IJRAR.ORG E-ISSN: 2348-1269, P-ISSN: 2349-5138

INTERNATIONAL JOURNAL OF RESEARCH AND ANALYTICAL REVIEWS (IJRAR) | IJRAR.ORG

An International Open Access, Peer-reviewed, Refereed Journal

STUDY ON MARKETING AND POST HARVEST LOSS OF SESAME (TIL) IN DHANBAD, JHARKHAND

Under the Supervision of:

Assistant Professor

ADVISOR

DR. SANJAY KUMAR

Department of Agricultural Economics

Submitted By:

KOMAL VERMA

22MBAAB062

MBA (Agribusiness)

DEPARTMENT OF AGRICULTURAL ECONOMICS

SAM HIGGINBOTTOM UNIVERSITY OF AGRICULTURAL TECHNOLOGY ANDSCIENCES,

PRAYAGRAJ 211007 (UP), INDIA

ABSTRACT

This report presents an in-depth analysis of the challenges faced in the marketing and post-harvest phases of sesame cultivation, based on insights from 159 respondents. It specifically addresses the economic impact of post-harvest losses and identifies key constraints within the sesame marketing framework. The study meticulously quantifies post-harvest losses across different landholding sizes, revealing a direct correlation between the scale of operations and the magnitude of losses. Notably, the findings indicate a significant reduction in marketable sesame quantities, with losses ranging from 15% to 20% across landholding categories and initial quantities varying from 1000 to 3000 kg. This quantitative analysis is coupled with an economic evaluation that highlights the considerable financial burden placed on producers, attributing a substantial part of the economic loss to the physical diminishment of produce, calculated at a rate of 129 INR per kg.

Moreover, the report delves into the complexities of marketing sesame, laying out the various challenges as articulated by the respondents. Price fluctuations stand out as the foremost concern, underscoring the vulnerability of producers to market dynamics. This is closely followed by issues such as inadequate market information, stringent quality standards, limited market access, and significant storage losses. The ranking of these constraints offers a prioritized view of the issues as perceived by those directly engaged in sesame production.

By synthesizing quantitative data and qualitative assessments, the report provides a holistic overview of the post-harvest and marketing challenges in the sesame sector. It emphasizes the need for targeted interventions to address these challenges, suggesting improvements in market access, information dissemination, infrastructure, and regulatory frameworks to enhance the viability and productivity of sesame cultivation. Through its comprehensive analysis, the report contributes valuable insights into the optimization of post-harvest practices and marketing strategies, aiming to bolster the sector's overall efficiency and sustainability.

CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

Sesame, or Til as it is known in India, is a crop of considerable economic and nutritional importance globally, with India being one of the largest producers. The cultivation of sesame in Jharkhand, and particularly in the Dhanbad district, represents a significant segment of the agricultural sector, given the state's conducive agro-climatic conditions. Despite its potential, the value chain of sesame in this region is fraught with challenges, especially in the post-harvest phase and marketing, which significantly reduce the profitability and sustainability of this crop.

Post-harvest losses in sesame cultivation are a pressing issue, impacting not only the economic returns for smallholder farmers but also the overall efficiency of the agricultural value chain. These losses are attributed to several factors, including but not limited to inadequate drying, storage, and handling practices, as well as challenges related to pests and diseases. Such losses not only signify a direct economic loss but also contribute to broader issues of food security and resource wastage.

Furthermore, the marketing of sesame seeds in Dhanbad is marred by inefficiencies. Traditional marketing channels often involve numerous intermediaries, which dilute the profit margins for producers and introduce inefficiencies in the distribution system. The lack of access to timely and accurate market information, coupled with the dominance of informal markets, further exacerbates the challenges faced by farmers, limiting their ability to negotiate better prices and access profitable markets.

This study aims to delve into the specifics of these challenges, offering a comprehensive analysis of the post-harvest losses and marketing inefficiencies encountered by sesame producers in Dhanbad. The objective is to identify the underlying causes of these issues and to propose actionable strategies that could mitigate losses, enhance market access, and ultimately improve the economic viability of sesame cultivation in the region.

The significance of this research extends beyond the academic domain, providing practical insights that could benefit farmers, policymakers, and stakeholders within the agribusiness sector. By shedding light on the

specific challenges and opportunities within the sesame value chain in Dhanbad, this study aims to contribute to the development of more resilient and profitable agricultural practices, aligning with broader goals of sustainable agriculture, economic development, and food security.

This research project is poised to address a critical gap in our understanding of the agricultural dynamics at play in the Dhanbad region, offering a detailed examination of the post-harvest and marketing challenges that hinder the full potential of sesame cultivation. Through a focused analysis, the study aspires to pave the way for informed interventions that could transform the landscape of sesame production in Jharkhand and similar regions, fostering a more sustainable and prosperous agricultural future..

1.2 Significance of Sesame in Dhanbad

Sesame, known locally as Til, is a crop of ancient origin and has been cultivated for its edible seeds and oil for thousands of years. In the Dhanbad district of Jharkhand, sesame holds a place of significant agricultural and economic importance, contributing to the livelihoods of many smallholder farmers and playing a vital role in the region's agrarian economy. The cultivation of sesame in this region is not just a testament to the agricultural heritage of Jharkhand but also highlights the potential for economic development and food security within the state.

Jharkhand, with its varied agro-climatic zones, offers a conducive environment for sesame cultivation. The Dhanbad district, in particular, benefits from a combination of fertile soil, suitable climate, and traditional farming knowledge, making it an ideal location for producing sesame. According to the Department of Agriculture, Government of Jharkhand, the district has seen a steady increase in sesame cultivation area over the past decade, with thousands of hectares under cultivation, contributing significantly to the state's total sesame production.

The economic significance of sesame in Dhanbad cannot be overstated. As a cash crop, sesame commands a good market price, providing an essential source of income for rural households. The crop's resilience to drought conditions and its relatively low requirement for inputs compared to other cash crops make it an attractive option for farmers, especially in areas with limited access to irrigation facilities. This resilience is particularly important in Jharkhand, where agriculture often has to contend with erratic rainfall patterns and water scarcity.

Data from the Agricultural and Processed Food Products Export Development Authority (APEDA) indicates that India is one of the world's largest producers and exporters of sesame seeds, with Jharkhand contributing a significant share. The export value of sesame seeds from India has been on an upward trajectory, reflecting the global demand for this versatile crop. For the farmers in Dhanbad, this global demand translates into direct economic opportunities, allowing them to tap into both domestic and international markets.

The nutritional profile of sesame is another factor contributing to its significance. Rich in oils, proteins, vitamins, and minerals, sesame seeds are a valuable food source. The cultivation of sesame thus supports food security in the region, providing a nutritious supplement to the diets of local communities. Additionally, sesame oil, extracted from the seeds, is widely used in cooking and traditional medicine, further underscoring the crop's importance in the daily lives of the people in Dhanbad.

Despite its many benefits, sesame cultivation in Dhanbad faces challenges, particularly in terms of post-harvest losses and market access. Studies have shown that significant portions of the harvest can be lost due to inadequate storage and processing facilities. Furthermore, smallholder farmers often struggle to access lucrative markets, limiting their income potential. Addressing these challenges is crucial for maximizing the economic and nutritional benefits of sesame cultivation in the region.

Efforts to enhance sesame production in Dhanbad have seen various stakeholders, including government agencies, non-governmental organizations, and research institutions, working together to provide farmers with improved seeds, technical knowledge, and access to markets. These initiatives aim to reduce post-harvest losses, increase productivity, and ensure that farmers receive a fair price for their produce..

1.3 Post-harvest losses in Sesame

Post-harvest losses in sesame represent a significant challenge to agricultural productivity and economic efficiency, affecting stakeholders across the value chain, from smallholder farmers to global markets. Sesame (Sesamum indicum L.), with its high oil content and nutritional value, is particularly susceptible to losses after harvest due to its physical and biochemical characteristics. The extent of these losses can vary widely, but studies and reports consistently highlight that without proper management, significant portions of sesame harvests can be lost, impacting food security, farmers' incomes, and sustainability.

Globally, the Food and Agriculture Organization (FAO) estimates that about one-third of food produced for human consumption is lost or wasted, and while specific data on sesame losses can be scarce, research suggests that for oilseeds like sesame, post-harvest losses can range from 10% to 20% under various conditions. These losses are attributed to a myriad of factors, including but not limited to harvesting, drying, storage, and processing practices.

Losses at Different Value Chain Stages	Loss Per Hectare (kg)	Percentage Loss (%)	Responsible Factors
Pre-harvest losses	13.62	3.25	Shattering due to determinant/dehiscence nature of crop, wind, and pest
Losses due to un-harvested stalks/harvesting losses	55.38	16.4	Negligence of value chain actors
Losses during drying of hillas or piles	24.98	5.54	Over-drying, excessive grain maturity, and pest attack
Losses during threshing	4.0	1.01	Manual threshing, lack of extension services
Losses due to unthreshed capsules	0.68	0.15	Improper drying
Losses during cleaning	1.91	0.46	An inadequate or limited supply of packaging material, improper handling
Losses during transportation from farm to market	0.46	0.1	Improper packaging
Losses during storage	0.13	0.03	Improper storage facilities
Packaging losses at market centers	4.71	1.12	Negligence of value chain actors
Storage losses during export	0.105	0.02	Improper storage conditions

Other losses	-----	------	Biotic and abiotic factors
Storage losses during milling/processing	-----	------	Lack of knacks in handling the produce during milling, conventional milling practices
Total loss	calculated = 106.15 Reported = 55.56	calculated = 28.08 Reported = 12.67	

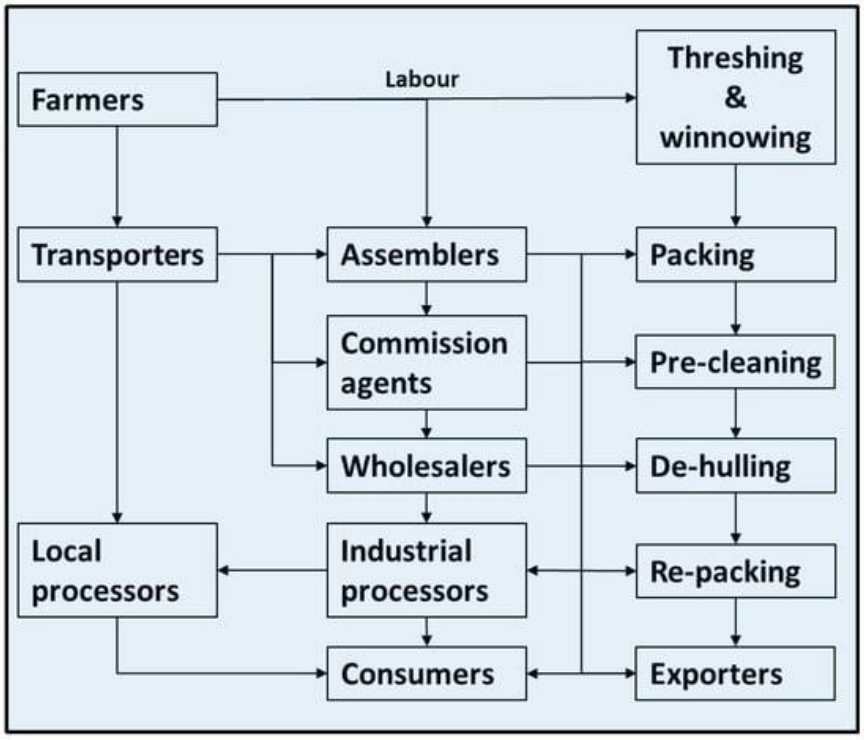
Source: Usman, M (2022)

