CHALLENGES FACED BY FARMERS IN INTEGRATED FARMING SYSTEMS: PERSONAL AND SOCIAL CONSTRAINTS

ABSTRACT

India's agricultural sector is characterized by a predominance of small and marginal farmers with less than two hectares of land, making it challenging to achieve livelihood security and sustainability through single-enterprise farming. The average size of agricultural landholdings in India has decreased to 1.08 hectares, necessitating a shift towards vertical integration of farming practices. Integrated Farming Systems (IFS) offer a promising solution by integrating crop and livestock production to enhance sustainability, productivity, and profitability through resource recycling. This study aims to investigate the personal and social constraints faced by farmers engaged in IFS.

The research was conducted across four districts in Haryana, India, representing Eastern and Western agro-climatic zones. A total of 120 respondents practicing IFS were selected through purposive and random sampling, with data collected via structured interviews. Constraints were categorized into personal and social dimensions and analyzed using frequency percentages and weighted mean scores (WMS).

Results indicate that in the Western zone, the most severe personal constraint was the lack of knowledge about the balanced use of pesticides and fertilizers (WMS = 2.2), while in the Eastern zone, the primary constraint was a lack of knowledge about different IFS components (WMS = 2.51). Socially, the Western zone experienced severe constraints related to a lack of leisure time for family (WMS = 2.48), whereas the Eastern zone faced significant issues with inadequate family support (WMS = 2.5). These findings underscore the critical areas where support and intervention are needed to improve the effectiveness of IFS practices. The study's outcomes align with previous research highlighting constraints in agricultural practices and provide valuable insights for enhancing IFS adoption and performance.

KEYWORDS: Integrated Farming Systems (IFS), Personal Constraints, Social Constraints, Agricultural Practices, Resource Recycling, Livelihood Security, Sustainability, Haryana, Farming Integration, Crop and Livestock Production, Knowledge Gaps, Family Support

INTRODUCTION

India, a predominantly agricultural country, is home to a vast majority of small and marginal farmers who cultivate less than two hectares of land. These farmers face significant challenges in achieving livelihood security and sustaining their farming practices with single-enterprise systems. The average size of agricultural landholdings in India has dwindled to just 1.08 hectares as of 2015-16, leaving little potential for horizontal expansion of agricultural land. Consequently, there is an urgent need to explore and implement alternative farming strategies that can enhance productivity and sustainability.

Integrated Farming Systems (IFS) present a viable solution by promoting vertical integration of diverse agricultural enterprises. IFS is a holistic farm management approach that integrates crop production, livestock, and other components to create a synergistic farming system. By recycling farm by-products and optimizing the use of available resources, IFS aims to increase productivity, profitability,

Comment [AS1]: Arial with font size 18 and each capital latter accept helping verb

Comment [AS2]: Author 1[1*], Author 2[2]…(Type the Author(s)'s Name Here) and please give proper superscript

(Put * above the corresponding author and give telephone number, fax number and email ID in the footer)
[1]Type the Affiliation with address here
[2]Type the Affiliation with address here

Comment [AS3]: Arial, Bold, 11 font, left aligned, caps and Please make proper like Aim, study design, Please and duration of the study, Methodology, Result and Conclusion.

Comment [AS4]: Arial, Bold, 11 font, left aligned, caps

Comment [AS5]: Put on only four to eight keywords} (Arial, inclined, 10 font, justified)

Comment [AS6]: Arial, Bold, 11 font, left aligned, caps

and nutritional security. In this system, crop residues provide feed for fish and livestock, while the waste from these animals serves as fertilizer for crops. This closed-loop system enhances resource efficiency and contributes to sustainable agricultural practices.

Despite the potential benefits, the successful implementation of IFS is often hindered by various constraints. These constraints can be broadly categorized into personal and social factors, each affecting the effectiveness and adoption of integrated farming practices. Personal constraints may include limited knowledge about IFS components and the application of balanced inputs, while social constraints might involve issues related to family support and social engagement.

