Supplementary Table A1.Summary statistics of edaphic parameters across treatment types at each sampling time. Values are represented as mean (standard deviation). Significant global ANOVA models for the effect of herbicide treatment are indicated in bold. Letters indicate significant pairwise differences among treatments.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Sampling Time One | | | | | | |
|  | Nontreated | Handweeded | Atrazine | Dicamba | Glyphosate | p-value (F) |
| *Nitrite..mg.g.dry.soil.* | 0.001 (0.001) | 0 (0) | 0.001 (0.002) | 0.001 (0.001) | 0.01 (0.05) | 0.51, (F 4,50 = 0.83 ) |
| *Nitrate..mg.g.dry.soil.* | 0.197 (0.173) | 0.346 (0.263) | 0.187 (0.17) | 0.287 (0.26) | 0.424 (0.467) | 0.24, (F 4,54 = 1.43 ) |
| *Ammonium..mg.g.dry.soil.* | 0.004 (0.003) | 0.004 (0.001) | 0.004 (0.002) | 0.005 (0.002) | 0.012 (0.026) | 0.44, (F 4,54 = 0.96 ) |
| *total\_inorganic\_N* | 0.206 (0.181) | 0.356 (0.275) | 0.206 (0.172) | 0.292 (0.261) | 0.483 (0.552) | 0.24, (F 4,50 = 1.42 ) |
| *Phosphate..mg.g.dry.soil.* | 0.05 (0.018) | 0.043 (0.009) | 0.048 (0.011) | 0.042 (0.008) | 0.043 (0.007) | 0.37, (F 4,54 = 1.1 ) |
| *Magnesium..mg.g.dry.soil.* | 1.462 (0.353) | 1.374 (0.323) | 1.577 (0.343) | 1.457 (0.259) | 1.464 (0.245) | 0.63, (F 4,54 = 0.65 ) |
| *Calcium..mg.g.dry.soil.* | 0.524 (0.152) | 0.542 (0.153) | 0.589 (0.138) | 0.524 (0.092) | 0.47 (0.114) | 0.31, (F 4,54 = 1.23 ) |
| *GravimetricMoistureContent* | 0.103 (0.018) | 0.098 (0.012) | 0.093 (0.017) | 0.101 (0.023) | 0.094 (0.025) | 0.61, (F 4,54 = 0.68 ) |
| *pH* | 7.88 (0.88) | 7.88 (0.22) | 7.9 (0.174) | 7.84 (0.145) | 1.76 (0.082) | 0.67, (F 4,14 = 0.60) |
| *EC* | 923.3 (233.93) | 976.3 (436.1) | 840.75 (345.55) | 1023.5 (463.0) | 1240.5 (173.37) | 0.57, (F 4,14 = 0.75) |
|  |  |  |  |  |  |  |
| Sampling Time Two | | | | | | |
|  | Nontreated | Handweeded | Atrazine-Mesotrione | Dicamba | Glyphosate | p-value (F) |
| ***Nitrate..mg.g.dry.soil.*** | **0.136 (0.123)ab** | **0.11 (0.062)a** | **0.244 (0.12)ab** | **0.155 (0.11)ab** | **0.277 (0.194)b** | **0.04, (F 4,53 = 2.68 )** |
| *Ammonium..mg.g.dry.soil.* | 0.004 (0.003) | 0.004 (0.006) | 0.004 (0.004) | 0.003 (0.002) | 0.005 (0.004) | 0.34, (F 4,53 = 1.16 ) |
| ***total\_inorganic\_N*** | **0.141 (0.122) ab** | **0.115 (0.07) a** | **0.249 (0.13) ab** | **#VALUE! ab** | **0.285 (0.191) b** | **0.04, (F 4,53 = 2.76 )** |
