USE OF COLOR VEGETATION INDICES FROM UAS AERIAL MAPPING TO EVAUATE NIMITZ® EFFICACY CONTROLING *BELONOLAIMUS LONGICAUDATUS* IN FLORIDA STRAWBERRY.

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The use of color vegetation indices (CVI) derived from low-altitude aerial photograph orthomosaics obtained using an unmanned aerial vehicle (UAV) were evaluated for the ability to discriminate green leaf area, plant vigor, plant stress, stunting and decay induced by *Belonolaimus longicaudatus* in Florida Strawberry. The two CVIs used in this analysis were the Excess Greeness (ExG) and Excess Redness (ExR), ExG represents the green plant area and ExR indicates the stressed or dead plant area. The vegetation index maps were created at the field scale at different stages of the strawberry growing season. The field was selected for NIMITZ® evaluation based on a long history of high nematode pressure. Programmatically, treatments consisted of one drip irrigation system application of NIMITZ® at 2.9 L/ha, NIMITZ® at 4 L/ha, and Telone® EC at a 112 L/ha in the final stage of the previous year's strawberry crop as a crop termination treatment, including and compared with, an untreated check. In preparation of a fall planting, 7 days prior to strawberry transplanting in September 2017, NIMITZ® was applied at 2.9 L/ha and at 4L/ha, Telone® EC was applied 21 days before transplant at 68.2 L/ha, and again compared with the same untreated controls associated with spring treatments. All treatments were drip applied with 3-hour injection periods except fall Telone® EC applied in 1.5-hours. At transplanting on October 1st, 2017. All fall treatments were followed by 14 days of daily overhead irrigation to establish the bareroot transplants. Aerial imaging survey of the experimental area was conducted on December 16th 2016, January 24th and March 22nd 2017 using a DJI Inspire 1 Pro UAS with a DJI Zenmuse Z3 camera and a AerialMediaPros X3 NDVI camera. Image orthomosaics were created using DroneDeploy cloud software platform. Image resolution was high quality, generated at 0.4 inches per pixel. Processed RGB and NDVI maps were analyzed by Skymatics Ltd. Plant row based zonal summary statistic results of each CVI map show significant differences of both NIMITZ® treatments expressing larger canopy size and with more green plant area (ExG) compared to the Telone® EC and Untreated treatments. Conversely, the Telone® EC treatment showed numerically more stressed, reduced canopy and dead areas (ExR) than within NIMITZ® treated areas, the untreated control showed significantly greater ExR areas compared to either NIMITZ® treatments. This work suggests that the use of CVIs from unmanned aerial imaging can be useful to rapidly assess nematode damage and nematicide treatment efficacy in a very practical, non-invasive, and quantitative way, with implications for use in related plant pathology studies.