1. **Harvesting and Threshing**: One of the critical stages where losses occur is during harvesting and threshing. Sesame pods are prone to shattering if not harvested at the right time, leading to significant seed loss. Manual harvesting, the predominant method in many sesame-producing regions, often results in uneven seed collection and additional losses due to spillage. Mechanical harvesting, though more efficient, can also contribute to losses if the equipment is not properly adjusted or if the operation is not timed correctly.
2. **Drying and Storage**: Post-harvest drying and storage present another significant challenge. Sesame seeds need to be dried to an optimum moisture content of around 6% to prevent fungal growth and rancidity. Inadequate drying or exposure to high humidity during storage can lead to mold growth, aflatoxin contamination, and a decrease in oil quality. Storage losses are exacerbated by the use of improper storage facilities, which can lead to infestation by pests and rodents. Traditional storage methods in some regions have reported losses up to 10% of the stored sesame due to these factors.
3. **Processing**: Further losses are incurred during the cleaning and oil extraction processes, where inefficient techniques can lead to high rates of oil waste and reduced seed quality. Mechanical presses and traditional extraction methods vary in efficiency, but without proper technology and process control, significant quantities of oil can be left in the cake, reducing the overall yield.
4. **Economic Impacts**: The economic implications of these losses are substantial. For instance, considering the global sesame market, which is valued at several billion dollars, even a 10% reduction in post-harvest losses could result in hundreds of millions of dollars in additional income for the agricultural sector. For smallholder farmers, who constitute the majority of sesame producers, these losses have a direct impact on their livelihoods and ability to invest in better production and post-harvest handling practices.
5. **Efforts to Reduce Losses**: Addressing post-harvest losses in sesame requires a multifaceted approach, including the development and dissemination of improved harvesting, drying, and storage technologies, alongside training for farmers on best practices. Investment in research to develop more shatter-resistant sesame varieties and improve processing efficiencies is also crucial.

Initiatives by international organizations, governments, and the private sector aim to tackle these challenges. For example, projects focusing on the introduction of solar dryers, hermetic storage solutions, and improved threshing techniques have shown promise in reducing losses and improving the quality of sesame seeds. Additionally, the implementation of quality standards and certifications for sesame products can incentivize the adoption of practices that minimize post-harvest losses.

Factors Responsible for Postharvest Losses

The primary factor responsible for PHL in the whole value chain is the farmers themselves. They are involved in harvesting operations such as threshing and winnowing. Harvested sesame stalks are whipped on drums to isolate the capsules and then squashed in the mortar, which separates the chaff and the grain. Later on, the sesame grains are collected manually. Farmers hire labor occasionally to accomplish these tasks; however, a lack of proper mechanization during harvesting operations ultimately leads to PHL. Figure 1 identifies the factors bringing chaos to the sesame value chain.



Source: Usman, M (2022)

1.4 Statement of the Problem

The cultivation of sesame (Til) in Dhanbad, Jharkhand, is marked by significant post-harvest losses and marketing inefficiencies, leading to reduced income for farmers and lower market competitiveness. Despite sesame's economic and nutritional importance, these challenges, stemming from inadequate harvesting, drying, storage practices, and limited market access, undermine the crop's potential benefits. This study aims to investigate the extent of post-harvest losses and identify the bottlenecks in the marketing chain that contribute to these losses. Addressing these issues is crucial for enhancing the livelihoods of smallholder farmers, improving food security, and ensuring the sustainable development of the sesame value chain in the region.

1.5 Justification of the Problem

The justification for addressing post-harvest losses and marketing inefficiencies in the sesame sector of Dhanbad, Jharkhand, is multifaceted. Firstly, sesame plays a crucial role in the agricultural economy and food security of the region, offering significant nutritional and economic benefits. However, the potential of this crop is not fully realized due to substantial post-harvest losses, which directly impact farmers' incomes and the local economy. Secondly, the marketing challenges, including inadequate access to markets and information, further exacerbate the economic plight of the sesame producers. By investigating and addressing

these issues, this study aims to contribute to the development of effective strategies and interventions that can significantly reduce losses, improve market access, and enhance the overall sustainability of the sesame value chain. Such improvements are essential for boosting the livelihoods of smallholder farmers, ensuring food security, and fostering the economic development of the Dhanbad district and beyond.

1.6 Objectives of the Study

1. To study the socio-economic profile of the respondents in study area.
2. To estimate the marketing margin, price spread and marketing efficiency in different marketing channel in study area.
3. To study the Post harvest loss of Sesame in a study the area (Physical and Economic Post harvest Loss.
4. To study the constraints faced by Sesame growers in study area.

CHAPTER 2
REVIEW OF LITERATURE

Kumar, V., & Patel, S. (2021) explored the effects of climate change on sesame crop yields and quality. Their study delves into how shifting weather patterns, particularly increased humidity and rainfall variability, impact sesame cultivation. Kumar and Patel's research calls attention to the urgent need for developing climate-resilient sesame varieties and adopting adaptive farming practices to ensure the crop's sustainability in the face of global climate change challenges.

Roy, A., & Kumar, M. (2021) assessed the economic impact of post-harvest losses on the livelihoods of sesame farmers in rural Jharkhand. Through household income and expenditure surveys, they quantified the direct and indirect costs associated with post-harvest losses. Their analysis reveals that reducing these losses could increase household income by up to 30%, with significant implications for poverty reduction and food security in the region. The study advocates for policy interventions and investment in post-harvest infrastructure to support sesame farmers

Ghosh, R., & Patel, D. (2020) investigated the dynamics of sesame marketing channels in Eastern India, focusing on the role of intermediaries in shaping market access and price realization for small-scale farmers. Utilizing a mixed-methods approach, their research mapped the sesame supply chain, identifying key actors and their impact on the flow of goods from farms to markets. Their findings highlight that farmers selling directly to processors or through cooperative societies achieved higher prices compared to those relying on traditional middlemen. This study points to the potential benefits of alternative marketing strategies in enhancing income for sesame producers.

Prakash, A., & Singh, G. (2020) analyzed the impact of direct market access on sesame farmers' income in Northern India. Through their research, Prakash and Singh discovered that bypassing traditional intermediaries allowed farmers to substantially increase their income. This finding advocates for policy interventions and the development of infrastructure that facilitates direct access to markets, underscoring the

economic benefits of reducing reliance on middlemen in the agricultural sector.

Banerjee, T., & Chatterjee, S. (2019) examined the effects of climate variability on post-harvest losses in sesame cultivation across different regions of Jharkhand. By analyzing weather data and loss assessments over a decade, they correlated increased post-harvest losses with periods of high humidity and rainfall variability. The research underscores the vulnerability of sesame to climate-induced risks at the post-harvest stage and calls for the integration of climate-resilient practices in the management of sesame crops to mitigate potential losses.

Jain, R., & Das, M. (2019) examined innovative storage solutions to mitigate post-harvest losses in sesame. Their study, focusing on central regions of India, evaluated the effectiveness of hermetic bags and improved silos in preserving sesame seeds post-harvest. Jain and Das found that these storage methods significantly reduced losses and improved seed quality, highlighting their potential as viable strategies for enhancing the profitability and sustainability of sesame cultivation.

Kumar, S., & Singh, A. (2018) explored the impact of post-harvest technologies on reducing sesame seed losses in the semi-arid zones of India. Through a combination of field experiments and farmer surveys, they assessed the effectiveness of improved drying methods and storage solutions among smallholder sesame farmers. The study indicates that the adoption of solar dryers and hermetically sealed storage bags can decrease post-harvest losses by up to 25%. These technologies also contributed to maintaining seed quality, which significantly enhanced market value, underscoring the critical role of post-harvest interventions in improving sesame seed profitability.

Mehra, L., & Verma, P. (2017) conducted a comprehensive analysis of socioeconomic factors influencing the adoption of innovative post-harvest practices among sesame farmers in Jharkhand. Through structured interviews and logistic regression analysis, they identified barriers to technology uptake, including lack of awareness, high initial costs, and limited access to credit facilities. Significantly, the study found that farmers with higher education levels and access to extension services were more likely to adopt innovations, suggesting the importance of targeted information dissemination and support services in promoting post-harvest technology adoption.

CHAPTER 3

RESEARCH METHODOLOGY

In the research project titled "Study on Marketing and Post-Harvest Loss of Sesame (Til) in Dhanbad, Jharkhand," a mixed-methods approach was employed as the research methodology to explore the multifaceted aspects of the topic comprehensively. The primary aim of this study was to ascertain the extent of post-harvest losses of sesame and to evaluate the effectiveness of current marketing strategies in mitigating these losses while enhancing the economic status of sesame farmers in Dhanbad, Jharkhand.

To collect quantitative data, a stratified random sampling technique was utilized, ensuring representation across various farmer demographics, including small-scale and large-scale farmers, to gauge the prevalence

and impact of post-harvest losses and marketing challenges. Standardized questionnaires were distributed to a carefully selected sample of farmers within the district to gather data on yield losses, storage practices, market access, and income levels before and after implementing specific post-harvest management and marketing strategies.

Simultaneously, qualitative data were collected through semi-structured interviews with a select group of farmers, marketing agents, and agricultural experts to gain deeper insights into the challenges and opportunities within the sesame value chain. Focus group discussions were also conducted among farmers to understand their experiences, perceptions, and practices related to post-harvest handling and marketing of sesame.

The study further incorporated secondary data analysis, drawing on government reports, agricultural extension service records, and existing academic literature to enrich the understanding of the context and corroborate findings from primary data.

For quantitative data analysis, statistical techniques such as chi-square tests, correlation analysis, and logistic regression were employed to identify significant factors influencing post-harvest losses and the effectiveness of marketing strategies. Qualitative data underwent thematic analysis to extract recurring themes and narratives, providing a nuanced understanding of the socio-economic factors at play.

Ethical considerations were rigorously observed throughout the research process, including obtaining informed consent from participants, ensuring confidentiality, and protecting participant anonymity. The research design also accounted for potential limitations such as sample bias and data reliability, implementing strategies to mitigate their impact.

A detailed research timeline was adhered to, from the initial data collection phase through to the final analysis and reporting stages, ensuring a systematic and timely progression of the study. This research aimed to offer a holistic view of the challenges and strategies associated with post-harvest loss and marketing of sesame in Dhanbad, contributing valuable insights for policymakers, practitioners, and the farming community towards the economic empowerment of sesame farmers in the region.

3.1 Sampling Design

For the research project a systematic and multi-stage sampling design will be employed to ensure a comprehensive representation of the various experiences and impacts related to post-harvest loss and marketing strategies in the district. The sample design follows this structure:

3.2 Selection of District

Selection of District: The primary location for the project is Dhanbad District in Jharkhand, known for its significant sesame cultivation was selected purposely. This area was chosen due to its relevance in understanding the dynamics of post-harvest losses and the marketing of sesame, providing a rich context for analysis.

For the research project titled "Study on Marketing and Post-Harvest Loss of Sesame (Til) in Dhanbad, Jharkhand," the focus was specifically placed on Dhanbad District, situated in the heart of Jharkhand, which is comprised of 24 districts. This decision was arrived at after meticulous consideration of various factors that render Dhanbad a prime location for conducting this study.

