ABSTRACT

There are several reasons for low crop yield in agriculture. It may be due to erratic rain fall, climatic conditions, and various other natural and manmade reasons. Therefore in order to ensure food security and sustainable agricultural system, India needs to invest in key inputs such as seeds fertilisers, irrigation, pesticides etc. Among these inputs, pesticides are very important component for crop production, that acts as a protective umbrella for other inputs thereby helps in enhancing output in agriculture. With the agriculture being carried out on the commercial proposition across the world as shown in the records, application of fertilizers and chemical pesticides have increased rapidly. Modern agricultural practices with irrational use of chemical input without following proper guidelines, use of substandard pesticides and lack of awareness about pesticides have become sensitive issues in the globe as well as in India. Therefore, this issue needs an in-depth investigation at this juncture to understand the nature of pesticide use and rationalize if it is possible.

In recent past, the impact of pesticide use on crop yield, income and health of the farmers has become a national and international issue of discussion. Many studies have been carried out in the past by researchers in order to assess the negative externalities. Most of the studies had focused on externalities such as soil contamination, water contamination and environmental pollution etc. But studies relating to human health impact of pesticide use are found to be scanty in India especially in southern Karnataka. Even the problems associated with unscientific and excessive use of pesticides on human health have not been addressed by the policy makers. Hence, the major victims are small and marginal farmers who are most often exposed to pesticides residues owing to occupational factors. However, though there is a policy shift in favour of organic farming in recent years, the study is proposed to examine the magnitude and impact of pesticide use on the income, yield and negative externalities associated with it. Thus present study has laid down the objectives to analyse growth pattern of pesticide use, its economic impact, externalities and determinants of pesticide use in the study area.

The present study procures required data from both secondary and primary sources. Using secondary data, the study tries to analyze the growth of pesticide use in agriculture in Southern and in Northern Regions during 1990-2014. This is a comparative analysis of the two region again on the two time frames i.e., Period one (1990 to 1999) and period two (2000 to 2014). The findings of the study suggest that, in both the regions namely northern region and southern regions during period one, pesticide consumption recorded drastic declining trend compared to period two. This could be primarily owing to the slowdown in the spiraling effects of green revolution.
This indicates that, pesticide consumption is gradually increasing in agriculture especially during period two of the present study which is a serious cause of concern.

Primary data has been collected by using the tested schedule from 300 farmers of Periapattana taluk, Mysore taluk, and T.Narasipura taluk of Mysore district. The focus was on examining the economic impact of pesticide use in three crops such as, paddy, tobacco and cabbage. The study has used statistical tools such as cost-benefit ratio, multiple linear regression and frontier production function. From the results, it was observed from the study that pesticides though constitute small portion of total cost of cultivation, it is a very significant cost component in cultivation. The pesticide use was at its maximum level for all the three selected crops along with over application fertiliser and seeds. It was found that excess use of such inputs do not contribute to the crop output beyond a level. This outcome provides enough evidences to support the law of variable proportions. It was also found that lack of awareness on using the pesticides, use of spurious and substandard pesticides, unscientific handling practices, and negligence to adopt integrated pest management practices (IPM) have led to several health problems among the sample farmers. In addition the use of Red and yellow category pesticides, not wearing suitable protective gadgets, mixing of pesticides with bare hands, not following proper time and direction of pesticide application, lack of education, smoking etc. are also the other factors contributing to the worsening health status of the sample farmers.

In the study area some of the factors that determined pesticide use by the sample farmers are Level of education attained by the farmer, family labour and cost of pesticide appear to be the significant factors governing the quantity of pesticide applied by each farmer during the cultivation. The results indicate that farmers with higher level of education tend to apply lower quantity of pesticides and vice versa. Pesticide price and family labour significantly but positively influenced the pesticide use. Hence, this tendency hinders the growth trajectory of agricultural sector leading to backwardness. The farmers were in general efficient in production but had a tendency to overuse pesticides and the mode of application was not proper which is seriously causing health problems. Therefore the need of the hour is to create awareness regarding handling practices of pesticides use among agricultural farmers thereby reducing the externalities of pesticides which needs to be addressed in the light of sustainable agricultural development and it is also suggested to adopt alternative methods of cultivation namely organic farming and natural farming which have been proved more productive and least hazardous on both human and environment.