

How to encourage farmers to adapt to climate change ?

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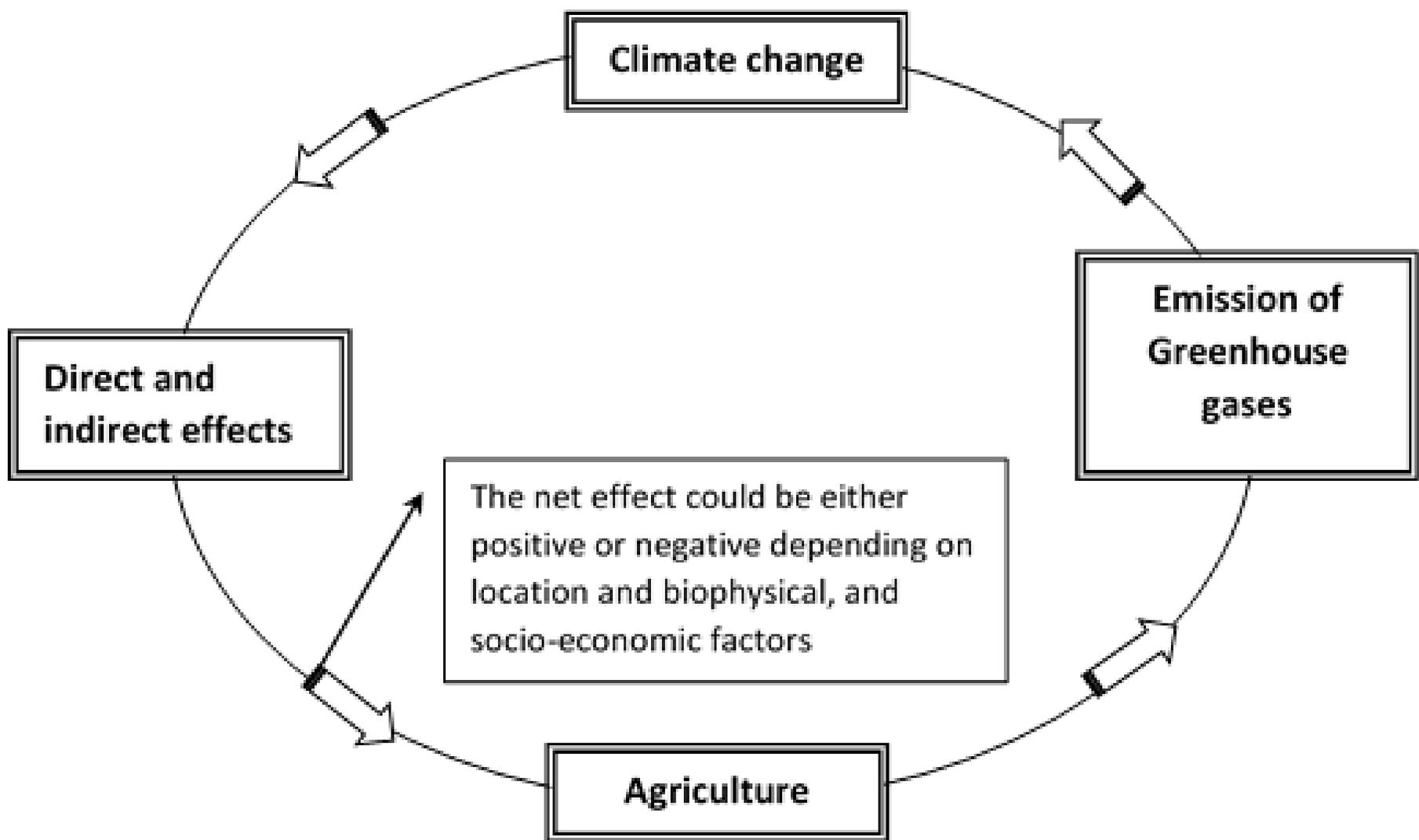
Organization

- ❖ Background, motivation & objectives
- ❖ Study area, methods & data
- ❖ Results & discussions
- ❖ Conclusions & policy implications

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Addressing climate change has now become essential

- ❖ Provisioning of food and raw materials is the major assignment of agriculture, which is under great threat of *climate change*.
- ❖ Climate change is no more distant future problem.
- ❖ Two-way relationship between climate change and agriculture



Adapting agriculture: A solution but very challenging particularly in developing countries

- ❖ Low adaptive capacity

 - 80 per cent farmers are small & marginal farmers

 - Credit & other constraints

- ❖ Autonomous adaptation – cannot expect and if, it wouldn't be sufficient to offset losses from climate change.

