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HEALTH HAZARDS AND KNOWLEDGE ASSESMENT ISSUES RELATED TO PESTICIDES USE

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Abstract

Pesticide application getting popularity among the farming community of district Charsadda after the cultivation of hybrid crop in the area .However, the farmer of the area and pesticide dealer have very less knowledge about pesticide. Therefore, for the assessment of pesticide dealer knowledge the present survey was designed. During the survey total 27 pesticide dealer of district Charsadda were examined through comprehensive questionnaire. The results of the survey demonstrated that the pesticide dealers have very less knowledge about pesticides. Further, it has been noticed that most of the pesticide selling for sugarcane and wheat crop while, a very a smaller number of pesticide sell for fruits in the area. In addition, the dealers have no proper disposal procedure for expiry pesticide and it have been found that same dealers selling expired pesticide in the market. The dealers also reported that due to the poverty of the farmers their business is suffering because they sell the pesticide majorly on loan. Thus, it has been concluded from the study that the district agriculture inspectors should monitor the pesticide shops on regular intervals to avoid asny mishandling and dealing regarding pesticides at district Charsadda.

Keywords:*Pesticide safety, environmental pollution, soil fauna, pesticide regulation, pesticide market.*

INTRODUCTION

Pesticide buyers often rely on pesticide dealers for product recommendations. Studies have shown that crop producers regard local agricultural pesticide dealers as their principal source of pesticide management information (Alston and Reding 1998). Dealers are readily accessible to pesticide users and are perceived as being familiar with their products, their customers, and local production practices. This situation means that pesticide dealers have a continuing need to update their knowledge of pesticide use, safety, and regulations. This need provides an important opportunity for Extension pesticide safety educators to impact dealer information levels and, indirectly, the information imparted to purchasers. Kalnay et al. (2002) used results from a survey conducted by Czapar et al. (1998) to develop pilot training programs in pest management and proper pesticide use for retail garden center employees who sell general use pesticides to homeowners.

Pesticides have become an integral part of modern agriculture, enabling farmers to increase crop yields and reduce losses due to pests and diseases. However, the widespread use of pesticides has raised concerns about their impact on human health. Exposure to pesticides has been linked to a range of health problems, including cancer, neurological disorders, reproductive issues, and respiratory diseases. The World Health Organization (WHO) estimates that pesticides are responsible for around 200,000 deaths worldwide each year, primarily in developing countries where regulatory controls may be weaker. Research has consistently shown that exposure to pesticides is linked to various health problems. A 2020 meta-analysis published in Environmental Health Perspectives found an association between organophosphate pesticide exposure and increased risk of neurodevelopmental disorders in children (Shelton et al., 2020). Exposure to glyphosate, a widely used herbicide, has been linked to an increased risk of non-Hodgkin lymphoma, according to a 2019 study in the Journal of the National Cancer Institute (Zhang et al., 2019). Pesticide exposure during pregnancy has been associated with a higher risk of birth defects and reproductive issues, as reported in a 2020 review in Toxicology (Winchester et al., 2020). Furthermore, studies have found connections between pesticide exposure and increased risks of respiratory diseases like asthma and COPD (Li et al., 2018), neurodegenerative diseases such as Parkinson's and Alzheimer's (Costa et al., 2019), cardiovascular disease (Kim et al., 2020), reproductive problems including infertility and miscarriage (Giordano et al.,

2018), thyroid disease (Moon et al., 2019), kidney disease (Chen et al., 2020), and mental health issues like depression and anxiety (Hernandez et al., 2019).

MATERIAL AND METHODS

The survey was conducted at district Charsadda, KP, Pakistan to assess the pesticide dealer's knowledge about pesticide. The dealers of pesticide shops were assessed through a comprehensive questionnaire. The questionnaire began by gathering basic information, including the location of the shop, dealer name, shop name, and the duration of operation. It then inquired about the primary customer base for pesticide products and the types of pesticides sold, including insecticides, herbicides, fungicides, rodenticides, and others.