| *Phosphate..mg.g.dry.soil.* | 0.053 (0.026) | 0.052 (0.013) | 0.056 (0.015) | 0.043 (0.007) | 0.055 (0.016) | 0.21, (F 4,53 = 1.51 ) |
| *Magnesium..mg.g.dry.soil.* | 1.241 (0.711) | 0.749 (0.614) | 0.994 (0.743) | 1.194 (0.659) | 1.199 (0.761) | 0.23, (F 4,53 = 1.45 ) |
| *Calcium..mg.g.dry.soil.* | 0.528 (0.379) | 0.301 (0.32) | 0.379 (0.342) | 0.5 (0.332) | 0.49 (0.355) | 0.27, (F 4,53 = 1.33 ) |
| ***GravimetricMoistureContent*** | **0.185 (0.033) ab** | **0.21 (0.022) a** | **0.16 (0.022) b** | **0.168 (0.025) b** | **0.177 (0.03) ab** | **<0.001, (F 4,53 = 5.46 )** |
| *pH* | 7.78 (0.106) | 7.79 (0.099) | 7.635 (0.186) | 7.855 (0.178) | 7.737 (0.084) | 0.38, (F 4,14 = 1.12) |
| *EC* | 979.25 (155.2) | 1092 (185.8) | 1031 (88.44) | 881.75 (185.0) | 1209 (333.18) | 0.32, (F 4,14 = 1.29) |
|  |  |  |  |  |  |  |
| Sampling Time Three | | | | | | |
|  | Nontreated | Handweeded | Atrazine-Mesotrione | Dicamba | Glyphosate | p-value (F) |
| ***Nitrate..mg.g.dry.soil.*** | **0.01 (0.013)b** | **0.03 (0.02)b** | **0.038 (0.041)b** | **0.062 (0.04)ab** | **0.12 (0.132)a** | **0.01, (F 4,53 = 3.77 )** |
| *Ammonium..mg.g.dry.soil.* | 0.003 (0.002) | 0.002 (0.002) | 0.002 (0.002) | 0.001 (0.001) | 0.002 (0.002) | 0.23, (F 4,53 = 1.44 ) |
| ***total\_inorganic\_N*** | **0.014 (0.013)b** | **0.033 (0.02)b** | **0.041 (0.041)b** | **0.065 (0.04)ab** | **0.123 (0.133)a** | **0.01, (F 4,53 = 3.72 )** |
| *Phosphate..mg.g.dry.soil.* | 0.048 (0.015) | 0.056 (0.011) | 0.068 (0.027) | 0.058 (0.019) | 0.064 (0.024) | 0.8, (F 4,53 = 0.41 ) |
| *Magnesium..mg.g.dry.soil.* | 0.992 (0.589) | 0.754 (0.57) | 0.767 (0.606) | 0.766 (0.602) | 0.763 (0.664) | 0.58, (F 4,53 = 0.72 ) |
| *Calcium..mg.g.dry.soil.* | 0.285 (0.213) | 0.188 (0.199) | 0.193 (0.204) | 0.189 (0.2) | 0.166 (0.192) | 0.41, (F 4,53 = 1 ) |
| *GravimetricMoistureContent* | 0.217 (0.026) | 0.207 (0.028) | 0.197 (0.032) | 0.2 (0.025) | 0.189 (0.016) | 0.77, (F 4,53 = 0.46 ) |
| *pH* | 8.06 (0.218) | 8.093 (0.15) | 8.08 (0.116) | 8.052 (0.184) | 8 (0.219) | 0.94, (F 4,14 = 0.19) |
| *EC* | 730.25 (228.1) | 681.25 (93.4) | 564.5 (140.91) | 790.75 (241.1) | 930.5 (393.63) | 0.36, (F 4,14 = 1.16) |

Supplementary Table B1.Summary statistics of edaphic parameters across sampling times and split by treatment types. Values are represented as mean (standard deviation). Significant global ANOVA models for the effect of time since treatment are indicated in bold. Letters indicate significant pairwise differences among sampling times.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Nontreated | | | | |
