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Adoption level of farmers on hybrid castor YRCH 1 cultivation in Salem and Namakkal districts of Tamil Nadu

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Abstract

India has the largest area (11.48 lakh ha) and highest productivity (1666 kg/ha) of Castor in the world. Castor is one of the important non-edible oilseed crop and is grown in arid and semi arid region. The Hybrid Castor YRCH 1 was released in the year 2009 and abundant number of extension activities were undertaken to popularise this hybrid in the major castor growing districts of Tamil Nadu since its release by the Tapioca and Castor Research Station (TCRS), Yethapur and the Krishi Vigyan Kendras of respective districts. The main reason to release a hybrid or variety is to increase the crop yield by reducing the cost of cultivation. If so, farmers income would enhanced which led to increase in the socio economic status and there by ensures livelihood security. Keeping this in the view, the present study was undertaken with the objective of "Assessing the Adoption level of Farmers on Hybrid Castor YRCH 1 cultivation in Salem and Namakkal districts of Tamil Nadu". This study was conducted in Namakkal and Salem districts of Tamil Nadu which has maximum area under Hybrid castor (YRCH 1) cultivation. In this study a total of four villages have been selected from which 120 farmers were selected by simple random sampling technique. Using a well structured interview schedule, the required data were collected and percentage analysis was done. From the findings, it is revealed that more than half (55.80 per cent) of the respondents were in the medium level of adoption of technologies. Little less than one fourth (23.40 per cent) of the respondents had high level of adoption followed by 20.80 percent had low adoption level.

Keywords: Hybrid castor YRCH 1, adoption level, technologies on production, protection, harvesting

Introduction

Castor is a non-edible oilseed crop from the Euphorbiaceae family that has a wide range of use in industry, agriculture, and pharmaceuticals. Castor seeds survive in tropical and subtropical environments. Castor is mostly cultivated in dry and semi-arid climates. On a commercial scale, it is grown in 30 countries with India, China, Brazil, Russia, Thailand, Ethiopia and the Philippines accounting for about 88 percent of global production.(Source: Agricultural Market Intelligence Centre, PJTSAU, 2020).

India fulfils more than 80% of the world's demand for castor oil, making it the world's leading producer. India is a major player in the worldwide castor products market, which is projected to be nearly USD 2.5 billion (18,750 crores in Indian Currency) (Source: Advanced Biofuel Center, Global Castor Biodiesel World, 2018).

India is the largest producer of castor seed and constitutes about 64% of total global production. At the National level, average castor seed productivity for the year 2019-20 is estimated to be 2,052 kg/ha as compared to 1,407 kg/ha last year. (Source: Business standard-Agriwatch, Feb 2020). In India, major castor producing states are Gujarat (7.02 lakh ha), Rajasthan (1.54 lakh ha), Andhra Pradesh (0.33 lakh ha), Telangana (0.22 lakh ha) and Odisha (0.04 lakh ha). (Source: Agricultural Market Intelligence Centre, PJTSAU, 2020).

Tamil Nadu is an important castor growing state in India, with an area of 13,900 hectare. (Source: TNAU Agritech portal). In Tamil Nadu mainly castor is grown under rainfed condition as border crop and intercrop. The districts namely Salem, Namakkal, Dharmapuri, Perambalur are important in their contribution to increase in area and production of castor.

Rogers and Shoemaker (1971)^[5] described adoption as an individual's or a farmer's decision to employ an innovation to its full potential as the best course of action possible.

Methodology

The term "adoption" was employed in this study to refer to the respondents' utilisation of recommended procedures. The scoring procedure followed by Hema (2017)^[4] was used for the study. Twenty four practices which includes crop production technologies, crop protection technologies and technologies pertaining to harvest were taken into account when evaluating adoption. Each time, the respondents were told about these practices one by one and asked whether they had implemented them or not. "Adopted" received a score of 3, "Modified adopted" received a score of 2, and "Not adopted" received a score of 1. Based on the scores obtained by the respondents, they were classified as low, medium and high on overall adoption levels using cumulative frequency method.

Technology-wise adoption of growers on Castor hybrid YRCH 1 cultivation

To obtain a meaningful interpretation of their pattern of adoption of various practises, the percentage analysis method was applied. The following was the formula for determining the level of adoption of i^{th} practice:

Adoption level of i th practice =	Number of respodents adopted the ith practice
	Total number of respondents

Results and Discussion

Adoption, according to Rogers and Shoemakers (1971)^[5], is the decision to make full use of new ideas as the best course of action available. The following information was gathered, analysed and reported on the adoption of growing practices on Castor hybrid YRCH 1 cultivation. The data collected to study the overall adoption of recommended technologies for Castor hybrid YRCH 1 cultivation is presented in Table 1.

Table 1: Distribution of respondents according to their overall adoption level

			(n = 120)
S. No	Category	Number	Per cent
1.	Low	25	20.80
2.	Medium	67	55.80
3.	High	28	23.40
	Total	120	100.00

It could be observed from Table 1 that more than half (55.80 per cent) of the respondents were in the medium level of adoption of technologies. Little less than one fourth (23.40 per cent) of the respondents had high level of adoption followed by 20.80 percent had low adoption level.

