



STATUS OF HIGH DENSITY CASHEW PLANTING IN TAMIL NADU

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Abstract

Cashew (*Anacardium occidentale* L., family-Anacardiaceae) a native of Eastern Brazil was introduced in India during 16th century. India is the first country to exploit the international trade of cashew kernels in the early 20th century. Today cashew occupies the status of an important export oriented commercial crop. More than ten lakh farmers are engaged in the cultivation of cashew, whereas five lakh persons are engaged in processing units. Besides, cashew adds substantial foreign exchange to the exchequer. Cashew therefore, plays a prominent role in Indian farming, commerce, industry and vitally provides employment opportunities to needy people. In Tamil Nadu, Cuddalore district was considered to have the maximum area and production under cashew than other cashew producing districts in the state. Hit a Thane cyclone has its wider negative impact on the production of cashew in Cuddalore district in December 2011. After that the State Department of Horticulture and Plantation crops recommended the High Density Planting (HDP) method in the affected area. In this area, the cashew growers newly planting VRI 3 cashew grafts with minimum spacing and followed other practices like inter cropping, drip irrigation, fertigation, etc. The present study was designed to measure the adoption level of the recommended HDP practices in cashew cultivation. The study was carried out in selected twelve villages of Panruti and Kurinjipadi blocks in Cuddalore District of Tamil Nadu. The samples consisted of 120 respondents who were selected by using proportionate random sampling method. The respondents were interviewed personally by a well structured and pre-tested interview schedule. Percentage analysis and cumulative frequency method were used for analyzing and interpreting the data. Majority of the respondents possessed high level of adoption (50.00 per cent) about the recommended HDP practices in cashew cultivation. About the sixteen HDP practices in cashew cultivation, cent per cent for seven practices viz., varieties, planting, application of organic manures, irrigation management, flowering management, intercropping and time of harvesting, more than ninety per cent of the respondents had knowledge on pit preparation spacing, age of cashew grafts for planting, below ninety per cent of the respondents had knowledge on pruning, pest management, weed management, nutrient management, and disease management and below fifty per cent of the respondents had knowledge on fertigation. Cent percent of the respondents were adopted the recommended HDP practices in cashew cultivation are five practices viz., varieties, spacing, application of organic manures, pest management, time of harvesting. More than ninety per cent of the respondents had adoption on planting, pit preparation, intercropping and flowering management, below ninety per cent of the respondents had adoption on pruning, weed management, irrigation management, diseases management, age of cashew grafts for planting, nutrient management and below fifty per cent of the respondents had adoption on fertigation.

Keywords: Cashew, HDP, Adoption level.

Introduction

“Cashew is the Golden mine of wasteland”. Cashew (*Anacardium occidentale* L.), a tree native of Eastern Brazil, was introduced in India by the Portuguese nearly five centuries ago. In India, cashew was first introduced in Goa, from where it spread to other parts of the country. Initially, it found use in soil binding to check erosion. Commercial cultivation began in the early 1960s and, over the years, cashew became a crop with high economic value and attained the status of an export-oriented commodity, earning considerable foreign exchange for the country.

In India cashew is being grown in an area of 1040.89 thousand hectares with a total production of 779.335 thousand metric tonnes of raw nuts and unit area productivity

of 753 kg/ha. India is the largest producer of raw cashew nut contributing 20% of total global production. The production and productivity of cashew is highest in the state of Maharashtra. The highest average productivity of Maharashtra is 256.61 thousand metric tones, Andhra Pradesh 111.39 thousand metric tones and Orissa 93.895 thousand metric tones are the other two States in the 2nd and 3rd position followed by Karnataka 83.98 thousand metric tones, Kerala 83.98 thousand metric tones and Tamil Nadu 67.65 thousand metric tones in 2016-2017.

