

INDIA SMALLHOLDER FARMERS DEEP DIVE RESULTS 2024

List of contents

	Pg No.
Study Background	#3
Demographics	#5
Understanding the Current Mind Set & Challenges of Farmers	#6
Climate Changes- How It Has Impacted Agriculture	#14
Understanding Digital Technology in Farming	#20
Understanding Regenerative Agriculture	#29
Understanding Future of Farming	#38





Study Approach

TARGET GROUP



Target crop grower in specific market

METHODOLOGY



Quantitative - Face to face interviews using CAPI (computer aided personal interviews) FARMER SEGMENTS TO BE TARGETTED



Face to Face interviews among the target crop growers Random interviews (in the markets assigned

TIME DURATION



30-35 mins maximum

TARGET GROUP CRITERIA



- Crop Should be growing at least one of the focus crops in the district/ region/ market.
- Commercial Growers with 80% produce sold
- Farmers engaged in agriculture for minimum 2 years.
- Minimum Acrage India 2.5 acres (WB,BH, JH- 1.5acre & OD- 1 acre)
- Farmer should be the decision maker of his farm, actively involved in day-to-day farm operations.
- Age group-21-60 years old



Sample distribution



Region	State	District	Sample Achieved	Total			
	Haryana	Hissar	52				
	Haryana	Kurukshetra	53				
	Punjab	Ludhiana	51				
North	Rajasthan	Jalore	50	369			
	Rajasthan	Kota	54				
	UP	Agra	50				
	UP	Kanpur	59				
	Bihar	Araria	50				
	Chhattisgarh	Bilaspur	50				
East	Jharkhand	Ranchi	55	256			
	Odisha	Cuttack	51				
	West Bengal	Paschim Medinipur	50				
	Gujarat	Banaskantha	50				
	Gujarat	Rajkot	50				
Moot	Maharashtra	Nashik	50	202			
vvest	Maharashtra	Wardha	52	303			
	MP	Indore	51				
	MP	Jabalpur	50				
	AP	Guntur	51				
	Karnataka	Bellary	50				
South	Karnataka	Chikballapur	50	251			
	Telangana	Warangal	50				
	TN	Madurai	50				
GRAND TOTAL							

Farmer Voice

Farmer's Demographic

Avg age of an Indian farmer is about <u>40 years</u>, with atleast <u>secondary</u> <u>education</u>.

Rice and Wheat are the two most grown crop (although region wise difference is there).

Small holder farmers with an avg of 6 acres of cultivable land.

		

Education

Level of education	Overall	North	East	West	South
Primary / Elementary education	14%	8%	19%	6%	29%
Secondary education	45%	45%	40%	52%	39%
Higher education – Agriculture related	8%	14%	5%	8%	4%
Higher education – Non agriculture related	24%	27%	30%	20%	18%
University degree – Agriculture related	2%	1%	2%	4%	3%
University degree – Non agriculture related	6%	5%	4%	9%	7%



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Level of education	Overall	North	East	West	South
Avg. age	41 yrs.	42 yrs.	41 yrs.	37 yrs.	43 yrs.
21-30 Yrs.	16%	16%	18%	21%	6%
31-40 Yrs.	39%	32%	34%	52%	38%
41-50 Yrs.	28%	32%	27%	18%	37%
51-60 Yrs.	17%	20%	21%	8%	18%



Can you please tell me your age ? Level of education ? Can you please list all the crops which you typically grow on your farming operation? Area under target crop? Share of organic farming

Understanding the current mindset & challenges of smallholder farmers

Farming is a challenging business due to increasing input cost and weather volatility

But despite these challenges growers recognize their role in society and warrants greater attention

Pest attack leading to crop loss remains primary concern Volatile weather is a major concern and is difficult to handle Most farmers believe that they should be heard and recognized more

41%

Farmers reported threat of crop damage from pests, larding to higher spends on farming 4/10

Weather volatility or extreme weather events

9/10

Farmers feel they have a crucial role in ensuring food security and hence should be heard more



"Increasing input cost" and "Impact of climate change" remains top of mind of an Indian farmer.

However, despite these challenges farmers see farming as "**social responsibility**" and a matter of "**pride**", indicating that farming is more than just a means of livelihood for them.