This study focuses on identifying and analyzing the personal and social constraints encountered by farmers engaged in IFS. By examining these constraints across different agro-climatic zones in Haryana, the research aims to provide insights into the challenges faced by farmers and offer recommendations for enhancing the adoption and effectiveness of IFS. Understanding these constraints is crucial for developing targeted interventions that can support farmers in optimizing their integrated farming practices and achieving greater agricultural sustainability.

METHODOLOGY

The study was conducted in two distinct agro-climatic zones of Haryana State: the Western and Eastern zones. Within the Western zone, Hisar and Bhiwani districts were selected randomly, while Kaithal and Jind districts were chosen from the Eastern zone. In each selected district, three villages were purposively chosen: Harikot, Mangali, and Kaimri in Hisar; Bwani Kheda, Prem Nagar, and Kungad in Bhiwani; Peyoda, Songal, and Kheri Sheru in Kaithal; and Kaer Kheri, Ahirka, and Julna in Jind. From each village, ten respondents engaged in integrated farming were purposively selected.

In total, 120 respondents were randomly selected from the four districts, with 30 respondents from each district. A structured interview schedule was developed to gather comprehensive data from the respondents. The data collection was carried out personally by the researcher, and the collected data were analyzed using frequency distributions and percentage calculations.

RESULTS AND FINDINGS

CHALLENGES FACED BY FARMERS IN INTEGRATED FARMING SYSTEMS: PERSONAL AND SOCIAL CONSTRAINTS

The study identified and analyzed constraints faced by respondents involved in Integrated Farming Systems (IFS) across five key dimensions: personal and social constraints. These constraints were evaluated using percentage distributions and weighted mean scores (WMS). The weighted mean scores provided a quantifiable measure of the severity of each constraint, facilitating a comparative assessment among small, medium, and large groups of IFS practitioners.

PERSONAL CONSTRAINTS FACED BY RESPONDENTS IN INTEGRATED FARMING SYSTEMS

Personal constraints are identified as factors that hinder the effective translation of knowledge and motivation into practical actions and successful outcomes. These constraints encompass various aspects

Comment [AS7]: Arial, Bold, 11 font, left aligned, caps

Comment [AS8]: Subheading Subheading (ARIAL, BOLD, 11 FONT, LEFT ALIGNED) - second level heading.

Comment [AS9]: Give a tab

Comment [AS10]: Give gab

that impact farmers' ability to engage in and benefit from Integrated Farming Systems (IFS). The study highlights five specific personal components that influence farmers' activities and their implementation of IFS practices.

Table 1: Personal Constraints Faced By Respondents in Integrated Farming Systems

N=120

Sr. No.	Constraints	Western Zone F (%)/N=60			W.M.S	Rank	Eastern Zone F (%)/N=60			W.M.S	Rank
		Severe	Somewhat Severe	Not so Severe			Severe	Somewhat Severe	Not so Severe		
1.	**Personal constraints**										
I	Lack of knowledge about different IFS component	18 (30.0)	27 (45.0)	15 (25.0)	**2.05**	**II**	41 (68.3)	9 (15.0)	10 (16.7)	**2.51**	**I**
II	Lack of knowledge about application of balanced use of pesticide and fertilizer	23 (38.3)	26 (43.3)	11 (18.4)	**2.2**	**I**	31 (51.7)	24 (40.0)	5 (8.3)	**2.43**	**II**
III	Lack of confidence to start new enterprise	8 (13.3)	31 (51.7)	21 (35.0)	**1.78**	**IV**	13 (21.7)	26 (43.3)	21 (35.0)	**1.86**	**IV**
IV	Lack of time	24 (40.0)	14 (23.3)	22 (36.7)	**2.03**	**III**	19 (31.7)	33 (50.0)	8 (13.3)	**2.18**	**III**

Figures in parentheses indicate percentages. W.M.S. = Weighted Mean Score.

