

# Development of a Crop Yield Prediction Model for Corn using an Artificial Neural Network and High Resolution Remotely Sensed Imagery

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This paper follows the development of an accurate crop yield prediction model for corn fields at the McGill University MacDonalD Campus farm. The identification of specific locations where crop yield is less than optimal enables farmers to know where to better manage their resources. This research was conducted with high resolution satellite (WorldView 2 + Worldview 3) imagery courtesy of an academic grant from Digital Globe. A model with the similar form of my own can be practically implemented into Precision Agriculture workflows in the near future; especially with the advent of Unmanned Aerial Vehicles (UAVs) as temporally flexible geospatial data collection platforms. This model incorporates multiple vegetable indexes (VIs), which are algebraic combinations of two or more bands (ranges of electromagnetic energy) from multispectral imagery, as independent variables. The artificial neural network regression (ANN) developed in this paper was able to predict crop yield for corn for any given ground sampling distance (GSD) to a relative error of 26.851 bushels/acre.

