

## **Corn yield anomaly estimation from principal components of spectral indices in the rainfed agricultural region of Córdoba, Argentina**

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Revista Argentina de Agrometeorología RADA, v. XIII (2022): 1–14

### **Summary**

Different spectral indicators obtained during the corn (*Zea mays* L.) crop cycle were transformed from the Principal Component Analysis (PCA) to estimate the yield anomaly (ARMz) in Córdoba, Argentina, between 2000 and 2018. After corroborate the multicollinearity condition of the spectral records, ARMz was estimated by applying the conventional Multiple Regression Analysis (AnReMu) in its three characteristic modes: i) Using all the variables; ii) With forward selection and iii) With backward selection, to obtain models whose  $R^2$  reached values of 0.658, 0.609 and 0.596, respectively. Once the PCA was carried out, the AnReMu was reiterated to the set of the first 6 PCs to estimate ARMz and it was established that all the coefficients contribute significantly to explain the variability, although the model reaches an  $R^2$  of only 0.53. The lower performance of the CP model is explained by the fact that other factors that contribute to a lesser extent to the total variability present also high correlations with ARMz. Applying AnReMu with forward variable selection to the CP set, a model of 11 significant terms with an  $R^2$  of 0.628 was obtained, similar to the fit of models using spectral data

**Key words:** NDVI; LST; TVDI