

A photograph of a chive field. The chives are planted in neat rows, with dark brown soil visible between the plants. The chives themselves are vibrant green and appear to be in a healthy, growing stage. The lighting is bright, suggesting a sunny day.

CHIVE PRODUCTION PRACTICES IN GUYANA

Introduction

Chive is a member of the Allium family (Alliaceae) which includes other crops such as eschallot, onion, garlic, leek and bunching onion. The chive is the most widely distributed of the Allium species. The crop is a perennial, but in Guyana it is cultivated as an annual where the entire plant is harvested after an eight week growing cycle. Compared to onions and other alliums, chives have a strong tillering habit, forming dense clumps without well-formed bulbs.

Chives are grown mainly to satisfy the domestic market in Guyana. The herb has culinary and medicinal properties. The fresh leaves are used for making herbal butters and vinegar as well as a flavouring in salads, soups and soft cheeses. The oils (leaf extract) of the plant are known to lower blood levels of low-density lipoproteins. Chives contain some iron and vitamins and can be used as mild antibiotics and laxative. The plants can also be grown for their attractive pinkish to mauve fragrant flowers.

Cultivation

Soil

Chives are tolerant to a wide range of soil conditions but fertile, well-drained medium loams with a pH of 6.0 - 7.0 are generally considered most suitable. Sandy soils can also be used if organic matter (30-40 tons/ha) is incorporated. Clay soils need good drainage as well as organic matter (well-rotted pen manure) to improve the soil structure and fertility.

Land preparation

Chive is a shallow rooted crop (25-30 cm), so land preparation should not be deep. For virgin lands, plough the land twice down and across the field, to a depth of 20-25 cm, and harrow to obtain a fine tilth. Form beds 120 cm wide and 20 cm high. For continuously cultivated lands, fork and rake the land before planting.

If nut grass, *Cyperus rotundus*, is present at land preparation, use Roundup at 3-4 tbs/gal 7-14 days before planting. The chemical is most effective when the weeds are actively growing.

Liming

Growth of chives is best on pH of 6.0 –7.0. Different soil types have different liming requirements. Limestone must be applied at least six weeks before planting for liming to be effective. Apply the limestone at the recommended rate and work into the soil to a depth of at least 15 cm.

Planting Time and Method

Although chives can be propagated from seeds, this method is not suitable for commercial cultivation because of the long crop cycle (11-15 weeks). The propagation of chives vegetatively by division of existing clumps of bulbs is the common practice. A spacing of 10 cm within rows and 10 cm across rows should be maintained.

In the recommended spacing, two bulbs should be planted per hole. Thus to plant an area of 0.65 m², the quantity of bulbs required is 0.45 kg. For one hectare of pure stand chives, 6923 kg of planting material will be required.

Increasing the planting density will result in depressed yields while decreasing the planting density will result in under-utilisation of land resources, thereby decreasing productivity.

Fertiliser Application

Fertiliser needs are related directly to the type and nutrient status of the soil. It is essential therefore that a soil analysis be conducted so that a precise recommendation for fertilizer application can be provided. Contact NARI for all soil analysis and fertilizer recommendations.

In the absence of a soil analysis, the following is an approximate guide. Apply compound fertiliser (15:15:15) at the rate 414.7 kg/ha two weeks after planting. Apply urea at a rate of 138 kg/ha and muriate of potash at a rate of 103.6 kg/ha six weeks after planting.

Irrigation

Chives respond well to regular irrigation, especially in the dry seasons. Watering in the morning is highly recommended.

Weed Control

Chive is poor competitor with weeds for water and soil nutrients - due to its shallow fibrous root system and the lack of an aerial canopy to shade out other vegetation.

Chive is affected by many weeds but Hog bhagee, *Portulaca oleracea* L. is of major economic importance. It affects the plant from a very early stage; it grows vigorously competing with the plant and if not controlled, especially during the first three weeks of crop growth, it will smother the plants.

P. oleracea can be controlled effectively with the broadleaf-specific chemical, Runstar at 15 ml/2-3 gal water. Since this chemical does not affect straight vein weeds such as grasses, the most suitable method of control is removal by hand.

