

Ginger

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Scientific Name and Introduction

The rhizome of ginger (*Zingiber officinale*) is referred to as a “root” and is used as a spice in cooking and as a pickled vegetable. The knobby, fibrous mature root has a light yellowish-brown skin when fresh. The rhizome is also harvested at a very early stage, before fiber development has taken place, for use in pickles and confectionery.

Quality Characteristics and Criteria

Desired quality characteristics include skin color, plumpness of tuber pieces, sheen on skin, and absence of vegetative sprouts, blemishes, soil, and insect injury. Young ginger is bright yellow to brown and has a high sheen with greenish-yellow vegetative buds, but no sprouts.

Horticultural Maturity Indices

Mature ginger rhizomes are harvested when the plant tops begin to wilt and die. These rhizomes should be plump with a dry, bright yellow-brown skin. The sheen is soon lost and the skin darkens after harvest.

Grades, Sizes, and Packaging

Rhizomes are sold in full, telescoping 13.61-kg (30-lb) and 9.06-kg (20-lb) fiberboard cartons or in 2.27-kg (5-lb) cartons with film bags.

Precooling Conditions

Forced-air or room cooling to 12 to 14 °C (54 to 57 °F) should be used.

Optimum Storage Conditions

Mature ginger rhizomes can be stored at 12 to 14 °C (54 to 57 °F) with 85 to 90% RH for 60 to 90 days. Storage at 13 °C (55 °F) with 65% RH leads to extensive dehydration and a wilted appearance (Akamine 1962). Superficial mold growth can occur if condensation occurs on rhizomes.

Controlled Atmosphere (CA) Considerations

There are no published recommendations.

Retail Outlet Display Considerations

Display fresh young ginger with misting and mature ginger at ambient temperature with no misting.

Chilling Sensitivity

Mature ginger is chilling sensitive if held below 12 °C (54 °F). Symptoms include loss of skin color and pitting of the skin. In severe cases there is internal breakdown.

Ethylene Production and Sensitivity

Very low.

Respiration Rates

Rates are about 5.5 to 6.8 mg CO₂ kg⁻¹ h⁻¹ (3.1 to 3.8 μL kg⁻¹ h⁻¹) at 22 °C (72 °F).

To get mL CO₂ kg⁻¹ h⁻¹, divide the mg kg⁻¹ h⁻¹ rate by 2.0 at 0 °C (32 °F), 1.9 at 10 °C (50 °F), and 1.8 at 20 °C (68 °F). To calculate heat production, multiply mg kg⁻¹ h⁻¹ by 220 to get BTU per ton per day or by 61 to get kcal per tonne per day.

Physiological Disorders

Dehydration is the most common problem. The rhizomes lose their sheen and darken rapidly during handling (Akamine 1962). Shriveling of the pieces becomes pronounced after the loss of about 10% of harvest weight (Paull et al. 1988).

Postharvest Pathology

Fusarium rot (*Fusarium* spp.) can cause serious problems. Symptoms include pale-brown discoloration of the vascular strands (Trujillo 1963) that invades the rest of the rhizome, which then becomes brown and dry (Teakle 1965). Pythium rot (*Pythium* spp.) has also been reported. The rhizome becomes soft and watery (Haware and Joshi 1974). Fungicides are not permitted, but reasonable control is obtained if the rhizomes are adequately cured and held at 12 to 14 °C (54 to 57 °F). Saprophytes, such as *Penicillium* spp., may grow on cut ends and injured areas and, though not parasitic, they give the cut ends and surface an unsightly appearance.

Quarantine Issues

Rhizome pieces free of soil and insect injury require no treatment.

Suitability as Fresh-Cut Product

None at this time.

References

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