

# Garlic Production Guide

**GARLIC** (*Allium sativum L.*), otherwise known as bawang, is one of the more popular cultivated *Alliums*. It is mainly used as a condiment for flavouring meat, fish and salads, in fresh and dehydrated forms. It is also known to lower blood sugar and cholesterol levels. Its many other health-promoting attributes have resulted in medicinal pills, drinks and powders based on garlic extracts.

## ***Production and Trade***

Garlic is grown in about 5,700 ha mainly in Ilocos Region. In 1997, an average production of 15,760t was reported. In 1996, 267.7t valued at P5.35 M were exported to the Netherlands and Singapore while 3,990 t of fresh and processed garlic valued at P68 M were imported.

## ***Production Management***

### *Strains*

Ilocos White  
Batangas Strain  
Cabuyao Strain  
Batanes

## ***Climatic and Soil Requirements***

Garlic grows best in areas with comparatively mild climate. It requires cooler weather during the early stages of growth and dry atmosphere with moderately high temperature for maturation. It can be grown from sea level to over 1,000 feet above sea level. Areas with Type 1 climate that is dry from November to April is best for commercial production of garlic.

Garlic can be grown in several types of soil. It grows best in sandy loam and silty loam to clay loam with pH of 5.6-6.8. The soil should be fertile, rich in organic matter, well-drained and maintains good soil moisture supply during the growing period.

## ***Land Preparation***

A 1-ha production area requires 1,000 kg garlic seedpieces.

With thorough tillage, the land is prepared 4-6 weeks before planting. The field is plowed 2-4 times at 7 days interval to improve soil texture. The use of tractor driven implement requires 1-2 plowing and harrowing operations while an animal-drawn harrow needs 4 passings. Apply animal manure at 10-15t/ha prior to bed preparation. Mulch with 3-5 cm layer of rice straw after planting to conserve moisture and control weeds. This method of land preparation is appropriate for upland areas.

Zero tillage is usually practiced in lowland rice fields. Cut straw and weeds close to the ground after rice is harvested. Allow soil to dry until desired moisture level is attained. Construct canals around the paddies to make sure that no standing water will stay in the paddy after irrigation or heavy rain.

## ***Fertilization***

In the absence of soil analysis, a 1-ha production area requires 7 bags of complete fertilizer (14-14-14), 2 bags of urea (46-0-0), 2 bags of superphosphate (0-18-0) and a bag of muriate of potash (0-0-60). Apply all 0-18-0 and 14-14-14 as basal fertilizer prior to planting. Apply a combination of 46-0-0 and 0-0-60 at 30,50 and 70 days after planting.

## ***Irrigation***

Irrigate lightly but frequently with 25 cm of water per week to provide continuous and uniform moisture supply throughout the growing season. Regulate watering at the onset of bulb formation to ensure proper ripening. Stop irrigation when tops begin to fold over, otherwise, it will result in watery bulbs, increased rotting and reduced keeping quality.

## ***Pest and Disease Management***

**Purple blotch** (*Alternaria porri*) and Cercospora leaf spot (*Cercospora duddiae*). Select healthy planting materials. Control humidity within the field with lower planting density and proper irrigation. Spray with compost tea (Compost tea is prepared by fermenting rice compost for 10-14 days. The effluent is sprayed to control foliar diseases). Remove infected leaves.

**Black mold** (*Aspergillus niger*), basal rot (*Fusarium oxysporum*) and bacterial soft rot (*Erwinia carotovora*). Harvest only mature bulbs. Cure harvested bulbs properly. Maintain good air circulation during curing. Packing and storage.

**Thrips** (*Thrips tabaci*), army worm (*Spodoptera exigua*) and cutworm (*Argotis spp.*). Use overhead irrigation, spray with water and soap solution at high pressure. Remove thrips-infested leaves. Spray with hot pepper extract and spread ash on the soil around the plant at regular intervals to control army worm and cutworm infestation. Manage weeds properly to maintain sufficient population of natural enemies of insect pests.

## ***Harvesting***

Harvest when 75% of the leaves turn yellow and begin to fold over. Pull bulbs manually from the soil at about 90-100 days after planting.

## ***Postharvest***

Cure harvested bulbs for 10-14 days under dry shade. Proper drying is essential to minimize diseases during storage and to produce good skin color. After curing, cut leaves 10-12 cm from the top of the bulb. Grade bulb according to size and quality and store in a well-ventilated area. Storage of bulbs layered with *lagundi* leaves prevents damage caused by storage pests such as cigarette beetles.

### **Cost and Return Analysis Per Hectare**

<b>ITEMS</b>		<b>AMOUNT</b>
<b>I. VARIABLE COSTS</b>		<b>113,030</b>
A. Labor (P150/MD)	1,500	
Plowing	1,000	
Harrowing	1,500	
Manure application (4 MD)	600	
Fertilization; basal (4 MD) and side-dress (10 MD)	2,100	
Preparation of planting material (5 MD)	750	
Seedpiece treatment (1 MD)	150	
Planting (25 MD)	3,750	
Mulching (5 MD)	750	
Irrigation (14 MD)	2,100	
Spraying (20 MD)	3,000	
Weeding (30 MD)	4,500	
Harvesting (20 MD)	3,000	
Postharvest operations (35 MD)	5,250	
Sub-total	29,950	
B. Materials		
Seedpieces (1,000 kg/ha)	50,000	
Animal manure (15 t)	15,000	
Fertilizers		
14-14-14 (7 bags)	2,450	
46-0-0 (2 bags)	930	
0-18-0 (2 bags)	1,100	
0-0-60 (1 bag)	600	
Rice straw (20 trailer-load)	3,000	
Fuel and oil	5,000	
Sub-total	83,080	

II. FIXED COSTS		18,063
Land Rental	5,000	
Depreciation		
5 pcs. scythe (2 yrs)	63	
5 pcs. hoe (3 yrs)	125	
3 pcs. shovel (3 yrs)	75	
2 knapsack sprayers (5 yrs)	800	
Interest on loans at 20% int. p.a.	12,000	
TOTAL COSTS		131,093
GROSS INCOME <sup>a</sup>		200,000
NET INCOME <sup>b</sup>		Y1 = 68,907
		Y2 = 118,907

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<sup>a</sup> With marketable yield of 4 t/ha at P50/kg

<sup>b</sup> Year 2 total costs exclude item on seedpieces

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**Sources:**

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