



ISSN (E): 2277-7695
ISSN (P): 2349-8242
NAAS Rating: 5.23
TPI 2023; SP-12(11): 1940-1942
© 2023 TPI
www.thepharmajournal.com
Received: 01-09-2023
Accepted: 06-10-2023

Harpreet Kaur

Student, University Institute of
Agricultural Sciences,
Chandigarh University,
Gharuan, Punjab, India

Prince

Student, University Institute of
Agricultural Sciences,
Chandigarh University,
Gharuan, Punjab, India

Dr. Gurshaminder Singh

Assistant Professor, University
Institute of Agricultural
Sciences, Chandigarh University,
Gharuan, Punjab, India

Corresponding Author:

Dr. Gurshaminder Singh

Assistant Professor, University
Institute of Agricultural
Sciences, Chandigarh University,
Gharuan, Punjab, India

Plant health concepts: Examining and questioning the fundamentals of plant protection

Harpreet Kaur, Prince and Dr. Gurshaminder Singh

Abstract

The term "plant health" is frequently used, however it is not well defined. Human medicine, on the other hand, has a wealth of research on broad definitions of health and health standards. Plant health notions are examined, and a framework is constructed to situate these notions in distinct philosophical conflicts, drawing on ideas from these philosophical conversations. The following topics are specifically addressed: (i) how values differ between a naturalist and a norm activist approach to defining plant health; (ii) positive and negative definitions of plant health; (iii) reductionist and holistic perspectives; (iv) resilience (the plant's ability to withstand stress with or without human intervention) versus functionality; (v) materialist and vitalist approaches; and (vi) biocentric versus anthropocentric perspective. We investigate how these points of view relate to both conventional and unconventional methods of plant protection, and we offer some suggestions for resolving the conflicts between the opposing points of view. While all of these viewpoints contain inherent contradictions, it is argued that by combining opposing approaches, a comprehensive albeit hazy concept can be produced. Rather than providing a new interpretation of plant health, a conceptual framework is developed that suggests potential topics for discussion and how those discussions should be structured. The research was carried out in the Kharar block of Punjab's SAS Nagar district. six villages were chosen at random. To interview the farmers, a set of questions was developed. Following the collection of data from respondents, the data was classified and analyzed using appropriate statistical measures. According to the overall data collected, 98% of respondents grow paddy crop in their fields, while 100% of farmers grow wheat. In addition to these two crops, 46% of farmers grow mustard and 52% grow cauliflower on their farms. Overall, the respondents applied more fertilizer than is recommended. Aside from the main weed, *Phalaris minor*, 92% of farmers deal with grasshopper insects in the paddy.

Keywords: Plant protection, agriculture, weeds, fertilizer, insects

Introduction

Agriculture is a critical component of socioeconomic development. Approximately 58 percent of Indians rely solely on agriculture for a living, and 70 percent of rural households do as well. The Indian economy is heavily reliant on agriculture, which accounts for roughly 20% of the country's GDP. Historically, agriculture was only done for personal consumption. However, as agronomic techniques and new technologies advanced, crop productivity increased, and people began to make a living from it as well. However, in addition to environmental threats, a number of socioeconomic challenges have emerged. The development and widespread use of chemical pesticides has contributed to the success of modern farming techniques. Indeed, without the assistance of these artificial substances, it would not have been possible to achieve the remarkable increase in crop yields associated with the "green" revolution. The Green Revolution is a good illustration of how scale-independent technology revolutionized agricultural productivity. Among other things, the Green Revolution increased yields, reduced poverty rates, improved infrastructure, increased food availability, and reduced food costs. Pesticides are being created in greater quantities to replace the compounds that have been lost as a result of the higher registration requirements. These insecticides include those derived from natural sources. New pesticides are also required to prevent pesticide resistance from emerging. This research covers the aspects of farmers that how they protect their crops the fertilizers they use and the dose they apply to the crops.

Materials and Methods

The study was conducted in Rupnagar district. In the study 6 villages were covered viz., Madauli Kalan, Ratangarh, Bhateri, Badwali, Ramgarh Manda, Madauli Khurd.

The total of 150 farmers were selected randomly for the interview from these villages, 33 from Madauli Kalan, 35 from Ratangarh, 25 from Bhatari, 20 from Badwali, 19 from Ramgarh Manda, 18 from Madauli Khurd. A detailed interaction was directed with the farmers regarding their social status and plant protection measures they follow throughout the cropping cycle. The respondents were interviewed on their farms as well as at their homes. A questionnaire was developed in order to interview the farmers and thoroughly examine each parameter in order to cover every aspect of the farmers' agronomical techniques. Following the collection of data from respondents, the information was categorized and analyzed using appropriate statistical techniques such as bar graphs, pie charts,

percentages, and graphical representation.

