Machine learning for the prediction of high Andean crop yields in the Ancash Region – Peru

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Agriculture is the backbone of every economy. In a country like Peru, which has an increasing demand for food due to population growth, advancements in the agricultural sector are necessary to meet these needs. Machine learning is an important decision support tool for predicting crop yields. However, nowadays, food production and prediction are being depleted due to non-natural climate changes, which negatively impact the economy of farmers by obtaining low yields. This article explores various machine learning techniques such as neural networks, decision trees, k-means, and logistic regression, used in the field of crop yield estimation, to enhance decision-making by farmers in the Ancash region of Peru. For this research, six provinces in the Ancash region (Yungay, Carhuaz, Huaraz, Recuay, Aija, and Huari) were selected, where a database of 2,573 households was obtained in 2016, and subsequently, a separate set of 594 samples was obtained in 2017. All machine learning algorithms are useful as they cater to different objectives. In our study, we still need to test ensemble algorithms such as random forests, stacking, bagging, boosting, and voting to determine the best one for predicting yields in high-altitude crops in the Ancash region of Peru.
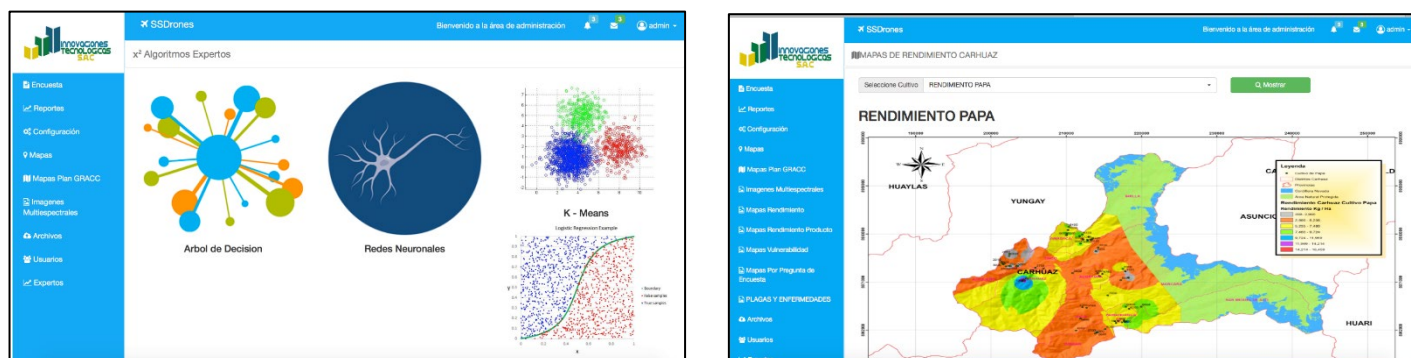
Figure 1: Prediction of yields of high Andean crops in the Ancash Region - Peru

Keywords: Machine learning, high Andean crops, yield prediction

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