General Information -- Castor beans have been important since Biblical times. Castor oil has been used in printing, dyeing, lubrication and medicine for many years. Most people think of castor oil as a medicine, but actually it has won fame in the manufacture of paint, plastic, rayon, textiles, nylon, hydraulic fluids, special lubricants and coating of electric cables.

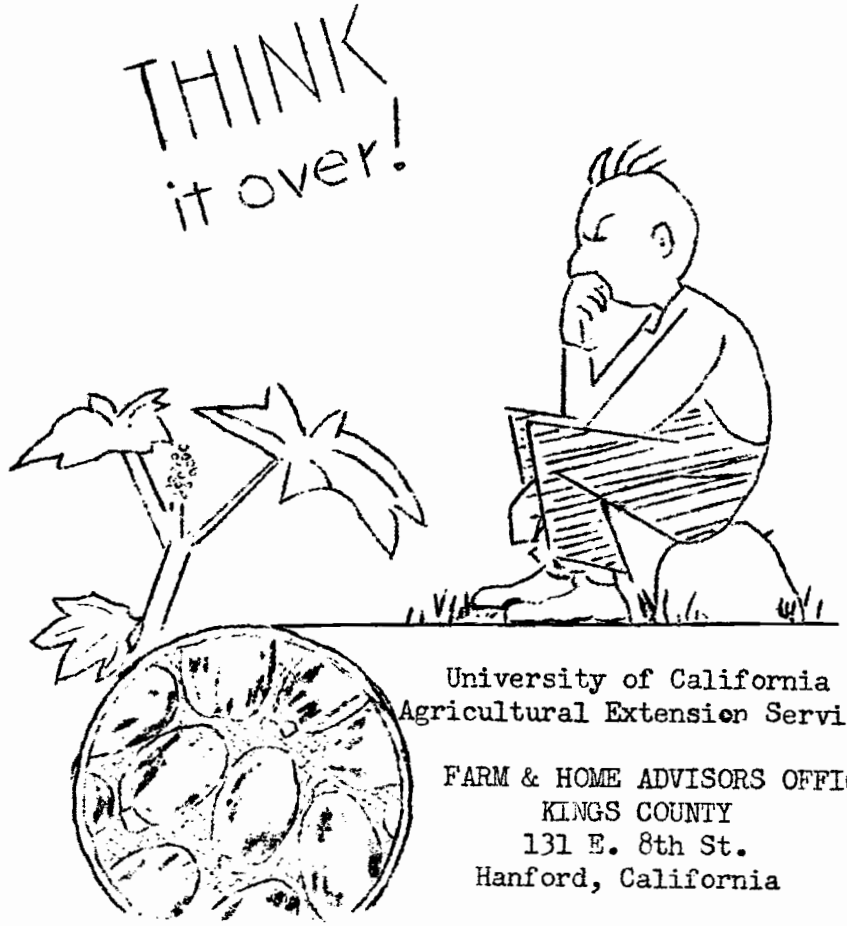
The crop takes about 150 - 180 days to mature and requires about three acre feet of water.

Castor beans belong to the spurge family and are known as "Ricinus Communis." Under Kings county conditions they grow 3-10 feet in height depending on the variety. Most harvestable varieties are about 4-6 feet tall. The seed is about 50% oil. The spike which bears the fruit or bean is made up of two parts, the upper being the female and the lower the male. The spike or raceme then at harvest time will normally have seed only on its upper part. The lower or male part drys up and drops off. Castor beans are not true beans. In the plant's native habitat it is a perennial and may grow 30 feet tall. Its native habitat is the tropics.

Castor beans if eaten are poisonous to people and livestock. Livestock usually avoid eating the plants. Many people are allergic to Castor beans.

BE-VS-53-3

CASTOR BEANS 1953



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Kings 11-53

November - 1953

CASTOR BEANS

Thinking About Castor Beans For The Market?

Castor beans have a ready market at a price of $188.80 per ton minimum. This is support price and is available for the crop grown in 1953. At the time this is written there is no information available on price supports for 1954. Castor beans are grown under contract with the processor. Such a company employs trained fieldmen to help you, the grower, with contracts, marketing and processing seed. If you need help with cultural problems call the Kings County Agricultural Extension Service office ---phone 587.