|  | Time one | Time two | Time three |  |
|  | mean (sd) | mean (sd) | mean (sd) | p-value (F) |
| ***Nitrate mg/g dry soil*** | **0.19 (0.17)a** | **0.24 (0.12)a** | **0.04 (0.04)b** | **0.01, (F 2,32 = 5.76 )** |
| *Ammonium mg/g dry soil* | 0 (0) | 0 (0) | 0 (0) | 0.18, (2,32= 1.81 ) |
| ***Total inorganic N*** | **0.2 (0.06)a** | **0.25 (0.13)a** | **0.04 (0.04)b** | **0.01, (F 2,31 = 5.74 )** |
| *Phosphate mg/g dry soil* | 0.05 (0.01) | 0.06 (0.01) | 0.07 (0.03) | 0.74, (F 2,32= 0.3 ) |
| ***Magnesium mg/g dry soil*** | **1.58 (0.34)a** | **0.99 (0.74)a** | **0.77 (0.61)a** | **0.02, (F 2,32 = 4.7 )** |
| ***Calcium mg/g dry soil*** | **0.59 (0.14)a** | **0.38 (0.34)a** | **0.19 (0.2)a** | **0.02, (F 2,32 = 4.23 )** |
| ***Gravimetric moisture content*** | **0.09 (0.02)a** | **0.16 (0.02)b** | **0.2 (0.03)c** | **<0.001, (F 2,8 = 35.76)** |
|  |  |  |  |  |
| Handweeded | | | | |
|  | Time one | Time two | Time three |  |
|  | mean (sd) | mean (sd) | mean (sd) | p-value (F) |
| ***Nitrate mg/g dry soil*** | **0.35 (0.26)a** | **0.11 (0.06)b** | **0.03 (0.02)b** | **<0.001, (F 2, 31 = 13.01)** |
| *Ammonium mg/g dry soil* | 0 (0) | 0 (0.01) | 0 (0) | 0.28, (F 2, 31 = 1.34 ) |
| ***Total inorganic N*** | **0.356 (0.27)a** | **0.12 (0.07)b** | **0.03 (0.02)b** | **<0.001, (F 2, 30 = 12.65)** |
| ***Phosphate mg/g dry soil*** | **0.04 (0.01)a** | **0.05 (0.01)ab** | **0.06 (0.01)a** | **<0.001, (F 2, 31 = 7.21 )** |
| ***Magnesium mg/g dry soil*** | **1.37 (0.32)a** | **0.75 (0.61)b** | **0.75 (0.57)b** | **0.01, (F 2, 31 = 5.91 )** |
| ***Calcium mg/g dry soil*** | **0.54 (0.15)a** | **0.3 (0.32)b** | **0.19 (0.2)b** | **<0.001, (F 2, 31 = 7.48 )** |
| ***Gravimetric moisture content*** | **0.1 (0.01)a** | **0.21 (0.02)b** | **0.21 (0.03)b** | **<0.001, (F 2, 8 = 88.39)** |
|  |  |  |  |  |
| Atrazine-Mesotrione | | | | |
|  | Time one | Time two | Time three |  |
|  | mean (sd) | mean (sd) | mean (sd) | p-value (F) |
| ***Nitrate mg/g dry soil*** | **0.19 (0.17)a** | **0.24 (0.12)a** | **0.04 (0.04)b** | **<0.001, (F 2,32 = 9.44 )** |
| ***Ammonium mg/g dry soil*** | **0 (0)a** | **0 (0)ab** | **0 (0)b** | **0.05, (F 2,32 = 3.31 )** |
