

Predictive Models for the Implementation of Targeted Reproductive Management in
Multiparous Cows on Automatic Milking Systems

SUPPLEMENTARY MATERIAL

Supplementary Table 1. Variables analysed within the RBT data sets

Dataset	CFI		EO	
Variable	Median	IQR	Median	IQR
Mean Milk Yield	38.8	10.8	38.0	11.7
Mean Delta Yield	3.9	1.8	3.8	1.8
Mean Conductivity	69.6	3.9	69.7	4.0
Conductivity Alert	0	2.0	0	2.0
Mean Milk Fat:Protein Ratio	1.17	0.2	1.23	0.25
Milk Protein Percentage	3.72	0.32	3.71	0.36
Milk Fat Percentage	4.87	0.8	4.56	0.84
Mean Concentrate Intake	5392	817.1	5301	1073
Mean Refusals	2.9	4.2	3.0	4.5
Mean Milkings	3.57	0.9	3.5	0.9

IQR= Inter Quartile Range.

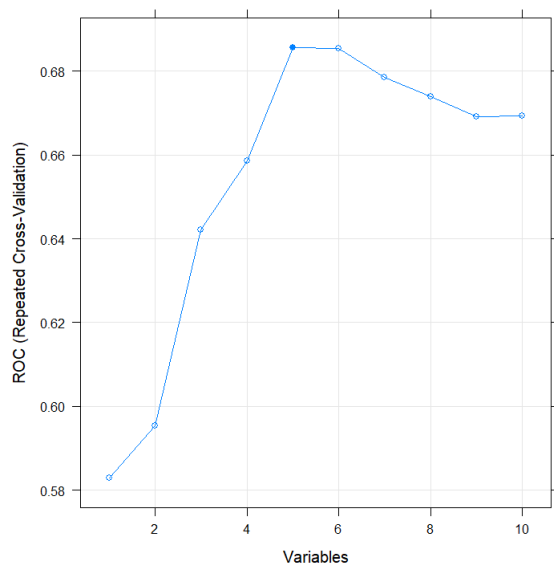
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Supplementary Table 2. Additional variables analysed within the RBT+ Data Set

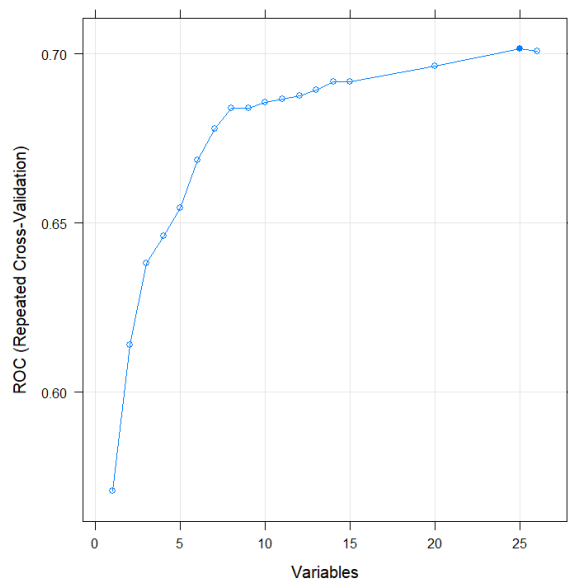
Dataset	EO		CFI	
Variable	Median	IQR	Median	IQR
Mean Rumination	559.23	88.7	554.33	90.4
Mean Delta Rumination	0.5	1.7	-0.05	1.6
Mean Variation Rumination	2968	4024	2801	4032
Mean Activity	40	8.4	39.7	8.2
Mean Delta Activity	-0.92	1.5	-0.93	1.4
Mean Variation Activity	14.95	28.2	13.2	25.0
Transition Heat Count	0	1.0	0	1.0
PV-Mean Milk Yield	34.16	13.1	32.9	12.9
PV-Transition Yield	33.12	15.3	33.1	14.7
PV-Yield at Dry Off	21.79	10.5	19.4	11.9
PV-DO ¹	365	55.0	368	60.0
PV-DD ²	54	14.0	54	16.0
PV-DC ³	0	0.1	0	0.1
AFC ⁴	1427	715	1460	757

IQR= Inter Quartile Range,PV= Previous Lactation, DIM = Days in Milk. ¹DIM at dry-off in prior lactation. ²Days dry in prior lactation,³ Milk conductivity at dry-off in prior lactation, ⁴ Age at first calving.