Tamil Nadu is the six largest producer state of cashew nut in India. Among the different cashew growing districts in Tamil Nadu, Ariyalur (31.4 per cent), Cuddalore (30.2 per cent) and Pudukkottai (8.5 per cent) were the major cashew growing districts accounting for about 70 per cent of the total

area. Cuddalore district ranked first in terms of cashew production with 24,302 tonnes (47.0 per cent) and had the highest cashew productivity of 810 kg / ha among cashew growing districts in the state (Loganathan and Chandrasekaran, 2013).

Hit a Thane cyclone has its wider negative impact on the production of cashew nut in Cuddalore district in December 2011. The cyclone resulted in the uprooting of cashew trees, breaking of branches, stripping of leaves and destroying the cashew nuts. According to Damodaran, 2015, the major Cashew trees (23,500 ha) in the blocks of Panruti, Annagramam, Vridhachalam, Cuddalore and Kurinjipadi were either completely uprooted or partially uprooted. In addition, the branches were also damaged with complete leaf shedding. It has been observed that 77.43 percent of total farm land cultivated under the cashew has been damaged by the cyclone.

Total area under cashew was estimated to be 33,000 ha, out of which 32,162 ha were reported to be damaged by cyclone. Out of this 65 % of the cashew trees were of traditional varieties and around 35 % were of noted VRI series varieties. Among the VRI series cashew varieties, area covered under VRI-2 were 3 % and VRI-3 were of 32 %. The instantaneous traumatic effect of Thane cyclone took a heavy toll on the lives and livelihoods of cashew growers and cashew, the prime export crop of Cuddalore district. In due course of two months after thane cyclone incidence, natural rejuvenation occurred in cyclone damaged cashew plantations proving its semi hardiness nature. In this regard, a revised damaged cashew tree assessment was carried out, which initially suggested that about 1,200 ha need to be replanted with HDP method.

Due to the absence of high yielding varieties and multiplication techniques, seeds and seedlings were used for plantation development in an unscientific manner. However, as a result of governmental interventions, coupled with sustained efforts of Research, Development organizations and farmers the development of Cashew Plantations has become re oriented in a scientific manner to great extent with HDP. Because of its adaptive ability in wide range of agro climatic conditions and excellent return per unit area, Cashew has attained again the status of an export oriented crop of high commercial value. Keeping this in view, the present study has been made to know the adoption level of cashew growers about HDP practices.

Materials and Methods

The present study was taken up among the cashew growers in the area of Cuddalore district of Tamil Nadu. It was carried out in selected twelve villages of Panruti and Kurinjipadi blocks in Cuddalore District of Tamil Nadu. The samples consisted of 120 respondents who were selected by using proportionate random sampling method. The respondents were interviewed personally by a well structured and pre-tested interview schedule. Percentage analysis and cumulative frequency method were used for analyzing and interpreting the data.

In this study, recommended production technologies for HDP in cashew cultivation were selected for assessing the

extent of adoption. The cultivation practices for maximizing yield of cashew were selected in consultation with Extension scientists, subject matter specialists and Officials of the State Horticulture Department. Totally sixteen practices were selected for studying the extent of adoption with sub components. Each individual was asked about adoption against each item. A score of two was given for adoption, while non- adoption received one score. The scores for all these items were added-up for each respondent and his total adoption score was arrived at by using the formula for adoption index as adopted by Loganathan (2017) which was followed in the study.

$$\text{Adoption index} = \frac{\text{Respondent's total score}}{\text{Maximum possible score}} \times 100$$

The proportion (actual/recommended) were calculated separately for each of the practices. Then the values for all the practices were summed up and divided by the total number of practices. The resulting values were taken as the adoption index to find out extent of adoption of practices. Based on the respondents score, they were categorized into low medium and high using cumulative frequency method.

Results and discussion

In general, knowledge leads to adoption of innovation and could create motivation for adoption. In order to know whether such a trend is exhibited in case of cashew growers also, the present analysis was taken up. Rogers and Shoemakers (1971) defined adoption as a decision to make full use of new ideas as the best course of action available. The information collected to study the adoption behaviour of the respondents on the adoption of recommended HDP practices in cashew cultivation are detailed below.

