

PRÆCITRÆ – AP2) Lus

Igangværende aktiviteter

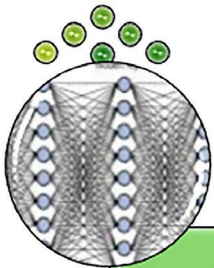
Early detection and targeted control measures



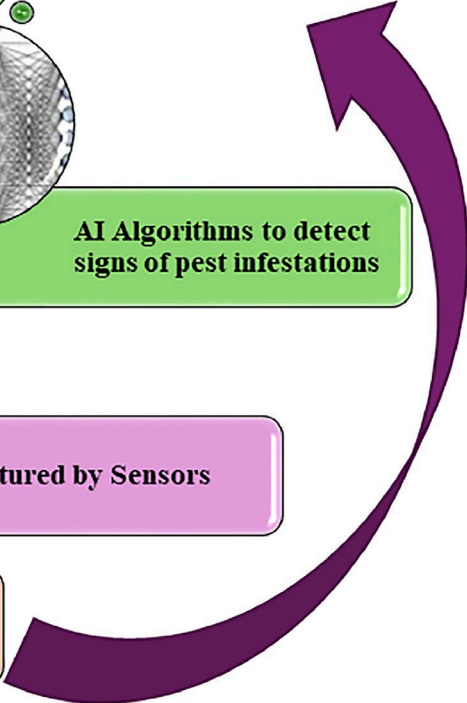
Pest Infestations



Captured by Sensors



AI Algorithms to detect signs of pest infestations





Rooted cuttings
for adelgid
infestation test

Start 2020
FRIJUL project

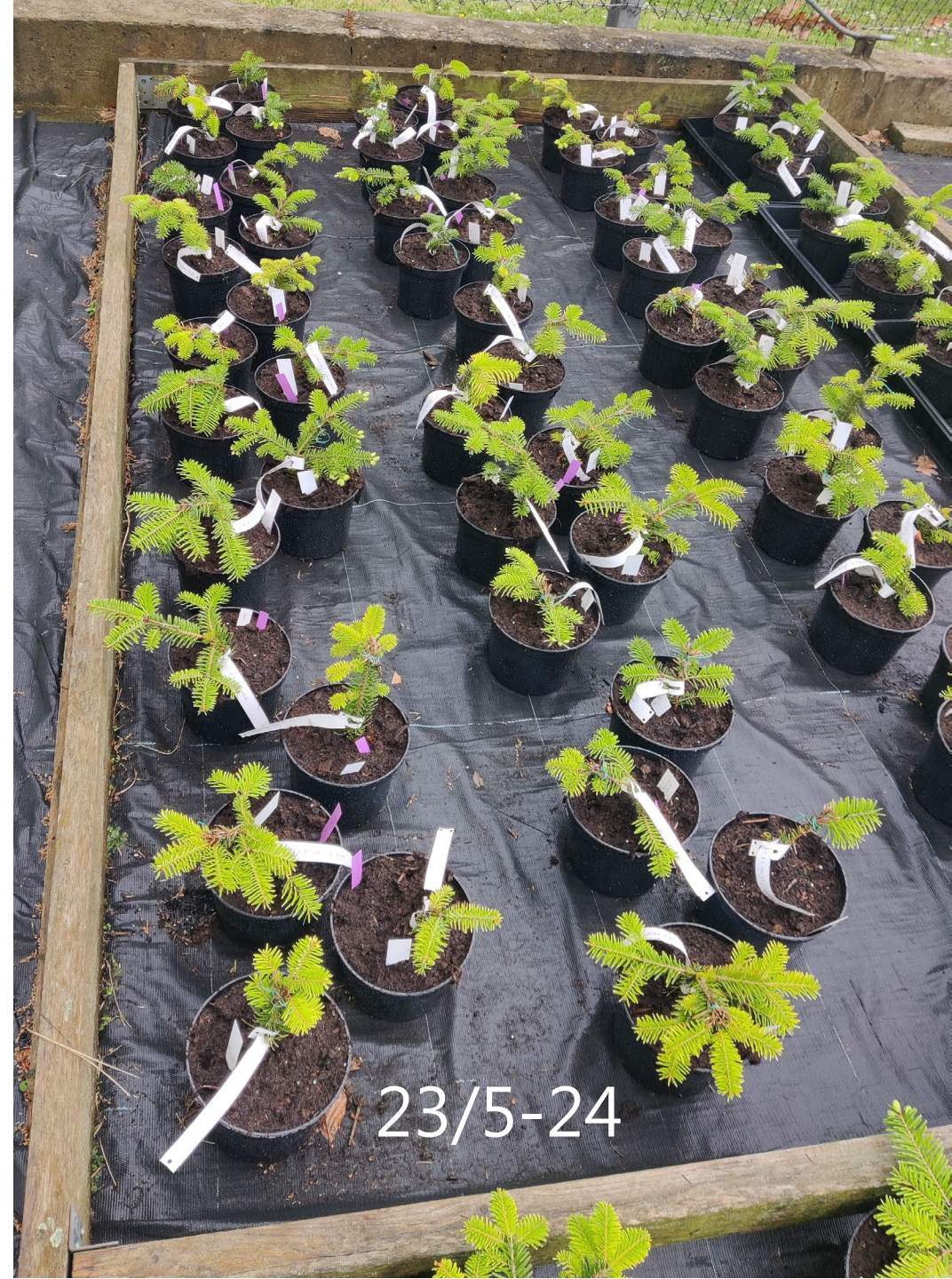
Setup of
infestation test
24/5-2023





Infestation test 2024 second season

13/6-24



23/5-24

PRÆCITRÆ forsøg

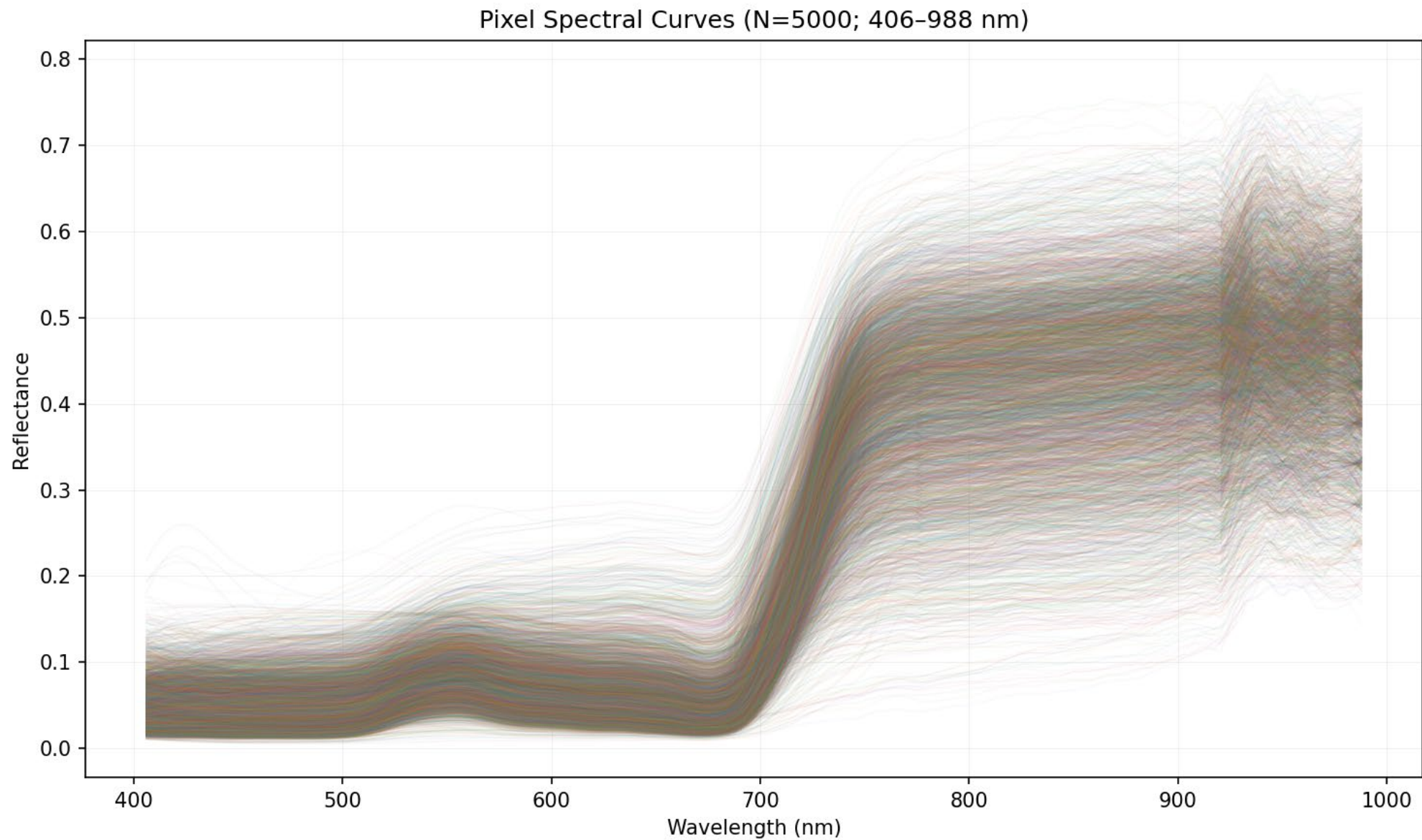
11/4-2025

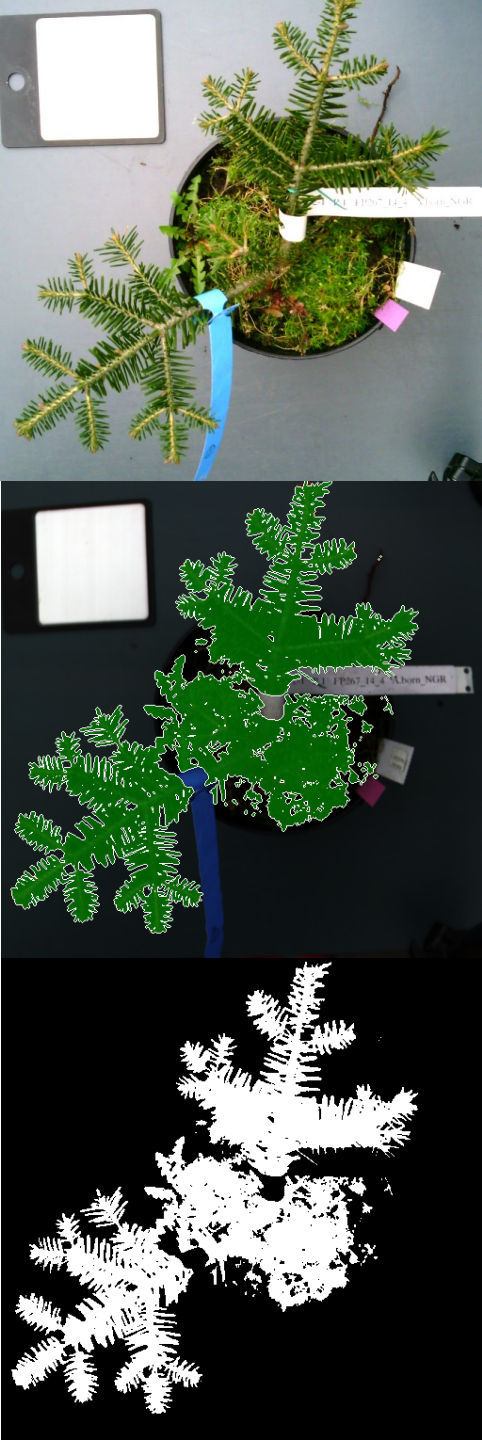


Mor	Far	group	Cross	Tree	Cut	Serial number	Aph_21Jun2024	Aph_210325	Aph_250425	Aph_040625
