



## A Review on Industrial Banana Production in Cambodia

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### ABSTRACT

The most common banana cultivars grown in Cambodia are Namva, Pong Mone, Ambong Meas, Ambong Kheiv, Ambong Loeng, and Slabmuk. Cambodia bananas were exported to China for the first time, becoming the first Cambodian fruit shipped to China. The Ministry of Agriculture, Forestry, and Fisheries of Cambodia reports that in the first half of 2022, the country exported 218,000 tons of fresh bananas, all of which were sold to China. Fresh bananas have emerged as Cambodia's greatest agricultural export, with an expected yearly export amounting to 500,000 tons. This review paper's goal is to compile the literature on banana production in Cambodia. Growing and taking care of the banana plant is simple. However, it also has some diseases and insects that harm its leaves and stems. The most prevalent diseases that may cause issues during the wet season are circular, depressed areas, and dry reddish brown. Banana growers should focus on standardization, technologies suitable for various cultivation systems, high-yield variety selection, planting healthy, disease-free, planting material, selecting the proper planting density, timely and need-based input application, and irrigation water should be the main priorities for banana growers, and to bridge the gap between yield and potential yield per unit area nutrients, weed control, etc., are important.

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## INTRODUCTION

Banana is a tropical plant in the Musaceae family and there are 65 species. Plantains and bananas, which belong to the Musa genus and Musaceae family, are recognized as economically important crops (Li et al., 2010). The banana crops have been grown widely in Cambodia and are commonly used as a source of food. Due to their high vitamin and mineral content, fiber content, and helpful non-nutrient ingredients including bioactive chemicals, fruits are vital parts of a healthy diet. The World Health Organization (2003) recommends ingestion of at least 400 g (about five portions) of fruits and vegetables per day. Cambodia is unknown when bananas were first grown. However, due to the nation's location in the banana's center of origin, the crop has a very high genetic diversity, and also landraces and wild species have been discovered (Sarom, 2002). In upland regions, villages, and riverbanks, bananas are grown. The land area was estimated to be around 20600 ha. The most common banana cultivars grown in Cambodia such as Namva, Pong Mone, Ambong Meas, Ambon Kheiv, Ambon loeug, and Slabmuk (Sarom, 2005). Khmer farmers usually propagate bananas from suckers that are cut from the mother plant and planted directly in the field. Bananas are commonly grown in the rainy season and harvested after 10 to 12 months of culture depending on the variety. Total production includes a few large-scale growers and small-scale growers (Sarom, 2005). The banana plant is simple to grow and maintain. Even though, bananas also have some diseases and insects which damage its stem and leaves. Dry reddish brown, depressed spots, and circular are the most common diseases that will become problems in the wet season. There are a few insects that cause leaf roller, Corm weevil, and Stem weevil (Sarom, 2005). However, Bananas are still the main crop and the most suitable for growing in Cambodia. This research aims to express an overview of banana production and the opportunity for exportation.

## LITERATURE REVIEW

Many species of banana have been grown in Cambodia, but some species haven't been identified yet. The below text is common species of banana such as: Chek Namva, Chek Ambong, Chek Pong Moan (chicken-egg banana), Chek Nuon, Chek Meas Sgnuon, Chek Teuk (water banana), Chek Snap Mouk (masked face banana), Chek Muoy Roy Snit (one hundred hands), Chek Chvea, and Chek Tes (Sarom, 2002). The Cavendish banana is a commercially important variety that has been grown for exportation. The fruit shape is like Check Ambong, but its peel turns yellow in full ripen.

Cambodia is a country in Southeast Asia in the southwestern corner of Indochina. The climate of Cambodia is tropical monsoonal, with distinct dry and wet seasons. May through October is the wet season, and November to April is the dry time of year. Rainfall amounts vary from 1250 to 4000 millimeters per year. The average temperature is between 21 and 35 °C, with January having the lowest temperature (21–25 °C) and April having the highest (30–35 °C). The country's hottest area is the central plain; the east and southwest have colder temperatures. (Sarom, 2002).

By planting deeper than subsequent ratoon crops, bunch weight was increased, and flowering time was shortened. It makes use of suckers that have three or four leaves. Cow manure or compost is mixed with the soil to fill the pit. After filling the pit with soil mixed with cow manure or compost, transplants can be planted at a space 2.5 x 4 meters or 3 x 4 meters (Mustaffa et al., 2012). A new crop is established after two or three generations are maintained. Banana spacing pit depends on the cultivar and local cultural customs in each location. A density of less than 2,500/ha is advised for fresh consumption, as the yield rose from 1,120 to 3,360. The yields of 'Williams' banana were significantly higher (51.0 to 56.4 t/ha/year) at higher densities (1,666 plants/ha) than at lower densities (1250 pl/ha), i.e., 39.1 to 48.9 t/ha/year (Mustaffa et al., 2012).

