Drone Tool Getting Started Guide

The drone-version BLB damage assessment tool (hereinafter referred to as Drone Tool or simply as tool) is a tool for estimating BLB damage intensity related to rice color information (spectral reflectance and vegetation index) obtained from drone images. In addition to estimating BLB damage intensity, the tool has the ability to combine multiple drone images into a single image (an orthomosaic image), the ability of geometric correction to align the drone image to the parcel data of the plots, and the ability to identify BLB scoring locations in the drone image.

Before using the Drone Tool, it is necessary to prepare in advance five data sets:

1. Field observation data
   Ex: C:¥Users¥satreps¥Work¥Field_Data¥Current¥Block-2A¥Excel_File¥Block-2A_2022-03Mar-26.xls
   ※ If a field observation data is stored under
   C:¥Users¥satreps¥Work¥Field_Data¥Current
   with the following file name, it will be automatically renamed to the above file name when the survey block name/survey date is set.
   Ex: 26.03.2022 2a.xls, CIHEA - 2 A (20220326).xls, Block-2A_2022-03Mar-26.xls, 2A_2022-03-26.xls, 2A-2022.Mar.26.xls
2. Drone raw data
   Ex: C:¥Users¥satreps¥Work¥Drone_Data¥Current¥Block-2A¥2022-03Mar-26¥101FPLAN¥DJI_0011.TIF
   ※ If a folder containing drone raw data (*FPLAN) is stored under
   C:¥Users¥satreps¥Work¥Drone_Data¥Current
   with the following folder name, it will be automatically renamed to the above folder name when the survey block name/survey date is set.
   Ex: 26.03.2022 2a, CIHEA - 2 A (20220326), Block-2A_2022-03Mar-26, 2A_2022-03-26, 2A-2022.Mar.26
3. Damage estimation formula
   Ex: C:¥Users¥satreps¥Work¥Drone_Analysis¥Current¥formula¥pv_formula_age_90_110.csv
   Ex: C:¥Users¥satreps¥Work¥Drone_Analysis¥Current¥formula¥pm_formula_age_90_110.csv

4. Parcel data of the plots
   Ex: C:¥Users¥satreps¥Work¥Shapefile¥All_area_polygon_20210914¥All_area_polygon_20210914.shp
5. WorldView satellite data for geometric correction reference
   Ex: C:¥Users¥satreps¥Work¥WorldView¥wv2_180629_pan.tif

When using the Drone Tool with default settings, after preparing the necessary data, enter the observation block name/observation date on the main screen, check the check boxes for the required processing items (Make Orthomosaic, Geometric Correction, Calculate Indices, Identify Points, Extract Indices, Make Formula, Estimate Damage), and click the Run button, then everything will be processed automatically.

Here are some typical uses, as well as the data and processing items they require:

1. Calculate rice reflectances and indices from drone image and estimate BLB damage using existing BLB damage estimation formula
   Data: Drone raw data, Damage estimation formula, Parcel data of the plots, WorldView satellite data for geometric correction reference
   Processing item: Make Orthomosaic、Geometric Correction、Calculate Indices、Estimate Damage
2. Identify the observation points from drone images
   Data: Field observation data, Drone raw data, Parcel data of the plots, WorldView satellite data for geometric correction reference
   Processing item: Make Orthomosaic、Geometric Correction、Identify Points
3. Extract the values at the observation points from the reflectance/index images and create training data for estimating BLB damage
   Data: Field observation data, Drone raw data, Parcel data of the plots, WorldView satellite data for geometric correction reference
   Processing item: Make Orthomosaic、Geometric Correction、Calculate Indices、Extract Indices
4. Create BLB damage estimation formula from the training data
   Data: Processing results of Extract Indices (It is desirable to have more than 30 fields.)
   Processing item: Make Formula