B_C22	N_C42	A.born_NGR	FP267_14_4	12	4	1	52	4	4	0
B_C82	N_C13	A.born_NGR	FP267_14_1	4	3	2	83	10	9	16
B_C22	N_C42	A.born_NGR	FP267_14_4	4	1	3	15	2	4	0
B_C82	N_C13	A.born_NGR	FP267_14_1	1	5	4	102	34	13	2
B_C82	N_C13	A.born_NGR	FP267_14_1	1	6	5	69	50	50	7
B_C82	N_C13	A.born_NGR	FP267_14_1	4	6	6	225	97	88	11
B_C22	N_C42	A.born_NGR	FP267_14_4	10	3	7	21	6	3	12
B_C82	N_C13	A.born_NGR	FP267_14_1	4	2	8	0	0	0	0
NGR	NGR	NGR	FP251_K	8	2	9	500	306	255	37
NGR	NGR	NGR	FP251_K	8	5	10	144	44	39	11
B_C22	N_C42	A.born_NGR	FP267_14_4	11	5	11	0	0	0	1
NGR	NGR	NGR	FP251_K	12	5	12	122	22	16	5
B_C82	N_C13	A.born_NGR	FP267_14_1	10	4	13	73	14	8	2
NGR	NGR	NGR	FP251_K	12	2	14	0	0	0	0
