TRENDS INVOLVED IN FARMING PRACTICES ACROSS HARYANA:

AN ETHNOGRAPHIC CASE REFLECTION FROM FOUR VILLAGES

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1. Introduction

Ever since India embarked on the path to liberalize its economic growth story since the early 1990s, there has been a substantive body of scholarship –in areas across development economics- highlighting the increase in sector-wise productivity differences, empricially observed across its economic landscape (i.e. between the primary-secondary-tertiary sector). The varied (under) performance of the agriculture segment-as part of the primary sector- has occupied a special interest amongst most scholars analysing India's contemporary development picture. A principal reason for this focus owes to the fact as to how more than 58% of the average rural population and 48% of India's overall population (rural + urban) still remains employed by the agricultural sector.

In recent years, an exponential rise seen in accounts of farmer suicides; declining farmers' incomes, and a gradual decline in agricultural productivity across states, have been the critical discussion points, making it essential to understand the activity of farming, and the extent to which farmers- especially in certain rural spaces- struggle in making farming a more profitable enterprise for themselves and others. At the same time, as observed during the length of this study, decisions involved in actual process of farming across villages (within states) require a deeper understanding of a diverse set of inter-connected factors that influence the farming mechanism.

In this context, this report- involving four months of on-field ethnographic[2] engagement in form of detailed oral interviews and conversations with 36 farmers from 4 randomly identified villages (Bidhnauli, Rathdhana, Aterna and Sersa) across the state of Haryana- makes an attempt to understand how factors such as: **the educative profile of a farmer**; **average size of land acreage** (i.e. land under cultivation); **farmer's household working group composition** involved in farming (i.e. an entire family vs. an individual engaged in farming), affect the process and activity of farming amongst other aspects.

Developing a more in-depth understanding of how these factors- in addition to the economics of costs involved in farming along with the efficacy of social protection measures available through schemes of crop insurance- play a critical role in the entrepreneurial nature of farming, qualified as the key objectives to this research investigation. The study further discusses the role and impact of current crop protection and insurance mechanisms- supported by the Pradhan Mantri Bima Yojana- in identified villages of Haryana, discussing some of the key limitations it is facing amongst farmers.

Through detailed interviews and conversations with each farmer as our respondent, the documented findings also help us understand how aspects such as: *inter-generational transfer of knowledge about the process of farming* (from one family member to another- in case of family owned farming enterprises) and existing *knowledge-peer network amongst farmers* at an intra/inter-village level (amongst most independent farmers), play substantive roles in both, influencing and shaping an average farmer's decision on crop cultivation at all stages involved in the overall process of farming.

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[2]Ethnography, emerging from anthropology, and adopted by sociologists, is a qualitative methodology that lends itself to the study of the beliefs, social interactions, and behaviours of small societies, involving participation and observation over a period of time, and the interpretation of the data collected (Denzin and Lincoln, 2011; Reeves, Kuper and Hodges, 2008; Berry, 1991).

Wheat, Rice and Onions are the three crops identified as a focal-basket for our study, owing to the geographical cropping pattern seen within the state of Haryana (as part of North India), where, wheat and rice remain (rotationally) the more 'popular' crops to be sown and enjoy better market connectivity and price-based incentives (offered via government's Minimum Support Price). The selection of Onion –as the third crop selection-was based from observations made on farmer's choice to cultivate more onions in recent years during successive field visits made before the actual study was undertaken.

Even though concerns around 'asymmetric market information' on market price and 'poor warehousing and transport conditions' make onions less desired as a preferred cultivation choice- in comparison to wheat and rice- amongst most respondents, still, we observed how most farmers in some villages (like Aterna, Sersa) are now increasingly 'experimenting' to grow onions along with other crops, and sell them at a higher price in nearby markets (especially within informal *mandis*) for commercial purposes.

As discussed in length during the breath of this report, detailed oral conversations with each respondent allowed interviewees to gauge how farmers of a given age profile, educational background- with support of an active farming-community (of similar age) in the village allowed farmers residing in certain villages to have a more optimistic view on farming as a preferred entrepreneurial activity while for most of the other respondents this could be the case, if and only if, accessibility to the market could become easier (through greater investments in public infrastructure) and with lesser bureaucratic interventions from the state (affecting the process of cultivation and other cost-benefit distributions).

Structure of the report is as follows: **Part I (1.1 to 1.3)**[3] includes the Introduction, Methodology of the study while introducing the profile of villages covered during the interviews; **Part II (2.1 to 2.1.5)** introduces the observed trends in farmer's profile (in terms of age, educational background, farmer's household working group composition- family owned farming enterprise vs. independent farmers); **Part III (2.2 to 2.2.4)** illustrates the crop-wise observations made on the process of farming (in regards to the use of seeds, fertilizers, costs involved and the crop-insurance mechanisms available); **Part IV (2.3 to 2.4.2)** provides breakdown of the Cost-Benefit Analysis done for each crop – in terms of trends across identified villages, and **Part V (3 to 5)** offers a conclusive take discussing some of limitations faced during the field-work part of our study, while further emphasizing the future lines of inquiry- taking this research forward.

1.1 Elements to Research Approach

The nature of the study was essentially qualitative. Personal interviews were conducted with farmers to gather information regarding various farming practices. An ethnocentric approach involved visits to the farming fields and initial understanding of how wheat, rice and onions are cultivated. Based on preliminary field-visits, a questionnaire was designed to include some of the key aspects involved in the process of farming, and the broader set of factors responsible for better/poorer output performance.

[3] Each Report Parts is Mapped in () with the Index of Contents (Page 1)

At the same time, our long association with the community interviewed as part of the study helped us with a critical understanding of an average farmer's social and economic positioning- say, within his village. It also helped us to observe the lives of women inside the farming households- who play a critical role in assisting their male-partners (or family members) with both, the market and non-market aspect of managing an agrarian farm. Though the interviews recorded and compiled were of 36 male participants, the interviewers also got a chance to interact with more than 25 women across villages[4]

An ethnographic approach helped us to record a deeply descriptive account of each farmers' practice and systematically document their approach to farming. One of the key process involved in such kind of interviews (as undertaken) and in incorporating a participant-observer approach was 'rapport formation'. Developing trust amongst a community is most critical to make sure the respondents are most comfortable and accessible to respond to questions and offer additional observational inputs to the interviewees.

Mr. Kapil Dahiya, who is a resident from the area was one of our guides who helped with the initial rapport building exercises along with Mr. Ravinder, who was instrumental in helping us contact a diverse group of farmers across the Bidhnauli village, of which he is also a resident. Mr. Ravinder and Mr. Kapil were further instrumental in providing vital knowledge on community farming practices being undertaken across villages in Haryana, although this study doesn't specifically elaborate more on the development of community farming (say, in cultivation of baby corn, organic seeds etc.), still, this is an area of further research inquiry.

1.2. Methodology[5]

To understand the profiles and the farming practices in the area, four villages were identified, namely Rathdhana, Bidhnauli, Sersa and Aterna. (Table 1) The choice of villages was primarily determined by the major crops grown in the area. Another factor involved in choosing these representative villages was also based on geographical proximity and logistical ease of mobility for interviewers from O.P. Jindal Global University campus to the village locations for a period of three months where interviews were conducted.

[4] To protect respondent's anonymity, we have avoided discussing these conversations within farming households here.

[5] An ethnographic approach was adopted to effectively observe and interact with the target audience in their real-life environment. This ethnographic view helped in understanding the problems faced by the farmers beyond the surface level and to inquire about the accessibility concerns they face in the process. The adaptive nature of ethnographic research helped us from the very beginning to first identify potential problems and then formulate our interview questionnaire accordingly. Further, it provides the scope to fully understand the issues and challenge the pre- conceived ideas.

Table 1: Village Profile

Name of Village	Population[6]	No. Of Interviews	Crops Grown
Sersa, Sonepat	3956	6	Onions
Aterna, Sonepat	4925	10	Onions, Paddy, Wheat
Rathdhana, Sonepat	6924	13	Onions, Paddy, Wheat
Jagdishpur, Sonepat	1247	2	Onions
Bidhnauli, Sonepat	2826	5	Onions, Paddy, Wheat

Wheat and rice, as mentioned, were chosen because they form the most popular combination of crops grown in the northern belt of the country. Onion was chosen to diversify the basket of products by including vegetables that are increasingly in demand and are often sold by farmers in nearby market settlements (say, the Biswamil street market). Further, based on preliminary observations (prior to actual field work), the decision to choose Onions- as part of the focal food-basket- helped the researchers to make an observed comparison between a respondent's (farmer's) approach to cultivation of 'food grains' viz-a-viz 'onions' in regards to farming pattern and pricing mechanisms.

As a result, producers of wheat, rice and onions were identified for interviews in each village. The process of cultivation from the stage of buying seeds to the actual market distribution of farming activity for all three crops was examined using a participant-observatory[7] ethno-centric methodological approach. The narratives of each farmer-as a respondent- featured an extensive use of detailed questionnaires (See Appendix)[8] for 36 farmers[9] across the four villages. While our primary focus- in terms of village specific observations remain centered around *Bidhnauli*,

[6] According to the Census 2011. https://cdn.s3waas.gov.in/s3d296c101daa88a51f6ca8cfc1ac79b50/uploads/2018/04/2018040930.pdf

[7] By understanding the relationship among and between people, contexts, ideas, norms behaviours and the activities they do, this approach, helped in better understanding the physical, social, cultural and economic context of the participants.

[8] The interviewee had the freedom to choose the scope, depth, pace, and length of the response using interpret-personal oral conversation, on the other hand, using semi-structured interviews, the researchers guided the informants back to the scope of the study when they deviated from it and also, in situations where the details provided were considered completely irrelevant to the study.

[9] The number of actual interviews undertaken were more than 50 but given the scope of documentation made during the field work and to discuss common underlying trends for interviews across villages, observations made in the report illustrate 36 respondent cases. As the same farmer was involved in producing multiple-crop baskets, for crop-wise graphical trends, the sample size disaggregates between the 'wheat producers' with the 'rice producers' and 'the onion producers' (as a result the number for some charts total to 50- double counting farmers cultivating two or all the three of the identified crops).

Rathdhana, Aterna and Sersa, we have also included some interesting observations from neighboring villages- including Jagdishpur where most farmers growing Onions were interviewed (to validate observations from other villages' 'onion producers'[10]).

In designing the actual questionnaire- used as the primary means of collecting information- this involved a few preliminary visits prior to the actual field-work duration. The initial (preliminary) visits developed a consultative process for researchers with the farming community of all villages. This also helped us to understand the faming process and its unique approach across villages. To account for the difference in method to farming and factors affecting the process in each village– despite the common cropping pattern- the researchers kept the main questionnaire partially open to include open-ended conversations (instead of receiving Yes-No responses to direct questions or including only multi-choice questions).

For example, there are certain questions in understanding the insurance and credit mechanism aspect of the interview that required further inquiry even after a clear Yes or No answer was elicited (to the question of whether a respondent took a loan previously to finance his/her farming expenses). Further enquiry and deconstruction of the reasoning behind the same was undertaken through a follow-up open-ended question (including the respondent's family- in certain cases)[11].

Questions on the (respondent's) farmer's profile[12] investigates the socio-economic indicators and other demographic information of the farmer and how this may broadly affect his or village's overall farming processes (which were observed to be collectively driven for most villages). The demographic information on respondent's age, educational qualifications, average size of land under cultivation and number of people from the household involved in the farming process. Additionally, questions on crop protection scheme access and other credit mechanisms and insurance schemes- available to the farmers in the area- were included.

