

Table S1. Interactive effect of P source and rate of application on total corn P uptake in different soils.

| P sources   | P rates<br>(mg P kg <sup>-1</sup> ) | Eram-<br>Lebo | Crete     | Wabash    | Woodson   | Ulysses   | Harney    |
|-------------|-------------------------------------|---------------|-----------|-----------|-----------|-----------|-----------|
| <b>CM-1</b> | <b>0</b>                            | 21 n*         | 50 f*-i*  | 34 m*     | 40 k*-m*  | 20 n*     | 37 l*m*   |
|             | <b>50</b>                           | 40.5 J*-m*    | 65.8 s-x  | 55 b*-g*  | 67 r-w    | 48 g*-j*  | 62 w-b*   |
|             | <b>150</b>                          | 76 o-q        | 109 d-f   | 89 k-n    | 103 f-i   | 85 l-n    | 96 i-k    |
| <b>CM2</b>  | <b>0</b>                            | 21 n*         | 50 f*-i*  | 34 m*     | 40 k*-m*  | 20 n*     | 37 l*m*   |
|             | <b>50</b>                           | 41 j*-m*      | 61.5 w-c* | 51 d*-h*  | 62 w-b*   | 47 h*-k*  | 63.5 v-a* |
|             | <b>150</b>                          | 77 o-q        | 98 h-j    | 89 k-n    | 103 f-i   | 90 k-m    | 101 g-i   |
| <b>TL</b>   | <b>0</b>                            | 21 n*         | 50 f*-i*  | 34 m*     | 40 k*-m*  | 20 n*     | 37 l*m*   |
|             | <b>50</b>                           | 36 l*m*       | 60 w-c*   | 50 e*-h*  | 54 c*-h*  | 41 j*-m*  | 55 b*-g*  |
|             | <b>150</b>                          | 64 u-z        | 86 l-n    | 86 l-n    | 82.5 m-o  | 64 u-a*   | 77 o-q    |
| <b>HM</b>   | <b>0</b>                            | 21 n*         | 50 f*-i*  | 34 m*     | 40 k*-m*  | 20 n*     | 37 l*m*   |
|             | <b>50</b>                           | 50 f*-i*      | 77 o-q    | 58.6 x-d* | 70 q-v    | 57.5 y-e* | 73 q-s    |
|             | <b>150</b>                          | 89 k-n        | 126 b     | 107 e-g   | 132 b     | 115 dc    | 117 c     |
| <b>SS</b>   | <b>0</b>                            | 21 n*         | 50 f*-i*  | 34 m*     | 40 k*-m*  | 20 n*     | 37 l*m*   |
|             | <b>50</b>                           | 42 i*-l*      | 72 q-t    | 56 a*-f*  | 63.6 u-a* | 51 d*-h*  | 65 t-y    |
|             | <b>150</b>                          | 65 t-y        | 102.5 f-i | 91.6 j-l  | 112.5 c-e | 91 j-l    | 104 f-h   |
| <b>TSP</b>  | <b>0</b>                            | 21 n*         | 50 f*-i*  | 34 m*     | 40 k*-m*  | 20 n*     | 37 l*m*   |
|             | <b>50</b>                           | 48 g*-j*      | 82 n-p    | 57 y-f    | 71 q-u    | 37 l*m*   | 60 w-c*   |
|             | <b>150</b>                          | 74.6 p-r      | 104 f-h   | 89 k-n    | 142 a     | 62 w-b*   | 86 l-n    |

§ Soil×P rate×P source interaction effect on total P uptake is significant at P<0.01

§§Means with same letter / letters in columns and across rows are not significant at P<0.05.

§§§ Means with letters having dash line (-) represent all letters present between the two alphabets.

§§§§ means with letter containing \* symbol represent letter starting after z.

