove stones, dirt, leaves, bad pieces
2. **Cleaning** – Use water or air to wash or blow away dust
3. **Drying** – Use the sun or a drying tool to remove moisture
4. **Grinding** – Turn dried spice into powder
5. **Packaging** – Put spice into clean, sealed containers for storage or sale

Examples:
Black pepper, cloves, cardamom, cinnamon, dried turmeric, cumin
These spices are often processed into powder, packaged in small bags or bottles, and sold in shops or markets.

2.1.3 Properties of spices

Spices have special **natural properties**. These properties give spices their **taste, smell, colour, and health benefits**.

1. Sensory properties

These are the things we can notice using our senses.

- **Flavour** – Spices can be sweet, bitter, hot, or spicy (e.g. chilli is hot, cardamom is sweet)
- **Aroma (smell)** – Spices have strong smells (e.g. cloves, cinnamon)
- **Colour** – Spices add colour to food (e.g. turmeric makes food yellow)
- **Texture** – Some are rough, fine, oily, or dry

These properties make spices useful in cooking, cosmetics, and medicine.

2. Volatility

Volatility means the important compounds in spices can disappear easily.

- Spices have essential oils and other compounds that give them flavour and aroma
- These compounds can evaporate when exposed to:
    - Heat
    - Light
    - Air
    - Moisture

To protect these properties:

- Keep spices in airtight containers
- Store in a cool, dry, and dark place
- Avoid long storage time

3. Medicinal and functional properties

Many spices are known to support good health, as discussed in Module 1. They are used in traditional medicine in Tanzania and around the world. Spices can also help preserve food because some have antibacterial and antifungal properties.

2.2 Forms of spices

Spices can be used in many different forms. This gives more options for cooking, selling, and making different products. Some forms are sold as they are, and others are made through processing.

2.2.1 Whole spices

Whole spices are sold just as they are—either fresh or dried.

- **Fresh whole spices**: These include ginger root, turmeric root, garlic, chilli, and tamarind.
- **Dried whole spices**: These include black pepper, cloves, cardamom pods, cinnamon sticks, and dried chillies.

Whole spices are often used in cooking or crushed at home. They last longer when stored well.

2.2.2 Ground spices (powder)

Many dried spices can be ground into powder. This makes them easy to use and measure.

Examples:

- Ground black pepper
- Turmeric powder
- Ginger powder
- Cinnamon powder
- Clove powder
- Cumin or coriander powder

Some spices can be coarse ground or fine ground (e.g. black pepper) while other are usually fine ground e.g. cinnamon and turmeric.

Ground spices must be stored in airtight containers to keep the flavour and aroma strong.

2.2.3 Spice mixes

These are blends of different ground spices. They are made for special recipes or styles of cooking.

Examples:

- **Masala** – A mix of spices for tea or food
- **Pilau mix** – Used for pilau rice
- **Curry mix** – For stews, curries, and sauces

Spice mixes are popular in homes and restaurants. Spice processing businesses can create their own spice mix products for different dishes and for different markets.

2.2.4 Pastes

Pastes are made by **blending fresh spices** into a soft, wet form that are convenient and ready to cook with.

Examples:

- Garlic paste
- Ginger paste
- Chilli paste

- Mixed spice pastes for marinades or rubs

Pastes are used in hotels, households, and food production. They should be kept in clean bottles and stored in a cool place.

2.2.5 Oils and extracts

Some spices can be processed to make essential oils or liquid extracts. These are more advanced products but have many uses.

Examples:
- **Clove oil** – Used in medicine and cosmetics
- **Cinnamon oil** – Used in perfumes, sweets, and skin products
- **Vanilla extract** – Used for baking and sweet foods

These products are sold in small bottles and must be made carefully under clean conditions.

2.3 Uses of spices

Spices are used in many different ways in Tanzania and around the world. People use spices in food, medicine, beauty products, and even in spiritual or traditional practices. Each spice has special qualities like taste, smell, and health benefits.

Culinary (for cooking)
Spices are commonly used in cooking to add flavour, smell, and colour. For example:
- **Flavouring** – Black pepper, ginger, chilli
- **Aroma** – Cardamom, cloves, cinnamon
- **Colouring** – Turmeric gives food a yellow colour

Preservation
Some spices help keep food fresh for longer. They can stop bacteria and mould from growing.
- Used in **pickling** (e.g. cloves, chilli, garlic)
- Have **antioxidant** properties (fight spoilage)
- Have **anti-microbial** properties (kill or stop germs)

Medicinal and health
Many spices are used in traditional medicine. They can help the body fight sickness and stay healthy.
- **Boost immunity** – Ginger, turmeric
- **Aid digestion** – Cardamom, clove
- **Reduce pain or swelling** – Turmeric (anti-inflammatory)

- Used in **aromatherapy** – Cinnamon, clove, cardamom oils

Cosmetics
Spices are used in natural beauty and skin care products.
- **Soaps and lotions** – Turmeric and clove oil for clear skin
- **Hair oils** – Ginger or clove oil for scalp care
- **Face masks** – Turmeric for brightening skin

Other uses
Spices are also used in:
- **Incense** – For smell and traditional ceremonies
- **Candles** – To give natural aroma
- **Spiritual practices** – In some communities, spices are used for protection or blessing rituals

These different uses make spices valuable for home, business, and export.

2.4 Preservation of spice properties

Spices can lose their good smell, taste, and colour over time if they are not stored properly. To keep the spices strong and fresh, it is important to understand how to store them well.

Volatility
Spices contain oils and special compounds that give them flavour and aroma. These are called **volatile compounds**. Volatile means they can easily disappear into the air. If spices are not stored correctly, they can quickly lose their strength, colour, and smell.

Causes of loss
Spices lose quality because of these main problems:
- **Air** – lets the aroma escape
- **Light** – fades the colour and reduces strength
- **Moisture** – causes mould and clumping
- **Heat** – damages aroma and flavour
- **Long storage time** – weakens the spice over time
-

Prevention
To keep spices fresh and strong for a longer time:
- **Use airtight containers** – this keeps out air and moisture
- **Store in a cool, dry, and dark place** – avoid sun, heat, or damp places
- **Keep containers clean and dry** – do not let old powder or dirt remain inside
- **Label with date** – always mark the date when the spice was packed and check regularly if it is still good

Protect from pests and contamination
Spices must be protected from insects, rats, and dirt.

- Keep storage areas **clean**
- Use **sealed containers** with tight-fitting lids
- Store containers on **shelves or pallets**, not directly on the floor

Good storage keeps spices safe, strong, and ready for sale or use.

2.5 Spice production in Tanzania

Tanzania grows many important spices. Some are used locally in cooking, while others are sold in markets across the country or exported to other countries. Spice farming provides income for many farmers and small businesses.

Spice growing regions
Spices grow best in warm, humid areas with good rainfall and fertile soil. In Tanzania, the main spice-producing regions are:

- **Morogoro** – Known for growing black pepper, cardamom, ginger, and turmeric. Many farmers in this region grow spices as part of small mixed farms.
- **Tanga** – Produces cloves, cinnamon, cardamom, and turmeric. The climate is good for both farming and drying spices.
- **Singida** – The dry climate supports the cultivation of coriander, cumin, and garlic. Farmers in this region focus on drought-tolerant spices that can be sold locally and transported to larger markets.
- **Mbeya** – With cooler highland conditions, Mbeya is suitable for ginger, turmeric, and black pepper. The region is increasingly recognised for producing high-quality ginger for both local consumption and export.
- **Songea** – Located in the southern highlands, Songea is known for growing cardamom and ginger. Farmers here often combine spice farming with other crops, providing steady income for smallholder households.
- **Zanzibar** – Famous for its history as the "Spice Island." Clove is the main spice grown, but quantities are limited compared to the past. Other spices like cinnamon, nutmeg, and black pepper are also grown in smaller amounts.

These regions offer good opportunities for spice processing businesses to buy directly from farmers or spice cooperatives. Working closely with farmers can also improve the quality and supply of raw materials.

2.6 Quality points of processed dry spices

Good quality spices are important because they give better taste, are safe to use, and sell for a higher price. After processing, every spice must meet clear quality standards. This makes sure customers receive a clean, fresh, and reliable product.

It also helps the processor build a good name and reputation in the market. The following quality points are checked by the Bureau of Standards, so they must be presented well. This will also prepare youth for future certification.

1. **Physical Quality**
- **Appearance/colour:** Should be uniform, natural, and characteristic of the spice type. For example, turmeric should be bright yellow, chilli red, and black pepper dark brown to black.
- **Size and shape:** Whole spices should have uniform size and shape; broken or irregular pieces may reduce quality.
- **Texture:** Should be free-flowing (for powders) and not lumpy; whole spices should be firm, not brittle or soft.
- **Purity:** Free from stones, dirt, sand, sticks, and other foreign materials.

2. **Chemical Quality**
- **Moisture content:** Low moisture prevents microbial growth and prolongs shelf life. For most dry spices, moisture content should be below 10–12%.
- **Volatile oil content:** Especially important in aromatic spices like cardamom, cloves, and cinnamon; higher oil content usually indicates better flavour.
- **Ash content:** Indicates mineral content; excessive ash may suggest contamination or adulteration.
- **Absence of residues:** Pesticides, heavy metals, or other chemical residues should be within permissible limits.

3. **Microbiological Quality**
- **Microbial load:** Should be within safe limits; high counts of bacteria, moulds, or yeast reduce safety.
- **Absence of pathogens:** *Salmonella*, *E. coli*, and aflatoxin-producing moulds must not be present.

4. **Organoleptic Quality**
- **Aroma/flavour:** Should be characteristic, strong, and pleasant. Poor aroma may indicate old, improperly stored, or adulterated spices.
- **Taste:** Should match the expected taste profile of the spice.

5. **Packaging and Storage Quality**
- **Hygienic packaging:** Airtight and moisture-proof to protect against contamination.
- **Labelling:** Correct information on origin, grade, and expiry date.
- **Shelf life:** Ability to retain colour, flavour, and aroma during storage.

6. **Grading and Standards**

Processed spices may also be evaluated based on official **standards and grades**, such as:
- Whole vs. crushed vs. powdered.

- Extra bold vs. bold vs. regular (for black pepper, cardamom, etc.).
- Cleanliness and absence of foreign matter according to ISO or national spice standards.

3 Module 3: Good Manufacturing Processes

Good Manufacturing Practices (GMPs) are a set of rules and procedures that help ensure food products are clean, safe, and of good quality. For spice processors, following GMPs means working in a clean place, using safe tools, and handling spices carefully to avoid contamination.

These practices protect the health of consumers, help build trust with buyers, and improve the chances of selling to shops, hotels, and export markets. In Tanzania, GMPs also help processors meet government food safety requirements.

There are various elements to GMP, as discussed in detail below.

3.1 Location and Site Selection

Choosing the right place for a spice processing unit is very important. A good location helps make the work easier, keeps the spices safe and clean, and avoids problems with health or contamination.

3.1.1 Requirements

Dust and contamination prevention
The site must be in a **clean and safe area**. It should not be near places that create dust, bad smells, or harmful chemicals. Avoid locations nearby:

- **Cement and fertilizer factories** – These release dust and strong smells that can enter the spices.
- **Dump or landfill sites** – These attract flies, rats, and other pests that can contaminate spices.
- **Mines** – Mining areas produce dust and heavy metal particles that can affect spice safety.

A clean and well-chosen location supports good hygiene, easy work, and better-quality spice products.

3.2 Facility Requirements

The spice processing facility must be clean, safe, and easy to keep in good condition. This helps protect the quality of the spices and keeps the workers healthy.

Closed environment
The building should be fully closed with proper doors and windows. This stops dust, pests, and animals from getting inside.

Roof: The roof must be strong and not leaking.

- A **ceiling** is recommended to stop spice dust from collecting on the roof beams.
- If there is **no ceiling**, workers must regularly clean the beams using a feather duster or broom to remove dust and avoid contamination.

Walls: Walls should be made of **brick and mortar**.

- They must be **smooth and easy to clean**, not rough or cracked as rough walls will collect spice dust which will build up dirt and be unhygienic.

Floor: The floor must be **cleanable** and strong.

- **Cement or tile** floors are good choices.
- Avoid dusty or muddy floors.

Electricity: The facility must have **electric power** to run important machines like the grinder or blender.

Water: There must be a supply of **clean water**, also called **potable water**, for washing spices, cleaning tools, and for staff hygiene.

A proper facility helps to meet health standards, improve production, and build trust with customers.

3.3 Equipment and Tools

To process spices well, it is important to use the right equipment and tools. These tools help with receiving, sorting, cleaning, drying, grinding, mixing, packaging, and storing spices. Most of them are simple and easy to use.