Results and Discussion

Major crops grown by farmers in the region

According to the data gathered, 98% of respondents grow paddy crops in their fields, while 100% grow wheat. Aside from these two crops, 52% of farmers grow cauliflower in their fields. The overall percentage of farmers who grow mustard is 46%. Crops such as potatoes, sugarcane, chiles, and pulses were less common in this region. Sorghum and berseem are the two main fodder crops grown in this area during their respective growing seasons. In their fields, approximately 89% of respondents cultivate sorghum, and approximately 86% cultivate maize for fodder.

Table 1: Major Crops cultivated

	Crops	Madauli Kalan	Ratangarh	Bhatari	Badwali	Ramgarh Manda	Madauli Khurd	Total
1	Wheat	100%	100%	100%	100%	100%	100%	100%
2	Paddy	100%	100%	97%	100%	100%	97%	98%
3	Maize	92%	93%	94%	86%	85%	74%	87%
4	Cauliflower	10%	12%	26%	32%	25%	34%	23%
5	Mustard	50%	46%	56%	61%	45%	32%	48%
6	Sugarcane	37%	41%	53%	25%	38%	41%	39%
7	Maize	61%	56%	58%	62%	41%	37%	52%
8	Berseem	15%	22%	16%	18%	29%	16%	19%

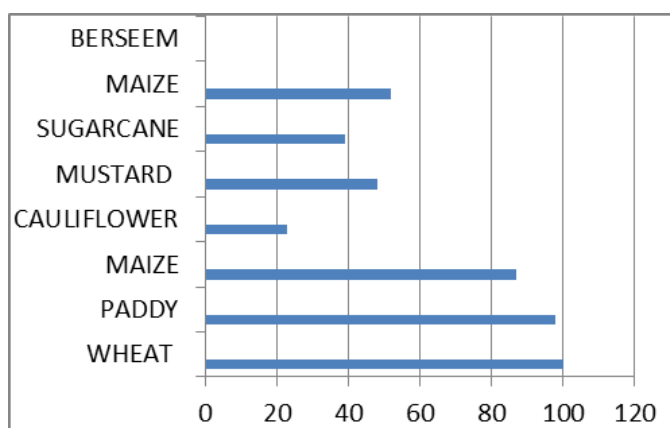


Fig 1: Major crops cultivated

Table 2: Major weeds recorded

SR. NO.	Major weed	Percentage
1	<i>Phalaris Minor</i>	100%
2	<i>Wild Oat</i>	29%
3	<i>Broadleaf Weeds</i>	65%

We observed that *Phalaris Minor* was the major weed in the region.

Table 3: Herbicides used

SR. NO.	Herbicides	Percentage
1	Axial	25%
2	Leader	60%
3	Avkira	10%
4	Sencor	80%
5	Nominee Gold	5%
6	Pretilachor	20%

We observed that leader was the most used herbicide in the region.

Table 4: Major pest infestation recorded

SR. NO.	MAJOR PEST	PERCENTAGE
1	Stem Borer	50%
2	Leaf Folder	60%
3	Plant Hopper	70%
4	Aphids	90%
5	Termites	90%

This data shows the major pests of the region with aphids and termites being widely spread with 90% each.

Table 5: Pesticides used

SR. NO.	Pesticide used	Percentage
1	Chloropyriphos	70%
2	Imidacloprid	40%
3	Coragen	90%

The pesticides used by farmers are displayed in the table data. Farmers use imidacloprid 40% of the time, chloropyriphos 70% of the time, and coragen 90% of the time.

Table 6: Common diseases observed

SR. NO.	DISEASES	PERCENTAGE
1	Brown Rust	85%
2	Sheath Blight	90%
3	False Smut	70%
4	Leaf Spot	50%

The data in the table depicts the diseases that affect farmers' crops. Sheath blight affected 90% of farmers, Brown rust affected 85%, False smut affected 70%, and Leaf spot affected 50%.

Table 8: Disease control chemicals used

SR. NO.	Disease control chemical	Percentage
1	Nativo	100%
2	Propiconazole	30%
3	Mancozeb	50%

The information in Table shows the chemicals farmers use to prevent disease. Farmers use Nativo 100 percent of the time, Mancozeb 50 percent of the time, and Propiconazole 30 percent of the time.