Finally, a close examination of the process through which each cultivated crop is produced, packaged and prepared for market sale was done. Here we addressed the following questions:

a. Where are the seeds procured from?
b. What resources are required for ploughing and preparing the crop?
c. What are the fertilizers and pesticides required for the crop?
d. What amount of water is required for the crop?
e. What other maintenance is required for the crop in terms of weeding etc.?

[10] The necessity to interview farmers in Jadgishpur arose because of scarcity of farmers growing onions in other villages. While farmers in Sersa specialize in growing onions, other villages had only one or two farmers who cultivated onions.

[11] The order for the questions as listed in the interview schedule was adhered to in collecting preliminary information and also while tracing the questionnaire framing process from its genesis to its culmination point. Yet, it wasn't strictly followed, thus providing an opportunity to the interviewee to engage with the subject and helping us formulate a rapport in the process.

[12] Their demographic, area of land under farming, number of family members involved in farming.

f. Where is the crop stored before sale and how much is the transportation cost to the market?
g. What costs are involved in the harvesting process- whether thrashers have to be leased or labour employed?
h. What are the overall costs involved in the process?

1.3. Acknowledgment

We would like to express our sincere gratitude towards Mr. Kapil Dhaiya and Mr. Ravinder without whom this study would not be possible. Their support and assistance at every step of the way helped us to actualize this study. Their knowledge of the local farming communities and first-hand experience helped us understand some essential problems. Their experience provided us context. Their familiarity with the community helped us to interview farmers and eased the rapport formation requirement which is essential for smooth conduct of interviews and ethnographic research. Their understanding and knowledge helped bridge communication barriers. Their insights helped us understand aspects of the farming practice which were often left unsaid by our interviewee farmers. They went over and beyond to help us and we are extremely grateful for their assistance.

2. Observations

2.1 Role of 'Farmer's Knowledge-Peer Network' Across Villages

2.1.1 Village-Wise Macro Observations

Despite homogeneity in crop-patterns across villages, each village provided a different approach in terms of the farming processes and community's involvement in it. These peculiarities can be attributed to- *the existing knowledge-peer network* of farmers at an intra-village level (for independent farmers), and the *inter-generational information transfer of knowledge on farming processes* (for family-owned farming enterprisers-interviewed as respondents). Before we get into these, below are some macro-observations from each village.

Sersa is known for growing onions. This is unusual from the widely observed (and documented pattern), because in Sonepat district of Haryana, most farmers are inclined towards growing wheat and rice as opposed to onions. In most other villages, there were only a couple of farmers who grew onions. In *Sersa* the practice of onion farming exists due to the farmers' support ecosystem – strengthening their knowledge peer network. Farmers in this village reported that a few farmers in the village grow onion seeds which are then distributed amongst them (other farmers within the village) for a lesser price. Such a socio-economic farming network helps most farmers in Sersa to include onion cultivation in their farming pattern and make it a lucrative option for higher profitability (owing to low onion supply otherwise in neighbouring villages).

Aterna is famous for growing baby corn. The crop is financially lucrative and attracts a lot of Multinational Corporations and even exporters. Most farmers here are involved in the farming process and do not engage in other activities (say, construction work or other seasonal jobs) to sustain their farming practice. This is essentially because they are able to make good profits due to high demand of baby corn in the market. It was also interesting to observe that most of these farmers do not take credit from formal institutionalised mechanisms like banks or cooperatives as they depend on intra-village knowledge and capital networks to help each other add to greater productivity and profit-sharing. This unique credit taking and profit-sharing mechanism was observed to be widespread amongst most Aterna farmers and is indicative of the strength of the village's *knowledge-peer network*.

Rathdhana is a village where the farming network was observed to be highly influential in determination of farming choices. On interviewing, it was observed that most of the farmers held very similar views regarding role of the government in providing aid to farmers. This was largely because of a dominant idle-practice of playing cards-seen amongst farmers during afternoon hours (when farming work was considered over). Men exchanged ideas and views on farming practices while they smoked and played cards together and this allowed farmers to collectively engage in crop cultivation patterns on most occasions in Rathdhana.

In the village of *Bidhnauli*, however, the rampant problem of illegal sand mining made it difficult for the farming community to meet their basic livelihood needs. Crops sown by interviewed farmers from here were heavily affected by sand mining, forcing some of them to sell their land in parts. Most farmers in this village were observed to be quite pessimistic about their own future- in farming- because of the volatile returns made by them. As a result, most farmers of this village also took up other contractual and seasonal occupations (as security guards, construction workers) to increase their monthly income levels. The peer-network here amongst farmers reflected a collective pessimism on farming- as an occupation- with a critical view on the local government and state which (in their opinion) offered little targeted support to farmers (or did little in addressing the issue of illegal sand mining).

However, a few kilometres away from *Bidhnauli*, in the area of Jagdishpur, the Krishi Vigyan Kendra is situated. It is a government run agricultural research centre. Here, we saw astute technological implements being used for the process e.g. sprinkler and drip irrigation for the suitable crops. The main focus here is to grow the crop for research purposes, and thus onions were not cultivated on a large scale. Onion seeds were prepared and sent to local government colleges for further study. As a result, we focused exclusively on understanding the pattern and process of onion cultivation in the village and area of Jagdishpur.

Village-based knowledge and farming networks played a critical role in the collective (and individual) approach taken to farming by most respondents across all these villages. A mutual feeling of 'fraternity' shared amongst most farmers is an important point for most farmers' decision-making and information-seeking architecture.

Somewhere, the use of these networks has become a focal point in farming related decisions in such village-based farm settings. It affects decisions from a farmer's choice of crop to how he actually distributes it to the end market for commercial sale. The farm-community network thus, offers support and guidance to an average farmer and in situations of collective failure (say, due to a natural calamity or weather-borne disaster) the community addresses these on a collective level. Also, on decisions regarding the amount of fertilisers/ weedicide used during crop cultivation, and on seeking credit for financing their practice essentially depends on the general sentiments of farmers' collective peer-networks within the village.

Box.1. Some Interesting Facts about Farmers in Aterna village

In Aterna Village a different pattern, from that of the others was observed. Farmers of most of the other three villages preferred 8-hour day/night contractual jobs over farming. They hope that one day their children get out of the "hopeless business of farming" and find another career for themselves- as these other avenues provided job security, fixed monthly income and also do not require such round the clock commitment as is required in farming. Though the above narrative is what we heard everywhere, farmers in Aterna had a different story to tell. Aterna village is known for its thriving baby corn export.

We interviewed Mohak, a 20-year-old farmer who his born and brought up in a farming family. He reported that *"These jobs are a scam. You have to work full hours and sometimes extra time also, but you get less money than what you were promised. You are made to sign for, say fifteen thousand rupees, but in reality, you only get eight thousand because the middlemen take up a lot of it. With farming, you are comfortable as your family is involved in the practice with you. You have your own timings and a lot of support."* Thus, he prefers farming over a standard job; a view not held by anyone of the other 35 interviewees of ours.

Among all the farmers we interviewed in Aterna, none of them had taken insurance or loans from the bank. Yet, this 20-year-old farmer reported that he had once taken insurance to experiment and see whether the scheme can be successful. He reported that he took insurance for only 2 acres of land. He paid Rs. 2,000/- as premium for the same. The crop was damaged about 20-30% but he stated that no one came to survey the property after the damage and henceforth he stopped taking insurance.

2.1.2 Age Profile of Farmer Respondents

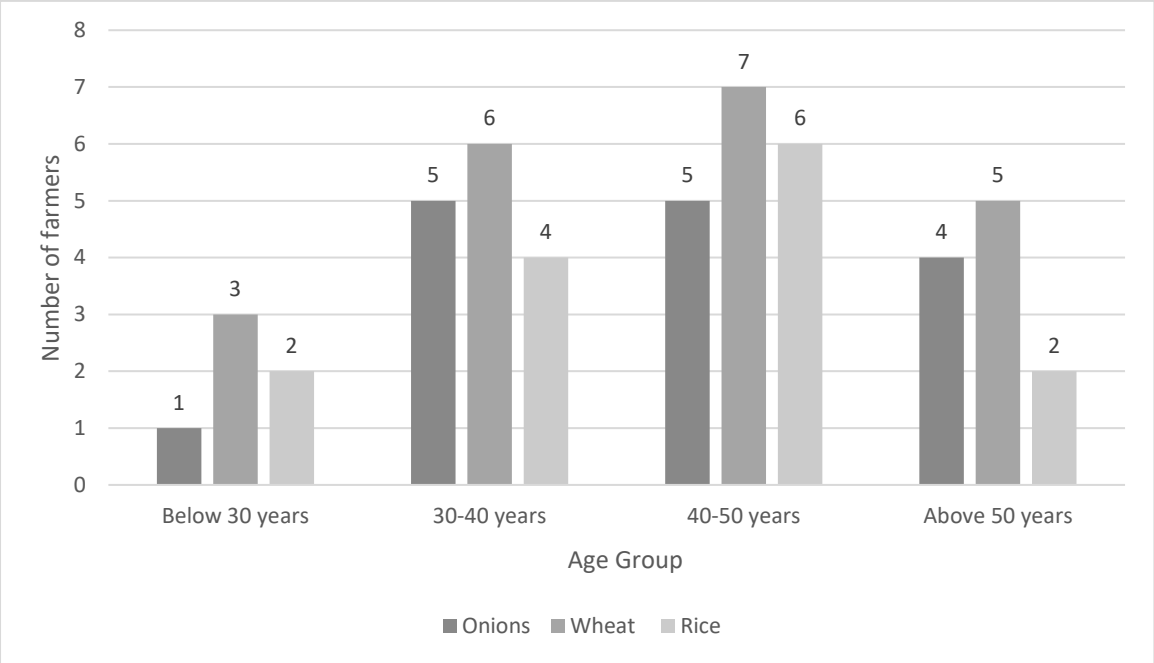
Around 36% of the farmers interviewed were in the age group of 40-50 years. 30% of the farmers belong to the age group of 30-40 years. 22% of the farmers were above 50 years while 12% were below 30 years of age. It was observed that farmers in the age group of 50 or above were averse to adopting new methods of farming. Since most of the young farmers were educated and exposed to the benefits of mechanized farming, they understood the benefits of adopting new technology which could help them in maximising profits.

However, the aversion towards growing vegetables was ubiquitously present across all age groups of respondents. On observation, this was essentially because of the uncertainty and volatility in the prices of vegetables and poor market connectivity for these. Wheat and Paddy are the dominant crops because these crops are considered 'safe crops' as it assures a certain income to farmers because their selling price is pre-determined by the government. The price of vegetables is determined by the short-term volatile effects of rising and falling demand, thereby increasing risks of return on the supply provided.

Amongst the farmers interviewed, one of them highlighted the reason behind the shift to growing wheat and paddy from vegetables. Dev, a farmer from Rathdhana reported that

> "*I used to grow onions and tomatoes on 2 acres of land. Now I grow wheat and rice in maximum area. The vegetables are cultivated for personal use only. Land devoted to cultivation of vegetables has reduced because the cost of production is very high, and the price of vegetables is highly volatile. Cultivation of vegetables requires undivided attention and is more susceptible to getting destroyed due to weather conditions. Growing vegetable means that you are unable to take up other jobs because of the persistent attention and care required during growing vegetables."*

Figure 1: Age group of the farmers



2.1.3. Educational qualification of the farmers

Amongst the farmers interviewed, it was observed that 50% of the farmers had cleared matric education. Nearly 32% were graduates. Around 2% were postgraduates and 2% had done further higher education. The average age of farmers who had only cleared matric education was 42 while the average age of farmers who were graduates was 30. The young members of the family who were educated did not solely rely upon farming, they have taken up other private or government jobs as well. Since they were not devoting all the time to farming, they did not interfere in the decision to change the cropping pattern and preferred relying upon wheat and paddy as they were safe crops.