Receiving
These tools are used when the spices arrive from the farm:

- **Weighing scale** – for measuring the amount of raw spices; it should be digital and capable of weighing bulk spices, so should be able to handle up to e.g. 25 – 50 kg at a time.
- **Moisture meter** (optional) – to check how wet or dry the spices are (measures moisture content
- **Buckets or crates** – for collecting and moving the spices

Sorting and grading
Used to remove dirt and separate good quality spices:

- **Sorting table** – flat surface to lay out spices
- **Sorting trays or baskets** – to hold and examine spices
- **Sieve or mesh** – for removing dust or separating sizes
- **Baskets for winnowing** – for air-cleaning like with pepper
- **Crates or containers** – for holding clean, sorted spices

Cleaning
Used for washing certain spices like ginger or turmeric:

- **Basins or buckets** – for washing with clean water
- **Drying cloths or strainers** – for draining water
- **Gloves and aprons** – for hygiene and protection

Drying
Used to remove moisture before grinding:

- **Drying trays or racks** – made of mesh, bamboo, or plastic
- **Raised platform or drying mat** – to keep spices off the ground
- **Protective cover** – like netting or shade cloth to protect from dust or insects

Grinding
Used to make spice powder:

- **Electric grinder** – to grind dried spices
- **Sieve** – to separate fine powder from large particles; sieves are usually built into the spice grinding machine.
- **Collection bowls or containers** – to catch the ground spice



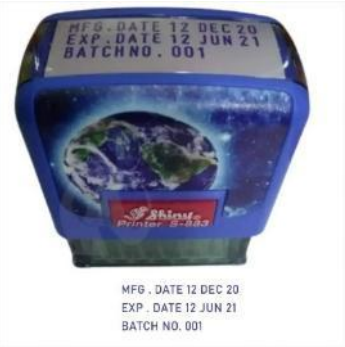
Blending
Used for making spice mixes:

- **Mixing bowls or buckets** – to combine spices
- **Measuring cups, spoons, or scale** – for correct amounts
- **Mixing spoons** – to stir the spices together

Packaging and packaging equipment
Used to prepare the product for sale or storage:

- **Weighing scale (digital)** – this should weigh small quantities according to package sizes e.g. 100g, 500g, 1kg, 5kg, etc. This is not a large scale item.
- **Packaging bags, boxes, bottles, or jars** – to hold the final product

- **Scoop or spoon** – for filling the container
- **Funnel** – helps to pour spice into bags or bottles
- **Heat sealer** – seals plastic bags to keep spices fresh
- **Labels** – show the spice name, weight, and producer name
- **Batch and date stamp** – used to mark the production date and batch number



Storage
Used to keep processed spices in good condition:
- **Airtight containers** – to protect from moisture and air
- **Shelves or pallets** – to keep containers off the floor and organised

3.4 Layout and Design

A good layout helps the spice processing work go smoothly and safely. Equipment, tools, and materials should be arranged in a way that supports a clear step-by-step flow. This helps reduce mistakes, save time, and protect the spices from contamination.

Benefits of good layout and design
- **Reduces contamination** – by keeping raw and clean areas separate
- **Simplifies work** – saves time and makes tasks easier
- **Reduces accidents** – by keeping tools and walkways organised
- **Supports stock control** – makes it easy to track materials and finished products

Arrangement of processing equipment

The facility should allow for the **smooth flow of work** from raw spices to finished products.
- Raw materials enter at one end.
- Spices move through cleaning, drying, grinding, mixing, and packaging in order.
- Finished spices are stored away from raw ones.

This separation helps avoid cross-contamination between dirty and clean products.

Layout options: Different shapes can be used to fit the space:
- **L-shape** – good for small or narrow rooms
- **U-shape** – allows flow from one side to the other
- **Straight line** – simple layout for very small operations

Storage space: Separate storage areas help prevent confusion and keep the spices safe.

- **Raw materials** – fresh or dried unprocessed spices
- **Processed materials** – ground or packed spices
- **Other items** – packaging, labels, buckets
- **Equipment** – tools like trays, grinders, mixers
- **Cleaning materials** – cloths, soap, brooms

Admin space: A small space is needed for basic office work.

- **Desk or table and chair** – for record keeping
- **Filing cupboard or shelf** – for keeping documents like receipts, batch records, and safety checks

Washing area: There must be a place for:

- **Washing hands** before and during work
- **Cleaning tools and equipment** after each session

Staff toilet and basin: A **toilet and handwashing area** must be available for staff to support hygiene and health.

Space for working clothes: There should be a small area to keep:

- **Overalls or uniforms**
- **Protective clothing (Personal Protective Equipment – PPE** like aprons, gloves, and hair covers

A good layout supports clean, efficient, and professional spice processing that meets quality and safety standards.

3.5 Health and Hygiene

Keeping people and the workplace clean is very important in spice processing. This helps protect the spices from dirt, germs, and other contamination. Good health and hygiene also protect the workers.

Personal health

Everyone working in the processing area must be in good health.

- People must not work when **feeling sick** (fever, cough, diarrhoea, skin infections)
- All workers should have a **health certificate**, updated every 6 months
- Follow good habits:
    - Do not cough or sneeze over spices
    - Do not scratch skin or touch hair during work
    - Wash hands before work, after toilet, and after breaks
    - No smoking inside the facility
    - No eating or drinking in the processing area

Personal hygiene
Each worker must take care of their body every day:

- Bath or wash daily
- Keep hair clean and tied back
- Trim fingernails
- Brush teeth every day

Working dress and PPE
Clean clothes and protective equipment help stop germs and hair from falling into the spices. Workers should wear:

- A clean **overall, overcoat, or apron**
- A **hair covering** (scarf, hat, or net)
- **Gloves** (optional, for grinding or packing)
- **Closed shoes** to protect feet
- **Dust mask** (optional, useful during grinding)
- **Safety glasses** (optional, for extra protection)

All working clothes should be kept clean and washed often. Workers must change into clean gear before starting work.

3.6 Safety and Security

Spice processing must be done in a way that is safe for people and the products. Safety protects workers from injuries. Security protects the equipment, raw materials, and processed spices from theft or damage.

Safety¶
Workers must be trained to use all tools and machines correctly, especially those that can cause injury. First aid readiness in case of any accidents or injuries is also important. Safety guidelines for spice processing include:

- **Spice grinder** – The blades are sharp and fast. Never open or put hands inside when the grinder is plugged in or running.
- **Electricity and water** – Keep electric tools and plugs away from water to avoid electric shock. Handle all equipment with dry hands.
- **First aid kit** – Keep a full first aid kit in the facility, including items like bandages, antiseptic, and an **eye bath** in case powder gets into the eyes.
- **Basic injury treatment** – Train someone to clean and cover small cuts or burns. Know when to go to the clinic.
- **Fire extinguisher** – Keep a small extinguisher in the building and train someone how to use it in case of fire.

Security
Protecting the facility from theft or damage is also important. Guidelines for safety include:

- **Secure premises** – Doors and windows must be lockable. Keep the building locked when not in use.
- **Cash security** – Use mobile money services like M-Pesa or Airtel Money, when possible, instead of handling cash.
- **Safe storage** – Store raw spices, packaging, and finished products in locked rooms or cupboards.
- Keep **stock records** – Write down how much raw material comes in, how much is used, and how much finished product is packed and sold. This helps prevent theft and loss.

Good safety and security help build a reliable, professional, and trustworthy business.

3.7 Machine Maintenance

Keeping machines in good condition is very important in spice processing. Well-maintained machines work better, are safer to use, and last longer. This also helps to produce high-quality spices and avoid breakdowns that can delay work.

Guarantees and warranties
When buying a machine like a grinder or blender, ask for a **guarantee or warranty**.

- This is a promise from the seller or maker that they will repair or replace the machine if it has problems within a certain time.
- Keep the receipt and warranty paper safe in the administration office (in a file for equipment).
- Ensure that the machine is serviced in accordance with the warranty requirements, and manufacturer's instructions to ensure that the warranty does not lapse, and that the machines operate at best efficiency.

Operating machines
Always use machines **according to the manufacturer's instructions**.

- Read the user manual or ask for a demonstration.
- Do not overload the machine or use it for the wrong purpose.
- Switch off and unplug before opening or cleaning.

Cleaning machines

- Clean the machines **after every use**.
- Follow the **manufacturer's instructions** to clean safely and correctly.
- Make sure the machine is **dry before storing**.

Servicing periods
Each machine must be serviced regularly to keep it running well.

- Servicing may be based on hours of use (e.g. after every 100 hours of grinding), or a time period (e.g. every 6 months).
- Check belts, blades, wires, and moving parts.
- Oil and clean parts as required.

Service records
Keep a **record of all services** done.

- Note the date, the type of service, and who did it.
- Use a recognised service provider if the machine needs professional repair.
- This helps keep the warranty valid and helps track machine performance.

Regular maintenance ensures the machine works safely, the spices stay clean, and the business runs smoothly.

3.8 Recordkeeping

Keeping good records helps the spice business stay organised, understand profits and losses, and plan for growth. Records also help to prove the quality and safety of products.

3.8.1 Types of records

Different types of records are needed for production, packaging, and money management. These can be kept in notebooks, ledgers, or printed forms. Each type should be kept in a **separate book or file**, with columns for clear entry.

Production records
Keep track of how much raw material comes in, and how much finished product is made.

Raw materials received:	*Production:*
• **Spice type** (e.g. ginger, turmeric) • **Quantity** (e.g. kilograms) • **Supplier** name • **Price** per kilogram and **total amount paid** • **Quality** observations (clean, fresh, broken, etc.)	• **Date** of production • **Spice type** being processed • **Quantity produced** (e.g. in kg or number of packs) • **Quality notes** (dryness, colour, aroma) • **Batch number** for traceability

Example: Production Record – Raw Materials Received

Date	Spice Type	Quantity (kg)	Supplier	Price per kg (TZS)	Total (TZS)	Quality Notes
10/08/2025	Ginger	50	Mama Zawadi	1,200	60,000	Fresh, clean roots
12/08/2025	Turmeric	30	Mtunda Traders	1,500	45,000	Firm, no mould
14/08/2025	Chillies	25	Bwana Juma	2,000	50,000	Bright red, no bruises

Example: Production Record – Processed Batches

Date	Spice Type	Before drying	After Drying	Quantity Processed (kg)	After milling/ grinding	Batch No.	Quality Notes
11/08/2025	Ginger	200	40	40	38	G-110825	Fine, dry powder
13/08/2025	Turmeric	50	45	28	20	T-130825	Bright yellow, fine
15/08/2025	Chillies	40	30	20	17	C-150825	Spicy aroma, dry

Packaging records

- **Type of packaging** (bags, jars, bottles, boxes)
- **Size** of packaging
- **Quantity** received and used

Example: Packaging Record

Date	Packaging Type	Size	Quantity Received	Used for Product	Quantity Used	Balance in Stock
09/08/2025	Plastic bags	100g	500	Ground Ginger	300	200
11/08/2025	Plastic jars	250g	200	Turmeric Powder	120	80

13/08/2025	Cardboard boxes	1kg packs	100	Chilli Powder	50	50

Financial records

Keep simple records to know how much money comes in and goes out.

Income (sales):	***Expenses:***
• Date • Product sold • Quantity sold • Buyer name (if known) • Amount received	• Transport • Rent • Packaging • Labels • Tools • Electricity • Wages • Spices

Example: Financial Record

A. Income (Sales)

Date	Product Sold	Quantity	Buyer Name	Price per Unit (TZS)	Total Income (TZS)
12/08/2025	Ginger Powder	300 x 100g	Mama Halima	1,200	360,000
14/08/2025	Turmeric Powder	120 x 250g	Local Market	2,500	300,000
15/08/2025	Chilli Powder	50 x 1kg	Mr Yusuph	8,000	400,000

B. Expenses

Date	Item Bought	Purpose	Amount (TZS)
10/08/2025	Raw ginger (50 kg)	Production	60,000
11/08/2025	Plastic jars (250g)	Packaging	80,000
13/08/2025	Grinder repair	Maintenance	50,000
14/08/2025	Airtime for sales phone	Communication	5,000

Purchase record
Use this to record all items bought for the business. Purchase records include the following information:

• Date • Supplier name	• Item/Product • Quantity	• Price received

Example: Purchase Record

Date	Supplier Name	Item Purchased	Quantity	Price per Unit (TZS)	Total (TZS)
10/08/2025	Mama Zawadi	Fresh Ginger	50 kg	1,200	60,000
11/08/2025	PackWell Ltd.	Plastic Jars (250g)	200 pcs	400	80,000
13/08/2025	Tool King	Grinder Spare Parts	1 set	50,000	50,000
14/08/2025	ChemDry Traders	Cleaning Soap	2 litres	3,000	6,000

Sales record
Shows who bought the product, and when. Sales records include the following information:

• Date • Buyer name	• Product sold • Quantity sold	• Price received

Example: Sales Record

Date	Buyer Name	Product Sold	Quantity	Price per Unit (TZS)	Total (TZS)
12/08/2025	Mama Halima	Ginger Powder	300 x 100g packs	1,200	360,000
14/08/2025	Local Market	Turmeric Powder	120 x 250g jars	2,500	300,000
15/08/2025	Mr. Yusuph	Chilli Powder	50 x 1kg boxes	8,000	400,000

Good recordkeeping helps manage the business better, track problems quickly, and build trust with customers and partners.

3.9 Quality Assurance

Concept of Quality Assurance
Quality Assurance (QA) means making sure that all spices produced are safe, clean, and meet expected standards. It is not just one step, but a continuous process that checks the quality of spices at each stage of production. Quality checks can be conducted using small laboratory tools and equipment like moisture meter for measure moisture content.

Benefits of Quality Assurance

- Builds **customer trust** and loyalty
- Increases **sales and repeat orders**
- Helps to avoid **spoilage and waste**
- Makes it easier to sell to **shops or exporters**
- Shows that the business is **professional and reliable¶**

Checkpoints for Quality Assurance (QA) in Spice Processing
QA is done at many points in the spice processing chain:

- **Raw material check** – look at freshness, cleanliness, conformity, and moisture content.
- **Aroma**: smell spices to determine if there are any other odours other than the specific aroma of the spice itself.
- **Cleaning check** – check if there are any physical contaminants such as leaves, insects, soil, twigs, etc.
- **Grinding and packaging check** – check texture, aroma, and proper sealing
- **Final product check** – look at appearance, aroma, and packaging before storage or sale.