Table 9: Doses of urea application

Sr. No.	Urea	Percentage
1	Recommended	20%
2	Below recommended	5%
3	Above recommended	75%

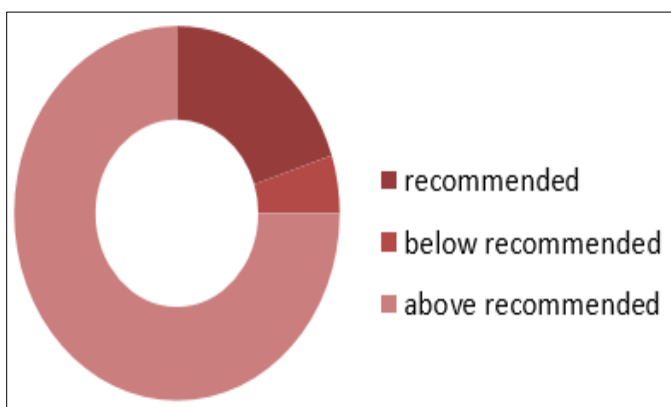


Fig 2: Doses of urea application

Table 10: Doses of DAP application

Sr. No.	Urea	Percentage
1	Recommended	40%
2	Below recommended	10%
3	Above recommended	50%

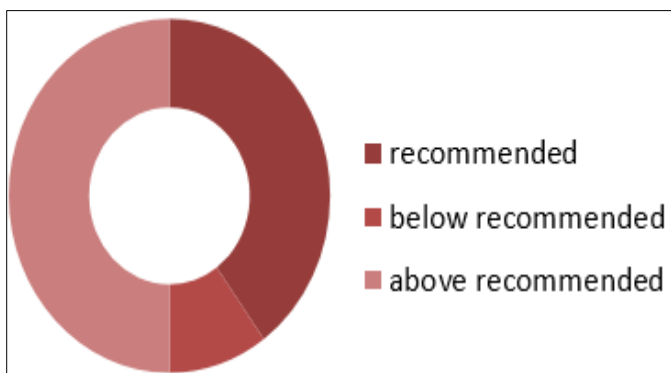


Fig 3: Doses of DAP application

Table 1: Doses of MOP application

Sr. No.	Urea	Percentage
1	Recommended	30%
2	Below recommended	60%
3	Above recommended	10%

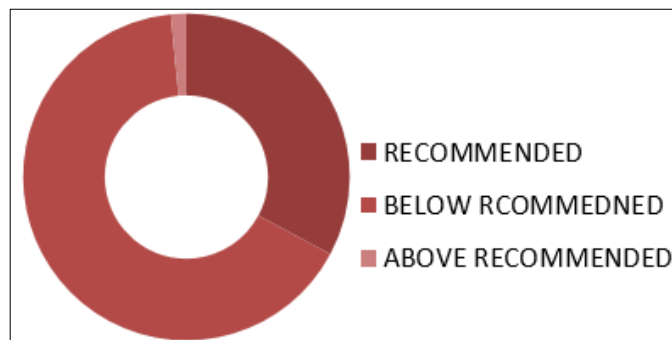


Fig 4: Doses of MOP application

Conclusion

According to the study's findings, the main crops grown in these villages are cauliflower, wheat, paddy, mustard, sugarcane, maize, and berseem. Farmers exceeded the recommended fertilizer dose to increase productivity, with the exception of MOP, because the fields already had an abundance of potash. Every farmer struggled with Phalaris minor, which they were unable to control. The main herbicides used in the wheat and paddy seasons, respectively, were Avkira and Nominee Gold. Coragen and chlorpyriphos are the most commonly used pesticides. The most common pests observed were aphids and plant hoppers. Brown rust, false smut, sheath blight, and leaf spot are the four major diseases that have been identified in the fields. All farmers used Nativo as a disease control chemical, and some also used Propiconazole and mancozeb. We also concluded that there is an imbalance in fertilizer use in this region, as well as a lack of farmer awareness of soil testing. Phosphorous and nitrogenous fertilizers are given higher priority. Farmers should test their soil on a regular basis to stay informed about the health of their soil and the macro- and micronutrient status. Based on the results of the soil nutrient status, they should also provide the crop with the optimal amount of nutrients. Adopting these agronomic techniques can benefit both the economy and productivity.

References

1. Döring TF, Pautasso M, Finckh MR, Wolfe MS. Concepts of plant health—reviewing and challenging the foundations of plant protection. *Plant Pathology*. 2012;61(1):1-15.
2. Lartey, Robert, and Anthony Caesar. *Emerging Concepts in Plant Health Management*. Book Chapter; c2004. p. 300.
3. Morris CE, Géniaux G, Nédellec C, Sauvion N, Soubeyrand S. One Health concepts and challenges for surveillance, forecasting, and mitigation of plant disease beyond the traditional scope of crop production. *Plant Pathology*. 2022;71(1):86-97.
4. Cramer, Hans-Herrmann. *Plant protection and world crop production*. Plant protection and world crop production; c1967.
5. Rutton M. Social profile of agricultural entrepreneurs: Economic behavior and life-style of middle-large farmers in Central Gujarat. *Economic and Political Weekly*; c1986. p. A15-A23.