B_C22	N_C42	A.born_NGR	FP267_14_4	10	4	15	0	5	3	4
B_C82	N_C13	A.born_NGR	FP267_14_1	10	5	16	420	150	153	18
B_C22	N_C42	A.born_NGR	FP267_14_4	12	2	17	137	26	21	4
B_C82	N_C13	A.born_NGR	FP267_14_1	12	3	18	221	52	89	2
NGR	NGR	NGR	FP251_K	8	1	19	22	7	11	7
NGR	NGR	NGR	FP251_K	12	4	20	200	76	65	4
NGR	NGR	NGR	FP251_K	7	5	21	282	171	226	16
B_C82	N_C13	A.born_NGR	FP267_14_1	10	3	22	408	204	251	17
NGR	NGR	NGR	FP251_K	11	5	23	570	247	294	15
NGR	NGR	NGR	FP251_K	9	1	24		3	4	8
NGR	NGR	NGR	FP251_K	7	4	25	500	312	374	23
B_C82	N_C13	A.born_NGR	FP267_14_1	11	1	26		0	0	0
NGR	NGR	NGR	FP251_K	7	3	27	4	8	15	6



Hyperspectral data





Python

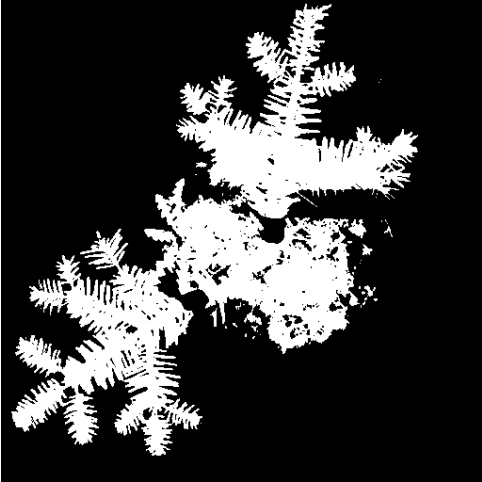
