

Dataset Documentation

Dataset Name: Dalberg Data Insights Uganda Crop Classification

Location and boundaries

Overall Location Method

- Ground collection only
- Ground collection with boundary drawn using imagery
- Ground collection with spatial buffer added
- Boundary drawn from imagery
- Other _____
- Unknown

GeoLocation Device

- Industrial grade GPS (List model) _____
- Retail grade GPS
- Mobile Phone GPS
- N/A
- Unknown

Ground Boundary Method (Details explained in Appendix A)

- Live/Continuous point capture of walk-around
- Manual point capture of walk-around
- Manual point capture of polygon boundaries (not whole field)
- Manual point capture for later image annotation
- Manual point capture for spatial buffer within field
- Manual point capture while looking at but not in field, with heading recorded
- Other _____
- Unknown

Imagery used (Skip if no imagery used)

Sensor: _____

Date(s): _____

List scenes used in Appendix B

Imagery Annotation methods

- Boundaries drawn based on a single ground point captured
- Boundaries drawn/edited based on multiple ground points captured
- Buffer validated from ground point captured
- Boundary drawn without ground reference data (Include description of methods in Appendix C)
- Pixels annotated without ground reference data (Include description of methods in Appendix C)
- Unknown

Boundary inclusion

- Captured polygon includes the entire field/area
- Captured polygon includes only a sample of the field/area

Classification

Classification Type

- Land cover
- Crop type
- Other _____

Classes/fields used

Describe in Appendix D

Ground Referenced Classification

- Observation (Describe methods of determination in Appendix E)
- Survey/interview with land holder (Describe methods in Appendix E)
- Other (Describe methods in Appendix E)

Image Referenced Classification

Describe methods used in Appendix C

Data Properties

Property name	Property Description	Parameters/Allowed responses (optional)
Village	Name of the closest village to the field	
Subcounty	Name of the Subcounty where the field is located	
District	Name of the District where the field is located	
Moisture	Average moisture of the grains measured for the different quadrants	
Grain_W_g	Average grain weight measured for the different quadrants (1.5m x 1.5m)	
Stem_W_g	Average stem weight measured for the different quadrants (1.5m x 1.5m)	
Yield_KgHa	Average yield measured for the different quadrants in Kg per Ha	
HI	Average Harvest Index measured for the different quadrants	
surveyorid	Unique ID of the surveyor who sampled the field	
quadrant	Number of quadrants sampled in the field	
crop1	Crop type of the quadrant number 1	
variety1	Variety of the quadrant number 1 (indigenous or improved)	
m_plant1	Number of maize plants in the quadrant number (if crop1 = maize)	

m_cob1	Number of maize cobs in the quadrant number 1 (if crop1 = maize)	
m_disease1	Are the plants located in the quadrant affected by a disease in the quadrant number 1 (1=Yes , 0=No).	
m_worm1	Are the plants located in the quadrant affected by the army worms in the quadrant number 1 (1=Yes , 0=No).	
m_worm_nu1	Number of plant affected by the army worms in the quadrant number 1.	
s_plant1	Number of sorghum plants in the quadrant number (if crop1 = sorghum)	
s_ear1	Number of sorghum ears in the quadrant number 1 (if crop1 = sorghum)	
s_disease1	Are the plants located in the quadrant affected by a disease in the quadrant number 1 (1=Yes , 0=No).	
crop2	Same as for quadrant number 1	
variety2	Same as for quadrant number 1	
m_plant2	Same as for quadrant number 1	
m_cob2	Same as for quadrant number 1	
m_disease2	Same as for quadrant number 1	
m_worm2	Same as for quadrant number 1	
m_worm_nu2	Same as for quadrant number 1	
s_plant2	Same as for quadrant number 1	
s_ear2	Same as for quadrant number 1	
s_disease2	Same as for quadrant number 1	
crop3	Same as for quadrant number 1	
variety3	Same as for quadrant number 1	
m_plant3	Same as for quadrant number 1	
m_cob3	Same as for quadrant number 1	
m_disease3	Same as for quadrant number 1	
m_worm3	Same as for quadrant number 1	
m_worm_nu3	Same as for quadrant number 1	
s_plant3	Same as for quadrant number 1	
s_ear3	Same as for quadrant number 1	
s_disease3	Same as for quadrant number 1	
crop4	Same as for quadrant number 1	
variety4	Same as for quadrant number 1	
m_plant4	Same as for quadrant number 1	
m_cob4	Same as for quadrant number 1	
m_disease4	Same as for quadrant number 1	
m_worm4	Same as for quadrant number 1	
m_worm_nu4	Same as for quadrant number 1	
s_plant4	Same as for quadrant number 1	
s_ear4	Same as for quadrant number 1	
s_disease4	Same as for quadrant number 1	
crop5	Same as for quadrant number 1	

