Supplementary material

Estimation of daily tea plantation actual evapotranspiration using ensemble machine learning algorithms and six available scenarios of meteorological data.

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GG model

Granger et al. (1989) propose the GG model. He select the evapotranspiration of surface saturated atmospheric parameters and surface temperature constant as potential evapotranspiration. Meanwhile, surface saturated atmospheric parameters and energy constant were selected as moist environment evapotranspiration. Using Dalton's evaporation law, the quantitative complementary relationship between actual evapotranspiration and potential evapotranspiration is derived, and the concept of relative evapotranspiration is further introduced to estimate actual evapotranspiration.

$$E_a = \frac{\Delta G * R_n}{\Delta G + \gamma\lambda} + \frac{\gamma G}{\Delta G + \gamma} * E_S$$

Where Δ is the slope of saturated water vapor pressure curve; G is the soil heat flux; R_n is the net radiation; γ is the constant of the psychrometer (k Pa/ °C)); Es is the drying force (mm/day).

Supplementary Figures

Figure S1. The general schedule of phenology, managements and rainy/dry season for the study tea plantations. The pruning period is also the early growing season of the study tea plantations. The pictures were taken in the middle or late days of each month (Geng et al., 2020).

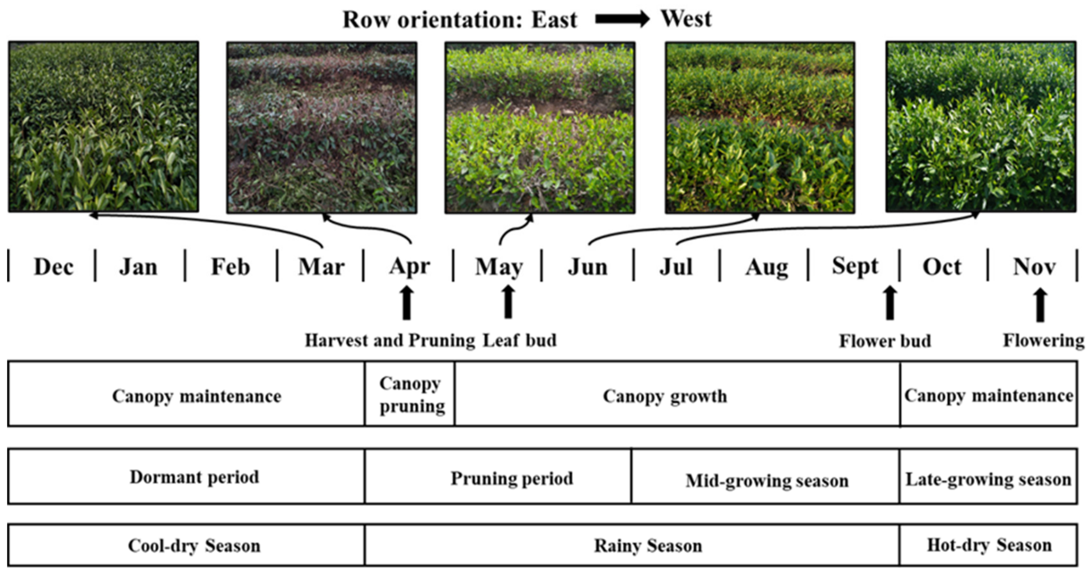


Figure S2, a) Normal Support Vector Machine model; b) Soft-margin Support Vector Machine model.

