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A Study on Knowledge and Extent of Adoption of Plant Protection Measures in Coconut Crop

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Abstract: The study on knowledge and extent of adoption of plant protection measures in coconut cultivation by farmers of Chitradurga district was conducted during 2006-07. This district was purposively selected where in maximum area was covered by coconut cultivation and also pests and diseases in this district severely affected the crop. In the present study, it was observed that the maximum of 61.88 per cent of coconut growing farmers had medium knowledge level about cultivation and plant protection measures. Further, it was also observed that about 58.76 per cent of farmers had adopted plant protection measures to control pests and diseases. The farmers had hundred percent of absolute knowledge about mites infestation. Similarly, farmers also had (97.50 %) absolute knowledge about bud rot disease. Further, in case of extent of adoption of plant protection measures, about 27.00 per cent of farmers revealed complete adoption of plant protection measures to control mites infestation, followed by a maximum of 28.00 per cent full adoption to control bud rot disease, respectively.

Key words : Coconut mites, coconut bud rot, plant protection measures, knowledge assessment, adoption assesment

Introduction

Coconut crop is one of the important crop cultivated in Karnataka. It is estimated that coconut based industries provide full time or part time employment to more than 10 million people in India. The enhancement of coconut production and development of coconut based industries will therefore contribute to the national economy even though in the present senario with fast development in scientific research and evolvement of new technology is flourishing continuously, only 20 per cent of the available technology is reaching to farmers to increase the knowledge level and to adopt the improved cultivation practices to control pests and diseases. Even after four decades of green revolution with an appreciably improved extension service, the country is yet to attain the goals of sustained economic growth in the agricultural sector. The progress in agriculture depend upon the willingness and ability of farmers to acquire knowledge and to adopt the new technology to increase agriculture production as a whole and keen interest to adopt the important plant protection measure in cultivation of coconut crop in particular. In view of keeping this point, the study was undertaken to know the knowledge and extent of adoption level of plant protection practices in coconut crop.

Materials and Methods

The study was conducted during the year 2006-07 in Chitradurga district which was purposively selected. This is because the district has maximum area coverage under coconut crop cultivation. More over this district was severely affected by the pests and diseases. The coconut growing farmers were randomly selected from 20 villages of Holalkere and Hosadurga talukas which totally constituted the sample size of 160. Further, data was collected in person from the farmers by using well-structured interview schedule. The data was analyzed using statistical tools such as percentage, standard deviation and correlation analysis.

Results and Discussion

It is observed from the results (Table 1) that a maximum of 61.88 per cent of farmers had medium knowledge level followed by 28.75 per cent of farmers had high knowledge level where as 9.37 per cent of respondents had least knowledge level about plant protection measures in coconut cultivation.

Table 1. Knowledge level of the respondents about plant protection measures in coconut plantation (n=160)

Knowledge level	Frequency	Percentage
Low (<5.11)	15	9.37
Medium (5.11 – 18.34)	99	61.88
High (>18.34)	46	28.75
Mean = 11.73	SD = 6.62	

Similarly, it is also observed from Table - 2 that the medium level farmers had maximum (58.76 %) of adoption level towards plant protection measure followed by 23.12 per cent farmers had high adoption level and with a least of 18.12 per cent of farmers had low adoption level about plant protection measures in coconut crop.

It was observed that cent per cent of farmers had knowledge about the mites (Table 3). Moreover, majority (91.25%) of the farmers had absolute knowledge about the black

Table 2. Adoption level of the respondents about plant protection measures in coconut plantation (n=160)

Adoption level	Frequency	Percentage
Low (<5.45)	29	18.12
Medium (5.45 – 22.53)	94	58.76
High (>22.53)	37	23.12
Mean = 13.99	SD = 8.54	

headed caterpillar and 78.13 per cent of farmers had the knowledge about rhinoceros beetle. Similarly, in case of diseases the majority of the farmers (97.50%) know about the bud rot diseases. About, 83.13 per cent of the farmers had knowledge about stem bleeding and 54.37 per cent of the farmers had knowledge about the gyanoderm disease. As such coconut is an important commercial crop grown by farmers of this region and fetch more money, farmers had better knowledge about coconut cultivation practices, pests and diseases in order to achieve higher yields.

