

Comparative insights into smallholder agriculture in Uttar Pradesh and Rajasthan: A Field Study

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Abstract

Field visits were undertaken to speak to farmers in some districts in Uttar Pradesh and Rajasthan to gain some qualitative insights about their current experiences with agriculture. The conversations were around production costs, prices of produce, economic viability of smallholder agriculture and agriculture extension services. Other issues connected to agriculture like landholding sizes, leasing of agricultural land, government policies and schemes for agriculture like minimum support prices (MSP), agriculture credit/Kisan Credit Cards(KCC), Soil health Cards (SHC), input subsidies etc., were also discussed. This paper summarises these free flowing discussions. Criticality of irrigation, comparisons between small and marginal farmers as compared to the slightly more landed farmers, agriculture being no longer remunerative enough and consequent disillusionment of farmers and youth with agriculture as a sole means of livelihood are general themes that emerge from these conversations. Paper concludes by elaborating these themes and observing that in spite of inadequate economic returns, smallholder agriculture in India remains significant for food security and livelihoods of our farmers in the absence of alternate and better remunerating economic opportunities.

Introduction:

As a part of the agriculture team in the project titled –‘Towards a New Indian Model of ICT-Led Growth and Development’, being undertaken by the Centre for Sustainable Development, Columbia University, New York and TERI, New Delhi, I undertook 2 field visits to some districts in Uttar Pradesh (Unnao) and Rajasthan (Hanumangarh and Jhunjhunun). These districts were chosen primarily because they are not contiguous to a metro city like New Delhi or Bangalore and because of availability of non-institutional connections for introducing me to farmers so that the interaction could be devoid of any biases. The visits were conceptualised so that some qualitative insights concerning the actual ground situation prevalent in smallholder agriculture in India could be obtained. Hence the travels were aimed at meeting smallholder farmers and discussing with them about their experiences in production of crops and sale of those crops. This paper describes these conversations with farmers. At the beginning of the paper, I attempt to briefly review literature which pertains to smallholder agriculture in these 2 states Uttar Pradesh (UP) and Rajasthan and I also refer to relevant literature for agriculture at the national level as literature specific to these 2 states is limited. Following the literature review, a description of the conversations with farmers and relevant observations from the field visits is given. I conclude by summarising impressions from the discussions. As I have mentioned at the very outset, our visits were qualitative in nature and thus the data cited from the visits should be seen within that context.

Literature Survey on Agriculture in Uttar Pradesh and Rajasthan:

Bajpai and Volavka (2005), provide a detailed historical account of Agricultural Performance in Uttar Pradesh(UP) beginning in the early 1960s and examine in detail outputs and yields in UP in comparison to Punjab and Haryana, their more successful counterpart states in the Green revolution. They establish the importance of modern inputs in agriculture as the reason for the better performance of Punjab and Haryana as compared to Uttar Pradesh in agricultural efficiency. Basing on the inputs, they also examine in detail intrastate variation between Eastern UP and Western UP. They argue that the extent of variation in agricultural output is, to a large extent, explained by the use of inputs for modern agriculture, like technical variables, such as use of fertilizers, irrigation, and HYV seeds or environmental variables, such as rainfall, soil fertility and economic variables, such as size of land holdings, size of the markets and availability of power for agricultural use. However, they single out irrigation as the most significant variable, from the ones listed above to explain the differential agricultural performance of U.P. relative to Punjab and Haryana. They suggest that UP should make investments on irrigation, agricultural research and development, encourage diversification of crops, revamp its agricultural extension system to assist farmers in adopting new technologies and build up and promote rural infrastructure and agro-based industries.

