

## FEASIBILITY OF COTTON CULTIVATION IN THAILAND

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### **Abstract:**

Most of the cotton textile industry in Thailand are commodity player who focus more on bulk production, engaged in spinning and/or weaving operations and supply yarn fabric. Raw materials cost forms a major component of cost and operate at low margins. This research aims to study one of the biggest Cotton Yarn manufacturers in Thailand, where the requirement of raw cotton is approximately 18,000 tons per year. In order to reduce the raw materials cost, the feasibility study of cotton cultivation in Thailand is required to replace the imported cotton with home-grown cotton for at least 5 to 10 percent of the annual requirement. The net revenue is simulatedly estimated from carefully analysis the fixed cost, capital investment cost, commodity market trend, and demand of cotton yarn. These factors are put into the simulation software to forecast the Return of Investment and feasibility of cotton farming in Thailand.

*Keywords: cotton, feasibility study, forecasting, simulation, commodity trading.*

## 1. INTRODUCTION

For Thailand, cotton is a very important crop for the constantly growing textile industry. The current yearly demand for raw cotton in the textile industry is more than 300,000 tons; however the annual production of the nation is only about 25,000 to 26,000 tons or approximately 7 percent of the total demand within the country. The rest of the supplies are imported from United States, Australia, China, and India, which represents an annual value of not less than 15 billion baht annually. Both domestic demand and International demand of the textile industry in Thailand are rising, driven by factors like consumerism, fashions, income levels, and growth of retail and wholesale sectors. This translates into an increasing demand for cotton yarn in Thailand.

The cotton textile industry in Thailand value chain comprises cultivations, spinning, weaving, knitting, processing, garmenting and distribution. Most of the Thai industries are commodity player who focus more on bulk production, engaged in spinning and/or weaving operations and supply yarn fabric. The cotton spinning industry is characterized by cyclicity, fragmentation and high capital return. Raw materials cost forms a major component of cost and operate at low margins. This research aims to study one of the biggest Cotton Yarn manufacturers in Thailand, where the requirement of raw cotton is approximately 18000 tons per year. In order to reduce the raw materials cost, the feasibility study of cotton cultivation in Thailand is required to replace the imported cotton with home-grown cotton for at least 5 to 10 percent of the annual requirement.

A study begins with the evaluation of industry in which the company operates, followed by the assessment of the business risk factors specific to the company. This is followed by an assessment of the financial and investment analysis as well as the quality of the products and their market share both in domestic international markets.

## 2. MARKETING STUDY

Diversified cotton tend to generate more stable revenues. The ginner, yarn manufacturer, and textile industry prefer having finer count yarns, higher elasticity, longer fibre, and stable shape in their product mix. Raw cotton cost forms about 45-50% of cost in a cotton spinning company. Cotton, being an agricultural commodity, its availability and price are dependant on the vagaries of nature and the international price trends in the cotton market. The researchers believe that the efficient cotton procurement strategies like integrated supply chain by company owned cotton farm, contract farming, proficiency in estimating the future trends in the cotton market, proximity to the cotton cultivation areas, and optimal quantity of cotton procurement would help the company in minimizing the raw material costs.

Currently, the rate of cotton import to Thailand is directly related to the demand of raw cotton, but contrary to the production rate of raw cotton in Thailand. Thus, market strategies are not necessary due to the shortage of raw cotton, the company is ready to purchase any amount of qualified raw cotton from the cotton farmers. Moreover, the labor cost, cost of land, processing cost, and cost of machineries in Thailand are cheaper than many countries in South East Asia, which will create the competitive market and value added to the textile Industry in Thailand.

The drawbacks of cotton farming in Thailand are mainly from the government's policies to support the biodiesel plant, the instability in weather, and lack of expert in the sector. The

government has encouraged oil palm cultivation to meet its policy of replacing the compulsory production of B2 with B5 use for all diesel consumption.

