



# A Simple Guide to Growing A Leafy Vegetable



Partners in Sustainable Community Development



## **Table of Contents**

<b>1 Preface</b>	<b>3</b>
<b>2 Introduction</b>	<b>4</b>
<b>3 Feasibility Study</b>	<b>5</b>
<b>4 Nutritional Benefit</b>	<b>7</b>
<b>5 Types of Lettuce</b>	<b>8</b>
<b>6 Land Preparation</b>	<b>10</b>
<b>7 Planting and Spacing</b>	<b>11</b>
<b>8 Fertilizer Application</b>	<b>12</b>
<b>9 Cultural Practices</b>	<b>13</b>
<b>10 Pest Control</b>	<b>14</b>
<b>11 Disease Control</b>	<b>15</b>

# Preface

This manual is designed as a resource guide to the participants of the Turtle Village Trust Agricultural Training Programmes. It is intended to give an intermediate approach to guide the reader/farmer in the agronomy of a Leafy Vegetable with the intention of establishing a sustainable enterprise.

Turtle Village Trust would like to acknowledge our partners in sustainable community development BHP Billiton, JB Fernandes Memorial Trust and Atlantic LNG without whom this valuable resource would not be possible. Turtle Village Trust would also like to thank the Ministry of Food Production for their support in this project and all others who contributed in making this endeavor possible.

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## Partners in Sustainable Community Development



## *INTRODUCTION*

Lettuce and Patchoi are the two most prevalent leafy vegetables offered for sale on the local market.

The increasing trend of these two (2) crops being a favorite among small farmers for cultivation stems from the following reasons:

- (a) These crops are short term with a production period of six to eight (6-8) weeks from seed stage to harvesting.
- (b) These crops are ideal for anyone who wants to cultivate as a beginner since they are much easier to grow compared to fruit crops.
- (c) These crops have a short crop cycle which gives the added advantages for a faster turn over and many crop cycles, thus allowing the farmer to realize a profit return in a shorter period of time.
- (d) These crops can be grown in areas with limited land space and a wide range of soil types. They are also ideal for Grow Box/Pot Trough and Hydroponics cultivation.

## *Feasibility Study*

The following questions should be adequately researched and considered when planning and investing in the production of this commodity:

- i) Have you identified a potential market for your produce? - This information will determine who you would target as buyers and how much of the commodity you should produce.
- ii) What periods of the year does the commodity attain its highest prices? - This information will give the producer a sound grounding as to when demand is high and the market season when the supply of this crop is greatest. Market information can be obtained from agencies such as NAMDEVCO.
- iii) What is the required investment inputs and potential profit that is inherent in this enterprise ?- This information will assist in identifying the size or scale of production, the method to be employed for producing the commodity and whether the business endeavor makes **dollars and sense**.

**Table 1: Summarised Cost of Production of Two Crates (240 Heads) of Lettuce**

Input/Activity	Amount	Man days	Unit Cost	Total Cost	Assumptions
Land Preparation	Bed 5ft x40ft	2	\$100.00	\$50.00	4 crop cycles on bed
Seedlings	2 crates (240)	-	\$25.00	\$50.00	
Manure	2 bags	-	\$10.00	\$20.00	
Transplanting	240 seedlings	½ day	\$100.00	\$50.00	
Fertilizer Application		½ day	\$100.00	\$50.00	1hr / application.
a. Nutrex (10g/2L)	220g	-	\$7.72/lb	\$3.74	3 applications of
b. 12:24:12 (5g/plant)	1200g (2.5lb)		\$2.20/lb	\$5.50	12:12:17:2 and
c. 12:12:17:2 / CalNitro (3:1 mixture- 10g/plant)	10.5lb 3.3lb		\$3.20/lb	\$33.60	CalNitro mixture.
Pest and Disease Control					Applied during daily
a. Fastac (3tsp/gal)	12tsp		\$0.15/ml	\$5.40	irrigation, manually
b. Rhizolex (3tsp/gal)	12tsp		\$0.21/g	\$7.56	
c. Azadirect (3tsp/gal)	9tsp(3 application)		\$0.96/ml	\$43.20	
Weed Control					
a. Round Up (3Tbs/gal)	4g		\$15.00	\$15.00	
b. Manual Control	4hrs (spread in 3weeks)	½ day	\$100.00	\$50.00	
Irrigation	¼ hr for 28 days	1 days	\$100.00	\$100.00	
Total Expense	240 heads			<b>\$484.00</b>	<b>\$2.10 per Head</b>
Income	240 heads		\$5.00	<b>\$1,200.00</b>	
Profit				<b>\$716.00</b>	

## *Nutritional Benefits*

Lettuce is consumed mainly in salads or as a dressing for sandwiches and other dishes. Patchoi though may be eaten raw or cooked.

Lettuce and Patchoi are high in vitamins (vitamin C) and minerals especially iron (Fe). One of the major benefits is that these crops are high in dietary fiber.

**Health Tip** ó Lettuce has low calorific contents (100mg yields 10 kcal) and is a perfect addition in a meal for people trying to lose weight.

## *Types of Lettuce*

There are mainly four basic types of lettuce.

### **i) Crisp Head Lettuce**

These lettuce are characterized by forming crisp, tight head with leaves thin and light green when harvested. e.g.: Iceberg.



### **ii) Butter Head or Bibb**

These lettuce are the smallest of the other varieties, have loose gently folded head with tender leaves e.g. Butter Crunch.





### iii) Leaf Lettuce

These lettuce do not form heads and remains as an open rosette e.g. Mignonette Bronze.



### iv) Romaine or Cos

These lettuce have tall loose tightly folded heads with soft broad leaves e.g. Romaine, Valamine.