S Mahendra Dev (2012) identifies roles, challenges and opportunities of smallholder agriculture in India. This study establishes that Indian small farmers contribute to both diversification and food security. Only in the cases of pulses and oilseeds, their share is lower than other farmers. It also shows that from efficiency point of view, small holdings are equal or better than large holdings. With the help of data, it points that smallholder basic consumption generally exceeds their income and thus indebtedness is a constant feature in the lives of smallholders. As far as challenges are concerned, role and vulnerability of women among the smallholder farmers, vulnerable social groupings like SCs and STs, land issues (tenure and security) , low educational achievement and skills, high levels of credit and indebtedness, globalization, climate change and water issues make smallholder farming risky and dangerous; they are also not able to go for diversification due to these constraints. Research and extension, bridging the yield gap between lab and actual field yields, post-harvest value addition, organic farming, wider public support for institutions of agriculture, collectivization initiatives, rural non-farm initiatives, more institutional credit support, farmers' groups, rural infrastructure etc., should be focus areas to improve the lot of smallholder farmers. The same study also identifies the constraints of small holder agriculture. It states, "income from small and marginal farms is not enough to take care of daily consumption and they have to borrow to survive. Therefore, small holdings farmers have to get part of income from rural non-farm activities. Therefore, promotion of rural non-farm sector is essential for generating incomes for rural population. Poverty cannot be removed with 55% of workers in agricultural sector. Ultimately, many of the small and marginal farmers have to be shifted to rural non-farm sector and urban areas."

Ajit Kumar Singh (2013) has discussed the income levels and livelihood issues of farmers on the basis of a large field study in Uttar Pradesh. This study estimates the per-day per-capita income from agriculture to be Rs 15 for marginal farmers, Rs 31 for small farmers, Rs 45 for medium farmers and Rs 84 for large farmers for 2011-12. Thus, all marginal farmers, who constitute over three-fourths of UP farmers, fall below the poverty line of Rs 22 if they depend solely on agricultural income. Given the inadequacy of agricultural income to meet household expenditure, the small and marginal farmers have to devise livelihood strategy for their survival. Specifically, this study suggests:

- Increase in agricultural productivity
- Mixed Farming including scientific animal husbandry
- Move workers from Agricultural to other sectors of economy and growth of non-farm economy
- Improvement in rural services and skill development of rural youth
- Improvement in rural infrastructure

Nilanjan Banik (2017) analyses interventions for smallholder farmers in Rajasthan and quantitatively evaluates 3 interventions:

- Farm loan waiver
- Provision of smooth supply chain management and cold storage facilities
- Electronic markets

The study quantifies the benefits of these interventions and summarises them as follows:

Intervention	BCR @ 5% Discount Rates (BCR=Benefit Cost Ratio)	Benefit (INR Crore)	Costs (INR Crore)	Time Horizon of analysis	Quality of Evidence
Farm Loan Waiver	0.81	9,537	11,731	5 years	Strong
Cold chain infrastructure	15.5	92,788	5,985	10 years	Medium
E-Mandis	65	8,523	131	20 years	Limited to Medium

It is clear from the above that this study is clear in favour of electronic markets and development of cold chain infrastructure for which it estimates a high benefits to cost ration in comparison to farm loan waivers in which case it estimates a benefits cost ration lower than 1 for farmers and agriculture.

Sarthak Gaurav and Srijit Mishra (2011), analyse size-class and returns to cultivation using nationally representative data from the Situation Assessment Survey of Farmers (SAS) of the 59th Round of the National Sample Survey, for the period 2002-03. Their empirical results, computed separately for kharif and rabi, at an aggregate all India level as also for each size-class indicate an inverse relationship between size-class and productivity. At the same time, they caution that while the small holder seems efficient the low absolute returns raises questions on livelihood sustainability. This is also important from the perspective of the risk bearing capacity of the small-holders given the fact of their per hectare costs being higher. They conclude by arguing that their study establishes a clear need for further and segregated enquiries into aspects opened by this study.

Verma et al (2017) study the spectacular success achieved by Madhya Pradesh (MP) during the decade long period of 2005-06 to 2014-15. It was around 9.7 per cent per annum, which is the highest growth rate registered in agriculture by any major state of India over a ten year period. The last five years in this period saw agricultural GDP grow at 14.2 per cent per annum. They identify 3 interventions which stand out – expanded irrigation, a strong procurement system put in place for wheat along with bonus over MSP for wheat, and all-weather roads to connect farmers to markets. They also note that MP government strategized to improve the supply chain of wheat by re-modelling the procurement system through digitization and initiated ‘e-Uparajan’ and by increasing storage capacity significantly. Thus they suggest that similar states wishing for similar high agricultural growth should improve the quality and quantity of rural power supply by strengthening transmission and distribution and by separation of feeders for irrigation and household use, increase the density of surfaced roads in rural areas, and improve procurement and marketing infrastructure to reduce market risk of farmers.