Insect Pests and Their Control

Chive is subject to pest attacks like any other crop. Daily inspection is recommended for insect pests. This should be done in the early morning or late afternoon. Apply insecticides only when the pests are present at levels that can reduce returns of the crop.

1. **Leafminer**, *Liriomyza* sp.

Economically, this is the most important pest affecting chive cultivation on the coast. The larvae of the leafminer feed between the leaf surfaces leaving irregular patterns of greenish-white mines on the leaves. This pest occurs year-round and it indiscriminately attacks plants of all stages of the crop cycle. Serious infestation causes yellowing, and subsequently browning of infected leaves.

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Control

Apply any one of the following:

- a) Leaf Guard (IGR) 75%. Mix 7g/18 litres water. For high insect population, repeat every seven days, for normal levels repeat every 14 to 21 days. Pre-harvest interval is seven to ten days.
- b) Padan 50 WSP. Mix 15 g in 4 to 5 litres of water. Ensure a seven day interval between applications. Pre-harvest interval is ten days.
- c) Trigard 75% WP. Mix 2 g/3.8 litres water.

It is advisable to alternate these chemicals to prevent the pest from developing resistance to the chemicals.

2. Crickets

Mole crickets, *Scapteriscus spp.* are present year-round and attack the crop indiscriminately. Crickets bite through the pseudostem of the chive destroying the entire plant. This is common during the first two weeks of planting.

Control

A bait comprising 0.9 kg (2 lb) freshly grated coconut and 3 ounces malathion and small handful of sugar or 2 tablespoons of molasses can be used to control crickets.

This mixture is applied in the evening and evidence of control can be noticed the morning after. This method is highly effective in controlling the pest and one application is necessary per crop cycle.

The pest can also be controlled by any of the following:

Diazinon (Contact)	1-2 tbsp/4.5 L	(1-2 tbsp/gal)
Fastac (Contact)	1-2 tsp/4.5 L	(1-2 tsp/gal)
Admire (Systemic)	28.4-85.2 g/4.5 L	(1-3 oz/gal)
Fendona (Contact)	28.4-113.1 g/4.5 L	(1-4 oz/gal)
Padan (Contact - ingestion)	2-3 tsp/4.5 L	(2-3 tsp/gal)

Diseases/Physiological Disorders And Their Control

There are no major diseases affecting this crop presently. However, seek the assistance of NARI whenever it is necessary.

Burnt tip, technically not a disease caused by a pathogenic organism but is a physiological disorder. It is caused by environmental factors particularly a deficiency of calcium in the soil resulting in parching of the tips of the leaves. The parching progresses downwards resulting in a brown burnt appearance. This nutritional disorder affects all stages of plant growth. Burnt tip is also associated with water stress conditions particularly when this deficit is coupled with reduced soil fertility. This disease can be controlled by liming the soil prior to planting.

Other means of controlling pests and diseases

- Using pest-free propagation materials. Infested or infected planting materials can infect an entire crop.
- Adequate soil inversion before planting. This method destroys insects and weeds and prevents the growth of weeds that are likely to harbour disease. Turning the soil exposes insects that pupate in the ground.
- Sanitation. Infield sanitation is also a principal means of preventing pests and diseases. The aim is to eliminate breeding sites.

Harvesting

The entire plant can be harvested six to eight weeks after planting. Always harvest early in the morning to prevent the subjection of plants to heat stress. The leaves should be crisp, clean and relatively free from discolouration. Remove all diseased, pest infected or damaged and yellow leaves. The roots should be thoroughly washed to remove all soil particles. The material should then be weighed and tied into the market-required bunches [usually 0.45 kg (1 lb)]. Burn all diseased and pest-infected post harvest waste. Disease free wastes can be used as mulch for other crops.