Table S2. Sequential extraction of bioavailable P forms in the dilute solution of 0.01M CaCl<sub>2</sub> and in 0.5M NaHCO<sub>3</sub> extracts of different animal manures.

| Animal manure sources                         | Total P | P released in 0.01M CaCl <sub>2</sub> * | 0.5M NaHCO <sub>3</sub> -Total P |
|---|---------|---|----------------------------------|
| -----mg P kg <sup>-1</sup> manure dry wt----- |         |   |                                  |
| CM1   | 8800    | 1714±28.8 (19.5)                        | 2464±19.8 (28.2)                 |
| CM2   | 3800    | 520±14.1 (13.7)                         | 1501±28.9 (39.5)                 |
| TL  | 21000   | 2983±25.5 (14)                          | 2342±24.0 (11.1)                 |
| HM  | 17000   | 7980±28.8 (47)                          | 1029±14.8 (6.05)                 |
| SS  | 27000   | 4627±38.18 (17.2)                       | 2970±42.4 (11)                   |

\*only inorganic P was measured, ±standard deviations of two replicates, values in parenthesis are the P recovered as (%) of total P.

Table S3. Interactive effect of soil and P source on P release constant (1/h) in FeO- method

| Treatments | Eram-Lebo soil                      | Ulysses soil |
|------------|-------------------------------------|--------------|
|            | -----desorption constant (1/h)----- |              |
| CM1-150    | 0.089 d                             | 0.22 c       |
| CM2-150    | 0.074 d                             | 0.18 c       |
| TL-150     | 0.078 d                             | 0.29 b       |
| HM-150     | 0.082 d                             | 0.22 c       |
| SS-150     | 0.080 d                             | 0.18 c       |
| TSP-150    | 0.103 d                             | 0.18 c       |
| Control    | 0.046 d                             | 0.56 a       |

§ Means with same letter / letters across both soils and treatment combinations are not significant at P<0.05.

Table S4. Interactive effect of P source and time on P release constant (1/h) in FeO- method

| Treatments | T0                                  | T7        |
|------------|-------------------------------------|-----------|
|            | -----desorption constant (1/h)----- |           |
| CM1-150    | 0.117 c                             | 0.194 abc |
| CM2-150    | 0.105 c                             | 0.145 bc  |
| TL-150     | 0.164 abc                           | 0.201 abc |
| HM-150     | 0.159 abc                           | 0.141 c   |
| SS-150     | 0.121 c                             | 0.144 bc  |
| TSP-150    | 0.185 abc                           | 0.125 c   |
| Control    | 0.313 a                             | 0.301 ab  |

§ Means with same letter / letters across both soils and treatment combinations are not significant at P<0.05.

**Table S5.** Influence of soil and P source properties on TNBP (mg P kg<sup>-1</sup>) during the entire period

| <b>Soil properties</b>         | <b>P source</b>  | <b>a</b>     | <b>Bx</b> | <b>R<sup>2</sup></b> | <b>Linear / Quadratic</b> |
|--------------------------------|------------------|--------------|-----------|----------------------|---------------------------|
| Clay content                   | CM1-50           | 30.61**<br>* | -0.03**   | 0.72                 | Linear                    |
|                                | HM-150           | 98.26**<br>* | -0.07*    | 0.70                 | Linear                    |
|                                | SS-150           | 81.42**<br>* | -0.08**   | 0.89                 | Linear                    |
| Soil pH                        | CM2-50           | -8.5NS       | 4.4*      | 0.73                 | Linear                    |
|                                | HM-50            | -4.6NS       | 5.3**     | 0.90                 | Linear                    |
|                                | SS-50            | 2.0NS        | 3.4*      | 0.65                 | Linear                    |
| Soil organic C                 | CM1-150          | 74****       | -0.62***  | 0.92                 | Linear                    |
|                                | HM-150           | 115****      | -1.5*     | 0.74                 | Linear                    |
| <b>Animal waste properties</b> | <b>Soil type</b> | <b>a</b>     | <b>Bx</b> | <b>R<sup>2</sup></b> | <b>Linear / Quadratic</b> |
| C:N ratio                      | Harney-150       | 97****       | -0.34*    | 0.68                 | Linear                    |
| C:P ratio                      | Eram-Lebo-150    | 30.5**       | 1.2*      | 0.65                 | Linear                    |