Gulati et al (2017) in their study of Uttar Pradesh (UP) state, use econometric analysis to determine drivers of agricultural growth in UP which finds that irrigation, total road density and relative prices for agriculture are the most important drivers of agricultural growth in the state. On an average, they find, a 1 % increase in irrigation ratio increases UP’s agri-GSDP by 1.25 %; a 1 % increase in total road density in the state increases its agri-GSDP by 0.5 %; and a 1 % increase in relative prices for agriculture increases UP’s agri-GSDP by 0.6 %. However, given the predominance of groundwater based irrigation in UP, it is influenced by the price environment that farmers in UP face. At the same time, the study finds that unfortunately, farmers in UP fail to get remunerative prices or even the basic Minimum Support Price (MSP) for their main produce – wheat and rice. In addition to lack of proper price incentives, lack of adequate infrastructure – rural road connectivity, rural power, cold-storages, warehouses, etc. – has impeded agricultural growth in UP. For doubling of Agri growth in UP, they suggest the following measures:

- Procurement and ensuring remunerative pricing/ value addition through processing/ Fair and Remunerative Price and Revenue Sharing Formula and price stabilization for foodgrains (wheat, rice and pulses), milk and sugarcane
- e-Nam: Removal of all restrictions on licensing and trading; creation of assaying facilities in mandis so as to increase trade through e-NAM in the state
- Creation of FPOs to increase bargaining power of farmers
- Enhancing rural road connectivity in UP
- Fast tracking pending Irrigation projects in the Bundelkhand region
- Improving, extension, encouraging solar power, innovative farming techniques and value chain development for agriculture in UP

P K Joshi (2015) after a detailed examination of the features of increasing crowding and risk intensiveness of Indian agriculture in the context of ever increasing small and marginal

farmers in India, suggests the following opportunities to improve smallholder farming in India.

- Bridging yield gaps
- Diversification to High Value Agriculture
- Institutional Innovations to collectivise farmers to achieve economies of scale
- Focus on food processing

The study further suggests land and labour reform, market reform, reform of agricultural extension system, minimize climate risk in agriculture, Convergent Innovations and Programmes i.e., convergence of different public and private initiatives and increase in non-farm employment opportunities.

One very significant finding of this study is that states with a higher concentration of smallholders have a higher share of high-value agriculture in the total value of agricultural output. Accordingly, Bihar, West Bengal, Odisha, Jharkhand, Andhra Pradesh, Tamil Nadu, Madhya Pradesh, Chhattisgarh, Meghalaya, Mizoram, Sikkim, Tripura, Himachal Pradesh, Uttarakhand, Jammu and Kashmir account for a 40 per cent share of the total value of the country's high-value commodities.

We can observe that issues and possible solutions for rapid growth of agriculture in India and to ensure better returns to farmers have been captured in the literature review above. I now describe our conversations with farmers around the various relevant themes, like agricultural landholdings and consolidation, land leasing/contracting, the economics of their agriculture (cost of production and monetary value of output), agriculture wage rates, agriculture extension, soil health cards, stray cattle issues, sale of produce, Minimum Support Price (MSP) issues, and payment modes. I also describe farmers' views around agriculture credit (crop loans most commonly known as Kisan Credit Card (KCC) loans), issue of rationalisation of subsidies via direct cash transfers and contract farming. The issues have been described state wise.

Landholdings and consolidation:

Uttar Pradesh:

The average landholding as per Agri census 2015-16 in India is reported 1.08 Hectare and 0.73 hectare for UP. For the smallholders in Unnao I met, rarely was an operational holding of more than 1 bigha (approx 0.25 Hectare). Most of the farmers who own 1.5 bigha to 3 bigha land have their plots in minimum 2 or 3 different locations. Land consolidation, locally known as 'chakbandi' is an urgent need as it enhances plot sizes and makes farm operations easier to manage for the farmer and his family.

Rajasthan:

The average landholding as per Agri census 2015-16 is 2.73 hectare for Rajasthan. For the smallholders in Rajasthan, the operational holdings were definitely bigger and slightly more consolidated than UP.

