

Adoption of indigenous plant protection practices for sustainable environment

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ABSTRACT

An attempt was made to study the extent of adoption of indigenous agricultural practices in Cuddalore district of Tamil Nadu state in India. Three hundred respondents were selected based on 'population proportionate to size' sampling method. A well structured and pre-tested interview schedule was administered for the collection of relevant data. The results revealed that a number of indigenous agricultural practices in the study area were adopted by more than 50.00 per cent of the respondents. Most of the indigenous agricultural practices on land preparation, seeds and sowing, plant protection, harvest and post-harvest aspects were adopted by more than 40.00 per cent of the respondents in the study area.

INTRODUCTION

'Sustainability' refers to the capacity to remain productive while, maintaining the resource base. In recent years, generally agricultural production needs are met with application of inorganic fertilizers along with improved and hybrid varieties and increased productivity. But yield levels is not sustained over years.

For achieving sustainable development, Indigenous knowledge systems play a vital role. According to Haverkort (1991), indigenous knowledge is the actual knowledge of a given population that reflects the experiences based on traditions and includes more recent experiences with modern technologies.

In India, the total use of pesticides account for about 90,000 tonnes annually, out of which 63 per cent is for agriculture. Among the pesticides used 70 per cent are insecticides, 12 – 15 per cent are fungicides and 4-5 per cent herbicides. The indiscriminate use of chemical fertilizers, pesticides and unplanned use of irrigation water have threatened the sustainability of agricultural production. They increased the health hazards and pollute soil, water and environment (Gupta, 1999).

A lot of researchers have found out that indigenous agricultural practices contribute significantly for the sustainable agriculture production and for the eco-friendly environment. (Chambers, 1990; Woodley, 1991;

Reijntjes, 1995).

Considering the significance of indigenous agricultural practices an attempt has been made to find out the extent of adoption of indigenous plant protection practices in Cuddalore district.

METHODOLOGY

Cuddalore district in Tamil Nadu were purposively selected for the study considering the significance of the availability of large number of agricultural families in this district. Ex-post facto design was followed. Data were collected from 300 respondents identified based on simple random sampling method. Statistical tools like percentage analysis was employed for the study and the results obtained were tabulated and appropriate inferences were drawn.

RESULTS AND DISCUSSION

The indigenous plant protection practices identified along with the extent of adoption in the study area are presented in Table 1.

It is observed from the Table 1 that a number of indigenous agricultural practices are adopted by more than 50.00 per cent of the respondents in the study area. With regard to plant protection a significant number of practices were adopted by more than 40.00 per cent of the respondents. In general it can be concluded that farmers in the study area

Key words :

Adoption,
Indigenous
agricultural
practices,
Plant protection

Accepted :
January, 2010

Table 1 : Extent of Adoption of Indigenous plant protection practices

Sr. No.	Indigenous plant protection practices	Frequency	Percentage
1.	Clipping the tip of paddy seedlings to gather stem borer egg masses before transplanting.	236	78.67
2.	Irrigating rice crop once in 2-3 days to maintain uniform water column to reduce weeds.	222	74.00
3.	Using "Panchakaviam" (FYM solution + Cow's urine + milk + curd + ghee) for control of pests and diseases and also to induce growth in paddy.	206	68.67
4.	Keeping bunches of neem leaves and neem cake in rice field to control leaf folder at vegetative stage.	195	65.00
5.	Immersing sacks filled with neem cake in irrigation channel to control termites and other insect pests in paddy.	192	64.00
6.	Neem oil + pungam oil is used to control leaf folder and leaf roller at vegetative stage in paddy.	188	62.67
7.	Neem oil is mixed with water at 30 ml/lit and sprayed to control stem borer in rice.	158	52.67
8.	In coconut, kolungi (<i>Tephrosia purpurea</i>) and Calotropis gigantean are applied in circular basin just before flowering to control button shedding.	152	50.67
9.	Application of neem cake in the pits before planting coconut, to avoid the attack of insect pests and ants.	143	47.67
10.	Earthen pots are placed in small pits in coconut gardens and 3/4 th of the pot is filled with water and ¼ kg of castor cake. After three days due to the smell, rhinoceros beetles get attracted, fall into the pot and die.	141	47.00
11.	Crowns of coconut trees are examined during every harvest and adult rhinoceros beetles are hooked out and killed.	130	43.33
12.	To control stem weevil in coconut, the hole bored by it, is cleaned and plugged after putting common salt.	129	43.00
13.	Putting 1 – 2 kg of common salt in the pit, while planting coconut, to control termites and to conserve moisture.	124	41.33
14.	Flooding the coconut garden to wash off termites.	102	34.00
15.	In coconut to control stem bleeding, the bleeding mouth on the trunk is cut to certain extent, cleaned and poured with lime solution.	92	30.67
16.	Digging 1 feet deep trenches around field and placing calotropis leaves in them to control red hairy caterpillar in groundnut.	88	29.33
17.	Mixing pulp extract of neem fruits with water in a ratio of 1 : 20 and sprayed in the field in morning hours to control red hairy caterpillar in groundnut.	87	29.00
18.	Cultivation of sunhemp (<i>Crotalaria juncea</i>) or diancha (<i>Sesbania</i> sp.) to control nut grass weed at summer.	81	27.00
19.	Broadcasting leaves of calotropis at different location of the paddy field to check the movement and infestation of larvae. The worms gather along the leaves, feed them instead of rice plants. Pass a rope along rows of plants to knock down these larvae found still on plants.	77	25.67
20.	Applications of Eruku (<i>Calotropis gigantean</i>) as green leaf manure to prevent thrips attack in rice nursery field.	73	24.33
21.	In paddy application of sheep / goat and pig dung under irrigated condition will lessen the pests and diseases.	67	22.33
22.	Spraying neem oil mixed with solution of calotropis plant soaked in water to control red hairy caterpillar in groundnut.	62	20.67
23.	Cowpea is cultivated as intercrop in cotton to attract aphids.	57	19.00
24.	Growing castor as border crop to control early shoot borer attack in sugarcane.	45	15.00

are adopting majority of the indigenous agricultural practices in various aspects like land preparation, seeds and sowing, plant protection, harvest and post-harvest operations. Kanagasabapathi (1997) and Isaacdevanand (2000) have reported in their respective research studies that indigenous agricultural practices were adopted by more than half of the respondents in their respective study areas.

Conclusion:

As it is observed that indigenous plant protection practices serve for eco-friendly environment, it is suggested that formal research may be focused much on indigenous plant protection practices to find out the rationality and to make necessary promotional efforts for the spread of these practices for achieving sustainable environment.

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