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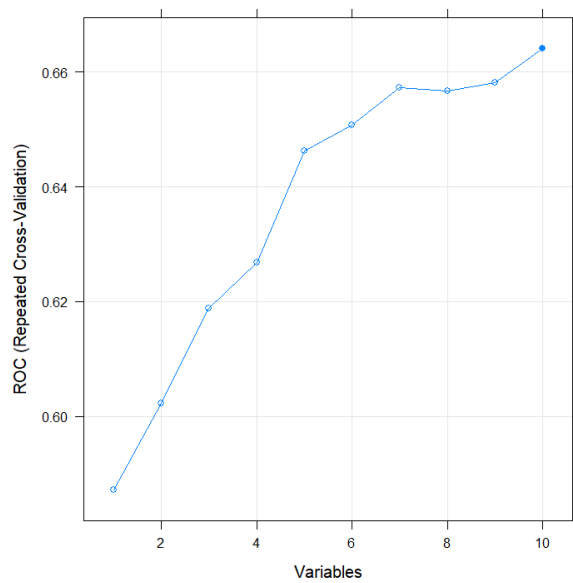


Supplementary Figure 1. Optimal variable subset as calculated by recursive feature elimination within the CARET package for the EO-RBT model, a random forest model designed to maximise the are under the receiver operator curve

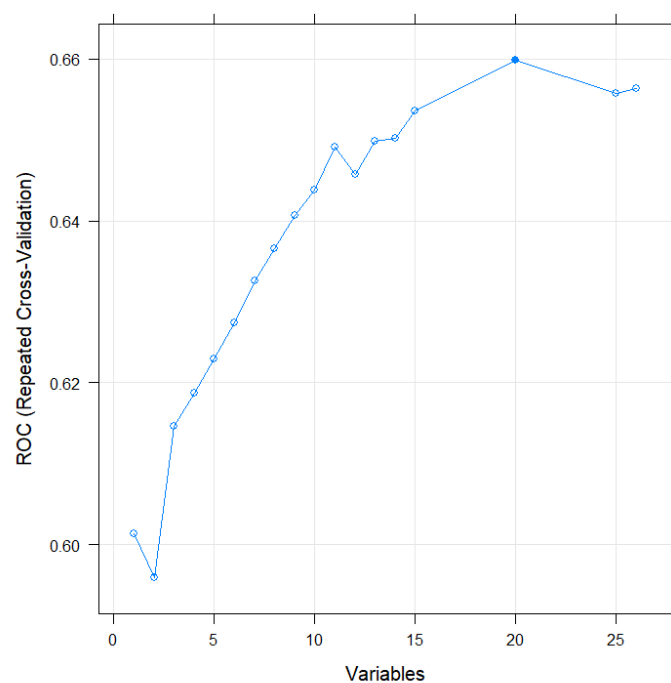


Supplementary Figure 2. Optimal variable subset as calculated by recursive feature elimination within the CARET package for the EO-RBT+ model, a random forest model designed to maximise the are under the receiver operator curve.

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Supplementary Figure 3. Optimal variable subset as calculated by recursive feature elimination within the CARET package for the CFI-RBT model, a random forest model designed to maximise the are under the receiver operator curve.



Supplementary Figure 4. Optimal variable subset as calculated by recursive feature elimination within the CARET package for the CFI-RBT+ model, a random forest model designed to maximise the are under the receiver operator curve.

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