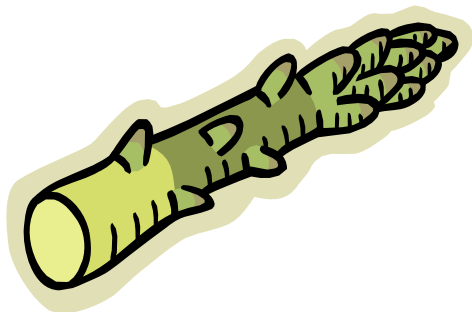


# Growing Asparagus in the home garden



## Introduction

Asparagus (*Asparagus officinalis* L.) is a perennial crop that can remain commercially productive for 10–15 years. The plant is composed of ferns, a crown and the root system.

Growing asparagus in the home garden can be both rewarding and challenging. Asparagus is a temperate crop that can be grown throughout Bhutan under a wide range of soil and climatic conditions. This nutritious perennial is the first fresh vegetable available from the garden in the spring. Although an initial amount of time and money is needed prior to the harvesting of asparagus, an established bed will produce a spring harvest for nearly 10–15 years. However, the yield of asparagus gradually declines after ten harvest years, and therefore, should be replanted at this time.

## Uses and Nutritional Value

Young, tender shoots or spears eaten half cooked alone or mixed with other vegetables. The spears are also processed by canning in brine. Green

asparagus are rich in vitamin A, B, C and phosphorus content.

## Growth cycle

The asparagus plant has a crown consisting of underground stems, called *rhizomes*, with an extensive network of fleshy roots that store food reserves for the plant. Buds, which are formed on the rhizomes, develop into the edible spears that are harvested and eaten. If there are not harvested the spears will develop into green ferns that manufacture food reserves for the next season. The food reserves are stored in the roots; thus, a well developed root system would provide a stronger crown that would sustain high yields for many seasons.

Asparagus plants may be started from seed or crowns. However, in Bhutan, one year crowns are available from the Druk Seed Corporation nurseries. The first harvests from the crowns generally occur the spring of the third year after planting. This delay of two years before the first harvest is necessary to allow the newly planted crowns to develop an adequate crown and root storage system. The delay also helps to maintain a high yielding, long bearing asparagus bed.

## Climatic and site requirements

Asparagus is a long-term investment. Careful considerations should be given to site selection in the home garden. The soil should be adequately prepared prior to planting. It is very difficult to alter the soil conditions in the bed once the asparagus is planted and deep tillage can damage the crowns resulting in higher incidences of diseases. The asparagus

plot should be situated away from the annual vegetable garden in an area sheltered from the wind.

A sunny, frost free site is ideally suited for asparagus culture. Asparagus is sensitive to frost, and therefore should not be planted in hollows where frosts may prevail. Asparagus grows best on well-drained soils that is deep, fertile and of a porous and friable nature, such as sand or sandy loam. Heavy soils such as clay should be avoided since they are difficult to work, cause deformed spears, and lack sufficient drainage aeration for good growth. The addition of organic matter to the soil prior to planting will improve the structure of the soil and be beneficial to the growth of the plant. Asparagus does not grow well under acidic conditions; the optimum pH range for asparagus is 6.0 – 7.0. A 10–10–10 fertilizer at the rate of 8kg per 100 square meters should be incorporated into the top 30 cm of the soil prior to planting to ensure a good stand of asparagus. A soil analysis maybe obtained through SPAL to determine their specific fertilizer requirements and soil pH.

Weeds should be eliminated by hoeing before the crowns are planted. You should avoid selecting a site that had previously grown asparagus in order to decrease the incidence of Fusarium diseases. Fusarium is a soil borne fungus that is common in most soils.

### **Planting**

The commonly available varieties of asparagus in Bhutan are:

- Mary Washington (OP)
- UC 157 F1 (Hybrid)

One year old crowns can be purchased from the Druk Seed nurseries. You should choose healthy, fresh crowns. The crowns should have numerous plump buds with a strong root stem. Avoid crowns with pointy buds and spindly root systems. Only one year old crowns should be used, since they can be dug and handled with less damage. Plant the crowns in the prepared beds as soon as possible in the spring, weather permitting, before the buds on the crown break dormancy.

