Pesticide Consumption on Agriculture in Western Maharashtra: A Geographical Perspective

Chandrakant Kale

R.B.Narayanrao Borawake College Shrirampur- Dist Ahmdnagar

Abstract: The role of pesticide is most significant among various agrochemicals in the sense that these act as protective umbrella for other inputs. After using other inputs such as H.Y.V. seeds, irrigation fertilizers machinery, etc. the crop is destroyed by pest and diseases; the entire investment is lost. The farmers in study region are aware of the importance of this input in agriculture. But farmers have inadequate knowledge for using intimae and quantity too. The use of pesticides for Jawar, Wheat, Rice, Soyabean, Sugarcane, Grapevine cultivation, Pesticide may be classified as insecticides which control insects, fungicides which kill pathogens causing diseases to the plant rodent cider to kill rodent’s weedicides or herbicides to control unwanted plants and nematicides to control nematodes. The Western Maharashtra region is located in Maharashtra State. It covers an area of 57235 Sq.Km With comprise five district i.e Pune, Satara, Sangli, Kolhapur and Solapur and population of about 2349049 as per 2011 census. The major river system is Bhima and Krishna. In this present analysis, both primary as well as secondary data have been used. The high consumption (above 30gm/hectare) Tausgaon, Kagal, Hathanagal, Wai, Phutlkan, Panhula, Karveer, Bhudargaon, Bawda, Shirol, Walwa, Palus, Mahabaleshwar tehsils of the region. The Research paper is examined Pesticide technology in the region.

Keywords: Consumption, Insects, Fungicides, herbicides

1. Introduction

The success of planning in India rests critically on increasing production in the agricultural sector. The scope for further extension in cultivable land having nearly been exhausted any further increase in agricultural production has to emanate from improving the productivity of agricultural sector. The Extension of area under the high yielding varieties of crops has empty demonstrated that their higher yield potential can be realized only if adequate plant protection measures are adopted

The pesticides are generally used by farmers for many improved varieties ranging from food grains to many commercial and horticultural crops. They cannot be afforded by small farmers and especially farmers in dry farming areas where income level of farmers is insignificant. However, there is regional disparity in the distribution of these pesticides. In view of this, the study of spatial variations in the consumption of pesticide has been attempted. Besides this an efforts have also been made here to examine the use of pesticides for grapevine cultivation. It is because grape vine cultivation. It is because grapevine cultivation absorbs greater quantity of pesticides.

It includes, apart from legislative controls, the use of chemical pesticides in the post world war period, quick and easy method of plant protection become available to the farmers. Chemical measures gained importance thereafter as the principal method of pest control in agriculture. The term pesticide encompasses all chemical material used for controlling of pests. Based on their principal uses, pesticide may be classified as insecticides which control insects, fungicides which kill pathogens causing diseases to the plant rodent cider to kill rodent’s weedicides or herbicides to control unwanted plants and nematicides to control, nematodes.

2. Problem

The present Research paper is examined Pesticide Consumption in western Maharashtra

3. Data Base & Methodology

In this present analysis, both primary as well as secondary data have been used. The primary data have been generated from sample villages. The selection of sample village is based on random sampling method and accordingly to zone in which consumption of pesticides are high. Further the farm level study is attempted for that randomly and purposefully selected farm to collect primary data through schedule method. The secondary data obtained from records maintained by Zilla Parishad and Agriculture Department of Solapur, Sangli, Kolhapur, Pune, Satara districts. However, some limitations have been set for data availability which has restricted the scope of study data pertaining to the consumption of pesticide per hectare for earlier period i.e. in 2015 was available. Besides it is difficult to assess crop wise consumption of pesticides because of its scattered nature. The Pesticide data were abstracted for the present analysis from the published records of Zilla Parishad and Agricultural department of Solapur, Sangli, Kolhapur, Pune, Satara districts. The data thus obtained were analyzed with the help of following

Formula

\[ Ipe = \frac{TP}{DP} \times 100 \]

Where,

\[ Ipe = \text{Index of pesticide consumption} \]
\[ TP = \text{Pesticide consumption in the tehsil (gm/hectare)} \]
In case of sugarcane, Pyrilla, topborer, stemborer are commonly observed which harm standing crop resulting into appreciable decrease in yields per unit area. Carboril, indosulphon dymethoet are the pesticides used by the farmers. In grape vine cultivation there are many diseases like daunmildew anthracnose, mildew and insects like herpes, mile’s millbugs are taking heavy toll during leafy and flowering season. In fact, several types of pesticides are used in grapevine in the central eastern and eastern dry zones where it is located. There are also heavy doses used to control various diseases. Besides Boro mixture of lime and copper has been traditionally used as effective measures to this cash crop. 3) it is estimated that more than 80 per cent pesticides are adopted for this crop as it is delicate vine and requires the use of pesticide technology in time. Any delay in spraying pesticides may result into heavy damage of vines leading to economic loss of farmers. Generally farmers are not using pesticide technology largely to food grains. However, in view of extensive use of seed technology in the form of improved seeds, the farmers adopt pesticide technology as these varieties are susceptible easily to diseases.