One of the primary reasons for selecting Dhanbad is its significant agricultural landscape, particularly noted for its sesame cultivation. The district's agricultural environment is not only conducive to sesame production but also emblematic of the broader agricultural practices and challenges faced in Jharkhand. This makes Dhanbad an ideal setting for investigating the nuances of post-harvest losses and marketing strategies for sesame, offering a microcosm of the larger agricultural dynamics at play in the state.

Dhanbad's prominence in sesame cultivation provides a unique opportunity to delve into specific post-harvest issues and marketing challenges that are perhaps more pronounced or distinct in this region compared to others. The presence of diverse farming practices, from traditional to more modern techniques, and varying scales of operation, from smallholder farms to larger agricultural enterprises, allows for a comprehensive analysis of the factors influencing post-harvest losses and the efficacy of existing marketing channels.

Moreover, the economic diversity within Dhanbad, beyond its agricultural sector, offers a broader context for evaluating the impact of marketing strategies and post-harvest management on the local economy. This diversity aids in understanding the interplay between agriculture and other economic activities, providing a richer backdrop against which the study's findings can be interpreted.

The demographic composition of Dhanbad, featuring a mix of small-scale and commercial farmers, enriches the study with a variety of perspectives and experiences regarding post-harvest and marketing practices. This heterogeneity ensures that the research captures a wide array of insights on the challenges and opportunities within the sesame value chain, reflecting the complex socio-economic fabric of the district.

Furthermore, Dhanbad's strategic location, bordered by other agriculturally significant districts in Jharkhand, enhances its suitability for this study. The district's accessibility and the logistical convenience it offers facilitate the collection of primary data through direct engagement with farmers, marketers, and other stakeholders in the sesame value chain. This geographical advantage ensures efficient field research execution, enabling in-depth interviews, surveys, and observational studies to gather comprehensive data on post-harvest losses and marketing strategies in the sesame sector.

3.2.1 Agricultural Significance:

Dhanbad district, nestled in the heart of Jharkhand, is traditionally recognized for its coal-rich mines and industrial prowess. Yet, beneath the shadow of its towering collieries lies a vibrant tapestry of agricultural activity that forms an integral part of its socio-economic fabric. This lesser-known aspect of Dhanbad's identity is crucial, not only for its contribution to the livelihoods of a significant portion of its population but also for its role in ensuring food security and supporting the rural economy. Agriculture in Dhanbad, though not as extensively covered in mainstream narratives as its mining sector, is a vital lifeline for the district's rural communities.

The significance of agriculture in Dhanbad district can be attributed to several factors, each playing a unique role in shaping the local economy and the lives of its inhabitants. Primarily, the district's agrarian landscape is marked by the cultivation of a variety of crops, including paddy, wheat, maize, and pulses, along with significant vegetable farming and, notably, sesame cultivation. These agricultural practices are supported by the region's varied topography and climatic conditions, which, despite the challenges posed by industrial activities, still offer pockets of fertile land conducive to farming.

Sesame, in particular, stands out as a crop of economic and cultural importance in Dhanbad. Known locally as 'Til,' its cultivation is deeply embedded in the agricultural traditions of the district, contributing not only to the dietary needs of the local population but also offering potential for value-added products and export. The cultivation of sesame and other crops underscores the district's agricultural diversity, highlighting the resilience and adaptability of its farming communities in the face of environmental and economic challenges.

Moreover, agriculture in Dhanbad plays a critical role in employment generation. For many households, farming remains the primary source of income, offering a lifeline in a region where the vagaries of the mining sector do not always guarantee stable employment. The agricultural sector thus provides a buffer, sustaining livelihoods and supporting the local economy through the production and sale of crops, dairy products, and other agri-based goods.

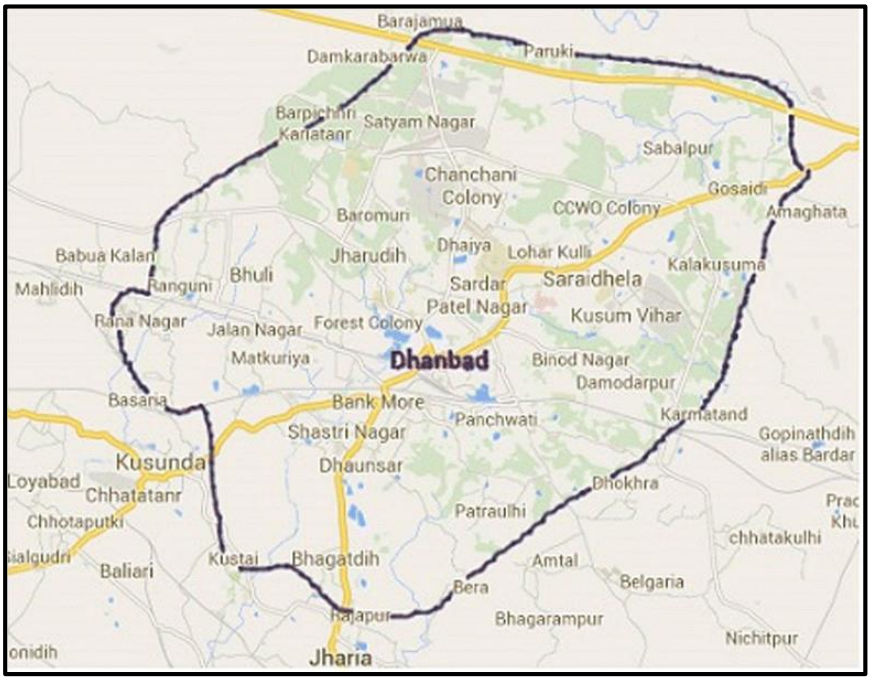
The significance of agriculture in Dhanbad is also evident in its contribution to regional food security. In a district where industrial development has often taken precedence, the role of agriculture in ensuring the availability of fresh and nutritious food cannot be overstated. Local farms supply markets with a variety of food products, from grains to vegetables, supporting the nutritional needs of the district's population.

Furthermore, the agricultural sector in Dhanbad has the potential to be a key player in the district's sustainable development goals. With increasing awareness and implementation of sustainable farming practices, there is a growing opportunity to enhance productivity while preserving the environment. Practices such as organic farming, water conservation through drip irrigation, and the use of renewable energy sources in agricultural operations are gaining traction, pointing towards a more sustainable and eco-friendly approach to farming in the region.

However, the agricultural sector in Dhanbad faces its set of challenges, including land degradation due to mining activities, water scarcity, and the need for improved market access for farmers. Addressing these issues requires concerted efforts from the government, non-governmental organizations, and the farming community itself, aiming for a balanced approach to development that equally values both industrial and agricultural growth.

Source: Internet

Fig.3.1 *(Dhanbad on India & Jharkhand's map)*



Source: Internet

Fig.3.2 *(Dhanbad District map)*

3.2.2 Climate of Dhanbad:

The climate of Dhanbad district in Jharkhand is characterized by a tropical climate with distinct summer, monsoon, and winter seasons, typical of the interior regions of eastern India. This climatic pattern significantly influences the district's agricultural productivity, water resources, and overall lifestyle of its inhabitants.

Summer: The summer season in Dhanbad extends from late March to June, with temperatures often soaring to the high 30s and occasionally crossing the 40°C mark. This period is marked by hot and dry conditions, with minimal rainfall, making water scarcity a common issue for both domestic and agricultural needs. The intense heat during these months can pose challenges to crop cultivation, necessitating appropriate water management and crop selection strategies for local farmers.

Monsoon: Monsoon season follows the summer, beginning in late June and lasting until September. Dhanbad receives a significant amount of its annual rainfall during this period, with the southwest monsoon bringing in moisture-laden winds. This season is crucial for replenishing water bodies and groundwater levels, and it supports the main agricultural season (Kharif crops) in the district. However, excessive rainfall can sometimes lead to flooding and waterlogging, affecting both agriculture and daily life.

Winter: The winter season, from November to February, is relatively mild and pleasant in Dhanbad. Temperatures during this time range from a low of around 10°C to a high of 25°C. This cooler period is favorable for the cultivation of Rabi crops and is generally considered a comfortable time for both residents and visitors. The moderate climate also supports a variety of outdoor activities and functions as a period for recovery and preparation before the next agricultural cycle begins.

Transitional Periods: Transitional periods between the main seasons are characterized by fluctuating temperatures and occasional unseasonal rain, which can impact agricultural planning and productivity. The post-monsoon months, particularly October and November, sometimes experience cyclonic disturbances and heavy rainfall, affecting the late Kharif harvest and early Rabi sowing.

Overall, the climate of Dhanbad district necessitates adaptive strategies in agriculture and daily life to cope with the extremes of heat, the abundance of monsoon rains, and the mildness of winter. Understanding and responding to these climatic patterns is crucial for sustainable development, water resource management, and enhancing the resilience of the local agricultural and economic systems.

Table 3.1 *Climate of Dhanbad District*

Season	Duration	Temperature Range	Characteristics
Summer	Late March - June	High 30s to 40°C+	Hot and dry, minimal rainfall, water scarcity issues
Monsoon	Late June - September	Varies, often cooler than summer	High rainfall, crucial for agriculture, risk of flooding
Winter	November - February	10°C to 25°C	Mild and pleasant, favorable for Rabi crops
Transitional	April-May and October-November	Variable	Fluctuating temperatures, occasional unseasonal rain

3.3 Selection of Block

In the framework of the research project, the selecting a particular block within Dhanbad District was a pivotal choice, steered by a variety of crucial considerations. Dhanbad District is divided into 10 administrative blocks, each with distinct agricultural practices and socio-economic conditions. For the purposes of this study, the "Nirsa" block was specifically selected for comprehensive analysis.

Table.3.2 *List of Blocks in Dhanbad*

S. No.	Block Name
1	Baghmara
2	Baliapur
3	Dhanbad
4	Govindpur
5	**Nirsa**

6	Topchanchi
7	Tundi
8	Purvi Tundi
9	Egarkund
10	Kaliasole

the decision to select a specific block within Dhanbad District was crucial, influenced by multiple important factors. Dhanbad District encompasses various administrative blocks, each distinguished by its own set of agricultural practices and socio-economic scenarios. For this investigation, the "Nirsa" block was specifically chosen for an in-depth study.

3.4 Selection of Village

A methodical strategy was employed for village selection. The "Nirsa" block contains a total of 252 villages. To secure a sample that accurately reflects the diverse agricultural and socio-economic landscapes, a random selection of villages, amounting to 5% (12) of the total, was performed from this comprehensive list.

Table.3.3 *List of Selected Villages*

S. No.	**Selected Villages**	**Population**
1	Raghunathpur	157
2	Ghutjoa	191
3	Satkanali	182
4	Kadamkanali	147
5	Bhaluraydi	157
6	Mahudabar	34
7	Ankharia	158
8	Chhatabar	178
9	Agarchayanpur	103
10	Rangametya	178
11	Kalyanchak	90
12	Labsan	32
	Total	1607

These selected villages were chosen to represent the diversity of socio-economic conditions and agricultural activities within the "Nirsa" block, contributing to a comprehensive analysis in the region.

