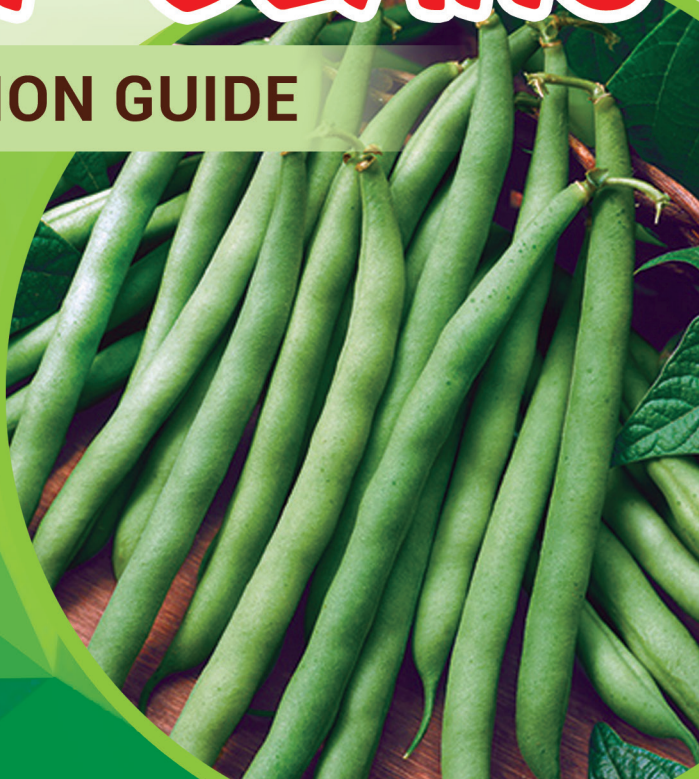
DEPARTMENT OF ARICULTURE
Regional Field Office No. 02
Tuguegarao City, Cagayan

SNAP BEANS

PRODUCTION GUIDE



Snap Beans

Production Guide

This Publication is a project of the **Department of Agriculture, Regional Field Office No. 02, High Value Crops Development Program.** It contains the most recently available and locally adaptable technical information on **Scap Beans Production** in Region 02.

June 2017

INTRODUCTION

Snap bean *(Phaseolus vulgris L.),* popular called Baguio bean (habichuelas", is also known as French bean, green bean, string bean, kidney bean, and haricot bean. It is one of the most widely cultivated vegetable legumes in the Philippines. The term "snap" pertains to the manner by which young pods are used as vegetables- snapping them to smaller pieces. It also refers to the lower fiber content in snap bean pods compared to dry bean pods, which are tougher and grown only for the dry seeds.

There are two types of snap bean grown in the Cordillera: the pole type, which is more preferred by farmers in Benguet; and the bush type, which is preferred by farmers in Mountain Province and Ifugao.

Uses and Nutritional Value

The succulent young pods of snap beans can be steamed, sautéed, buttered, or cooked along with other vegetables.

Per 100 grams (g) edible portion, fresh snap bean pods contains the following:

Properties	Amount
Water	90.5
Energy (kcal)	36.0
Protein	2.0
Fat	0.1
Carbohydrates	6.8
Fiber	1.2
Ash	0.6
Calcium	77.0
Phosphorus	38.0
Iron	1.2
Vitamin A	60.0
Thiamine (mg)	0.06
Riboflavin (mg)	0.09

Niacin (mg)	0.7
Scorbic acid (mg)	17.0

Source: The Philippine Food Composition Tables, 1997, Food and Nutrition Research Institute- Department and Technology (FNRI-DOST).

PRODUCTION MANAGEMENT

Varietal Selection

Below are the various types of varieties that can be planted in Region 02 condition due to their versatility:

Varieties	Pole Type	Bush Type
Alno/ Black Valentine	Patig	Labrador
Norman	Kaki/Kanaya	Matador
Redford	B-21	Bush Blue Lake 274
Burik	Taichung # 1	
Gemmy	Stringless Blue Lake 5-7	
Black Kentucky		
Black Gonder		
Kentucky Gonder		
Mayabong		
BSU-I		

SOIL AND CLIMATE REQUIREMENT

Snap beans grows best in medium to high elevation areas or temperatures of 18 °- 29 °C. It can also be grown in low elevation areas during the cool, dry months, but the yields tend to be lower; and the pods, more fibrous. Temperatures above 32 °C cause blossom drop and deformed pods. Planting is usually done during October and November to achieve higher percentage of pod set.