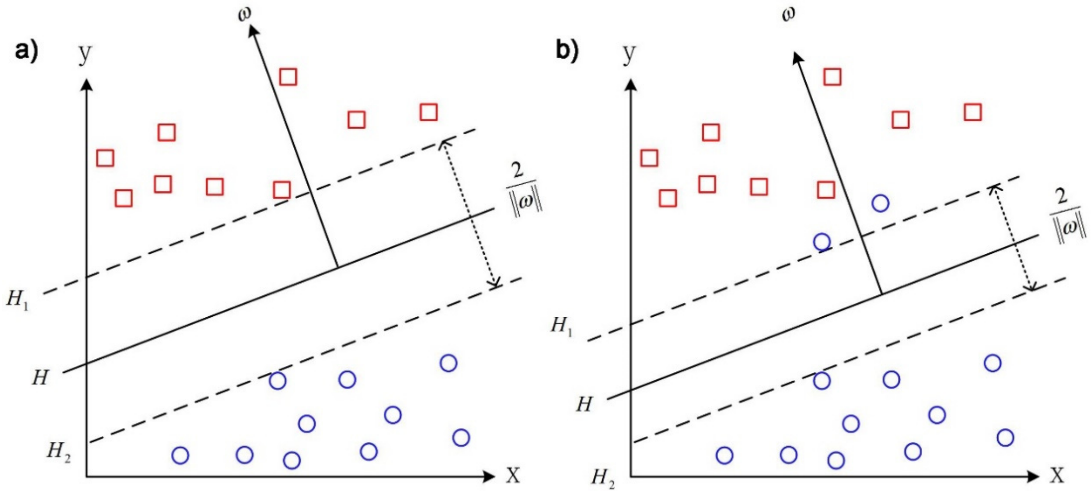
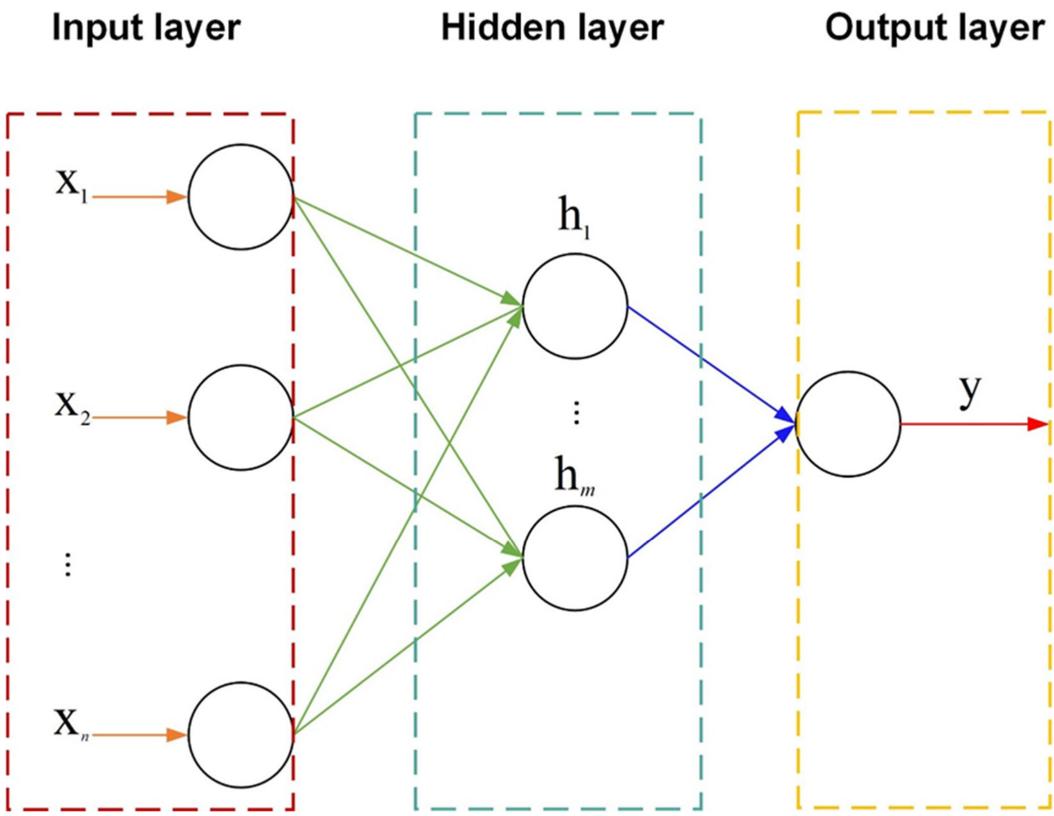


Figure S3. Classic multilayer perceptron structure.



Supplementary Tables

Tables S1 Seasonal variations of major biophysical parameters at the tea plantation.

Month	Height (cm)	Crown width (cm)	Ridge spacing (cm)	LAI (m^2 m^{-2})
January	115±6	97±9	36±9	3.6
February	115±4	97±8	35±7	3.7
March	115±5	108±10	31±5	4.1
April	23±3	53±6	67±5	0.8
May	45±6	65±8	53±4	0.9
June	75±7	86±4	42±2	2.4
July	80±8	90±5	45±6	3.2
August	103±6	95±6	41±6	3.5
September	109±5	100±6	35±8	4.0
October	116±9	101±9	37±10	3.7
November	115±9	107±7	32±10	4.6
December	111±10	107±12	36±12	3.6

References

Geng JW, Li HP, Pang JP, Zhang WS, Chen DQ. Dynamics and environmental controls of energy exchange and evapotranspiration in a hilly tea plantation, China. Agricultural Water Management 2020; 241.

Granger, R. J. , and D. M. Gray . "Evaporation from natural nonsaturated surfaces." Journal of Hydrology 111.1-4(1989):21-29.