- ❖ Policy driven adaptation is urgently required.

Adaptation: A two-step process

❖ Perceiving climate change and its associated risks.

Perceiving is a cognitive process which involves receiving sensory information and interpreting these information based knowledge and experience.

Accuracy of perception depends on how we interpret received information and it depends on our knowledge and experience.

❖ Responding to these changes to minimize their adverse impacts.

Objectives

- ❖ To formulate recommendation on how to scale-up adaption to ***Climate change (CC)***.

To understand farmer's perception of both **CC** and its associated risks and what factors can help in forming perception accurately.

To identify changes in technology and practice that farmers take to mitigate losses from **CC** and assess if **CC** drives observed changes by farmers.

Study area

- ❖ Eastern Uttar Pradesh
- ❖ Three villages (Sariyawa, Gauhaniya & Kinauli) from Faizabad district.
- ❖ Sariyawa & Gauhaniya from Masodha block & Kinauli from Milkipur block.
- ❖ Masodha, close to city and relatively developed in infrastructure and other services.



Features of chosen villages

- ❖ All three villages are less developed – *Sariyawa*, relatively more developed than other two villages.
- ❖ Sariyawa, dominated by an upper cast '*Kshatriya*' & major occupation is agriculture and service.
- ❖ Gauhaniya, dominated by an upper backward cast '*kurmi*' & major occupation is agriculture & allied activities.
- ❖ Kinauli, least developed & dominated by an upper cast '*kayasth*' – they have either migrated or moved to city & shared-out/rented-out their agriculture land. Farmers are mostly tenants.

Data & methods

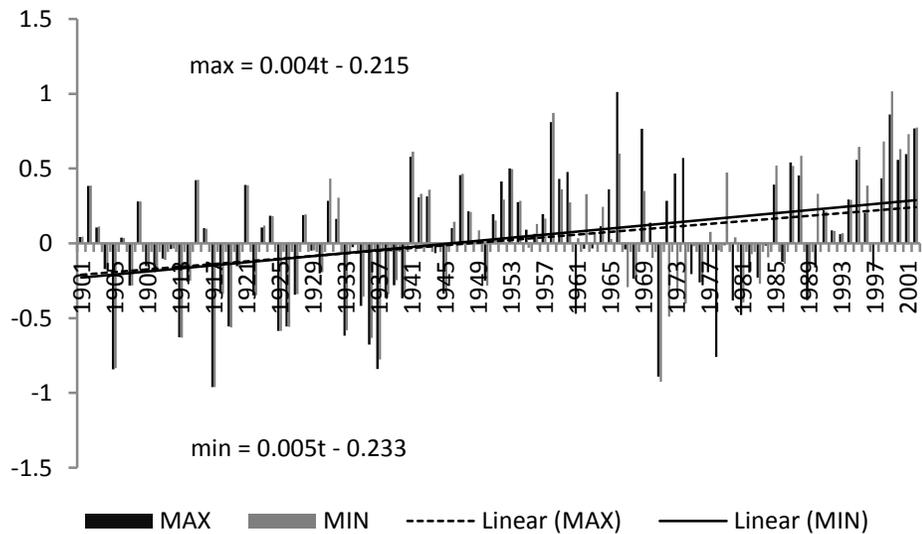
- ❖ Focus Groups Discussion (FGDs) method - Five groups of farmers & each group has nine farmers (Two groups in each Sariyawa and Gauhaniya and one group in Kinauli).
- ❖ Inclusion criteria – 20 or more years of farming experience.
- ❖ Information obtained from FGDs are later check for validation by agriculture and climate data collected from secondary sources.
- ❖ Secondary data are analysed using trend analysis.