With regard to pesticides as high as 39.37 per cent of the farmers knew about dicofol which is used for controlling the mites. About 34.37 per cent of farmers knew about usage of the carbaryl for the red palm weevil control. Similarly, thirty five per cent of the farmers had better knowledge about the monocrotophos for black-headed caterpillar control and only 33.13 per cent of the farmers knew about the chlorpyriphos for control of rhinoceros beetle. Regarding use of fungicides, more than 43.75 per cent of the farmers had the knowledge about bordeaux paste in case of bud rot control, as high as 32.50 per cent of farmers had the knowledge about calixin for stem bleeding control and a least of 26.87 per cent know about the calixin (Tridemorph) for gyanoderma control. Reasons for the lack of knowledge about the pesticide and fungicide may be due to illiteracy among farmers, lack of technical know how about pesticides and insufficient knowledge about use of exact dosage of pesticides, due to high cost of chemicals and lack of skill involved in spraying of pesticides.

In case of pest and their control measures, only 30.63 per cent of the farmers had knowledge about concentration of spray mixture for black headed caterpillar control. About 33.13 per cent of the farmers knew exact stage for plant protection measures to be taken up about the red palm weevil control. With regard to diseases and their control measures, maximum (39.37 %) farmers had knew the stage of application of fungicide for bud rot control and only 33.75 per cent of the farmers had the proper knowledge of effective fungicide to control stem bleeding and 33.13 per cent of the farmers had the knowledge of proper concentration of spray mixture for stem bleeding control. The control of pest and diseases were lacking which may be attributed to lack of technologies for application of pesticides and fungicides use and may not have sufficient skills. The results of the study were in conformity with the findings of Kantharaju (1989), Balasubramani (1997), Raghavendra (1997) and Kubde *et al.* (2000).

In case of extent of adoption of pesticides, it is observed from Table - 4 that, majority (52.00%) of the coconut growers did not apply dicofol for controlling mites. About 27.00 per cent of the farmers were applying dicofol and 21.00 per cent of the farmers partially applied dicofol for controlling mites infestation. Similarly, 61.00 per cent of respondents did not apply monocrotophos to control black headed caterpillar and 24.00 per cent of them were applying monocrotophos to control black headed caterpillar. About 15.00 per cent of respondents were partially appling the monocrotophos to control black headed caterpillar infestation. Further about, 62.00 per cent of the respondents did not apply chlorpyriphos to control the rhinoceros beetle and 26.00 per cent of the respondents were applying the chemical. Least percent (12) of respondents were partially applying the chloropyriphos to control the rhinoceros beetle.

Regarding extent of adoption of fungicides, it was observed that about 28.00 per cent of the respondents applied the bordeaux paste to control bud rot disease and 21.00 per cent of them partially applied the bordeaux paste to control bud rot disease. Majority of the respondents did not apply bordeaux paste to control bud rot diseases. In case of calixin around 27.00 per cent of the farmers were applying the calixin to control stem bleeding About 14.00 per cent no of respondents were partially applying the calixin to control stem bleeding and majority (59.00%) of the farmers did not adopt to application of calixin to control the stem bleeding disease. Only 21.30 per cent of the farmers fully adopted application of calixin to control the gyanoderma disease and a least per cent (9) of the farmers partially adopted application of the calixin to control the gyanoderma and maximum of 69.00 per cent of them did not adopt the calixin application to control the gyanoderma disease.

The inference that could be drawn from the above analysis is that large number of farmers did not adopt application of plant protection chemicals due to lack of extension support to educate and provide knowledge to the farmers regarding plant protection measures and several consequences of indiscriminate use of chemical pesticides.

In case of utilization of concentration of pesticides, majority (55.00%) of the farmers did not apply the exact concentration of Dicofol to control mites infestation and only 35.00 and 10.00 per cent of the farmers partially and fully adopted the application of dicofol respectively. However, 57.00 per cent of farmers did not apply the exact concentration of monocrotophos for spraying of insecticide compared to partial and full adoption category of farmers.