Process and Tools for Quality Assurance

- **Observation** – look at the colour, dirt, moisture, mould, insects, and packaging condition
- **Tasting** – taste small amounts (if safe) to check flavour and spiciness
- **Testing** – use a **moisture meter** or drying test to check dryness level
- **Checklists** – use inspection lists to go through quality steps one by one

Recordkeeping
All QA checks must be recorded to track performance and show proof of good practices. Use one **quality record sheet** per batch. This can be a page in a book or a printed form.

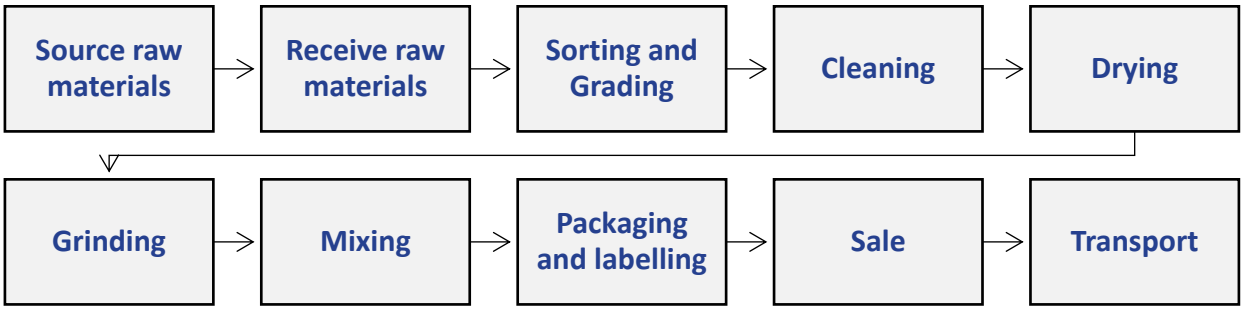
Quality parameters to record include:

- **Moisture** – check during drying and after drying
- **Debris and waste** – how much is removed during sorting (e.g. stones, stems, bad pieces)
- **Aroma** – is the spice smell strong and correct?

Recording these points helps identify problems early and improve the next batch. It also supports traceability in case of complaints or product returns.

4 Module 4: General Spice Processing

An overview of the general spice process is presented below. Not all steps apply to every spice, but in later modules, the exact process for each spice will be given.



4.1 Source Raw Materials

Sourcing good-quality raw materials is the first and most important step in spice processing. The quality of the finished spice product depends directly on the quality of the raw spice used.

Main spice-producing regions in Tanzania
As mentioned before in Module 2, there are three main spice-growing areas in Tanzania:

- **Morogoro** – major source of ginger, turmeric, garlic, and chillies. This is one of the best regions for sourcing large quantities of fresh spices.
- **Tanga** – known for black pepper, cardamom, and chillies. Supplies are more stable and available in bulk.
- **Zanzibar** – produces cloves, cinnamon, and other spices, but usually in small quantities. These may be high in quality, but supply is limited and prices are often higher.

Because of this, **Morogoro and Tanga** are more reliable sources for most spice processors who need good volumes for regular production.

Suppliers
Spices can be bought from:

- **Farmers** – This is usually cheaper, and farmers can be trained to supply the quality needed. However, small farmers may have limited quantities and mixed quality.
- **Brokers or middlemen** – They collect from different farmers and can offer larger amounts. However, prices may be higher and there is less control over quality.

Some processors use both options — farmers for main supply and brokers when demand increases or supply is short.

Current market prices
Prices change depending on:

- Season
- Transport costs
- Supply and demand

It's important to check current prices in different areas before making purchases.

Quality specifications when buying
When buying, look for:

- Clean spices (free from dirt, dust, insects, mould, and stones)
- Uniform size and colour
- Mature and fresh spices, not spoiled or over-dried
- No foul smell or signs of pests

Always inspect the spices before payment. Some buyers use moisture meters or test samples to check quality.¶

Quantity based on processing needs
The amount of raw spice to buy depends on the business size. For example, a small-scale processor may buy 20–50 kg per week, while a larger one may need 200 kg or more. Buying too much can cause storage problems, while buying too little may interrupt processing.

Seasonality
Each spice has a harvest season. For example:

- Ginger and turmeric are harvested once or twice per year
- Chillies and garlic also have seasonal harvests

It is important to know these seasons and plan to buy and store enough raw material for the year.

Transport and condition in transit
Transport affects spice quality. Bad transport can reduce the weight and value of spices. Poor handling in transit also leads to spoilage and losses of spices and money.

Guidelines for transporting spices from the producer/farmer to the processing unit include:

- Transport spices in clean sacks or crates
- Use covered transport to protect from dust, sun, and rain
- Avoid squeezing or over-packing sacks so that spices do not crush

Match raw spice to final product
Processors must choose raw spices that fit their end product:

- Use **fresh ginger** for pastes

- Use **dry turmeric** for grinding
- Use **clean black pepper** for packaging whole or grinding
- Use **high-quality cloves** for oil or dry product

This ensures the product meets customer expectations and market standards.

4.2 Receive Raw Materials

Once raw materials have been sourced and arrive at the processing site, they must be properly received. This helps ensure only good-quality spices enter the facility, and poor-quality ones are returned or rejected.

Weighing
As soon as the raw materials arrive, they should be **weighed** using a scale.

- Record the weight in kilograms (kg).
- Compare it to the amount ordered or expected.
- Write down the date, supplier name, spice type, and weight in the **raw materials record book**.

Inspection for quality
Before accepting the raw materials, do a **visual inspection** to check the quality. Use a clean table or surface and examine a sample from each sack or container.

Check for:

- **Contaminants or debris** – such as stones, sticks, sand, insects, plastic, or mould.
- **Moisture** – spices should not feel soft or damp. If available, use a **moisture meter** to test dryness. Too much moisture can cause spoilage.
- **Colour** – spices should have a strong, natural colour (e.g. turmeric should be bright yellow, black pepper should be dark). Dull or pale colour may mean poor quality or age.
- **Product quality** – look for damage. For example:
    - Cinnamon sticks should be whole, not broken
    - Black pepper should be dry and firm, not soft or mouldy
    - Chillies should not have holes or rot

Recording
Record the results of inspection and weighing in the **receiving logbook**. Include:

- Date
- Spice type
- Quantity
- Supplier
- Notes on quality (e.g. “clean, dry, no smell”, or “some sticks broken, signs of mould – rejected”)

Raw materials receiving sheet/logbook

Date	Spice	Quantity	Supplier	Notes

If the quality is poor, inform the supplier immediately and decide whether to return the product or accept it at a lower price. Only good-quality raw spices should enter the processing area.

4.3 Sorting and Grading

After receiving and inspecting the raw materials, the next important step is **sorting and grading**. This step improves the quality of the final spice product and helps it meet market standards.

Sorting
Sorting is the process of removing unwanted materials or anything that does not belong. Even though spices are dried on farms, they often arrive with some foreign matter that must be removed before processing.

During sorting, remove 'foreign matter' which includes:

- Stones, sand, dust
- Sticks, leaves, or plant stems
- Insects or insect parts
- Other seeds that are not part of the spice
- Plastic, thread, or packaging pieces

Sorting can be done by hand, using sorting trays or baskets, and sometimes with a fan (for winnowing) or a sieve. Spread spices on a clean table and pick out foreign materials.

Grading
Grading means **separating the spices by quality, size, or appearance**. This helps set different prices or use different grades for different products.

Some examples of grading include:

- **Removing broken or damaged pieces** – such as broken peppercorns or small pieces of cinnamon

- **Separating by size** – for example, separating large and small peppercorns using a mesh or sieve
- **Grading by shape** – such as sorting thick cinnamon sticks from thin ones to meet buyer needs or improve packaging

Good sorting and grading make the spice product look more professional and can increase its market value. It also removes waste early so that only clean, good-quality spice goes for further processing.

4.4 Cleaning

Cleaning is an important step in spice processing, but not all spices need to be cleaned with water. Some spices, such as black pepper, turmeric, and ginger, may need cleaning to remove dust, dirt, or surface impurities before further processing.

Spices that may require cleaning include:
- **Black pepper** – often has dust or light debris from the drying process
- **Turmeric and ginger** – sometimes still have soil or dirt on the surface, especially if poorly cleaned at farm level

4.4.1 Cleaning methods

1. Air cleaning/Winnowing (for dry spices)
Used for **black pepper** and similar dry spices.
- Use trays or shallow baskets to toss the spice gently in the air
- This helps remove light debris like dust, husks, or dry leaves
- Sometimes a fan or natural wind can help remove particles during winnowing
- It is important to do this in a clean, dry area

2. Water cleaning (for turmeric and ginger only)
Sometimes spices like turmeric and ginger may arrive with soil still stuck on the surface. These can be cleaned using:
- Clean water in basins or buckets
- Soft brushes or clean hands to scrub the surface gently
- Wash only when necessary, and do not soak for long, to avoid water absorption

After water cleaning, the spices must be:
- Drained well using a sieve or by placing on clean clothes or trays to remove excess water
- Dried properly before grinding or storage to prevent spoilage or mould

Note: Most spices are received already dry from farmers, so water cleaning is not always needed. Only clean when there is visible dirt or soil remaining. Over-washing can damage the spice and reduce its quality.

4.5 Drying

Drying is a key step in spice processing. It reduces the moisture content of spices, making them suitable for storage and grinding. Spices must be fully dried to prevent mould, spoilage, and insect damage.

Preparation for drying
Some spices need to be prepared before drying:

- **Turmeric** – can be dried whole or sliced. Slicing helps it dry faster and more evenly. Peeling is optional but the benefits are that peeling turmeric improves its final appearance and reduces drying time.
- **Ginger** – can be sliced to speed up drying. Most other spices like black pepper or cardamom are already dried on the farm and may only need further drying if they feel soft or contain too much moisture.

4.5.1 Drying methods

There are three main methods of drying spices:

1. Air drying (room temperature)

- Done in a clean, dry, indoor area with good air circulation.
- Slower than sun drying but protects spices from dust, insects, and sunlight.
- Good for spices that lose colour in direct sun (e.g. chillies).

Pros	Cons
• Gentle drying; protects colour and aroma • Low cost	• Slow drying time • Needs clean, ventilated space

2. Sun drying

- Common method used in Tanzania. Spices are spread in the sun on mats or trays.
- Must be covered or taken in at night to avoid moisture.

Pros	Cons
• No equipment cost • Fast drying under strong sun	• Risk of contamination from dust, animals, or insects • Spices can lose colour or aroma if exposed too long • Wet weather can affect drying.

3. Assisted drying (using dehydrators)

- Uses solar dryers or electric dehydrators.
- Can control temperature and speed.

Pros	Cons
• Fast, clean, and consistent • Better quality and less loss	• High cost to buy or maintain equipment • Needs electricity or fuel¶

Equipment for drying

- **Drying cloths or mats** – made of clean cotton or plastic
- **Drying trays or raised platforms** – allow air to pass underneath
- **Covers or nets** – protect from insects and dust

Drying process

- Spread spices in a thin, even layer on the mat or tray
- Turn regularly (e.g. twice a day) to dry evenly
- Drying time depends on the weather and the type of spice

Checking moisture levels

There are different ways to test when spices are dry:

- **By weight** – weigh a sample before and after drying.
- **By colour** – colour should be strong and even (e.g. turmeric should be deep yellow)
- **By feel** – spices should be **brittle** (snap easily) and feel hard, not soft or rubbery

Good drying protects quality and increases shelf life. Spices that are not fully dry will spoil during storage or grinding.

4.6 Grinding

Grinding is the process of turning dried spices into powder form. It is a key step that affects the final product's appearance, aroma, and usability.

Clean machine before grinding
Always clean the grinder before use to avoid mixing flavours and colours from different spices. Leftover powder from the last spice can affect the quality of the next batch.

To clean the grinder:

- Wipe or brush out any leftover powder
- Run a neutral spice like dried cinnamon leaves or rice through the machine to absorb and remove remaining aroma
- Brush again and ensure no residue is left inside

Grinding process

1. **Add spices into the grinder** – only add dry spices. If any spice still has moisture, dry it again before grinding.
2. **Grind** – operate the machine according to instructions. Some grinders allow for different levels of fineness.
3. **Regrind if needed** – if the powder contains large particles or is not fine enough, return it to the grinder for a second round.
4. **Collect the ground spice** – collect from the hopper or chute using a clean scoop or bowl.
5. **Clean the grinder** – clean the machine again after grinding to keep it in good condition and ready for the next spice.

Grinding must be done in a clean, dry place. Always wear PPE like a dust mask and goggles if grinding large amounts because fine spice dust can irritate the eyes and lungs.

A well-ground spice has:

- A uniform particle size
- Strong colour and aroma
- No burnt smell (avoid overheating the grinder)

Grinding transforms the spice into a form that is easier to sell, pack, or mix for consumers.

4.7 Mixing

After grinding, it is often necessary to mix different batches of the same spice to create a uniform, consistent product. This helps ensure that every packet or container of spice looks, smells, and tastes the same.

Why mix?

- Different batches of the same spice may have slightly different colours, aromas, or textures.
- Mixing creates a homogeneous final product that improves customer satisfaction.
- It also ensures evenness in moisture, oil content, and spice strength.

Process of mixing

1. Collect all batches of ground spice intended to be mixed.
2. Place them into a clean mixing bowl, basin, or bucket.
3. Use clean mixing spoons, hands (with gloves), or spatulas to gently mix in circular or lifting motions.
4. Mix for several minutes to ensure even distribution.
5. If needed, sieve after mixing to remove clumps and improve texture.