Agriculture Land leasing/contracting patterns:

Uttar Pradesh:

Land is leased by sharecroppers in 2 ways in UP.

First is contract system locally known as 'theke' system. It is based on measure of wheat to be given against per bigha of land for a year. The landowner is only concerned about the amount and does not have any say on number/type of crop. The range of rent reported in this system was 4-7 quintals of wheat per bigha per year with 6 quintals wheat being the most frequently reported number. The rent also depends on location of land, fertility and also on micro factors like lands just at the edge of roads fetch higher rents. The cultivator can grow any crops and also take 2 or 3 crops as he wishes and landowner does not interfere.

Sharecropping: This system is locally called 'bataai'. In this system, seeds, irrigation and fertilizer costs are shared equally between landowner and cultivator and rest all costs including field preparation and all types of labour charges are borne by the cultivator. The produce, including straw left from paddy and wheat is shared equally between both parties and losses, if any, are also shared equally.

Rajasthan:

Land is leased by sharecroppers in the usual 2 ways in the region. Contract leasing rates are less compared to UP and contracting is not very prevalent. Annual contract amount ranges from Rs.5000-7000/- per bigha which is around Rs 11000/- in UP.

Sharecropping: In Hanumangarh, the landowner provides irrigation and rest all costs have to be borne by cultivator and produce is shared equally. In Jhunjhunu, landowner and cultivator share all costs except labour costs and produce equally and labour costs have to be borne by the cultivator as is the usual case. The equal sharing of input costs in Jhunjhunu is a recent development because input costs have gone up and returns are not high, hence if one wishes to get one's land cultivated on sharecropping basis, they pay equal production cost.

In both the scenarios, the sharecroppers prefer land which has source of irrigation and un-irrigated land is not preferred for leasing. There is minor individual to individual variation in the terms of leasing but all leasing is verbal and no written documentation is ever maintained for leasing processes.

Agriculture wage rates:

Uttar Pradesh:

In UP, wheat agricultural operations are mostly carried out in quantity of wheat. Land rents, wheat harvesting either manual or through harvester, thresher machines are all calculated and transacted in terms of prefixed quantity of wheat; i.e, harvesting and threshing of wheat are carried out on micro contract basis. Like 1 quintal wheat is paid for every 10 quintals of wheat harvested, another 1 quintal for threshing every 10 quintal. Wheat has minimum proportion in manual labour charges as can also be seen from table above. In paddy 2/3rd of the input cost is on labour charges. Similarly, vegetable cultivation is also labour intensive. There is a very significant import of this aspect in the cultivation pattern and crop choice. Upper caste people, who are generally landed as compared to the other castes don't go for extensive manual work in the fields on their own. Vegetables and paddy, on the other hand require much higher manual tending and operations (refer table) and thus enhanced monitoring and higher and instant cash requirements to pay the labour. Hence, only those farmers who can toil themselves in the field along with their families prefer these crops. Wheat, due to its less manual labour intense nature of cultivation, on the other hand is preferred by everyone for cultivation. Another aspect is that upper castes have relatively better educational achievement and due to their social capital have more opportunities in other professions including salaried jobs and migration opportunities. The upper caste elders can manage the less labour intensive wheat. This is also the reason that sharecropping(bataai) is comparatively less as compared to fixed rent contracts(theke). Also, sharecropping is undertaken by families only on such amount of land that they can tend within the sharecropper's family of typically 4-6 members. 1 more reason why such families go for sharecropping is that they take the support of the landowner for the cash input costs and manage their cashflow in such manner.

Rajasthan:

The striking difference between UP and Rajasthan in the matter of Agricultural labour wages is that in Rajasthan the wages are higher ranging from minimum Rs 350 to Rs 500 per day which is almost double that of UP . Another striking difference from UP and a welcome thing to notice is equal wages for males and females as far as agricultural labour is concerned.

Understanding the economics of smallholder agriculture in UP and Rajasthan:

Tables below show per unit production cost as well as yield and returns reported by farmers as per present market price for common crops in areas visited in UP and Rajasthan. Land rents are not taken into account anywhere.