\* intercept and slopes significant different at p&lt;0.1,

\*\* intercept and slope significantly different at p&lt;0.05,

\*\*\* intercept and slope significantly different at p&lt;0.001

**Table S6.** Influence of soil and P source properties on NBP1 ( mg P kg<sup>-1</sup>) after first harvest

| <b>Soil properties</b>         | <b>P source</b>  | <b>a</b>    | <b>bX</b> | <b>cX<sup>2</sup></b> | <b>R<sup>2</sup></b> | <b>Function type</b> |           |
|--------------------------------|------------------|-------------|-----------|-----------------------|----------------------|----------------------|-----------|
| Clay content                   | HM-150           | 48***       | -0.06*    |                       | 0.56                 | Linear               |           |
|                                | SS-150           | 33.5***     | -0.06***  |                       | 0.86                 | Linear               |           |
|                                | TSP-150          | 78***       | -0.42**   | 0.0007**              | 0.90                 | Quadratic            |           |
| Soil organic matter            | CM2-150          | 29.1***     | -0.4**    |                       | 0.77                 | Linear               |           |
|                                | HM-150           | 58***       | -0.9*     |                       | 0.65                 | Linear               |           |
| <b>Animal waste properties</b> | <b>Soil type</b> | <b>a</b>    | <b>bX</b> | <b>cX<sup>2</sup></b> | <b>R<sup>2</sup></b> | <b>Function type</b> |           |
| Total carbon                   | Eram-50          | 13.7***     | -0.06**   | 0.0002**              | 0.84                 | Quadratic            |           |
|                                | Crete-50         | 3.8***      | -0.05**   | 0.0002**              | 0.90                 | Quadratic            |           |
|                                | Woodson-50       | 15.9**      | -0.08*    | 0.0002*               | 0.65                 | Quadratic            |           |
|                                | Ulysses-50       | 6.6**       | 0.02*     |                       | 0.55                 | Linear               |           |
|                                | Harney-50        | 11.0***     | -0.05**   | 0.0001**              | 0.85                 | Quadratic            |           |
|                                | Eram-150         | 23.4**      | -0.12**   | 0.0003*               | 0.65                 | Quadratic            |           |
|                                | Crete-150        | 12.7**      | -0.1*     | 0.0003*               | 0.69                 | Quadratic            |           |
|                                | Wabash-150       | 23*****     | -0.12***  | 0.0004**              | 0.98                 | Quadratic            |           |
|                                |                  |             |           | *                     |                      |                      |           |
|                                |                  | Woodson-150 | 52***     | -0.4**                | 0.0009**             | 0.88                 | Quadratic |
|                                |                  | Ulysses-150 | 22.2**    | -0.13NS               | 0.0004*              | 0.74                 | Quadratic |
|                                |                  | Harney-150  | 25***     | -0.13**               | 0.0003**             | 0.85                 | Quadratic |
|                                | C:N ratio        | Woodson-50  | 16***     | -0.6*                 |                      | 0.57                 | Linear    |
| Ulysses-50                     |                  | 5.4NS       | 1.9**     | -0.11*                | 0.74                 | Quadratic            |           |
| Woodson-150                    |                  | 55***       | -2.8**    |                       | 0.74                 | Linear               |           |
| C:P ratio                      | Woodson-50       | 16.9***     | -1.3**    | 0.04**                | 0.80                 | Quadratic            |           |
|                                | Ulysses-50       | 5.9*        | 0.33*     |                       | 0.59                 | Linear               |           |

\* intercept and slopes significant different at p<0.1, \*\* intercept and slope significantly different at p<0.05, \*\*\* intercept and slope significantly different at p<0.001

