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Hybrid Castor: A Novel Crop and Money Spinner for Rainfed Farmers of Perambalur District

Looming water crisis owing to uncertainty monsoonal rainfall coupled with intermittent dry spell during critical stages, paucity of skilled labourers, steep increase in wages coupled with emerging problems like fall army worm in hybrid maize and pink boll worm in Bt cotton greatly affects the crop productivity in North Western region of Tamil Nadu. Under these circumstances, farmers in these region looks for an alternate crop which has drought hardy, high water use efficiency, water productivity and monetary returns with less cost of production. Consequently, Tapioca and Castor Research Station, Yethapur intervened and hybrid castor was introduced during *Kharif* season through cluster demonstrations under NMOOP scheme against maize and cotton. The outcome of the cluster demonstrations on castor showed that higher productivity with less cost of production was the key factor for obtaining higher monetary returns over maize and cotton. Moreover, there was no middlemen involvement in procurement process, since most of the produce was sold in regulated market. Even, if it fetches low market price during peak harvesting season, farmers could store their produce for long period without any storage pest. Thus, castor hybrid is lucrative crop under changing climatic condition.

INTRODUCTION

Castor is one of the ancient oil seed crop in the world and it belongs to the family Euphorbiaceae. India is the largest producer of castor in the

world and earning nearly Rs.7,000 crore of foreign exchange annually through export and constitutes about 85% of total global production. Castor productivity in India is more than the world average and it ranks first among the major producing countries such as China and Brazil. Castor oil is important industrial oil catering to the needs of more than 200 types of industries across the globe. Mono cropping affects soil health and creates biotic and abiotic stress to the soil. Crop rotation has been recognized as an effective strategy for achieving nutrition security, income growth, poverty alleviation, employment generation, judicious use of land and water resources, sustainable agricultural development and environmental improvement and crop rotation enhances profitability, reduce pests, reduce risks from aberrant weather. Considering the facts in mind, castor was introduced and popularized in the North Western Region of Tamil Nadu.

AGRICULTURE SCENARIO OF NORTH WESTERN REGION OF TAMIL NADU

Nergunam village of Perambalur District of Tamil Nadu has known for *Bt* cotton and Hybrid Maize cultivation which are mainly cultivated during *Kharif* season as rainfed crop for the past two decades. The predominant soil type of this region is black cotton soil with no water resources and the dominant crops are totally depends on monsoonal rainfall. Hence, crop production becomes relatively difficult as it mainly depends upon intensity and frequency of rainfall with intermittent dry spell. Yield fluctuations of cotton and maize are relatively high mainly due to deterioration of soil fertility owing to mono cropping, lack of crop rotation, vagaries of monsoon, often much behind the risk bearing capacity of the farmers. Further, looming water crisis, escalating labour costs, paucity of agricultural labourers and fluctuation in market price, farmers in these region are getting very less returns out of these crops and looking for an alternative crop for increasing farm productivity and income under changing climatic condition.

INTERVENTION MADE

Recently, hybrid castor cultivation has received much attention among rain fed farmers and farmers with limited irrigation source in these regions. Castor is good contingent crop and its advantages over other crops are hardy, drought resistant, less demanding in terms of water, labour and steady marketing price. It improves soil fertility through addition of leaf litter

and biomass. Moreover, castor augurs well for water deficit areas and problem soils, highly suitable for small and marginal farmers. Therefore, hybrid castor cultivation is gaining momentum among resource poor famers not only in traditional areas of Tamil Nadu but also in non-traditional areas.