Uttar Pradesh:

1 bigha= 1/4th Hectare

Crop	Total production cost including transportation per bigha in Rupees	Yield	Average savings/loss per bigha at present average market prices. Loss to be reported with '-ve' sign
Wheat	12000	10 quintals	11000
Paddy	16000	12 quintals	6000
Potato	29000	55 quintals	15000

Rajasthan:

1 bigha= 1/4th Hectare

Crop	Total production cost including transportation per bigha in Rupees	Yield	Average savings/loss per bigha at present average market prices. Loss to be reported with '-ve' sign
Wheat	17000	11 quintals	7000
Guar (Indian Cluster Bean)	8000	2.5 quintals	2000
Green Gram(Moong)	9000	2 quintals	3000
Bengal Gram (Kala Chana Hybrid)	17000	5 quintals	3000
Bengal Gram Traditional (Desi Kala Chana)	8000	2.5 quintals	2000

Agriculture extension: Availability of seeds, urea and other fertilizers and Soil Health Cards:

Uttar Pradesh:

Extension (Seeds/fertilizer/Pesticides): All the farmers buy seeds and pesticides from shops. These shops also serve as their advice centres. The shops on their part, receive inputs from personnel of private companies involved in the business of seeds, pesticides and there is a feedback loop also. The farmers, whenever not sure, take a sample of any infection/problem they face to the shop for advice. The shopkeeper advises them if he knows or else reaches out to relevant company officials. Farmers mentioned that the inputs are good and the shopkeepers also remain accountable for quality of seeds and even reimburse some cost if there is adverse effect other than what is supposed to happen. Overall, they are content with the quality of inputs from this source.

Soil Health Cards: No farmer I met reported having received a soil health card.

Rajasthan:

Extension (Seeds/fertilizer/Pesticides): Government Agriculture department extension is available for farmers in Rajasthan and the farmers approach the Agri gram sewak or local agri dept office to seek advice on their problems of pests and diseases if they face any. Regarding seeds and pesticides, some farmers complained about spurious/poor quality seeds and pesticides and indicated that as a concern. An interesting observation about seeds also came to notice. Government provides seeds to farmers at subsidised rates. This being Rabi season, wheat and chana seeds were being distributed. A number of farmers were selling these seeds after procuring them from the government in the open market at higher prices. For instance, the wheat seeds which cost them Rs 1800/- per quintal (subsidised price) fetched a price of Rs. 2200/ per quintal. The reasons for this sale to open market were many. Sowing time for both wheat and chana is nearing end and the seeds have reached them late; so some farmers have sown already but don't want to forgo their due benefit from the seeds. Some farmers don't trust the quality of seeds they receive from the government and use the surplus generated from selling these, add some more amount and purchase seeds from open market which in their opinion are of better quality. The open market prefers these as say, for Bengal gram (chana), the grain size is slightly bigger for the seeds and it fetches a higher price in the market. Thus, this aspect is also present and those farmers who indulge in such selling do so for a variety of reasons of their own.

Soil Health Cards: Some farmers had soil health cards but they were sceptical of the information on the soil health cards and never referred to those cards for their agriculture operations. They did not trust the soil health cards and mentioned that –“we are not sure which samples were taken, whether our soil has been sampled and tested and thus we don't trust the results on the soil health cards”. As we have seen in Unnao also, physical hard

copies of soil health cards have not reached the farmers mostly and even when they have reached, they are of little use to the farmers.

Stray Cattle Menace:

Uttar Pradesh:

Stray cattle menace is a big concern of farmers and it came out that it has also affected sowing of crops specially in the Kharif season. Farmers use barbed iron wires around their fields but they say that it is also not 100% effective as cattle pass through from beneath or jump the fence. To ensure safety of crops, farmers usually sleep on bamboo pedestals ('machaans') enacted on their fields to shoo away cattle at night. On being asked why the cattle has not affected the wheat sowing that much, they reported that wheat is grown extensively and thus it is easier to monitor the wheat crop due to more availability of manpower guarding the crop.

Rajasthan:

Stray cattle menace is a concern of farmers but it was not expressed in conversations in as serious as a concern as the farmers expressed in Uttar Pradesh.