Good mixing practices

- Only mix same-type spices from good-quality batches.
- Do not mix poor-quality spice with good-quality batches.
- Make sure containers and tools are clean and dry before starting.
- Label the mixed batch with the mixing date and batch number for records.

Mixing helps standardise the product and prepares it for final packaging and sale.

4.8 Packing and Labelling

Packaging and labelling are the final steps in the spice processing line. They help preserve the quality of the product, protect it from contamination, and make it ready for sale. Good packaging also improves the appearance and trust in the product.

4.8.1 Types of packaging

Choose packaging based on the spice type, market, and shelf life. Common packaging materials include:

- **Plastic bags** (e.g. 100g, 250g, 500g) – affordable and easy to seal
- **Paper or foil pouches** – provide better protection from light and air
- **Plastic jars or bottles** – strong and reusable
- **Glass jars** – premium look, used for high-end markets
- **Cardboard boxes** – used for bulk or transport packaging

4.8.2 Labelling

Every spice package should have a clear label. Labels provide important information to the buyer and for business records.

Labels should include:

- **Product name** (e.g. Ground Black Pepper)
- **Net weight** (e.g. 100g)
- **Processor's name and contact**
- **Ingredients** (if it's a mix)
- **Production date and expiry date**
- **Batch number** – for quality tracking
- **Instructions for storage** (e.g. "Store in a cool, dry place")
- **How to use** (ideas for the use of the spice – optional information)

Examples of product labels:



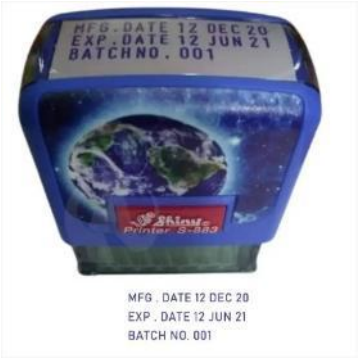


Filling process

1. Weigh the container (e.g. jar or bag)
2. Set the scale to zero with the container on it (tare)
3. Use a clean scoop or spoon and funnel to fill the spice to the required weight
4. Avoid overfilling – it can make sealing difficult or cause spillage
5. Check the weight again after filling to confirm accuracy

Sealing

- Use a heat sealer to seal plastic bags
- For jars or bottles, use tight-fitting lids
- Make sure seals are clean and tight to avoid air or moisture getting in



Label

- Stick the label neatly on the front of the pack
- Write or stamp the batch number and date clearly
- If possible, use a date/batch stamp for neatness and consistency; it also looks professional and is an easy item to purchase locally.

Final packing

- Pack filled and labelled units into cartons or boxes for transport or sale
- Store in a clean, dry space until delivery or sale
- Keep record of how many units were packed and from which batch

Good packaging and labelling help build your brand, meet legal requirements, and ensure the customer receives a safe, attractive, and high-quality product.

4.9 Transport

Transport is the final stage in getting the processed spice from the facility to the market or buyer. Choosing the right transport method helps protect the spice quality and ensures it arrives on time and in good condition.

4.9.1 Transport considerations

1. Type of product

- Ground spices are more sensitive to moisture and must be well-sealed.
- Whole spices may be less fragile but still need clean, dry handling.
- Spice mixes, oils, or pastes may need extra care depending on the packaging.

2. Type of packaging

- **Glass jars** are breakable and must be packed with padding or inside sturdy boxes.
- **Plastic jars or bags** are lighter and more flexible but may be affected by heat.
- Use **cartons, crates, or boxes** to protect individual packages during transport.

3. Distance

- Long-distance transport requires better planning to protect the product from heat, delays, or damage.
- Local transport is quicker but still needs good packaging to avoid contamination or spillage.

4. Quantity or volume

- Large volumes need bulk packaging and possibly a larger vehicle.
- Small batches can be transported by motorbike, bicycle, or small vehicle, but still need secure packing.

5. Weather

- Avoid transporting during heavy rain unless vehicle is covered.
- High temperatures may cause spice oils to evaporate—keep products cool.

6. Cost

- Choose the transport method that fits your budget without risking damage to the product.
- Compare options like public buses, hired vehicles, or delivery services.

7. Delivery time

- Timely delivery ensures the buyer receives fresh, high-quality spices.
- Delays may affect trust and reduce market value.

8. Security

- Ensure the transport vehicle is reliable and the driver trustworthy.
- Protect valuable spices from theft by sealing cartons and keeping records.
- Use delivery notes and stock records to track what is sent and received.

Good transport planning helps protect your hard work and ensures your spices reach the market in the best condition possible.

5 Module 5: Business Startup

5.1 Business Registration

Registering a spice processing business in Tanzania is an important step for operating legally and growing successfully. It gives the business credibility, access to finance, and protection under the law.

Benefits of business licensing and registration

- **Legal recognition** – shows the business is official and law-abiding
- **Trust** – customers and suppliers are more confident working with a registered business
- **Access to markets** – registration is often needed to sell to shops, supermarkets, and export buyers
- **Access to finance** – banks and organisations usually require documents for loans or grants
- **Business protection** – your name and rights are protected under law
- **Growth and support** – make it easier to join business networks, apply for training, and receive support from government or NGOs

Registration processes

To register a small spice processing business in Tanzania, follow these steps:

1. Register the business name or company with BRELA

- BRELA stands for the **Business Registration and Licensing Agency**
- You can register as:
  - A **business name** (e.g. PiliPili Spices) – simple for small businesses
  - A **company** – suitable for larger businesses or partnerships
- Registration can be done online via the BRELA ORS system or at BRELA offices
- Choose a unique name and check if it is available

2. Obtain a TIN from TRA

- Apply for a Tax Identification Number (TIN) at the Tanzania Revenue Authority (TRA).
- Provide your business registration certificate and personal ID.
- A TIN is required for paying taxes and getting tax clearance, which is needed before a business licence can be issued.

3. Get a business licence from your Local Authority

- Apply for a **business licence** at your **district or municipal office**
- Provide your TIN, registration certificate, and details of your spice processing activities

- They may inspect your premises to ensure it meets health and safety standards

Once these steps are completed, the business is fully registered and can operate legally. Keep copies of all certificates in a safe place and can be seen easily during inspection and renew the licence annually.

5.2 Product Certification

To sell spices in shops, supermarkets, or export markets, products must be certified. This shows that the product is safe, clean, and meets national quality standards. In Tanzania, this is done through the Tanzania Bureau of Standards (TBS). Certification is about credibility, trust, and market access.

Why certify your products?

Certifying your products is worth the effort as it has many advantages, such as:

- Builds trust with customers
- Allows you to sell to bigger markets like shops and supermarkets
- Supports entry into regional and international markets
- Shows that your spices are safe, hygienic, and of high quality
- Helps with branding and marketing
- Protects the health of consumers

How to get product certification from TBS

Step 1: Prepare your products

- Make sure spices are clean, safe, well-packaged, and properly labelled.
- Label must include name, net weight, batch number, production and expiry date, ingredients, and storage instructions as directed in the standard documents.

Step 2: Contact TBS

- Visit the nearest TBS office or their website
- Request information on product registration and certification for small food processors

Step 3: Apply through SIDO (Small Industries Development Organisation)

- SIDO works with small businesses and helps them meet TBS requirements
- They can assist with:
    - Training and technical support
    - Application for Product certification at minimal cost

Step 4: Product testing and inspection

- TBS Inspectors will visit your facility to check cleanliness, processing methods, and packaging
- They will collect samples of your products for testing
- TBS will test samples of your spice products in their labs and provide you with results

Step 5: Receive certification

- If your product passes all tests and inspections, you will receive a TBS Certificate of Compliance and a mark for certified products.
- The 'Certified' mark or logo should be printed in the product label or packaging.

Important tips

- Keep processing records to show quality control
- Always maintain good hygiene and proper labelling
- Renew your certificate as required by TBS

Product certification helps grow your business and ensures your spices meet high-quality standards trusted by the market.

5.3 Startup Costs

To start a spice processing business, some money is needed to get everything ready and running. These costs are called **startup costs**. They include the cost of a place to work, tools and machines, and money to run the business in the beginning.

1. Premises

This is the place where the spice processing will happen. Costs depend on whether:

- You **rent a small room or building**
- You use a **room at home** (lower cost, but must be clean and safe)
- You need to **improve the space** (e.g. clean floors, windows, or add shelves)

Other costs might include:

- Electricity connection
- Water supply
- Security improvements (locks, windows, doors)

2. Plant: Equipment and Tools

This includes the basic tools and machines needed to start:

- Grinder or blender
- Weighing scale
- Drying trays or mats
- Sieve for sorting or powdering

- Buckets, bowls, basins
- Packaging materials (bags, jars, labels, sealer)
- Protective equipment (aprons, gloves, masks)

You do not need everything at once—start small and grow. Some tools can be borrowed or shared at first.

3. **Working Capital**

This is money used to pay for running the business in the first few weeks or months. It helps cover:

- **Buying raw spices** (e.g. black pepper, turmeric, ginger)
- **Transport** of materials or products
- **Wages** if you hire helpers
- **Electricity and water**
- **Packaging materials**
- **Costs to register the business or apply for certification**

Working capital keeps the business going until income starts to come in from selling products.

Note: Startup costs can be kept low by starting small and using what is already available. Once the business grows, more tools and space can be added. It's important to make a simple budget and keep records from the beginning.

5.4 Access to Finance

Every small business needs money to start and grow. This is called **finance**. Getting the right funding helps to buy equipment, raw materials, packaging, and to register the business. There are many ways to access finance, depending on the stage of the business.

5.4.1 Initial funding

This is money used to start the business. It can come from:

1. **Savings**
   - Using personal savings to buy the most important tools and materials
   - **Pros**: No debt, no interest, full control
   - **Cons**: May not be enough to buy everything needed

2. **Family and friends**
   - Borrowing small amounts from people you trust
   - **Pros**: Flexible repayment, little or no interest
   - **Cons**: Can cause tension if not repaid or if business fails

5.4.2 Scaling up

Once the business is running and needs to grow, other types of funding can help:

1. Bank loan

- Some banks give loans to small businesses with a business plan and records
- **Pros**: Larger amount of money, regular repayment terms
- **Cons**: May require security (collateral), high interest rates

2. Government loans

- Some Tanzanian government programmes support small businesses
- Examples: Youth loans, women's enterprise support
- **Pros**: Often lower interest or no interest, targeted at small entrepreneurs
- **Cons**: Application process may be slow or require documents

3. SIDO loans or grants

- SIDO (Small Industries Development Organisation) supports small producers
- May provide small loans, equipment support, or link you to financing institutions
- **Pros**: Support and training often included
- **Cons**: Sometimes limited to registered businesses or groups

4. Project grants and donor funding

- Some NGOs or development projects offer grants for small business startups
- Often for youth, women, or specific sectors like agriculture or food
- **Pros**: No repayment, can be used for tools, training, or product development
- **Cons**: Competitive application, may have conditions or reporting requirements

Important tip: Whatever the source, always make a simple plan and budget before using the money. Keep records of how the money is spent and earned. This will help manage the business and apply for more support in future.

5.5 Brand Development

A **brand** is the identity of your spice business. It helps customers recognise your products and remember your business. A strong brand builds trust and helps your products stand out in the market.

5.5.1 Brand elements

These are the basic parts that make up a brand:

1. Name

- Choose a name that is **simple, unique, and easy to remember**
- It can reflect what you do (e.g. “Mama Halima Spices”) or where you are from (e.g. “Tanga Taste”)



2. Logo

- A logo is a small picture or symbol that represents your business
- It can be made by a graphic designer or even hand-drawn and scanned
- Should be clear, easy to print, and look good in colour or black and white

3. Colours and style

- Choose a few colours and stick to them across all packaging and advertising
- For example: brown and green for natural, organic spices
- Keep the style simple, clean, and professional

5.5.2 Application and building a brand

Your brand should appear in all areas where people see your business or products:

1. Signage

- Display your brand name and logo at your processing facility or stall
- Helps people find and remember your business

2. Business card

- Include your name, brand name, contact number, location, and logo
- Useful for giving to buyers, suppliers, or partners so that they have your name and contact details



3. Product labels

- Use your brand name, logo, and colours on all spice packages
- Add key details: spice name, weight, production and expiry date, ingredients, and contact info

4. Advertising

- Flyers, posters, and banners can carry your brand to local markets and customers
- Keep the message clear, and always show the brand name and logo

5. Social media

- Platforms like Facebook and Instagram are good for promoting your spices
- Share photos, prices, customer feedback, and updates
- Use your brand name and colours in your profile and posts

Building a brand takes time, but it helps your spice business grow. A strong brand makes your product look professional and trustworthy, helping you attract more buyers.

6 Module 6: Business Operations

6.1 Production Planning

What is production planning?

Production planning means preparing in advance for what to produce, when to produce it, and how to produce it. It helps ensure that all activities in spice processing are organised and run smoothly.