### **3. TECHNICALY STUDY**

With the aid from the Department of Agriculture extension, Thailand, the most suitable cotton seeds for Thailand atmosphere are chosen. This specific species of cotton tend to grow fast, require less pesticide, less herbicide, and have a high chance to have two harvest per year with good irrigation system.

The location of land for cotton cultivation is a very important factors to the feasibility study. The land should be close to the cotton gin plant, easy to access by heavy trucks or multi-trailers, good water and rain, and large enough to plant cotton.

### **4. INVENTORY MANAGEMENT**

Cotton is usually a seasonal crop and is harvest only once a year, however with the research and study from The Department of Agriculture extension, Thailand, it is possible to harvest the cotton twice a year. The main conditions are the irrigation system, quality of land, suitable seeds, and appropriate amount of fertilizer. Inventory management thus plays an important role as companies or farmers procuring optimum quantities of seeds, fertilizers, machineries, and stocking raw material requirement for a considerable time can ensure availability of good quality cotton fiber at reasonable prices. The

### **5. ECONOMIES OF SCALE**

As the industry is characterized by low margins, profitability depends on volume of harvest cotton and low operating cost, farms having high capacities and minimized expenses can register to satisfactory growth. High capacities can also help farms in bagging high orders to the yarn manufacturer. The financial study of initial fixed investment cost, pre-production expenditure, working capital, current liability, minimum days of coverage and coefficient of turnover, and cost of product sold are needed.

The capital requirements are categorized into fixed investment cost as shown in Table 1, their depreciation value can be seen from table 2, and pre-production expenditures as approximately 1,300,000 THB. The yearly cost of production in THB is shown in Table 3.

The researcher take assumption for the ratio between Equity and Ordinary share is 50:50 and the initial capital investment is 35 million THB. Currently, this research is underprogress, and the final outcomes of the research are not clear yet. However, the simulation for the cotton farms business, including the fixed investment cost, depreciation cost, variable cost, working capital cost, total debt service, expected net income base on forecasting of the commodity cotton market, cash-flow for financial planning, case flow for project planning, and growth of market are put into consideration. The expected results are thoroughly simulated via spreadsheet software and show that the Rate of Return of cotton cultivation in Thailand is approximately at year 10<sup>th</sup> with around 3.5 millions THB net revenue per year at year 11<sup>th</sup>. Furthermore, the land purchased earlier will be greatly increased in price if sold as an asset due to cotton cultivation has a very small impacts to the quality of soil.

## 6. CONCLUSION AND FUTURE WORKS

The aforementioned factors will be carefully revised again, with better algorithm to accurately predict the demand of raw cotton, cotton yarn,, inflation rate of the countries and price of cotton in the commodity market. The spreadsheet software will be verified by simulation software such as ARENA or ProModel to precisely estimate the Return of Investment and net revenue.

**Table 1:** The fixed investment cost

List	Cost (THB)
<b>1. Land</b>	16,000,000
<b>2. Leveling and Irrigation system</b>	5,000,000
<b>3. Construction</b>	8,000,000
<b>4. Machines and tools</b>	4,000,000
<b>Total</b>	<b>33,000,000</b>

**Table 2:** The depreciation of the fixed investment in 10 years term

Year	Value (Million THB)	2	3	4	5	6	7	8	9	10	11	10th year's worth (million THB)
<b>Land</b>	16											26
<b>Building</b>	8	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	4
<b>Machines and Tools</b>												
<b>&lt; 5 years</b>	4	0.8	0.8	0.8	0.8	0.8						-
<b>Replacement</b>	4						0.8	0.8	0.8	0.8	0.8	-
<b>Total</b>	32	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	30

**Table 3:** Yearly cost of production (THB)

Description	Value (THB)
<b>Seed</b>	40,000
<b>Fertilizers</b>	700,000
<b>Pesticides</b>	700,000
<b>Labor</b>	2,400,000
<b>Transportation</b>	1,500,000
<b>Ginners</b>	11,000,000
<b>Utilities</b>	400,000
<b>Depriciation</b>	1,200,000
<b>Interest</b>	1,300,000
<b>Total</b>	<b>19,240,000</b>