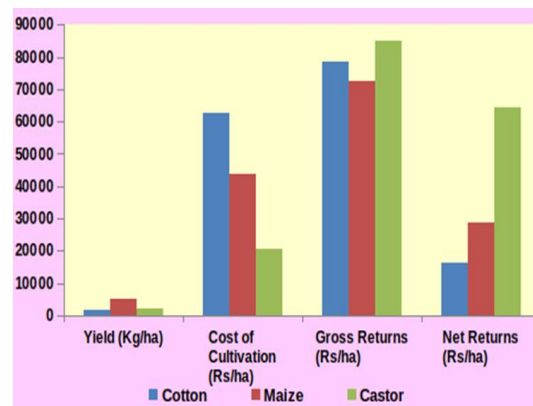


Figure 1. Comparative Performance of Castor with Predominant Crops

With this intention, farmers of Nergunam village approached Tapioca and Castor Research Station, Tamil Nadu Agricultural University, Yethapur during July 2016 and brought YRCH 1 castor hybrid seed about 6 kg and raised during *Kharif* 2016 season on experimental basis. After seeing the performance of castor hybrid YRCH 1 during *Kharif* 2016 season, farmers have shown wiliness towards cultivating castor on large scale during ensuing *Kharif* 2017 season. Consequently, large scale front line demonstrations with castor hybrid YRCH1, DCH 519 and DCH 177 were carried out during *Kharif* 2017 and *Rabi* 2018 season on cluster basis with an area of 100 acres in Nergunam village of Perambalur District with the financial assistance from ICAR-AICRP & DAC&FW-NMOOP projects. The results of front demonstrations showed that under rainfed black cotton soil of Perambalur District, adaptation of wider spacing of 150 x 120 cm had recorded significantly higher seed yield (2,027 kg ha⁻¹) with realizing higher gross return (Rs.85,105 ha⁻¹), net return (Rs.64,355 ha⁻¹) and BCR of 4.10 as against cotton and maize which recorded net returns and BCR of Rs. 16,250 & 28,750 and 1.26 & 1.65, respectively. The productivity of cotton was severely affected by pink boll worm and higher infestation of wilt and discoloration of lint owing to higher monsoonal rainfall, which resulted in poor marketing price of Rs.45/kg as against the normal procurement rate of Rs. 70/kg for Extra Long Staple variety/hybrid. Regarding maize, the productivity of maize again affected by higher infestation of pests



Performance of Castor During Kharif 2017 Season at Perambalur



Performance of Castor During Kharif 2017 season at Non-Traditional Area of Perambalur Dist



Comparative Performance of Castor Vs Bt Cotton in Perambalur District

and low marketing price ranging from Rs.12.5 to 14.5/kg. Hence, castor is highly remunerative when compared to *Bt* cotton and hybrid maize.

PERFORMANCE OF CASTOR HYBRIDS UNDER VARIED CROP GEOMETRY

Paucity of labourers particularly during peak period of castor cultivation causes serious problem to



Glimpses of Performance of Castor in Perambalur District During Kharif 2017 Season.

carryout timely weeding and other inter cultural operation. Adopting wider inter row spacing of 180 x150 cm in YRCH 1 under irrigated system facilitates easy and timely intercultural operation either with power weeder or tractor drawn cultivator with less cost and labourers for weeding. Which resulted in higher productivity of 2,550 kg/ha with realization of

higher net returns of Rs.74,250/ha with BCR of 4.12 were noticed under wider spacing of 180x150 cm in YRCH 1. While, the average productivity of 2,275/ha with net returns of Rs.62,700/ha and BCR of 3.82 were recorded under wider spacing of 150x120 cm in DCH 519.

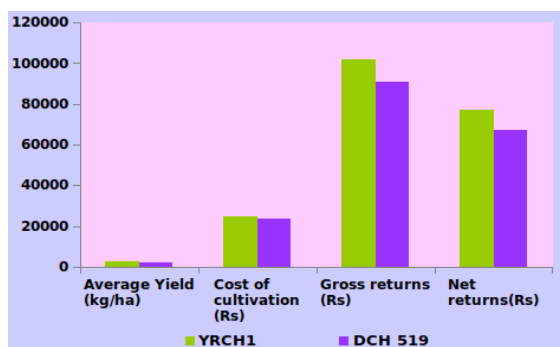


Figure 2. Performance of castor hybrids under varied plant geometry

IMPACT

Taking lead role as a resource centre for popularizing hybrid castor in traditional, nontraditional and newer areas of Tamil Nadu through conducting Front Line demonstrations, farmers participatory castor hybrid seed production, disseminating the best management practices (BMP) through various extension activities, Tapioca and Castor Research Station (TCRS), Yethapur has created lot of awareness on productivity potential of hybrid castor. Hence, majority of the farmers are cultivating castor throughout the year as irrigated crop during April-May and October - November and as rainfed crop during July. In order to popularize the castor hybrid cultivation and enhancing the area in nontraditional and newer areas in the state, the centre has actively involved in conducting front line demonstrations (FLD), organizing traveling seminars, farmers interactive meet, field day and Kissan mela across the state which in turn has created greater impacts on increasing the area under castor besides improving the livelihood of the farming community. Thus, demand for castor hybrid seed is ever increasing and Tapioca and Castor Research Station, Yethapur is augmenting the castor hybrid seed production and supply. Because of all activities, the productivity of castor has increased substantially. Currently, regular enquiry is received at Tapioca and Castor Research Station, Yethapur for hybrid castor seeds from the farmers throughout the year/season. This is awareness created by the Tapioca and Castor Research Station, Yethapur. In the year of recurring drought and monsoon failure, price fluctuation of other crops like cotton and maize, castor hybrid is gaining momentum in the newer area like Villupuram, Cuddalore, Thiruvannamalai, Trichy, Perambalur, Erode, Dharmapuri, Cauvery delta Zone and Southern Zone and getting much attention among the farmers across the districts.

FEED BACK OF THE FARMERS

Labour, water saving and stable market for castor seed are the major drivers of castor in Perambalur District. After seeing the beneficial effects of castor, farmers of neighboring Taluk and farmers nearby areas wished to adopt castor cultivation in 3000 acres during ensuing *Kharif* 2018 season.

CONSTRAINTS

- Non availability of the machineries like Castor sheller for decortication.
- There is no custom hiring centre at block level for castor sheller.

CONCLUSION

From this on farm cluster demonstrations, it could be concluded that hybrid castor cultivation is the precursor for obtaining higher productivity with less labour, water and cost over conventional crops like Bt cotton and hybrid maize and eventually, hybrid castor is lucrative crop in North Western Zone of Tamil Nadu under changing climatic condition.