



Does weather-based crop insurance offer effective mitigation option against climate change

1. INTRODUCTION

• Global warming if kept to 1.5°C, warming in the HKH & northwest Himalaya / Karakoram will likely be at least 0.3°C & 0.7°C higher, respectively.

Himalayan region for past 5 to 6 decades witnessed

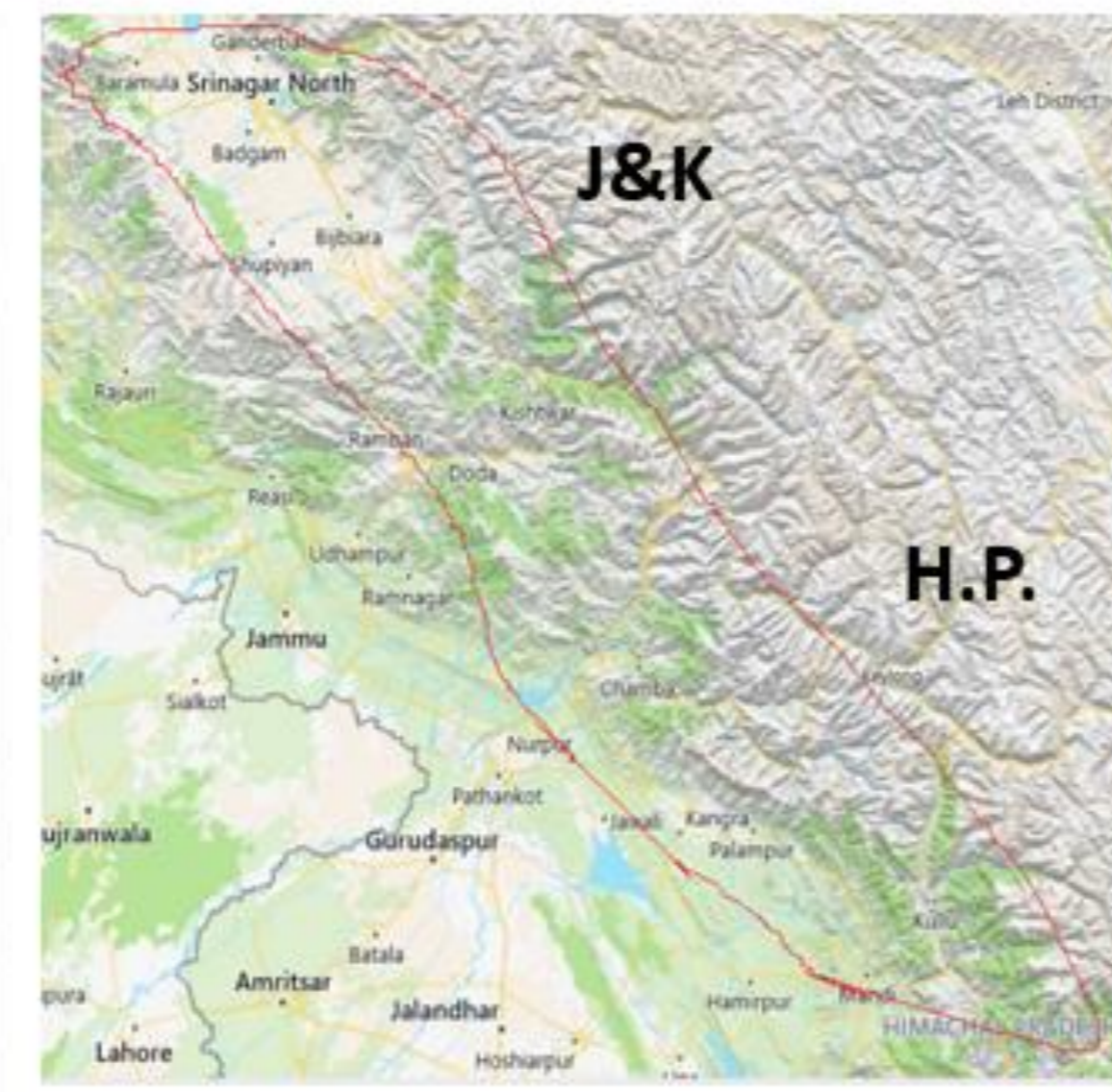
- Rising trend of extreme warm events
- Falling trend of extreme cold events



