College of Tropical Agriculture and Human Resources
University of Hawaii at Manoa

Food: Just Grow It!

BASIL

Types & Climatic Requirements

Basil (*Ocimum basilicum*), a member of the mint family, is a popular herb grown for the fresh market or for its aromatic leaves which are dried and used as a spice or flavoring. It is a perennial adapted to warm growing conditions, but is frequently grown as an annual. There are many varieties of basil including sweet basil, lemon basil, Thai basil, purple basil, Italian basil and others. Many types of basil are available varying in size, leaf shape, flavor, and in leaf color (ranging from green to purple). Product quality is determined by appearance (color and absence of decay or insect damage), flavor, moisture content for the fresh market, and volatile oil content and total insoluble ash content for the processing market. Basil for export from Hawaii is mainly grown during the winter months.

Soil Management & Fertilization

Fertilizer practices vary depending on the previous crop and on the fertility of the soil. Use soil tests to determine the levels of available plant nutrients in the soil. Work a complete fertilizer such as 8-8-8 into the soil before planting. Over-fertilization will diminish the quality of sweet basil at harvest and may increase the soluble salt content of the soil to undesirable levels. Basil does best when soil pH is between 6.0 to 7.5.

Planting

Basil seed should be obtained from a reputable source to ensure that the seed is true to type. Basil is direct seeded or transplanted into the field when about 6 in tall. When direct seeding, over seed for an 80 to 90 percent expected germination rate. Basil can be grown year round in Hawaii in well-drained soils at elevations below 700 feet, and from May to October at higher elevations. Optimum temperature for germination is 70°F (20°C), but the seeds will germinate well between 65 to 85°F (15 to 30°C) in about 7 days. The soil should be worked well to allow for proper germination. Plant seeds to a depth of ¼ inches. Space plants 6-24 inches apart in rows 2-3 feet apart. Basil can also be planted in beds with a spacing of 24 to 36 in between bed centers. Three rows are planted per bed with a spacing of 12 inches between rows.

Irrigation & Cultivation

Basil requires adequate soil moisture throughout the growing season to maintain quality and yields. The field may be mulched with organic material between the rows to help control weeds and conserve moisture. A mulched field will also reduce the amount of soil splashing onto the leaves, which simplifies the washing of foliage at harvest time and helps reduce the incidence of certain diseases.

Insect & Disease Control

Pests that commonly attack basil are slugs, mites, leafminers, leafhoppers, thrips, whiteflies, and nematodes. Basil is a specialty crop with only a few pesticides registered for use on the crop. Therefore, growers should develop and follow a pest management program to minimize the incidence of pests and diseases in their field. Growers should also follow strict measures during and after harvesting to ensure that live insects and mites do not infest shipments. Field plantings of basil generally have a healthy population of beneficial arthropods such as parasitic wasps, spiders, and other general predators which can help keep pest populations to moderate levels. Growers should learn to recognize both pests and beneficials and regularly monitor their

populations. The early detection and management of pests can often prevent major problems. Growers producing basil for export should pay particular attention to insects that are quarantine pests or are likely to remain on harvested basil, and remove them before export.

Growers should also be careful that their product is not contaminated with pesticides that are not registered for use on basil. Properly labeled shipments and record keeping help to protect the industry as a whole and to identify the source of contaminated products.

Basil is also susceptible to leaf spots, wilt, and bacterial pathogens. Information on basil disease etiology, epidemiology, and control is very limited. Although basil is plagued by many diseases, no fungicides or bactericides are currently registered for this crop in Hawaii. Therefore, growers must rely on early disease recognition and use cultural practices such as the use of windbreaks and rain shelters to prevent and manage diseases. By recognizing the first symptoms of disease, growers can remove diseased plants and continuously monitor fields for signs of pathogen recurrence or spread. For disease control: (1) use clean seed; (2) grow the crop in disease-free soil; (3) maintain disease free fields; (4) rotate basil with non-susceptible crops such as oats, buckwheat, and sunhemp; (5) sanitize or remove diseased leaves or plants to reduce field inoculum levels; (6) control moisture since high humidity or free water on plants strongly favors disease; (7) increase the spacing between plants to improve air movement and reduce leaf wetness periods; and (8) increase the organic matter in the soil which will enhance microbial activity and favor pathogen reduction. Laboratory analysis is recommended to identify the causal agent(s) when diseases are encountered.

High density plantings and physical or mechanical weed control are the most common practices used to prevent weed problems in basil. Weed control is enhanced with proper field preparation prior to planting. Both plastic and organic mulches may be utilized to minimize weeds in the field. Check with a county extension agent, the Department of Agriculture, or a chemical sales representative for herbicides which are registered for use on basil.

Harvesting

Fresh basil is very tender and is easily damaged by rough handling, desiccation, and chilling. To ensure and maintain product quality, minimize bruising when harvesting and packing. Harvested basil is usually dipped in cool water to reduce the temperature and to help dislodge soil particles and some of the insects pests that are not strongly adhered to the plant.

The shelf life of basil is relatively short compared to other herbs such as rosemary, oregano, and thyme. Thirty percent losses during shipment are not uncommon. Basil is susceptible to chilling injury and should not be stored below 40°F (5°C) for extended periods. Basil that has been damaged by cold (chilling injury) turn black and are rendered unsuitable for sale. Store and ship fresh basil at 45 to 55°F (5 to 13°C) and 95 percent relative humidity. Diseases affecting basil in the field will likely reduce the shelf life of the harvested product. Basil for export must be carefully inspected before packing to help ensure that it is free of live insects which will result in noncompliance with federal and state quarantine regulations.

Seed Availability

For the purposes of the Food: Just Grow It! Project, seeds of basil are available from the project directors at the University of Hawaii.

Information from: *Fresh Basil Production Guidelines for Hawaii*, by R. Hamasaki, H. Valenzuela, D. Tsuda, J. Uchida. University of Hawaii, College of Tropical Agriculture and Human Resource Research Extension Series 154. Dec. 1994.

Nutrition Facts

Serving Size (5g)
Servings Per Container

Amount Per Serving	
Calories 0	Calories from Fat 0
	% Daily Value*
Total Fat 0g	0%
Saturated Fat 0g	0%
Cholesterol 0mg	0%
Sodium 0mg	0%
Total Carbohydrate 0g	0%
Dietary Fiber 0g	0%
Sugars --g	
Protein 0g	

Vitamin A 4%	•	Vitamin C 2%
Calcium 0%	•	Iron 0%

*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:

	Calories:	2,000	2,500
Total Fat	Less than	65g	80g
Saturated Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300mg
Sodium	Less than	2,400mg	2,400mg
Total Carbohydrate		300g	375g
Dietary Fiber		25g	30g

Calories per gram:
Fat 9 • Carbohydrate 4 • Protein 4