Why plan production? Benefits of production planning

- **Saves time**: Reduces delays and confusion
- **Ensures inputs are available**: Packaging, labels, raw spices, and equipment are ready before production starts
- **Avoids contamination**: Proper planning reduces mixing up of spices and ensures cleaning between processes
- **Improves quality and consistency**: Products are uniform and meet customer expectations
- **Supports sales**: Helps meet orders on time and avoid stockouts

Key elements of production planning

- **What to produce**: Decide which spices or spice mixes to make (e.g. black pepper powder, pilau masala, turmeric)
- **When to produce**: Choose the time based on when spices are available and when there is market demand
- **How to produce**: Follow a clear process, including drying, grinding, mixing, and packaging

Factors to consider when planning

- **Seasonal availability**: Spices like ginger or turmeric may only be available fresh at certain times
- **Machine capacity**: Consider how much can be processed in one day or one week
- **Labour**: Plan based on the number of workers available and their skills
- **Budgeting**: Estimate and prepare money in advance to buy raw materials and pay for expenses
- **Storage space**: Make sure there is enough clean, dry space for finished products

Production planning process

1. **Check stock**: What spices and packaging are already available?
2. **Check market needs**: What products are in demand this week or month?
3. **Make a list**: Write what products to produce, how much, and by when
4. **Check equipment**: Make sure machines are working and clean
5. **Check labour**: Assign tasks and inform workers in advance
6. **Plan for quality**: Prepare tools for checking moisture, weight, packaging, and labelling
7. **Record the plan**: Write down the weekly or monthly production schedule¶

Simple production planning tool (example)

Week	Product	Quantity	Raw Material Available	Packaging Ready	Notes
1	Ginger powder	10 kg	Yes	Yes	Use old stock first
2	Pilau mix	8 kg	Yes	Need to reorder	Order labels early
3	Turmeric powder	5 kg	No	Yes	Wait for delivery

This type of table helps keep everything clear and helps small spice processors plan their work efficiently.

6.2 Marketing

6.2.1 Identify Markets and Market needs

Marketing means finding people who want to buy your products and letting them know what you offer. It helps a business grow by increasing sales and building a good reputation.

Understand what types of spice products are in demand.

- Some markets want pure ground spices; others want spice mixes or paste.
- Some want small affordable packs for home use, others want bulk quantities for restaurants or shops.
- Look at packaging preferences, price range, and quality standards.

6.2.2 Marketing and Promotional activities

Promotional activities help your business reach more people and attract customers. There are different tools and strategies you can use to market your spice processing business and products. These include:

- **Social media accounts**
  - Use Facebook, Instagram, or TikTok Shop to post photos of your products, share prices, and contact information.
  - Respond to comments and messages quickly.
  - Use local language where possible for better connection.

- **Cold calling**
  - Visit or phone local shops, cafes, and hotels to offer samples and prices.
  - Be polite and confident.
  - Prepare a small flyer or business card to give to them

- **Trade fairs and exhibitions**
  - Join events for small businesses or farmers to display and sell your products.
  - Offer tasting samples, explain your brand, and collect contact details.
  - Be friendly and professional when engaging with visitors at the exhibition stand
  - Ensure marketing materials are available to hand out
  - Follow up with visitors after the exhibition: test messages or emails with product information.

6.2.3 Identify customers

Understanding different types of **markets** (customers) helps a spice processor decide what products to make, how to package them, and how to price them. Different customers have different needs. Below are the key domestic market types and what they usually require.

1. Local/domestic buyers (individual customers)

These are regular people buying spices for home use. They usually:

- Prefer **small packs** (e.g. 50g, 100g, or 250g)
- Want **common spices** like black pepper, curry mix, pilau masala, turmeric, ginger, or garlic
- Buy from **local shops**, markets, or street vendors
- Prefer **affordable prices** and easy-to-use packaging (sealed plastic pouches, refill bottles, etc.)
- Are influenced by taste, aroma, and freshness

Tip: Good labelling with the spice name and a clear expiry date helps attract these customers.

2. Supermarkets and retail shops

These are formal shops selling packaged goods. They:

- Require **proper packaging**: sealed bags, plastic bottles or jars, well-labelled
- Need **barcodes and product certification** from TBS
- May ask for consistent supply and want to buy in **bulk** (e.g. 20–100 packs per week)
- Usually stock **standard spice powders** and mixes
- Prefer products that look professional and clean

Tip: To supply supermarkets, register your business and get product certification.

3. Hospitality industry (hotels, restaurants, guesthouses, lodges)

These customers prepare food daily for many people. They:

- Prefer **bulk packaging** (e.g. 500g, 1kg, or larger bags or containers)
- Want **pure, high-quality ground spices** or **standardised spice mixes**
- Require **consistency** in aroma and flavour for repeat dishes
- Often order monthly or weekly depending on size
- Expect **reliable delivery and cleanliness**

Tip: Build good relationships and offer samples.

4. Food processors and catering services

These businesses use spices in their production of:

- Chutneys, sauces, snack foods, or ready meals
- They buy spices in **bulk quantities**
- Often prefer **custom mixes** or specific quality requirements

Tip: Offer samples and be open to creating custom blends for large buyers.

5. Cosmetic and herbal product industries

Some companies use spices like turmeric, cloves, and cinnamon in soaps, creams, face masks, scrubs, or herbal medicines. They:

- Require **powders or extracts**, not culinary mixes
- Expect **clean, pure, chemical-free spices**
- Usually buy in **bulk amounts** for production use
- May request product analysis or sample certificates

Tip: If supplying cosmetics producers, keep separate stocks and ensure the spices are very clean and fine.

6. Offices and door-to-door sales

This is a way to reach working people directly. Sellers:

- Offer small, convenient spice packs
- Use samples, flyers, and WhatsApp to get orders
- Can sell combos or spice packs for cooking pilau, biryani, or curry
- Usually deliver in person and get paid by cash or mobile money

Tip: Keep things simple. Neat packaging and polite service go a long way.

Summary: Match form and quantity to the buyer

Buyer Type	Form Needed	Typical Quantity	Packaging Style
Individual customers	Powders/mixes	50g–250g	Small pouches or bottles
Supermarkets/retailers	Powders/mixes	100g–500g (bulk packs)	Labelled packs, jars
Hotels/restaurants	Pure spices/mixes	500g–5kg	Sealed bulk bags or tubs
Food processors	Pure spices	5–20kg	Sacks, sealed containers
Cosmetic industries	Powders/extracts	1–10kg	Airtight, food-grade bags
Office/door-to-door	Small spice packs	50g–250g	Combo packs, simple pouches

Understanding each buyer helps build better products and a stronger business. Always ask buyers what they need and be willing to adjust the product form or quantity.

6.3 Sales

Sales are the heart of any spice business. After making the product, it must be sold to generate income. Good sales practices help build strong relationships with buyers and keep the business running smoothly.

6.3.1 Sales calls

Sales calls are visits, phone calls, or messages to potential or existing customers to offer your products.

- **Visit in person**: especially useful for shops, markets, hotels, or restaurants
- **Use the phone**: call to remind customers about products or to take new orders
- **Use WhatsApp or SMS**: share product lists, photos, or special offers
- Always be **polite**, **clear**, and **punctual** when communicating
- **Prepare samples** and a basic price list to share

6.3.2 Recording sales

Recording each sale helps keep track of how much was sold, to whom, and for how much. This is important for managing stock, tracking income, and preventing loss or theft.

Use an **invoice or receipt book** with carbon paper to create two copies (books like that are easy to buy locally).
Include the following details:

- Date
- Customer name
- Product name
- Quantity
- Unit price
- Total amount
- Payment method (cash, M-Pesa, bank, etc.)



Example of a sales receipt:

Date	Customer	Product	Quantity	Unit Price	Total Amount	Payment Method
12 Aug 2025	Mama Fatuma	Pilau Mix 100g	20 pcs	1,500 TZS	30,000 TZS	M-Pesa

- Keep a **duplicate copy** in the receipt book for your own records
- Use this information to update your income records regularly

Good sales practices help maintain customer trust and improve the image of your spice business. Make sure each customer leaves with the right product, a receipt, and a reason to come back.

Example: Sales Record

Date	Buyer Name	Product Sold	Quantity	Price per Unit (TZS)	Total (TZS)
12/08/2025	Mama Halima	Ginger Powder	300 x 100g packs	1,200	360,000
14/08/2025	Local Market	Turmeric Powder	120 x 250g jars	2,500	300,000
15/08/2025	Mr Yusuph	Chilli Powder	50 x 1kg boxes	8,000	400,000

6.4 Money Management

Good money management helps a spice processor understand if the business is making a profit, plan for the future, and avoid losses.

Record keeping of both income and expenses

- Write down every **sale (income)** and **cost (expense)**.
- Use a simple notebook or spreadsheet.
- Update records **daily or weekly** to avoid forgetting details.

Income (money coming in)

This is money received from sales.

- Example: Selling 100 packets of turmeric powder at 1,000 TZS each = 100,000 TZS income
- Keep a record of each sale with the customer's name, product, quantity, and total amount.

Expenses (money going out)

Expenses are all the costs of running the business. Common expense items include:

- **Raw materials**: buying dried black pepper, ginger, turmeric, cloves, etc.
- **Labour**: paying workers who clean, grind, pack, or transport spices
- **Premises**: rent for the building, and bills for water and electricity
- **Packaging**: bottles, bags, labels, ink, boxes
- **Transport**: delivery of raw materials or delivery of finished products to buyers
- **Equipment replacement or repair**: fixing a grinder or replacing a broken scale
- **Marketing**: printing flyers, attending trade fairs, phone airtime or internet bundles
- **Other costs**: PPE, cleaning supplies, admin items

Example of expense record

Date	Item	Amount (TZS)	Notes
5 Aug 2025	Raw black pepper	50,000	Bought from Morogoro Spice Farm
6 Aug 2025	Plastic bottles	20,000	For packaging curry mix
8 Aug 2025	Electricity	18,000	Monthly grinder use

6.4.1 Profit calculation

To check if the business is making money: **Profit = Total Income – Total Expenses**

Example:

- Income this month = 400,000 TZS
- Expenses this month = 280,000 TZS
- Profit = 400,000 – 280,000 = **120,000 TZS**

6.4.2 Profit and loss calculation

To calculate profit or loss you will need to total of your income, and the total of your expenses.

Total Income – Total Costs = Profit or Loss

- If income is more than costs → **Profit**
- If income is less than costs → **Loss**

Sample profit and loss recording sheet

The recording and calculation system could be a simple book where income and expenses are both recorded and summarised. Basic 'cash books' with this layout can be bought very inexpensively from many shops.

Money Management for the month: _____					
Date	**Income**	**Amount**	**Date**	**Expense**	**Amount**
	Shop 1	120,000		Raw materials	120,000
	Market	95,000		Packaging	35,000
	Sunrise Hotel	140,000		Labour	90,000

	Restaurant	60,000		Transport	25,000
	Shop 2	40,000		Electricity	18,000
	Shop 3	50,000		Marketing	15,000
	Sunrise Hotel	70,000		Equipment Repair	30,000
	Total income	**575,000**		**Total expenses**	**333,000**
	Total expenses	**333, 000**			
	Profit or loss	**242 000**			

6.4.3 Calculating prices

To set a selling price, add all the costs involved in making one unit of product.

Example (to produce 100 packs of turmeric powder):

- Raw turmeric: 50,000 TZS
- Packaging: 20,000 TZS
- Transport: 10,000 TZS
- Labour: 10,000 TZS
- Total cost = 90,000 TZS
- Cost per pack = 90,000 ÷ 100 = **900 TZS per pack**

To make a profit, add a margin (e.g. 20%):

- 900 + (20% of 900 = 180) = **1,080 TZS**
- Round up to 1,100 or 1,200 TZS selling price

Managing money well helps the spice processor avoid waste, grow the business, and plan for the future. Keep records clear, simple, and up to date.

Product Costing and Pricing Sheet:

Consumables: Raw Spice & Packaging				
Item	**Unit**	**Quantity**	**Unit cost**	**Total cost**
			Total Consumables	
Other costs e.g. labour, fuel, transport				
Item	**Unit**	**Quantity**	**Unit cost**	**Total cost**
			Total Other costs	
			Total Cost	
			Number of packets	
			Cost per packet	
			Price per packet	

6.5 Transportation

Transport is an important part of a spice processing business. Spices need to be moved from farms to the processing unit and from the processing unit to customers. Transport affects both the quality of the spice and the final cost of the product.

Transport of raw materials to the processing unit

- Raw spices (like black pepper, turmeric, cloves) are usually dried by farmers and then transported to the processor
- Processors must arrange safe, clean, and affordable transport to avoid losses
- Poor transport can cause breakage, moisture, or contamination
- Transport should be arranged in advance to match production plans

Transport of finished products to the market or customer

- Once the spices are processed, packaged, and labelled, they must be delivered to the buyer
- Choose transport based on the type of packaging (e.g. jars vs. bags), distance, and quantity
- For local markets or shops, motorbikes or handcarts may be enough
- For supermarkets, restaurants or larger buyers, vans or taxis may be required
- Products must be handled carefully to avoid damage, especially glass packaging

Choosing transport options

- Compare different transport options for cost and reliability
- Share transport costs with others when possible (e.g. market days or shared delivery trips)
- Consider the cost of transport when setting product prices

Key points:

- Poor transport = poor quality + customer complaints
- Timely delivery builds trust with customers
- Keeping records of transport costs helps in managing business expenses and calculating profit properly

7 Module 7: Black Pepper

7.1 About Black Pepper



Type of spice: Black pepper is a fruit spice. It comes from the dried berries (peppercorns) of the *Piper nigrum* plant.

Origin: Black pepper originated in the Western Ghats of India. Today, it is grown in many tropical regions around the world, including Tanzania.

Flavour: It has a hot, spicy, and pungent flavour that adds heat and depth to food.