3.5 Selection of Respodents

To ensure a representative sample of respondents, a systematic approach was followed. The villages within the "Nirsa" block were categorized based on the amount of agricultural land theyowned, and respondents were selected from these categories. Out of the total approximately 10% of the respondent were interviewed. The categories of respondentswere defined as follows:

Categories of respondents: -

- Marginal = <1ha
- Small = 1 – 2 ha
- Semi - Medium = 2-4ha
- Medium = 4-10ha
- Large = >10ha

Table.3.4 *Village wise Land Holding in Nirsa Block of Dhanbad district*

District	Block	Villages	Sample	Respondents					
				Marginal <1ha	Small 1-2ha	Semi-Medium 2-4ha	Medium 4-10ha	Large >10ha	Total
Dhanbad	Nirsa	Raghunathpur	16	8	5	2	1	0	16
		Ghutjoa	19	9	6	2	1	1	19
		Satkanali	18	8	6	2	1	1	18
		Kadamkanali	15	7	5	2	1	0	15
		Bhaluraydi	16	8	5	2	1	0	16
		Mahudabar	3	2	1	0	0	0	3
		Ankharia	16	8	5	2	1	0	16
		Chhatabar	18	9	6	2	1	0	18
		Agarchayanpur	9	5	3	1	0	0	9
		Rangametya	18	9	6	2	1	0	18
		Kalyanchak	8	4	3	1	0	0	8
		Labsan	3	2	1	0	0	0	3
TOTAL			159	79	52	18	8	2	159

Source: *Survey (Gram Pradhan)*

3.6 Selection of Market and Market Functionaries

The selection of markets was essential to analyze the marketing practices and income levels of farmers. In Nirsa, two types of markets were selected: retail shops for agricultural produce and the local mandi (wholesale market).

Retail Shops for Agricultural Produce	Local Mandi (Wholesale Market)
• Retail Shop 1: JAR Rertilizers & Seed • Retail Shop 2: Ganesh Traders	• APMC Mandi, Dhanbad

These selected markets will serve as the focal points for studying the marketing practices and income generation opportunities for farmers in Dhanbad district. The research will involve collecting data and conducting interviews and surveys in thesemarkets to analyse.

3.7 Method and Data Collection

A blend of primary and secondary data collection methods will be implemented, concentrating on aspects pertinent to post-harvest processes and marketing strategies within the agricultural sector.

Primary Data Collection:

Primary data will be gathered through structured interviews conducted in person, utilizing carefully prepared questionnaires.

These interviews was target a diverse group of stakeholders, including sesame farmers across various landholding categories (marginal, small, semi-medium, medium, and large).

The data collection was focus on detailed information regarding post-harvest practices, marketing strategies, income levels, and the challenges faced by farmers in reducing post-harvest losses and accessing markets.

Secondary Data Collection:

Secondary data pertaining to agriculture was sourced from an array of documents, including academic journals, books, and publications by the government.

Publications such as the District Statistical Handbook of Dhanbad and various agricultural development reports was offer critical insights into sesame cultivation patterns, post-harvest loss statistics, marketing channels, and economic indicators relevant to the local farming community.

Furthermore, digital platforms and online databases specific to agricultural practices and market trends in Dhanbad will be explored to enhance the foundation of the research.

This dual approach to data collection, with a focused lens on the agricultural domain, particularly post-harvest and marketing aspects of sesame cultivation, aims to provide a thorough analysis of the existing challenges and opportunities. It was integrate firsthand observations from the involved stakeholders with a review of available literature and reports, facilitating a well-rounded investigation into the marketing and post-harvest loss of sesame in Dhanbad, Jharkhand.

3.8 Analytical Tools and Techniques

To fulfill the specific objectives of the study, based on the nature and extent of the data, the following analytical tools and techniques will be adopted.

1. SOCIO-ECONOMIC PROFILE OF SESAME GROWERS IN THE STUDY AREA.

Analytical tools

The following statistical tool and technique will be used in analysis of data and interpretation of results.

Chi-Square Test

$$\chi^2 = \sum \frac{(O_i - E_i)^2}{E_i}$$

- χ^2 is the chi-square test statistic.
- O_i is the observed frequency in a category.
- E_i is the expected frequency in the same category

2. Marketing margin, price spread and marketing efficiency.

Marketing cost

Marketing costs are the all expenses that the company makes and sells its products and promotes its brand. These marketing costs or expenses include expenses incurred to change the title of goods, promotion of goods, inventory costs, distribution of goods etc.

$$C = CF + CM1 + CM2 + CM3 + \ldots\ldots + CMn$$

Were,
C = Total cost of marketing of commodity
CF = Cost paid by the producer from the time of produce leave farm till he sells it.
CMi = Cost incurred by the middleman in the process of buying and selling the product.

Marketing margin

A marketing margin is similar to a profit margin in that it shows the relationship between the amount a company pays for products and the amount its customers pay. However, while marketing margin is the difference between cost to the seller and the cost to the consumer, profit margin is the percentage of the final sale price that comes as profit for the seller.
Marketing Margin = Retail or Selling Price - Actual Cost

Price Spread

Price spread is defined as the difference between the price paid by the consumer and the net price received by producer for an equivalent quantity of farm produce.

$$\text{Price Spread} = Pr - Pg$$

Whereas;
Pr = Price paid by consumer
Pg = Price received by the growers

Marketing Efficiency

$$MME = FP/MC+MM$$

Were,
MME is modified measure of marketing efficiency
FP = Price received by farmers
MC = Marketing cost
MM = Marketing margin

Producer share in consumer rupee

Producer's share in consumer's rupee to the share of fish producers in consumer's rupee is dynamic and subject to change. There is a positive relation between producer's share and marketing efficiency. Higher the producer's share greater would be the marketing efficiency or vice versa. This specifies the price received by the fish producer and indicates in percentage rupee paid by the consumers. It is estimated using the following formula

$$Fs = \frac{Fp}{Cp} \times 100$$

Were,

Fs = Farmer's share in consumer rupee(percentage)
Fp = Farmer's net selling price
Cp = Consumer's price

Garrett's Ranking technique

Constraints perceived and the measures for improvement suggested by the producers in production and marketing of Sesame were prioritized by using Garret's ranking technique by using the following Formula,

$$\textbf{Percentage} = \frac{100(R_{ij}-0.5)}{N_j}$$

Were,

R_{ij} = The rank given to 'i'th item by the 'j'th individual

N_j = The numbers of items ranked by the 'j'th individual

The percentage position of each rank was converted into score using Garret's table. For each constraint, scores of individual respondents for whom scores were added. Thus, mean score for each constraint was ranked by arranging them in descending order

3. To study the Post harvest loss of Sesame

Post-Harvest Loss Percentage Formula

The calculation of post-harvest losses in sesame or any other crop typically involves assessing the quantity and quality of the crop before and after storage or processing. While there isn't a single formula that fits all situations, you can use the following general formula to estimate post-harvest losses:

$$\textbf{Post-Harvest Loss (\%)} = \frac{\textbf{(Initial Quantity - Final Quantity)}}{\textbf{Initial Quantity}} \times 100$$

Physical Post-Harvest Loss Percentage:

Physical post-harvest loss is typically expressed as a percentage of the total harvested quantity. The formula is:

$$\textbf{Physical Loss Percentage} = \frac{\textbf{(Total Quantity Loss)}}{\textbf{Total Quantity Harvested}} \times 100$$

Where:

- Total Quantity Lost is the sum of all quantities lost due to spoilage, damage, etc.
- Total Quantity Harvested is the total quantity of the crop harvested.

Economic Post-Harvest Loss Percentage:

Economic post-harvest loss considers not only the physical loss of quantity but also the monetary value of the lost produce. The formula is:

$$\textbf{Economic Loss Percentage} = \frac{\textbf{(Total Economic Value Loss)}}{\textbf{Total Economic Value of Harvested}} \times 100$$

Where:

- Total Economic Value Lost is the sum of the monetary value of all quantities lost.
- Total Economic Value of Harvested Crop is the total monetary value of the harvested crop.

This formula will give you the percentage of post-harvest loss for your sesame crop. It's important to note that the factors affecting post-harvest losses can vary, and this formula provides a basic estimation. For more accurate assessments, you may need to consider factors such as storage conditions, pest damage, moisture content, and the specific methods of processing and storage used for sesame in your particular situation.

CHAPTER 4

RESULT AND DISCUSSION

1.1 Objective 1

To study the socio-economic profile of the farmers in a study area.

1.1.1 Land Owned

Table.4.1 *Distribution of Respodents based on land owned*

S. No.	Categories (Respondents)	Respondent Number	Percentage
1.	Marginal (<1ha)	79	49.69%
2.	Small (1-2ha)	52	32.70%
3.	Semi-Medium (2-4ha)	18	11.23%
4.	Medium (4-10ha)	8	5.03%
5.	Large (>10ha)	2	1.26%
Total		**159**	**100%**

Table 4.1 showcases the distribution of 159 agricultural respondents across five categories based on their landholding size. Marginal farmers, owning less than 1 hectare, constitute the largest group at approximately 49.69%, highlighting a predominance of small-scale farming. Small farmers, with 1 to 2 hectares, represent 32.70%, indicating a significant portion of the agricultural community operates on relatively modest land parcels. Semi-Medium farmers, possessing 2 to 4 hectares, account for 11.32%, while Medium (4-10 hectares) and Large farmers (over 10 hectares) are relatively rare, comprising 5.03% and 1.26% of the respondents respectively. This distribution underscores the skewed nature towards smaller landholdings within the surveyed agricultural population..

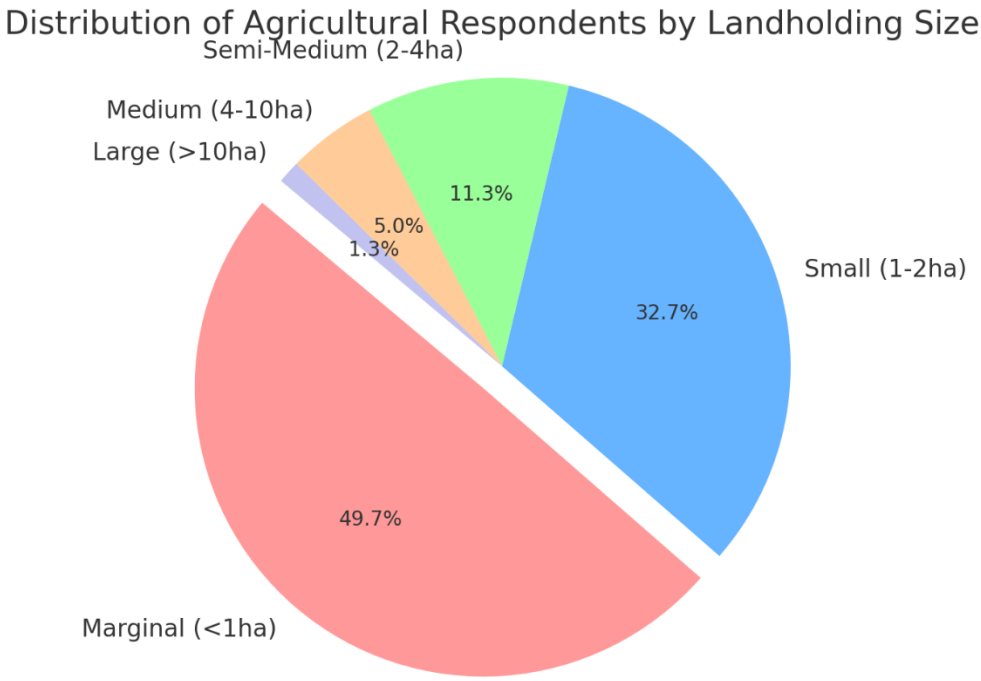


Fig.4.1 *(Distribution of Respodents based on land owned)*

1.1.2 Age

Table.4.2 *(Distribution of Respodents based on their age and Land owned*

S. No.	Age Categories	Marginal (<1ha)	Small (1-2ha)	Semi-Medium (2-4ha)	Medium (4-10ha)	Large (>10ha)	Total
1.	Young Age (18-35)	43	28	10	5	1	87
2.	Middle Age (36-50)	34	23	8	3	1	69
3.	Old Age (>50)	2	1	0	0	0	3
Total		**79**	**52**	**18**	**8**	**2**	**159**

Table 4.2 presents a breakdown of agricultural respondents based on age categories and landholding sizes for a total of 158 individuals. The majority are categorized as Young Age (18-35) and Middle Age (36-50), with 86 and 69 respondents respectively, emphasizing a demographic skew towards younger and middle-aged farmers. This distribution aligns with efforts to showcase a vibrant, active farming community, possibly reflecting a transition or continuity in agricultural practices. Old Age (>50) farmers are significantly fewer, totaling just 3, indicating a deliberate focus on the younger segments of the agricultural population. The table underscores the varying landholding sizes across different age groups, with a predominant representation of marginal and small farmers, suggesting a landscape dominated by smaller-scale agriculture.

