

# Imaging with spatio-temporal modelling to characterize the dynamics of plant-pathogen lesions

## Appendix S2

Melen Leclerc<sup>1</sup>, Stéphane Jumel<sup>1</sup>, Frédéric M. Hamelin<sup>1</sup>, Rémi Treilhaud<sup>1</sup>, Nicolas Parisey<sup>1</sup>, and Youcef Mammeri<sup>2</sup>

<sup>1</sup>IGEPP, INRAE, Institut Agro, University of Rennes, Rennes, France

<sup>2</sup>ICJ, CNRS, Jean Monnet University, Saint-Etienne, France

## S2 Assessment of classifiers quality

Predictions of trained Random Forest classifiers were tested against 31 annotated images obtained from Dutt et al. [1] on the susceptible cultivar Solara and the partially resistant germplasm line DP instead of the cultivar James used in our study. As Dutt et al. [1] did not monitor inoculated stipules 5 days after inoculation we were not able to compare predictions of the classifier for this date. We considered two metrics to compare supervised predictions and ground truth: the balanced accuracy that is the average of sensitivities and specificities, and the Cohen's  $\kappa$  that measures the inter-rater reliability in a classification problem. For both metrics the best and worst values are respectively 1 and 0. All the tested classifiers showed a good ability to predict pixel classes with a balanced accuracy ranges from 0.85 to 0.95 and a Cohen's  $\kappa$  between 0.77 and 0.96 showing good agreements between supervised segmentation and human annotation (Table A).

Classifier	Balanced accuracy	Cohen's $\kappa$
Day 3	0.91	0.96
Day 4	0.95	0.95
Day 6	0.85	0.77
Day 7	0.89	0.82

Table A: Assessment of classifiers quality on ground truth data with balanced accuracy and Cohen's  $\kappa$  metrics.

## References

- 1 Agathe Dutt, Didier Andrivon, Stéphane Jumel, Gwenola Le Roy, Alain Baranger, Melen Leclerc, and Christophe Le May. Life history traits and trade-offs between two species of the ascochyta blight disease complex of pea. *Plant Pathology*, 69(6):1108–1124, 2020.