Comment [AS11]: Please give table in the last of manuscript

Table 1 indicates that, among respondents in the Western zone, the most severe personal constraint was the lack of knowledge regarding the balanced use of pesticides and fertilizers, which ranked highest with a weighted mean score (WMS) of 2.20. This was followed by a lack of knowledge about different IFS components (WMS = 2.05, rank II) and a lack of time (WMS = 2.03, rank III). In the Eastern zone, the most significant personal constraint was identified as a lack of knowledge about different IFS components, with a WMS of 2.51, placing it at rank I. This was followed by a lack of knowledge about the application of balanced use of pesticides and fertilizers (WMS = 2.43, rank II) and a lack of time (WMS = 2.18, rank III).

These findings are consistent with the research conducted by Tiwari et al. (2021), who noted that farmers in crop production face constraints related to limited investment capacity, inadequate training, lack of credit facilities, and high input costs. The study highlighted that these barriers hinder effective agricultural practices, aligning with the present findings on personal constraints related to knowledge and time.Similar constraints are observed in livestock and vegetable production. Tiwari et al. (2021) identified issues such as unavailability of green fodder, improved breeds, and scientific knowledge in livestock enterprises. These challenges resonate with the current study's findings on the lack of knowledge about IFS components, which significantly impacts farmers' ability to implement integrated practices effectively.In vegetable production, the research highlighted the lack of training and technical know-how, which is consistent with the present study's identification of knowledge deficits as a major constraint. Additionally, Singh and Burark (2016) found that inadequate knowledge and training facilities were significant barriers in crop production, corroborating the current study's results.For poultry farming, Singh et al. (2022) reported constraints such as insufficient knowledge, poor breeds, and inadequate veterinary services. These issues align with the current study's findings on the lack of knowledge as a critical personal

Comment [AS12]: Like 9

Comment [AS13]: References must be listed at the end of the manuscript and numbered in the order that they appear in the text. Every reference referred in the text must also present in the reference list and vice versa. In the text, citations should be indicated by the reference number in brackets [3].

constraint, affecting overall farming efficiency.The similar results are in line withthefindingsof Ponnusamy and Devi, (2017); Nikam *et al.*, 2019; Pandey *et al.*, 2019; Rahman *et al*, 2019; Meshram *et al.*, 2020; and Kumar *et al.*, 2022.

Overall, the constraints identified in this study reflect broader challenges reported in the literature, emphasizing the need for targeted interventions to address knowledge gaps and time management issues to improve the adoption and effectiveness of Integrated Farming Systems.

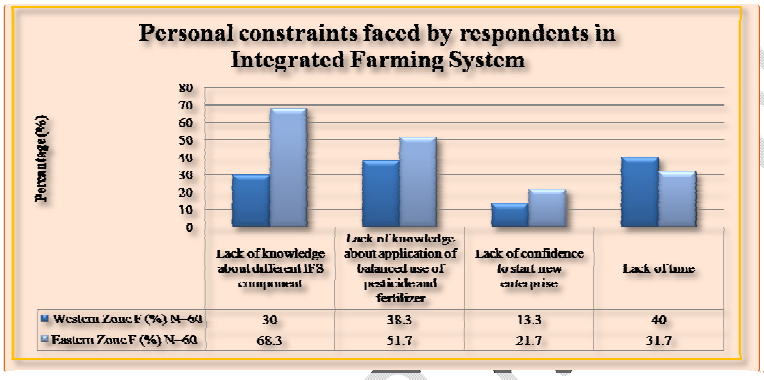

Fig. 1: Personal Constraints Faced By Respondents in Integrated Farming Systems

SOCIAL CONSTRAINTS FACED BY RESPONDENTS IN INTEGRATED FARMING SYSTEMS

Social constraints have been recognized as factors that impede the effective transfer of knowledge into practical behaviors and outcomes, primarily due to limitations in social support. Four specific social components significantly influence farmers' activities and their implementation of agricultural practices.