| ***Total inorganic N*** | **0.206 (0.172)a** | **0.25 (0.13)a** | **0.04 (0.04)b** | **<0.001, (F 2,31 = 9.83 )** |
| *Phosphate mg/g dry soil* | 0.05 (0.01) | 0.06 (0.01) | 0.07 (0.03) | 0.09, (F 2,32 = 2.61 ) |
| *Magnesium mg/g dry soil* | 1.58 (0.34) | 0.99 (0.74) | 0.77 (0.61) | 0.21, (F 2,32 = 1.64 ) |
| ***Calcium mg/g dry soil*** | **0.59 (0.14)a** | **0.38 (0.34)ab** | **0.19 (0.2)b** | **0.05, (F 2,32 = 3.29 )** |
| ***Gravimetric moisture content*** | **0.09 (0.02)a** | **0.16 (0.02)b** | **0.2 (0.03)c** | **<0.001, (F 2,8 = 25.64)** |
|  |  |  |  |  |
| Dicamba | | | | |
|  | Time one | Time two | Time three |  |
|  | mean (sd) | mean (sd) | mean (sd) | p-value (F) |
| ***Nitrate mg/g dry soil*** | **0.29 (0.26)a** | **0.15 (0.1)ab** | **0.06 (0.04)b** | **0.03, (F 2,32** **= 3.76 )** |
| ***Ammonium mg/g dry soil*** | **0 (0)a** | **0 (0)b** | **0 (0)b** | **<0.001, (F 2,32** **= 8.35 )** |
| ***Total inorganic N*** | **0.29 (0.26)a** | **0.15 (0.107)ab** | **0.07 (0.04)b** | **0.03, (F 2,32** **= 3.83 )** |
| ***Phosphate mg/g dry soil*** | **0.04 (0.01)a** | **0.04 (0.01)a** | **0.06 (0.02)b** | **0.01, (F 2,32** **= 6.06 )** |
| ***Magnesium mg/g dry soil*** | **1.46 (0.26)a** | **1.19 (0.66)ab** | **0.77 (0.6)b** | **0.01, (F 2,32** **= 5.84 )** |
| ***Calcium mg/g dry soil*** | **0.52 (0.09)a** | **0.5 (0.33)a** | **0.19 (0.2)b** | **0.01, (F 2,32** **= 5.91 )** |
| ***Gravimetric moisture content*** | **0.1 (0.02)a** | **0.17 (0.02)b** | **0.2 (0.02)c** | **<0.001, (F 2,32** **= 41.16)** |
|  |  |  |  |  |
| Glyphosate | | | | |
|  | Time one | Time two | Time three |  |
|  | mean (sd) | mean (sd) | mean (sd) | p-value (F) |
| *Nitrite mg/g dry soil* | 0.01(0.05) | 0 (0) | 0 (0) | 0.21, (F 2,30= 1.65 ) |
| ***Nitrate mg/g dry soil*** | **0.42 (0.47)** | **0.28 (0.19)** | **0.12 (0.13)** | **0.02, (F 2,31= 4.27 )** |
| *Ammonium mg/g dry soil* | 0.01 (0.03) | 0 (0) | 0 (0) | 0.19, (F 2,31= 1.77 ) |
| ***Total inorganic N*** | **0.483 (0.552)a** | **0.28 (0.19)ab** | **0.12 (0.13)b** | **0.03, (F 2,30 = 4.07 )** |
| ***Phosphate mg/g dry soil*** | **0.04 (0.01)a** | **0.06 (0.02)ab** | **0.06 (0.02)b** | **0.05, (F 2,31 = 3.25 )** |
| ***Magnesium mg/g dry soil*** | **1.46 (0.24)a** | **1.2 (0.76)ab** | **0.76 (0.66)b** | **0.03, (F 2,31 = 3.78 )** |
| ***Calcium mg/g dry soil*** | **0.47 (0.11)a** | **0.49 (0.36)a** | **0.17 (0.19)b** | **<0.001, (F 2,31 = 7.78 )** |
