Supplementary Table S1. Weather data of the experimental site

Period	Tmax (°C)	Tmin (°C)	RH (%)	Rainfall (mm)	Wind speed (km/hr)	Solar radiation (Mj/m²/day)	ETP (mm)
November 2017	15.2	31.9	69.2	21.7	6.8	22.1	17.0
December 2017	20.0	32.6	72.6	32.1	6.1	23.3	73.5
January 2018	19.3	30.4	73.5	44.5	5.8	32.2	91.3
February 2018	19.4	31.8	73.1	54.9	6.9	32.3	121.1
March 2018a	19.3	31.4	73.5	51.5	7.1	32.2	56.5
Total season 1	**18.6**	**31.6**	**72.4**	**204.7**	**6.6**	**28.4**	**359.4**
March 2018b	19.3	31.3	78.8	37.2	6.4	32.5	34.0
April 2018	19.4	30.5	78.2	147.6	5.8	32.9	85.8
May 2018	19.2	30.9	62.0	103.6	8.8	31.9	218.1
June 2018	18.6	31.5	64.3	1.1	8.3	29.4	184.2
Total season 2	**19.1**	**31.1**	**70.8**	**289.5**	**7.3**	**31.7**	**522.1**
November 2018	15.4	30.8	75.0	42.5	6.9	32.3	32.1
December 2018	15.3	31.4	73.9	43.8	6.0	32.3	83.6
January 2019	15.7	32.1	73.8	21.4	6.1	32.1	114.6
February 2019	16.9	32.2	75.1	12.9	6.5	31.9	66.0
March 2019	15.2	31.9	72.4	21.8	6.4	32.0	51.4
Total season 3	**15.7**	**31.7**	**74.0**	**142.4**	**6.4**	**32.1**	**347.7**
Mean/Sum	**17.8**	**31.5**	**72.4**	**636.6**	**6.8**	**30.7**	**1229.2**

Legend: Tmax (Maximum temperature), Tmin (Minimum temperature), RH (Relative Humidity), ETP (Evapotranspiration)

Supplementary Table S2: Statistical analysis of soil characteristics of the experiment site in Ruzizi plain, eastern DR Congo

