



## Study on Quantitative Understanding and Knowledge of Farmers in Trichy District

A.S. Hovan George<sup>1</sup>, A. Shahul Hameed<sup>2</sup>, A. Shaji George<sup>3</sup>, T. Baskar<sup>4</sup>

<sup>1</sup>Masters IT Solutions, Chennai, Tamil Nadu, India.

<sup>2</sup>General Manager, Department of Telecommunication, Consolidated Techniques Co. Ltd, Riyadh, Kingdom of Saudi Arabia.

<sup>3</sup>Director, Masters IT Solutions, Chennai, Tamil Nadu, India.

<sup>4</sup>Professor, Department of Physics, Shree Sathyam College of Engineering and Technology, Sankari Taluk, Tamil Nadu, India.

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**Abstract** – Pesticides have become a significant component of world agriculture since independence and over time. To preserve farmers' health and the environment, as well as to improve the long-term viability of chemical pest control, a quantitative understanding of farmers' pesticide use behaviour is essential. However, research on farmers' levels of knowledge and awareness, as well as pesticide use practises, is frequently limited. Pesticides have made a significant contribution to pest management and increased crop yields, but there has been growing concern regarding pesticide usage at random throughout the years. Trichy is a prospective agricultural production location that also functions as a vegetable pocket for the surrounding area. Tomatoes, ladyfinger, cucumber, chilli, cabbage, brinjal, and other vegetables are grown by small-scale farmers in this area, who employ a variety of pesticides to prevent pests and diseases that target these crops. On addition to chemical pesticides, the majority of farmers employ manure in their crops. Farmers in the Trichy region were interviewed about the types and sources of pesticides they use in their vegetables, the frequency with which they apply them, if they wear protective clothes, and whether they have ever been poisoned by pesticides. Excessive pesticide use and handling procedures may expose farmers to high levels of pesticides and

have a negative impact on their health. The majority of respondents expressed dissatisfaction with health issues such as skin and breathing. A study was done to look at the effects of farmers' knowledge and awareness in Trichy district.

**Keywords:** Vegetables, Crop, Farmers, malaria, dengue, Zika, Chikungunya, Pesticides, Trichy.

### 1. INTRODUCTION

Crop protection products, notably pesticide use, are one of the causes contributing to the massive increase in agricultural production. Pesticides are important components of modern agricultural production because of their high capability and reliability in protecting crops from pests and ensuring high crop yields. Pesticides are also used to safeguard human health from vector-borne diseases such as malaria, dengue fever, Zika fever, and Chikungunya fever, as well as to protect home sites, storage areas, and lawns from weeds, pathogens, and insect and mammal pests. Pesticides are the most widely used way of pest management all over the world. Trichy is considered to be the most developed, with a vegetable production system and an effective irrigation system.



In agriculture, a wide range of pesticides are utilised for pest management and vector control, however many rural communities in the Trichy region are not fully informed about the chemicals' risks. As a result, farmers apply pesticides without fully comprehending the consequences for human health and the environment [1]. In the field, during pesticide application, weeding, pruning, harvesting, re-entry to collect firewood or vegetables, or in their houses, to eliminate mosquitoes, cockroaches, fleas, and flies, humans come into contact with pesticides. Storing pesticides can result in acute and/or chronic exposures, both of which can be harmful to one's health [2].

## 2.OBJECTIVE OF WORK

The study's overall goal was to examine the situation of pesticide use in the area's vegetables and its impact on socioeconomic status. The following are the specific objectives:

- To analyse knowledge about pesticides used in that area.
- To document different types of pesticides used in the study areas.
- To increase awareness and provide solutions to agriculture-related environmental challenges in order to ensure a safe (lower use of environmentally hazardous chemicals, pesticides, and other chemicals) and long-term agricultural development.
- To figure out how much pesticide was utilised in that area.
- To collect data towards the development of a tool to collect information on the cost of pesticide use.

This research presents information on small-scale vegetable producers' pesticide methods and use in the Trichy region.

## 3.METHODOLOGY

### 3.1 Place of Study

Kulithalai, Musiri, Jeeyapuram, Perugamani, and other areas of Trichy are included. In many regions of the region, vegetable production has become highly popular. Trichy, in particular, is a famous spot for growing a variety of vegetable crops, which are then sold at reasonable costs in adjacent towns. Many individuals want to eat the crops (particularly veggies) cultivated in the Trichy region. Because pesticide residue analysis is tough to come by in Trichy, it's impossible to estimate the amount of pesticide residue existing in the plants, soil, and water around the treated region.

### 3.2 Literature Review

Various literatures pertaining to the subject regions, as well as other relevant papers, were examined. The use of pesticides, as well as their many forms and health impacts, were investigated. Trichy compared and contrasted many significant research publications and periodicals on pesticides and agriculture, covering the study area.