It was observed that educational qualification did not act as a strong variable in influencing the decisions of farmers. However, the farming networks are pivotal in disseminating information

to farmers and largely influences the decisions of farmers. This network includes fellow farmers, local vendors and representatives from organisations such as the Bharatiya Kisaan Sangh or Kisaan Khet Mazdoor Congress. Raj Singh from Sersa reported that

> "*this connection also breeds favouritism towards particular farmers or villages in doling out government schemes as these become the poster boys for the parties. We never received benefit of any of the government schemes like the insurance policies because they were not in with these political wings. These connections enhance the influence of farmers in their community, they also become the point of contact for political parties to gather information regarding their area. While some farmers thrive, others like us, are never consulted and often are left to fend for ourselves*".

To understand, we also interviewed Mahaveer- a farmer who was also working as a Government employee at the District Level. His division was responsible for marketing agricultural schemes of the government and had tremendous insight into the various schemes, their effectiveness and also their pitfalls. It is also interesting to note that out of the 36 farmers we interviewed, it was only Mahaveer who procured his seeds from Haryana Agro Industries Corporation (HAIC)[13]. Here the seeds were subsidised and provided by the government. Rest of the farmers all acquired the seeds from private shops. He (Mahaveer) said that,

> "*The bureaucratic machinery of the government is inaccessible to the common man. Farmers are unable to approach government officials and bank officials to resolve their issues. Those farmers who are delayed on their payments or have some other dues hesitate to engage with them due to inherent fear. Due to the prevalent misuse of power by the officials, they are inaccessible to the masses.*" He further added that "*there are information booths and camps organized frequently in all districts to enlighten the people of the area regarding the policies and their rights. These camps are a sham as they become tools of parties to propagate their agenda. They distribute alcohol and also give out money to solicit votes. There is very little infrastructure or safety net for the farmers, thus leaving them the most vulnerable bunch of the country*."

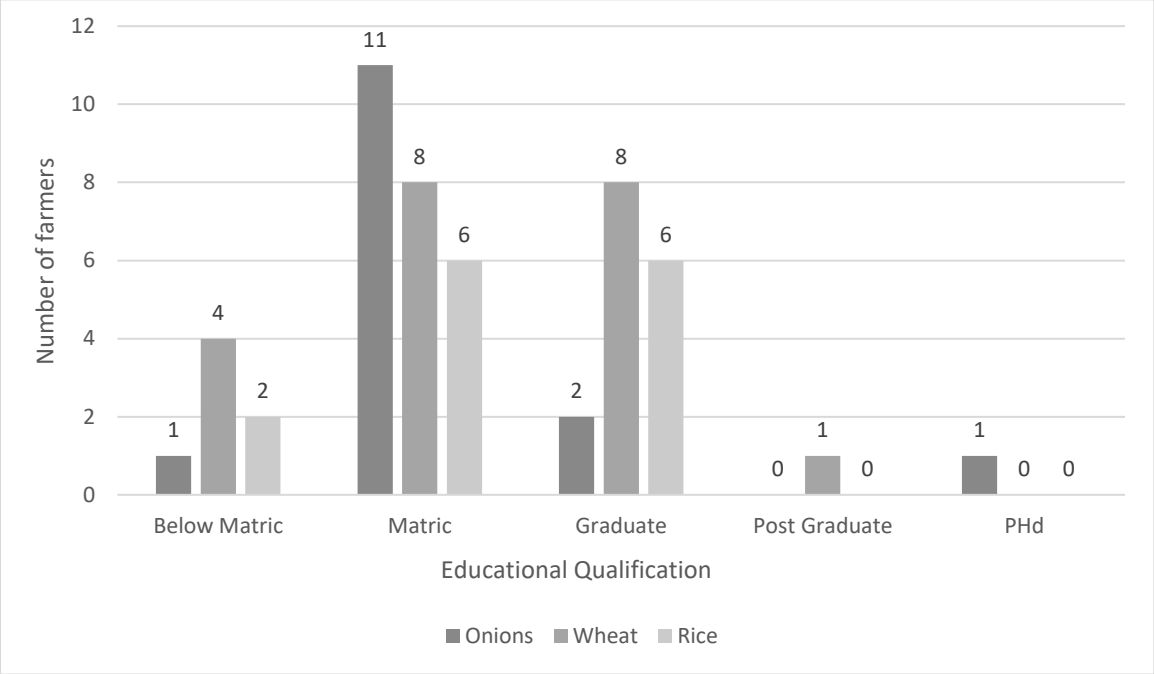
Mahaveer's account illuminates the need for improved information dissemination mechanisms of the government. Public funds need to be devoted to building efficient and quick commutation infrastructure. Where educational qualification of the farmers becomes minor in affecting their cropping decisions information camps become an important tool.

While Mahaveer's critical examination of government schemes and policies provided us bipartisan perspective, some other farmers who were associated with a national party's agriculture wings were much more partisan in their views of the inefficiency of the bureaucratic

[13] Haryana Agro Industries Corporation Limited is a Public Sector Undertaking, which was set up with the primary objective of providing service to the farmers of the state of Haryana. Its aim is to undertake, assist, aid, finance and promote agro-industries such as poultry, dairy, land development, seed related activities and other agro-based industries, and to manufacture agriculture implements, agricultural machinery and equipment required for these industries in Haryana and in India, and to sell the products of these industries.

structures. Those who were involved in party politics were also trying to weave a narrative about how beneficial it would be if their party would come to power. They emphasised on their respective party's expertise in formulating a better policy and capability to ensure robust implementation of schemes to rid the farmers of their misery.

Figure 2: Educational qualification of the farmers



2.1.4. Size of land under farming

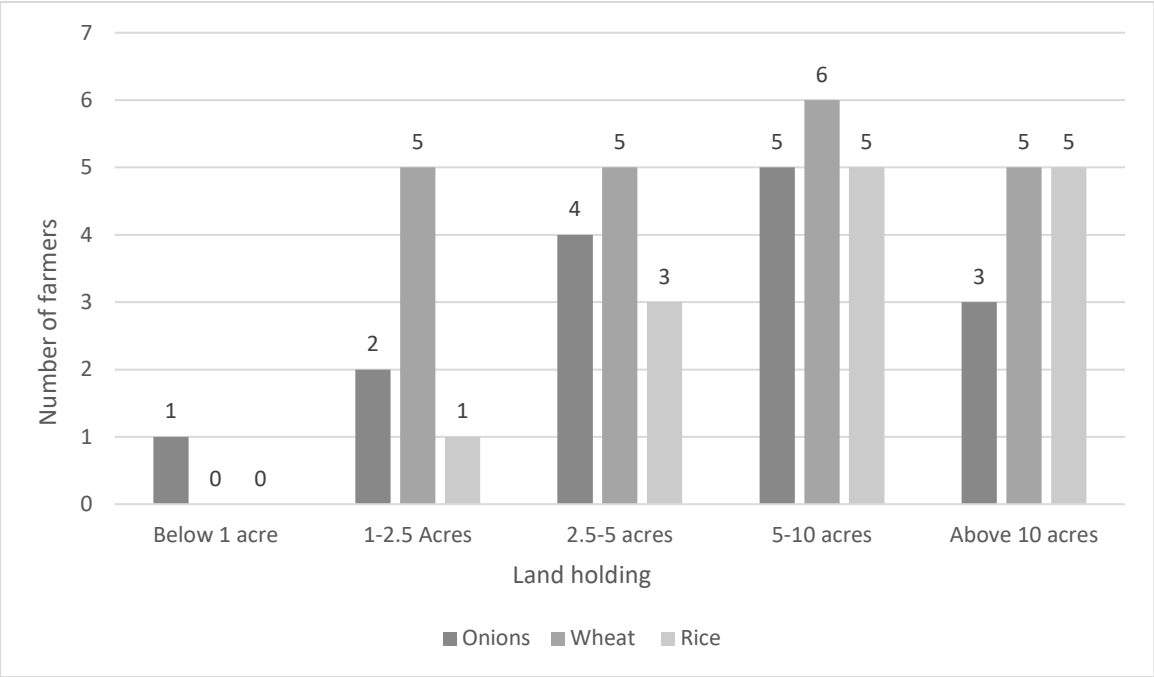
Amongst the farmers interviewed, 32% of the farmers owned 5-10 acres of land. 26% owned over 10 acres of land. 24% owned 2.5-5 acres of land while 16% owned 1-2.5 acres of land. Very few around 2% of the farmers owned land less than 1 acre. Farmers with less than one and up to 2.5 acres of land are seen as small farmers who often use the produce for their home use. Wheat is the most frequently grown crop. It is often harvested in alternation with paddy. Farmers owning land over 10 acres were observed to be growing a diversity of crops. They do so to diversify their investment and guard against loss in a particular crop in a season.

Most of the farm lands have been acquired by the Government for development purposes. This has left people with lesser land to harvest and people in the family take up jobs elsewhere to sustain themselves.

During the survey, it was observed that some of the farmers owned more land than they were cultivating. Farmers would lease out some land to other farmers on rent. This assured them fixed income and helped them avoid the uncertainty and volatility in farming. *We interviewed a farmer who reported that in his first experience of renting land for cultivation, he was experimenting with all kinds of vegetables. He was harvesting tomatoes, onions, bottle guard*

and beans. Such behaviours was unique in our study, where farmers are often on predictable farming patterns as inherited from their family or as observed among their village peers' practice.

Figure 3: Size of land under farming



2.1.5 Sole-farmer vs. Family-farming practice

It was observed that 68% of the farmers were farming on family owned land where the whole joint family contributed to the practice. Only 32% of the farmers were working on either rented land or purchased land. The employment of labour during the process of farming for various steps like- weeding, spraying pesticides, harvesting, packaging of harvest for transport; was heavily influenced by the number of family members involved-as part of the farmer's working group composition. *One of the farmers reported that since he was an independent farmer, he employed a lot of labourers (on short-term daily wage rates) to engage in farming processes.*

