# Relationship between Climate and Year to Year Variability in Crop Yield: Selected Districts of Pakistan 

Khush Bukhat Zahid ${ }^{\text {* }}$, Ghaffar Ali ${ }^{2}$, Samina Sabir ${ }^{1}$ and Mohammad Fayaz ${ }^{2}$<br>${ }^{1}$ Kashmir Institute of Economics. University of Azad Jammu and Kashmir Muzaffarabad, Pakistan; ${ }^{2}$ Department of Agricultural and Applied Economics, The University of Agriculture, Peshawar, Khyber Pakhtunkbwa, Pakistan.

Received | January 30, 2018; Accepted | November 22, 2018; Published | January 12, 2019
*Correspondence | Khush Bukhat Zahid, Kashmir Institute of Economics. University of Azad Jammu and Kashmir Muzaffarabad, Pakistan; Email: khushbukhatphd2009@gmail.com
Citation | Zahid, K.B., G. Ali, S. Sabir and M. Fayaz. 2019. Relationship between climate and year to year variability in crop yield: selected districts of Pakistan. Sarbad Journal of Agriculture, 35(1): 36-42.
DOI | http://dx.doi.org/10.17582/journal.sja/2019/35.1.36.42
Keywords | Climate change, Agriculture productivity, Temperature and rainfall, Production function technique, Yield variability

Supplementary Table 1: Unit Root Test.

|  | Model Specification | Levin and Lin | ImPesaran and <br> shin W stat | ADF Fisher Chi <br> square | Conclusion |
| :--- | :--- | :--- | :--- | :--- | :--- |
| Wheat yield | Intercept | -11.5474 | 0.53135 | 34.2599 | $\mathrm{I}(0)$ |
|  | Intercept and Trend | -7.9948 | -4.26595 | 86.686 | $\mathrm{I}(0)$ |
| Rice yield | Intercept | 1.0174 | 15.51 | 267.066 | $\mathrm{I}(0)$ |
| Maize Yield | Intercept and Trend | -2.3633 a | -13.955 | 223.760 | $\mathrm{I}(0)$ |
| Annual mean Temperature | Intercept | -11.176 | 0.64599 a | 33.0047 a | $\mathrm{I}(1)$ |
|  | Intercept and Trend | -7.6344 | -4.51132 | 86.0394 | $\mathrm{I}(0)$ |
|  | Intercept | -3.606 | -2.370 | 61.3861 | $\mathrm{I}(0)$ |
|  | Intercept | Intercept and Trend | -1.462 | -4.810 | 83.1184 |
| $\mathrm{I}(0)$ |  |  |  |  |  |
|  |  | -2.417 | -5.5563 | 96.080 | $\mathrm{I}(0)$ |
|  |  | -4.6025 | 81.249 | $\mathrm{I}(0)$ |  |

Supplementary Table 2: Hausman Test.

| Crops | Fixed Vs Random Effect | Decision |
| :--- | :--- | :--- |
| Wheat yield | $12.1107(0.0023)$ | Fixed effect Model |
| Rice Yield | $11.108(0.0039)$ | Fixed effect Model |
| Maize yield | $12.1107(0.0023)$ | Fixed effect Model |