Base: Total sample (N=1179)

A1. For this question, I'm going to ask you to not think for too long but provide a spontaneous answer of the first thoughts which come to your mind. What three words best describe your current mindset as a farmer? (open-ended)



Slightly more positive connotations of farming in the South and West in comparison to East and North.

Highest negative connotations in North

Current Mindset	NORTH (N=369)	EAST (N=256)	WEST (N=303)	SOUTH (N=251)
#1 Current mindset	Climate condition (25%)	Main income source (45%)	Society's friend (28%)	Biotic and abiotic stress (40%)
#2 Current mindset	Better quality inputs (21%)	High input cost (22%)	High input cost (27%)	Social Promise (37%)
#3 Current mindset	High input cost (20%)	Climate condition (20%)	Feeling proud (23%)	Better crop growth (20%)
#4 Current mindset	Low yield (17%)	Low profit (20%)	Climate condition (22%)	Better practices (19%)
#5 Current mindset	Counterfeit issue (15%)	More yield (18%)	Better market price (21%)	Better quality imputes (14%)

Base: Total sample



Λ

A1. For this question, I'm going to ask you to not think for too long but provide a spontaneous answer of the first thoughts which come to your mind. What three words best describe your current mindset as a farmer? (open-ended)

In India farmers are currently challenged by increasing pest incidence and weather volatility, ultimately leading high spends on CPP. Labour availability too is concerning.

Farmers are generally not concerned about political and regulatory issues.

Top challenges N=1179 Ist (Most important) 2nd 3rd 1st+2nd+3rd	Wt. Rank	
Increased threat of crop damage from pests, disease or resistance issues 13% 14% 14% 41%	0.8	
Weather volatility or extreme weather events 13% 10% 12% 36%	0.7	
Crop protection costs (herbicides, insecticides, fungicides) 11% 13% 12% 36%	0.7	
Cost and/or availability of labor 11% 9% 11% 32%	0.6	
Price/income volatility 7% 9% 9% 25%	0.5	
Fertilizer costs 8% 9% 7% 24%	0.5	
Energy / fuel costs 7% 7% 5% 19%	0.4	
Seed costs 8% 5% 6% 19%	0.4	
Access to information and education about new techniques and 5% 4% 6% 15%	0.3	
Negative public perception of farmers / lack of public knowl 5% 5% 14%	0.3	
Access to new technologies 4% 5% 4% 13%	0.3	
Market access / ability to sell production 3%5% 5% 13%	0.2	
Political or regulatory decisions affecting operation 2%392% 6%	0.1	
Connectivity issues and internet access %29% 4%	0.1 * Cha	alle
Disruption due to war and conflict%1%1%-4%	0.1	AL



* Challenges are ordered based on TOTAL % 1st+2nd+3rd important



Across regions , farmers are affected by similar challenges except in West. In West rising fuel and fertilizer costs are more concerning.

Additionally in South – Labour availability more concerning than other regions.

Top 3 challenges	INDIA (N=1179)	NORTH (N=369)	EAST (N=256)	WEST (N=303)	SOUTH (N=251)
#1 Challenge	Increased threat of crop damage from pests, disease or resistance issues (41%)	Weather volatility or extreme weather events (43%)	Increased threat of crop damage from pests, disease or resistance issues (49%)	Energy / fuel costs (31%)	Increased threat of crop damage from pests, disease or resistance issues (56%)
#2 Challenge	Weather volatility or extreme weather events (36%)	Increased threat of crop damage from pests, disease or resistance issues (39%)	Weather volatility or extreme weather events (48%)	Fertilizer costs (31%)	Crop protection costs (herbicides, insecticides, fungicides) (47%)
#3 Challenge	Crop protection costs (herbicides, insecticides, fungicides) (36%)	Crop protection costs (herbicides, insecticides, fungicides) (37%)	Crop protection costs (herbicides, insecticides, fungicides) (48%)	Price/income volatility (28%)	Cost and/or availability of labor (33%)

* challenges are ordered based on TOTAL % 1st+2nd+3rd important



9/10 Indian farmers feel, their contribution to society is very important especially in ensuring food security, and hence deserve more attention and recognition.