| ***Gravimetric moisture content*** | **0.09 (0.02)a** | **0.18 (0.03)b** | **0.19 (0.02)b** | **<0.001, (F 2,8 = 38.3)** |

Supplementary Table C1.Summary statistics of enzymatic activities across treatment types at each sampling time. Values are represented as mean (standard deviation). Significant global ANOVA models for the effect of herbicide treatment are indicated in bold. Letters indicate significant pairwise differences among treatments.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | | |
| Sampling Time One | | | | | | | |
|  | | Nontreated | Handweeded | Atrazine-Mesotrione | Dicamba | Glyphosate | p-value (F) |
| *BG* | | 180.72 (105.95) | 168.02 (23.65) | 214.36 (21.49) | 195.24 (51.84) | 200.81 (46.43) | 0.73, (F 4,14 = 0.51 ) |
| *BX* | | 37.44 (24.62) | 16.19 (1.62) | 33.81 (13.16) | 22.87 (10.41) | 35.86 (14.21) | 0.08, (F 4,14 = 2.64 ) |
| *CBH* | | 26.15 (18.69) | 15.24 (4.83) | 23.07 (10.4) | 18.28 (7.03) | 28.08 (10.13) | 0.27, (F 4,14 = 1.45 ) |
| *AG* | | 29.58 (21.06) | 11.09 (2.53) | 27 (15.73) | 17.36 (9.86) | 27.96 (12.82) | 0.13, (F 4,14 = 2.14 ) |
| *NAG* | | 23.2 (19.27) | 7.5 (1.78) | 13.11 (7.66) | 10.26 (6.71) | 16.46 (7.57) | 0.29, (F 4,14 = 1.38 ) |
| *LAP* | | 229.86 (41.22) | 225.26 (49) | 292.63 (63.93) | 220.1 (33.98) | 239.74 (34.7) | 0.27, (F 4,13 = 1.45 ) |
| ***PHOS*** | | **152.77 (14.05)a** | **95.58 (17.06)b** | **130.1 (23.25)ab** | **106.62 (21.6)ab** | **117.08 (21.4)ab** | **0.02, (F 4,14 = 3.99 )** |
| *C.N\_enz* | | 1.01 (0.51) | 0.93 (0.24) | 0.98 (0.06) | 1.09 (0.14) | 1.15 (0.26) | 0.72, (F 4,13 = 0.53 ) |
| *C.P\_enz* | 1.74 (1.02) | 2.3 (0.74) | 2.29 (0.12) | 2.37 (0.4) | 2.49 (0.29) | 0.66, (F 4,14 = 0.62 ) |
| ***N.P enz*** | **1.64 (0.24)a** | **2.45 (0.44)b** | **2.34 (0.22)ab** | **2.18 (0.20)ab** | **2.21 (0.25)ab** | **0.02, (F 4, 13 = 3.85)** |
|  | |  |  |  |  |  |  |
|  | |  |  |  |  |  |  |
| Sampling Time Two | | | | | | | |
|  | | Nontreated | Handweeded | Atrazine-Mesotrione | Dicamba | Glyphosate | p-value (F) |
| ***BG*** | | **239.69 (98.72)a** | **328.07 (67.9)a** | **235.01 (94)a** | **199 (60.5)a** | **237.49 (52.16)a** | **0.03, (F 4,14 = 3.72 )** |
| *BX* | | 40.75 (26.77) | 49.8 (13.24) | 44.87 (24.07) | 41.37 (23.02) | 39.86 (14.09) | 0.57, (F 4,14 = 0.75 ) |
| *CBH* | | 29.05 (13.46) | 33.42 (7.61) | 23.52 (14.55) | 28.23 (14.04) | 32.93 (8.11) | 0.36, (F 4,14 = 1.19 ) |