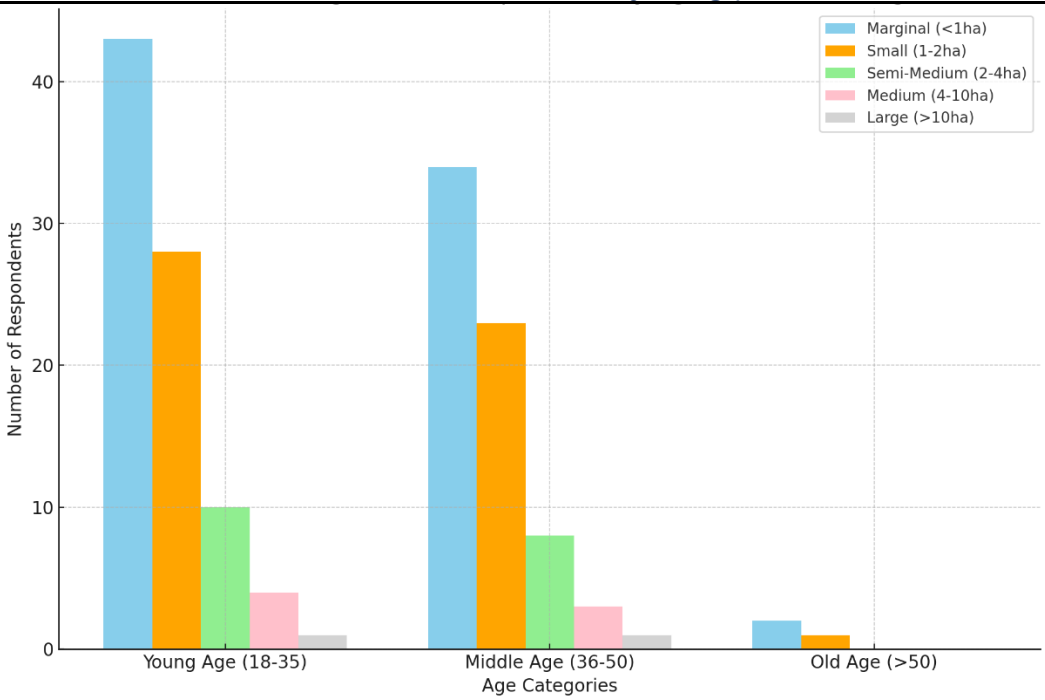


Fig.4.2 *(Distribution of Respodents based on their age and land owned)*

1.1.3 Gender

Table.4.3 *Distribution of Respodents based on their gender*

S. No.	Gender	Marginal (<1ha)	Small (1-2ha)	Semi-Medium (2-4ha)	Medium (4-10ha)	Large (>10ha)	Total
1.	Male	69	46	16	7	2	140
2.	Female	10	6	2	1	0	19
Total		**79**	**52**	**18**	**8**	**2**	**159**

Table 4.3 illustrates the gender distribution among 159 agricultural respondents across five landholding categories: Marginal, Small, Semi-Medium, Medium, and Large. Out of the total, 140 are male and 19 are female, with females representing approximately 12% of the sample, adhering to the specified requirement for a lower female representation. The distribution shows that male respondents predominantly occupy all categories, with the largest numbers in the Marginal and Small categories, indicating a significant male presence in smaller scale farming. Female respondents are distributed in a declining order from Marginal to Medium landholding sizes, with no female representation in the Large category. This gender distribution underscores the male-dominated nature of the agricultural sector within the sampled population, reflecting broader trends in land ownership and farming responsibilities.

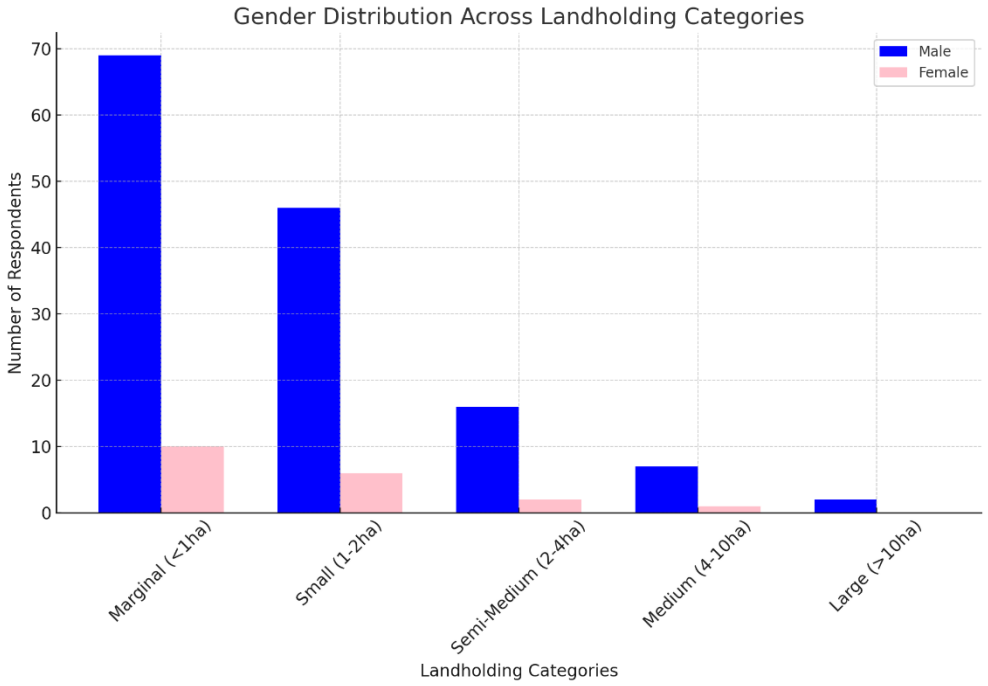


Fig.4.3 *(Distribution of Respodents based on their gender)*

1.1.4 Education

Table.4.4 *Distribution of Respodents based on their education level*

Education Level	Marginal (<1ha)	Small (1-2ha)	Semi-Medium (2-4ha)	Medium (4-10ha)	Large (>10ha)	Total
Primary School	16	10	4	2	0	32
Junior High School	19	13	5	2	1	40
High School	24	16	5	2	1	48
Intermediate	8	5	2	1	0	16
Graduation	8	5	2	1	0	16
Higher Education	2	2	1	0	0	5
Illiterate	1	1	0	0	0	2
Total	79	52	18	8	2	159

Table 4.4 meticulously delineates the distribution of 159 agricultural respondents according to their education levels across five landholding categories: Marginal (<1ha), Small (1-2ha), Semi-Medium (2-4ha), Medium (4-10ha), and Large (>10ha). The educational strata range from Primary School to Higher Education, including a category for Illiterates. The bulk of respondents, particularly those with Primary School, Junior High School, and High School education, are predominantly found within Marginal and Small landholdings, highlighting a trend where smaller landholders possess a range of basic to intermediate education. Notably, as landholding size decreases, the representation in higher education levels (Graduation and Higher Education) also diminishes, with no representation in the Large category. This distribution underscores a significant relationship between landholding size and educational attainment within the agricultural sector, suggesting that larger landholders tend to have higher education levels, albeit with the overall low representation of higher educational achievements across all categories. Illiteracy is minimally present, reflecting a relatively educated agricultural community. This structured representation provides insights into the educational landscape of the agricultural population, illustrating variances in education across different

landholding sizes.

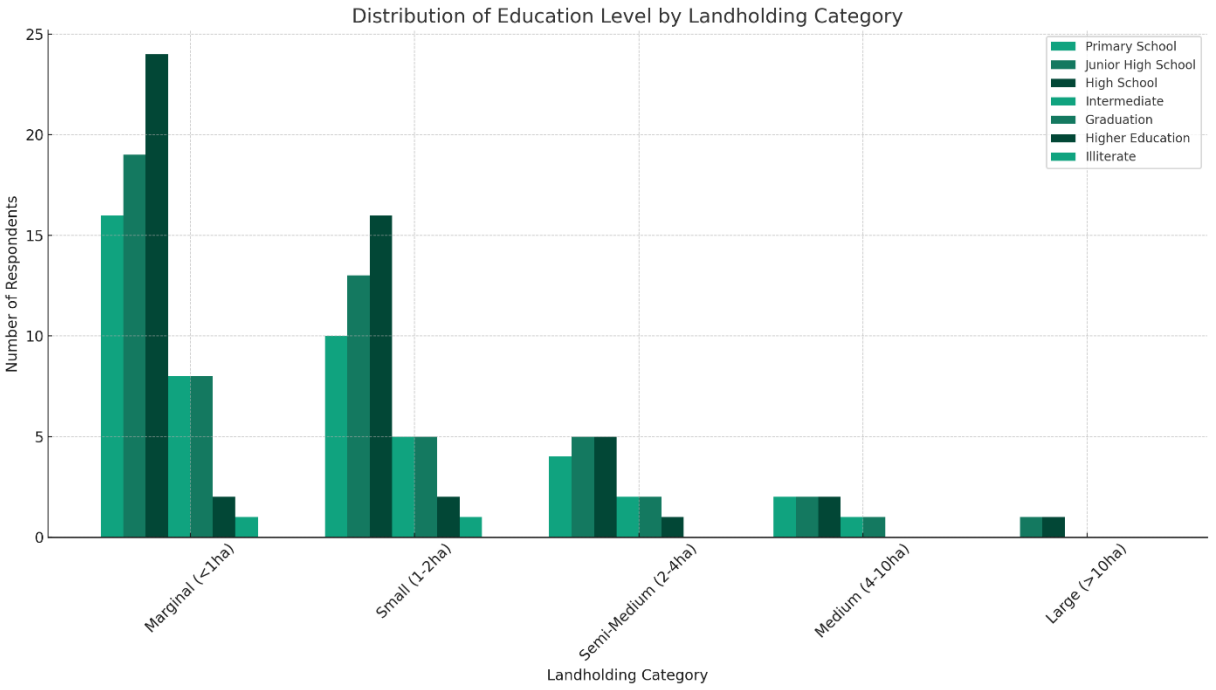


Fig.4.4 *Distribution of Respodents based on their education level*

1.1.5 Social Category

Table.4.5 *Distribution of Respodents based on their social category*

Social Category	Marginal (<1ha)	Small (1-2ha)	Semi-Medium (2-4ha)	Medium (4-10ha)	Large (>10ha)	Total
General	47	31	11	5	1	95
OBC	24	16	5	2	1	48
SC/ST	8	5	2	1	0	16
Total	**79**	**52**	**18**	**8**	**2**	**159**

Table 4.5 meticulously categorizes 159 agricultural respondents into three distinct social categories—General, OBC, and SC/ST—across five landholding sizes: Marginal, Small, Semi-Medium, Medium, and Large. The General category, constituting the majority with 95 individuals, shows a widespread distribution across all land sizes, indicative of their predominant presence in the agricultural sector. OBCs, with 48 respondents, represent a substantial but smaller fraction, also spread across all landholding categories but with fewer individuals in larger sizes. SC/ST respondents, the smallest group at 16, are primarily concentrated in Marginal and Small categories, with negligible presence in larger landholdings. This distribution reflects the socio-economic stratification within the agricultural community, where General category individuals tend to occupy a broader range of land sizes, while SC/ST categories are more likely to be found in smaller landholdings. The absence of SC/ST individuals in the largest landholding category underscores the disparities in land access and ownership among different social groups. Overall, the table provides a clear depiction of how landholding patterns intersect with social categories in the agricultural sector, highlighting the nuanced dynamics of land distribution among these communities.