The reason for medium to high level of adoption might be due to high level of knowledge about recommended practices, better contact with extension agencies, high level of scientific orientation, increased income and economic motivation among Castor hybrid growers.

Adoption of recommended technologies varies from individual to individual. Hence, the data on technology-wise adoption of recommended technologies were collected and the findings are presented in Table 2.

It could be inferred from Table 2 that cent per cent (100.00%) of the respondents adopted correct season for planting (May-June, June-July) for Castor hybrid cultivation. Majority 98.33 per cent of the respondents adopted recommended seed rate (2.5 kg/ acre) in Castor hybrid cultivation. Exactly equal number (92.50 per cent) of the respondents adopted depth of sowing (sowing depth -4.0 - 6.0 cm) and gap filling (Within 15 days).

It is also observed that equal number (91.66 per cent) of the respondents had adopted number of seeds to be sown per hole (1 seed sown per hole) and correct irrigation interval (Once in 10-15 days).

Exactly three-fourth of the respondents (75.00 per cent) adopted recommended weed management practices (within 3 days of sowing, spray Alachlor 1.25 lit ai/ha, Pendimethalin 3.25 lit ai/ha, and Fluchloralin 2.0 lit ai/ha, Hand weeding on 20th and 40th day) in Castor hybrid cultivation. This is followed by 71.66 per cent of the respondents adopted recommended spacing (120cm x 90cm).

It also observed that (70.83 per cent) of the respondents adopted recommended quantity of FYM/ Compost application

(5t/acre). In case of inter crops, 59.16 per cent of respondents adopted inter crops (Black gram, green gram and onion) in Castor hybrid cultivation.

It is concluded that more than two-fifth of the respondents (43.33 per cent) adopted correct dose of fertilizers as top dressing (Irrigated - on 30^{th} and 60^{th} day - 30 kg N/ha, Rainfed - On 40^{th} - 60^{th} day - 15 kg N/ha) followed by 36.66 per cent of the growers adopted correct dose of fertilizers as basal (on 30^{th} and 60^{th} day as Irrigated – 30:30:30 kg NPK/ha, Rainfed – 30:15:15 kg NPK/ha).

It is also seen that equal and exactly one-third (33.33 per cent) of the respondents adopted recommended fungicide treatment (Mixing with carbendazim 2g/kg for 24 hrs) for Castor hybrid cultivation and drip irrigation for Castor hybrid cultivation.

It is followed by more than one-fourth (26.66 per cent) of the respondents adopted bio-fertilizer treatment (Mixing with Trichoderma viridi (4g for 1kg) and soaking the seeds in water for 10 hrs). It is observed that only 16.66 per cent of respondents adopted castor gold spray.

It could be seen from the Table 2 that (85.00 per cent) of the respondents adopted the recommended control measure for wilt, followed by 70.83 per cent of the respondents used the recommended insecticide for the control of leaf eating caterpillar.

It is also seen that little more than one-third (34.16 per cent) of the respondents adopted recommended insecticide for the control of capsule borer followed by less than one-third (31.66 per cent) of the respondents adopted the recommended control measure for botrytis (Fruit rot).

It could be observed that cent per cent (100.00 per cent) of the respondents adopted optimum drying before packaging followed by nearly cent per cent (99.16 per cent) of the respondents adopted correct time of harvest and majority (98.33 per cent) of the respondents adopted recommended physiological maturity before harvesting.

Table 2: Distribution of respondents according to their technology-wise adoption level on Castor hybrid YRCH 1 cultivation

			(n = 120)
S. No	Technologies	Number	Per cent
A.	Crop production technologies		
1.	Season	120	100.00
2.	Seed rate	118	98.33
3.	Depth of sowing	111	92.50
4.	Number of seeds sown per hole	110	91.66
5.	Spacing	86	71.66
6.	Gap filling	111	92.50
7.	Irrigation	110	91.66
8.	Drip irrigation	40	33.33
9.	Fungicide	40	33.33
10.	Bio fertilizer	32	26.66
11.	Quantity of FYM	85	70.83
12.	Fertilizer as Basal on 30 th and 60 th day	44	36.66
13.	Fertilizer as top dressing	52	43.33
14.	Inter crop	71	59.16
15.	Castor gold spray	20	16.66
16.	Weed management	90	75.00
B.	Crop protection technologies		
17.	Control measure for leaf eating caterpillar	85	70.83
18.	Control measure for capsule borer	41	34.16
19.	Control measure for Botrytis/fruit rot	38	31.66
20.	Control measure for wilt	102	85.00
C.	Technologies pertaining to harvest		
21.	Physiological maturity for castor hybrid YRCH 1	118	98.33
22.	Harvesting stage for castor hybrid YRCH 1	119	99.16
23.	Drying	120	100.00

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