ABSTRACT

Agriculture is one of the most ancient and significant sectors of India, the only means of living for almost two-third of the employed class in India. It has occupied almost 43 percent of India’s geographical area. India is one of the major cotton producing countries, ranking 3rd after USA and China. Cotton accounts per 30 percent of agricultural Gross Domestic Product (GDP) in India and has the largest cotton area of 20 million acres. It provides livelihood to more than 60 million people in India. As agriculture is closely associated with the environment, it has a major impact on land use, soil, water biodiversity and the landscape and the intensive agriculture has disrupted ecological balance. Green revolution in India was ushered with the increased use of pesticide and increased input of agricultural fertilizers and using better farm techniques in spite of increase in food production, many of agriculture farmers of India are not aware of the environmental hazards occurred due to the usage of pesticides. The farmers of India are using one-third of pesticides that are consumed in third world countries. The widespread use and disposal of agriculture pesticides by farmers, large plantations and the general public causes environmental contamination. In addition, the economic loss incurred as a result of environmental pesticide pollution is enormous. Many of the pesticides used are highly toxic resulting in tens of thousands of users being injured or dying every year. Government of India based on the recommendations of the Genetic Engineering Approval Committee (GEAC), introduced Bacillus thuringensis (Bt) cotton in March, 2002. According to government authorities, Bt-cotton offers a promising solution to the serious problems viz. environmental damage, human health hazards and poor yields of the cotton farmers. Keeping in view of the above, the present study has been designed to evaluate the environmental benefits, pesticides usage pattern in Bt-cotton farming, effect of pesticide usage on human health and socio-economic benefits of Bt-cotton farming. The present study was conducted during the year 2009-10 in 3 mandals (sub district unit) viz., Amaravathi, Tadikonda and Prathipadu (selected purposively based on the cotton growing area, out of 56 mandals), of Guntur district, Andhra Pradesh state, India. The selection of respondents was done using three stage selection criteria. The primary data was collected aided with pre-tested questionnaire coupled with planned interview schedule. 200 respondents (Bt-cotton farmers) were selected based on both purposive and simple random sampling methods and the secondary data such as current literature, conference proceedings, government and institutional reports, market research etc., were analysed for the comparative studies. The research was designed using both ex-post-facto and exploratory design. The quantification of qualitative data was done in accordance with the standards laid down and tabulated to draw meaningful inferences. The zero order co-relation statistical technique was applied to find out association among different variables. The multiple regression analysis technique was adopted to ascertain the variation; the other statistical techniques applied includes frequency, percentage, mean, standard deviation, correlation and multiple linear regression were used in the study. The results showed that the introduction of Bt-cotton had reduced the number of sprays to 4.36 from 9.83, attributed to the environmental benefits, the frequency of illness of farmers (ill health) were considerably reduced and recorded 44.17 percent more yield, 64.70 percent more gross returns and 302 percent more net returns. The present results are confirming the positive reports (secondary data) of several government agencies favoring the Bt-cotton adoption.