Sale of produce:

Sale at MSP common features: As far as selling on MSP is concerned; farmers who have enough produce to sell at MSP do so as per their immediate cash needs. They sell that much produce to private traders for instant cash as is their requirement at the time of harvest. Rest, sale at MSP is dependent on individual; those who register and manoeuvre the documentation sell at MSP and the rest is stored for consumption or sale later when the prices go up. This is the general scenario for farmers with just few quintals of produce to sell and immediate cash needs. But the crops for which government actually procures at MSP (like wheat, paddy, Green Gram (moong)), the market rates hover around the MSP and are generally 5-12% lower than the MSP during the window of MSP procurement.

Uttar Pradesh:

Potato farmers: The produce is sold to private traders at the time of harvest as per the immediate cash requirement and the rest is taken to cold storages. There are 4-5 cold storages available in 20 kms radius of Unnao and each bag of 50-60 potato is charged Rupees 150/- for 6 months irrespective of the duration they keep it in the cold storage. When the farmer wants to release his produce from cold storage, he has to pay the rent at 150 Rs per bag and

take out his produce. In the case of price crash, the farmers don't go to release their produce and the cold storage owner is free to dispose/sell as he pleases.

Vegetables: Taken to mandis in Unnao, Kanpur, Lucknow, Rai Bareli etc depending on prices. Many vegetable cultivators also take their produce for sale to weekly markets ("haats") in Unnao, Shuklaganj, Safipur and many other small haat in 25-30 kms radius from them.

Rajasthan:

Sale of wheat at MSP: Small holder farmers in this region with land upto around 2 hectares don't generally go for sale of wheat at MSP. This is so because rarely can they cultivate enough wheat due to availability of water and capital and such issues. The wheat which they produce is used up for self consumption, local sale to neighbours and relatives at around Rs.100/quintal less than MSP or whatever is the market price at the time of harvest.

Procedure of MSP sale: Along with not having enough surpluses to sell at MSP and then wait for payment, the procedure for sale at MSP is as follows. Farmers have to register online for the crop which they wish to sell at MSP after a government notification at the local e-kiosk. This is usually a month before the harvest. For the registration, they require to produce the sowing certificate locally known as girdawari which is available from the Patwari (last mile revenue official). This process involves its own costs and is completely out of reach for tenants/sharecroppers or anyone who is not a landowner. After that, when the procurement starts a month later at the time of harvest, the farmers have to remain alert to when his date of procurement is. The farmers usually receive sms text messages for this and then have a week's time to go to the designated place(mandi) for getting his produce quality checked, cleaned, weighed and deposited (sold) with the government authorised agency and then wait for payment to be credited directly to his/her bank account. The payment process can take from 15 days to 2 months or in rare cases even more time. When they sell locally, they don't have to bother about quality and the risk of rejection due to quality issues, the weight loss in produce due to cleaning (usually 2-4 kg per quintal i.e. average 3%) and transportation cost to designated MSP procurement spot. Thus the reluctance of the smallholders without adequate surplus produces to go for MSP. The acceptance or rejection of quality parameters is manual and involves human discretion. Quantity of produce accepted by the procurement agencies is dependent on norms of yield set by the government and the amount of land a farmer has and also on an overall limit on procurement from an individual farmer. In the case of Moong the limit is 25 quintals for an individual farmer; it is the maximum government will procure from him irrespective of any surplus he has produced. If the farmer has say 2 bighas land and as per the norm for this year(2quintals/bigha), only 4 quintals moong at MSP will be accepted from him even though lets say he produced 6 quintals in his 2 bighas. Produce is accepted in quantum of 50 kgs and procurement agency weighs 100 grams extra with each 50 kg. The

weight of empty sack (gunny bag) is 600 grams and so gross weight of each packet is 50.7 kgs.

The problems of the smallholders described above also give rise to sort of entrepreneurship opportunities for aggregators. Aggregators collect land and relevant documents from farmers and register online in their name for MSP procurement. These aggregators usually operate on a bigger scale compared to individual farmers. At the time of MSP procurement, they collect small quantities of produce from smallholders or even purchase from open market at prevailing prices and use the documents of the smallholders to sell the aggregated produce at MSP in the name of those farmers. The sale amount is deposited in the bank account of the individual farmers concerned and the aggregator takes the amount back from them. These aggregators keep the entire relevant revenue and MSP procurement bureaucracy well-oiled to perform these aggregation operations and pocket the difference. Any concerns with quality of the produce are also thus dealt with very easily by these aggregators. The element of mutual trust between these aggregators and farmers as well as their ability to recover the amounts in future from a number of farmers after it has been credited to the bank account of farmers is significant.