With regard to utilization of chlorpyriphos concentration, a maximum of 26.00 and 17.00 per cent of the respondents had fully and partially adopted the application of monocrotophos to control black headed caterpillar infestation respectively. A maximum of 57.00 per cent of respondents did not use monocrotophos for control of black headed caterpillar.

Whereas, majority (59.00%) of farmers did not apply the chlorpyriphos at proper concentration to control the rhinoceros beetle. Only, 26.00 and 15.00 per cent of the respondents partially and fully adopted proper concentration of chlorpyriphos to control rhinoceros beetle. As far as concentration of fungicides is concerned majority (58.00%) of respondents did not apply proper concentration of bordeaux paste to control the bud rot disease. However, least of 29.00 and 13.00 per cent of the respondents had fully and partially adopted the proper concentration or bordeaux paste to control the bud rot disease. Majority of (56.00%) of the respondents did not adopt proper concentration of calixin to control stem bleeding disease. Only 25.00 and 19.00 per cent of respondents had fully and partially adopted proper concentration of calixin to control stem bleeding disease. Majority (60.00%) of respondents had not adopted proper concentration of calixin (Tridemorph) to control the gyanoderma disease. However, the least (20.00) per cent of the respondents in both the category had fully and partially adopted proper concentration of calixin (tridemorph) to control the gyanoderma disease in coconut crop. The reasons may be due to their conviction about the use of recommended quantity of chemical pesticides. The other reasons might be high cost of plant protection chemicals and equipments and lack of existing knowledge about use of recommended plant protection measures. The facts implied that the extension agency is therefore need to organize method demonstrations group discussion, meetings, seminars, exhibitions and field days to convince the farmers regarding benefits of adopting recommended plant protection measures in order to obtain higher yields. Whereas, in case of time of application of pesticides, about 26.90 per cent of the respondents fully adopted the application of pesticides at proper time . Only 30.00 per cent of respondents had adopted application of fungicides at the proper time to control pests and diseases of coconut crop. Therefore, this implies that large number of farmers did not adopt application of pesticides and fungicides at the right time and were lacking the knowledge regarding the pesticide and fungicides.

Table 3. Knowledge of individual components of plant protection measures in coconut plantation (n=160)

Sl. No.	Knowledge level	Frequency (%) of respondents having correct knowledge
1.	Pests	
a.	Mites	160 (100.00)
b.	Black headed caterpillar	146 (91.25)
c.	Rhinoceros beetle	125 (78.13)
2.	Pesticides	
a.	Mites (dicofol)	63 (39.37)
b.	Red palm weevil (carbaryl)	55 (34.37)
c.	Black headed caterpillar (monocrotophos)	56 (35.00)
d.	Rhinoceros beetle (chlorpyriphos)	53 (33.13)
3.	Diseases	
a.	Bud rot	156 (97.50)
b.	Stem bleeding	133 (83.13)
c.	Gyanoderm	87 (54.37)
4.	Fungicides	
a.	Bud rot (bordeaux paste)	70 (43.75)
b.	Stem bleeding (calixin)	52 (32.50)
c.	Ganoderma (Calixin (Tridemorph)	43 (26.87)
5.	Pest and their control	
a.	Symptom of mite attack	145 (90.63)
b.	Concentration of spray mixture of black headed caterpillar	49 (30.63)
6.	Right stage to take up plant protection measures	
a.	Mites	63 (39.37)
b.	Black headed caterpillar	53 (33.13)
c.	Red palm weevil	53 (33.13)
7.	Disease and their control	
a.	Symptom of bud rot	144 (90.00)
b.	Stage of application of fungicide for bud rot	63 (39.37)
c.	Effective fungicide to control stem bleeding	54 (33.75)
d.	Right concentration of spray mixture for stem bleeding	53 (33.13)

Table 4. Extent of adoption of important plant protection practices in coconut crop (n=160)