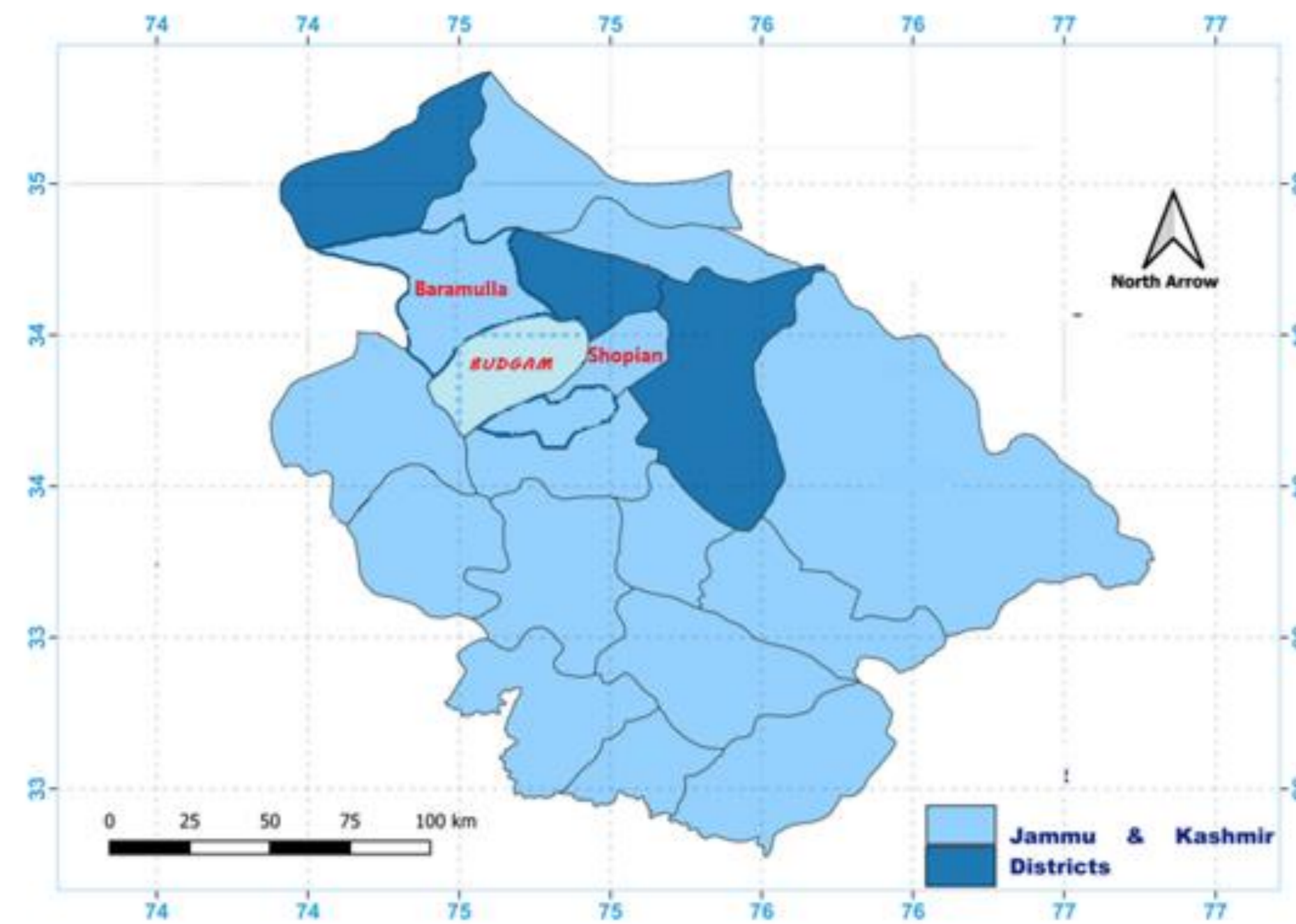
2. STUDY AREA, DATA AND METHODS



India



Kashmir



Restructured Weather based Crop Insurance Scheme



Prime Minister Crop Insurance Scheme

Stated Preference Theory was employed to draw farmers' willingness to pay (WTP) using Double Bounded Dichotomous Choice (DBDC) model

