Prediction of different physiological conditions of Riverine buffaloes (*Bubalus bubalis*) based on their vocal cues through machine learning algorithms and a conventional statistical model

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SUPPLEMENTARY FILE

Supplementary Table S1. Validation results of ANN model (based on Misclassification rate) for estrus condition

Neurons	Partition scheme 60:40			Partition scheme 70:30			Partition scheme 80:20		
	MLP-LM	MLP-CG	RBF	MLP-LM	MLP-CG	RBF	MLP-LM	MLP-CG	RBF
3	0.315352	0.331950	0.327800	0.320441	0.348066	0.386740	0.297520	0.256198	0.413223
5	0.273858	0.294605	0.327800	0.309392	0.337016	0.386740	0.330578	0.347107	0.355371
7	0.298755	0.323651	0.302904	0.364640	0.320441	0.337016	0.338842	0.338842	0.363636
10	0.269709	0.307053	**0.257261**	0.381215	0.331491	0.364640	0.256198	0.280991	0.280991
15	0.298755	0.265560	0.352697	0.325966	0.342541	0.298342	0.297520	0.280991	0.380165
20	0.348547	0.336099	0.290456	0.292817	**0.265193**	0.359116	**0.223140**	0.297520	0.330578

Supplementary Table S2. Validation results of Decision tree and Logistic regression (based on Misclassification rate) for estrus condition

Model used		60:40	70:30	80:20
Decision Tree	DT-Decision	**0.307053**	**0.287292**	**0.305785**
	DT- Probability	0.331950	0.292817	0.322314
Logistic regression		0.327801	0.342541	0.338842

Supplementary Table S3. Validation results of ANN model (based on Misclassification rate) for isolation condition

Neurons	Partition scheme 60:40			Partition scheme 70:30			Partition scheme 80:20		
	MLP-LM	MLP-CG	RBF	MLP-LM	MLP-CG	RBF	MLP-LM	MLP-CG	RBF
3	0.195020	0.195020	0.244813	**0.193370**	0.193370	0.243093	0.214876	0.214876	0.264462
5	0.203319	0.224066	0.244813	0.270718	0.232044	0.204419	0.239669	0.256198	0.173553
7	0.207468	0.199170	0.253112	0.198895	0.198895	0.243093	0.190082	0.165289	0.289256

10	0.190871	0.174273	0.228215	0.198895	0.220994	0.209944	0.181818	0.198347	0.198347
15	0.199170	0.186721	0.190871	0.204419	0.198895	0.198895	0.223140	0.206611	0.322314
20	0.178423	**0.153526**	0.195020	0.243093	0.226519	0.226519	**0.148760**	0.157024	0.190082

Supplementary Table S4. Validation results of Decision tree and Logistic regression (based on Misclassification rate) for isolation condition

Model used		60:40	70:30	80:20
Decision Tree	DT-Decision	**0.236514**	**0.243093**	**0.157024**
	DT- Probability	0.244813	0.248618	0.165289
Logistic regression		0.244813	0.248618	0.289256

Supplementary Table S5. Validation results of ANN model (based on Misclassification rate) for delayed milking condition

Neurons	Partition scheme 60:40			Partition scheme 70:30			Partition scheme 80:20		
	MLP-LM	MLP-CG	RBF	MLP-LM	MLP-CG	RBF	MLP-LM	MLP-CG	RBF
3	**0.29460**	0.302904	0.377593	0.364640	**0.331491**	0.414364	0.380165	0.396694	0.355371
5	0.356846	0.373443	0.307053	0.403314	0.403314	0.370165	**0.206611**	0.256198	0.305785
7	0.336099	0.340248	0.381742	0.359116	0.359116	0.397790	0.297520	0.330578	0.421487
10	0.315352	0.298755	0.390041	0.359116	0.370165	0.386740	0.272727	0.264462	0.421483
15	0.373443	0.360995	0.307053	0.331491	0.309392	0.408839	0.363636	0.256198	**0.206611**
20	0.363411	0.352641	0.304102	0.324159	0.302414	0.352416	0.297520	0.247933	0.272727

Supplementary Table S6. Validation results of Decision tree and Logistic regression (based on Misclassification rate) for delayed milking condition

Model used		60:40	70:30	80:20
Decision Tree	DT-Decision	**0.369294**	**0.342541**	**0.338842**
	DT- Probability	0.381742	0.370165	0.338842
Logistic regression		0.398340	0.414364	0.404958