Supplementary information

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1. Model distinguishability – 20 days of observation

This supplementary information provides quantitative assessments of the model distinguishability after 20 days of observation of the detected symptomatic animals.

1.1. Performance assessment of pathogen identification

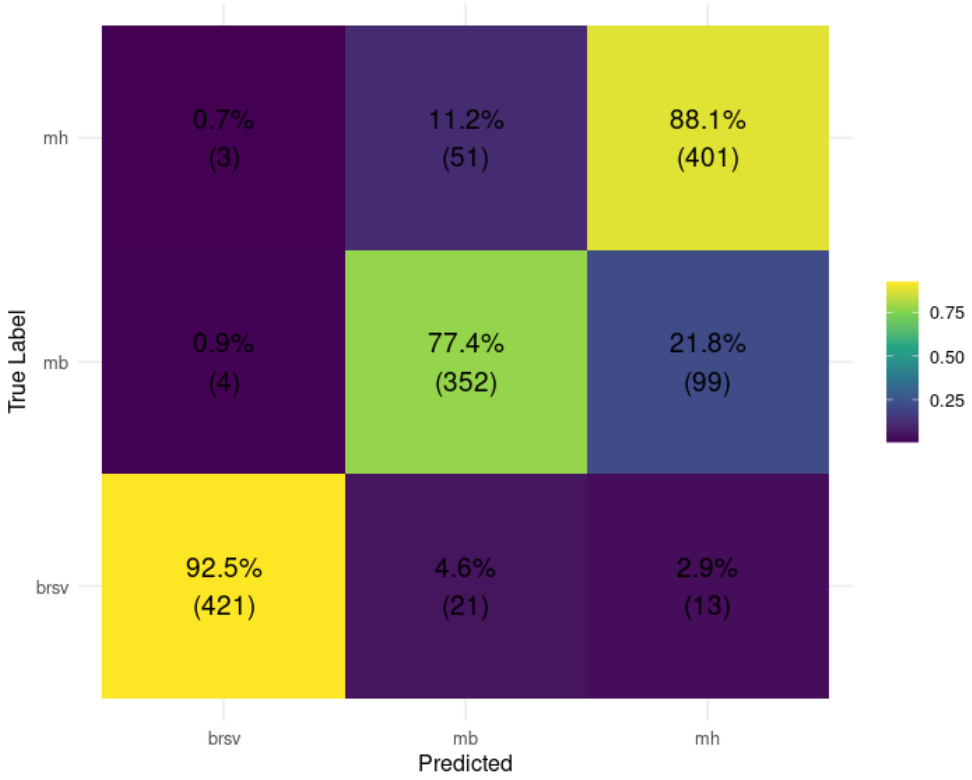

Figure 1: Confusion matrix. Classification performance for BRSV, MH and MB. The diagonal represents correctly classified instance, while off-diagonal values indicate misclassifications between classes.

Table 1. Pathogens identifiability performances

Metrics	BRSV	MB	MH
True Positive Rate	**0.9253**	0.7736	0.8813
False Positive Rate	**0.0077**	0.0791	0.1231
Positive Predictive Value	**0.9836**	0.8302	0.7817
Negative Predictive Value	**0.9637**	0.8905	0.9366
Balanced Accuracy	**0.99**	0.95	0.96
Support	455	455	455

1.2. Pathogen identification according to batch configuration

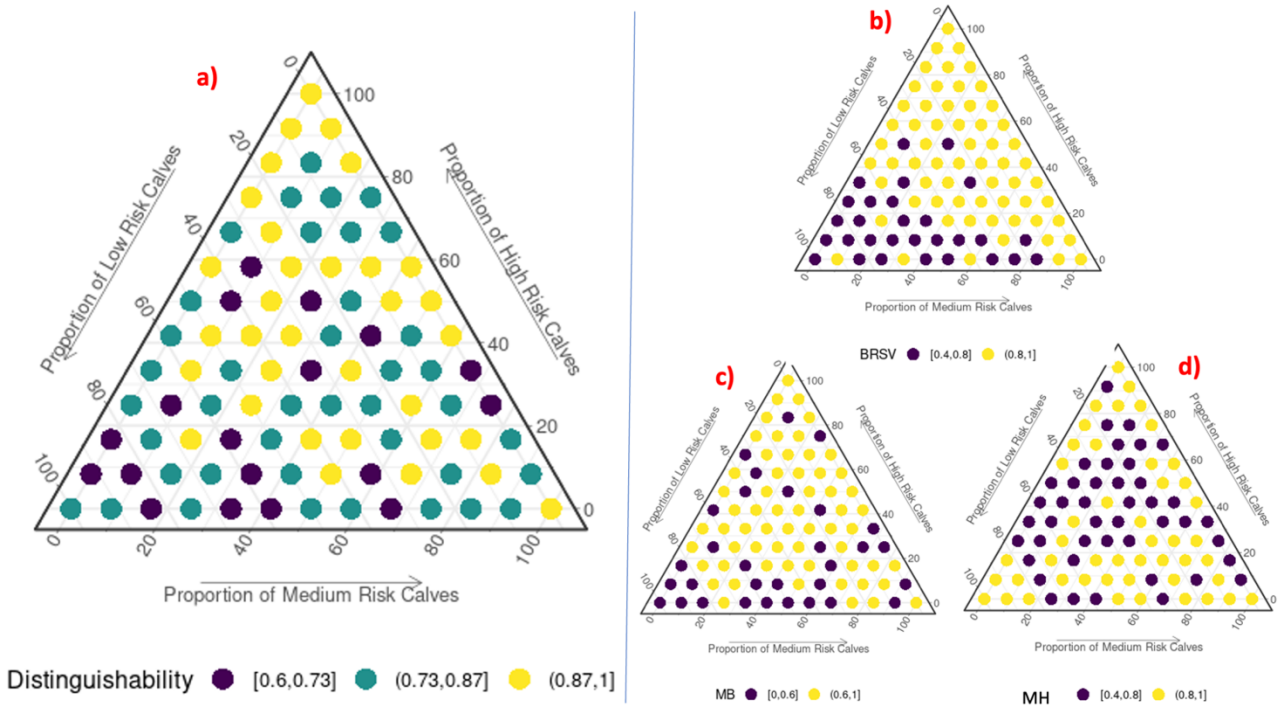

Fig 02: Pathogen distinguishability map after 20 days of observing of symptomatic dynamics. They represent the balanced accuracy of pathogen identification as a function of initial risk composition. The large ternary plot on the left is the overall classification accuracy. And on the right are the specific accuracies of each pathogen (one-vs-all approach)

2. Bioeconomic implications after 20 days of observation

2.1. Profitability assessment

2.2. Profitability according to batch configurations