Figure S1. Mean annual precipitation from 1986 to 2015 calculated by CHELSA data, and the location of gauged station site surrounding the HTYZ area.

Table S1. Estimation of P factor in the HTYZ.

Slope (%)	Contouring	Strip Cropping	Terracing
0.0-7.0	0.55	0.27	0.10
7.0-11.3	0.60	0.30	0.12
11.3-17.6	0.80	0.40	0.16
17.6-26.8	0.90	0.45	0.18
> 26.8	1.00	0.50	0.20

Table S2. The K factor in HTYZ.

Soil Code	K	Area (km2)	Area (%)
CMc	0.02282	82.7649	23.65%
RGc	0.02208	19.8261	5.67%
KSh	0.02041	117.5391	33.59%
GLk	0.01997	8.3790	2.39%
GRh	0.01902	4.3749	1.25%
CHk	0.01695	33.7185	9.63%
ARc	0.01572	0.0387	0.01%
ARh	0.01570	2.1015	0.60%
ARb	0.01564	81.2196	23.21%

Table S3. The LS factor of HTYZ.

LS factor	Area (km2)	Area (%)
<1	115.8786	33.12
1-15	197.4501	56.44
15-30	33.7059	9.63
>30	2.9097	0.83

Table S4. The C factor of HYTZ.

C factor	Area (km2)	Area (%)
<0.5	74.9520	21.42
0.5–0.8	194.3235	55.53
0.8–1	80.0235	22.87
>1	0.6444	0.18

Table S5. The P factor of HTYZ.

P factor	Area (km2)	Area (%)
0.55	34.6455	9.90
0.6	56.7009	16.21
0.8	156.3858	44.70
0.9	49.9554	14.28
1	52.1721	14.91

Table S6. The severity levels of soil loss in the HTYZ.

Soil erosion (t ha^{-1} yr^{-1})	Severity classes	Area (km²)	Area (%)
0–10	very slight	279.629	80.06
10–25	slight	46.022	13.18
25–50	moderate	20.198	5.78
50–80	severe	3.226	0.92
80–150	extreme severe	0.194	0.06