Figure 4: Family-Owned Farming Practice V. Sole (Independent) Farmer

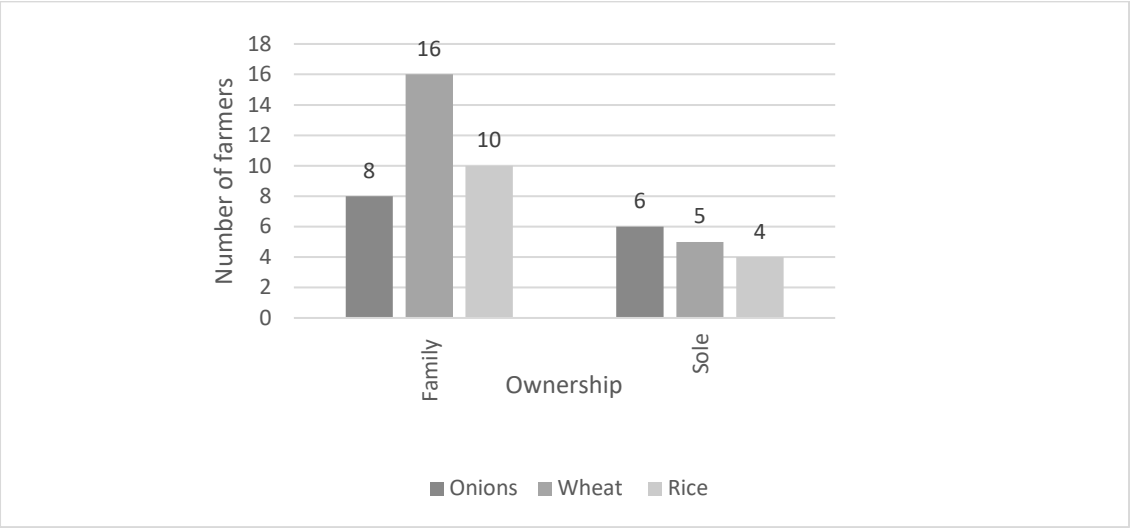
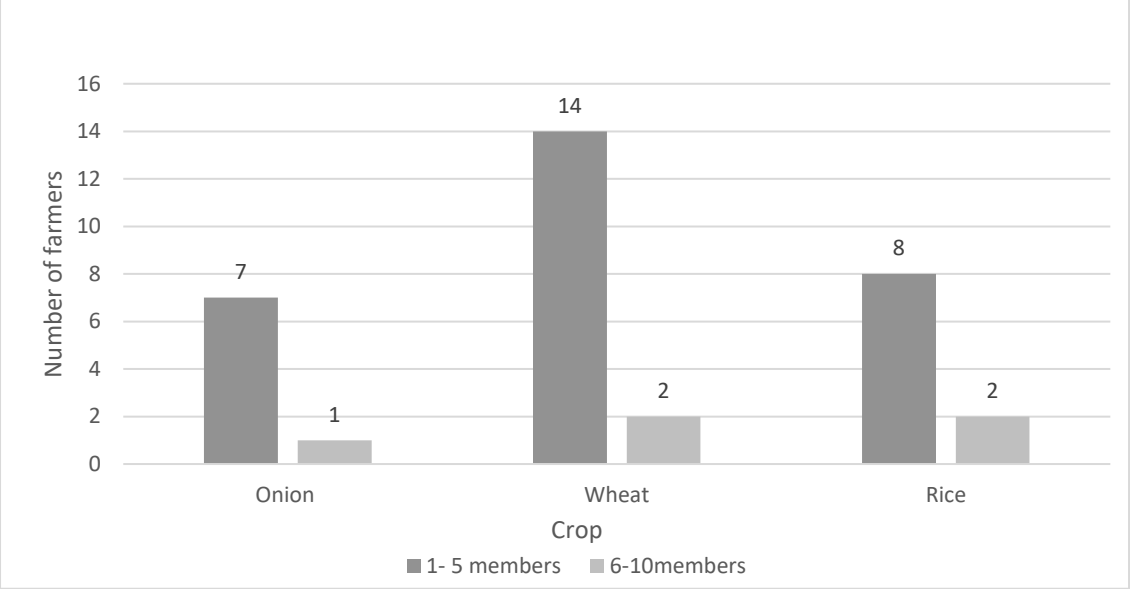


Figure 5: Number of Family Members (Within the Family Owned Farming Practice)



Ownership of land significantly affected the respondents' credit taking behaviour. It is easier for farmers with more land to get easy credit because they can offer more land as collateral. Also, they are liable to have higher incomes as compared to small or medium scale farmers. It was observed that in joint families, usually the elder brother had a Kisaan Credit Card (KCC), and the loan was taken on that card while the younger brothers were completely unaware about the mechanism. Families that had over 5 members did not solely rely on farm income. Some of the family members would take up other jobs to foot the expenses.

Box.2. Additional Notes on Short-Term Contract Labor Involved in Faming

The participation of short-term laborers is fundamentally important for the farmers though they were often demonized by the farmers. The farmers reported that labor easily "slacks off if a thorough and complete check is not kept on their activities". They are paid by the hour and have no social or economic protection for days (or hours) missed. Some others are paid in a barter kind of system where the harvest is given to them in exchange for the hours put in. The higher the labour intensive nature of crop cultivation, the higher are the overall charges.

Onions, in this case, remained the most labour intensive crop amongst the others (wheat, rice paddy). Onion cultivation require hard work at every step: from making a space for the nursery; to cultivate seeds; to transplant the seeds (once ready) to the farm; for weeding; to spray pesticides/ weedicides, and then to harvest the onions as combines or thrashers cannot be used. Number of family members involved in the production of the crop also determine the overall use of labour in the process. The family ensures that labour is used the least as in that case the cost estimate will significantly go down.

Sonu, a farmer from Sersa reported that "*we are barely able to save money. These savings do not represent the amount of mazdoori (labor) we do day and night on the field to be able to take good care of the crop. If we were to account these costs, then there will be an overall loss to us*." He added.. "*to be able to make farming a viable option, either the Minimum Support Price of the crop has to be increased or provisions like pension to farmers have to be enforced to ensure that there is some safety net for the farmer and more importantly for the laborers (s)he employs to work on her/his farm*."

2.2. Observations on Crop-Wise Process of farming practice

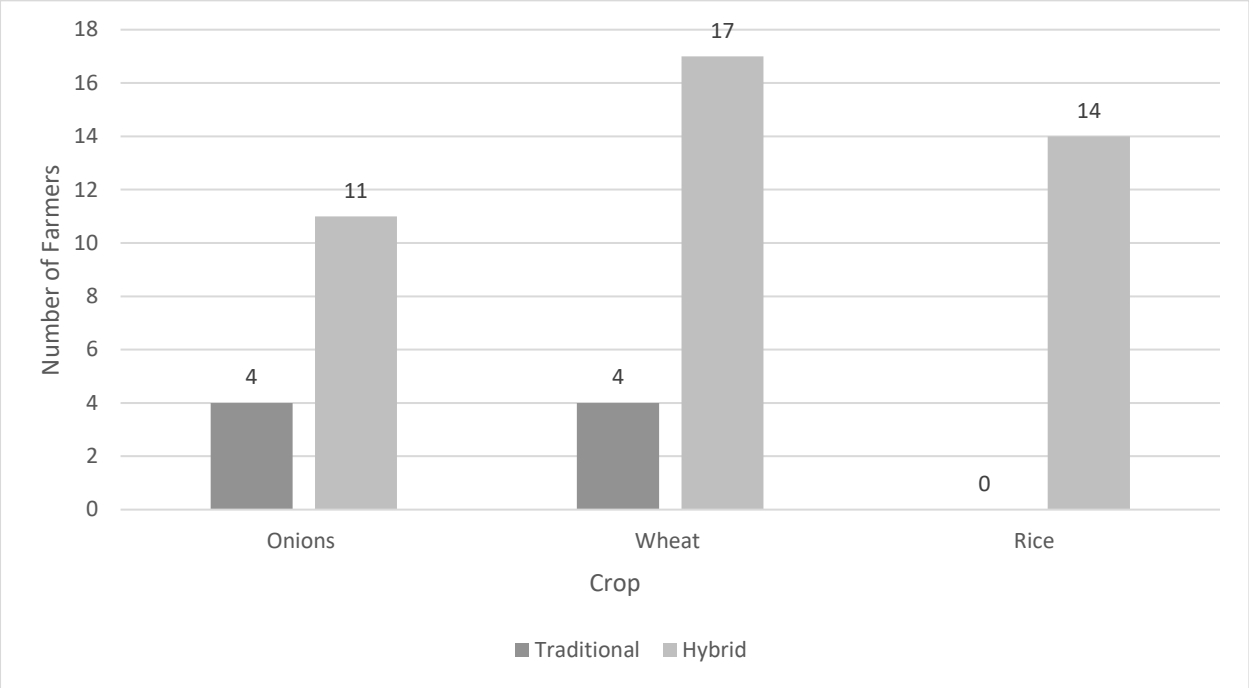
Across the regions surveyed, parity in the process of farming was observed. There was consistency in the type of seeds, fertilizers and pesticides being used. The ownership of tube wells is a major factor in determining the choice of crop. A new trend has been observed amongst farmers in respect with the ownership of tractors as they prefer renting tractors as opposed to purchasing them.

2.2.1. Seeds-

More than 80% of the farmers use hybrid seeds purchased from the local market. The percentage of farmers using traditional seeds is substantially low. Most of the farmers believe that traditional seeds are better than hybrid seeds as they require less fertilizers and help in maintaining the fertility of the soil. However, they prefer using hybrid seeds because of high yield and profitability. Traditional seeds cost more than hybrid seeds. In case of onions, seeds

can be prepared on the farm, however this is an added effort and not all farmers do the same. It can be seen that for all the crops wheat, rice and onions, farmers prefer using hybrid seeds.

Figure 6: Types of seeds used



2.2.2 Fertilisers (and Pesticides)-

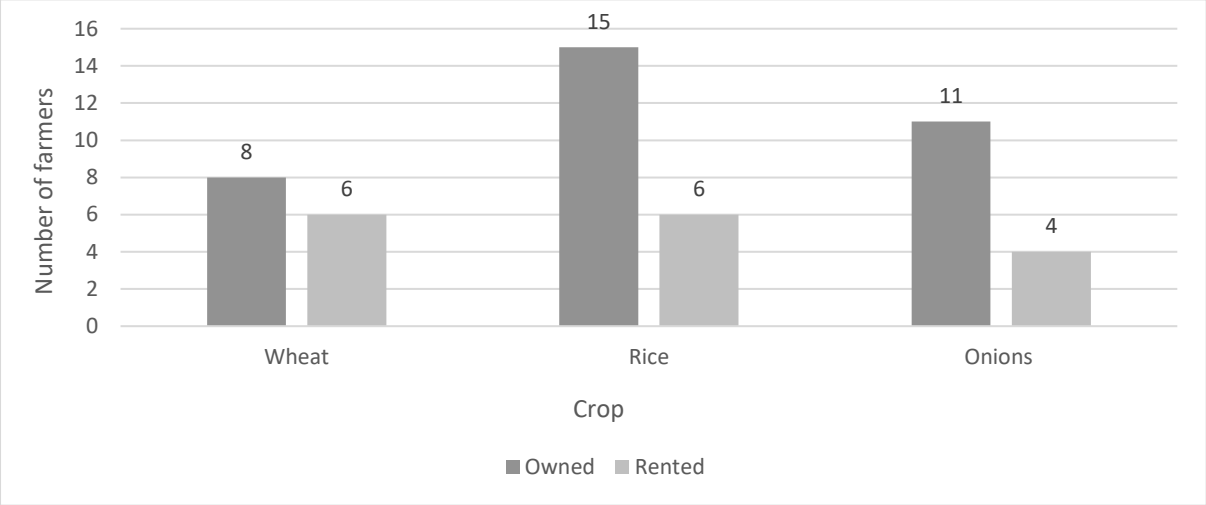
Most of the farmers use chemical fertilizers like Di-Ammonium phosphate (DAP), urea, sulphur and magnesium. In the region surveyed, there is consistency regarding the quantity of fertilisers being used. The pattern of usage is largely influenced by the local farming network. The standards set by the government indicating the amount of fertilizers to be used are not strictly followed. Small farmers use a slightly higher quantity of fertilisers and pesticides assuming that it would improve the yield. Usage of pesticides is the highest in onions followed by paddy and then wheat.