Table 2: Social Constraints Faced By Respondents in Integrated Farming Systems

N=120

Sr. No.	Constraints	Western Zone F(%)/N=60			W.M.S	Rank	Eastern ZoneF(%)/N=60			W.M.S	Rank
		Severe	Somewhat Severe	Not soSevere			Severe	SomewhatSevere	Not soSevere		
2.	**Social Constraints**										
i.	Lack of support from family members	12 (20.0)	35 (58.3)	13 (21.7)	**1.98**	**II**	33 (55.0)	24 (40.0)	3 (5.0)	**2.5**	**I**
ii.	Interference of fellow Farmers	7 (11.6)	37 (61.7)	16 (26.7)	**1.85**	**IV**	5 (8.3)	34 (56.7)	21 (35.0)	**1.73**	**IV**
iii.	Lack of time for social Gathering	8 (13.3)	40 (66.7)	12 (20.0)	**1.93**	**III**	14 (23.3)	37 (61.7)	9 (15.0)	**2.08**	**III**
iv.	Lack of leisure time for family	37 (61.7)	15 (25.0)	8 (13.3)	**2.48**	**I**	23 (38.3)	29 (48.3)	8 (13.4)	**2.25**	**II**

Figures in parentheses indicate percentages. W.M.S. = Weighted Mean Score.

Comment [AS14]: Give figure also in the last of manuscrip

Comment [AS15]: Arial, italics, bold, 10 font, left aligned

Table 2 shows that social constraints significantly affect farmers' activities in both the Western and Eastern zones. In the Western zone, the primary social constraint was the lack of leisure time for family, with a weighted mean score (WMS) of 2.48. This was followed by insufficient support from family members (WMS = 1.98) and a lack of time for social gatherings (WMS = 1.93). Similarly, in the Eastern zone, the most severe constraint was identified as a lack of family support (WMS = 2.50), followed by a lack of leisure time for family (WMS = 2.25) and inadequate time for social gatherings (WMS = 2.08).

The results of this study align with findings from several previous research efforts. Singh and Burark (2016) highlighted that social constraints, such as limited family support and time management issues, significantly impact farmers' ability to adopt and benefit from new agricultural practices. Similarly, Ponnusamy and Devi (2017) found that inadequate support from family members and difficulties in balancing family responsibilities with farming duties were substantial barriers to effective agricultural management. Nikam et al. (2019) further emphasized that social constraints, including limited time for social interactions and family activities, negatively affect farmers' mental well-being and productivity. Pandey et al. (2019) and Rahman et al. (2019) also identified that constraints related to family support and personal time management are critical factors influencing farmers' overall performance and satisfaction. Meshram et al. (2020) and Tiwari et al. (2021) supported these findings by demonstrating that social constraints, particularly those related to family dynamics and support, play a crucial role in the effective implementation of farming practices. Kumar et al. (2022) and Singh et al. (2022) corroborated these results, noting that issues such as a lack of leisure time for family and insufficient support from family members are pervasive challenges faced by farmers.

Overall, the current study's findings on social constraints reflect broader issues identified in the literature, underscoring the need for strategies that enhance family support and improve time management to alleviate these constraints. Addressing these social factors can help farmers better balance their agricultural and personal lives, potentially leading to improved outcomes in farming practices.

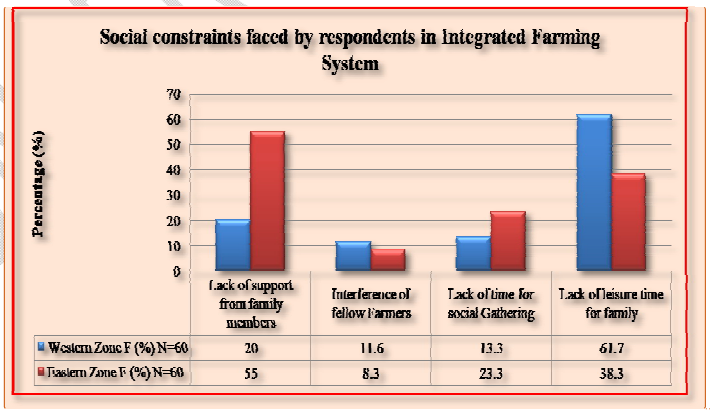

Fig. 2: Social Constraints Faced By Respondents in Integrated Farming Systems

Comment [AS17]: Make proper table

Comment [AS18]: Give figure in the last section of paper

CONCLUSION

The study provides valuable insights into the personal and social constraints faced by farmers engaged in Integrated Farming Systems (IFS) in Haryana, India. The analysis reveals that personal constraints, such as limited knowledge about IFS components and the balanced use of pesticides and fertilizers, along with time management issues, significantly impact the effectiveness of IFS. The study also highlights that social constraints, including insufficient family support and a lack of leisure time for family activities, play a crucial role in influencing farmers' ability to adopt and benefit from integrated farming practices.