Forms: Black pepper is sold in different forms:

- Whole peppercorns
- Cracked pepper
- Coarse ground pepper
- Fine ground pepper

Uses: black pepper has various uses including:

- **Food:**
  - Adds flavour to savoury dishes and spice mixes
  - Common in spice blends like tea masala and curry powders
  - Used in marination for meats and vegetables—both wet and dry rubs
- **Medicinal:**
  - Traditionally used to promote lactation in mothers
  - Helps with digestion
  - Used to relieve coughs
- **Preservation:**
  - Black pepper has antimicrobial properties that can help preserve food
- **Spiritual/Traditional uses:**
  - Believed to offer protection, cleansing, and positive energy in many cultures

Notes/Facts:

- Black pepper is a **macro spice**, meaning it is widely used and traded in large volumes
- It has a **medium price point**
- Often called the **"King of Spices"** because of its popularity and strong flavour

7.2 Quality of Black Pepper

When receiving black pepper for processing, the spice must be carefully checked to ensure it meets the correct quality standards.

The **colour** of good black pepper is deep black, which shows that the berries have been properly matured and dried.

The peppercorns must be **dry** to the touch. If they feel damp or soft, there is a risk of mould developing during storage, and the aroma and flavour may be weakened. Dryness is also important for ensuring a longer shelf life.

Another important indicator of quality is the **texture**. The peppercorns should be brittle and easy to break, crush, or crack. If the pepper is too soft or rubbery, it means it was either under-dried or harvested too early.

These simple checks—colour, dryness, and brittleness—help ensure the pepper is of good quality before entering the processing stage.

7.3 Processing Black Pepper

7.3.1 Receiving

When black pepper arrives at the processing unit, it should be received in a clean and organised area. The bags are weighed, and details are recorded in the production book: supplier name, quantity, date, and product condition. Although the pepper is dried by farmers, this must be verified.
***Quality Checkpoint*:** Check moisture level. Use a moisture meter or squeeze a handful of pepper—if it feels soft or has a slightly damp texture, further drying is needed. The pepper should be hard and dry to the touch.

7.3.2 Sorting: Size and colour

Sorting is done to separate peppercorns by size and colour. Larger and darker peppercorns are more desirable. Use trays, sieves, or sorting tables to remove very small or pale peppercorns. These can be used for grinding, and not for selling whole.
***Quality Checkpoint*:** During sorting, check that the peppercorns are whole, round, and black. Remove light brown or discoloured seeds, which indicate lower quality.

7.3.3 Grading

Grading helps divide the pepper into clear quality levels for pricing and customer preferences.

- **Grade A:** Large size, black, shiny, good aroma. These are sold as whole spices.
- **Grade B:** Medium size, dark grey, slightly dull. Used for ground spices.
- **Grade C:** Small size, brown, faded colour. Used for ground spices.

***Quality Checkpoint*:** At this stage, verify size and colour consistency in each grade. This ensures buyers receive the product quality they expect.

7.3.4 Winnowing

Winnowing removes light debris like pepper husks, dust, or dried leaves. This is done by tossing the pepper in shallow trays or baskets in front of a fan or natural breeze. Winnowing is only conducted if needed.

***Quality Checkpoint*:** After winnowing, inspect the product for visible dirt, dust, or insect parts. Only clean, whole peppercorns should remain.

7.3.5 Drying

If the pepper still contains too much moisture, it must be dried further. Spread a thin layer on clean drying mats or raised mesh trays in the sun. Turn the pepper regularly to ensure even drying.
***Quality Checkpoint*:** After drying, test by using a moisture meter (most accurate results) biting or crushing a peppercorn—it should snap easily. Moisture content should be around 10–12%. If it bends or feels soft, more drying is needed.

7.3.6 Grinding

If selling ground black pepper, feed clean, dry peppercorns into the grinder. Make sure the grinder is cleaned before and after use. Neutralising agents like cinnamon leaves can help remove residue from previous spices.
Grind in batches. If the powder has uneven sizes, regrind the coarser parts. Sieve the final product for a smooth texture.
***Quality Checkpoint*:** Check the aroma—ground black pepper should have a strong, spicy smell. Look for a fine, even texture. If it smells musty or weak, quality may be poor.

7.3.7 Packaging

After grinding or grading, pepper must be packaged in clean, airtight containers. Use spoons or funnels to avoid contamination. Label every package with the product name, weight, date, and batch number.
***Quality Checkpoint*:** Before sealing, inspect the product one last time for visible impurities, moisture, or odour. Make sure packaging is sealed properly to prevent air and moisture entering.

8 Module 8: Cloves

8.1 About Cloves



Type of spice: Cloves are a bud spice. They are the dried flower buds of the clove tree (*Syzygium aromaticum*).

Origin: Cloves originated in Indonesia. Today, they are grown in various tropical countries, including small-scale production in Zanzibar and some parts of mainland Tanzania.

Flavour: Cloves have a strong, warm, and sweet aroma with a slightly bitter and astringent taste. They are known for their rich, aromatic flavour that can dominate a dish if used in large quantities.

Forms: Cloves are available in several forms:
- Whole dried buds
- Ground cloves (powder)
- Clove oil (essential oil)

Uses: cloves have various uses including:
- **Food:**
  - Used in both sweet and savoury dishes for flavour and aroma
  - Common in spice mixes such as garam masala and pilau spice
  - Used in baking, stews, rice dishes, and teas
- **Medicinal:**
  - Traditionally used to relieve toothache and gum pain
  - Helps improve digestion and relieve nausea
  - Contains eugenol, a natural pain reliever and antiseptic
- **Therapy:**
  - Clove oil is used in massage oil for relaxation and pain relief
  - Often used in aromatherapy for its strong, warming scent

Notes/Facts:
- Clove oil is highly concentrated and expensive, often used in small quantities
- Cloves are considered a medium-price spice in Tanzania, though prices can vary depending on quality
- Cloves must be properly dried and stored to preserve their oil content and aromatic properties

8.2 Quality of Cloves

When receiving cloves for processing, it is important to check the quality to ensure a good, finished product. High-quality cloves have a dark brown colour, indicating proper drying and maturity. The buds should be uniform in size and appearance.

The cloves must be completely dry when touched. Any sign of dampness can lead to mould growth and spoilage during storage. Moist cloves may also lose their essential oils, which carry most of the flavour and aroma.

A simple test for dryness is to feel the cloves and check if they are brittle. Good-quality cloves should snap or break easily when pressed. If the cloves bend or feel soft, they are not properly dried and may need further drying before use. The most accurate way to test moisture is using a moisture meter.

8.3 Processing Cloves

8.3.1 Receiving

When cloves arrive at the processing unit, they should be received in a clean area. Bags must be weighed and the details recorded in the production book: supplier name, quantity, date, and general condition of the product. Although farmers dry the cloves before delivery, the dryness must be confirmed.
***Quality Checkpoint*:** Check moisture level by feeling the cloves. They must be completely dry and brittle to the touch. Any cloves that feel soft or damp must be dried further before processing.

8.3.2 Sorting: Size and colour

Sorting is done to separate cloves based on size and colour. High-quality cloves are dark brown and have full buds. Use trays, baskets, or sorting tables to remove undersized or pale cloves.
***Quality Checkpoint*:** During sorting, ensure the cloves are whole, with most showing the bud intact. Remove any without buds, broken pieces, or very pale or light brown cloves.

8.3.3 Grading

Grading helps organise the cloves into two categories based on appearance:

- **Grade 1**: Whole cloves with buds, good aroma, uniform colour: these can be sold as whole spices.
- **Grade 2**: Cloves without buds or with faded colour. These can be used for ground spices.

***Quality Checkpoint*:** After grading, inspect each batch for consistency. Grade 1 should look clean and uniform in colour with intact buds. Lower grades must be clearly labelled.

8.3.4 Winnowing

Winnowing may be needed to remove light debris like dust, broken clove parts, or leaves. This can be done using trays or baskets and a fan or natural breeze.
***Quality Checkpoint*:** After winnowing, inspect for any remaining dust, husks, or foreign matter. Only clean cloves should remain.

8.3.5 Drying

If cloves have any moisture on arrival, they must be re-dried. Spread the cloves in a thin layer on clean drying mats or trays and place them in the sun. Turn regularly to ensure even drying.
***Quality Checkpoint*:** Test the dryness by crushing a clove between the fingers—it should snap cleanly. There should be no softness or bend in the stem. The most accurate way of measuring moisture is with a moisture meter. Moisture content should be below 12%.

8.3.6 Grinding

If producing ground clove, feed the clean, dry cloves into a cleaned grinder. Clean the grinder between different spices to avoid contamination. Neutral materials like dried cinnamon leaves can be used to absorb any leftover smell or oils.
***Quality Checkpoint*:** After grinding, check that the clove powder is fine and aromatic. The smell should be strong and sweet. If the texture is uneven, sieve and regrind the coarse parts.

8.3.7 Packaging

Cloves, either whole or ground, must be packaged in airtight containers. Use a spoon or funnel to avoid direct hand contact. Label each pack with product name, weight, date, and batch number.
***Quality Checkpoint*:** Inspect one last time before sealing. Ensure the cloves are clean, dry, and free from visible impurities. The packaging must be tightly sealed to prevent moisture from entering.

9 Module 9: Cardamom

9.1 About Cardamom

Type of spice: Cardamom is a seed-in-pod spice. The small black seeds are found inside light green pods of the *Elettaria cardamomum* plant.



Origin: Cardamom comes from the forests of India, Bhutan, and Nepal. It is now grown in tropical regions worldwide, including parts of East Africa.

Flavour: It has a strong, aromatic, slightly sweet and floral flavour with hints of mint and citrus. It is warmly fragrant and refreshing

Forms:
Cardamom is available in these forms:

- Whole pods (light green or bleached white)
- Loose seeds (inside pods)
- Ground cardamom (powder)
- Essential oil
- Syrup or cordial (for drinks and desserts)

Uses: cardamom can be used in a variety of ways:

- **Culinary:**
  - Used in both sweet and savoury dishes
  - Added to spiced tea (chai), rice dishes, desserts, and baked goods
  - Common in blends like garam masala and biryani mix
- **Medicinal:**
  - Aids digestion, relieves stomach discomfort and nausea
- **Aromatherapy:**
  - Cardamom oil is used in massage and relaxation treatments due to its fragrant and calming scent

Notes/Facts:

- Cardamom is one of the most expensive spices by weight due to labour-intensive harvesting and processing
- There are two main forms: green cardamom pods and white cardamom pods
- White cardamom is simply green cardamom bleached to a pale colour. This bleaching process reduces aroma and flavour, making it milder, and is often used in baked goods where colour is important.

- Green cardamom retains its natural colour and stronger flavour, making it more expensive and preferred for premium use.

9.2 Quality of Cardamom

When cardamom is received for processing, it is important to check its quality before accepting or storing it. Visual inspection and physical testing can help ensure the spice meets standards for drying, storage, and eventual use.

Colour: The colour should match the expected form of cardamom.

- *Green cardamom* should have a vibrant sage green colour. This shows the pods have been dried carefully and stored well.
- *White cardamom* should appear pale beige or off-white. This is usually green cardamom that has been bleached, and while it has milder flavour, it is acceptable if intentional.

Moisture: The pods should feel dry to the touch. Any dampness or moisture indicates poor drying or bad storage, which can lead to mould or spoilage. Press a few pods in your fingers—if they feel soft, leathery, or sticky, they may not be fully dry.

Brittleness: Good-quality cardamom should be brittle. When gently pressed or rolled between the fingers, the pods should crack open easily, releasing the small black seeds inside. This brittleness indicates the pods are properly dried and ready for further processing or packaging.

These quality points help ensure that only the best raw cardamom is used in the spice processing unit.

9.3 Processing Cardamom

9.3.1 Receiving

When cardamom arrives at the processing unit, it should be unloaded and handled carefully to avoid crushing the pods. Record key information in the production book: supplier name, quantity, date, and general condition of the product. Although cardamom is usually dried before delivery, its moisture content must still be checked.
***Quality Checkpoint*:** Check for signs of dampness or mould. Squeeze a handful—pods should feel crisp, dry, and slightly brittle. If they feel soft or leathery, further drying is required.

9.3.2 Sorting

Sorting involves removing foreign matter such as stones, leaves, and debris, as well as rejecting empty or shrivelled pods. Workers may use trays or baskets to sort visually by hand. This step is crucial for ensuring that only full, aromatic pods move forward in the process.

9.3.3 Grading

Cardamom is graded to separate the spice into clear quality categories. Grading considers size, colour, and aroma.

- **Grade A** – Large pods, vibrant green or consistent colour (for white cardamom), strong aroma.
- **Grade B** – Medium-sized pods with slight colour variation and milder aroma.
- **Grade C** – Small pods, pale or uneven colour, may include some empty pods. Often used for grinding.

***Quality Checkpoint*:** Confirm that each grade meets the expected visual and aromatic standards. Grade A and B are typically sold whole, while Grade C is reserved for powder.

9.3.4 Winnowing

Winnowing is only performed if there is excess light debris such as husks or dry leaves. This is done by tossing the pods in baskets or trays and allowing a breeze or fan to blow away the lighter waste material.
***Quality Checkpoint*:** After winnowing, inspect the product to ensure only clean, whole pods remain.

9.3.5 Drying

If moisture content is still too high, cardamom needs further drying to prevent mould. Drying should be gentle to protect the colour—especially important for green cardamom. Spread in a single layer on raised trays or mats in a shaded, well-ventilated area.
***Quality Checkpoint*:** Check dryness by gently cracking pods. They should split easily and feel brittle. Weigh samples before and after drying to measure moisture loss. The most accurate way of measuring moisture is with a moisture meter.