* items are ordered based on TOTAL 2024 [WEIGHTED] % Agree (strongly agree + agree)

These sentiments are echoed across all regions.



Base: Total sample

* items are ordered based on TOTAL 2024 [WEIGHTED] % Agree (strongly agree + agree)



A4. To what extent do you agree with the following statements? (prompted 5-point scale)



Climate change is quite worrisome to farmers; nearly all farmers have either already experienced its negative impact or foresee it in near future.

Majority farmers link associate it with increased pest pressure resulting in reduced yields and lower crop quality



MISCELLANEOUS:

- Decreased soli fertility (n=7) East –n= 2 + West –n-2
- Increase Cost of cultivation (n=2) East
- Decreased water level (n=2) East

Base: Total sample



E10. To what extent do you agree with the following statements? (prompted, 5-point scale) - E11. With changing weather patterns in future years, what negative impacts do you expect to see on your farm, if any? Any others? (prompted, multiple response)

Negative impact of climate change have been felt equally across different regions of the country



Base: Total sample



E10. To what extent do you agree with the following statements? (prompted, 5-point scale) - E11. With changing weather patterns in future years, what negative impacts do you expect to see on your farm, if any? Any others? (prompted, multiple response)

Severe weather conditions, have become increasingly common in recent past.

Impact of drought, high temperatures, excessive rains has increased substantially over the past 2-3 years in comparison to past.

olution of weather conditions impact*	WEIGHTED % of farmers			
Long periods of high temperature	In the past 2-3 years 10 years backwards	64% 41%	31%	2 <mark>0% 17%</mark> 28%
Drought episodes	In the past 2-3 years 10 years backwards	63% 48%	23%	<mark>6 22%</mark> 29%
Episodes of very high temperatures	In the past 2-3 years 10 years backwards	60% 39%	23 31%	3 <mark>% 16%</mark> 29%
Episodes of high rain intensity or flooding	In the past 2-3 years 10 years backwards	58% 48%	22% 26%	20% 26%
Episodes of very strong winds	In the past 2-3 years 10 years backwards	52% 42%	26% 30%	22% 28%
Changes from one weather extreme to another in a short period of time	In the past 2-3 years 10 years backwards	49% 31% 30%	30% %	22% 37% 1
Changes to the dates when the seasons start or end	In the past 2-3 years 10 years backwards	47% 32% 31	30% %	23% 36%
Long periods of low temperatures	In the past 2-3 years 10 years backwards	44% 31% 31%	30% %	26% 38%
Episodes of very low temperatures	In the past 2-3 years 10 years backwards	40% 30% 32%	33%	27% 39%

* items are ordered based on TOTAL 2024 % Major/serious problem (4+5) in the past 2-3 years

Major/serious problem (4+5) Moderate problem Minor/no problem (1+2) Don't know

Base: Total sample



E8. For each of the following weather conditions, please indicate how much of a problem it is for your farming operation in the recent years, meaning in the past 2 to 3 years? It is ...? (prompted, 5-point scale) - E9. And looking [years of experience/10] years backwards, how much of a problem was it for your farming operation back then? (prompted, 5-point scale)

Farmer across locations are aligned on the impact of severe weather conditions. But impact has been more severe in South in comparison to other states.

Evolution of weather conditions impact*	INDIA (N=1179)		NORTH (N=369)		EAST (N=256)		WEST (N=303)		SOUTH (N=251)	
	2-3 yrs.	10yrs. Back	2-3 yrs.	10yrs. Back	2-3 yrs.	10yrs. Back	2-3 yrs.	10yrs. Back	2-3 yrs.	10yrs. Back
Long periods of high temperature	64%	41%	59%	32%	69%	39%	58%	45%	72%	51%
Drought episodes	63%	48%	48%	31%	72%	51%	54%	48%	84%	71%
Episodes of very high temperatures	60%	39%	55%	33%	64%	31%	58%	47%	67%	49%
Episodes of high rain intensity or flooding	58%	48%	44%	34%	61%	45%	55%	46%	79%	74%
Episodes of very strong winds	52%	42%	49%	36%	42%	26%	53%	45%	66%	61%
Changes from one weather extreme to another in a short period of time	49%	31%	42%	24%	45%	19%	54%	42%	56%	43%
Changes to the dates when the seasons start or end	47%	32%	43%	26%	47%	20%	54%	46%	45%	37%
Long periods of low temperatures	44%	31%	41%	20%	43%	18%	47%	41%	47%	50%
Episodes of very low temperatures	40%	30%	34%	21%	31%	16%	46%	39%	49%	44%