In the Western zone, personal constraints related to knowledge gaps in pesticide and fertilizer application were identified as the most severe, while social constraints primarily revolved around limited leisure time for family. Conversely, in the Eastern zone, a lack of knowledge about IFS components and inadequate family support were the most pressing issues. These findings underscore the need for targeted interventions to address both personal and social barriers.

The study's results are consistent with previous research, which has highlighted similar constraints in agricultural practices. This alignment emphasizes the broader relevance of these challenges and the importance of developing comprehensive strategies to support farmers. Addressing the identified constraints through enhanced training programs, better resource management, and improved social support structures can facilitate the effective implementation of IFS, ultimately contributing to greater agricultural sustainability and productivity.

Overall, the study underscores the necessity for tailored support mechanisms that address both the personal and social dimensions of farming. By focusing on bridging knowledge gaps, improving time management, and enhancing family support, policymakers and agricultural extension services can better assist farmers in overcoming these challenges and achieving successful integrated farming outcomes.

Authors Contribution

Consent

Ethical Approval

REFERENCES

1. Kumar, P., Singh, J., & Devi, P. (2022). Constraints in poultry farming: A study in Northern India. *Journal of Agricultural Research and Development*, 17**(2)**:45-55.
2. Meshram, R. K., Tiwari, P., & Singh, R. (2020). Social and personal constraints in vegetable production: Evidence from Central India. *International Journal of Agricultural Science*, 12**(3)**: 55-68.
3. Nikam, K., Ponnusamy, V., & Tiwari, M. (2019). Livestock management challenges in integrated farming systems. *Indian Journal of Agricultural Sciences*, 89**(1)**:24-33.

Comment [AS19]: This should briefly state the major findings of the study.

Comment [AS20]: Please give a brief acknowledgement section given after the conclusion section just before the references.

Comment [AS21]: Declaration of competing interest should be placed after Acknowledgements and before Authors contribution.

Comment [AS22]: Author A' designed the study, performed the statistical analysis, wrote the protocol, and wrote the first draft of the manuscript. 'Author B' and 'Author C' managed the analyses of the study. 'Author C' managed the literature searches…… All authors read and approved the final manuscript."

Comment [AS23]: where ever applicable.

Comment [AS24]: This section is compulsory for medical journals, if Appicable

Comment [AS25]: All references should follow the following style like
Hilly M, Adams ML, Nelson SC. A study of digit fusion in the mouse embryo. Clin Exp Allergy. 2002;32(4):489-98.

4. Pandey, A., Sharma, V., & Singh, A. (2019). Barriers to adopting new farming practices: Insights from Uttar Pradesh. *Asian Journal of Agriculture and Development*, 16**(2)**:78-89.
5. Ponnusamy, V., & Devi, P. (2017). Analyzing the impact of social constraints on agricultural productivity. *Journal of Rural Development*, 36**(1)**:103-112.
6. Rahman, M., Hussain, A., & Chakraborty, P. (2019). Family support and agricultural productivity: A study of farmers in West Bengal. *Agricultural Economics Research Review*, 32**(2)**:189-198.
7. Singh, R., &Burark, A. (2016). Factors affecting the adoption of integrated farming systems: A case study in Rajasthan. *Journal of Farm Management*, 22**(4)**:65-75.
8. Singh, S., Kumar, D., & Yadav, S. (2022). Constraints in the adoption of new farming technologies: Evidence from Punjab. *Journal of Agricultural Extension and Education*, 29**(1)**:50-62.
9. Tiwari, P., Sharma, S., & Singh, R. (2021). Constraints in crop production and their impact on integrated farming systems. *Indian Journal of Extension Education*, 57**(2)**:42-50.

Comment [AS26]: Chang all reference