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A study on the extent of adoption of crop management practices

D JEBAPREETHA, REXLIN SELVIN and M ESAKKIMUTHU*

Tamil Nadu Agriculture University, Coimbatore 641003 Tamil Nadu, India
***Kerala Agricultural University, Thrissur 680656 Kerala, India**
Email for correspondence: esakkimuthu418@yahoo.com

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ABSTRACT

The aim of the present study was to find out the level of adoption of eco-friendly technologies by the intensive-cultivation area farmers. A set of 120 farmers who had been practicing intensive cultivation under assured irrigation facilities were selected. The data were collected using a well-structured interview schedule. Farmers adopted all the regular agricultural practices but they did not adopt recommended scientific eco-friendly technologies due to lack of awareness and time constraint. Foremost constraint in adoption of eco-friendly practices experienced by them was limited availability of organic manure expressed by 89.50 per cent of the respondents. The study indicated that majority of the farmers had medium level of adoption of eco-friendly technologies. Farmers in the study area were in practice of indigenous and traditional eco-friendly practices which contributed to more medium level of adoption of management practices among majority of the respondents. Thus these technologies could be promoted by changing the attitude of farmers through extension activities.

Keywords: Adoption; environment; green revolution; intensive cultivation

INTRODUCTION

Green revolution was the result of increased use of high yielding varieties, fertilizers, pesticides and mechanization which led to some fatigues to our natural resource base (soil and environment). Though by virtue of chemical fertilizers the production and productivity of crops have increased it also created many hazards like decreased soil flora and fauna, decreased porosity, increased ground water pollution etc. The increased use of pesticides has posed many environmental and health problems. Ambitious use of agro-chemicals boosted food production but also destroyed the agricultural ecosystem.

Food security without environmental security is not a security at all to mankind. In order to balance this situation eco-friendly farming which aims at cultivating the land and raising crops in such a way as to keep the soil alive in good health may be an alternative to the present system of farming which solely depends on chemicals (Hareesha 1994).

Maliwal (2005) reported that environment is a word which describes in the aggregate all of external forces, influences and conditions which affect the life, nature, behaviour and the growth, development and maturation of living organisms. Shashidhara (2012) in a study revealed that majority of the respondents were in medium level adoption of eco-friendly technologies. Majority of the respondents were not practicing application of organic manures, selection of crops, cropping pattern, mixed cropping, inter-cultivation practices, application of bio-fertilizers to soil and use of limited inorganic fertilizers. According to Patel et al (2013) maximum vegetable growers had low extent followed by medium and high extent of adoption of the eco-friendly management practices. A research study on awareness about environmental issues and management of natural resources was conducted by Arunachalam (2003) who found that the variables education, farm size, social participation, risk orientation, farm waste disposal behaviour, integrated pest management, integrated water management, integrated weed management, integrated nutrient management,

great concern for environment, progressive nature and farm machinery use behaviour of the respondents had their influence on the adoption of natural resource management practices. The innovativeness; attitude towards eco-friendly cultivation practices; perception on organic manures, feasibility of eco-friendly cultivation practices, health hazards and environmental degradation; information source utilization and decision making were variables that had positive and significant association with adoption of eco-friendly technologies (Chandra 2001). Utilization of eco-friendly technologies by the farmers revealed that participation in trainings and perception on environmental degradation had shown a positively significant contribution for adoption of eco-friendly technologies (Nalini 2004). It is essential to know the characteristics of the intensive growers and their influence on the dependent variable to have a clear understanding about their background, attitude, perception and their mind set in general. Thus the present study was conducted with an objective to assess the influence of the independent variables on adoption of eco-friendly crop management practices by the farmers in Tamil Nadu.

METHODOLOGY

The study was conducted in Theni district of Tamil Nadu. Cumbum block of Theni district consists of eleven revenue villages. Among the eleven revenue villages, five villages namely Annumandanpatti, C Pudhupatti, KK Patti, NT Patti (North) and Melagudalore (North) were selected by judgement sampling. The criteria for judgement sampling followed in this study were based on the judgment of assistant agricultural officer, the agricultural officer and the agricultural development officer of the block. They opined/judged that the intensive cultivation was being practiced in the above villages. A set of 120 farmers who had been practicing intensive cultivation under assured irrigation facilities were selected by proportionate sampling method. The data were collected with the help of interview schedule. It consisted of questions to be asked from the farmers regarding eco-friendly farming practices.

RESULTS and DISCUSSION

Adoption of eco-friendly crop management practices: The data given in Table 1 show that almost all the farmers had adopted land preparation practices viz summer ploughing, incorporation of crop residue and green manures and land leveling. All the respondents had followed selection of good seed, optimum seed rate and timely sowing. Though farmers adopted all the regular agricultural practices but they did not adopt recommended scientific eco-friendly technologies due to lack of awareness and time constraint. Scientific nutrient management practices were not adopted by most of the intensive cultivation area farmers due to non-availability of organic materials within the villages. Soil test laboratory-based recommendations were adopted by innovative and progressive farmers only. Water and weed management was adopted by most of the farmers including herbicide application. None of them followed postharvest practices like cleaning of fruits and washing root vegetables before packing etc. The results are is in line with those of Khan et al (2002) and Kumar (2001).