| *AG* | | 32.96 (19.72) | 38.08 (9.4) | 30.19 (22.54) | 30.8 (19.05) | 36.79 (13.85) | 0.68, (F 4,14 = 0.59 ) |
| *NAG* | | 19.74 (14.79) | 22.42 (7.36) | 14.49 (8.7) | 15.65 (12.56) | 17.39 (5.65) | 0.58, (F 4,14 = 0.74 ) |
| *LAP* | | 250.96 (49.15) | 256.6 (24.21) | 214.08 (43.38) | 233.48 (60.33) | 251.63 (28.92) | 0.1, (F 4,14 = 2.38 ) |
| ***PHOS*** | | **114.92 (24.89)a** | **155.57 (18.2)a** | **110.36 (25.6)a** | **128.09 (29.0)a** | **137.8 (7.22)a** | **0.04, (F 4,14 = 3.46 )** |
| *C.N\_enz* | | 1.24 (0.34) | 1.63 (0.27) | 1.41 (0.4) | 1.18 (0.19) | 1.31 (0.32) | 0.27, (F 4,14 = 1.46 ) |
| *C.P\_enz* | | 2.91 (0.86) | 2.89 (0.13) | 2.92 (0.8) | 2.28 (0.37) | 2.53 (0.56) | 0.13, (F 4,14 = 2.15 ) |
| *N.P enz* | | 2.41 (0.60) | 1.82 (0.33) | 2.10 (0.45) | 1.93 (0.16) | 1.96 (0.19) | 0.71, (F 4, 14 = 0.54) |
|  | |  |  |  |  |  |  |
| Sampling Time Three | | | | | | | |
|  | | Nontreated | Handweeded | Atrazine-Mesotrione | Dicamba | Glyphosate | p-value (F) |
| *BG* | | 307.85 (100.03) | 236.65 (55.2) | 219.77 (24.81) | 206.02 (52.38) | 207.13 (26.13) | 0.95, (F 4,13 = 0.16 ) |
| *BX* | | 42.53 (30.81) | 35.77 (21.9) | 31.74 (16.92) | 44.34 (37.15) | 26.91 (8.89) | 0.92, (F 4,13 = 0.23 ) |
| *CBH* | | 33.56 (21.58) | 27.63 (15.46) | 25.62 (12.98) | 21.68 (11.9) | 16.5 (4.78) | 0.92, (F 4,13 = 0.22 ) |
| *AG* | | 32.53 (30.87) | 30.84 (22.5) | 32.84 (27.01) | 25.23 (16.13) | 23.4 (11.7) | 0.98, (F 4,13 = 0.11 ) |
| *NAG* | | 20.14 (12.64) | 24.06 (11.58) | 14.7 (8) | 12.36 (6.74) | 11.1 (5.77) | 0.51, (F 4,13 = 0.86 ) |
| *LAP* | | 290.93 (80.75) | 256.49 (26.45) | 254.4 (18.14) | 238.96 (53.68) | 214.94 (4.55) | 0.61, (F 4,12 = 0.7 ) |
| *PHOS* | | 144.77 (54.28) | 128.97 (18.95) | 114.11 (19.35) | 120.37 (24.19) | 105.19 (5.17) | 0.91, (F 4,13 = 0.23 ) |
| *C.N\_enz* | | 1.32 (0.09) | 1.16 (0.28) | 1.15 (0.2) | 1.17 (0.29) | 1.21 (0.1) | 0.98, (F 4,12 = 0.11 ) |
| *C.P\_enz* | | 2.9 (0.32) | 2.51 (0.52) | 2.71 (0.32) | 2.41 (0.49) | 2.61 (0.28) | 0.87, (F 4,13 = 0.31 ) |
| *N.P enz* | | 2.20 (0.27) | 2.19 (0.13) | 2.39 (0.30) | 2.08 (0.15) | 2.15 (0.10) | 0.36, (F 4, 12 = 1.19) |

Supplementary Table D1.Summary statistics of enzymatic parameters across sampling times and split by treatment types. Values are represented as mean (standard deviation). Significant global ANOVA models for the effect of time since treatment are indicated in bold. Letters indicate significant pairwise differences among sampling times.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Nontreated | | | | |