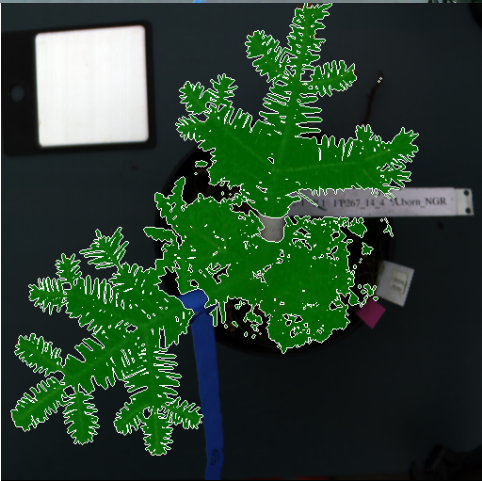
Spectral: for reading ENVI-format hyperspectral data (.hdr/.dat) and extracting wavelength information and band matrices;

scikit-image: for image processing and segmentation, including Otsu thresholding, boundary detection, RGB–HSV color conversion, and mask operations;

NumPy: for large-scale matrix operations and band-based calculations such as NDVI, SAVI, and spectral normalization;

Pandas: for exporting full-band reflectance values of plant pixels into wide-format CSV tables;

imageio and Matplotlib: for generating mask overlays, pseudo-color PGB images, and intermediate debugging visualizations.