2.2.3 Irrigation -

The most common source of irrigation in the region is private tube wells. 68% of farmers own their tube well while 32% have to rent water at an hourly or daily basis. It was observed that most of the farmers who owned the tube well indulged in growing paddy and onions. This is essentially because paddy and onions are water intensive crops. Farmers growing wheat preferred renting water as it turns out to be more cost efficient in the long run. There was no facility of government tube wells for irrigation. The low cost of electricity is a respite for

farmers in the region as it does not prove to be a hindrance in using water. However, the odd hours at which the electricity is provided is a problem**.**

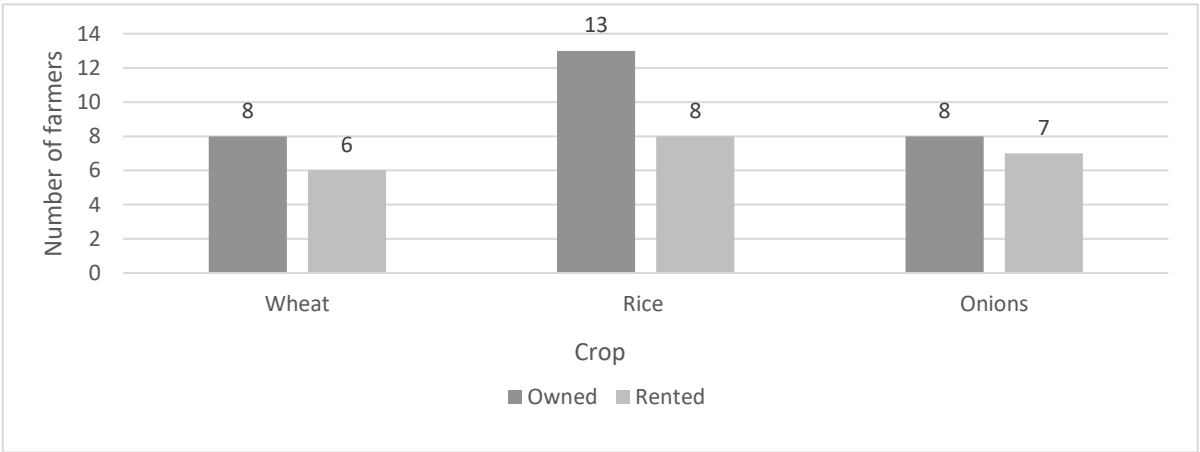
Figure 7: Usage of Tube Well



2.2.4 Ownership of tractor-

Around 58% of the farmers owned tractors while 42% rented it. On interviewing it was observed that over the years farmers have become averse to purchasing tractors. Renting the tractor is seen a better alternative than buying a tractor. This is because of procedure involved in taking credit from banks. Moreover, equipment needs to be purchased separately for the purpose of winnowing, threshing, tilling, harrowing and ploughing. The life of a tractor is assumed to be 10 years. The cost of maintenance, diesel, purchasing or renting equipment and interest on loan does not seem to even out with the benefits derived even in the long run

Figure 8: Ownership of tractor



The cost incurred on each crop is largely effected by the process of farming. Parity was observed in the process of farming in a village. This is majorly because of the farming network

in the area. Decisions made during the process of farming impact the cost in various important ways. The decision to not invest in a tube well fares cheap for wheat farmers but not for onion and rice farmers. Similarly, the decision to purchase a tractor must be well thought out because it is a huge investment with a continuous cost of maintenance and the cost of interest if the tractor is purchased on loan.

There is a direct relation between the cost incurred on fertilisers and seeds. If the farmer decides to purchase traditional seeds, he can cut down on the cost on fertilisers. Onion farmers incur maximum cost on fertilisers, but since preparing seeds on the field was an extensive process, most of them resorted to hybrid seeds. The process of farming determines the performance of the crop which in turn determines whether the farmer will continue his association with the crop. This means whether he will continue to grow the same kind of crops in the same manner or adopt changes with time.

Box.3: Notes on Challenges Faced by Respondents in the Farming Process

A farmer's claim to insurance is manned and challenged by a lot of requirements. Not all damage to the crop is covered by the insurance protection scheme (as highlighted by most respondents). These include:

Environmental Factors: The most frequent damage which is faced by the farmers is unseasonal rain and hailstorm. Dust Storms with high speed winds in recent years (during the summer months) have added to most farmers' misery. These adverse seasonal conditions have a huge negative effect, reducing the overall final yield to a large extent.

Animals and Pests: The most destruction to the crop is from local animals, an activity which is not a ground to claim insurance. Stray animals like cow, buffalos and *nilgai* are the most disruptive. Precautions which have to be taken against them require to undertake huge costs to set up fences, but those are also not a permanent solution.

One of the farmers mentioned that despite setting up four fences, the *nilgai finds* it very easy to destroy the crop. He stated that he had urged the local panchayat to look into the matter and deal effectively with this menace, but there was no effort. His solution was to pool in resources to make a fence which can be effective for the crop in the whole village. As you will note, in the list of legitimate claims for insurance, destruction by stray animals is not a ground.

Another factor with a devastating effect on crop cultivation was from **'pests & diseases'**. *Blast* or *machari* is a disease unique to paddy where around 80% of the crop can be ruined just. This disease is contracted by the crop around 2 weeks before harvesting. The insect sucks out the blood of the rice seed. The crop then falls flat, thus reducing the overall yield to a large extent.

Another disease which affects the onion crop is *khipsaki*. It affects other vegetables as well. It turns the whole crop yellow. It stops the development of the crop which can lead to an estimated 20-30% of loss. Weeding of the area regularly is also required as excessive stray weed in the crop can affect its development.

Infrastructural Factors: Some of the farmers reported that local waterlogging can also be an issue. Irrigation facilities usually are a tube well which is shared by most farmers in a community. The water from the tube well is not dissipated in a uniform fashion, like drip farming, but by canals which have been dug throughout the field. If, during this process or otherwise due to the general placement of the field, there is waterlogging, then the crop in that area of the farm gets destroyed.

This waterlogging could also be due to rains coupled with a poor drainage mechanism in the farm. In these cases of waterlogging, the claims are denied because the insurance company either wants that the whole (or 80-90%) crop is destroyed; or that there should be significant damage from the rain for all farmers and not just one. They rationalize this requirement by saying that it is only natural to assume that in one village area where all farming plots are growing the same crop and adjacent to each other, destruction on one due to natural forces should be identical to the others.

2.3 Cost-Benefit analysis

2.3.1 Price

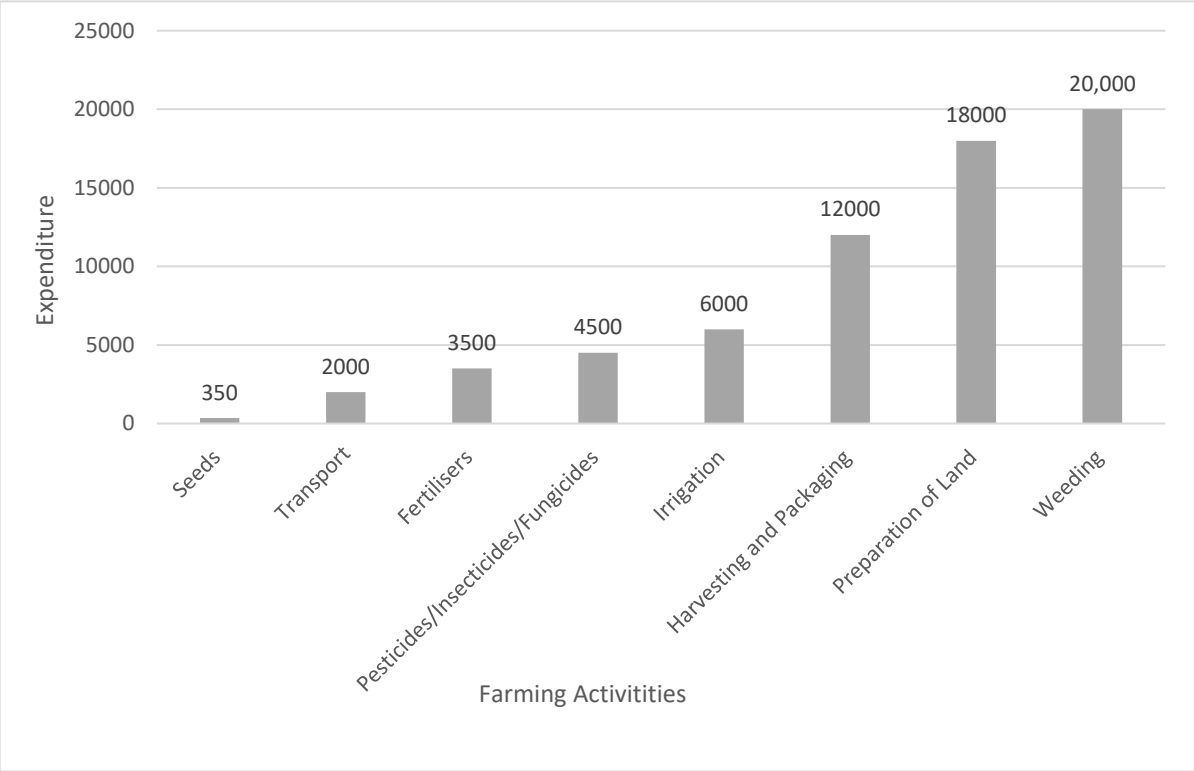
Price plays the most crucial role in determining the performance of the crop. The cost incurred on growing the crop must not be higher than the price at which it is sold. The expenditure in agriculture is incurred on tilling, seeds, irrigation, transportation, fertilisers, packaging and most importantly labour. According to this study conducted, the maximum expenditure- in terms of costs incurred for an average farmer was on production of **onions (Rs. 65000)**, followed by **paddy (Rs. 35000)** and **wheat (Rs. 22,000).** The factors that contribute to the expenditure of each crop are explained below:

Onions –

The expenditure incurred on labour is the main contributor to the cost of producing onions. The process of weeding that requires around 30-40 workers happens at least twice during the cycle of production and contributes around 31% to the cost. Harvesting and packaging is also a labour intensive process and contributes 18% to the total cost.

Preparation of land contributes 27% to the total and involves the cost from tilling to sowing of seeds. This includes renting the tractor and equipment for tilling and the labour involved in planting saplings. Development of a nursery and then planting saplings increase the cost as this cannot be substituted by machinery. Onions require continuous supply of water contributing to a higher cost of irrigation amounting to around 10% of the total. Expenditure on pesticides and fertilisers forms 12% of the total and is slightly higher than cereal crops because vegetables are more susceptible to climate change. The cost of transport is 3% of the total. The cost of seeds is almost negligible at around 0.5%.