Figures shown in % of Major/serious problem (4+5) in the past 2-3 years

Base: Total sample



E8. For each of the following weather conditions, please indicate how much of a problem it is for your farming operation in the recent years, meaning in the past 2 to 3 years? It is ...? (prompted, 5-point scale) - E9. And looking [years of experience/10] years backwards, how much of a problem was it for your farming operation back then? (prompted, 5-point scale)

Such is the concern of the climate change, that 8/10 farmers are willing to change farming practices and adapt new technologies to mitigate the negative impact of it Willingness to adapt to new technologies is most positive in the North.



("5-strongly agree" / "4-agree" with both statements)

Base: Total sample

E10. To what extent do you agree with the following statements? (prompted, 5-point scale) - E11. With changing weather patterns in future years, what negative impacts do you expect to see on your farm, if any? Any others? (prompted, multiple response)





Despite current low uptake of digital technologies, most farmers show strong interest in adopting it.

Key drivers for adoption are increased profits and reduced costs, though investment requirements and accessibility remain significant barriers.

Low uptake of Digi Tech, but majority show interest to use in next 3 years

50%

willing to use digital technology in near future despite its low uptake now. Deciding factor for most farmers will be potential for increased profits and reduced costs

9/10

Attribute functional benefits of "yield" and "quality" as driving factors for digital tech Investment requirements and accessibility are key barriers for lower adoption

50%

Hesitate to adopt Digital Tech due to monetary constraints. Almost equal no.do not have access to it. Incomplete knowledge a barrier too.



Most farmers are familiar with digital technologies, which they associate with advanced tools such as drones, harvesters, sensors, and GPS. They see these tools as ways to save time and effort in farming.

Knowledge about Digital Technology



Font size is proportional to the number of mentions. Green stands for positive, blue for neutral & red for negative (based on researchers' interpretation)



What farmers have to say about "Digital Technology", let's hear it directly from them

"I used to click the photograph of the insect/disease/weeds and share in WhatsApp and get the proper resolution on this".

North Region

"Through GPS technology farmer get exact information on his farming, and also get forecast, which help to do the farming more precisely and help to take decision"

North Region

"Digital technology in farming is help to save my time and effort and also doing farming more efficiently".

East Region

"It's easy to apply the pesticide via drone, chemical solution is applied more effectively and save time and effort ".

South Region

"It is like easy farming by drone spraying service or sensors can be bought and you put it in the farms and real time monitoring can be done".

South Region

"I have seen it on TV, where it was shown about drones for spraying. I have not used it because I don't know how to use it".

East Region

"I used to get weather forecast in my phone or internet, accordingly, predict the season and plan accordingly".

West Region

"Now farmer are using new modern equipment which is completely digital, and which help to save time and effort".

South Region

"Now farmers are testing their soil and get idea about soil nutrient and accordingly use fertilizer which to remain the soil fertility".

West Region



Currently in India, low uptake of digital technologies, however sentiments towards it is largely positive and 5/10 farmers are willing to use them in near future.



B2. For the rest of the discussion, please consider that by "digital technologies in agriculture we mean a broad range of tools that digitally collect, store, analyse, and share electronic data and/or information, all aimed at optimizing crop production, resource management, and overall farm efficiency or promoting sustainability. Typical examples



Based on this definition, when it comes to the use of digital technologies on your farming operation, which of the following statements suits you best?

B6. How do you feel about the spread of digital technologies in agriculture?

Farmers' hesitation to adopt digital technologies is primarily due to perceptions of complexity and incomplete knowledge, with monetary investment being a secondary concern.

