**Supplementary Material**

|  |
| --- |
|  |
|  |
|  |

**Figure S1**: Cumulative rainfall at the three locations of the study area during the 2007/08 and 2008/09 seasons: (a) Santa Clara; (b) Jiboia and (c) Paraiso. Rainfall data at Paraiso are missing for the 2008/09 season.

**Table S1:** Distribution of the farmer fields according to location, soil type, soil tillage management and chemical fertilization in the 2007/08 and 2008/09 growing seasons.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Soil type | | | Soil tillage management | | Fertilization | | |
| Terra de cultura | Latossolos | Terra de campo | NT | CT | with | without |
| Santa Clara | 3, 3 | 1, 3 | 0, 0 | 4, 4 | 0, 2 | 1, 5 | 3, 1 |
| Jiboia | 0, 0 | 0, 0 | 2, 4 | 1, 1 | 1, 3 | 1, 2 | 1, 2 |
| Paraiso | 1, 3 | 2, 4 | 0, 0 | 1, 4 | 2, 3 | 3, 5 | 0, 2 |
| Total | 4, 6 | 3, 7 | 2; 4 | 6, 9 | 3, 8 | 5, 12 | 4, 5 |

NT: no-tillage; CT: conventional tillage

Number pairs represent the number of farmer fields in 2007/08 and 2008/09, respectively.

**Table S2:** Main characteristics of the crop management practices on the farmer fields in 2007/08 and 2008/09.

|  |  |  |  |
| --- | --- | --- | --- |
|  | 2007-2008 | 2008-2009 | |
| Maize planting date\* | 22/11/2007 to 15/12/2007 | 17/11/2008 to 15/12/2008 |
| Cover crop planting date (DAS) | 17 (5) | 20 (9) |
| Maize plant density (plants m-2) | 5 (1) | 4 (1) |
| Pigeon pea plant density (plants m-2) | 9 (7) | 28 (11) |
| Applied nitrogen (kg ha-1) | 10 (15) | 9 (11) |

DAS: Days after maize sowing

Numbers in parentheses are the standard deviations.

**Table S3**. Results of the general linear mixed model analysis for total (maize + fodder crop) N, P, K uptake at harvest.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Total N uptake | | Total P uptake | | Total K uptake | |
| Effect1 | F-value | p-value | F-value | p-value | F-value | p-value |
| Interval between maize and cover crop sowing date | 4.82 | **0.04** | 2.02 | 0.18 | 2.08 | 0.17 |
| Season | 5.17 | **0.05** | 0.012 | 0.92 | 0.78 | 0.40 |
| Soil type | 4.62 | **0.05** | 1.33 | 0.32 | 2.49 | 0.14 |
| Cropping treatment | 18.89 | **<.001** | 2.79 | 0.09 | 5.29 | **0.02** |
| Soil tillage management | 2.53 | 0.13 | 2.66 | 0.12 | 1.35 | 0.26 |
| Fertilization | 13.66 | **<.001** | 5.48 | **0.03** | 4.53 | **0.05** |
| Season\*Cropping treatment | 0.03 | 0.97 | 2.30 | 0.13 | 4.05 | **0.03** |
| Season\*Soil type | 5.38 | **0.03** | 0.51 | 0.62 | 1.47 | 0.29 |
| Soil type\*Cropping treatment\*Soil tillage management | 3.04 | **0.04** | 1.02 | 0.42 | 0.29 | 0.88 |
| Season\*Soil type\*Cropping treatment\*Soil tillage management | 9.77 | **<.001** | 1.32 | 0.30 | 0.29 | 0.88 |

1 Only interactions with a signification effect are shown