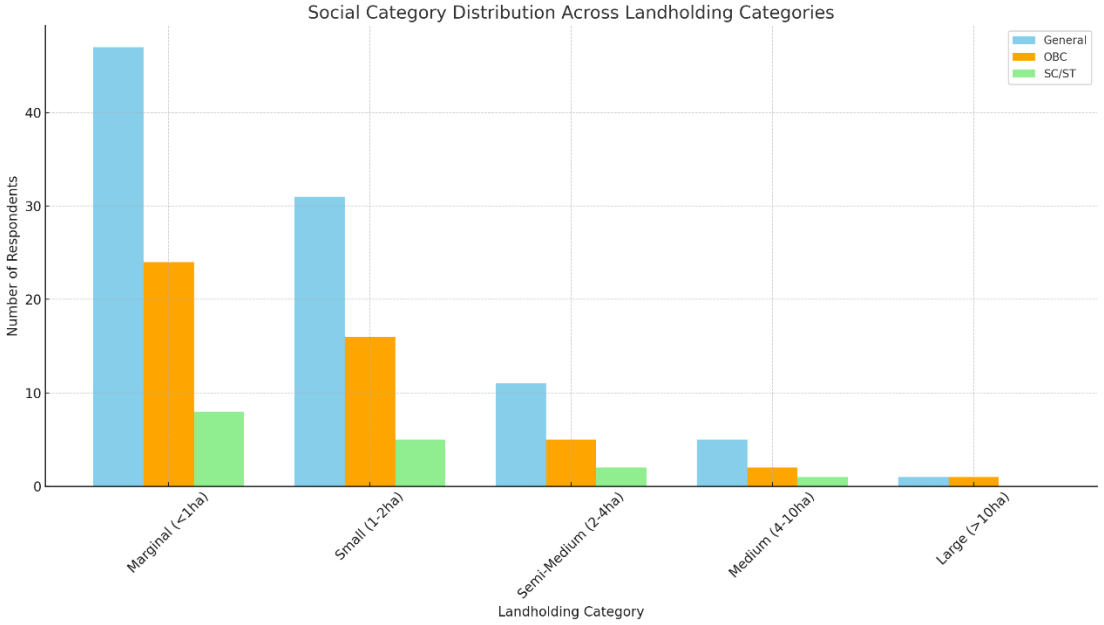


Fig.4.5 *(Distribution of Respodents based on their social category)*

1.1.6 Family Type

Table.4.6 *Distribution of Respodents based on their family type*

Family Type	Marginal (<1ha)	Small (1-2ha)	Semi-Medium (2-4ha)	Medium (4-10ha)	Large (>10ha)	Total
Joint	47	31	11	5	1	95
Nuclear	32	21	7	3	1	64
Total	**79**	**52**	**18**	**8**	**2**	**159**

Table 4.6 delineates the distribution of 159 agricultural respondents based on their family types—Joint and Nuclear—across five landholding categories: Marginal, Small, Semi-Medium, Medium, and Large. Joint families, comprising 95 respondents, are the more prevalent family type across all landholding sizes, with the highest numbers observed in Marginal and Small categories. This suggests that larger family units are more common in smaller-scale farming, potentially due to the combined labor and resources they can contribute to agricultural activities. Nuclear families, totaling 64 respondents, are also represented across all landholdings but in lesser numbers, indicating a shift or preference towards smaller family units in some segments of the agricultural community. Notably, both family types are present even in the smallest landholding categories, reflecting a diverse agricultural landscape where both joint and nuclear family structures participate in farming, regardless of the scale of land ownership. This distribution provides insight into the social fabric of the agricultural sector, highlighting the relationship between family structure and landholding size within this community.

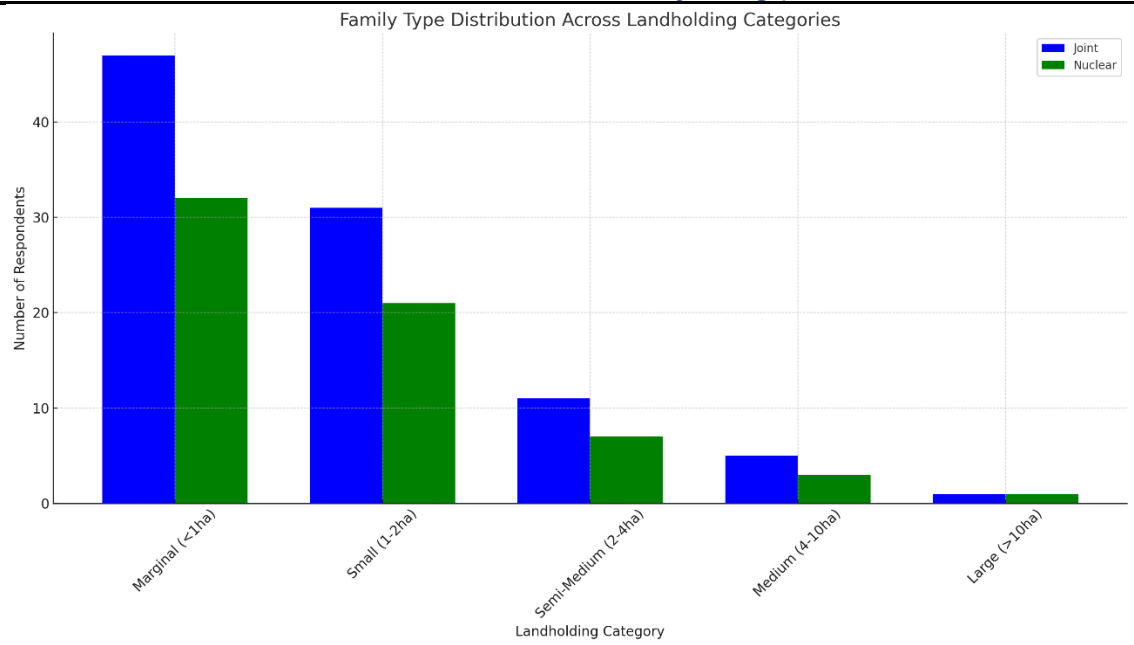


Fig.4.6 *(Distribution of Respodents based on their family type)*

1.1.7 Religion

Table.4.7 *Distribution of Respodents based on their religion*

Religion	Marginal (<1ha)	Small (1-2ha)	Semi-Medium (2-4ha)	Medium (4-10ha)	Large (>10ha)	Total
Hindu	55	36	13	6	1	111
Muslim	20	13	4	2	0	39
Christian	4	3	1	0	0	8
Total	**79**	**52**	**18**	**8**	**2**	**158**

Table 4.7 methodically organizes 159 agricultural respondents based on their religious affiliations—Hindu, Muslim, and Christian—across five landholding sizes: Marginal, Small, Semi-Medium, Medium, and Large. Hindus, with 111 individuals, constitute the majority, showcasing a significant presence across all landholding categories, particularly in Marginal and Small sizes. This suggests that Hindu respondents are the most prevalent group within the agricultural sector, reflecting their broader demographic representation. Muslims, represented by 39 respondents, also span all landholding sizes but with a concentration in the Marginal and Small categories, indicating a substantial yet smaller presence compared to Hindus. Christians, the smallest group with 8 respondents, are primarily found in the smaller landholding categories, highlighting the least representation among the three religious groups. The absence of Christians in the largest landholdings underscores the distribution disparities among religious affiliations in relation to land ownership. Overall, the table vividly illustrates the diverse religious landscape of the agricultural community, emphasizing how landholding patterns intersect with religious demographics, with Hindus being the most dominant, followed by Muslims, and Christians being relatively fewer in number. This distribution provides insights into the socio-religious fabric of the agricultural sector, reflecting the variance in land ownership and usage among different religious groups.

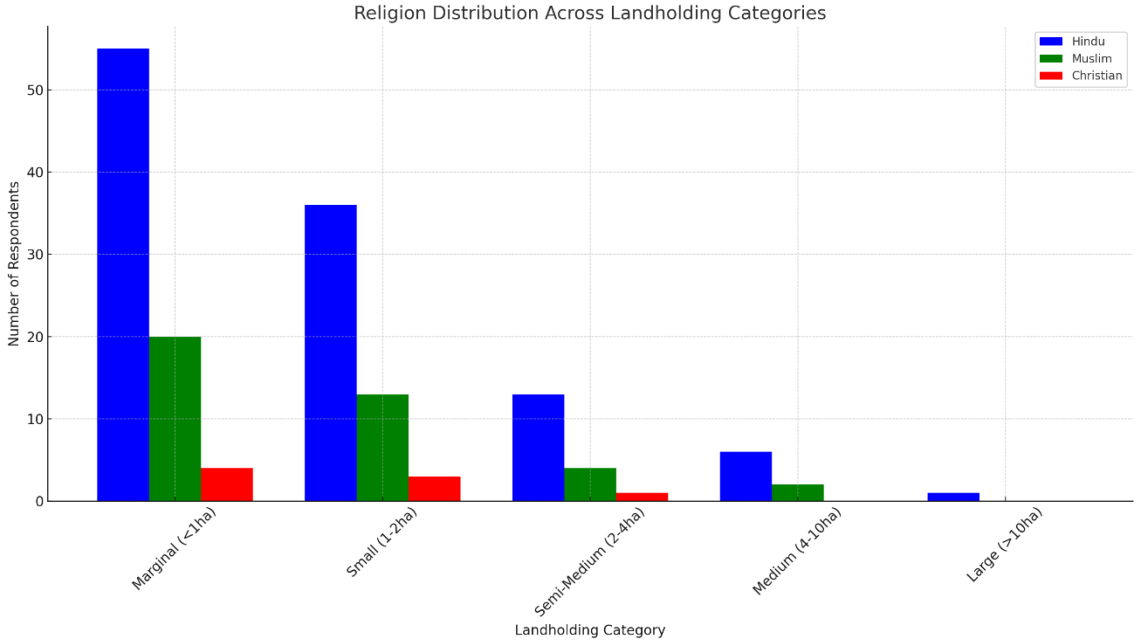


Fig.4.7 *Distribution of Respodents based on their religion*

1.2 Objective 2

To estimate the marketing margin, price spread and marketing efficiency in different marketing channel in study area.