Snap beans thrives best in well-drained, clay loam soil, rich in organic matter with pH ranging from 5.5 to 7.5.

Land Preparation

Plow and harrow the area 2-2 times. For single row planting, make furrows 0.75-1.0 meter (m) apart. For double-row planting, make 1 m wide and 0.2 m high raised beds. Dig shallow holes 0.3 m between hills. Mix well-decomposed animal manure and/or 14-14-14 fertilizer during bed preparation.

Mulching

Use plastic mulch to suppress weeds and conserve soil moisture. After making the raised beds and incorporating manure, apply plastic as mulch with the silver side up. To ensure that the plastic is well stretched, apply during the silver side up. To ensure that the plastic is well stretched, apply during the hotter part of the day. Secure the ends and the sides with soil. Make holes 30-50 cm apart using heated tin cans. The plastic mulch can be used for up to four croppings without being removed from the plot.

Planting

On hectare of snap beans requires 40 kg seeds for the pole type and bush type. After basal fertilization of organic and/or inorganic fertilizers, directly sow 2 – 3 seeds per hill at a distance of 30 cm x 30 cm between hills, cover lightly with soil, and apply mulch using grass clippings or rice straw. If plastic mulch will be used, directly sow 2-3 seeds per hole and cover lightly with soil.

Trellising

For the pole type snap bean, construct A-type or fence type trellis using bamboo sticks, “rono” or wire # 16, and abaca or plastic twine before vine development.

Fertilization

The general fertilizer recommendation for snap beans is 135 kg/ha Nitrogen (N), 135 kg/ha Phosphorus Pent oxide (P_2O_5) and 112 kg/ha Potassium Oxide (K_2O). However, proper fertilization should be based on

soil analysis.

Apply 2-3 t/ha decomposed chicken manure in order to contribute 40-60 kg NPK and micronutrients. Apply 3 bags/ha 14-14-14 (complete fertilizer) as basal fertilizer side dress with one bag urea. Fermented plant juice (FPJ) may also be used to improve plant vigor.

To prepare manure tea soak 3/4 sack of dried cow or horse manure in a 3/4 plastic drum (200-L capacity) of water. Soak for 7 days with frequent stirring. Dilute manure tea in up to 20 parts water and spray on the leaves at 1-2 weeks interval. To prepare FPJ, mix three parts chopped plant shoots or banana trunk with one part raw sugar or molasses. Ferment mixture for 7 days. Use 1 tbsp. per 4L of water for drenching on the plots or as foliar fertilizer.

Irrigation

Snap beans requires constant supply of moisture throughout the growing period. Water the plants regularly to enhance flowering and pod setting. Avoid too much that can cause root pot. On the other hand, too little water can result to flower and pod drop.

Weed Management

Pull out weeds regularly from planting up to the third week. Hill up after 2-3 weeks to cover the side dressed fertilizer and to suppress weed growth. Regularly spot weeding is recommended, but a minimum level of weed growth may be allowed along the alleys to protect the soil. Hilling up is not necessary when plastic mulch is used.

Pest and Disease Management

Pest Management Recommendations

Beanfly - Spray with soap solution (4 tbsp. soap/16 L water. If needed, spray with permenthrin, cypermenthrin, or other appropriate chemicals following the recommended rates.

Aphids - Spray with hot pepper extract (100 g macerated hot pepper/16

L water) and soap solution. If needed, spray with cypermenthrin, fevalerate, deltamethrin, or other appropriate chemicals following the recommended rates.

Leafhopper - Plant sacrificial crops like okra. Spray with soap solution or Methahizium.

Pod Borer - Grow repellant crops like basil, onion, and marigold. Spray with Bacillus thuringensis (Bt) or Nuclear poly hedrosis Virus (NPV).

