

TECHNOGUIDE
IN PRODUCTION & MANAGEMENT OF
GINGER



ALL ABOUT GINGER

Ginger is a traditional crop that is easy to cultivate and can easily adapt to a broad range of agro-ecological conditions.

Ginger thrives in all parts of the country and is found cultivated in small patches for local demand. It is very much used in the Philippines to add flavor to some common Filipino dishes like *tinola*, *goto*, *arozz caldo*, *paksiw*, *batchoy*, and *pinakbet*.

It is also used as an ingredient in the manufacture of perfumes, softdrinks, candies, and pickles.

Per 100 grams edible portion, ginger contains: protein, fiber, ash, calcium, phosphorus, iron, thiamine, riboflavin, niacin and ascorbic acid.

With its many uses, the production of ginger does not meet the current demand. Thus, this technoguide in production management of ginger aims to guide farmers in the production of ginger.

It also contains management of pest and diseases of said crop to help them in the production of disease free and quality products.



ABOUT THE CROP

Ginger (*Zingiber officinale Roscoe*) is monocotyledonous, herbaceous, tropical plant belonging to the family Zingiberaceae. It is a perennial plant but is usually grown as an annual crop.

It is popular for its distinct sharp and hot flavor due to an oily substance called gingerol.

It is known as 'luya' in Tagalog, 'shoga' (Japanese), 'chiang' (Chinese), 'jengibre' (Spanish), 'gingembre' (French), and 'zanjabil' (Arabic). It has an aerial part of about 0.8 m high, which could grow up to 1.5 m tall (in Costa Rica, Hawaii, and Honduras) and a finger-like perennial underground part or rhizomes called hands.

According to FAOSTAT, in 2017, the Philippines produced 27, 482 tons of ginger. The area planted is 3, 908 hectares.

Production and Management

A. Varieties

Ginger varieties differ in size and shape of rhizomes, yield, quality, and flavor. The following are the more common varieties in the Philippines with their corresponding rhizome characteristics:

1. Native ginger

- a. **White ginger** - small, very fibrous but most pungent of all kinds
- b. **Yellow ginger** - like the white in kind except that it is orange in color.
- c. **Red Native** - Small, red, fibrous, very pungent
- d. **Imugan** - Medium-sized, slightly fibrous, pungent

2. **Hawaiian** - bigger, stouter rhizomes and yellowish brown flesh, sometimes pinkish not so pungent.

3. **Jamaica "Oya"** - Medium-sized, pale-colored, gives off pleasant aroma.

4. **Canton or Chinese**-Large, yellowish, succulent, less fibrous, less pungent

Red Ginger



Hawaiian Ginger



Jamaican Ginger



B. Soil and Climate Requirements

Ginger can be grown in flat to slightly rolling areas with well-drained, light to medium textured soil high in organic matter and pH of 6.8-7.0. It can grow in elevations of up to 1,500 meters above sea level (msl) with about 200-300 cm annual rainfall evenly distributed throughout the year and a temperature range of 25 -35°C. It grows well even with 25-40% shading.



Choose a site with gently sloping land with good soil drainage during the rainy months.

C. Planting Materials

In selecting planting materials, select rhizomes that are:

- a. mature (9-10 months)
- b. Select healthy rhizomes with 3-4 sprouts
- c. free of any disease

About 800 to 1,500 kg seed-pieces are required per hectare.

Freshly cut rhizome planting materials should be suberized first to avoid rotting due to fungal infection.



Pre-germinated ginger

The seed-pieces may also be pre-germinated for uniform growth. Prepare raised beds of any desired length measuring 1 m wide and 20 cm high. Line sow the seed-pieces 2 cm apart and cover with a mixture of compost and coir dust. Water as needed. Transplant when the sprouts are about 1-2 cm long. New varieties can also be propagated by micropropagation or tissue culture to increase the rate of multiplication.

D. Clearing

Clear the area of bushes or stubbles of previous crop to facilitate land preparation. These can be used in compost piles and should not be burned.



E. Land Preparation

On flat areas, plow the field twice then harrow to pulverize the soil. Make furrows 1m apart and incorporate organic fertilizers or any fully decomposed materials.

In cases where the farmer wants to plant ginger in sloping areas to serve as intercrops, build bench terraces.

F. Planting

Planting is done at the onset of the rainy season, usually from April to May. In areas with abundant supply of water throughout the year, planting can be done anytime.

Plant only fresh ginger free from disease, about 20 grams in weight, and showing early germination. A hectare of land can accommodate about 800 pieces.

Plant the ginger about 5 cm deep in every hill, about 25 cm apart from each other.

Ginger is usually intercropped with perennial crops such as coconut and coffee. Intercropping of ginger with papaya, pineapple, and tomato is a common practice in some parts of the country like in Cavite.

G. Fertilization

Ginger takes up large amounts of nutrients. Like most plants, ginger requires large amounts of Nitrogen (N), Phosphorus (P), and Potassium (K).