Soil Preparation and Requirements

Seedbed preparation is the same as that for cotton. In either case a well prepared seed bed is a "must."

Soil requirements are different. While cotton may produce fairly well with some alkali in the soil, castor beans don't do well since they are not alkali tolerant. Like most crops the better soils produce the better crops. Hard pan soils give low production.

Planting

Since the harvester is designed to handle two 38" rows, the distance between rows should be that width. Spacing within the row should be about 12 - 14 inches. If the beans are carefully planted, thinning will be unnecessary.

Time to plant is the same as cotton.

The Planter

An inclined planter box can be mounted on some planters for about $40.00. (The company representative who handles your marketing contract will give you specific information on its purchase.) Castor beans are easily crushed and planting is quite a problem. The Ventura Bean planter is better than the average cotton planter, but in a pinch the cotton planter with bean plates will work.

Depth of Planting

Depth of planting is important since a little longer time must elapse before emergence when compared with cotton. The beans should be in about 2 - 2½ inches of moisture for best results. The castor bean itself requires lots of moisture since it germinates slow. Emergence occurs after 10-14 days of germination.

In case of rain before the plant has a chance to emerge and the soil has formed a crust the cotton "scratcher" (a type of rotary hoe) has been used successfully to break the crust. One farmer last spring used a harrow with good success. It appears that beans can come through more crust than cotton, but a little help on the farmer's part may help to provide a more uniform stand.

Seeding Rate

Seeding rates are 12-14 pounds per acre. Seed should be treated with a fungicide before planting. Three to four ounces of Arasan per 100 pounds of beans is satisfactory.

Varieties

Since the contracting company will recommend the variety to plant little can be said on the subject. Past observations have shown U.S.D.A. 144, Baker 195 and Baker 1, to be good yielders. The new hybrid varieties are being grown and more information will be available on them by 1954. In yield trials in 1952 they failed to show any superiority over the more common varieties here in Kings county.

The table below is a summary of 1952 yield trials grown on Kings County heavy clay soils:

Name	Lbs. Clean Beans Per Acre
U.S.D.A. 144	2587
Baker 1	2474
Baker 195	2453
No. 121	2252
Western Hybrid 9	2190
Western Hybrid 4	2023

No significant difference between yields.

Weed Control

Castor beans are a very poor competitor with weeds, particularily when they are young. After they have attained some growth they will shade the area between rows and compete with weed growth considerably. Cultivation is necessary along with the hoe and a stout back. Weed control methods are about the same as cotton. Flaming has not been reported as being used and it would seem doubtful if it would work since the stem, unlike cotton, is not woody in nature.

Fertilization

Not too much is known about fertilization. It appears that 50 pounds nitrogen is sufficient to give ample growth on most soils. Phosphorus and potash are not recommended on Kings county soils based on the information that we have gathered this far. Excess quantities of nitrogen should be avoided since the plants might be forced into excess vegetative growth.

Irrigation

For the most part, this crop requires about as much water as cotton. The first irrigation should be made sooner than with cotton. Irrigations should be often enough during the summer so that the plants never wilt severely. If at any time the raceme or spike is permitted to wilt, blasting of the flowers will result, and a loss of seed set will occur. This matter of irrigation is very important.

Diseases and Insects

So far diseases haven't been a problem here in Kings county.

Insects haven't bothered much. Thrips infested most fields this year and seemed to do a lot of harm for a while, but the plants apparently grow out of the condition caused by the thrips. Tests need to be run to see if thrip control pays.

Defoliation

Defoliation using dinitro weed killers at about 1 - 1½ pints to enough diesel oil to cover one acre have done a good job of stopping plant growth and aiding harvest. Applications are made by plane and are timed so that they are about two weeks in advance of harvest.