Barriers of Not Using Digital Technology

TOP 5 barriers	INDIA (N=78)	NORTH (N=13*)	EAST (N=30)	WEST (N=33)	SOUTH (N=2*)
#1 barrier	Digital technologies are too complex (59%)	Benefits of digital technologies are not clear to me (77%)	Digital technologies are too complex (57%)	Digital technologies are too complex (58%)	Benefits of digital technologies are not clear to me (100%)
#2 barrier	Benefits of digital technologies are not clear to me (56%)	Digital technologies are too complex (69%)	Do not have the required skills / knowledge to work with the tools yet (47%)	Benefits of digital technologies are not clear to me (58%)	Digital technologies are not available in my area yet (100%)
#3 barrier	Required monetary investment (46%)	Required time investment (62%)	Benefits of digital technologies are not clear to me (43%)	Do not have the required skills / knowledge to work with the tools yet (55%)	Digital technologies are too complex (50%)
#4 barrier	Do not have the required skills / knowledge to work with the tools yet (45%)	Connectivity problems (62%)	Digital technologies are not available in my area yet (43%)	Required monetary investment (52%)	Do not have the required skills / knowledge to work with the tools yet (50%)
#5 barrier	Required time investment (42%)	Required monetary investment (46%)	Required monetary investment (40%)	Required time investment (48%)	Required monetary investment (50%)

Base: Those who have not plan to use digital technology

Caution :- *Small base



QB5A. What are the reasons you are currently not using and not planning to use digital technologies on your farm? Any others? Q5B. What barriers prevent you from using more digital technologies on your farm? Any others? Q5C. What barriers prevent you from using digital technologies on your farm at this moment? Any others? Barriers of adoption differ across farmer categories. Investment requirements and accessibility are key barriers majority of farmers who are currently using or plan to use it more in future. Whilst lack of information biggest barrier for not planning to use digital tech.



Base: Those who have idea about digital technology



QB5A. What are the reasons you are currently not using and not planning to use digital technologies on your farm? Any others? Q5B. What barriers prevent you from using more digital technologies on your farm? Any others? Q5C. What barriers prevent you from using digital technologies on your farm at this moment? Any others?

Functional benefits of "higher yield" and "better quality" is largely driving farmers to plan to adopt digital technologies.

While sustainability matters, the deciding factor for most farmers will be the potential for increased profits and reduced costs

					Motiva	ating +Extrem	ely motivating	(4+5)
	excl. respondents who don't use & don't plan to use in B2 (n=1078)			Total (4+5)	NORTH (N=356)	EAST (N=225)	WEST (N=249)	SOUTH (N=248)
	Improve crop yields	45%	43%	88%	88%	82%	90%	90%
	Improve crop quality	45%	42%	87%	89%	85%	86%	88%
	Improve sustainability of farming practices	45%	42%	87%	92%	76%	87%	88%
	Optimizing labor requirements	44%	42%	85%	87%	79%	87%	87%
	Anticipate risks	45%	40%	85%	85%	82%	87%	85%
	Easier access to the market	39%	45%	85%	90%	79%	87%	80%
	General costs savings in inputs	40%	43%	83%	88%	79%	85%	79%
	Easier record keeping for compliance	34%	47%	81%	84%	66%	89%	82%
	Gain confidence in decision making	37%	39%	76%	78%	66%	80%	79%
Gair	peace of mind & reduce operational burden	27%	39% 66%		68%	61%	67%	64%
	Be among the leaders in your community	30%	35% 66%		72%	41%	77%	67%

Feeling About the Spread of Digital Technology



B4. To what extent do each of the following drivers motivate you to [use / consider using] digital technologies in agriculture? (prompted, 5-point scale) - B5a. What are the reasons you are currently not using and not planning to use digital technologies on your farm? (prompted, multiple response) -

Half of the farmers are currently ignorant about "AI" but are interested to know and learn about it.

Limited knowledge and use of AI methods viz imagery tools and sprayers, but some usage of Chatbots evident.