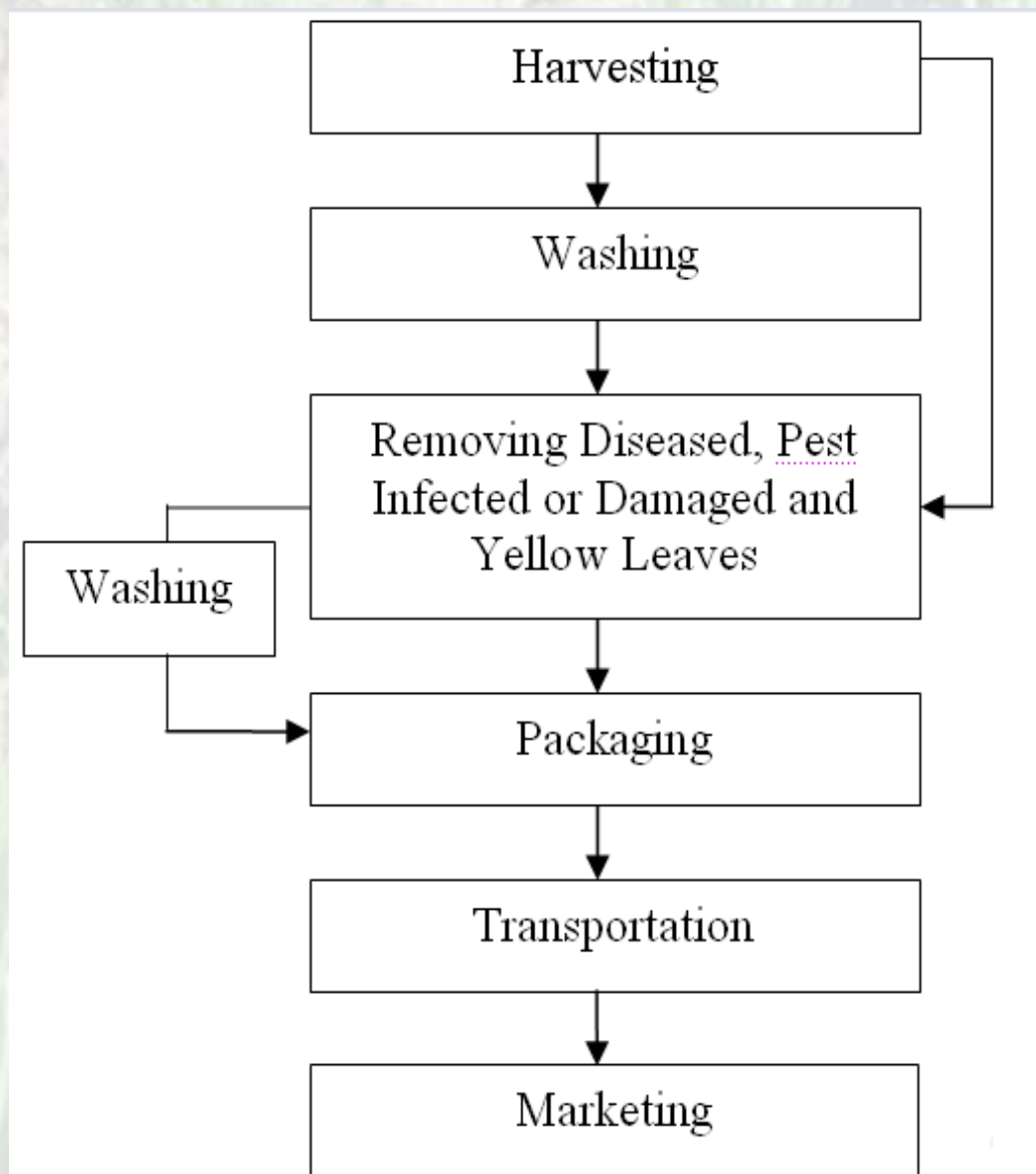
Estimated Yield

Pure stand chives will yield approximately 32,888 kg/ha.

Post-harvest Management

Chive is a highly perishable crop and should therefore reach the market within 24 hours of harvesting. If refrigerated conditions are available, this can extend to 48 hours. Storing at 0-1°C at 95-100% relative humidity can extend the shelf life of chives for 7-14 days.

Flow Diagram of Post-Harvest Handling System For Chives



Seed Material

For 'seed' material, the bulbs should be severed from the foliage leaving 3.8 – 5 cm from the base of the bulb. Replant bulbs soon after harvesting; do not keep bulbs longer than five to seven days. Since 1 kg of planting material will plant approximately 1.43 m², the farmer can calculate the required planting material for his vacant beds and therefore should leave enough planting material for the next crop.