3. RESULTS

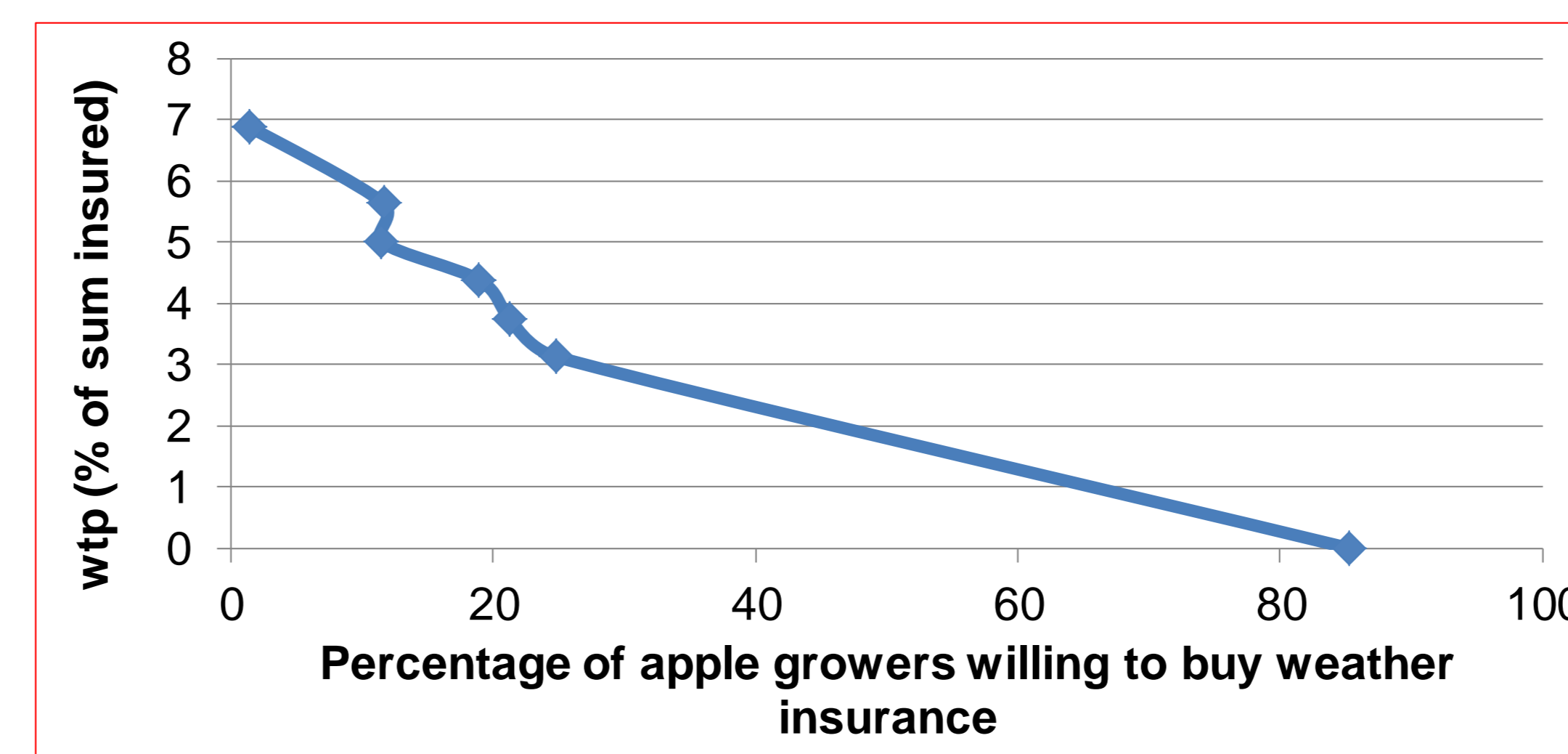
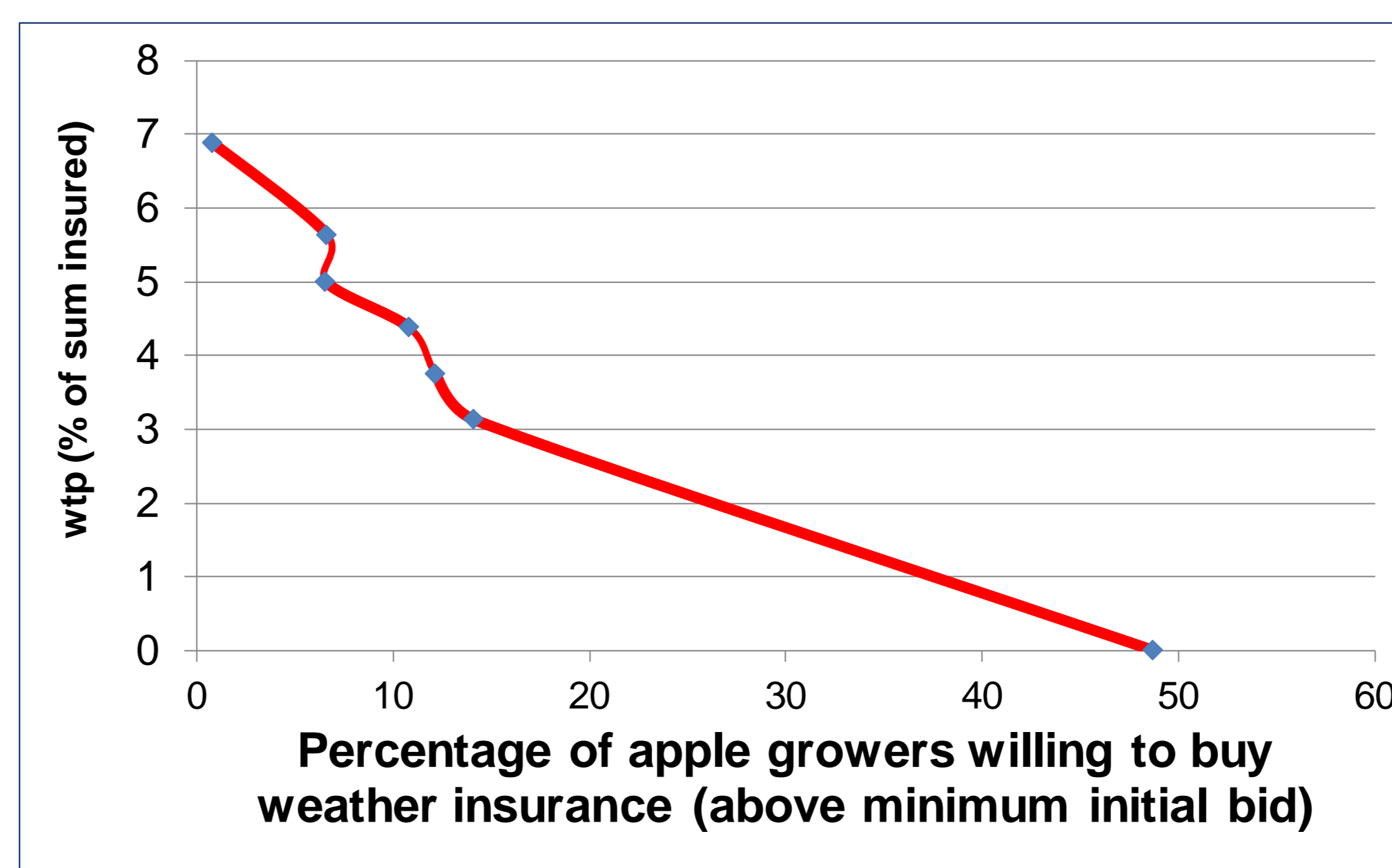
Factors affecting willingness to pay for RWBCIS for apple crop