4. Regional Pattern of Pesticide Consumption:

It is observed that there are some regional variations in the consumption of pesticide. The tehsils have been grouped under three categories –

1) Region of high consumption (above 30gm/hectare)

The covers the area of 13 tehsils located in central and north eastern parts of the Krishna and Panchganga river of the tehsils of Tasgaon,Kagal, Hatkanagale, Wai, Phaltan, Panhala, Karveer, Bhudargad, Bawda, Shirlo, Waiwa, Palus and Mahabaleshwar tehsils of western Maharashtra. The zone has been characterized by assured supply of water dominance of sugarcane, Grapevine and Soyabean Cultivation, location of Sugar factories and after all close network of village level co-operatives. Except Mahabaleshwar tehil Strawberry Fruits were cultivated. As a result this zone possesses high level of pesticide consumption.

2) Region of moderate consumption (between 15 to 30 gms/hectare)

It includes 19 tehsils of eastern, northern parts of the region, Jaoli, Daund, Radhanagri, North, Solapur, Indapur, Gadhislag, Karmala, Miraj, Baramati, Sangola, Malshiras, Pandharpur, Velhe, Shahawadi, Aja, Kadegaon Shirala, Karad and Khandala tehsils of western Maharashtra. The tehsils located in eastern and northern parts are endowed with the developments in irrigation mainly from wells lift and canal irrigation and presence of this region dominance of Grapevine, Pomegranate and Kardai, pulses are cultivation has attributed to the moderate level of consumption and these tehsils were developed to domestic oil mills due to the oil seeds production.

3) Region of Low Consumption (below 15 gm/hectare)

It includes 26 tehsils namely Havali, South Solapur, Akalkot, Madha, Ambegaon, Satara, (tehsil), Mohol, Koregaon, Mangalwedha, Man, Khanapur, Mulshi, Maval, Khed, Shirur, Kavthemahankal, Chandgad, Bhor, Khata, Pandharpur, Velhe, Shahawadi, Aja, Kadegaon Shirala, Karad and Khandala tehsils of western Maharashtra. The tehsils located in eastern and northern parts are endowed with the developments in irrigation mainly from wells lift and canal irrigation and presence of this region dominance of Grapevine, Pomegranate and Kardai, pulses are cultivation has attributed to the moderate level of consumption and these tehsils were developed to domestic oil mills due to the oil seeds production.
Junner, Barshi, Purandhar, Atpadi, Patan, Jat and Pune city tehsils of western Maharashtra. In that tehsils frequent drought conditions meager water supply dependence on rainfall has led to the poor economic status of farmer which has constrained the consumption of pesticide.

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Crops</th>
<th>Insect</th>
<th>Diseases</th>
<th>Pesticides</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Jawar</td>
<td>Steam borer, earhead, weebing cutter pillar</td>
<td>Grain, Smut, downy, mildew</td>
<td>Indosulphon Maletheaon</td>
</tr>
<tr>
<td>2</td>
<td>Wheat</td>
<td>Cutwrm, blue beetle</td>
<td>Yellow rust</td>
<td>Zyaben 75, Mencozeb</td>
</tr>
<tr>
<td>3</td>
<td>Rice</td>
<td>Gundhlybugs, leaf hoops, caseworm hispa</td>
<td>Blast, steam rot, helminthos porium</td>
<td>Farrest, Syperme Threen, Monocrutoyos</td>
</tr>
<tr>
<td>4</td>
<td>Soyabean</td>
<td>White fly, Jassid, semi 100 per, Girdle Beetle</td>
<td>Soyabean mosaic Bacterial pustules root-root</td>
<td>Forret, Indosulphon, Queen holfos</td>
</tr>
<tr>
<td>5</td>
<td>Sugarcane</td>
<td>Pyrilla, topbore, stem borers</td>
<td>Red rot, smut</td>
<td>Carboril, Indosulphon, Dynethoet</td>
</tr>
<tr>
<td>6</td>
<td>Grape Vine</td>
<td>Therpse mites millulus</td>
<td>Davinimildue, Anthracnose mildew</td>
<td>Malthuon Bord, Bina Pakril</td>
</tr>
</tbody>
</table>

Source – Zilla Parishad and Agricultural Department of Western Maharashtra Districts 2015

5. Conclusions

The role of pesticide is most significant among various agrochemicals in the sense that these act as protective umbrella for other inputs. After using other inputs such as H.Y.V. seeds, irrigation, fertilizers, machinery, etc. the crop is destroyed by pest and diseases; the entire investment is lost. (4) The farmers in Solapur, Sangli, Kolhapur, Pune, Satara districts are aware of the importance of this input in agriculture. But farmers have inadequate knowledge for using intima and quantity too. The pesticides are generally used by farmers for many improved varieties ranging from food grains to many commercial and horticultural crops.

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Jawar crop is concerned. Insect like stem border, earthed webbing and caterpillar along with grain, smut, downy mildew diseases are affecting this crop adversely every year. The farmers use indosulphone maletheaon to control them. Sugarcane, Pyrilla, topbore, stembore is commonly observed which harm standing crop resulting into appreciable decrease in yields per unit area. Carboril, indosulpon dymethoet are the pesticides used by the farmers. Grape vine cultivation there are many diseases like davni mildew anthraces nose, mildew and insects like therpse, mille’s millbugs are taking heavy tall during leafy and flowering season. In fact, several types of pesticides are
used in grapevine in the central eastern and eastern dry zones where it is located. There are also heavy doses used to control various diseases.

References