The questionnaire further explored the main crops or areas of application for the pesticides sold and whether guidance or assistance was provided to customers regarding pesticide selection and application. Additionally, it asked how dealers stayed informed about new pesticide products and if they had any knowledge or training in pesticide safety and handling.

The questionnaire also investigated the factors considered when deciding which pesticide products to stock, including efficacy, cost, safety, environmental impact, customer demand, and others. It asked about preferred brands or manufacturers of pesticides and if educational materials or resources were provided to customers regarding pesticide usage and safety.

Furthermore, the questionnaire explored changes in customer preferences or demands for specific types of pesticides, how expired or unusable pesticide products were handled and disposed of, and the measures taken to ensure safe storage of pesticides. It also inquired about challenges related to pesticide regulations or licensing, how potential risks and precautions associated with pesticide usage were communicated to customers, and the most significant challenges or issues facing the pesticide industry today.

The collected data were put in excel sheet and graph were prepared each parameter using Ms.Excell-2007 version.

RESULTS AND DISCUSSION

Pesticide business duration

During the survey a total 27 number of pesticide dealers were examined regarding the pesticide business and their proper usage at district Charsadda. It has been computed that only 6 dealers were doing pesticide business for more than 10 years at district Charsadda while, 10 dealers were involved in this business for more than 5 years. Nine dealers have less than 3 years of business while, only 2 dealers work in this

field for less than 1 year. From this parameters it has been observed that most of the dealers are new in this business so the concerned department should train them regarding the handling of pesticides.

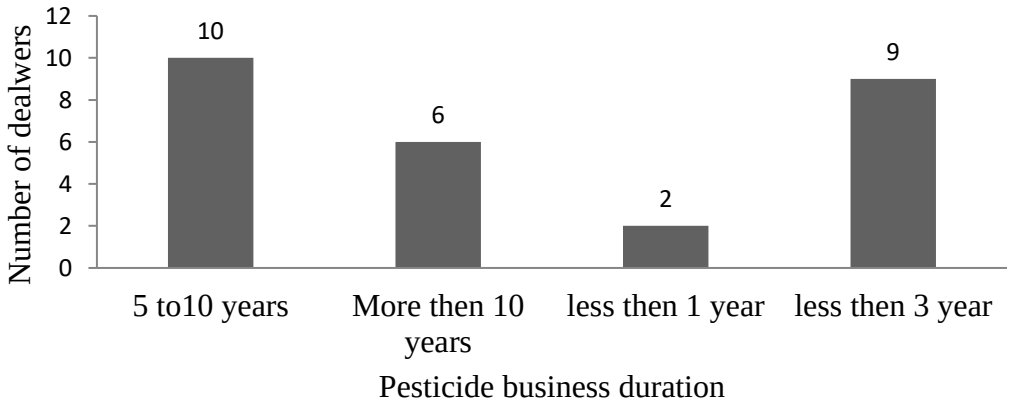

Fig. 1 The duration of the pesticides business by responded in district Charsadda.

Disposal methods of the expired pesticides

During the examination regarding the disposal of expired chemical at district Charsadda, It has been noted that out of total 27 dealers the 24 dealers return the expired pesticides to the company, however, 3% dealers reported that they sell these expired product for using in orchard only. In the study it was strangely found that 1% of the dealer sells these products illegally.

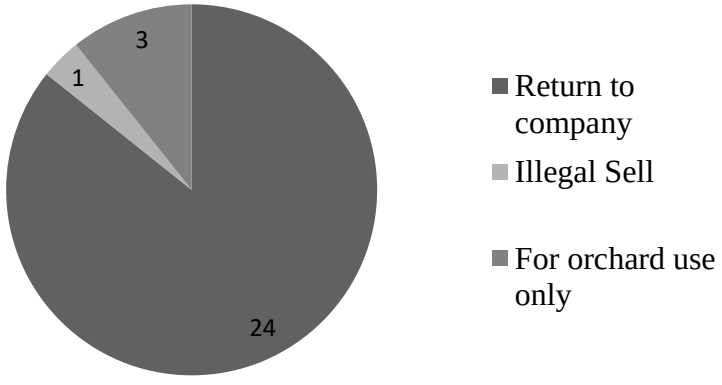

Fig. 2 The disposal method of pesticides dealers for expired pesticides in district Charsadda.