Python

1 Data Import

2 Vegetation Segmentation (NDVI/SAVI)

Compute NDVI from red and NIR bands and apply Otsu thresholding with a lower limit (NDVI > 0.55) to isolate vegetation. Calculate SAVI and intersect it with the NDVI mask to reduce soil and shadow effects.

3 Soil and Blue Tag Suppression

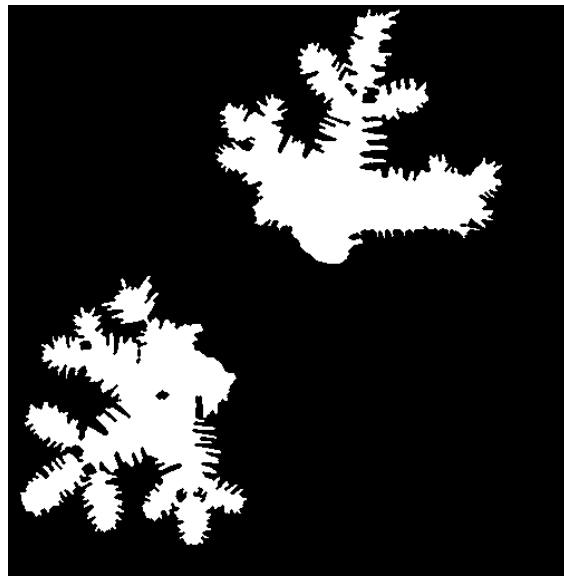
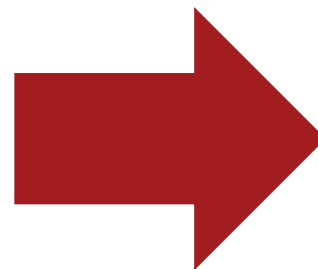
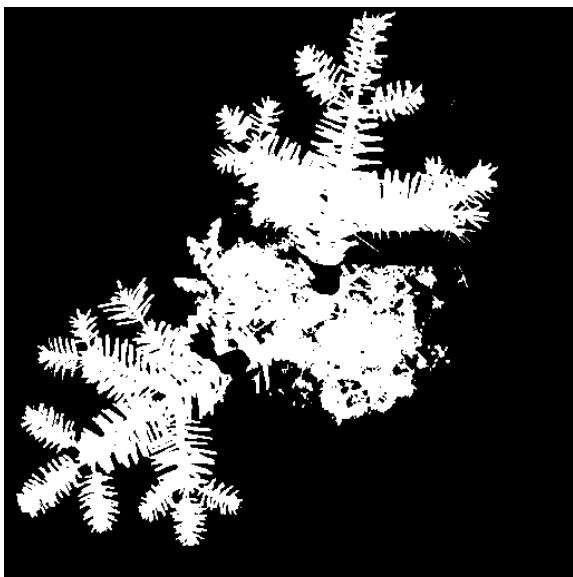
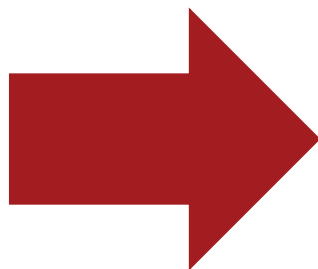
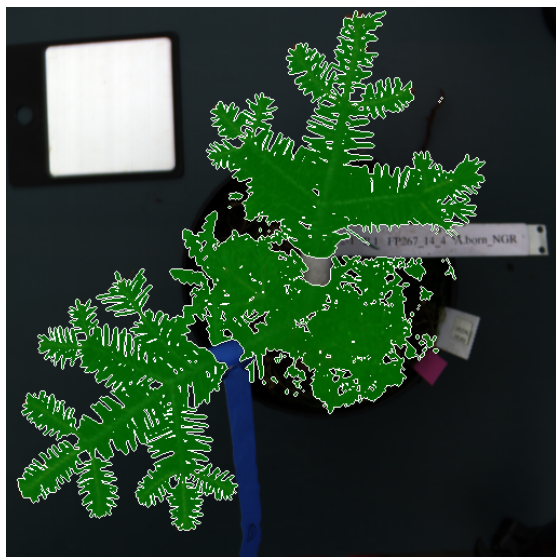
Apply RGB ratio rules ($R/G > 1.05$, $R/B > 1.10$, $NDVI < 0.30$) to remove soil pixels. Detect and exclude blue tag regions via HSV color analysis, refining the final plant mask.

