# PlantCounts Collection and Upload SOP

## Drone Photo Collection Requirements for Stand Count Analysis

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**Applies to:** PlantCounts-supported crop photo collection, upload, and review workflows
**Image Type:** Original nadir drone photos only

# 1. Purpose

This SOP describes how to collect and submit drone photos for PlantCounts stand count analysis. PlantCounts uses individual drone photos, not orthomosaics, to detect rows and plants and calculate scaled stand count metrics using known row spacing.

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# 2. Supported Crop, Stage, and Resolution Requirements

Photos must be collected within the acceptable crop stage and ground sample distance (GSD) ranges below. Ideal ranges should be used when possible.

| Crop | Ideal Stage | Acceptable Stage | Ideal Resolution | Acceptable Resolution |
|---|---|---|---|---|
| **Canola** | 1-leaf to 3-leaf | cotyledon to 5-leaf | 0.8–1.0 mm GSD | 0.25–1.5 mm GSD |
| **Lentil** | 4-node to 6-node | 2-node to 8-node | 0.6–0.8 mm GSD | 0.25–1.25 mm GSD |

For lentils, staging excludes scale nodes & try to collect before to lateral growth.

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# 3. Required Field Information

Before collecting photos, confirm:

- **Crop type:** Lentil or canola for 2026.
- **Crop stage:** must be within the acceptable range.
- **Row spacing:** must be known in inches or centimetres. PlantCounts requires row spacing to calculate image scale.
- **Usable rows:** rows should be visible and reasonably straight. Avoid crossed rows, merged rows, sharp curves, corners, tramlines, drowned-out areas, or irregular row structure unless those areas are intentionally being evaluated.

# 4. Drone, Camera, and Image Requirements

Any drone camera may be used if the photos meet the stage, resolution, viewpoint, and quality requirements.

Photos must be:

- Direct, original photos from the drone camera
- Nadir only, with the camera facing straight downward
- Unstitched and unprocessed
- Not orthomosaics
- Not screenshots
- Not exported from mapping, photogrammetry, or image-processing software
- Preferably JPG

Do not crop, resize, stitch, process, or otherwise modify photos before upload.

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# 5. Photo Collection Method

PlantCounts does not require image overlap. Unlike mapping workflows, the goal is not to build an orthomosaic. The goal is to collect clear, individual, nadir photos from representative locations in the field.

Photos may be collected by:

- Manually flying the drone
- Running a waypoint mission
- Running a grid, transect, or custom mission
- Using third-party mission software

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# 6. Field Collection Procedure

1. Confirm the crop type, stage, and row spacing.
2. Select representative field areas, management zones, soil zones, or problem areas.
3. Avoid poor row structure unless intentionally sampling that area.
4. Set the camera to nadir.
5. Collect clear individual photos.
6. Review a sample of photos to make sure they look good.
7. Upload the original drone images only.

# 7. Photo Quality Standard

As a practical rule:

If a person cannot reasonably view the photo and count the plants, the model will struggle as well.

Before submitting, confirm that:

- Individual plants are visible
- Rows are visible
- The image is sharp and in focus
- Motion blur is minimal
- Exposure is acceptable
- Plants are not hidden by heavy residue, shadows, weeds, or canopy closure
- Crop stage and GSD are within the acceptable ranges

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# 8. Submission and Review

1. Open PlantCounts.
2. Create or select the appropriate field or project.
3. Enter the crop and row spacing information.
4. Upload the direct drone photos.
5. Allow PlantCounts to detect rows and plants.
6. Review the results.
7. Accept usable photos and reject photos with poor row detection, poor plant visibility, or image quality issues.
8. Export results as needed.

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# 9. Key Reminder

PlantCounts is designed for fast single-photo stand count sampling, not full-field mapping. Use original drone photos, collect from a nadir viewpoint, ensure row spacing is known, and submit only photos where rows and plants are clearly visible.