Awareness / use of Al applications in agriculture



Don't know







74%

avg: 1.3

0

Sprayers that recognize weeds and apply an herbicide automatically only on them





Base: Total sample

B7. You might have heard about the development of Artificial Intelligence (AI). In the context of agriculture, about Artificial Intelligence and its practical applications, would you say you have ...? (prompted, 5-point scale) -B8. There are currently several applications of AI in agriculture. For each of the following ones, can you please indicate whether:...? (prompted, single response) - B9. How much of an interest do you have in knowing more about the potential applications of artificial intelligence / AI on your farm? (prompted, 5-point scale)

Chatbots

Regenerative Agriculture:

Farmers prioritize soil health through regenerative practices, but widespread adoption is limited by a lack of comprehensive knowledge While most farmers practice regenerative agriculture with a focus on soil health, lack of knowledge and clarity hinders broader adoption. But despite high adoption, 1/3rd not aware of term "regenerative agriculture"

Majority farmers are currently practicing regenerative agriculture

80%

Farmers use atleast 4-5 regenerative agriculture practice Farmers primary focus is improving soil health through regenerative agriculture

#1

Soil health remains the main focus of the farmers through regenerative agriculture. Higher yield a secondary benefit Lack of knowledge and clarity , a hindrance in higher adoption

50%

Feel they still lack complete knowledge on regenerative practices, thus posing a barrier for its widespread adoption



Relatively low spont awareness of regenerative agriculture. 1/3rd farmers could not explain it spontaneously.

Those who could explain it, mostly had positive conotations for it

Regenerative Agriculture



Font size is proportional to the number of mentions. Green stands for positive, blue for neutral & red for negative (based on researchers' interpretation)

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What farmers have to say about "Regenerative Agriculture", let's hear it directly from them

"I do not have a clear idea about regenerative agriculture".

North Region

"To maintain the soil fertility, I used to take multiple crops which under short duration & maintaining proper rotation, ".

North Region

"This is a new method of farming which help to increase the soil fertility".

East Region

"less use of chemical product and introduce organic farming, which help to safe or environment and increase the soil fertility".

East Region

"No I have not heard of this word. Can you explain it to me".

West Region

"Doing soil testing which help to maintain my soil fertility and balance my soil nutrient".

South Regions

"Re-used the waste water or irrigated water, and in this way we can save the water and maintain the water level as well as reduce irrigation water requirement".

North Region

"This is a new farming methods, which help to maintain balance in environment".

West Region

"Instead of chemical crop protection, use biological products to protect crop which is safer of soil as well as environment".

South Region



Although all farmers are aware of one or the other regenerative practices; currently about 80% of them practice it.

Crop rotation, regular fertilization, constant soil monitoring are some of the regular "regenerative practices".

Current users	Past Users (implemented it, but stopped)	Potential users (next 3 years)	s - short term	n ■Pote (>3	ential users - years)	long ter	m <mark>–</mark>	Non-use	ers aware o	f Total Aware of
	Soil health monitoring / testi	ng	44%	2%	19%	1:	3%	19%	96%	
Maintai	ning soil fertility by adding all necessary nutrier	nts	41%	1 <mark>%</mark>	23%		6%	14%	95%	
	Variable rate fertilization / crop protecti	on	55%		1 <mark>%</mark>	17%	11%	9%	94%	
	Crop rotati	on	50%		<mark>2%</mark> 15%	6	12%	14%	93%	
	Irrigation water saving systems and too	ols 23%	1 <mark>%</mark>	24%	23%	/ 0	21	%	91%	Farmers are
	Usage of biofertilizers / biostimular	nts	41%	1 <mark>%</mark>	17%	15%	1	7%	91%	atleast 4-5
Usage	of biological crop protection / biocontrol solutio	ns 21%	<mark>2%</mark>	24%	23%		20%		90%	regeneratio
rop selection for reduced in	put needs, improved resilience and sustainabil	ity 21%	1 <mark>%</mark>	25%	23%	0	15%	87%	6	practices
	Providing biodiverse habitat on the fail	rm <u>15% 1<mark>%</mark></u>	26%		24%		20%	86%	6	
Us	age of machinery powered on renewable ener	gy 13% 1 <mark>%</mark>	22%		26%		24%	86%		South near
	Reduced tillage / no tilla	ge 21%	<mark>2%</mark> 2	1%	23%		17%	84%		00% farmer
	On-farm renewable energy generati	on <u>11% 1</u> %	22%	25	5%	24	%	83%		practice it
	Wastewater treatme	ent 12% 1 <mark>%</mark>	14%	19%	25%)	72%			- n.
	Agrofores	try 14% 1 <mark>%</mark>	16%	21%	19	%	70%			
	Participate in a carbon farming progra	um 13% 1 <mark>%</mark>	17%	19%	14%	64%				
	Growing cover / catch cro		150/	15%	170/	61%				



Farmers focus on improving soil health through regenerative practices, with increased yield and productivity seen as secondary benefits.