### 3.3 Preliminary Field Visit

A preliminary field visit was made to examine the overall environmental scenario. The overall backdrop of the study area, as well as distinct personalities in the study area, were collected during the preliminary field visit. The study was carried out in collaboration with local residents and government officials.

### 3.4 Places and Questionnaire survey

It included interviews with farmers and agricultural workers in the Trichy area, where vegetables were mostly grown with the use of farm inputs, mainly pesticides. Small-scale farmers from Kulithalai, Musiri, Jeeyapuram, and Perugamani were chosen as the sample farmers from whom information was collected. The locations were chosen based on the types of vegetables grown, pesticide use, and accessibility. Because the study was limited to the management system, no sophisticated instruments were used, and no laboratory analysis was performed.



Only a questionnaire survey, informal chats, open-ended questions, and a field tour were completed. The questionnaire assessed these farm workers' knowledge, attitudes, and practises regarding pesticide safety, pesticide handling and spraying practises, and the identification of the most prominent health-related issues in the area [3, 5].

## 4.RESULT AND DISCUSSION

### 4.1 Pesticides Use in the place

Pesticides are generally used on standing crops in the field at the study site. In addition to chemical pesticides, a large number of farmers utilise manure in their fields. Similarly, 46% of farmers use pesticides on a daily basis, whereas only 17% use them sporadically[8,9]. Only 37% of farmers do not use pesticides in their farms. Pesticides are mostly used on the following vegetables in the research region to manage numerous insect pests and diseases: potato, tomato, cauliflower, brinjal, chilli, lady finger, and cucumber. In terms of pesticide use, the most important vegetable crops in the area are chilli cauliflower, brinjal tomato, and cucumber.

### 4.2 Availability of Pesticides

Local agro vet shopkeepers, agro-vet store, local agro-shop, and farmers' cooperatives are where the farmers buy pesticides. As a result, pesticides are readily available throughout the area.

### 4.3 Farmer Perception on Pesticides

The use of pesticides and artificial fertilisers in crops has enhanced agricultural productivity, according to almost all of the respondents. They argue that without pesticides, the crops in this area would not grow well, and that insects and mosquitoes in the area have destroyed 50% of the crops. They were forced to employ insecticides as a result of this. Similarly, they all stated that as vegetable production has increased, so has the number of pesticides used and the amount of money spent on pesticides [10].

### 4.4 Types of pesticides used by farmers

Insecticides (59 percent), fungicides (26 percent), and herbicides were the most commonly utilised pesticide formulation types by farmers in the area, according to the survey (15 percent ).

### 4.5 Use of Protective Measures and Practices

Adoption of safety measures before, during, and after pesticide application is a critical factor in avoiding pesticide-related harm. Gloves, masks, long sleeved cloth, glass, long boots, and other safety measures could be used [4]. According to the findings, 41% of all farmers interviewed utilised none of the safety measures, 43% used mouth covers such as masks and cloths over the mouth, 16% used gloves, and only a few used both the mouth cover and gloves in combination [7].

This may expose them to pesticides, and their health may be jeopardised due to disease caused by inhalation, ingestion, and skin absorption. This could put workers' health at risk [6]. On the other hand, no precautions are taken during the manufacturing of pesticides in the pump. Similarly, the majority of respondents wash their hands with water and soap. People are aware of the importance of hand washing, yet the technique for doing so is inadequate. 89 percent of them wash their hands with soap and water[11,12]. In addition, only 11% of them wash their hands with plain water. This may remove pesticide remnants from the hands, but it will not entirely remove them.

### 4.6 Pesticides Appliances

Pesticides are applied with the help of simple hand tools like sprayers and dusters. However, hand compression (typically 10-litre capacity) and knapsack sprayers (13-litre capacity) are widely utilised in this area. Locally produced brooms are utilised in the absence of a sprayer. In the absence of a duster, pesticide dust is distributed by hand over the plants and soil surface[13,14]. The production of insecticides is done with ground water.



## 5. CONCLUSIONS

This study includes useful information on pesticides used, pesticide exposures and perceptions, trends, and health symptoms experienced by small-scale vegetable farmers. Pesticides are also widely used because of their inexpensive cost and small percentage of total crop production costs. Farmers have little expertise about pesticides, and pesticide restrictions are not well implemented. To improve this scenario, farmers' awareness of pesticides, their alternatives, and IPM must be improved, as well as the government and several developmental agencies implementing the regulations. There are substantial indicators that the use of pesticides in the Trichy region is linked to human health problems. As a result, they are on the verge of long-term or short-term risks. In this setting, there is a need for increased pesticide awareness among farmers and the general public.

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