Modes of receiving payment

Uttar Pradesh: Almost 100% payments are transacted in cash except MSP.

Rajasthan: Same situation as UP as far as mode of payment is concerned. Almost 100% payments are transacted in cash except MSP.

Farmers' views on aspects of agriculture as expressed in one-one conversations as well as an open discussion with groups of farmers during the visits:

Institutional Credit/ KCC Loans: Farmers accepted that the amounts of KCC loans they have availed are more than that what is required for the input costs of their agriculture. But the continued subdued/zero returns have compelled them to utilize the KCC loan amounts for activities outside of agriculture. Now to keep the KCC running, they indulge in annual recycling of the KCC. They mentioned that within a span of same day or the next day, they repay the existing KCC loan and get a fresh loan issues in the account. Of course, this incurs some consideration at the bank but is a smooth process with the full knowledge and connivance of all parties involved and by fulfilling the prescribed legal process.

Rationalisation of subsidies: On the aspect of a direct cash transfer of subsidy instead of subsidizing inputs like fertilizer, seeds etc. on a per unit(hectare) basis , again the farmers were in 2 groups. 1 group was readily accepting of this proposal while the other group expressed that they would first have to know the exact quantities of subsidies they receive and the alternate direct amount proposed in lieu of those subsidies. Further enquiry as to what happens to the sharecroppers and tenants who would not receive any of the direct cash transfers because they are not landowners but farmers nonetheless, the reply was that in case of direct cash transfers, the sharecropping/lease/tenancy terms would reflect the revised economics of the new situation in case such a change were effected.

Contract/Leased Agriculture: About contract farming/leasing of land on a large scale, I discussed with a group of farmers the hypothetical proposition of giving away their lands on a mass scale to some entity which would do agriculture at scale by paying a fixed annual rent to the landowner. This proposition was welcomed by some farmers while some others expressed scepticism about the proposal. The group opposing such a proposal was asking questions like this is not practical as all the farmers won't agree to give away their lands and thus a large chunk of land cannot be obtained and also the fundamental question as what would they(the farmers) do in case they rent away their lands as per the discussion. They also queried on what happens when someone, in the middle of the lease term, wants to sell his/her land. The group actually themselves began debating the merits and otherwise of such a proposal but I was definitely surprised by first the enthusiasm of the supporters of such proposal as well as the very genuine concerns of the group which was sceptical of the idea which showed that they understand relevance and impact such policy can have on their future.

The above concern of farmers, of what would they do instead of farming came up in more conversations with farmers. However, the response when I put this question, directly but subtly to farmers, as well as when this question was implied, was similar expressing lack of option other than agriculture ("Aur kya karenge?"). The farmers said that using their experience and a mix and match approach (mostly less, sometimes surplus) they make ends meet and are carrying on their lives and livelihoods through agriculture. A farmer, Mr Sumer Singh in Jhunjhunu gave a very philosophical reply when I asked him what the economic prospects of smallholder agriculture are and why farmers persist with agriculture. He said, "Here, locally, there is a saying that a dog which keeps licking and biting a dry piece of bone and eventually his gum starts bleeding; the dog thinks that there is flesh in the dry bone and the blood is oozing out from there but in reality it's the dog's own blood. Smallholder agriculture is exactly the same".

Themes emerging in conclusion after interacting with farmers in different villages and different socio-economic status in these 2 states:

Criticality of irrigation: The crisis of water is not readily evident when I goes to a relative water abundant place like Unnao where surface irrigation as well as groundwater is available for agriculture. The contrast is in a place like Rajasthan. Though the districts I visited in Rajasthan are not the most arid within Rajasthan, the contrast with Unnao is stark. Even in figures, charges for an hour of irrigation in Unnao were reported to be Rs.150 whereas these were easily Rs 700 an hour in Rajasthan. Even for 5 times the price, there is no ready availability of irrigation. Thus, when I asked about the hire charges for irrigating wheat in Rajasthan, the reply was that if one does not have own/assured source of irrigation, a farmer would never go for wheat cultivation in Rajasthan. Even for a crop like Chana (Bengal Gram), which requires relatively less number of irrigations (generally 3 irrigations for the complete crop), if one sources it from someone else, the cultivator has to pay 1/3rd of the crop for a single irrigation and half of the total produce if he avails all 3 irrigations.