Variables	Coefficient (S.D.)
Constant	28.65*** (2.11)
Age	0.04 (0.03)
Education	0.50*** (0.09)
Family size	-0.22 (0.26)
No. of earning members	-0.37** (0.49)
Off-farm job	-7.28*** (0.74)
Total land	-2.96** (1.17)
Area under apple	4.88*** (1.67)
Risk aversion	1.04** (0.52)
Risk perception	2.54*** (0.69)

No. of observations	1200
Sigma	9.36*** (0.28)
Wald chi ² (10)	272.30***
Probability > chi ²	0.000

Standard errors are in parentheses
*, ** & *** represents significant values at 10%, 5% & 1%, respectively

	Premium under scheme (Indian Rupee per tree)	Mean WTP	Std. Err.	Z	P> z	Lower value	Upper value
WTP (bids only)		28.65	2.11	13.53	0.00	24.50	32.79
WTP with covariates	40/- (5%)	27.06	2.33	11.60	0.00	22.49	31.64



4. DISCUSSION

• The average **age** of apple growers is **48.69 years** with minimum age of household head of **25 years** and maximum age of **85 years**. The education level of apple growers is very less with an average of only **6.57 years of formal schooling**. The average family size is **6.24** with earning family members of **1.78 per family**. Only **34%** of the apple growers are pursuing off-farm job and a negligible percentage of **0.08% growers** are involved in some social/political organization.

• All the apple growers in the survey agree that there should be a mechanism for insuring the crop. However, the growers are more concerned about insurance against hailstorm and revealed their choice for covering hailstorm under main cover. Therefore the response to the bids offers to the growers was not positive in majority of the cases.

SELECTED REFERENCES

- FAO. 2011. *Agricultural insurance in Asia and the Pacific region*. RAP publication 2011/12. 15-25. Food and Agriculture Organization of the United Nations, Regional Office for Asia and the Pacific, Bangkok.
- IRDAI. 2012. *Handbook on Crop Insurance*. pp 2-12. Insurance Regulatory and Development Authority of India.
- Kumari Mrinali, Singh K.M.*, Mishra R.R., Sinha D.K., Ahmad Nasim. 2017. Role of Socio-economic Variables in Adoption of Crop Insurance: A Discriminant Function Approach. *Economic Affairs*. 62. 361-365.

ACKNOWLEDGEMENTS

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5. CONCLUSIONS

- **The climate extremes are still not inciting apple growers to buy RWBCIS as the WTP is far less than the prevailing rates**
- Adoption is affected by knowledge about the scheme, installation of weather stations, multiple sources of income, diversification etc.
- Combo product -mixing crop & weather based insurance may be explored
- **Amalgamation of CSS with insurance can serve the purpose**