Over all adoption of respondents about the recommended HDP practices

The results on the extent of adoption of recommended HDP practices in cashew cultivation are presented in Table 1. The Table 1 indicates that exactly half of the respondents (50.00 per cent) were found to have high level of adoption about recommended HDP practices followed by medium (40.80 per cent) level of adoption.

It may be inferred that most of them had high and medium level of adoption category. This might be due to the fact that the respondents would have enough knowledge in HDP practices in cashew cultivation and also they got advices from the officials of State Horticulture Department. This observation is in agreement with the earlier findings of Ram Sundar (2016).

Practice wise adoption level of respondents about the recommended HDP practices

Sixteen HDP practices were selected for studying the extent of adoption. The mean percentage score for practice wise adoption of respondents about recommended HDP practices in cashew cultivation are presented in Table 2.

Pit preparation

It could be observed from the Table 2 that, 95.80 per cent

of the respondents followed the correct pit size and procedure to fill. This might be due to the high awareness and knowledge level of the respondents on recommended HDP practices as already reported. This is in agreement with the findings of Aito Chopi (2016).

Varieties

Cent per cent of the respondents had adopted the recommended varieties. This might be due to the State Horticulture Department recommended the specific cashew varieties for all of its HDP cashew growers. This observation is in agreement with the earlier findings of Sudha (2003).

Age of cashew grafts for planting

Ideal age for planting from nursery farm to main field is the key factor of planting. More than three-fourth of the respondents (77.50 per cent) followed the recommended age of cashew grafts for planting. This might be due to the State Horticulture Farms supplied the grafts to needful HDP cashew growers in correct time.

Planting

96.60 per cent of the respondents plating the cashew grafts with recommended filling materials and followed staking. The rich farming experience gained by them might have resulted in adoption of correct planting procedures. This finding is in contradictory with the finding of Sudha (2003).

Spacing

Cent per cent of the respondents had adopted the recommended spacing. This might be due to the State Horticulture Department recommended the correct spacing for all of its HDP cashew growers. This finding is identical with the findings of Vinoth (2012).

Nutrient management

69.70 per cent of the respondents adopted recommended fertilizer schedule. Although application of fertilizers is one of the most important components in the HDP method, the respondents had adequate knowledge on recommended fertilizers dose, hence the adoption level was found to be more. This finding is in accordance with the findings of Indrakumar (2002).

Application of organic manures

Cent per cent of the respondents had applied the recommended organic manures. This might be due to easy availability of FYM in the study area with low cost. This finding is in agreement with the findings of Prakash (2016).

Irrigation management

It could be seen from the Table 2 that 80.80 per cent of the respondents had adopted recommended irrigation techniques. This might be due to the fact that farmers believed that adoption of correct irrigation schedule would highly influence the cashew production. This finding is in conformity with the findings of Sudha (2003).

Fertigation

Fertigation is very important for getting higher yield. But it could be ascertained from the Table 2, that two-fifths

(40.00 per cent) of the respondents had adopted the recommended fertigation practice. This might be due to the respondents were not fully aware of and knowledgeable on fertigation. This finding is get its support from Ram Sundar (2016).

Pest management

The Table 2 indicates that cent per cent of the respondents were found to adopted the various items under pest management. The respondents had adequate knowledge in identifying the pests. The Officials of the State Horticulture Department also recommended the control measures for pests. This finding is in line with the findings of Sudha (2003).

Disease management

78.30 per cent of the respondents adopted the various items under disease management. The respondents had required knowledge in identifying the diseases. The guidance of the Extension functionaries of the State Horticulture Department also the reason for adoption level was found to be more. This finding is in accordance with the findings of Sudha (2003).