Overall adoption of eco-friendly crop management practices: Farmers in the study area were in practice of indigenous and traditional eco-friendly practices which contributed to more medium level of adoption of eco-friendly crop management practices among majority of the respondents (Table 2). Farmers were not aware of bio-fertilizers, bio-pesticides, nutri-rich organic manures etc. The findings are supported by the work of Alagesan (1997) and Kavitha (1998).

Constraints in adoption of the eco-friendly crop management practices: The data given in Table 3 show that foremost constraint experienced by farmers was limited availability of organic manure expressed by 89.50 per cent of the respondents. It was found that the cattle population in the study area had reduced to a great extent leading to the reduction of availability of farmyard manure. Though majority (85.83%) of the respondents had high level of education, lack of knowledge on eco-friendly crop management practices especially in plant protection (using bio-pesticides, natural enemies and traps) was felt by nearly 85.00 per cent of the respondents. Delayed response of eco-friendly techniques was expressed as a constraint was 83.33 per cent of the respondents as organic inputs did not show immediate effect as do the chemical inputs. Non-availability of labour was constraint expressed by 80.00 per cent of the respondents. It was due to the reason that a large proportion of the agricultural labourers had shifted to other jobs such as factory workers, construction workers etc.

Table 1. Distribution of respondents according to their adoption of eco-friendly crop management practices

Parameter	Adoption		Non-adoption	
	Frequency	%	Frequency	%
Land preparation				
Summer ploughing	120.00	100.00	00.00	00.00
Incorporation of crop residues	120.00	100.00	00.00	00.00
Use of green/green leaf manures	120.00	100.00	00.00	00.00
Land leveling and shaping	120.00	100.00	00.00	00.00
Soil application of *Azospirillium, Phosphobacteria* etc	96.00	80.00	24.00	20.00
Seed and sowing				
Ash treatment of seed	34.00	28.33	86.00	71.67
Selection of good seed	120.00	100.00	00.00	00.00
Pre-treatment of seed/seedlings with organic material	17.00	14.16	103.00	85.84
Use of optimum seed rate	120.00	100.00	00.00	00.00
Timely sowing	120.00	100.00	00.00	00.00
Nutrient management				
Use of farmyard manure	120.00	100.00	00.00	00.00
Use of vermicompost, coir pith compost, sugarcane trash compost	64.00	53.34	56	46.66
Use of neem cake, oilcake, bio-fertilizers	120.00	100.00	00.00	00.00
Use of *Trichoderma, Pseudomonas viridi*, VAM etc	04.00	03.33	116.00	96.67
Use of soil testing laboratory (STL)-based recommended fertilizers	04.00	03.33	116.00	96.67
Water management				
Lining of channels with concrete	120.00	100.00	00.00	00.00
Storing rainwater in low-lying areas of farm	00.00	00.00	120	100.00
Judicious integration of all available water resources	120.00	100.00	00.00	00.00
Recommended land-based tillage practices	120.00	100.00	00.00	00.00
Agronomic management practices like mulching, cover cropping etc	12.00	10.00	108.00	90.00
Weed management				
Weed-free environment	120.00	100.00	00.00	00.00
Hand weeding	120.00	100.00	00.00	00.00
Use of recommended doses of herbicides	20.00	16.66	100.00	83.34
Use of biological agents	00.00	00.00	120.00	100.00
Plant protection				
Honeybee rearing	00.00	00.00	120.00	100.00
Use of neem, Motchi and pungam leaf extracts	00.00	00.00	120.00	100.00
Use of light traps, pheromone traps, trap crops, alternate crops etc	00.00	00.00	120.00	100.00
Use of natural enemies (predators and parasites)	00.00	00.00	120.00	100.00
Use of bio-pesticides (NPV, CPV, GV, HL, SL)	00.00	00.00	120.00	100.00
Use of recommended doses of insecticides and fungicides	00.00	00.00	120.00	100.00
Postharvest operations				
Mechanical equipments for harvest	120.00	100.00	00.00	00.00
Cleaning (fruits) and washing (root vegetables)	00.00	00.00	120.00	100.00
Trimming (removal of damaged and dead parts)	120.00	100.00	00.00	00.00
Harvesting at the recommended period (between last spray and harvest)	120.00	100.00	00.00	00.00
Grading, tight packing and wrapping in tissue paper	120.00	100.00	00.00	00.00

Table 2. Distribution of respondents according to their overall adoption of eco-friendly crop management practices

Category	Respondents	
	Frequency	%
Low	27.00	22.50
Medium	51.00	42.50
High	42.00	35.00
Total	120.00	100.00

Table 3. Constraints encountered by the respondents in the adoption of eco-friendly crop management practices

Constraint	Respondents	
	Frequency	%
Limited availability of organic manures	105.00	89.50
Lack of proper guidance	95.00	79.16
Delayed response of eco-friendly inputs	100.00	83.33
High cost of inputs	96.00	80.00
Lack of knowledge	103.00	85.83
Soil testing laboratory (STL) at distant location	88.00	73.35
High cost and non-availability of labour	98.00	81.66
Loss of market value	92.00	76.06

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