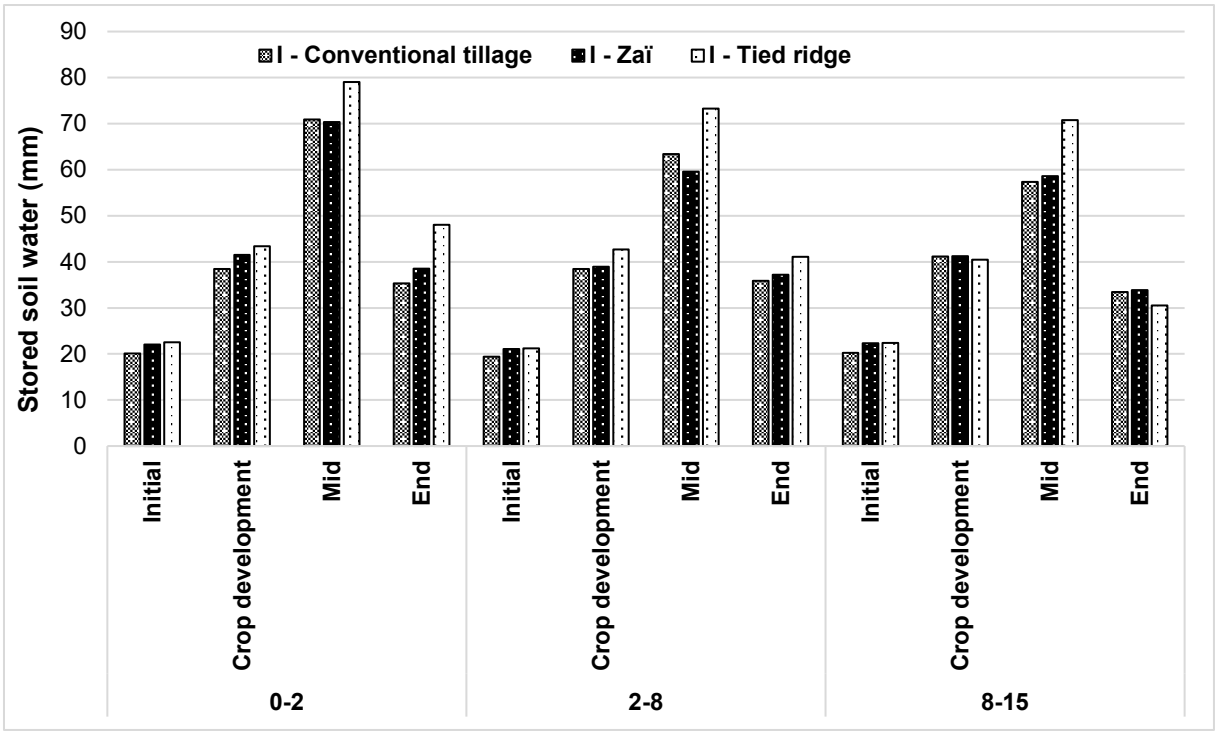
	Probability SWC	Probability Slope	SED Slope	Probability Depth	SED Slope
Clay (%)	0.22	0.1197	4.10	0.0066	3.61
Silt (%)	0.171	0.0258	6.27	0.00163	5.54
Field Capacity (FC)	0.3613	0.18	2.23	0.0303	2.54
Sand (%)	0.3615	0.1832	4.047	0.0303	3.72
Carbon (%)	0.525	0.0046	1.06	0.015	1.12
Coarse Fraction (%)	0.199	0.0068	8.54	0.191	11.00
Permanent wilt point (PWP)	0.293	0.0006	1.85	0.61	2.27
Bulk density (BD)	0.371	0.58	0.09	0.0155	0.07
Nitrogen (%)	0.762	0.006	0.091	0.074	0.10
Phosphorus (ppm)	0.261	0.469	30.76	0.59	31.08
pH water	0.73	0.00001	0.19	0.034	0.310
Saturated Hydraulic Conductivity (SHC)	0.62329	0.97508	19.65	0.008	15.61