4 Image Generation and Validation

Generate NDVI overlay maps (green-highlighted vegetation) and PGB pseudo-color images (NIR-G-B composition) for segmentation validation. If no RGB image exists, synthesize one directly from the hyperspectral cube.

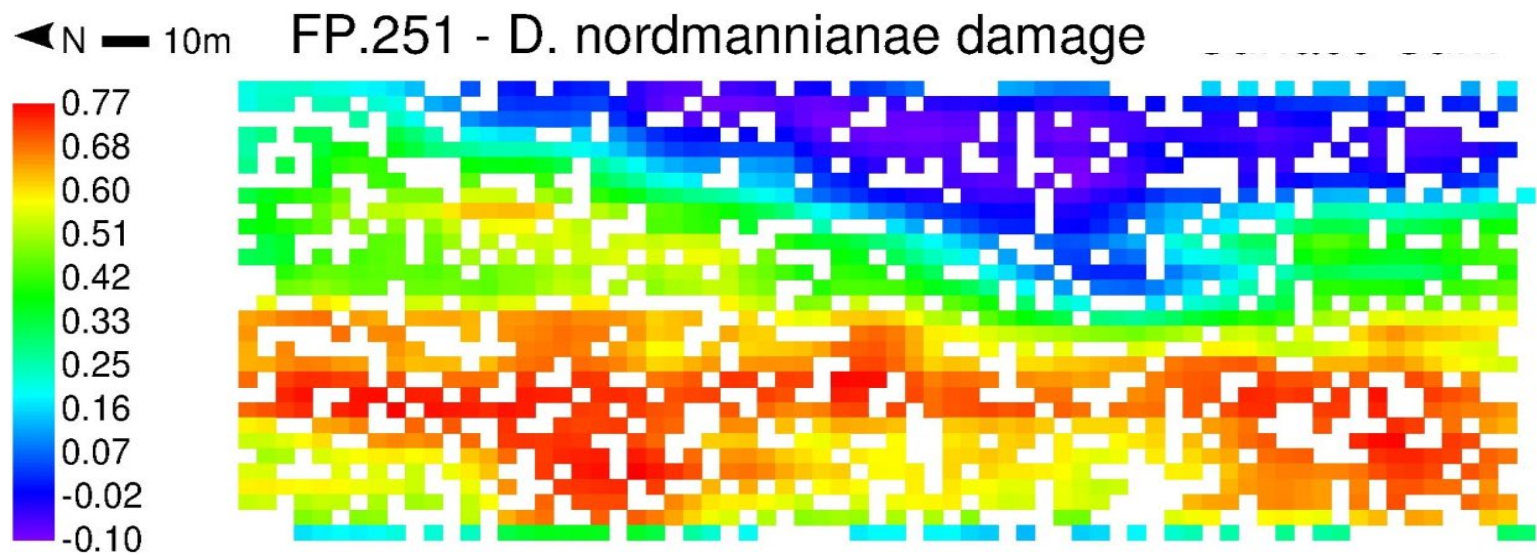
5 Spectral Data Export

Hyperspectral data - problem



Ny lokalitet for AP2) Lus (?)

FP.251 Clonal seed orchard – Tuse Næs



Figures: Jing Xu