
Castor beans cultivation#

Costing and practical
analysis report.

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Report on Castor bean cultivation and oil production in Zambia.

BAZ Assignment:

To tabulate the cost of castor bean cultivation and production from seed to harvest. The assignment was carried out by Mr. Tyson Chisambo and Mr. Mutoba Ngoma.

Introduction:

Our findings are that castor beans are actively been cultivated for use in the cosmetic industry by Yeetu Enterprises. Their current setup is contracting out growers to grow the seed for them and harvest it, at which point Yeetu buys the seed from the farmers at an agreed price (Current rate is K70, 000/50kg bag of seed). The price is set as close to the price of maize so that the farmers see the benefit of cultivating the castor bean alongside maize crop.

The cultivars:

The common castor crop found in Zambia is the perennial Misacas variety, which has been certified by Ministry of Agriculture, mount Makulu site. It is also the variety that has been adopted by Yeetu Enterprises. This variety takes an average mature rate of 180 days from seed to harvest, and in practice a hectare can yield an average of 1 to 1.5 tons of seed per season (seed to harvest). According to research, seed harvest can be as frequent as 3 times a year, with adequate irrigation. Another castor type is the Hale variety. It is more common in Zimbabwe, as it was the champion seed used by Africare, when castor production in Zimbabwe was at its peak. This variety has a shorter mature rate of 110 days from seed to harvest, and a higher yield per hectare of up to 2 tons per season in the first year.

Conditions:

Ideal conditions for farming castor beans, is in the rain season on land that does not get water logged. If irrigation is available throughout the year, clusters of seed pods can develop on a regular basis enabling the farmer to harvest mature pods as regularly as at three (3) week intervals.

Care and maintenance should be applied as if it were a maize field. Even though the castor plant is a wild plant that can thrive anywhere, it can be susceptible to competition from other plants in the vicinity. Recommended fertilizer is D-compound and top dressing with X-compound, each hectare of castor crop requiring 100 kg of each fertilizer per 180 day season.

Recommended spacing is 3 x 3 meters per hectare, which is space enough for approximately 1089 plants according to the Misacas variety requirements. Hale variety doesn't require as much space, thus the increased yields per hectare.

If cultivation is properly controlled, the crop can consistently produce seed for crushing for up to three (3) years.

High Value Products

The average oil output of castor beans is between 35 to 50% of the weight of the bean, depending on the efficiency of the expeller, and oil extraction process. Yeetu enterprises extract up to 35 % by weight, castor oil from their seed using a hand mechanized yenga press. In terms of mechanized expression of seed oil, this is the most basic and labour intensive. Some processes have been known to produce up to 55% oil by weight of the bean.

Another product that can be marketed is the castor cake. Not only does it have good compost qualities as organic fertilizer, but also has pesticide properties that can control the Nematode parasite, which is known for attacking the roots of field crops like tomatoes, soybean, and potatoes. This product is a combination of an organic fertilizer and pesticide, which can compete with generic industrial products on the market, to provide protection and nourishment for any field crop that utilizes this product.

Financials

Basic inputs for start up, as recommended by Yeetu Enterprises, consist of land, castor beans (for planting), adequate water supply, and fertilizer. See in the table below, a brief compilation of requirements and cost data obtained from an active, practical project.

S/N	ITEM	DESCRIPTION	PER UNIT	PRICE
1	Castor beans	For planting	Kg	10,000
2	Castor beans	For crushing	Kg	1,400
3	Ideal land	good drainage	Ha	On condition*
4	Water supply	Consistent	Ltr	On condition*
5	D-compound	Fertiliser	Kg	On condition*
6	X-compound	Fertiliser	Kg	On condition*

Price at which out grower farmer's sale their seed to Yeetu Enterprises

(* Prices are dependent on individual factors i.e. location, source or supplier)

According to Yeetu Enterprises operations, one (1) hectare can yield one (1) ton of seed with 35% oil content. This translates to a production of three hundred fifty (350) kilograms of oil from one (1) hectare, at a cost of ZMK 1,400,000. This cost doesn't take into account the efficiency of the equipment utilized, and oil content not extracted from the cake.

Summary

The information contained in this paper, demonstrates the availability of an indigenous bio energy crop which is easy to cultivate, affordable to initiate, high turnover amongst non-edible feed stocks and proven locally by local promoters such as Yeetu Enterprises, Ministry of Agriculture and Africare.