Thus, irrigation is one of the most important needs of the farmers who are deprived of it. At the ground level, it is starkly evident how the areas which have access to public irrigation (mostly surface and canal irrigation) fare from those even immediately neighbouring areas without the same irrigation facilities. The issues of, and articulation of problems related to irrigation from these areas is also predictable: those with no irrigation crave for water and those with irrigation talk about equitable distribution, quality of irrigation infrastructure, regularity and volume of water available. Those farmers with better socio-economic profile try to make their private irrigation arrangements. Thus, many solar irrigation pumps are visible as we drive through these fields. I also saw a couple of projects of upto 10KW which can easily cost 6-7 lakhs at a minimum.

Farmers' aspiration for their children: In Rajasthan, the farmers were very clear that their next generation does not want to do agriculture. Anyone entering the agriculture profession here is doing so because of an extreme compulsion of some form and the younger generation is just not convinced about agriculture. Girls and their parents refuse to marry into even big landholding families preferring boys who are into salaried jobs of any kind. Parents here, if at all they are involving their children in agriculture, do so in the spare time of the children without harming their educational or other aspirational plans. The good thing observed was that in the limited sample of farmers I met, their children, both boys and girls, and in all socio-economic classes and castes were going for higher education and were aspirational for jobs. The situation in Unnao is also similar where I found young people, both male and female, working in the fields but studying for their graduation degrees or similar higher education pursuits. The aspiration for a job, the desire to move out of the village, prove themselves in cities and be a part of the economy by working hard but not in the fields is plainly visible among the young as well as their farmer parents for them who support them with all means at their disposal. In any case, all young people (~below 40 years age) I met on

these trips, even if working actively in fields/agriculture, were also studying, or also into other professions and were aspirational and ambitious.

Small/Marginal farmer vis-a-vis the slightly landed farmers: The small and marginal farmers (landholding less than 2 hectares) I interacted with were rather subdued and not very vocal about issues or distress related to agriculture. To be sure, they are in distress and expressed their difficulties when asked specifically about an aspect but were not as articulate or vocal as the slightly higher landowning farmers (2- <10 Hectares). The second category of farmers was more articulate, vocal and raised more macro issues/ policy aspects like MSP, irrigation, stray cattle menace, price, subsidies, agriculture labour wage rates etc. related to agriculture. While the usual explanations for the above can be caste/class/ higher educational attainment/ higher social capital etc., it is felt that there is also an element of exclusivity of economic dependence here, i.e., for better or worse, a farmer with upto 2 hectares of landholding cannot in any manner be solely dependent on agriculture for livelihood the year round, diversification to other professions, wage labour etc. is perhaps a must for him and he has now for long accepted this. But in the case of the second category, with some more land, agriculture perhaps is the mainstay of his livelihood and hence the difference. This is borne out by a mental comparison of the usual annual livelihood activities (including MGNREGA work) which I asked as part of my interaction with farmers of both categories. This is definitely 1 area for further study, i.e, livelihood diversification and dependence on agriculture for smallholders versus those having slightly more land than smallholders but not big farmers.

Food security of the farmers: Smallholder farmers cope with the increasingly capital intensive nature of agriculture (including in a relative sense high agriculture wage labour costs) by employing a variety of methods. They possibly don't quit farming altogether because

- Smallholder agriculture, even though clearly economically not remunerative provides for food security of the agricultural households. The produce, in normal years, even if not surplus for sale, generally contributes to the household supply of foodgrains, vegetables etc. and also provides an option for barter with neighbours, relatives etc. thus contributing to food security of household
- They can access the farm leftover like straw as fodder for their cattle which provides milk and manure which contributes to their cash flow for day-day expenses as well as some nutrition for their fields.
- Barter of manual labour with fellow smallholders, in labour intensive activities reducing the cash component in input costs
- To make optimum use of human resource available in the household in the absence of alternate economic opportunities
- They love their lands and take pride in the fact that they are producers of food

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