Harvesting and Hulling

Both operations are arranged for through the local castor oil representative. Harvesting in Kings county has all been with the "clipper combine" which takes two rows at a time. Where fields are clean and free of Johnson grass, and other weeds, harvest has been satisfactory. The huller and combine have both been contracted for in the past and up to the present time, the farmer hasn't needed to purchase harvesting equipment. The combine handles the beans in bulk, dumping them into a huller located at the end of the field. From the huller the beans are elevated directly into a waiting truck where they are then hauled to the processing plant at Los Angeles.

An ordinary cotton stalk chopper makes quick work of the stalks and leaves. However, such an operation is not necessary since a good discing makes a much quicker work of the stalks. The hulls can also be spread and disced under for their fertilizer value following the stalk chopping operation.

The hulls show the following fertilizer value: Nitrogen 1.91%, phosphorus .28% and potash 3.02%. These values show that castor bean hulls are better fertilizer than ordinary dairy manure, which normally contains only 0.5 - 0.8% nitrogen, 0.2 - 0.5% phosphorus and 0.7 - 1.4% potash.

Many growers find it wise to get the stalks and hulls under as soon as possible after harvesting and then apply irrigation water. If the temperatures are warm enough the volunteer beans will sprout and frosts will kill them off so they won't appear in the following crop. Because all of the beans are not picked up by the harvester, due to shattering, some volunteering normally occurs in the following crop. For this reason, crops such as cotton or corn are recommended rather than forage crops.

Suggested reading: U.S.D.A. Farmer's Bulletin #2041
"Castor Bean Production."

November, 1953

WHAT WILL IT COST TO GROW CASTOR BEANS IN KINGS COUNTY

Based on a yield of 2,000 lbs. per acre

Man labor @.95: Medium wheel tractor @$1.60 per hour

O. D. McCutcheon* B. B. Burlingame**

	Sample Costs		My Cost	
	Per Acre	Per Cwt.	Per Acre	Per Cwt.
PRE-HARVEST LABOR AND MATERIAL COSTS:				
Land preparation: man & tractor - 3½ hrs.	8.93			
Plant: contract	2.25			
Seed: 12 lbs. @35¢	4.20			
Fertilize: 2 men & tractor - ½ hr.	1.75			
Fertilizer: 50 lbs. N	7.50			
Irrigate: 1 pre. & 5 crop - 10 man hrs.	9.50			
Water: 3 acre ft. @2.00	6.00			
Hoe:7 man hrs.	6.65			
Cultivate: 4X - man & tractor 2 hrs.	5.10			
Miscellaneous labor & material	3.00			
Total Pre-harvest Labor & Material Costs	$54.88	$2.74		
HARVESTING COSTS:				
Defoliant: spray 1½ pts. Dinitro	2.66			
Defoliate: applied by plane	3.00			
Harvesting - contract @1¢ per lb.	20.00			
Hulling @ $5.00 per acre	5.00			
Hauling @ $8.00 per ton	8.00			
Total Harvesting Cost	38.66	1.93		
CASH OVERHEAD COSTS:				
General Expense (5% of labor & material)	4.68			
County taxes	4.00			
Repairs (except tractor), insurance, etc.	2.00			
Total Cash Overhead Costs	10.68	.54		
TOTAL CASH, LABOR AND FIELD POWER COSTS	104.22	5.21		
DEPRECIATION COSTS:				
Irrigation facilities: (original cost $60)	3.50			
Equipment, except tractor (original cost $20)	2.00			
Total Depreciation Cost	5.50	.28		
INTEREST ON INVESTMENT @5%				
Facilities and equipment on ½ original cost ($40)	2.00			
Land at $400 per acre	20.00			
Total Interest on Investment Cost	22.00	1.10		
TOTAL COST OF PRODUCTION	$131.72	$6.59		

*Farm Advisor
Kings County

**Extension Specialist
in Farm Management

The above table is provided as a work sheet so you can estimate your own probable cost of production.

Production costs will vary somewhat depending on water costs, weeds, size of operation and other factors. Yields higher than a ton per acre will reduce costs per cwt., whereas lower yields will increase costs per cwt.

Cost for hybrid seed is higher than regular seed.

Where harvest is not expected until after the time of a normal killing frost, defoliation costs can be eliminated.

Castor Beans will be supported in 1954
at 6¢ per pound or $120 per ton.