Perception of climate change & its impact

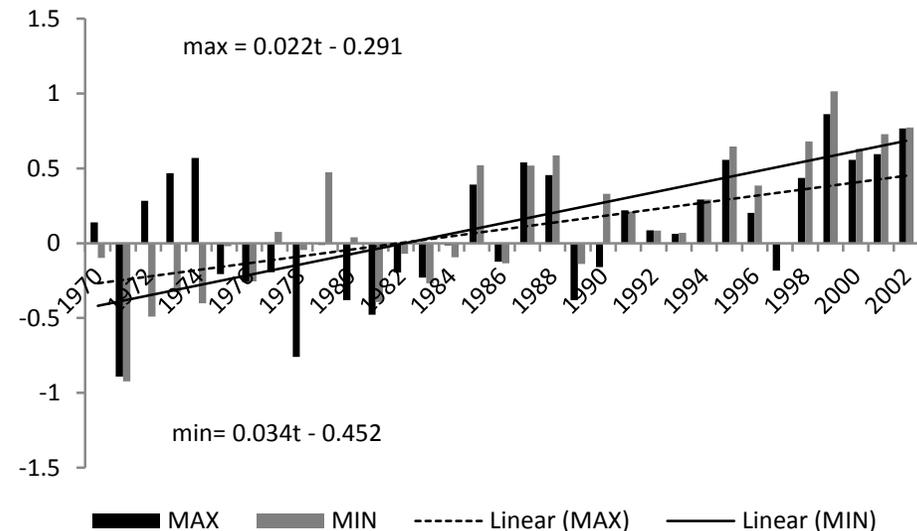
- ❖ Groups farmers perceived changes in warming trend, rainfall & weather and their impact on agriculture production and livelihood strategies.
- ❖ Two interesting features were noted.
 - Farmers perceived changes in climatic parameters, but were unaware that these changes were known as 'Climate Change (CC)'.
 - Disagreement over increasing warming trend.
- ❖ Print media is found helpful in spreading awareness and forming correct perception of CC.

Validation of Farmer's perception using observed climate data

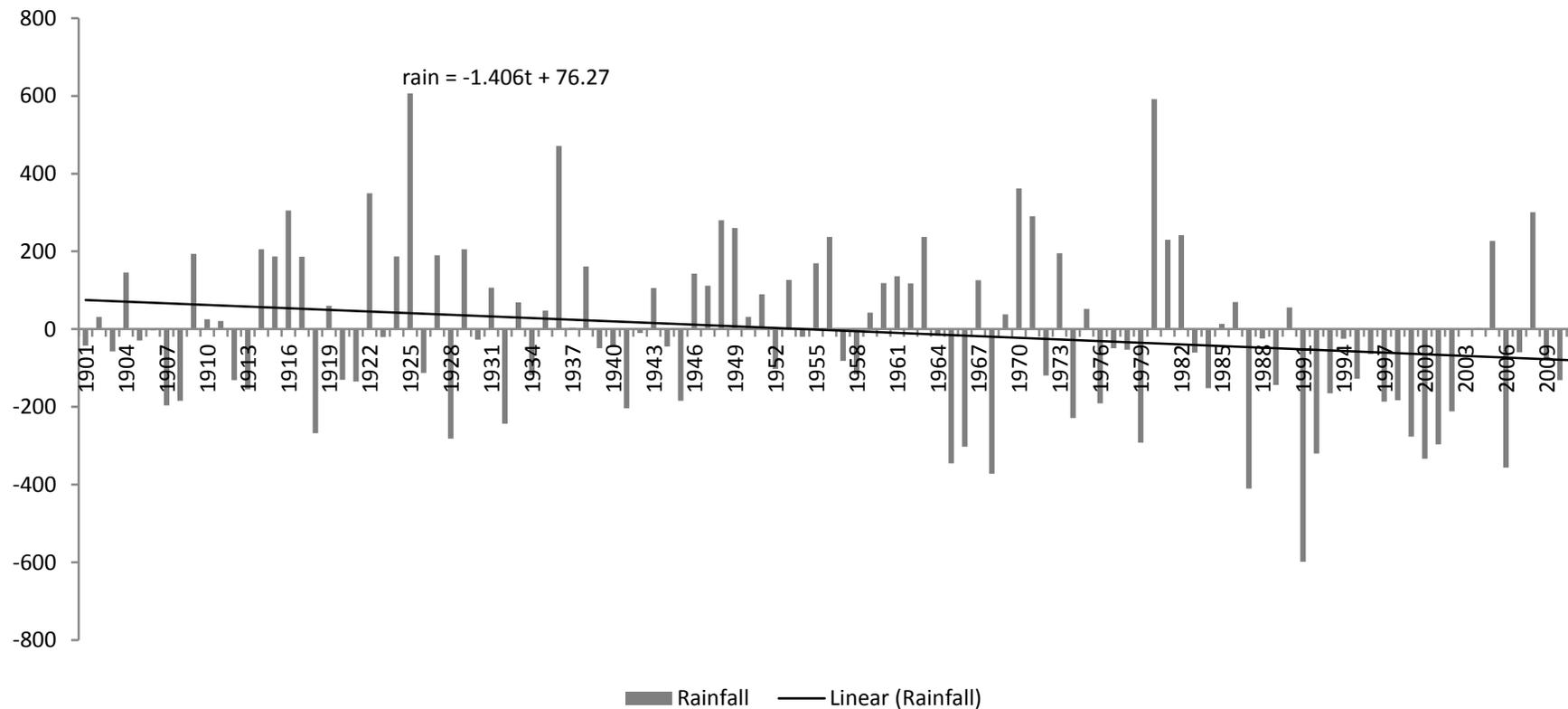
Maximum and minimum temperature anomalies in Faizabad district for the period begin 1901