3. Types of customer visiting to pesticide shop

Among the total 27 number of pesticide dealers when examined regarding the types of customer visiting to pesticide shop at district Charsadda. It has been noted that 25 farmer come to the pesticide shop while, only 2 visited to buy pesticides for household use

.

Fig.3 Types of customer vesting to pesticide shop in district Charsadda

4. The types of pesticide that sell for specific crop

In 27 number of pesticide dealers it has been noted that 30% pesticide sell for wheat crop, 30% for sugarcane and 10 % pesticide sell for vegetable. Further, 10% pesticide sell for tobacco, 7% for maze and 3% pesticide sell for fruits.

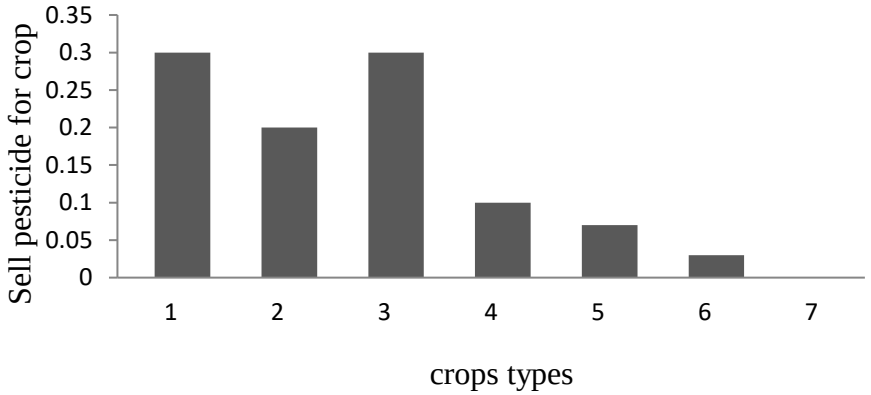

Fig.4 Types of pesticide that sell for specific crop in district Charsadda.

5. Pesticide dealer training source

It has been observed that among 27 pesticide dealers that were examined regarding the pesticide handling training it has been noted that 9 pesticide dealer taken training from govt institute, 17 pesticide dealer taken training from

local agriculture office and only 1 pesticide dealer got no training from any organization.

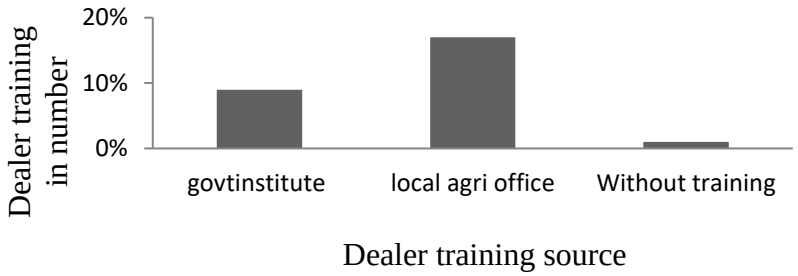

Fig.5 Types of pesticide dealer training source in district charsadda

6. Farmer preferences or demand for specific types of pesticide

Among 27 number of pesticide dealers it has been noted that 22 pesticide dealers say yes about farmer preference or specific types of pesticide and only 5 pesticide dealer say no about farmer preference or specific of pesticide.