Leaf Miner - Conserve natural enemies like spiders, lacewings and syrphid flies.

Diseases Management Recommendations

Antracnose - Use resistant varieties such as B-21. Remove sources of inoculum.

Bacterial Blight - Spray with copper-base fungicides following the recommended rates.

Bean Rust - Use resistant varieties such as Blue Lake, B-21 and Taichung #1. Remove and burn infected leaves.

Fusarium root rot - Use resistant varieties such as B-21. Grow snap bean in a well-drained soil. Practice crop rotation

Harvesting

Pole snap beans is harvested 60-70 days after planting (DAP), depending on the pod diameter and toughness permitted in the market. It is handpicked every 3-5 days for up to 10 times. Bush snap bean can be harvested as, bright in color, fresh in appearance early as 55-60 DAP or at 2 weeks after flower opening at the appropriate pod thickness required by the market. Harvest early in the morning (6-8a.m.) before the heat of the sun gets too intense to avoid weight loss. Pods should be well formed, straight, bright in color, fresh in appearance, tender but firm, and crisp.

Postharvest Handling

Pods are classified as marketable and non-marketable. Marketable pods are graded/sorted according to size and quality. First grade pods are unblemished, tender, straight, long, and at the right maturity. Second grade pods short, have minimal blemishes and distortion, and slightly over the picking stage. Unselected pods are considered non marketable but can still be consumed. Optimum storage contains are 5°-7.5°C and 95-100 % relative maturity.

Packing

Pack pods in bamboo baskets lined with available local materials such as newspapers or banana leaves. Plastic sacks, poly-ethelene bags, or "bayong" are also suitable for packing pods. Pods can be transported to distant markets with minimal weight loss when packed in thick lined crates.

Snap bean is sold in the local market with Manila as the main outlet. Wholesalers and retailers handle the distribution to smaller outlets in the provinces.

Seed Production

Snap bean is self-pollinated. Select plants that are vigorous and are free of damage from pests and diseases. At 90-100 days from sowing, harvest dry pods and extract seeds. Sun-dry to around 10 % moisture content. To determine if the moisture content is acceptable, put some seeds inside a plastic bag and place under the sun. After 20-30 minutes or more, depending on how intense the heat of the sun is, continue sun-drying the seeds. Pack the dry seeds in moisture-proof containers and store in a cool, dry place. If properly stored, seeds can remain viable for about two years.

COST AND RETURN ANALYSIS PER ONE HECTARE

Items	Amount (P)
Variable Costs	5,000
Labor (P250/man-day (MD)	2,500
Clearing (20MD)	5,000
Bed preparation (20MD)	5,000
Manure Application (15MD)	3,750
Planting (10MD)	2,500
Trellising (10MD)	2,500
Vine Training (10 MD)	2,500
Sidedressing/hilling up (30MD)	2,500
Spraying (8MD)	2,000
Weeding/Hilling Up (30MD)	7,500
Irrigation (10MD)	2,500
Harvesting (30MD)	7,500
Miscellaneuos (hauling, etc((10MD)	2,500
Sub-Total	**P 42,750**

MATERIALS

Items	Amount (P)
Seeds (40 kg)	20,000
Manure (40 bags @250/bag)	10,000
Fertilizer 14-14-14 (3 bags) 46-0-0 (1 bag)	 3,000 980
Insecticides (2 liters)	1,000
Fungicides (2 packs)	700
Fuel and Oil	3,000
Trellis materials (4,000 pcs)	4,000
Packaging Materials	4,000

Miscellaneous (pail, gloves, etc.)	2,000
Sub-total	**48,680**
Knap sack sprayer (1 unit)	2500
Scythe (5 pcs)	250
Hoe (5 pcs)	600
Shovel (3 pcs)	450
Plastic Drum (2 pcs)	1,000
Sub Total	**4,800**
Total Cost	**96,230**

Gross Income:
Regular Season- (at P15/ kg with 20t/ha yield) =P300,000
Offseason - (at P25/kg with 15t/ha yield) =P375,000

Net Income:
Regular Season- P 300,000-96,230 = 203,770
Offseason - P 375,000-96,230 = 278,770

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