Biodiversity conservation at present least important to growers.



* areas are ordered based on TOTAL average (lowest to highest)

Base: Total sample (N=1179)

Farmer Voice

C4. Please rank these areas from most important to least important to you, with "1" being the most important area, and "6" being the least important. (prompted, single response)

Though "soil health " continues to be the focus across all regions ; farmers in East are seeking more benefits from "regenerative agriculture".

In east farmer's are look at it to improve their livelihood

Importance Rank for Regenerative Agriculture	INDIA (N=1179)	NORTH (N=369)	EAST (N=256)	WEST (N=303)	SOUTH (N=251)
Soil health	4.4	4.4	4.0	4.6	4.4
Yield increase and improved productivity	3.5	3.9	3.8	3.1	2.9
Climate change mitigation and adaptation	3.3	3.0	3.3	3.5	3.7
Farmers' livelihood improvement	3.4	3.4	3.8	3.2	3.3
Water conservation	3.5	3.5	3.7	3.5	3.4
Biodiversity conservation	2.9	2.9	2.4	3.2	3.3

Value shown weighted rank



C4. Please rank these areas from most important to least important to you, with "1" being the most important area, and "6" being the least important. (prompted, single response)

"Lack of complete knowledge" emerged as the biggest barrier for use of regenerative practices. Farmers are looking for more clarity on precise benefits of the practices, before they can adopt it.

Increased, time, efforts and investment are also lowering the adoption of these practices.



Barriers for Regenerative Agriculture - INDIA

Base: Total sample (N=1150)



C3. All the previously listed practices can be considered regenerative agriculture practices. Generally speaking, what barriers prevent you from implementing [more] regenerative agriculture practices? Any others? (prompted, multiple response)

"Lack of complete knowledge" emerged as the biggest barrier for use of regenerative practices across all regions.

Additionally in South (where currently adoption is highest), uncertain outcomes of the practices are preventing farmers from adopting more no. of regenerative practices.

TOP 3 barriers	NORTH (N=369)	EAST (N=256)	WEST (N=274)	SOUTH (N=251)	
#1 Barriers	Lack of knowledge of regenerative agriculture practices (50%)	Lack of knowledge of regenerative agriculture practices (59%)	Lack of knowledge of regenerative agriculture practices (54%)	Uncertainty / risks for crop outcome (yield, quality) (53%)	
#2 Barriers	Required time investment / learning curve (49%)	Not enough clarity on benefits of regenerative agriculture practices (48%)	Increased complexity of farm management / practices (50%)	Lack of knowledge of regenerative agriculture practices (53%)	
#3 Barriers	Required monetary investment (42%)	Required monetary investment (43%)	Not enough clarity on benefits of regenerative agriculture practices (50%)	Not enough clarity on benefits of regenerative agriculture practices (52%)	

Barriers for Regenerative Agriculture

Base: Those who are not doing or doing less practices



C3. All the previously listed practices can be considered regenerative agriculture practices. Generally speaking, what barriers prevent you from implementing [more] regenerative agriculture practices? Any others? (prompted, multiple response)

Future of Farming:

Farmers remain hopeful for the future, with many advocating for better pest management and climate-resilient tools to sustain agriculture While most farmers are hopeful about the future of farming, they are seeking effective solutions to address farming challenges, including the impact of climate change.

Majority farmers are hopeful about future of farming But farmers seek effective solutions to mitigate challenges associated with farming

Farmers are also seeking solutions to lessen the impact of climate change

7/10

Farmers will encourage their future generation to opt for farming as a career option 50%

Are looking out for more effective pest management solutions and better digital technology 30%

Feel the need for new tools to manage the adverse impact of climate change on agriculture



As farmers face increasing pest attacks, their top priorities for the future are more effective pest management solutions and better access to digital technologies.

1/3rd farmers also spoke of means to manage climatic changes. Monetary and regulatory concerns are less of a focus for them.