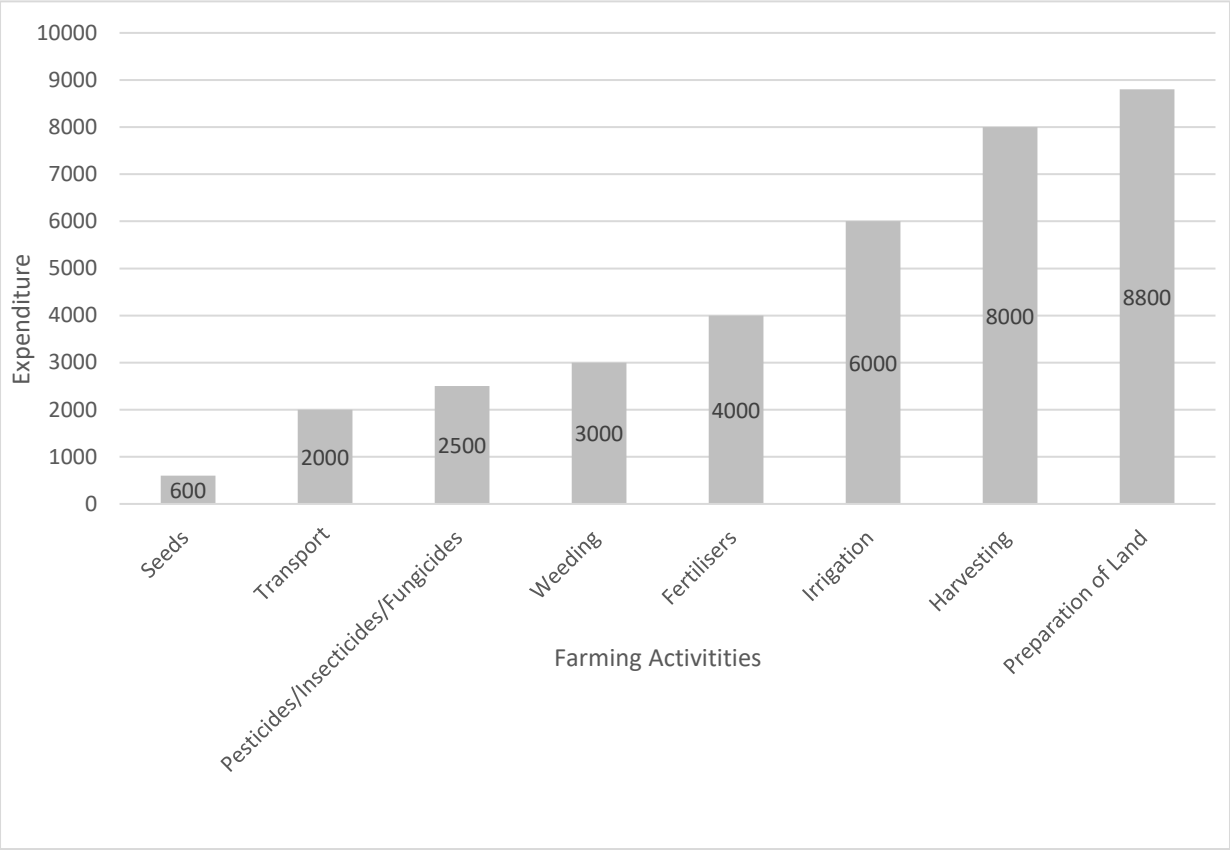
Figure 9: Expenditure on onions (in Rs.)



Paddy-

The main contributor to the expenditure in production of paddy is the cost of labour. Preparation of land includes the cost of renting the tractor and the labour involved in planting saplings. This stands at around 25% of the total cost. The cost of harvesting and packaging is a labour intensive process and contributes 22% to the total cost. Paddy is a water-intensive crop requiring unhindered supply of water increasing the cost of irrigation to 14% of the total. Weeding is also a labour intensive process contributing 8%. However it is carried only once during the cycle of production. The expenditure incurred on fertilisers and pesticides is around 18%. The cost of transportation is the same across crops but contributes 5% to the total in the case of paddy. The cost of seeds is negligible and contributes the least to the expenditure that is 1%.

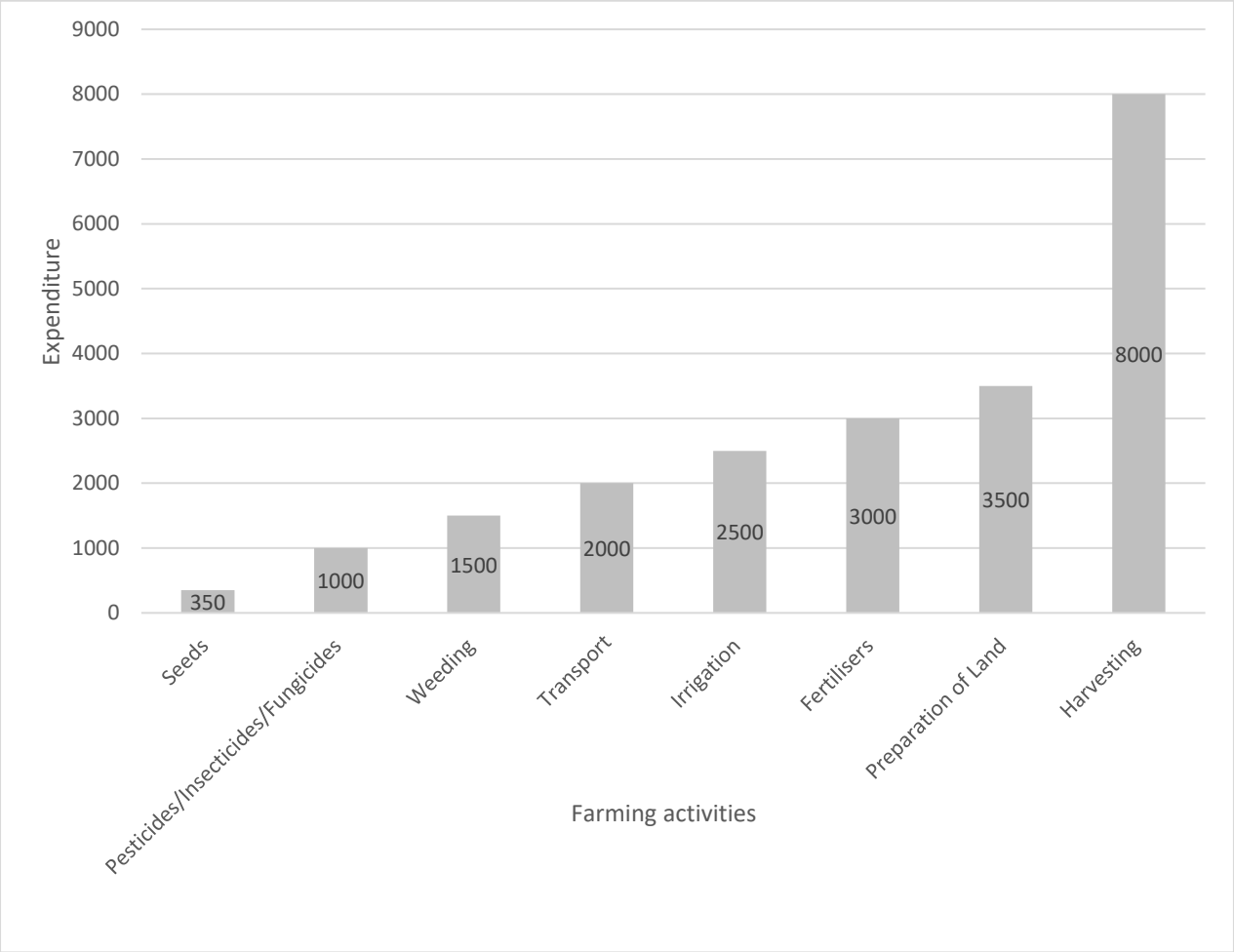
Figure 10: Expenditure on Paddy (in Rs.)



Wheat-

The cost incurred on labour remains to be the main contributor towards the total cost. Harvesting and packaging being labour intensive in nature contribute 36% to the total cost. Labour is hired for the process of weeding as well which is around 7% of the cost. The cost for preparation of land is 16% of the total cost. This involves renting the tractor for tilling. The cost of fertilisers and pesticides is 22% of the total. Wheat is not a water-intensive crop so the cost of irrigation is less at 11%. The share of transport in the total cost is 9%. The cost incurred on seeds is 1.5% of the total cost.

Figure 11: Expenditure on Wheat (in Rs.)



It can be observed that the cost incurred on labour is the largest contributor to total expenditure. This suggests that farmers are not using machines for activities like harvesting and weeding which can substantially bring down their expenditure. This reflects that machines are not easily available for renting in the region. This could be either due to high cost of renting or unavailability of required machines at the right time. The government provides machines for rent but they are not sufficient to satisfy the demand of all farmers at the right time. So, farmers resort to lending from big farmers at higher costs.

2.3.2 Expense analysis

As observed in the previous section, the maximum crop-wise expenditure is incurred by a farmer on onions. It has been established that cost of labour forms the largest share in total expenditure. The process involved in growing onions requires maximum contribution by labour for planting saplings, weeding, packaging and harvesting. The cost of labour is comparatively low in growing wheat and rice. In case of onions, the expenditure on fertilisers is also high as compared to wheat and rice.

Moreover, the farmers require continuous supply of water for onions. All these factors increase the cost inured on growing onions. Onions remain an unpopular choice amongst farmers because of high cost and volatility in the selling price.

Wheat and rice on the other hand are therefore seen as ‘safe crops’ because the average cost incurred in production can be reimbursed along with profits due to stability in the selling price. The cost of production of rice is more than wheat. This is also because of reliance on labour, fertilisers and need for constant supply of water. However, wheat and rice remain to be the most popular combination.

There is also a hidden opportunity cost involved with growing onions. Farmers growing onion cannot take up any other job because the crop required undivided attention at all times. This is not the case with farmers growing wheat and rice. These crops do not require constant attention so the farmers can take up alternate jobs.

Figure 12: Crop-wise Analysis of Average Expenditure (Overhead-Wise) in Rs.

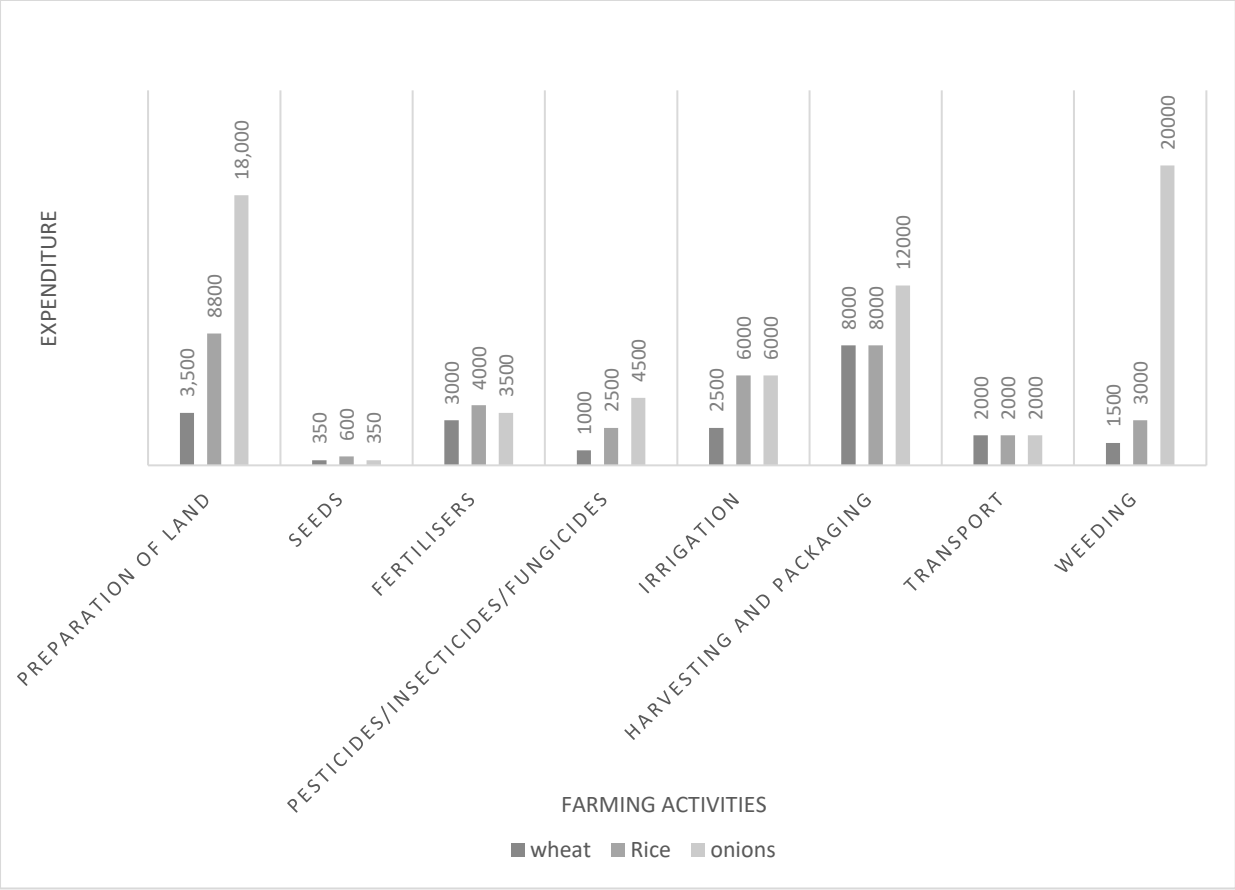


Table 2: Crop- wise analysis of expenditure (in Rs.)