|  | T1 | T2 | T3 |  |
|  | mean (sd) | mean (sd) | mean (sd) | p-value (F) |
| BG | 214.36 (21.49) | 235.01 (94) | 219.77 (24.81) | 0.32, (F 2,8 = 1.33 ) |
| BX | 33.81 (13.16) | 44.87 (24.07) | 31.74 (16.92) | 0.43, (F 2,8 = 0.95 ) |
| CBH | 23.07 (10.4) | 23.52 (14.55) | 25.62 (12.98) | 0.57, (F 2,8 = 0.6 ) |
| AG | 27 (15.73) | 30.19 (22.54) | 32.84 (27.01) | 0.53, (F 2,8 = 0.68 ) |
| NAG | 13.11 (7.66) | 14.49 (8.7) | 14.7 (8) | 0.44, (F 2,8 = 0.91 ) |
| LAP | 292.63 (63.93) | 214.08 (43.38) | 254.4 (18.14) | 0.44, (F 2,8 = 0.94 ) |
| PHOS | 130.1 (23.25) | 110.36 (25.61) | 114.11 (19.35) | 0.30, (F 2,8 = 1.39 ) |
| C.N\_enz | 0.98 (0.06) | 1.41 (0.4) | 1.15 (0.2) | 0.44, (F 2,8 = 0.95 ) |
| C.P\_enz | 2.29 (0.12) | 2.92 (0.8) | 2.71 (0.32) | 0.81, (F 2,8 = 0.22 ) |
| *N.P enz* | 1.64 (0.24) | 2.40 (0.60) | 2.20 (0.27) | 0.59, (F 2,8 = 0.74 ) |
|  |  |  |  |  |
| Handweeded | | | | |
|  | T1 | T2 | T3 |  |
|  | mean (sd) | mean (sd) | mean (sd) | p-value (F) |
| **BG** | **168.02 (23.65)a** | **328.07 (67.9)b** | **236.65 (55.2)ab** | **0.01, (F 2,8 = 8.87 )** |
| **BX** | **16.19 (1.62)a** | **49.8 (13.24)b** | **35.77 (21.9)ab** | **0.02, (F 2,8 = 6.99 )** |
| CBH | 15.24 (4.83) | 33.42 (7.61) | 27.63 (15.46) | 0.1, (F 2,8 = 3.2 ) |
| **AG** | **11.09 (2.53)a** | **38.08 (9.4)b** | **30.84 (22.5)ab** | **0.03, (F 2,8 = 5.55 )** |
| **NAG** | **7.5 (1.78)a** | **22.42 (7.36)ab** | **24.06 (11.58)b** | **0.03, (F 2,8 = 5.79 )** |
| LAP | 225.26 (49) | 256.6 (24.21) | 256.49 (26.45) | 0.5, (F 2,8 = 0.77 ) |
| **PHOS** | **95.58 (17.06)a** | **155.57 (18.17)b** | **128.97 (18.95)ab** | **0.01, (F 2,8 = 8.95 )** |
| **C.N\_enz** | **0.93 (0.24)a** | **1.63 (0.27)b** | **1.16 (0.28)ab** | **0.01, (F 2,8 = 8.56 )** |
| C.P\_enz | 2.3 (0.74) | 2.89 (0.13) | 2.51 (0.52) | 0.16, (F 2,8 = 2.3 ) |
| *N.P enz* | 2.45 (0.43) | 1.81 (0.33) | 2.18 (0.13) | 0.059, (F 2,8 = 4.11 ) |
|  |  |  |  |  |
| Atrazine-Mesotrione | | | | |
|  | T1 | T2 | T3 |  |
|  | mean (sd) | mean (sd) | mean (sd) | p-value (F) |
| BG | 214.36 (21.49) | 235.01 (94) | 219.77 (24.81) | 0.35, (F 2,8 = 1.2 ) |
| BX | 33.81 (13.16) | 44.87 (24.07) | 31.74 (16.92) | 0.58, (F 2,8 = 0.57 ) |
| CBH | 23.07 (10.4) | 23.52 (14.55) | 25.62 (12.98) | 0.59, (F 2,8 = 0.57 ) |
