Supplementary Material

Usefulness of MARS and Bagging MARS Algorithms in Prediction of Honey Production in Beekeeping Enterprises from Elazig province of Turkey

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Supplementary data:

Call:
bagEarth.formula(formula = YIELD ~ ., data = d, B = 5, degree = 2)

Out of bag statistics:

	RMSE	Rsquared	MAE
0%	0.2012	0.9747	0.1521
2.5%	0.2137	0.9748	0.1586
25%	0.3267	0.9751	0.2170
50%	0.3680	0.9780	0.2672
75%	0.4041	0.9861	0.2764
97.5%	0.4119	0.9919	0.2783
100%	0.4128	0.9926	0.2785

Model Selection Statistics:

Num Terms	Num Variables
Min. :10.0	Min. :2.0
1st Qu.:12.0	1st Qu.:2.0
Median :12.0	Median :3.0
Mean :12.2	Mean :2.6
3rd Qu.:12.0	3rd Qu.:3.0
Max. :15.0	Max. :3.0

> bagMARS$oob

	RMSE	Rsquared	MAE
[1,]	0.4128029	0.9747410	0.2671961
[2,]	0.4040851	0.9751495	0.2785343
[3,]	0.3680400	0.9861242	0.2764033
[4,]	0.3266828	0.9779949	0.2170388
[5,]	0.2011696	0.9925813	0.1520715

> format(bagMARS)

Honey yield =(2.518747
 + 0.06830415 * max(0,NFB-62)
 + 0.1350093 * max(0,84-NFB)
 - 0.08217804 * max(0,NFB-84)
 + 0.02861459 * max(0,NFB-150)
 - 0.01052717 * max(0,340-PRODUCTIONHONEY)
 + 0.01094114 * max(0,PRODUCTIONHONEY-340)
 - 0.01383467 * OTHERWORKSYES*max(0,84-NFB)
-6.022591e-05*max(0,NFB-84)*PRODUCTIONHONEY
        +   2.118663e-05   *   max(0,NFB-150)*PRODUCTIONHONEY
        +   0.0002262111   *   max(0,84-NFB)*max(0,PRODUCTIONHONEY-295)
    - 0.0003222141 * max(0,84-NFB)*max(0,295-PRODUCTIONHONEY)
+ -8.632829
 + 0.04474366 * max(0,NFB-51)
 + 0.05151117 * max(0,NFB-85)
 +   0.1144206 * max(0,160-NFB)
 - 0.09522511 * max(0,NFB-160)
 + 0.01083849 * max(0,PRODUCTIONHONEY-200)
 + 0.009078574 * max(0,330-PRODUCTIONHONEY)
 + 0.002571189 * EDUEL2*max(0,160-NFB)
        -       2.824133e-05   *

NFB*max(0,PRODUCTIONHONEY-330)

+ 0.0001026113 * max(0,160-NFB)*max(0,PRODUCTIONHONEY-240)

- 0.000277566 * max(0,160-NFB)*max(0,240-PRODUCTIONHONEY)

- 7.07623e-05 * max(0,160-NFB)*max(0,PRODUCTIONHONEY-380)

+ 5.513841

 + 0.01854453 * max(0,60-NFB)

 - 0.07516729 * max(0,NFB-60)

 + 0.0630554 * max(0,NFB-130)

 - 0.01672415 * max(0,340-PRODUCTIONHONEY)

 + 0.01602831 * max(0,PRODUCTIONHONEY-340)

 - 0.005529747 * max(0,PRODUCTIONHONEY-540)

 + 0.0004051666 * max(0,60-NFB)*PRODUCTIONHONEY

 - 3.561819e-05 * max(0,NFB-60)*max(0,PRODUCTIONHONEY-565)

 + 0.0001164411 * max(0,NFB-60)*max(0,565-PRODUCTIONHONEY)

+ 3.448277

 + 0.09603407 * max(0,NFB-40)

 + 0.07651317 * max(0,60-NFB)

 - 0.1902427 * max(0,NFB-60)

 + 0.05127878 * max(0,NFB-140)

 - 0.01641746 * max(0,330-PRODUCTIONHONEY)

 + 0.01605484 * max(0,PRODUCTIONHONEY-330)

 + 0.0125131 * EDUEL3*max(0,60-NFB)

 + 0.0004904481 * max(0,60-NFB)*PRODUCTIONHONEY

 - 0.0002249096 * max(0,NFB-60)*max(0,PRODUCTIONHONEY-540)

 + 0.0001907094 * max(0,NFB-60)*max(0,540-PRODUCTIONHONEY)

 + 0.0001780507 * max(0,NFB-85)*max(0,PRODUCTIONHONEY-330)

+ -21.39321

 + 0.09546193 * max(0,NFB-50)

 + 0.03607429 * max(0,NFB-85)

 + 0.03328026 * max(0,NFB-150)

 + 0.1499576 * max(0,180-NFB)

 - 0.1341244 * max(0,NFB-180)

 + 0.03461967 * max(0,PRODUCTIONHONEY-190)

 + 0.04834443 * max(0,330-PRODUCTIONHONEY)

 - 0.0412061 * max(0,PRODUCTIONHONEY-330)

 - 0.0001484576 * max(0,NFB-180)*PRODUCTIONHONEY

 + 0.0001265558 * max(0,NFB-85)*max(0,PRODUCTIONHONEY-210)

 - 0.0003624979 * max(0,NFB-85)*max(0,210-PRODUCTIONHONEY)

 + 0.0002143688 * max(0,180-NFB)*max(0,PRODUCTIONHONEY-210)

 - 0.0005347935 * max(0,180-NFB)*max(0,210-PRODUCTIONHONEY)

 - 3.142647e-05 * max(0,180-NFB)*max(0,PRODUCTIONHONEY-450)

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