SED: Standard Error of Difference, SWC: Soil water conservation practices

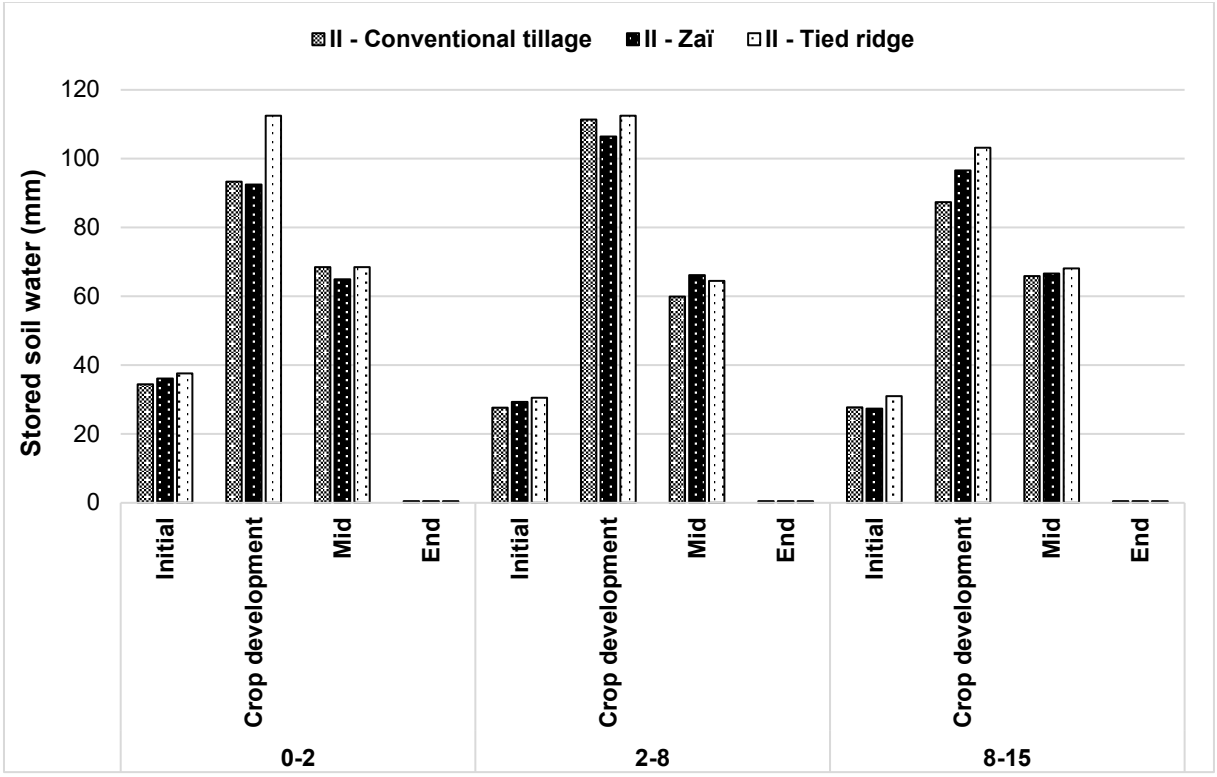
Supplementary Table S3. Effects of SWC, variety and slope gradient on maize growth parameters across three growing seasons in the Ruzizi plain, eastern DR Congo

Factor	Level	Plant height (cm)	Stem diameter (mm)	Internode distance (cm)	LAI	SBM (t ha^{-1})	RBM (t ha^{-1})	RSR
Slope	0-2	210.03 ±53.37a	6.86 ±9.03b	15.37 ±3.03a	2.63 ±0.47a	6.36 ±2.02a	2.66 ±1.26a	0.42 ±0.17a
	2-8	167.64 ±50.12b	10.52 ±10.36a	12.61 ±3.75b	1.40 ±0.45b	5.82 ±2.57b	2.61 ±1.31a	0.43 ±0.19a
	8-15	161.18 ±79.69c	8.77 ±10.30a	12.44 ±5.27b	1.11 ±0.55c	4.79 ±2.28c	1.97 ±1.06b	0.37 ±0.19b
	P-value (0.05 LSD)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
SWC	Conv.Tillage	169.67 ±79.77b	6.92 ±8.86c	12.52 ±5.48b	1.62 ±0.97c	4.72 ±2.16a	2.00 ±1.15a	0.37 ±0.19a
	Tied ridge	196.04 ±49.51a	8.89 ±9.80b	14.36 ±3.01a	2.07 ±0.68a	6.71 ±2.03b	2.89 ±1.29b	0.43 ±0.17b
	Zaï pits	184.20 ±50.17a	10.30 ±10.86a	14.17 ±3.01a	1.81 ±0.72b	6.07 ±2.46b	2.61 ±1.21b	0.44 ±0.18b
	P-value (0.05 LSD)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Varieties	Bazoka	179.01 ±61.44a	9.73 ±10.31a	13.57 ±3.87a	1.73 ±0.75a	6.02 ±2.50a	2.46 ±1.15a	0.41 ±0.18a
	Ecavel	189.73 ±62.73a	7.18 ±9.12b	13.85 ±4.37a	1.99 ±0.88a	5.55 ±2.11b	2.57 ±1.42a	0.42 ±0.19a
	P-value (0.05 LSD)	>0.05	<0.01	>0.05	>0.05	<0.01	>0.05	>0.05
Interactions	P SWC x Slope	<0.05	<0.01	<0.01	<0.01	<0.05	>0.05	<0.05
	P SWC x Varieties	>0.05		<0.05	>0.05	>0.05	>0.05	>0.05
	P SlopexVarietiesxSWC	>0.05	<0.01	<0.01	<0.05	>0.05	>0.05	>0.05