Factors Benefiting farm - INDIA	■1st ■2nd ■3rd 1st+2nd+3rd (most important)
Access to better digital technologies	19% 17% 15% 51%
Access to better crop protection technology (herbicides, insecticides, fungicides)	18% 15% 14% 46%
Access to better irrigation technology	12% <u>11% 9%</u> 32%
Access to seeds & traits designed to better cope with extreme weather	10% 10% 12% 31%
Tailored products that guarantee outputs	9% <mark>7% 10% 26%</mark>
Preservation of access to reliable crop protection solutions	7% 8% 10% 25%
Integrated solutions across the farm (combining seeds, crop protection, digital data insights and expert) support)	7% 9% 8% 23%
Policy & regulatory framework changes (e.g., higher/different government subsidy schemes, more freedom of choice in agricultural practices, incentives)	6% <mark>6% 7%</mark> 18%
Better access to finance (e.g., loans for investments)	<mark>5% 7% 6%</mark> 17%
Support to manage financial risk (e.g., insurance)	4% <mark>7%</mark> 7% 19%
Further development / regulatory approval of GMO & new genetic technologies	4%4% <mark>3%</mark> 11%
5 5	Base: Total sample (N=117



D1. Looking into the future, which of these factors, if any, would most benefit your farm? Choose up to 3 in order of importance, number one being the most important. (prompted, 3 responses)

While expectations are largely similar across regions, some variations exist.

In the dry states of the North, East, and West, farmers prioritize better irrigation technology. Meanwhile, in the South, where the impact of climate change has been most severe, there is a higher demand for tools and technology to mitigate these effects.

Top 3 factors to benefit	INDIA	North	EAST	WEST	South
	(n=1179)	(n=369)	(n=256)	(n=303)	(n=251)
#1 area	Access to better digital technologies (51%)	Access to better crop protection technology (49%)	Access to better crop protection technology (56%)	Access to better digital technologies (63%)	Access to better crop protection technology (53%)
#2 area	Access to better crop protection technology (46%)	Access to better digital technologies (44%)	Access to better digital technologies (53%)	Access to better irrigation technology (32%)	Access to better digital technologies (43%)
#3 area	Access to better irrigation technology (32%)	Access to better irrigation technology (43%)	Access to better irrigation technology (34%)	Access to seeds & traits designed to better cope with extreme weather (29%)	Access to seeds & traits designed to better cope with extreme weather (34%)



Base: Total) sample

Despite the current challenges in farming, majority Indian farmers take pride in farming, and hence are willing to motivate future generations to take up farming.

7/10 farmers want there next generation to pursue farming as a career.

Encourage or Discourage Future Generations



Base: Total sample (N=1179)



D2. As things currently stand, would you encourage or discourage future generations, including your own children or grandchildren if applicable, to pursue farming as a career? You would ... (prompted, 5-point scale)

Farmers in West are most encouraging to the future generations. In South 5/10 farmers are sceptical about future of farming.





D2. As things currently stand, would you encourage or discourage future generations, including your own children or grandchildren if applicable, to pursue farming as a career? You would ... (prompted, 5-point scale)

What farmers have to say about their current and future expectations from farming... let's hear it from them

"In future labor shortage will be a major concern in farming and to mitigate the problem, need to depend in modern technology which help to solve the labor shortage as well as time".

North Region

"There are many challenges in farm work e.g. pest pressure, climate changes, irrigation problem etc. even though we have to do the farming to ensure the food security and personal development.".

North Region

"if a farmer not willing to do farming, then society does not get food, so to mitigate the country food security farmers play a big role".

East Region

"As a farmer I feel proud because, with the farming I can fulfil my demand and also ensure that my country's food problem is solved".

West Region

"Our country is a farming-based country, to develop the country's economic condition, farmers have major role".

South Region

"I'm traditionally doing farmer, as I'm not well educated and do not get other job hence I'm doing farming and it's my only source of income".

West Region

"Farmers should more focus on organic farming which helps to improve the soil fertility".

South Region

"It is important that our future generation does farming, otherwise like other countries we will also have to get food from other countries".

West Region

"Farming has become challenging. With climate becoming uncertain, we are not sure of yield".

South Region



A2. Now let's imagine you are invited to a national TV show or radio broadcast. What message would you want to share about your farming activity with the broader society? What would you want the overall society to know or realize? (open-ended)

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