

Table S1. Soil quality indicators for 0-60 cm, 2020-2022.

Year	BD (g·cm ⁻³)				MWD (mm)			
	CTM	DTM20	DTM40	DTM60	CTM	DTM20	DTM40	DTM60
2020	1.59±0.011a	1.56±0.011a	1.54±0.012b	1.52±0.004c	1.46±0.044a	1.45±0.032a	1.43±0.017a	1.36±0.042b
2021	1.60±0.017a	1.57±0.019b	1.55±0.011bc	1.53±0.009c	1.46±0.055a	1.45±0.050a	1.37±0.043ab	1.36±0.027b
2022	1.60±0.012a	1.57±0.012b	1.56±0.013bc	1.54±0.008c	1.41±0.015a	1.39±0.019ab	1.36±0.038ab	1.34±0.034b
Year	pH				EC (g·kg ⁻¹)			
	CTM	DTM20	DTM40	DTM60	CTM	DTM20	DTM40	DTM60
2020	8.157±0.018a	8.131±0.016ab	8.093±0.011b	8.002±0.041c	3.55±0.487a	3.35±0.367a	2.45±0.523b	2.18±0.356b
2021	8.141±0.024a	8.103±0.024ab	8.083±0.023b	8.013±0.018c	3.49±0.522a	3.39±0.533ab	2.67±0.270bc	2.21±0.149c
2022	8.122±0.031a	8.094±0.028ab	8.068±0.023b	7.975±0.007c	3.45±0.687a	3.36±0.707a	2.28±0.286b	2.09±0.205b
Year	SOC (g·kg ⁻¹)				TN (g·kg ⁻¹)			
	CTM	DTM20	DTM40	DTM60	CTM	DTM20	DTM40	DTM60
2020	6.22±0.191b	6.34±0.181b	6.53±0.216ab	6.74±0.132a	0.76±0.012a	0.76±0.009a	0.77±0.012a	0.78±0.014a
2021	6.18±0.172c	6.35±0.086bc	6.46±0.101ab	6.67±0.132a	0.75±0.009b	0.76±0.008b	0.76±0.007b	0.77±0.008a
2022	6.19±0.199b	6.33±0.183ab	6.47±0.213ab	6.68±0.098a	0.75±0.005c	0.76±0.011ab	0.77±0.007b	0.78±0.009a
Year	TP (g·kg ⁻¹)				TK (g·kg ⁻¹)			
	CTM	DTM20	DTM40	DTM60	CTM	DTM20	DTM40	DTM60
2020	0.76±0.028a	0.75±0.027a	0.74±0.016a	0.74±0.013a	28.69±0.197a	28.79±0.023a	28.68±0.090a	28.55±0.201a
2021	0.76±0.026a	0.76±0.026a	0.76±0.034a	0.76±0.028a	28.71±0.188a	28.60±0.169a	28.61±0.183a	28.41±0.078a
2022	0.76±0.024a	0.76±0.025a	0.78±0.018a	0.78±0.019a	28.65±0.146ab	28.49±0.132b	28.48±0.062b	28.78±0.072a

BD, soil bulk density; MWD, soil mean weight diameter; EC electrical conductivity; SOC, soil organic carbon; TN, total nitrogen; TK, total potassium; TP, total phosphorus. CTM, conventional tillage; DTM20, 20 cm; DTM40, 40 cm; DTM60, 60 cm.

Table S2. Seed cotton yield in 2020-2022

Year	Seed cotton yield (kg·ha ⁻¹)			
	CTM	DTM20	DTM40	DTM60
2020	2727.30±87.58d	3389.55±90.53c	3974.10±80.44b	4558.50±77.43a
2021	2877.00±103.01d	3900.45±86.12c	4519.50±62.20b	5147.25±88.69a
2022	3235.65±80.66d	4485.45±70.17c	5287.80±79.91b	6073.65±80.58a

CTM, conventional tillage; DTM20, 20 cm; DTM40, 40 cm; DTM60, 60 cm.

Table S3. Data Normality distribution test

Shapiro–Wilk test			
	statistic	DF	<i>p</i>-value
BD	0.961	36	0.226
MWD	0.975	36	0.564
PH	0.969	36	0.411
EC	0.944	36	0.067
SOC	0.972	36	0.470
TN	0.950	36	0.105
TP	0.940	36	0.053
TK	0.942	36	0.058
Seed cotton yield	0.959	36	0.198