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### Perceived impact of pesticides use on environment by cabbage farmers

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#### Abstract

Chemical control of pests is a common practice in agriculture. Plant pests are known for causing significant losses on crop production throughout the world (Jena *et al.*, 2018) [3]. More than a thousand pesticides of both chemical and biological nature are used around the world to minimize crop losses. The study was conducted to assess the perceived impact of pesticide use on the environment cabbage crop. Further, over 50 percent of cabbage growers were found in high category with respect to perceived impact on air (52.50%), beneficial insect (46.25%), quality and quantity of crop (52.00%). While, about one third of cabbage growers were found in medium category of perceived impact. Further, the farmers were observed in high category with respect to perceived impact on air (52.50%) and quality & quantity of the crop (50.00%). While, 48.75 percent of the farmers were in medium category with respect to impact in crop growth and flowering.

**Keywords:** Pesticide, environment impact, perception

#### Introduction

The role of pesticides in augmenting agricultural output are well perceived and these are considered as essential inputs in agricultural production. Insecticides, fungicides, and herbicides are commonly used for pest control in agriculture. However, insecticides form the highest share in total pesticide use in India. Farmers use pesticides as the first line of defense for the management of pests and frequently resort to indiscriminate and non-judicious use of pesticides, which leads to several problems such as resistant development in insects/pathogens, recovery of pests due to destruction of natural enemies, toxic hazards due to pesticide residues on the edible products and deficient pollination due to destruction of pollinators resulting in nonsetting of fruits and low yields (Kodandarama *et al.* 2013) [4].

According to Ramlogan (2004) [5], 99.00 percent of pesticide poisoning cases were reported from developing countries while their total global share in pesticide use was only 20 percent. Many studies have shown that persistent use of chemical pesticides resulted in ill human health, devastating impact on biodiversity and ecosystem imbalances, down-turning agricultural production, causing financial hardships to small and marginal farmers and weakening sustainability.

#### Materials and Methods

The study was taken up in selected villages of Belagavi district where highest pesticide is used in cabbage crop and 80 farmers were selected by simple random method data was collected by personal interview method.

#### Results and Discussion

The perceived impact of pesticides use on environment in cabbage crop. It was observed that over forty percent of the farmers were found low category with respect soil (70.00%), livestock (48.75%) and climate variation (45.00%), Further, over 50 percent of cabbage growers were found in high category with respect to perceived impact on air (52.50%), beneficial insect (46.25%), quality and quantity of crop (52.00%). While, about one third of cabbage growers were found in medium category of perceived impact. Further, the farmers were observed in high category with respect to perceived impact on air (52.50%) and quality & quantity of the crop (50.00%). While, 48.75 percent of the farmers were in medium category with respect to impact in crop growth and flowering studied, higher quantity pesticides were used. Farmers must have realised that no beneficial insects (which they can identify) were found in their crops. Hence, they perceived that the pesticides cause damage to beneficial insects also. Surprisingly, farmers had perceived low affect on livestock. The fact is livestock are affected in two ways one by air and other through feeding on the grass / vegetation around the crop. Further, every time farmers take up pesticide sprays, they see its affects on both quantity and quality of the crops. Quantity of the crop harvest is understood by its weight and quality through observation. Abubakar *et al.* (2015) [1] concluded that farmers perception of pesticides effects on the environment include, soil destruction (54.70%) harming beneficial insects 28.10 percent, decrease biodiversity 61.7 percent and contribute to air pollution 48.1 percent.

**Table 1:** Distribution of cabbage crop farmers based perceived impact of pesticides use on environment n<sub>1</sub>=80

Sl. No.	Dimensions	Category	f	%
1	Soil	Low (<4.78)	56	70.00
		Medium (4.78-5.37)	12	15.00
		High (5.37)	12	15.00
		Mean 5.08 SD 0.69		
2	Water	Low (<2.90)	29	36.25
		Medium (2.90-4.18)	27	33.75
		High (>4.18)	24	30.00
		Mean 3.54 SD 1.50		
3	Air	Low (<2.64)	25	31.25
		Medium (2.64-3.73)	13	16.25
		High (>3.73)	42	52.50
		Mean 3.19 SD 1.28		
4	livestock	Low (0.71)	39	48.75
		Medium (0.71-2.18)	29	36.25
		High (>2.18)	12	15.00
		Mean 1.45 SD 1.73		
5	Beneficial insects	Low (<4.24)	19	23.75
		Medium (4.24-5.45)	24	30.00
		High (>5.45)	37	46.25
		Mean 4.85 SD 1.43		
6	Quality and quantity	Low (<4.24)	13	16.25
		Medium (4.24-5.45)	27	33.75
		High (>5.45)	40	50.00
		Mean 4.85 SD 1.43		
7	Crop growth ,flowering and fruiting	Low (<3.04)	13	16.25
		Medium (3.04-4.93)	39	48.75
		High (>4.93)	28	35.00
		Mean 3.99 SD 2.22		
8	Climate variation	Low (<2.91)	36	45.00
		Medium (2.91-4.54)	22	27.50
		High (>4.54)	22	27.50
		Mean 3.73 SD 1.92		

Figures in the parenthesis represent percentage f-Frequency % -Percentage

## Conclusion

In conclusion, the study highlights the complex perceptions among cabbage growers regarding the impact of pesticide use on the environment, encompassing soil, livestock, climate variation, air quality, beneficial insects, and the quality and quantity of crops. A significant proportion of farmers recognize the adverse effects of pesticides on air quality and the detrimental impacts on beneficial insects and crop characteristics, indicating a heightened awareness of environmental issues. Despite this awareness, there is a notable disparity in the perceived impact on livestock, which suggests a gap in understanding or observation of indirect effects through air pollution and contaminated feed. The findings underscore the need for comprehensive education and outreach programs to enhance farmers' understanding of the full spectrum of pesticide impacts. This includes not only the immediate benefits for crop yield and quality but also the broader ecological consequences, such as soil degradation, biodiversity loss, and air pollution. By fostering a more holistic view of pesticide use and its environmental repercussions, it is possible to encourage more sustainable agricultural practices among cabbage growers, ultimately leading to a balanced approach that safeguards both crop production and environmental integrity.

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