9.3.6 Grinding

If ground cardamom is the end product, pods must be fully dry and clean. Feed them into a clean grinder, free of residue from previous spices. Grinding may require two passes for a consistent texture. After grinding, sieve to remove coarse particles.

***Quality Checkpoint*:** Smell the powder—it should be strongly aromatic and sweet. If it smells weak or musty, the raw material may have been of low quality or too old.

9.3.7 Packaging

Cardamom—whether whole or ground—must be packed in airtight containers to preserve aroma and prevent moisture from entering. Use funnels or scoops to avoid direct hand contact. Label each container with product type, weight, date, and batch number.

***Quality Checkpoint*:** Final inspection of aroma, texture, and appearance before sealing. Ensure packaging is clean and undamaged to protect product quality during storage and transport.

10Module 9: Cinnamon

10.1 About Cinnamon



Type of spice: Cinnamon is a bark spice. It is made from the inner bark of trees in the *Cinnamomum* family. The bark is either sliced into chips or rolled into sticks (called quills) depending on how it is harvested.

Origin: Cinnamon originated in Sri Lanka, where Ceylon cinnamon (also known as "true" cinnamon) is still produced. Other major producers include Indonesia and Vietnam, which are known for Cassia cinnamon, a similar but stronger-tasting variety.

Flavour: Cinnamon has a warm, sweet, and aromatic flavour. Ceylon cinnamon is milder and more delicate, while Cassia cinnamon is stronger and spicier.

Forms:
Cinnamon is sold in several forms:
- Sticks (quills)
- Ground powder
- Cinnamon oil (used for food flavouring, fragrance, and medicinal applications)

Uses: cinnamon has many uses and is a very versatile spice:
- **Culinary:**
  - Used in both sweet and savoury dishes
  - Common in baking, spice mixes (like garam masala), teas, and rice dishes
- **Medicinal:**
  - Traditionally used to reduce inflammation and treat colds and digestive problems
- **Health and wellness:**
  - Cinnamon oil is used in aromatherapy and massage for its calming and warming properties

Notes/Facts:
- Cinnamon bark can be harvested and processed in two ways:
  - **Thick bark (Cassia type):** Often harvested when dry and sliced into chunks or chips
  - **Thin bark rolls (Ceylon type):** Harvested wet and carefully rolled into sticks—these are more expensive
- Ceylon and Cassia cinnamon differ in taste, strength, and price
- Cinnamon is a mid-priced spice that is widely used in both homes and industries worldwide

		
Cinnamon	**Cassia**	

10.2 Quality of Cinnamon

When receiving cinnamon, it is important to check key quality indicators to ensure the spice is suitable for processing or sale.

Moisture: Cinnamon should be completely dry. It must feel dry to the touch, with no dampness. Damp cinnamon can grow mould or lose its aroma and flavour.

Colour: Good-quality cinnamon has a consistent red-brown colour. The colour may vary slightly between types (e.g. Ceylon vs Cassia), but it should not appear grey, dull, or patchy.

Brittle: Cinnamon should be brittle and easy to break. If it bends without snapping, it may still contain moisture and need further drying before use.

These quality checks help ensure that the cinnamon is safe, aromatic, and suitable for grinding, packaging, or sale as whole sticks.

10.3 Processing Cinnamon

10.3.1 Receiving

Cinnamon arrives at the processing unit already dried by farmers, but moisture content must be checked again. Weigh the bags and record the details: supplier, date, type of cinnamon, quantity, and condition.
***Quality Checkpoint*:** Check moisture level by touching and breaking a piece. If the cinnamon bends without breaking, it needs further drying. It should be brittle and dry to the touch.

10.3.2 Sorting

Sorting is done by hand to remove foreign matter such as dust, leaves, small stones, or insects. Clean trays and tables are used for picking out impurities.
***Quality Checkpoint*:** Inspect for cleanliness and consistency. All cinnamon selected for processing must be clean and free from visible dirt or debris.

10.3.3 Grading

Grading separates cinnamon into categories based on appearance and use. This allows for better pricing and product consistency:

- **Rolls (sticks or quills):** Thin, uniform rolls with a strong aroma and bright colour; this is the highest grade and used for direct sale.
- **Bark:** Thicker pieces; still valuable but less expensive than rolls.
- **Chips:** Small, broken pieces used mainly for grinding into powder.

***Quality Checkpoint*:** During grading, check for consistency in size, colour, and aroma. High-grade cinnamon should have a sweet, strong scent and even colouring.

10.3.4 Drying

If the cinnamon feels soft or slightly damp, it must be dried further. Spread it in thin layers on clean mats or trays in the sun or under cover with good airflow. Turn pieces regularly to ensure even drying.

***Quality Checkpoint*:** After drying, the bark should snap cleanly and have no damp smell. Moisture content should be low to prevent mould or spoilage. The most accurate way of measuring moisture is with a moisture meter.

10.3.5 Grinding

If producing ground cinnamon, feed clean, dry chips into a grinder. Clean the machine before use. If cinnamon was stored near other spices, clean with neutralisers such as dried rice or cinnamon leaves.
Grind in small batches to ensure even texture. Regrind if the powder contains coarse fragments. Sieve for a smooth, fine product.

***Quality Checkpoint*:** Check the final powder for aroma and texture. It should have a rich, sweet smell and a fine, even consistency. A weak smell or clumps may indicate poor quality or moisture.

10.3.6 Packaging

Pack ground cinnamon or sticks into clean, dry containers. Use spoons or funnels to prevent contamination. Weigh, seal, and label each package with product name, batch number, weight, and date.

***Quality Checkpoint*:** Inspect before sealing. Look for moisture, insects, or foreign matter. Make sure packaging is airtight to protect the aroma and prevent spoilage.

11Module 8: Turmeric

11.1 About Turmeric



Type of spice: Turmeric is a root spice. It comes from the fleshy underground rhizome of the *Curcuma longa* plant. The fresh root is a deep yellow-orange colour and becomes hard and brittle when dried.

Origin: Turmeric originated in India and has been used in South Asia for thousands of years. It is now widely grown in tropical regions, including East Africa and Southeast Asia.

Flavour: Turmeric has an earthy, slightly bitter, and warm flavour. It is often used more for its bright yellow colour than for taste.

Forms: Turmeric is sold in different forms:

- Fresh turmeric root
- Dried sliced or chipped turmeric
- Ground turmeric
- Turmeric powder

Uses: turmeric has a range of uses:

- **Culinary:**
  - A key ingredient in many spice blends and curries
  - Adds colour and a mild, earthy flavour to dishes
- **Health/Medicinal:**
  - Used for its anti-inflammatory and antioxidant properties
  - Often consumed in teas or supplements
- **Cosmetic and dye:**
  - Used as a natural colouring agent in cosmetics, soaps, and fabrics

Notes/Facts:

- Turmeric is a strong yellow colouring agent that stains easily
- It has a low price point
- The main active compound is curcumin, responsible for its health benefits and colour

11.2 Quality of Turmeric

Quality points of fresh turmeric roots:
Fresh turmeric should be firm and heavy, with no signs of mould, rot, or shrivelling. The skin should be smooth, and the inside flesh should be a rich orange-yellow colour when cut. A strong earthy aroma is a sign of freshness and potency.

Quality points of dried, chipped turmeric:
Dried turmeric chips should be completely dry, with no softness or signs of moisture. The pieces should be hard and brittle to break. Colour should be deep yellow to orange, without any grey or brown patches. A clean, strong turmeric smell indicates good quality.

11.3 Processing Turmeric

11.3.1 Receiving

Turmeric is received either fresh or already dried and chipped. Upon arrival, it should be weighed and inspected. Details such as supplier, quantity, date, and product condition are recorded in the production book.

11.3.2 Sorting

Fresh turmeric is sorted to remove damaged, mouldy, or rotten rhizomes. Clean, firm, and healthy-looking roots are kept for processing. This step ensures only good-quality turmeric is processed.

11.3.3 Washing

Fresh turmeric must be thoroughly washed in clean water using basins and soft brushes to remove dirt, soil, and external contaminants.

***Quality Checkpoint*:** After washing, inspect each root to ensure it is clean, free of soil, and shows no signs of rot or mould. Dirty or damaged roots should be removed before slicing.

Some turmeric processing includes **boiling/curing**

- Clean rhizomes are boiled or steamed for 30–45 minutes until soft.
- This step removes the raw odour, enhances colour, reduces drying time, and ensures uniformity.

11.3.4 Slicing

Clean turmeric roots are sliced into thin pieces to speed up drying. Slicing can be done using knives, slicers, or specialised equipment.

***Quality Checkpoint*:** Slices should be of uniform thickness to ensure even drying. Remove any pieces that are still dirty or show signs of internal rot.

11.3.5 Drying

Slices are laid out on clean drying mats or mesh trays in a single layer and dried in the sun or using assisted dryers. The turmeric must be turned regularly to dry evenly. The most accurate way of measuring moisture is with a moisture meter.

***Quality Checkpoint*:** Turmeric is dry when slices are brittle and break cleanly. Moisture content should be low enough to avoid mould growth in storage. Colour should remain deep yellow to orange.

Polishing

- If dried rhizomes are produced for sale as whole spices, the rhizomes should be polished manually (by rubbing) or mechanically (using polishers) to remove rough surfaces, improve appearance, and enhance shine.

11.3.6 Grinding

Once completely dry, turmeric chips are ground into powder using a clean spice grinder. The grinder must be cleaned before and after use to prevent cross-contamination.

***Quality Checkpoint*:** Ground turmeric should be fine, bright yellow-orange, and have a strong aroma. The powder should be checked for consistency in texture and absence of foreign matter.

11.3.7 Packaging

Ground turmeric or dried chips are packed in clean, airtight containers. Labels must include the product name, batch number, date, and weight.

***Quality Checkpoint*:** Before sealing, inspect for any remaining impurities or moisture. Ensure the packaging is properly sealed to prevent moisture and air from entering.

12 Module 12: Spice Mixes

12.1 Tea Masala

Tea masala is a spice blend added to black tea or spiced milk tea (chai) to give it a warm, aromatic flavour. It is a popular product in both household and hospitality markets. As a processor, tea masala offers a good opportunity for value addition and packaging in different sizes for sale.

Use
Tea masala is a spice blend added to tea (chai) to give it a warm, aromatic flavour. It is commonly used in spiced milk tea, especially in Indian and East African households. It enhances the taste and aroma of everyday tea and is often associated with hospitality and comfort.

Target customers
Tea masala can be sold to:

- Households (in small sachets, jars or pouches)
- Cafés, tea stalls, and hotels (in bulk packs)
- Retail shops and supermarkets (pre-packed, labelled units)
- Informal vendors (repackaged in small affordable amounts)

Ingredients (example)
A traditional tea masala blend may include the following spices:

- Cardamom
- Ginger
- Cinnamon
- Clove
- Black pepper



These spices work together to create a balance of sweet, spicy, and warming notes. Quantities can be adjusted based on local preferences, but cardamom and ginger are usually the dominant flavours.

Production process (example)

1. **Sourcing**: Buy high-quality dried spices from trusted suppliers.
2. **Sorting and cleaning**: Check each spice for quality—remove debris or damaged pieces.
3. **Drying**: If any ingredient has moisture, dry further to avoid spoilage.
4. **Grinding**: Grind each spice individually to preserve aroma and achieve the correct texture.

5. **Mixing**: Blend ground spices in correct ratios to create a consistent product. Adjust formula to suit different markets if needed.
6. **Sieving**: Pass through a fine sieve to remove coarse particles.
7. **Packaging**: Package in clean, dry containers with accurate labelling. Label must include: product name, ingredients, batch number, date, weight, and producer contact.
8. **Storage**: Store in airtight packaging in a cool, dry place to retain freshness and aroma.

Packaging options

- Small sachets (10–20g) for household use
- Medium jars or pouches (50–100g)
- Bulk packs (250g–1kg) for hospitality buyers

Tips

- Consistency in flavour is key—use a standard recipe and measure carefully.
- Offer samples to vendors or cafés to test the market.
- Position the product as "natural" and "pure" to appeal to health-conscious customers.

Tea Masala – Suggested Recipe (per 1 kg batch)

Standard Blend (balanced flavour for general use):

- Green cardamom (whole or seeds) – 250g
- Dried ginger – 250g
- Cinnamon sticks – 200g
- Cloves – 150g
- Black peppercorns – 150g

Process:

1. Ensure all spices are clean and dry.
2. Break down larger items (e.g. cinnamon sticks) for easier grinding.
3. Grind each spice individually to preserve aroma.
4. Mix according to the weight ratios above.
5. Sieve for fine, uniform powder.
6. Package in airtight containers with full label information.

Variations:

- **Strong ginger profile:** Increase ginger to 300g and reduce cinnamon slightly.
- **Spicy version:** Increase black pepper to 200g for bolder flavour.
- **Premium blend:** Add 50g ground nutmeg or 30g star anise for enhanced aroma.

12.2 Pilau Mix

Use

Pilau mix is a spice blend used to flavour rice dishes such as meat, vegetable, or plain pilau. It is a high-demand spice mix in domestic kitchens, restaurants, hotels, and street food vendors. Producing pilau mix allows processors to add value and sell a product with strong cultural relevance and wide market appeal.

Target customers

Pilau mix can be marketed and sold to:

- Households (in small jars, pouches, or sachets)
- Restaurants, catering services, and hotels (in larger bulk packs)
- Retail shops, supermarkets, and open markets
- Informal traders and street food vendors

Ingredients (example)

Common ingredients in pilau mix include:

- Cumin
- Cloves
- Cinnamon
- Black pepper
- Cardamom
- Coriander



Formulas can vary by region or customer preference. Some blends may also include bay leaf, garlic powder, or dried ginger.