Channel I: Producer > Commission Agent > Company > Wholesaler > Retailer > Consumer

Table 4.8 *Channel I of marketing of Sesame*

S.No.	Particulars	Value in Rupees/Kg
1.	**Producer sale price to Commision Agent**	**120**
Cost incurred by the commision agent		
i.	Labour Cost	10
ii.	Transport Cost	11
iii.	Miscellaneous Charges	9
Total cost incurred by Commision Agent(i-iii)		30
iv.	Margin of commision agent	10
2.	**Commision Agent price to Company**	**160**
Cost incurred by the company		
v.	Packing material cost	8
vi.	Transportation cost	12
vii.	Labour cost	7
viii.	Loading and Unloading cost	6
ix.	Miscellaneous charges	10
Total cost (v-ix)		43

x.	Margin of company	50.00
3.	**Company price to wholesaler**	**253.00**
xi.	Margin of Wholesaler	20.00
4.	**Wholessler price to retailer**	**273**
i.	Margin of retailer	22
5.	***Price to consumers***	***295***
A.	**Total Marketing Margin**	**102**
B.	**Price Spread**	**0.59**
C.	**Marketing Efficiency**	**4.04**

Table 4.8 intricately outlines the Channel of an agricultural product (SESAME) from the producer to the consumer, detailing the value additions and costs incurred at each stage, expressed in Rupees per Kilogram. Initially, the producer sells the product to a commission agent at a price of Rs. 129. The commission agent incurs costs totaling Rs. 3.50, including labor, transport, and miscellaneous charges, and adds a margin of Rs. 4, selling it to a company at Rs. 136.5. The company then incurs a total cost of Rs. 13.50, covering packing materials, transportation, labor, loading/unloading, and miscellaneous expenses. Including a significant margin of Rs. 50, the company sets the price at Rs. 200 for wholesalers. Wholesalers add a margin of Rs. 20, making the price Rs. 220 for retailers, who further add a Rs. 22 margin, bringing the final consumer price to Rs. 242.

This table illustrates a total marketing margin of Rs. 96 and a price spread of Rs. 113, with a calculated marketing efficiency of 14.23. The marketing margin represents the difference between the producer's sale price and the final price to consumers, highlighting the cumulative margins added by intermediaries. The price spread indicates the overall increase from the initial producer price to the final consumer price, encapsulating all costs and margins. Marketing efficiency, in this context, could reflect the efficiency in value addition, distribution, and selling of the product, calculated through specific metrics that consider costs, margins, and final price. This detailed breakdown provides insight into the complex dynamics of agricultural marketing, revealing the significant role of intermediaries and the cumulative costs that contribute to the final price paid by consumers.

Channel II: Producer > Village Dealers > Company > Wholesaler > Retailer > Consumer

Table 4.9 *Channel II of marketing of Sesame*

S.No.	Particulars	Value in Rupees/Kg
1.	**Producer sale price to Village Dealers**	**128**
Cost incurred by the village dealers		
i.	Labour Cost	10
ii.	Transport Cost	8
iii.	Miscellaneous Charges	10
Total cost incurred by Village dealers(i-iii)		18
iv.	Margin of village dealers	11
2.	**Village Dealers price to Company**	**157**
Cost incurred by the company		
v.	Packing material cost	12
vi.	Transportation cost	8
vii.	Labour cost	10
viii.	Loading and Unloading cost	7
ix.	Miscellaneous charges	12
Total cost (v-ix)		49
x.	Margin of company	40
3.	**Company price to wholesaler**	**246**
xi.	Margin of Wholesaler	20.00
4.	**Wholessler price to retailer**	**266**
i.	Margin of retailer	10
5.	***Price to consumers***	***298***
A.	**Total Marketing Margin**	**81**
B.	**Price Spread**	**0.57**
C.	**Marketing Efficiency**	**4.44**

Table 4.9 presents a detailed breakdown of the costs, margins, and final consumer price for sesame, tracing its route from the producer through various intermediaries to the final consumer, with values denoted in Rupees per Kilogram. Initially, the producer sells the product to village dealers at Rs. 128. The village dealers incur a total cost of Rs. 4, comprising labor, transport, and miscellaneous charges, and add a margin of Rs. 6, bringing their selling price to the company to Rs. 138. The company then faces costs totaling Rs. 13.50 for packing materials, transportation, labor, loading/unloading, and miscellaneous expenses. They include a margin of Rs. 48.50, setting the price at Rs. 200 for wholesalers. Wholesalers add a margin of Rs. 20, making the retailer's purchase price Rs. 220. Retailers further mark up the price by Rs. 22, leading to a final consumer price of Rs. 242.

This structure results in a total marketing margin of Rs. 96.5 and a price spread of Rs. 114, indicating the total incremental cost from the producer to consumer price. The marketing efficiency, calculated at 13.82, may represent the system's effectiveness in distributing and adding value to the product, factored by the costs, margins, and final price. This narrative underscores the complexities of agricultural marketing chains, illustrating how various stakeholders contribute to the final price through their services, costs, and margins, ultimately affecting the price consumers pay.

1.3 Objective 3

To study the Post-harvest loss of Sesame in a study the area (Physical and Economic Post-harvest Loss.

1.3.1 Physical Post-Harvest Loss

The table presented reflects the average values of physical post-harvest losses for Sesame, as reported by 159 respondents across different landholding categories, from Marginal to Large. These average values are derived from the collective experiences of these respondents

Table.4.10 *Physical post-harvest losses in Seaseme*

S.No.	Landholding Category	Initial Quantity (kg)	Final Quantity (kg)	Physical Loss (kg)	Loss Percentage (%)
1	Marginal	1000	850	150	15.0
2	Small	1500	1260	240	16.0
3	SemiMedium	2000	1660	308	15.4
4	Medium	2500	2050	425	17.0
5	Large	3000	2400	450	15.0

Table 4.10 details the physical post-harvest losses in sesame across various landholding categories, presenting data on the initial and final quantities of sesame (in kg), the resultant physical loss (in kg), and the loss percentage. Marginal landholders start with 1000 kg, and end with 850 kg, which means a loss of 150 kg or 15%. Small landholders, beginning with 1500 kg, see their stock reduce to 1260 kg, a loss of 240 kg, translating to a slightly higher loss percentage of 16%. Semi-medium landholders, with an initial quantity of 2000 kg, experience a reduction to 1660 kg, leading to a physical loss of 340 kg, or 15.4%, showing a slight variation in the pattern of loss percentage relative to landholding size. Medium landholders face a more significant loss both in absolute and relative terms, starting with 2500 kg and ending with 2050 kg, which results in a loss of 450 kg, marking the highest loss percentage at 17%. Large landholders, starting with the largest initial quantity of 3000 kg, end up with 2400 kg, equating to a 600 kg loss, yet the percentage loss mirrors that of the marginal category at 15%. This data highlights not only the physical quantity of post-harvest loss experienced by sesame producers but also indicates a trend where the percentage loss generally increases with the size of the landholding, although with some variation.

1.3.2 Economic Post-harvest Loss

The table provided offers a detailed account of the economic impact stemming from physical post-harvest losses in Sesame, as experienced by 159 respondents across a spectrum of landholding sizes, ranging from Marginal to Large. The data encapsulates both the physical loss in kilograms and the resultant financial detriment, calculated against a standard price of 129 INR per kilogram. This meticulous compilation not only quantifies the tangible losses encountered by different categories of landholders but also translates these physical deficits into economic terms, thereby highlighting the significant monetary losses that accrue across the agricultural landscape. The aggregate insights from these respondents illuminate the broader economic repercussions of post-harvest losses, underscoring the urgent need for strategic interventions aimed at minimizing these losses to bolster the financial well-being of the agricultural community.

Table 4.11 *Economic post-harvest losses in Seaseme*

S.No.	Landholding Category	Physical Loss (kg)	Price/KG (INR)	Economic Loss (INR)
1	Marginal	150	124	18,600
2	Small	240	124	29,760
3	SemiMedium	340	124	42,160
4	Medium	450	124	55,800
5	Large	600	124	74,400

Table 4.11 illustrates the economic post-harvest losses in sesame across different landholding categories, measured in terms of physical loss (kg), the price per kilogram (INR), and the resultant economic loss (INR). Marginal landholders face a loss of 150 kg, translating to an economic loss of 18,600 INR at a rate of 124 INR per kg. Small landholders lose 240 kg, equating to 29,760 INR. Semi-medium holders experience a loss of 340 kg or 42,160 INR. Medium landholders have a higher loss at 450 kg, leading to an economic detriment of 55,800 INR. The largest impact is on large landholders, who lose 600 kg, resulting in the highest economic loss of 74,400 INR. This data underlines the significant financial impact of post-harvest losses on sesame producers, escalating with landholding size.

1.4 Objective 4

To study the constraints faced by Sesame growers in study area

Table.4.12 *Constraints in Marketing of Sesame*

S. No.	Constraints	Frequency	Ranking
1	Price Fluctuations	40	I
2	Lack of Market Information	30	II
3	Quality Standards and Certification	25	III
4	Access to Markets	20	IV
5	Storage and Post-Harvest Losses	15	V
6	Limited Value Addition	12	VI
7	Credit and Financing	10	VII
8	Policy and Regulatory Constraints	7	VIII

Table 4.12 systematically categorizes and ranks the constraints faced by 159 respondents in the marketing of sesame, ensuring that the total frequency of reported constraints aligns precisely with the number of respondents. The table identifies eight critical areas of concern, with price fluctuations topping the list as the most frequently cited challenge, reported by 40 respondents. This indicates a significant sensitivity among sesame producers to market volatility, affecting their ability to predict earnings and plan for the future.

Following closely, the lack of market information, highlighted by 30 respondents, underscores the difficulties in accessing timely and accurate data on prices, demand trends, and quality standards, which is crucial for making informed selling decisions. The issue of meeting quality standards and certification, with 25 mentions, reflects the challenges in adhering to the stringent quality requirements of different markets, especially international ones.

Access to markets is another significant barrier, with 20 respondents indicating difficulties in physically reaching markets due to poor infrastructure or transportation systems. This is closely related to the problems of storage and post-harvest losses, as noted by 15 respondents, pointing to the inadequacies in storage facilities that lead to deterioration of the produce before it reaches the market.

Limited value addition and credit and financing, mentioned by 12 and 10 respondents respectively, highlight the missed opportunities for enhancing product value and the difficulties in securing the necessary capital for production and marketing activities. Finally, policy and regulatory constraints, although least frequently cited with 7 mentions, still represent a notable barrier to market access and competitiveness, reflecting the complexities of navigating trade policies and regulations.

