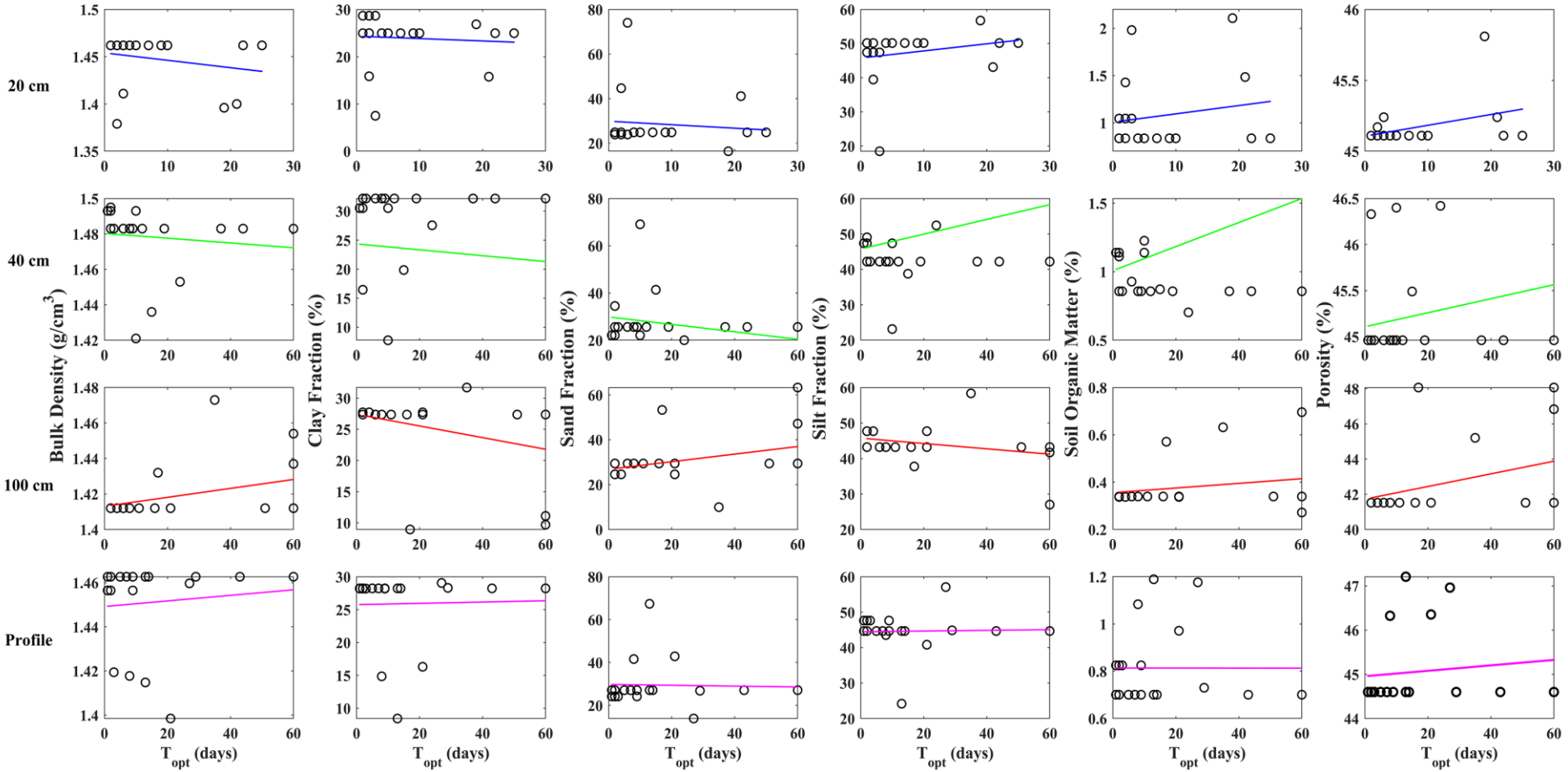

Figure S1. Scatter plots between T_{opt} and various soil properties (bulk density, clay, sand and silt fractions, soil organic matter and porosity). Lines in different color represent the correlated trends between T_{opt} and soil properties.

Table S1. Summary of statistical models between T_{opt} and annual average precipitation.

Statistical model	Linear regression	Logarithmic function	Exponential function	Power function	Polynomial function
20 cm	y = -0.0446x +55.246 R=-0.61**	y = -49.08ln(x) + 349.65 R=-0.61***	y = $4013.7e^{-0.006x}$ R=0.62***	y = $4E^{21}x^{-6.912}$ R=0.62***	y = $1E^{-4}x^2$ - 0.3542x + 223.1 R=0.64
40 cm	y =-0.0785x + 98.136 R=-0.57**	y = -86.19ln(x) + 614.97 R=-0.58**	y = $23290e^{-0.007x}$ R=-0.69***	y=$9E^{24}x$-7.929 R=-0.68***	y = $2E^{-4}x^2$ - 0.5317x + 343.88 R=-0.59
100 cm	y =-0.1116x + 149.18 R=-0.55**	y = -120.9ln(x) + 872.67 R=-0.55**	y = $27765e^{-0.007x}$ R=-0.65***	y=$1E^{23}x$-7.215 R=-0.64***	y = $-7E^{-5}x^2$ + 0.031x + 71.848 R=-0.55
0-100 cm	y =-0.0697x + 90.459 R=-0.56**	y = -75.93ln(x) + 545.28 R=-0.56**	y = $4414.3e^{-0.006x}$ R=-0.58**	y=$2E^{19}x$-5.997 R=-0.54**	y = $6E^{-5}x^2$ - 0.2049x + 163.78 R=-0.56

x denotes annual average precipitation, y denotes T_{opt} at different soil depths. ** denotes correlation coefficient R were significant at $p < 0.01$, *** denotes correlation coefficient R were significant at $p < 0.001$.