Name of the Crop	Wheat	Rice	Onions
Preparation of Land	3,500	8800	18,000
Seeds	350	600	350
Fertilisers	3000	4000	3500
Pesticides/Insecticides/Fungicides	1000	2500	4500
Irrigation	2500	6000	6000
Harvesting and Packaging	8000	8000	12000
Transport	2000	2000	2000
Weeding	1500	3000	20,000
Total	21,850	34,900	66,350

2.3.3 Profitability

It is evident from the survey that the maximum profit is earned by rice farmers, followed by wheat and then onion. The profit in the case of wheat is 84% of the cost, in case of rice it is 104% of the cost and in the case of onions it is 36% of the cost. In case of wheat, the prices are pre-determined by the government and the produce is sold in APMC (Agriculture produce market committee) markets. This provides the farmer a kind of certainty before growing wheat. Similarly, the price of rice is also pre-determined by the government depending upon the type of rice.

The price of *basmati rice* which is also grown in the region is determined by the demand created by private dealers. Since *basmati rice* is largely exported abroad, the export policy of the country also influences the demand. In case of onions, the price is determined by the demand in the market. Since all the onion farmers sell their produce around the same time, it creates excessive supply in the market reducing the prices. This allows the middlemen to purchase onions at a lower price and hoard them to create a glut in the market. This harms both farmers and consumers.

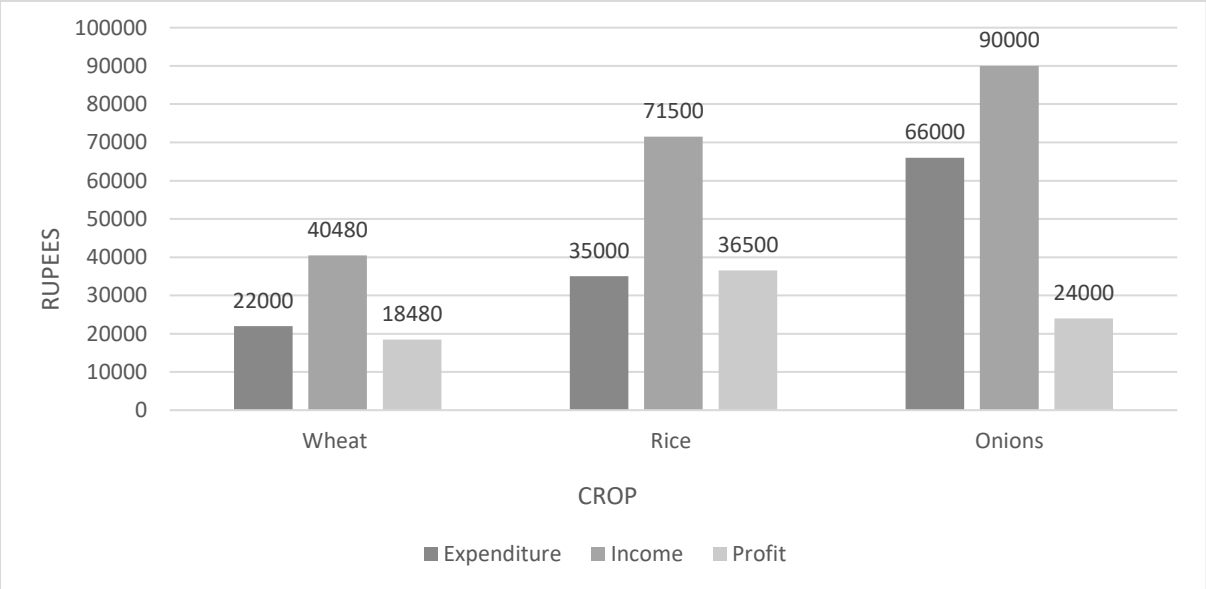
There are several factors that impact or inhibit the profit (or profitability) of farmers-

1. **Lack of Storage facility-** Farmers are forced to sell their produce right after harvesting because of lack of storage facility by the government. If the farmers would have had warehouses, they would not have to sell all their produce at the same time. When all the

farmers sell their produce at the same time, a sudden excessive supply is created in the market which leads to a fall in prices of the produce. This snatches away the bargaining power of the farmer. He cannot determine the price of his own produce and is forced to sell at the cheapest owing to the circumstances. Farmers would have been able to control the prices of their produce if they could sell their produce in a phased manner and not all at once.

2. **Lack of mechanisation-** In the process of farming, the maximum expenditure is incurred on labour that is hired for weeding, harvesting, packaging, sowing seeds or spraying pesticides. Most of these tasks can be performed more efficiently by machines. Not all farmers have the resources to purchase machines even if they are offered at heavy discounts by the government. So, it is essential that the machinery is made available by the government for renting. Also, the machines available for renting should be sufficient to meet the demand during the peak season.
3. **Lack of awareness-** During the survey, it was observed that most of the farmers above the age of 50 years were highly averse to adopting new techniques of farming. Also, majority of farmers were unwilling to accept the negative impact of excessive use of fertilisers and pesticides on the fertility of land in the long run. Lack of awareness about such issues impacts the profits that can be earned by farmers in the long run. So, it is important on the part of government to hold awareness camps regarding such issues.

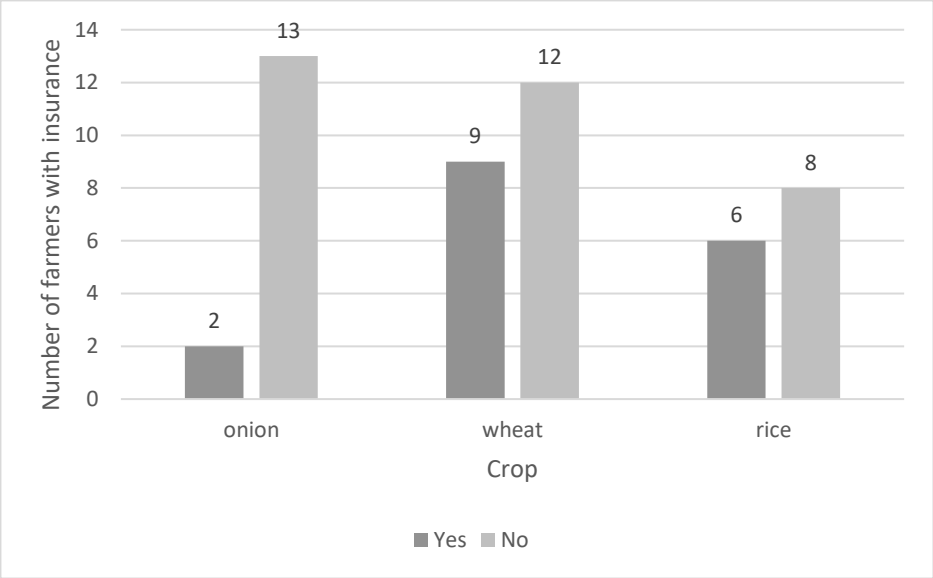
Figure 13: Profit-Margins on Average of Sown Crops (in Rs.)



2.4 Trends in Crop Insurance Coverage and Challenges

Crop insurance is important because it provides protection to farmers against losses caused by crop failure and thereby ensures stability in farm income. However, most of the farmers were averse to the idea of insurance. According to the survey, only 34% of the farmers had insured their crops. Most of these were compulsory as they were accompanied by the loans taken on the land. Around 13.33% of the onion farmers had insured their crop. 42.85 % of the wheat farmers had insured their crop while 42% of the rice farmers had insured their crop. The number of farmers growing rice and wheat whose crop is insured is higher as compared to onions. Insurance is tied with loans and farmers with loans would usually prefer growing wheat and rice because the return on them is relatively stable.

Figure 14: Patterns of insurance



2.4.1 Insurance tied with bank loans

Government's Pradhan Mantri Fasal Bima Yojana is the scheme under which it is stipulated that a farmer can avail insurance of his crop from Insurance Companies. These Insurance companies are either designated by official notification or these are government agents who handle insurance claims. The scheme also provides that those who avail loans from the banks automatically are entitled to insurance. While the scheme is well intentioned to encompass maximum number of farmers, in practice, the effect is opposed to its noble objectives.

The mandatory insurance provision in practice has become a tool to simply extract money from the farmers. This money is never returned as they are unable to realise a claim they make. Among all the farmers we interviewed, none of them had successfully realised claim. This tendency has made them averse not only to insurance but also to formal bank loans which mandatorily charges a premium. There is also very little awareness about the process among

the farmers. A lot of farmers also did know how much premium they were paying or how the premium amount was determined.

Insurance is not the only risk management tool available to farmers in India. Diversification, fragmented land holding, off-farm employment, and savings are just of few of the options. Requiring the farmer who is taking loan to prove their ability to manage risk is good business, however forcing one option upon them is not. Farmers with adequate risk management capabilities should not be forced to purchase crop insurance in order to receive a loan.

2.4.2. Why claims fail?

Sourced from the State Government's own website and the laws applicable in the Sonepat district, following are the grounds on which one can make an insurance claim as a farmer-

1. Prevented Sowing/Planting Risk: Coverage of risk in case the insured area is prevented from sowing/planting due to deficit rainfall or adverse seasonal conditions.
2. Standing Crop (Sowing to harvesting): Comprehensive risk insurance will be provided to cover yield losses due to non-preventable risks, viz. Drought**,** Dry spells, Flood, Inundation, Pests and Diseases, Landslides, Natural Fire and Lightning, Strom, Hailstorm, Cyclone, Typhoon, Tempest, Hurricane and Tornado.
3. Post-Harvest Losses: Coverage will be available only up to a maximum period of two weeks from harvesting for those crops which are allowed to dry in cut and spread condition in the field after harvesting against specific perils of cyclone, cyclonic rains and unseasonal rains.
4. Localized Calamities: Loss/damage resulting from occurrence of identified localized risks of hailstorm, landslide, and inundation affecting isolated farms will be covered.

Most claims fall under the category of 'localised calamities'. The indemnity is based upon the value of the threshold level for each crop grown in a set area. The threshold yield is based upon a moving average of the yield over past five years. Anyone remotely familiar with agriculture would understand that five years of yield data does not accurately represent complex weather patterns. Farmers insured are not guaranteed indemnity for the yield losses.

The uncertainty that even insured farmers face is due to claims/indemnity being based upon the 'area approach.' The area approach was considered the only feasible way to administer the amount of claim that must be made. As expressed in a Ministry of Agriculture publication an 'individual' crop insurance scheme is not possible in India for several reasons, including "prohibitive costs due to huge requirement of men and material" and "disputes over fixing guaranteed yield and loss assessment."