Flowering management

HDP in cashew, the first two years after planting, deblossing is very important for getting vegetative physiology, reproductive growth, better yield and nut quality. 91.20 per cent of the respondents followed deblossing under flower management in the first two years after planting. The rich farming experience gained by them might have resulted in adoption of deblossing procedures.

Inter cropping

A glance at the data in Table 2 would reveal that (92.50 per cent) of the respondents adopted inter cropping. It is one of the important components for getting excess yield. This might be due to the Officials of State Horticulture Department were provided adequate knowledge on inter cropping. Moreover, the respondents would have realised the advantages of adoption of inter cropping, by witnessing its impact on the additional yield. A similar results reported by Vinoth (2012).

Weed management

The adoption percentage under weed management of the respondents was 84.20 per cent. High adoption of weed management might be due to high awareness and knowledge level of the respondents on weed management practices as already reported. This findings draws support from the findings of Sudha (2003).

Pruning

In cashew, during first year of planting, the sprouts coming from the rootstock should be removed frequently to ensure better health of plant. It causes death of grafted scion allowing only rootstock to grow. After that pruning is the regular recommended practice to train the tree for many reasons. 85.80 per cent of the respondents adopted the practice of pruning. This might be due to the Officials of

State Horticulture Department were provided adequate knowledge on pruning. This finding is in concordance with the findings of Indrakumar (2002).

Harvesting

Cent per cent of the respondents had adopted the recommended harvesting practices. This might be due to the fact that farmers believed that optimum time of harvest would influence the yield level to a greater extent. State Horticulture Department Officials also suggested in correct time of harvest. This finding derives support from the findings of Indrakumar (2002).

Conclusion

The over all adoption indicates that exactly half of the respondents (50.00 per cent) were found to have high level of adoption about recommended HDP practices followed by medium (40.80 per cent) and low (9.20 per cent) level of adoption. According to adoption level of sixteen HDP practices in cashew cultivation, the mean percentage score of respondents were found to be cent per cent for five practices viz., varieties, spacing, application of organic manures, pest management and time of harvesting. More than ninety per cent of the respondents had adoption on planting (96.60), pit preparation (95.80), intercropping (92.50) and flowering management (91.20).

The mean percentage scores of below ninety per cent of the respondents had adoption on pruning (85.80), weed management (84.20), irrigation management (80.80), diseases management (78.30), age cashew grafts for planting (77.50), nutrient management (69.70) and only one practice little low mean percentage score was fertigation (40.00 per cent). Based on the findings of the study, majority of the respondents were found to have high level of adoption about the recommended HDP practices in cashew cultivation. Only the fertigation techniques were found to low level of knowledge and adoption. In HDP in cashew cultivation fertigation through drips is one of the important components recommended by the Scientists. Hence it suggested the Extension functionaries to design more number of trainings in these aspects. Organise the result demonstration and conduct the road side trials may be considered for enhancing adoption of HDP practices in cashew. Hence it recommended that the extension workers and scientists concerned may conduct result demonstrations and road side trials for enhancing adoption of HDP practices in cashew.

Table 1: Distribution of respondents according to their overall adoption level about the recommended HDP practices (n=120)

Sl. No.	Category	Number	Per cent
1.	Low	11	09.20
2.	Medium	49	40.80
3.	High	60	50.00
	Total	120	100.00

Table 2: Practice-wise adoption level of respondents about the recommended HDP practices (n=120)

Sl. No.	Recommended practices	Mean Percentage Score
1.	Pit preparation	95.80
2.	Varieties	100.00
3.	Age of cashew grafts for planting	77.50
4.	Planting	96.60
5.	Spacing	100.00
6.	Nutrient management	69.70
7.	Application of organic manures	100.00
8.	Irrigation management	80.80
9.	Fertigation	40.00
10.	Pest management	100.00
11.	Diseases management	78.30
12.	Flowering management	91.20
13.	Intercropping	92.50
14.	Weed management	84.20
15.	Pruning	85.80
16.	Time of harvesting	100.00

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