variety5	Same as for quadrant number 1	
m_plant5	Same as for quadrant number 1	
m_cob5	Same as for quadrant number 1	
m_disease5	Same as for quadrant number 1	
m_worm5	Same as for quadrant number 1	
m_worm_nu5	Same as for quadrant number 1	
s_plant5	Same as for quadrant number 1	
s_ear5	Same as for quadrant number 1	
s_disease5	Same as for quadrant number 1	
crop6	Same as for quadrant number 1	
variety6	Same as for quadrant number 1	
m_plant6	Same as for quadrant number 1	
m_cob6	Same as for quadrant number 1	
m_disease6	Same as for quadrant number 1	
m_worm6	Same as for quadrant number 1	
m_worm_nu6	Same as for quadrant number 1	
s_plant6	Same as for quadrant number 1	
s_ear6	Same as for quadrant number 1	
s_disease6	Same as for quadrant number 1	
crop7	Same as for quadrant number 1	
variety7	Same as for quadrant number 1	
m_plant7	Same as for quadrant number 1	
m_cob7	Same as for quadrant number 1	
m_disease7	Same as for quadrant number 1	
m_worm7	Same as for quadrant number 1	
m_worm_nu7	Same as for quadrant number 1	
s_plant7	Same as for quadrant number 1	
s_ear7	Same as for quadrant number 1	
s_disease7	Same as for quadrant number 1	
crop8	Same as for quadrant number 1	
variety8	Same as for quadrant number 1	
m_plant8	Same as for quadrant number 1	
m_cob8	Same as for quadrant number 1	
m_disease8	Same as for quadrant number 1	
m_worm8	Same as for quadrant number 1	
m_worm_nu8	Same as for quadrant number 1	
s_plant8	Same as for quadrant number 1	
s_ear8	Same as for quadrant number 1	
s_disease8	Same as for quadrant number 1	

Estimated Planting Date	Planting date not recorded for this dataset, and set to Jan 1, 2017	
Estimated Harvest Date	Harvest date not recorded for this dataset, and set to Dec 31, 2017	

Appendix A: Describe the method of geographic ground data collection

Dalberg Data Insights ran a data collection campaign starting in the end of September 2017, as close as possible to the harvest period of 2017. GeoODK apps were used to collect approximately four points per field to get widest coverage during two field campaigns.

Post ground data collection, Radiant Earth Foundation conducted a quality control of the polygons using Sentinel-2 imagery of the growing season as well as Google basemap imagery, and removed several polygons that overlapped with infrastructure or built-up areas.

Appendix B: List imagery scenes used for annotation (ideally also included in metadata)

Appendix C: Describe how boundaries and classes were determined without ground reference data

Appendix D: List all top-level classes or the classification guidance used

Crops include maize and sorghum.

Appendix E: Describe methods for determining classes based on direct/ground observation

Four teams composed of 4 enumerators and one supervisors worked for 2 weeks to cover all fields.

Every enumerator had one tablet to:

- Record the field boundary and position with a tablet (based on which he get the number of quadrants to sample),
- Identify the crop type,
- Provide indications on the overall health of the plot,
- Share any comment.

After retrieving this information, the enumerator had to cut all the above ground biomass in each quadrant and store it in individual bags. Within a field, the position of the quadrants was randomly defined.

The biomass was then sent by car to Moroto at the drying yard. Before weighing the grains and rest of the plant separately, we let the whole biomass dry until stable weight.