The asparagus bed should be prepared prior to purchasing or transplanting the plants. Following adequate soil preparation dig a trench in the soil to a depth of about 15–20 cm. Put the excavated soil off to one side and use it later to fill the trenches after the asparagus crowns are planted. Trenches should be 100–200 cm apart in the garden. You should add decomposed compost, well-rotten manure, and fertilizer to the bottom of the trench depending upon the specific soil requirements. The addition of more soil to the trench after a few days may be necessary if settling is dramatic; the beds should be about 15 cm deep at planting time.

Place the one-year old crowns, buds up with roots spread out evenly, at the bottom of the 15–20 cm deep trench. A spacing of 30 cm between each crown is optimal for rapid root growth and minimum crowding. Cover the crowns

with 2–5 cm of soil, and gently press the soil over the plants. As the fern grows, the trenched should be filled in gradually. This controls weeds and prevents suffocation of the plants.

Allow the plants to grow for the whole season maintaining an adequate moisture level. Mulch should be placed around the plants to help conserve the moisture and prevent weed growth. If cultivation is essential for weed elimination, hoe lightly to avoid injury to the underground growth. **Do not harvest any asparagus the first year.**

As the summer progresses, the spears will grow into tall, feathery ferns. The fronds will bear flowers in the summer after the second year and the female plants will produce small red berries in the autumn. The stalks will gradually turn brown and dry up after the first frost. In late April or early May, incorporate fertilizer lightly into the top 5 cm of soil before the spears emerge. Avoid deep cultivation.

### **Harvesting**

The first harvest normally occurs in spring, usually in late April or early May, during the third year of growth. **The first harvest should be limited to two weeks.** A longer harvesting period should be avoided, as this depletes the food reserves and causes smaller buds to be formed on the crown. This results in reduced plant vigor, smaller spear diameter and reduced yields the following year.

**A four week harvest period is recommended in the second harvest season.** A full harvest of five to six weeks in duration may occur in the following weeks. At harvest, all of the spears that emerge should be removed. Cut off the spears at the soil surface or snap them off by hand. **Spears should be about 1 cm in diameter and at least 14 cm long, with about 85% of the length of the stalk green when cut.** Care should be taken not to damage new spears above or below the soil surface. After the harvest season, optimal growing conditions should be maintained. The spears that emerge after the cutting season should be allowed to develop into full ferns for the remainder of the growing season. Cut asparagus should be cooled immediately; otherwise quality and food value degenerates rapidly. Control loss of moisture by placing butts in cold water. A plant can yield approximately 133 gm of asparagus once it has reached its prime. Maximum yields will occur when the plant is 5–9 years old, and it will then gradually decrease productivity. Although the life expectancy of an asparagus planting can reach 15–20 years, farmers should replant their beds after that.

### **Insect & Disease Control**

Asparagus beetles can be a major problem in asparagus planting since the beetles and larvae chew the fern, thereby decreasing the plant. Fusarium crown and root rot can also be a problem. In Bhutan, there is generally low level of insect and disease incidence in asparagus. The incidence of these diseases can be reduced by minimizing

the plant stress resulting from weed competition, over cutting, drought, deep tillage, soil compaction, poor soil drainage and low fertility.

### **Fusarium root and crown rot**

Affected spears may shrivel and rot in spring before or after emergence.

Infected crowns have hollow, rotted feeder and storage roots. When crown and stem tissue is sliced open, a reddish–brown discoloration is visible. Symptoms on fern include stunting, yellow to brown discoloration or one or more stalks per crown and fewer stalks per crown. Affected crowns decline in vigor and die.

Control is directed at minimizing infection early in the life of crowns, and at maintaining a vigorous, long lived asparagus stand by careful management. Suggested management practices include:

1. Avoid replanting in land which previously grew asparagus.
2. Use only vigorous, one year old crowns and encourage proper handling procedures for transplanting. Weak crowns are highly susceptible to infection
3. Minimize stress in young and established plantings. Stresses which weaken asparagus crowns and thus promote the diseases are:
  - a. Overextending the harvest season, or picking before crowns are well established
  - b. Insect and disease damage
  - c. Weed competition

- d. Mechanical wounding from tillage equipment, cutting knives etc
- e. Poor soil drainage
- f. Acidic soil pH
- g. Drought
- h. Injury from misapplication of pesticides, fertilizers and soil amendments
- i. Low fertility
- j. Soil compaction

For further information on disease and pest management, contact the nearest Dzongkhag Agriculture office or the National Plant Protection Centre in Semtokha.

For further information, please contact the:

**Vegetable Programme  
Horticulture Division  
Department of Agriculture**

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