The only source of water that crops can typically access is rainfall. Rainfall varies greatly in quantity and distribution, which has a significant impact on crop productivity. When there is too much rain, floods can happen and severely reduce yield, quality, and production. (Sarom, 2002). Banana plants need between 900 and 1200 mm of water per year for their whole life cycle or estimate that banana need water 25mm per week. This can be supplied by both additional irrigation and natural precipitation, such as rainfall. According to Stover and Simmonds (1987), each crop in a tropical environment needs 900–1800 mm of water. Generally, during the hot season, banana plantations should be irrigated every 3–4 days, and then every 7–8 days.

The quantity and form of fertilizer using are determined by soil analysis. Typically, farmers apply three applications totaling about twelve bags (600 kg) of NPK fertilizer per hectare. The typical 5-20-20 formula for the area should apply 30 kg of N, 120 kg of P, and 120 kg of K total yearly. Although fertilizing the plantation doesn't have a specific time, farmers usually prefer to apply the fertilizer in three equal applications, each weighing 200 kg. In addition to organic fertilizer, some farmers also use lime fertilizer. Although the amounts vary widely, for each application, two tons of limestone and five tons of organic matter (cattle manure) are generally advised. While most conventional farmers use green manure occasionally, extension services recommend it to improve overall nutritional quality, control weeds, and increase soil fertility (Gonçalves, 2014).

Bananas need 75–80 days to produce flowering to mature fruit. We can harvest bananas look for "hands" of fruit that are full, lack sharp angles, have a light green color, and easily have rub-off flower remnants before picking bananas. Generally, banana harvesting is when the fruit changes from dark green to light greenish yellow color and plump. The size of banana fruit depends on the variety. Normally, the fruit is 75% mature, but green bananas can also be chopped and cooked similarly to plantains, depending on the level of ripeness. Home growers typically pick the fruit 7–14 days before it ripens on the vine (Grant, 2022).

## **METHODOLOGY**

This study is an article based on literature research. A qualitative approach and a descriptive analytical method are combined in the methodology. Journal articles, books, reports, policies and regulations, and news from online media are the sources of the data. Identifying, acquiring, and examining the written materials are some of the data collection techniques. Data can be found by searching through reading books or e-books, research databases, case studies, online media, credible institution websites, and online media websites. The process of data analysis involves reading, making notes, describing, elaborating, and coming to conclusions.

## **RESULT AND DISCUSSION**

An industry association with a focus on services, the alliance is non-profit. At present, the organization comprises 37 companies, comprising 10 companies that plant bananas and 15 upstream companies that deal with pesticides, chemical fertilizers, organic fertilizers, cold storage operations, logistics, and shipping. There are 7 downstream enterprises and 5 banana buyers (Khmer Times, 2022). The first batch of fresh bananas in Cambodia was exported to China in May 2019. According to the ministry, Cambodia exported 345,470.2 tons of fresh bananas in 11 months of 2022, a decrease of 12.73 percent from the same period in 2021. The General Directorate of Agriculture (GDA) reporting that during the first quarter of the end March of 2023 were exported fresh bananas around 88,947.92 tons or 93.60 percent were sold to the Chinese market (Pisei, 2023). The fresh tropical fruit was also shipped to Vietnam (6,060.7 tons; 6.38%) and Japan (19.76 tons; 0.02%), according to the GDA, a division of the Ministry of Agriculture, Forestry, and Fisheries. There was no value given, nor were there year-over-year comparison numbers. According to a ministry report, \$919.694 million in agricultural products other than rice were exported from Cambodia in the first quarter of 2023 (Pisei, 2023).

The main objective of banana farming should be standardization. Other factors that are crucial to bridging the yield and potential yield per unit area include the selection of high-yielding varieties, planting healthy, disease-free planting material, deciding on proper planting density, and applying inputs on schedule and in response to need.

## **CONCLUSION**

Bananas are a staple food for over 16 million people in Cambodia. Currently, Banana production in Cambodia has increased rapidly and expect to be modern industry in future. Cambodia is the best region for Banana production because of the Nutrient soil, perfect weather, quality of water and better labor cost. Moreover, Cambodia had diversity of Banana species and had less diseases damage which could provide high yield.

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#### **FUTHER STUDY**

This research still has limitations so it is necessary to carry out further research on the topic “A Review on Industrial Banana Production in Cambodia.”

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