Sl. No.	Practices	Adoption respondents		
		Full adoption	Partial adoption	Non-adoption
I.	Pests			
1.	Pesticides			
a.	Mites (dicofol)	43 (27.00)	33 (21.00)	83 (52.00)
b.	Black headed caterpillar (monocrotophos)	38 (24.00)	24 (15.00)	97 (61.00)
c.	Rhinoceros beetle (chlorpyriphos)	41 (26.00)	19 (12.00)	99 (62.00)
2.	Concentration of pesticides			
a.	Dicofol (4 ml/l of water)	16 (10.00)	56 (35.00)	88 (55.00)
b.	Monocrotophos (15 ml/l of water)	42 (26.00)	27 (17.00)	91 (57.00)
c.	Chlorpyriphos (2 ml/l of water)	24 (15.00)	41 (26.00)	95 (59.00)
3.	Time of application of pesticides	43 (26.90)	-	117 (73.10)
II.	Diseases			
1.	Fungicides			
a.	Bud rot (bordeaux paste)	46 (28.00)	33 (21.00)	81 (51.00)
b.	Stem bleeding (calixin)	44 (27.00)	22 (14.00)	94 (59.00)
c.	Ganoderma (calixin (Tridemorph)	34 (21.30)	15 (9.70)	111 (69.00)
2.	Concentration of fungicides			
a.	Bordeaux (10 ml/100 ml of water)	47 (29.00)	21 (13.00)	92 (58.00)
b.	Calixin (5 ml/100 ml of water)	40 (25.00)	30 (19.00)	90 (56.00)
c.	Calixin (Tridemorph) (2 ml/100 ml of water)	39 (20.00)	32 (20.00)	96 (60.00)
3.	Time of application of fungicide	48 (30.00)	-	112 (70.00)

Large number of respondents revealed that they could identify the infestation of pests and diseases on the coconut crop. But due to lack of knowledge and proper guidelines, non-availability of chemicals and high cost of plant protection chemicals, farmers could not adopt the control measures in time to check the infestation on coconut crop. Adoption of the plant protection measures is a complex activity as it involves skills and needs lot of risk involvement. Since, more number of farmers were small land holders and their income is very low, they are not prepared to take risk. Other reasons like non-availability of plant protection inputs, lack of technical knowledge regarding plant protection measures comes in the way of poor adoption of plant protection measures.

The results of the study were in conformity with the findings of Nagabhushan and Guruprasad (1994) and Vasanth Kumar (2000) who expressed that the farmers had less knowledge and adoption level w.r.t. plant protection, there by farmers need strong motivational forces for adoption of improved practices. They also required more mass media exposure and extension contact for adoption of improved practices.

References

Balasubramani, 1997. Study on knowledge and adoption behaviour of rubber growers in Belthangadi taluk in Dakshina Kannada district, *M. Sc.(Agri.) Thesis*, Univ. Agril. Sci., Bangalore (India).

Kantaraju, 1989. A study on adoption of improved practices of coffee and cardamom by small farmers in Hassan district of Karnataka, *M.Sc. (Agri) Thesis*, Univ. Agric. Sci., Bangalore. (India).

Kubde V.R., Bhople S.R. and Tekale V.S., 2000. Knowledge and adoption of cultivation and storage practices of potato. Maharashtra J. Extn. Edu., 14: 293-298.

Nagabhushan. K. and Guruprasad. T. R., 1994. Knoweldge and adoption of coconut cultivation practices, J. Extn.Edu., 5: 918-920.

Ragavendra, 1979. Relative effectiveness of lecture, folder and lecture plus folder in communication dairy management practices to farmers – A field experiment, *M. Sc. (Agri) Thesis*, Univ.Agric. Sci., Bangalore, (India).

Singha. A.K., 1996. Adoption patterns of coconut cultivation practices in a progressive area of Assam. J. Extn. Edu., 66: 1314-1317.

Vasant Kumar, M.P. 2000. A study on knowledge adoption and economic performance of coffee growers in Virajpet taluk of Coorg district, *M.Sc. (Agri) Thesis*, Univ. Agric. Sci., Bangalore (India).