Maximum and minimum temperature anomalies in Faizabad district for the period begin 1970



Rainfall anomalies in Faizabad district during the period begins 1901



Observed changes in Farming practices & rural livelihoods in study villages

S. No.	<i>Observed Changes</i>	
	<i>Farming Practices</i>	<i>Livelihood Strategies</i>
1	Increased use of groundwater for irrigation	Self-employed businesses (Provision store, Mobile & its repair shop, etc.)
2	Use of PVC pipes to carry water to farms	
3	Changed timing of sowing & harvesting	
4	Use of high yield varieties for crops	Salaried employment (Government service, salesmen, security guards etc.)
5	Use of short-duration cultivars	
6	Mixed cropping (inter-cropping)	
7	Crop diversification	Out-migration
8	Agro-forestry	

Is climate change the
main driver of these
changes?

Case 1: Crop Diversification

Farmers particularly from Sariyawa and Gohaniya villages are gradually shifting towards cultivation of peppermint from sugarcane.

Peppermint is more profitable crop than sugarcane.

There is no marketing problems with peppermint.

Sugarcane has lot of marketing problems. For example, famers may be forced to sell their produce to these influential people at very low prices.

Case 2: Agro-forestry

Some farmers are found in these villages who begun planting trees particularly mango and eucalyptus on their farms in order to generate more income rather than reduce negative impact of climate change.

Even farmers are well known of hydrological consequence of eucalyptus that it lowers water level very rapidly because of high rate of transpiration.

Farmers mentioned that they do not bother it because of their prime concern of profit that they get from selling its wood.

Case 3: Increased use of groundwater for irrigation

Most of interviewed farmers have installed their own tube-well for irrigation purpose.

This practice has significantly reduces their dependency on rainfall and helped them to minimize the adverse effect of drought or lack of rainfall.

But, the way they irrigate their farms is not appropriate.

Farmers basically overuse the water which further depletes water table. Even, they are not aware about efficient irrigation system like sprinkle irrigation and drip irrigation etc

Other striking behaviour observed facilitating adaptation to climate change

Collective action

Social network and learning

Different Sources of information	Farmer's response
CSISA	2.84
Government Extension agent	6.36
Cooperatives	0.09
Private dealers	7.13
Exhibitions	0.52
Mass media	0.09
<i>Friends, Neighbour and other farmers</i>	<i>79.46</i>
Relatives or family members	2.92
No response	0.6
Total	100

Note: All values are in per cent.

Source: CSISA Baseline Household Survey, 2010-11.

- ▶ Background & Motivation
- ▶ Study area, data & methods
- ▶ Findings
- ▶ **Conclusions & Policy Implications**

- We found lack of knowledge among farmers and limited access to information. Hence, climate information services should be introduced and strengthening agriculture extension, and application of print media and mobile could be instrumental here.
- Print media contributes significantly to such perception, as is observed from results of this study.
- There is scope to reduce the cost of agriculture extension and climate information services by using social network effect in these services.
- Purposeful adaptation, needed for which climate information & agriculture extension services & capacity building programmes could be instrumental.

Thanking you for
your time!