The "area approach" is operated under the results of crop-cutting experiments. Each year a set number of plots with the insured crops for a certain "area" are used as the indicators of an individual farmer's losses within that area. The unit area can be as large as a Block/Taluka or

as small as 4-5 villages (Gram Panchayat level). Insured farmers receive indemnity based upon the difference between the threshold yield and the yield of the crop-cutting experiments in their area. Crop yields naturally vary even over small areas and very localized natural calamities could occur. Situations easily exist in which farmers would not be compensated for their loss or farmers without insurable losses would receive payments anyway. Loanee farmers forced to purchase crop insurance may not receive payments for crop losses. The only attractive feature of the area approach is that it reduces moral hazard. Moral hazard occurs when an individual farmer purposely allows his yield to be less in order to collect insurance premiums. The prevention of moral hazard does not redeem the area approach from its inefficiency.

The farmers in the village are not even aware of the process involved in filing and receiving the claim. None of the farmers who had insured their crops have received claims. *A farmer from Bidhnauli even mentioned that no insurance agent had ever visited the area to inspect the destroyed crop*. Even in the case when insurance agents come to inspect the area, they arrive after several weeks. This stops the farmer from growing any other crop on the land until the inspection is completed. A farmer has to bear the added burden of the delayed sowing of the next crop along with the loss incurred from the destroyed batch. This process becomes even more demeaning and discouraging when the claim received after all the hustle is not even closely proportional to the loss. *One of the farmers from Sersa village reported that once he received a claim of merely Rs. 10*. Such disregard, apathy and a complete disrespect towards the farming community has made them averse to ever engaging with the tedious insurance policies.

3. Challenges

Some methodological concerns faced during the study are noted in points below-

- The unresponsiveness, wariness, and reluctance on behalf of respondents make it extremely difficult sometimes for conducting field interviews of farmers.
- In studying the life cycle of a given product (a crop in this case), it is important to understand each stage of production and exchange involved in the product's lifespan. For most interviews (as part of this study) we relied on respondents' narratives on explaining the process of procuring, producing and distributing final goods. However, such an approach requires a substantive engagement in terms of time and resources for involved researchers.
- Sensitivity to concerns shared by respondents and ethics to confidential disclosures requires field interviewers to remain ethically responsible, ensuring confidentiality while respecting the views of respondents. In the results cited here, we have only included key

aspects of our conversation, that are aligned with the main scope (and objective) of the study.

4. Further Areas of Study- Research for Thought

This study conducted in the district of Sonipat opens various other avenues for further research in the line of agri-focused research work. Our objective, through this report, is to enable research scholars- especially social scientists- to engage in ethnocentric designs of research and further validate (or counter) observations made here. Accounting for the wide range of spatial considerations- critical for farming and other soil dependent natural occupations- requires a careful understanding of processes and in this regard farming (or any related agricultural occupation) can benefit from anthropological approaches to research.

During the research conducted, a peculiar pattern was observed in Aterna village with respect to the preference seen amongst farmers growing baby corn crop (away from the dominant tendencies of cropping pattern-seen otherwise). It was further observed the large extent to which intra-village farming networks in terms of peer-group based information sharing largely influence the decisions of farmers.

A separate study can be conducted solely exploring this aspect (and role of farm-based informational networks) for other villages in other states. Also, as in our case, most of these networks were largely dominated by men, it may interesting to see the role of women in the farming community and their own networks for other villages (and states). There is a strong case to be made by separately studying and researching women's own contribution to the farming process (and household).

Also, as discussed in Part III and IV, maximum expenditure –as part of costs- is incurred on labourers involved in working on larger farm areas. Emphasis has been laid upon mechanisation of agricultural practices. However, the probable impact of mechanisation on labourers (in terms of displacement and their own skills) has not been studied in detail. Short-term contractual labor forms an essential part of the farming process in the villages covered here and it is important to study their own life cycles, conditions of work (most of which is a fascinating line of independent study).

On insurance and crop-based protection measures, our study did not corroborate the claims of insurance from banking sources. Since our focus was to collect data solely based on farmers' accounts, we were not able to identify patterns with respect to the premium they pay (beyond what was indicated from interviews). This was due to their complete lack of knowledge about the insurance policy. A further enquiry and study- with respect to the premium and accounts from local insurance agency regarding how many insurance claims have been realised can be made. This can help to bridge the gap between the insurance companies and the farmers, thus

making the implementation gaps of the scheme more clear the benefits more realizable in the future.

5. **Conclusion**

Through an ethnographic participatory-observer method, this study seeks to provide a detailed and comprehensive account on actual farming processes and methods undertaken for wheat, rice and onions through the eyes of 4 villages in the state of Haryana. Interviews – in form of open ended research questionnaires- captured the educative profiles of farmers; average size of land under cultivation; ownership of land cultivated along with the involvement of household members in farming (in family owned vs. independent farming units), also covering information on credit mechanisms, crop insurance utilization. Our findings further discuss the process of actual farming methods- through insights on types and quantity of seeds used, ownership of farming implements, and role of irrigational resources like tube wells and tractors, types and quantity of fertilisers and pesticides used.

An important factor affecting farming processes across villages remains connected with the average age of farmers – in a particular village- along with the quantity of land they have and their educational profiles. As discussed, educational levels- in terms of college education- was observably weak, still, most farmers with a higher vocational understanding of farming processes through an inter-general transfer of knowledge from their own family (and with support of other farmers in the village) could benefit from doing well in the enterprise. A higher (college) educated farmer base saw more benefits in terms of having the ability to 'experiment' with new crops (as seen in Aterns) and making better use of technological means to increase productivity and market value for their produce.

Size of land under farming made a critical difference in the ability of farmers to leverage their production scale and diversify their cropping pattern along with financing the rise in expenses through land-based loans (where owned land was pegged as collateral). However, with lesser average land ownership for cultivation amongst the interviewed farmers, wheat and rice remained the 'safe crops' for most farmers as their rates have been fixed by the government (via MSP).

Accordingly, small farmers usually stick to safe crops as they do not possess a large appetite for risk. Moving on from these profile-related factors, we explored other aspects of the decision-architecture of farmers based on aspects such as the quality and quantity of: seeds used -traditional or hybrid; fertilizers and pesticides use, along with irrigation methods and ownership of tractors (in Part III and IV).

The cost-benefit analysis data further showed how maximum profitability is enjoyed by rice cultivators followed by wheat, then onions. A direct connection for rice cultivating farmers with private units (involved in exporting of rice) helps in giving direct price-based incentives for farmers to grow more rice (viz-a-viz other crops).

Even though concerns around ‘asymmetric market information’ on market price and ‘poor warehousing and transport conditions’ make onions less desired as a preferred cultivation choice- in comparison to wheat and rice- amongst most respondents, still, we observed how most farmers in some villages (like Aterna, Sersa) are now increasingly ‘experimenting’ to grow onions along with other crops, and sell them at a higher price in nearby markets (especially within informal *mandis*) for commercial purposes. At the same time, in areas like Bidhnauli, where farmers’ average productivity remained low-most of the respondents were seen to be involved in multiple jobs (as security guards, contractual labourers) for a fixed monthly income.

Implementation of government schemes like Pradhan Mantri Fasal Bima Yojana have largely failed in reaching to the broader base of farmers across villages. This fact is coupled with a consistent lack of awareness among farmers about the various provisions of insurance and the roll-out of existing support schemes (even if one signs onto them). Farmers, in the majority of cases- as observed- remained powerless to deal with insurance companies, and seldom got any support to recover their claim against losses incurred. It was seen how the 'area approach' followed by insurance companies to evaluate indemnity- focuses more on preventing certain farmers who may voluntarily benefit from reducing their output, than concentrating on providing rightful claims for the majority of the respondents (farmers) who actually incur unforeseen losses and merit crop insurance support.

6. **Appendix**

Questionnaire

Farmer Profile

1. Name:
2. Village:
3. Gender:
- Male
- Female
4. Age:
- Below 30 years
- Between 30-40 years
- Between 40 -50 years
- Above 50 years

5. Educational Qualifications:
- Below Matric
- Matric
- Graduate

- Post Graduate
- Any other, (please specify) -

6. Size of land under cultivation?
- Below 1 acre
- Between 1- 2.5 acres
- Between 2.5 - 5 acres
- Between 5 - 10 acres
- Above 10 acres

7. Nature of Farming: Family Owned vs. Independent Farming?

8. If Family Owned, how many members of the family assist in farming?

Process of Farming

1. How do you plough your land?
2. Do you rent a tractor? If yes, how much is the rent?
3. From where do you procure the seeds?
4. What is the type of seed used?
5. What is the method of irrigation?
6. Is there any storage facility available?
7. Where do you sell your produce?
8. What is the cost of transporting the produce to the market?

Fertilisers Used

1. ONION

FERTILISERS	QUANTITY SUGGESTED (KG/HA)	USED (KG/HA)
PHOSPHORUS	14-18	
POTASSIUM	22-26	
CALCIUM	6-8	
SULPHUR	4-6	
c	20-26	

2. WHEAT

FERTILISERS	QUNATITY SUGGESTED (KG/HA)	USED (KG/HA)
NITROGEN	50	
PHOSPHORUS	25	
POTASSIUM	12	
UREA	110	
DAP	55	

SULPHUR PHOSPHATE	155	
NITRO PHOSPHATE	125	
MURIATE OF POTASH	20	

3. RICE

FERTILISERS	QUANTITY SUGGESTED (KG/HA)	USED (KG/HA)
NITROGEN	60	
PHOSPHORUS	24	
POTASSIUM	24	
UREA	130	
SSP	150	
MOP	40	

Crop Insurance

1. Do you usually grow any of the following crops during the following seasons?

Kharif- Paddy Bajra Maize Cotton
Rabi- Wheat Gram Barley Mustard Sunflower

2. What kind of challenges have you faced in the farm process?

- Prevented Sowing/Planting Risk: Coverage of risk in case the insured area is prevented from sowing/planting due to deficit rainfall or adverse seasonal conditions.
- Standing Crop (Sowing to harvesting): Comprehensive risk insurance will be provided to cover yield losses due to non-preventable risks, viz. Drought, Dry spells, Flood, Inundation, Pests and Diseases, Landslides, Natural Fire and Lightening, Strom, Hailstorm, Cyclone, Typhoon, Tempest, Hurricane and Tornado.
- Post-Harvest Losses: Coverage will be available only up to a maximum period of two weeks from harvesting for those crops which are allowed to dry in cut and spread condition in the field after harvesting against specific perils of cyclone, cyclonic rains and unseasonal rains.
- Localized Calamities: Loss/damage resulting from occurrence of identified localized risks of hailstorm, landslide, and inundation affecting isolated farms will be covered.

3. Do you take a loan? How frequently? if not, then how do you manage resources?

4. If you have taken a loan, do you know that you are automatically covered under the Pradhan Mantri Fasal Bima Yojana? have you availed it?

If you don't take loan, are you aware of and have you taken loans from Insurance Companies or other Government Agents?

5. Have you heard about Universal Sompo General Insurance Company Ltd.?

Expenditure and Sale Analysis

Price as per location of sale

Product	Govt. Mandi(APMC)	Pvt. Market	Village
Wheat			
Rice			
Onions			
Tomato			

When do you sell your product

Product	Immediately (%)	After some time(%)
Wheat		
Rice		
Onions		
Tomato		

Total Expenditure

Name of Crop	Wheat	Rice	Onions	Tomato
Size of Crop-area				
Total Production				
Seeds				
Fertilisers				
Pesticides				
Irrigation				
Electricity				
Land rent				
Harvesting				
Transport				
Wages to labour				
Tools/ Equipment				
Others				