The two main lettuce grown in Trinidad and Tobago are the Head and Leaf types, however, higher prices are obtained for the Romaine Lettuce which are usually sold in high end supermarkets e.g. Hi-Lo.

## *Land Preparation*

Leafy vegetables can be grown on flat and undulating land. The soil should be free of weeds and crop residues. The land should be prepared to a fine medium tilth with adequate root room (8"- 12" deep) and good drainage.

The use of a systemic herbicide three weeks prior to transplanting seedlings allows for minimal manual weed control during the crop cycle.

Beds can be prepared 4-5ft wide with drains having a depth of 12"-16" to prevent water logged conditions.

Tip 6 (a) Leaf Crops does best on soils rich in organic matter.

(b) Cow manure should be avoided if not pasteurized due to potential high content of viable weed seeds.

## *Planting*

Seedlings should be at least three (3) weeks old at transplanting and is best done in the afternoon. Seedlings can be placed in holes filled with well cured manure to cover the root system of the plants.

Care should be taken to avoid damage to the roots. The transplanted seedlings can be drenched with a soil insecticide. (e.g. Fastac) to prevent attack by mole cricket. A fertilizer e.g 10:52:10 or 12:24:12 should be applied to encourage good rooting.

## *Spacing*

Head lettuce requires a wider spacing between plants-30 cm (1ft) as compared to leaf lettuce-20cm (9").

White-stem patchoi requires a spacing of 35cm between plants

Spacing may vary with variety and recommended distances should be considered to prevent competition between plants, allowing for good crop coverage and reduced soil surface area for weed growth.

## *Fertilizer Application*

<b>Timing</b>	<b>Fertilizer</b>	<b>Rate</b>	<b>Method</b>
At Transplanting	Complete foliar fertilizer e.g Nutrex	10g(2 chubby cork/2 litre )	Water Salt
	12:24:12	5g/ plant (1 chubby cork)	Circular/band
1 week after transplanting and every 7-10days until harvesting	Complete foliar fertilizer e.g. Nutrex	10-15g/ 2 litre	Water salt
	12:12:17:2/ Calnitro mixture 3lb:1lb	10g/plant	Circular/band

## *Cultural Practices*

- (1) Weed Control ó Manual weed control should be encouraged as Lettuce or Patchoi will cover the soil surface quickly and smoother weed growth.
- (2) Watering ó This can be done early in the morning or late afternoon.




### *Harvesting (4-6 weeks after transplanting)*

Head lettuce usually takes a little longer from planting to harvesting when compared to leaf lettuce.


The stalk is cut just under the last basal leaf (above the soil surface) and the lettuce head cleaned of disease leaves and soil residue.


Patchoi are usually harvested by hand, cut off at the base 35 to 55 days after sowing. Patchoi should always be picked when leaves are fresh and crisp, and before the outer leaves turn yellow. Remove any dead or damaged leaves, trim the base flush with the first petiole and wash the plant. Harvest during a cooler part of the day. Patchoi is usually sold in bunches of 3 to 5 plants held by string or rubber bands (be careful as plants bruise easily).


## *Pest Control*


Name of Pest	Symptoms/ Damage	Control
<p style="text-align: center;">Mole Cricket</p> 	<p>Attacks seedlings by cutting stems at or just under the soil surface</p>	<p>Use of soil insecticide at transplanting e.g. Fastac, Diazinon</p>
<p style="text-align: center;">Aphids</p> 	<p>Serve as vector for viral diseases</p>	<p>Biological e.g. Neem-x, Bio Neem, New Mectin, Azadirect</p>
<p style="text-align: center;">Cabbage Looper</p> 	<p>Eats holes in heads and leaves making the produce unmarketable</p>	<p>Biological e.g. Dipel DF</p>

## *Some Disease of Leafy Vegetable*

<i>Name/Type</i>	<i>Symptoms</i>	<i>Spread</i>	<i>Control</i>	<i>Remarks</i>
<p>Downy Mildew (Fungal)</p>  <p style="font-size: small; text-align: right;">Dept. of Plant Pathology University of Arizona</p>	<p>Pale yellow V shaped region on upper surface of leaves. White fluffy growth on under surface of leaf.</p>	<p>Soil borne disease, rain splash, contaminated tools and equipment.</p>	<p>Mulching, good drainage, drip irrigation, copper based fungicides can be used.</p>	<p>Thrives best in cool, moist conditions.</p>

<i>Name/Type</i>	<i>Symptoms</i>	<i>Spread</i>	<i>Control</i>	<i>Remarks</i>
<p>Bottom Rot (Fungal)</p>  <p style="font-size: small; text-align: right;">Dept. of Plant Pathology University of Arizona</p>	<p>Sunken reddish brown lesions on midribs of leaves that touch soil.</p>	<p>Soil borne, thrives in organic matter</p>	<p>Ensure proper drainage. Avoid overwatering</p>	<p>Remove plant debris prior to land preparation</p>

<i>Name/Type</i>	<i>Symptoms</i>	<i>Spread</i>	<i>Control</i>	<i>Remarks</i>
Tip Burn (Abiotic) 	Dark brown spots near leaf margin. Marginal necrosis		Calcium deficiency application of lime during land preparation	Contributing factors includes excessive nutrients, increase light, warm temperatures.

<i>Name/Type</i>	<i>Symptoms</i>	<i>Spread</i>	<i>Control</i>	<i>Remarks</i>
Big Vein (Viral) 	Yellowing of main veins on leaf. Rosetting of head	Water mould (Vector)	Control of insects vectors.	Rogueing of infected plants