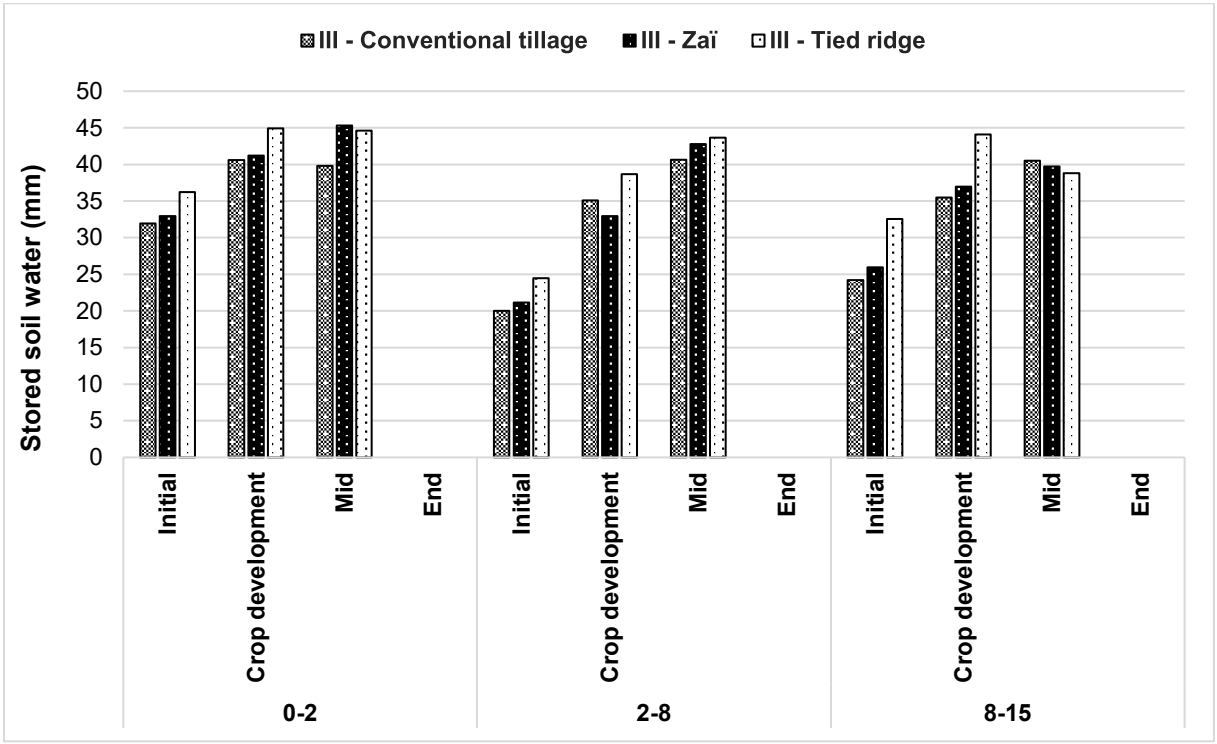
Legend: *LAI (Leaf Area Index), SBM (Shoot Biomass), RBM (Root Biomass) and SWC (Soil water conservation).*



Supplementary Figure S1. Variation in soil water storage among selected SWC practices along the slope gradient in Ruzizi plain for season 1.



Supplementary Figure S2. Variation in stored soil water among selected SWC practices along the slope gradient in Ruzizi plain for season 2.



Supplementary Figure S3. Variation in stored soil water among selected SWC practices along the slope gradient in Ruzizi plain for season 3.