The general fertilizer requirement is 180 kg/ha N, 180 kg/ha P₂O₅, and 255 kg/ha K₂O.

H. Irrigation

Ginger requires small amount of water but frequent irrigation during the vegetative stage if necessary

I. Weeding

Ginger generally requires manual weeding during its growth period. The frequency of subsequent weeding depends on weed density.

Mulch with locally available materials such as coconut leaves or rice straw to suppress weed growth.



GINGER PEST & DISEASE MANAGEMENT

J. Harvesting

Harvesting depends on the variety of ginger planted and harvest time depends on how the product should be used.

Harvest according to the following market requirements:

Market/Product form (for processing, domestic market etc..) is equal to the harvesting period (months after planting).

- a. domestic market = 8-11 months
- b. salted and pickled = 5-7 months
- c. dehydrated = 6-8 months
- d. fresh ginger (for export) = 7-10 months
- e. fresh consumption = 5 months

In harvesting, dig every hill with the help of a fork, then pull up the plant, shake off the soil, and lay them on the ground.

The stems and leaves may be cut off 2-5 days before harvesting so that the skin of the rhizome will harden. Care should be practiced during harvesting to minimize injury that results to faster weight loss and entry of microbials causing the rotting of the rhizomes.

1. Bacterial wilt of ginger (*Ralstonia Solanacearum*)

Symptoms

- a. "Green wilt" occurs early in the disease cycle and precedes leaf yellowing. Green ginger leaves roll and curl due to the water stress caused by the bacteria that block the vascular systems of the ginger stems.
- b. Leaves of infected plants turn yellow and then brown. Yellowing should not be confused with another disease of ginger causing similar symptoms, Fusarium yellows.
- c. Diseased plants grow poorly and may be stunted and can decline rapidly and die before harvest.
- d. Rotten rhizomes, often discolored. Water-soaked appearance of infected rhizomes and stem vasculature. Discoloration of vascular tissues

Management

- a. Plant ginger in areas where water can easily drain (well draining soil).
- b. Avoid planting during very wet weather, as this promotes dispersal of pathogens.
- c. Practice rotation of crops.

2. Rhizome rots (*Fusarium spp.* or *Pythium spp.*)

These disease favors warm, moist soils; spread primarily through use of infected seed pieces which may not show any outward signs of disease

Symptoms

Stunted plant growth; yellow leaves and stems; brown discoloration of water conducting tissue within stem; root system rotted, mushy and turning black; rotted rhizome gives off a foul odor

Management

- Plant ginger in well-drained soils
- Keep fields weed free and do not grow ginger for more than one year in same area.
- Use disease free planting materials

3. Bacterial soft rot (*Erwinia spp.*)

Symptoms

Light yellow lower leaf tips; yellow leaves; drooping, withered leaves

Management

- Roguing of infected plants.
- Practice crop rotation
- Plant ginger in easily drain soil.



POSTHARVEST HANDLING

4. Root-knot nematode (*Meloidogyne* spp.)

Symptoms

- a. Water soaked lesions on roots
- b. Galls on rhizomes which can be up to 3.3 cm (1 in) in diameter but are usually smaller
- c. Stunted growth
- d. Yellowing plants which wilt in hot weather

Rhizomes with galls



Management

Plant nematode free planting materials.

1 CLEANING/WASHING

Trim off the shoots and roots and clean the rhizomes immediately after harvest.

Ginger should be scrubbed by hand with a soft-bristled brush in clean water. Care is required during the process to prevent rhizome breakage that causes decay and shrinkage.

2 DRYING

Cut the rhizomes and lay them for drying. Care must be taken not to hurt the rhizomes. Spread rhizomes on clean surfaces .

Drying is important to avoid rotting and to prolong rhizome shelf-life.

3 CURING

Ginger intended for storage should be cured by drying the rhizomes in air at ambient temperature (22°C-26°C) for several days to allow the skin to thicken and the cut surfaces to suberize.

4 GRADING

Classify rhizomes according to size, weight, and appearance.

Generally, ginger is usually sold at the local market notwithstanding the class of the rhizomes, however, when these are sold to local processors, business establishments or big processing companies, the grading or class of rhizomes are observed.

The class of rhizomes dictates the price. The higher the class, the higher the market price.

The size classification for ginger is as follows:

1. Class I – Large > 300 g
2. Class II – Medium 150-300 g
3. Class III – Small <150 g

5 STORAGE

Store only clean and healthy rhizomes. Keep the 10-month old rhizomes under 7.2°C and the younger rhizomes at 13°C. Maintain relative humidity at 75% to minimize weight loss, sprouting, and rotting. In areas where cold storage is not available, farmers can keep the products in well shaded areas.

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**Some of the photos used were lifted from the internet.*

**This technoguide has undergone technical review by Ms. Benita U. Bilgera, Science Research Specialist II (High Value Crops Development Program) and Mr. Landes B. Teofilo, Senior Science Research Specialist (Research Division) of the Department of Agriculture-RFO-CAR*

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