Production process (example)

1. **Sourcing**: Buy clean, dry, good-quality spices from reliable suppliers. Each ingredient should be well-dried and free from debris.
2. **Sorting and cleaning**: Inspect each spice for quality. Remove any stones, dust, or spoiled spices.
3. **Roasting (optional)**: Lightly roast some spices like cumin and coriander to enhance aroma. Do not burn.
4. **Grinding**: Grind each spice individually to maintain aroma and ensure smooth texture.

5. **Mixing**: Combine ground spices using a fixed recipe. Mix thoroughly to create a uniform blend.
6. **Sieving**: Sieve the mixture to remove coarse particles and ensure even texture. Use sieve sizes to achieve the desirable particle size.
7. **Packaging**: Package in airtight, food-safe containers. Include product name, ingredients, weight, date, batch number, and producer contact on the label.
8. **Storage**: Store in a cool, dry place to maintain freshness and prevent clumping.

Packaging options

- Small sachets (10–25g) for household use
- Medium pouches or jars (50–100g) for retail sale
- Bulk packs (250g–1kg) for restaurants and food vendors

Tips

- Offer different packaging sizes to suit various buyers.
- Promote as a time-saving blend with consistent flavour results.
- Educate customers on how to use the mix—e.g. suggest 1–2 teaspoons per pot of rice.
- Ensure product consistency through accurate measuring and mixing.

Pilau Mix – Suggested Recipe (per 1 kg batch)

Standard Blend (East African style):

- Cumin seeds – 300g
- Black peppercorns – 200g
- Cinnamon sticks – 150g
- Cardamom (whole pods or seeds) – 150g
- Cloves – 100g
- Coriander seeds – 100g

Process:

1. Lightly roast cumin and coriander seeds to enhance aroma (optional).
2. Ensure all spices are fully dry and free of dust or debris.
3. Grind each spice separately.
4. Mix thoroughly according to the weights above.
5. Sieve and package in sealed containers.

Variations:

- **Aromatic premium:** Add 50g dried garlic powder or 30g nutmeg.
- **Budget mix:** Reduce cardamom to 100g and increase coriander to 150g.
- **Restaurant version:** Offer in coarser grind for bulk cooking.

12.3 Curry Mix

Curry mix is a blended spice powder used to flavour a variety of dishes including meats, vegetables, stews, sauces, and soups. It is widely used in home cooking, restaurants, and catering services. The flavour profile can be adjusted to suit local preferences—from mild and aromatic to hot and spicy.

Market potential:

- Curry mix is in high demand for household use, food stalls, restaurants, and packaged meal products.
- Many customers prefer ready-made blends instead of buying individual spices.
- Spice processors can develop different curry profiles (e.g. mild, medium, hot) to suit different customers and regions.

Forms of packaging:

- Retail packs: 50g, 100g, 250g (for home use)
- Bulk packs: 500g – 1 kg (for restaurants and caterers)

Ingredients commonly used:

• Turmeric • Coriander • Cumin • Fenugreek • Black pepper • Ginger • Garlic	• Cinnamon • Clove • Cardamom • Chilli powder • Mustard seeds • Nutmeg (optional)	

Production process:

1. **Ensure quality:** All raw spices must be clean, dry, and free of mould or insects.
2. **Roast (optional):** Some seeds like cumin, coriander, and fenugreek can be lightly roasted for better aroma.
3. **Grind spices separately:** This ensures even grinding and avoids strong aroma transfer between spices.

4. **Weigh and blend:** Use digital scales to mix according to the chosen recipe.
5. **Sieve:** Ensure uniform particle size.
6. **Quality check:** Check aroma, colour, and consistency of mix.
7. **Package and label:** Seal in clean, airtight packaging with full labelling including product name, weight, date, and batch number.

Suggested Recipe: Curry Mix (1 kg batch)

This is a balanced, medium-hot curry powder suitable for general use:

- Turmeric powder – 200g
- Coriander seeds – 200g
- Cumin seeds – 150g
- Fenugreek seeds – 100
- Chilli powder – 100g
- Black pepper – 80g
- Garlic powder – 50g
- Ginger powder – 50g
- Clove – 30g
- Cinnamon – 20g
- Cardamom – 10g
- Mustard seeds – 10g

Variations:

- **Mild version:** Reduce chilli to 50g and increase coriander to 250g.
- **Hot version:** Increase chilli to 150g and black pepper to 100g.
- **Premium blend:** Add 20g of nutmeg and 15g star anise powder for richer aroma.

12.4 Recipe Development

Recipe development is the process of creating new or improved spice blends that meet specific market needs or consumer preferences. It allows spice processors to expand their product range, attract more customers, and offer unique blends tailored for different dishes, cuisines, or regions.

Why develop new blends?

- Meet local taste preferences
- Create signature or branded spice mixes
- Respond to feedback from customers or chefs
- Offer variety (e.g. mild, medium, hot versions)
- Add value to existing spices
- Target niche markets like health, organic, or specific ethnic cuisines

Steps for developing a new spice blend:

1. **Identify the dish or target use**
   Decide what the mix will be used for — tea, pilau, curry, grilled meat, fish seasoning, snacks, etc. Understanding the dish helps choose the right spice profile.
2. **Select suitable spices**
   Choose the core spices that match the desired taste and aroma. Consider supporting spices that add complexity or colour. Start with 4 – 8 main spices.
3. **Test different ratios**
   Create small test batches using different proportions. Change one ingredient at a time to understand its effect. Keep all trials small (e.g. 100g total) to reduce waste.
4. **Record the recipe**
   Weigh all ingredients carefully and write them down. Include the weight in grams and the percentage of each spice in the mix. This helps with standardising and scaling up later.
5. **Taste and adjust**
   Prepare the dish using the test mix and gather feedback—this can be from friends, family, staff, or trusted customers. Adjust the blend based on taste, colour, or aroma.
6. **Standardise and label**
   Once satisfied, finalise the recipe and prepare a standard production sheet. Assign the mix a product name, label the packaging with ingredients, usage suggestions, batch number, and date.

Tips for recipe development:

- Use fresh, good-quality spices for best results
- Label all samples clearly and keep notes for each test
- Consider your market—some customers like strong clove, others prefer mild cinnamon
- Ask customers what they want!
- Keep your best recipes as trade secrets

Template for Recipe Development: (overleaf)

Spice Mix Recipe Development Form

Product Name: _____

Target Use/Dish: _____

Date: _____

Batch Number: _____

1. Ingredients and Ratios

Spice Name	Weight (grams)	% of Total Mix	Notes (e.g. for aroma, heat, colour)
Total		**100%**	

2. Sample Preparation and Feedback

Dish Prepared For Testing:_____

Cooking Method: _____

Test Results:

- Taste: _____
- Aroma: _____
- Colour in food: _____
- Customer/Tester Feedback:_____

3. Adjustments (if needed)

Spice Adjusted	New Weight (g)	Reason for Change

Final Version

Recipe Finalised? ☐ Yes ☐ No

Stored Sample? ☐ Yes ☐ No

Label Prepared? ☐ Yes ☐ No

Price per 100g: _____

Storage Instructions:

_____

13Module 13: Pastes

13.1 Basic process and equipment for pastes

Wet pastes are commonly made from garlic, ginger, or a mix of both. These pastes are widely used in cooking across East Africa and beyond. Spice processors can produce and package pastes to sell to households, restaurants, food vendors, or food producers. The process requires good hygiene, proper equipment, and a clean work area.

Equipment:

- **Brush** – nylon brush for cleaning roots and removing soil or dirt
- **Peeler, knife, or spoon** – for peeling garlic and ginger
- **Blender** – a strong commercial blender is best, but a domestic blender can also be used
- **Spoons and spatulas** – for scraping and mixing
- **Clean bowls or trays** – to hold peeled and chopped product
- **Bottles or jars** – clean, dry, food-safe containers for storing paste
- **Sealing equipment** – for sealing jars or bottles (optional but recommended)
- **Labels** – for product name, date, ingredients, batch number, etc.

General process:

1. **Clean:** Garlic and ginger roots must be cleaned well to remove dirt, dust, and debris. Use a nylon brush under running water to scrub the surface. Drain well.
2. **Peel:** Garlic cloves must be peeled fully. Ginger can be peeled using a spoon (which removes less flesh) or a small knife or peeler. Peels must be discarded.
3. **Chop (optional):** Large pieces may be chopped roughly to help the blender process more efficiently.
4. **Puree/blending:** Blend the garlic or ginger in small batches to form a smooth paste. A little water or oil may be added to help the process, depending on the recipe. Some producers add vinegar, salt, or lemon juice as natural preservatives.

Bottling:

Transfer the paste into clean, dry jars or bottles. Fill to the required level, remove any air bubbles, and seal the container. Paste should be stored in a refrigerator or cool space and clearly labelled with product and date.

13.2 Garlic Paste



Garlic paste is a popular kitchen ingredient that saves time for cooks and gives a strong, consistent garlic flavour. Spice processors can prepare and sell garlic paste in small jars or bulk containers for households, food vendors, and restaurants.

Quality of garlic:
The quality of the raw garlic directly affects the shelf life, colour, and flavour of the paste. Choose garlic that meets the following standards:

- Firm bulbs with tightly packed, large cloves
- No sprouting or green shoots
- No mould or soft spots
- Dry, papery skin still intact

Process:

- **Peeling:** Remove the dry outer skin and separate the cloves. Peel each clove completely. This can be done manually or using a mechanical garlic peeler if available. The fresher and drier the garlic, the easier it is to peel.
- **Cleaning:** After peeling, rinse the cloves in clean water to remove any remaining dirt or skin. Drain well before blending.
- **Blending:** Place the peeled cloves into a blender. Blend until a smooth paste is formed. To assist blending and improve shelf life, a small amount of white spirit vinegar can be added. Do not add water, as this reduces shelf life and increases microbial risk.

Quality of the processed product: A good-quality garlic paste should be:

- Smooth and evenly mixed
- Pale white to off-white in colour
- Strong in aroma
- Free from visible skins or lumps

Preservative (optional):
To extend shelf life, white spirit vinegar can be added at a rate of about 1–2 tablespoons per 250 g of garlic. This helps prevent discolouration and slows spoilage. Salt may also be added depending on the recipe.

Packaging:
Fill the paste into small, clean, food-safe jars or plastic containers. Seal tightly and label with product name, ingredients, date, and batch number. Refrigerate immediately after production and advise customers to keep refrigerated after opening.

13.3 Ginger Paste



Ginger paste is a versatile product used in many households, restaurants, and food industries. It saves time in cooking and delivers a consistent, strong ginger flavour. Spice processors can produce ginger paste in small jars for home use or larger containers for bulk buyers like hotels or caterers.

Quality of ginger:
The quality of fresh ginger roots (rhizomes) is very important. Good-quality ginger should have:

- A fresh, spicy aroma
- A golden-yellow interior
- Firm, smooth skin with no wrinkles
- No mould, black spots, or soft areas
- No dried, shrivelled, or fibrous sections

Process:

- **Cleaning:** Brush the ginger root under clean running water to remove soil. Use a nylon brush or clean sponge. Cut off any damaged or rotten sections.
- **Peeling (optional):** Peeling is optional. Some processors choose to peel ginger using a spoon or knife to remove the outer skin, especially for a smoother paste. Others skip this step to save time, especially if the skin is thin and clean.
- **Chopping (if needed):** Cut large roots into smaller pieces to ease blending.
- **Blending:** Place ginger pieces into a blender and blend into a smooth paste. Add a small amount of white spirit vinegar to help with blending and preserve the colour and shelf life. Do not use water.

Quality of processed product:
A good ginger paste should be:

- Smooth and uniformly mixed
- Light yellow in colour
- Free of fibres or stringy parts
- Strong in aroma

Preservative (optional):
To extend shelf life, white spirit vinegar can be added at around 1–2 tablespoons per 250g of ginger. Vinegar helps prevent spoilage and keeps the paste fresh for longer. Salt can also be added if preferred.

Packaging:

Spoon the paste into clean jars or plastic containers. Seal well and label with the product name, ingredients, date, and batch number. Keep refrigerated and advise customers to store in a fridge after opening.

13.4 Packaging/Bottling

Once garlic or ginger paste has been prepared, proper bottling and packaging are essential to ensure product hygiene, shelf life, and customer satisfaction. Paste products are sensitive to contamination, so cleanliness is especially important.

Bottling:

- Use clean spoons, scoops, or food-safe funnels to transfer paste into containers
- Avoid touching the paste with bare hands
- Fill to the desired weight or volume, leaving a small space at the top to prevent spillage during sealing
- Wipe the rims and sides of containers before sealing

Cleaning:

- Use clean glass or food-grade plastic containers
- Wash containers with hot water and soap, then rinse thoroughly
- Sterilise by dipping in boiling water or using a disinfecting solution
- Allow to air-dry upside down on a clean cloth or rack before filling

Labelling:

Each container must be labelled clearly with:

- Product name (e.g. Ginger Paste, Garlic Paste)
- Ingredients (e.g. ginger, vinegar)
- Weight or volume
- Date of production/manufacturing dates
- Best Before or Expiry date
- Batch number (for traceability)
- Storage instructions (e.g. “Keep refrigerated after opening”)
- Suggestions on how to sue the spice (optional)

Well-labelled and professionally packaged paste builds customer trust and increases chances of sales to retailers, supermarkets, and the hospitality sector.