Appendix

Digitised polygons and image calibration

Here, we present how shapefiles were digitised within the buckets of the imaged simulated environments in order to extract their Digital Numbers (DNs), noting to avoid the bucket edges (Figure 1). The extracted DNs were then converted to percentage reflectances through linear calibration equations, based on the mean DNs of the calibration panel (98% reflectance) as well as dark images (0% reflectance) to obtain DNs of 100% reflectance (Table 1). Percentage reflectances were determined using the Map Algebra toolset in ArcMap as: float("img")/(DN at 100 % reflectance).
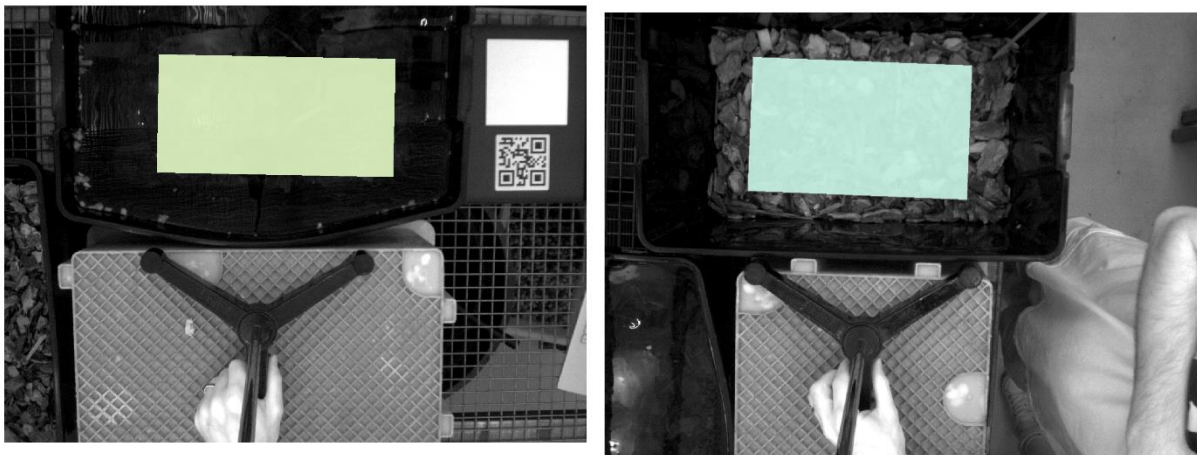

Figure 1 The digitised shapefile for the inundated treatment at 25 cm depth (left), and the digitised shapefile for the non-inundated treatment (right).

Table 1. DNs at 0%, 98% and 100% reflectance based on Linear calibration equations for water depths at 5 cm, 10 cm, 15 cm, 20 cm and 25 cm, and vegetation covers 10%, 20%, 50%, 70% and 90%.

Water Depth	DN values		
	0%	98%	100%
5 cm	5011.43	58704.00	59799.77
10 cm	5011.43	50512.71	51441.31
15 cm	5011.43	51206.93	52149.69
20 cm	5011.43	56932.86	57992.48
25 cm	5011.43	52776.46	53751.25
Vegetation Cover	DN values		
	0%	98%	100%
10%	5011.43	38291.69	38970.88
20%	5011.43	35125.02	35739.58
50%	5011.43	36629.03	37274.28
70%	5011.43	51157.89	52099.65
90%	5011.43	38223.19	38900.99

The anomaly at 70% cover was a result of aberrantly high DN values at 98% reflectance, resulting to higher than expected maximum reflectance. This thus resulted to lower reflectance when incorporated in image processing.