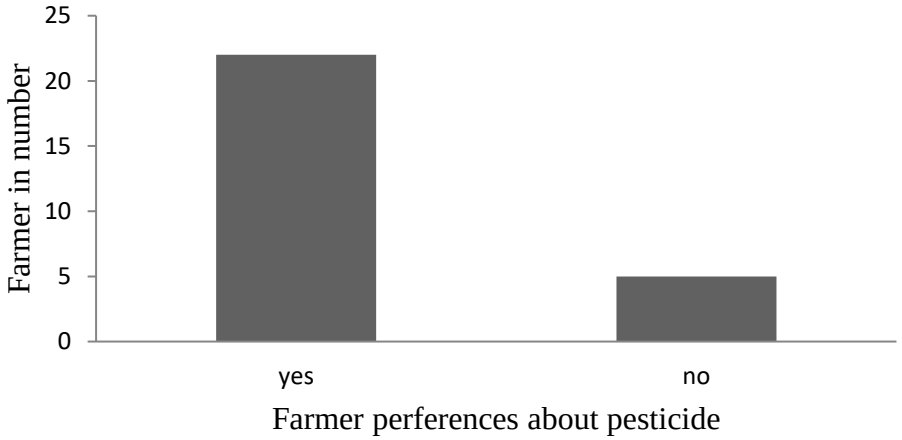

Fig.6 Types of farmer preferences or demand specific types of pesticide in district Charsadda

7. The types of dealer that stored pesticides in shops

Upon examine the dealers regarding the types storing of pesticide in their shops. It has been noted that 24 pesticide dealer say that they protected the chemical from sun. One pesticide dealer say that they proper ventilation every day in their shop and only 2 pesticide dealer say that they have proper chamber and divided these pesticides into groups

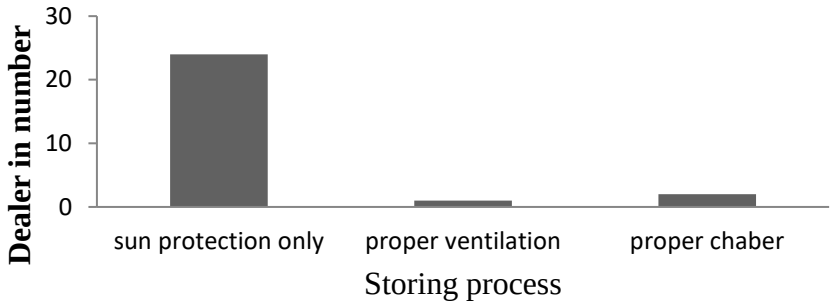

Fig.7 Types of pesticide storing procedure at district Charsadda

8. Dealers licensed issued

When the dealers were asked about licensed preparation issues during the survey then it has been observed that among 27 dealers only 6 reported official issues in making license while 21 reported no problem

.

Fig.8 Dealers with issued license for pesticides at district Charsadda

9. The types of dealers that provided precaution to customer about pesticides

During the survey a total 27 number of pesticide dealers were examined regarding the types of dealer that suggest precautionary measures to the customer about pesticide at district Charsadda. It has been noted that 22 pesticide dealers say verbal precaution to customer about pesticide and 5 pesticide dealer that give written or brochures to the customer about pesticide use.

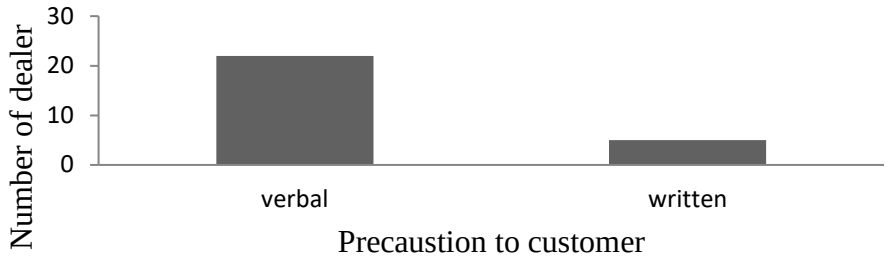

Fig.9 Dealer that provided precautionary measures to the customers

10. Basic issues in pesticide business in Charsadda

Pesticide dealers in Pakistan face numerous challenges, including regulatory issues due to lack of harmonization with international food standards, environmental and health concerns from excessive pesticide use, and inadequate governmental control over pesticide manufacturing and usage. Additionally, dealers must navigate market pressures from multinational companies and fluctuations in demand. To overcome these challenges, capacity building and training programs are necessary to focus on regulatory compliance, safe handling practices, and environmental sustainability, ultimately contributing to a more responsible and sustainable pesticide industry in Pakistan. In addition, this was the most important question of the survey regarding the basic problem in pesticide business. Among the total 27 number of pesticide dealers it has been noted that 21 pesticide dealer reported that the farmers purchased the product by loan is the major issue while 6 pesticide dealer say that there is a price competition in market that disturb the business.