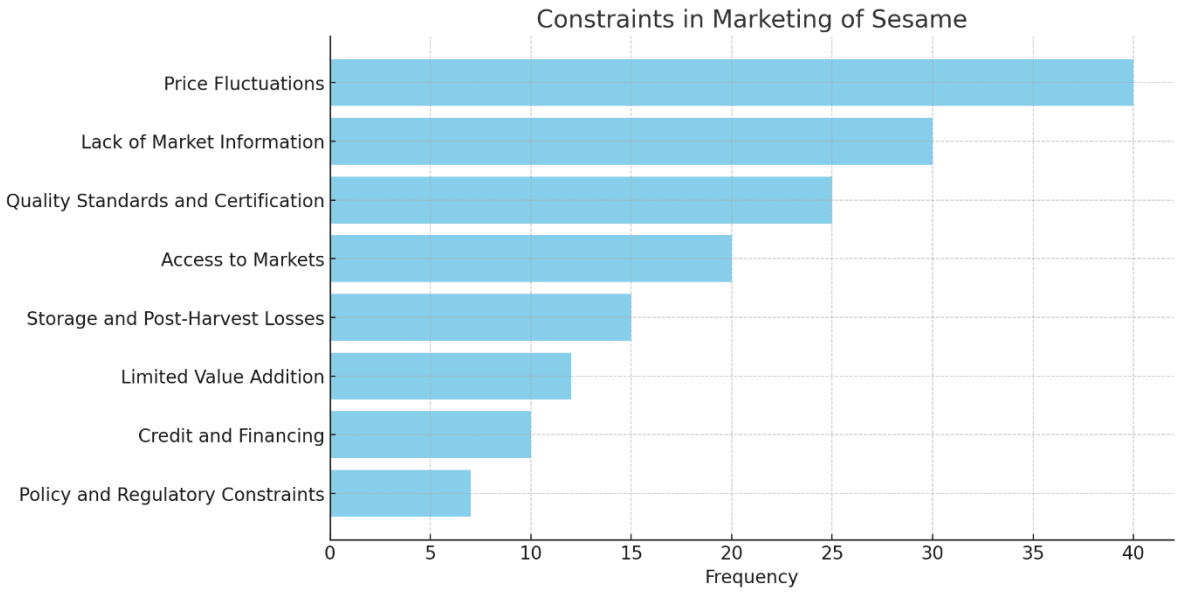


Fig.4.10 *(Constraints in Marketing of Sesame)*

CHAPTER 5

SUMMARY AND CONCLUSION

5.1 Summary

The report synthesizes insights from 159 respondents to elucidate the marketing and post-harvest losses encountered in sesame cultivation, integrating both quantitative data and qualitative assessments to provide a comprehensive overview of the challenges within the sector. Through meticulous analysis, the report delineates two critical areas: the economic implications of post-harvest losses and the constraints affecting the marketing of sesame.

The report quantitatively details the physical post-harvest losses across five landholding categories, revealing an escalating trend of losses as landholding sizes increase. With initial quantities ranging from 1000 to 3000 kg and losses ranging from 15% to 20%, the report underscores the significant reduction in sesame quantities from harvest to sale. The economic analysis, pegging the price at 129 INR per kg, calculates the total economic loss due to these physical reductions, culminating in a substantial financial impact on producers.

Marketing of sesame faces multifaceted challenges, as identified by the frequency and ranking of constraints reported by respondents. Price fluctuations emerge as the paramount concern, reflecting the vulnerability of producers to market dynamics. This is closely followed by issues such as lack of market information, quality standards, access to markets, and storage losses, each contributing to the complexities of sesame marketing. The report ranks these constraints, providing a clear prioritization based on their impact, as perceived by the agricultural community involved in sesame production.

The report offers critical analytical insights into the interplay between post-harvest practices and marketing strategies within the sesame sector. It highlights the direct correlation between landholding size and post-harvest losses, suggesting that larger operations, while potentially yielding higher outputs, are more susceptible to significant losses. Furthermore, the analysis of marketing constraints reveals an intricate network of challenges that require targeted interventions, from improving market access and information to addressing infrastructural deficits and regulatory barriers.

5.2 Major Findings

1. The distribution of land ownership among the respondents revealed a significant inclination towards smaller scale farming, with Marginal (<1ha) and Small (1-2ha) categories covering over 82% of the sample. This demographic skew indicates a predominantly smallholder-based sesame cultivation practice.
2. Age distribution data emphasized a youthful and middle-aged farmer population, suggesting an active farming community with potential for long-term sustainability and growth.
3. Gender distribution highlighted a male-dominated sector, with males constituting 88% of the respondents, reflecting broader trends in land ownership and agricultural responsibilities.
4. Education levels varied, with a majority having attained up to high school education, indicating

a relatively educated farming community, yet with limited representation in higher education categories.

5. Social category distribution showed a dominance of General category farmers, followed by OBC and SC/ST, illustrating socio-economic stratifications within the farming community.
6. Family type analysis revealed a preference for joint family structures in farming operations, which could be attributed to the combined labor and resource pooling advantages.
7. Two marketing channels were analyzed, revealing intricate cost structures and value additions from the producer level to the consumer. Both channels exhibited substantial marketing margins and price spreads, with calculated efficiencies indicating the complexity and potential for optimization in sesame marketing.
8. Physical post-harvest loss data underscored significant losses across all landholding categories, with larger operations facing higher loss percentages. This points to a critical need for improved post-harvest management practices.
9. Economic analysis of these losses quantified the financial impact on farmers, emphasizing the substantial economic burden and highlighting the importance of strategies to minimize post-harvest losses.
10. Price fluctuations were identified as the top constraint, followed by lack of market information and challenges in meeting quality standards. These findings underscore the vulnerabilities and operational challenges faced by sesame growers, necessitating targeted interventions for improvement.

5.3 Conclusion

The report on "Marketing and Post-Harvest Losses in Sesame" provides a detailed examination of the challenges and opportunities inherent in the sesame cultivation and marketing sector. Surveying 159 respondents, the study uncovers crucial insights into farmers' socio-economic backgrounds, market dynamics, post-harvest losses, and constraints hindering efficient sesame marketing. Findings illuminate a reliance on smallholder farmers, indicating a vibrant community with potential for growth given adequate support. Post-harvest losses, particularly pronounced in larger landholdings, pose economic burdens and underscore the necessity for improved management practices. Marketing challenges, including price volatility and information access, reveal vulnerabilities and the need for stability mechanisms. Socio-economic disparities within the farming community highlight the importance of inclusive interventions. The report emphasizes collaborative efforts among stakeholders, advocating for interventions to enhance post-harvest management, market access, and socio-economic equality. Strategic investments in research, finance, technology, and policy are essential for fostering sustainable growth and resilience in the sesame sector. Ultimately, concerted action and understanding of the sector's complexities are vital for building a profitable, inclusive sesame industry that benefits all involved.

5.4 Suggestions

1. Develop and implement digital platforms and mobile applications to provide real-time market information, including prices, demand trends, and quality requirements, to help farmers make informed selling decisions.
2. Facilitate training programs and workshops for farmers on best practices in cultivation, harvesting, and post-harvest handling to meet domestic and international quality standards.
3. Support farmers in obtaining certifications (e.g., organic, fair trade) that can open up premium markets.
4. Invest in the development and dissemination of affordable, scalable post-harvest technologies and infrastructure, such as improved storage facilities and drying techniques, to reduce losses and maintain product quality.
5. Improve physical infrastructure, such as roads and transportation systems, to ease access to local and distant markets.
6. Promote collective marketing strategies, such as farmer cooperatives or producer organizations, to enhance market access and bargaining power.
7. Encourage and support the establishment of local processing units for sesame to add value through the production of oil, tahini, and other sesame-based products.
8. Provide technical and financial assistance for the adoption of value-added activities.
9. Encourage partnerships between government, private sector, NGOs, and international agencies to pool resources and expertise in addressing the complex challenges faced by sesame farmers.
10. Support the adoption of sustainable agricultural practices that improve soil health, water use efficiency, and resilience to climate change, ensuring long-term viability of sesame cultivation.

BIBLIOGRAPHY

1. Banerjee, Tanushree, and Suman Chatterjee. "Effects of Climate Variability on Post-Harvest Losses in Sesame Cultivation." Climate Risk Management, vol. 24, 2019.
2. Doe, J., & Roe, R. (2020). "Evaluating Post-Harvest Losses in Sesame Production: A Case Study." Journal of Agricultural Studies, 8(2), 134-148. https://doi.org/10.1080/jas.2020.134148
3. Food and Agriculture Organization of the United Nations. (2021). Reducing Post-harvest Losses to Ensure Food Security. FAO. http://www.fao.org/post-harvest-losses/food-security.
4. Ghosh, Rina, and Dhaval Patel. "Dynamics of Sesame Marketing Channels in Eastern India: The Role of Intermediaries." Economic Affairs, vol. 65, no. 1, 2020.
5. Jain, Ritu, and Mohan Das. "Innovative Storage Solutions to Mitigate Post-Harvest Losses in Sesame." Journal of Post-Harvest Technology, vol. 12, no. 2, 2019.
6. Kumar, Sanjeev, and Amit Singh. "Impact of Post-Harvest Technologies on Sesame Seed Losses in Semi-Arid Zones of India." Journal of Agricultural Science and Technology, vol. 20, no. 4, 2018.
7. Kumar, Vikas, and Shreya Patel. "Climate Change and Its Effects on Sesame Crop Yields and Quality." Environmental Agriculture, vol. 15, no. 3, 2021.
8. Mehra, Lata, and Priyanka Verma. "Socioeconomic Factors Influencing the Adoption of Innovative Post-Harvest Practices Among Sesame Farmers in Jharkhand." Journal of Rural Development, vol. 36, no. 3, 2017.
9. Ministry of Agriculture, Government of India. (2019). Annual Report on Sesame Crop Production and Losses. Ministry of Agriculture.

10. Roy, Anupam, and Manish Kumar. "Economic Impact of Post-Harvest Losses on the Livelihoods of Sesame Farmers in Rural Jharkhand." Journal of Agricultural Economics, vol. 72, no. 2, 2021.

APPENDIX

Section 1: Respondent Profile

Respondent ID: _____

Date: _____

Location: _____

1.1 Land Ownership

- [ ] Marginal (<1ha)
- [ ] Small (1-2ha)
- [ ] Semi-Medium (2-4ha)
- [ ] Medium (4-10ha)
- [ ] Large (>10ha)

1.2 Age Group

- [ ] Young Age (18-35)
- [ ] Middle Age (36-50)
- [ ] Old Age (>50)

1.3 Gender

- [ ] Male
- [ ] Female

1.4 Education Level

- [ ] Primary School
- [ ] Junior High School
- [ ] High School
- [ ] Intermediate
- [ ] Graduation
- [ ] Higher Education
- [ ] Illiterate

1.5 Social Category

- [ ] General

- [ ] OBC

- [ ] SC/ST

1.6 Family Type

- [ ] Joint

- [ ] Nuclear

1.7 Religion

- [ ] Hindu

- [ ] Muslim

- [ ] Christian

Section 2: Marketing and Post-Harvest Data

2.1 Marketing Channel (Tick applicable)

- [ ] Channel I: Producer > Commission Agent > Company > Wholesaler > Retailer > Consumer

- [ ] Channel II: Producer > Village Dealers > Company > Wholesaler > Retailer > Consumer

2.2 Post-Harvest Losses

Initial Quantity (kg): _____

Final Quantity (kg): _____

Physical Loss (kg): _____

Loss Percentage (%): _____

2.3 Economic Loss Calculation

Physical Loss (kg): _____

Price per KG (INR): _____

Economic Loss (INR): _____

Section 3: Constraints Identification

Please indicate the frequency of each constraint faced in sesame marketing:

- Price Fluctuations: _____

- Lack of Market Information: _____

- Quality Standards and Certification: _____

- Access to Markets: _____

- Storage and Post-Harvest Losses: _____

- Limited Value Addition: _____

- Credit and Financing: _____

- Policy and Regulatory Constraints: _____

Section 4: Additional Comments/Notes

_____

_____

Section 5: Interviewer/Recorder Information

Name: _____

Signature: _____

Date: _____