| AG | 27 (15.73) | 30.19 (22.54) | 32.84 (27.01) | 0.95, (F 2,8 = 0.05 ) |
| NAG | 13.11 (7.66) | 14.49 (8.7) | 14.7 (8) | 0.86, (F 2,8 = 0.16 ) |
| LAP | 292.63 (63.93) | 214.08 (43.38) | 254.4 (18.14) | 0.91, (F 2,8 = 0.1 ) |
| PHOS | 130.1 (23.25) | 110.36 (25.61) | 114.11 (19.35) | 0.94, (F 2,8 = 0.06 ) |
| C.N\_enz | 0.98 (0.06) | 1.41 (0.4) | 1.15 (0.2) | 0.21, (F 2,8 = 1.87 ) |
| C.P\_enz | 2.29 (0.12) | 2.92 (0.8) | 2.71 (0.32) | 0.16, (F 2,8 = 2.33 ) |
| *N.P enz* | 2.34 (0.22) | 2.10 (0.45) | 2.38 (0.29) | 0.69, (F 2,8 = 0.37 ) |
|  |  |  |  |  |
| Dicamba | | | | |
|  | T1 | T2 | T3 |  |
|  | mean (sd) | mean (sd) | mean (sd) | p-value (F) |
| BG | 195.24 (51.84) | 199 (60.5) | 206.02 (52.38) | 0.76, (F 2,8 = 0.28 ) |
| BX | 22.87 (10.41) | 41.37 (23.02) | 44.34 (37.15) | 0.47, (F 2,8 = 0.83 ) |
| CBH | 18.28 (7.03) | 28.23 (14.04) | 21.68 (11.9) | 0.42, (F 2,8 = 0.97 ) |
| AG | 17.36 (9.86) | 30.8 (19.05) | 25.23 (16.13) | 0.51, (F 2,8 = 0.74 ) |
| NAG | 10.26 (6.71) | 15.65 (12.56) | 12.36 (6.74) | 0.59, (F 2,8 = 0.57 ) |
| LAP | 220.1 (33.98) | 233.48 (60.33) | 238.96 (53.68) | 0.60, (F 2,8 = 0.55 ) |
| PHOS | 106.62 (21.59) | 128.09 (29.01) | 120.37 (24.19) | 0.43, (F 2,8 = 0.95 ) |
| C.N\_enz | 1.09 (0.14) | 1.18 (0.19) | 1.17 (0.29) | 0.82, (F 2,8 = 0.20 ) |
| C.P\_enz | 2.37 (0.4) | 2.28 (0.37) | 2.41 (0.49) | 0.82, (F 2,8 = 0.20 ) |
| *N.P enz* | 2.17 (0.20) | 1.93 (0.16) | 2.08 (0.09) | 0.19, (F 2,8 = 1.99) |
|  |  |  |  |  |
| Glyphosate | | | | |
|  | T1 | T2 | T3 |  |
|  | mean (sd) | mean (sd) | mean (sd) | p-value (F) |
| BG | 200.81 (46.43) | 237.49 (52.16) | 207.13 (26.13) | 0.76, (F 2,7 = 0.28 ) |
| BX | 35.86 (14.21) | 39.86 (14.09) | 26.91 (8.89) | 0.46, (F 2,7 = 0.88 ) |
| CBH | 28.08 (10.13) | 32.93 (8.11) | 16.5 (4.78) | 0.09, (F 2,7 = 3.42 ) |
| AG | 27.96 (12.82) | 36.79 (13.85) | 23.4 (11.7) | 0.43, (F 2,7 = 0.96 ) |
| NAG | 16.46 (7.57) | 17.39 (5.65) | 11.1 (5.77) | 0.50, (F 2,7 = 0.76 ) |
| LAP | 239.74 (34.7) | 251.63 (28.92) | 214.94 (4.55) | 0.06, (F 2,7 = 4.15 ) |
| **PHOS** | **117.08 (21.42)ab** | **137.8 (7.22)a** | **105.19 (5.17)b** | **0.02, (F 2,7 = 6.57 )** |
| C.N\_enz | 1.15 (0.26) | 1.31 (0.32) | 1.21 (0.1) | 0.96, (F 2,7 = 0.04 ) |
| C.P\_enz | 2.49 (0.29) | 2.53 (0.56) | 2.61 (0.28) | 0.85, (F 2,7 = 0.16 ) |
| *N.P enz* | 2.21 (0.25) | 1.95 (0.19)) | 2.15 (0.09) | 0.39, (F 2,7 = 1.06 ) |