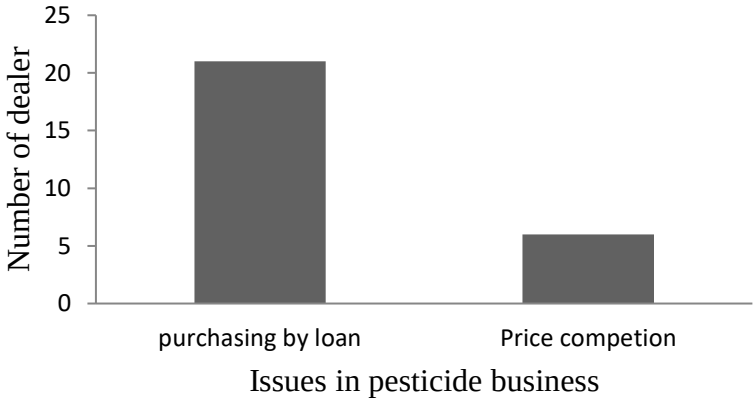

Fig. 10 Issues facing by pesticide dealers

ETHICAL STATEMENT

No ethical issues were raised during the course of study.

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AUTHORS` CONTRIBUTION

Concept: ZH, RK. Plan: ZH, RK. Data analysis: RK, RA. Writing, review and editing: RK, RA, WA, S. All authors have reviewed and consented to the final version of the manuscript for publication.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

References

Alston, D. G., & Reding, M. E. (1998). Factors influencing adoption and educational outreach of Integrated Pest Management. J. Extension [On-line] 36(3).

Czapar, G. F., Curry, M. P., & Lloyd, J. E. (1998). Survey of Integrated Pest Management training needs among retail store employees in Illinois. J. Soil and Water Cons.

Chen et al. (2020). Pesticide exposure and kidney disease: A systematic review and meta-analysis. Critical Reviews in Toxicology, 50(1), 1-13.

Costa et al. (2019). Pesticide exposure and neurodegenerative diseases: A systematic review. Neurotoxicology, 71, 104-115.

Giordano et al. (2018). Pesticide exposure and reproductive outcomes: A systematic review. Reproductive Toxicology, 81, 1-11.

Hernandez et al. (2019). Pesticide exposure and mental health: A systematic review. Occupational and Environmental Medicine, 76(10), 731-739.

Kim et al. (2020). Pesticide exposure and cardiovascular disease: A systematic review and meta-analysis. Epidemiology, 31(3), 431-441.

Kalnay, P.A., Czapar, G.F., & Cloyd, R. (2002). Pesticide safety training for sales personnel. In 2002 Conference Papers and Proceedings of the National Pesticide Stewardship Alliance Meeting, August 25-28, Seattle, WA.

Li et al. (2018). Pesticide exposure and respiratory diseases: A systematic review and meta-analysis. Environmental Research, 166, 342-353.

Moon et al. (2019). Pesticide exposure and thyroid disease: A systematic review and meta-analysis. Environmental Health Perspectives, 127(10), 105001.

Shelton et al. (2020). Organophosphate pesticide exposure and neurodevelopmental outcomes in children: A systematic review and meta-analysis. Environmental Health Perspectives, 128(1), 015001.

Winchester et al. (2020). Pesticide exposure during pregnancy and reproductive outcomes: A systematic review. Toxicology, 431, 152351.

Zhang et al. (2019). Glyphosate use and risk of non-Hodgkin lymphoma: A systematic review and meta-analysis. Journal of the National Cancer Institute, 111(11), 931-940.