**Table S7.** Influence of soil and P source properties on total corn uptake ( mg P kg<sup>-1</sup>) during entire study

| <b>Soil properties</b>         | <b>P source</b>  | <b>a</b> | <b>bX</b> | <b>cX<sup>2</sup></b> | <b>R<sup>2</sup></b> | <b>Function type</b> |
|--------------------------------|------------------|----------|-----------|-----------------------|----------------------|----------------------|
| Clay content                   | CM2-150          | 106***   | -0.05*    |                       | 0.47                 | Linear               |
|                                | SS-150           | 118****  | -0.09*    |                       | 0.51                 | Linear               |
| Soil organic matter            | CM2-50           | -50NS    | 9.4*      | -0.19*                | 0.78                 | Quadratic            |
|                                | TL-50            | -50NS    | 8.6*      | -0.17*                | 0.74                 | Quadratic            |
|                                | HM-50            | -64NS    | 11.5**    | -0.24**               | 0.90                 | Quadratic            |
|                                | SS-50            | -58NS    | 10.3*     | -0.21*                | 0.79                 | Quadratic            |
| Soil Test P                    | CM2-50           | 40.5**** | 0.58**    |                       | 0.64                 | Linear               |
|                                | HM-50            | 50****   | 0.58*     |                       | 0.51                 | Linear               |
|                                | CM2-150          | 78****   | 0.62**    |                       | 0.62                 | Linear               |
|                                | HM-150           | 75****   | 3**       | -0.04*                | 0.77                 | Quadratic            |
|                                | SS-150           | 51****   | 3**       | -0.04*                | 0.85                 | Quadratic            |
| <b>Animal waste properties</b> | <b>Soil type</b> | <b>a</b> | <b>bX</b> | <b>cX<sup>2</sup></b> | <b>R<sup>2</sup></b> | <b>Function type</b> |
| Total carbon                   | Eram-Lebo50      | 48****   | -0.11**   | 0.0003**              | 0.85                 | Quadratic            |
|                                | Ulysses-50       | 39****   | 0.04*     |                       | 0.57                 | Linear               |
|                                | Wabash-150       | 91****   | -0.1*     | 0.0003**              | 0.86                 | Quadratic            |
|                                | Woodson-150      | 138****  | -0.46**   | 0.001**               | 0.80                 | Quadratic            |
| C:N ratio                      | Eram-Lebo50      | 49****   | -0.7*     |                       | 0.52                 | Linear               |
|                                | Crete-50         | 82****   | -1.4**    |                       | 0.74                 | Linear               |
|                                | Woodson-50       | 72****   | -0.8*     |                       | 0.55                 | Linear               |
|                                | Ulysses-50       | 37****   | 3.4**     | -0.2**                | 0.79                 | Quadratic            |
|                                | Harney-50        | 60****   | 2.1*      | -0.2*                 | 0.70                 | Quadratic            |
|                                | Woodson-150      | 143****  | -3.5**    |                       | 0.78                 | Linear               |
|                                | Ulysses-150      | 62**     | 9**       | -0.6**                | 0.80                 | Quadratic            |
| Harney-150                     | 86****           | 6**      | -0.4**    | 0.86                  | Quadratic            |                      |
| C:P ratio                      | Ulysses-50       | 39****   | 0.52*     |                       | 0.49                 | Linear               |
|                                | Woodson-150      | 71****   | -1.6*     | 0.06*                 | 0.77                 | Quadratic            |
|                                | Ulysses-150      | 63****   | 1.3*      |                       | 0.45                 | Linear               |

\* intercept and slopes significant different at p&lt;0.1,

\*\* intercept and slope significantly different at p&lt;0.05,

\*\*\* intercept and slope significantly different at p&lt;0.001

Dataset S1

Table S8. The effect of P source on plant dry weight for the Eram-Lebo soil.

| Treatments | Corn harvests      |        |        |        |        |        |        |
|------------|--------------------|--------|--------|--------|--------|--------|--------|
|            | 1                  | 2      | 3      | 4      | 5      | 6      | 7      |
|            | ------(g/pot)----- |        |        |        |        |        |        |
| CM1-50     | 10.5               | 11.3   | 12.3   | 10.7   | 6.1    | 4.5    | 2.9    |
| CM2-50     | 9.5                | 10.7   | 12.7   | 12.3   | 6.6    | 4.6    | 3.1    |
| TL-50      | 8.4                | 10.0   | 11.3   | 10.3   | 5.3    | 3.9    | 2.9    |
| HM-50      | 12.0               | 8.0    | 13.0   | 11.3   | 5.6    | 4.6    | 3.3    |
| SS-50      | 10.0               | 9.7    | 12.0   | 10.7   | 6.5    | 4.4    | 3.3    |
| TSP-50     | 13.4               | 5.2    | 14.3   | 12.7   | 7.1    | 5.0    | 3.9    |
| CM1-150    | 15.1               | 13.3   | 17.7   | 16.3   | 7.9    | 6.8    | 5.1    |
| CM2-150    | 15.1               | 12.7   | 16.7   | 17.0   | 9.3    | 7.5    | 5.5    |
| TL-150     | 13.5               | 9.9    | 16.3   | 15.0   | 8.4    | 6.3    | 5.1    |
| HM-150     | 20.2               | 10.9   | 17.7   | 17.0   | 9.1    | 6.9    | 5.6    |
| SS-150     | 10.6               | 17.7   | 17.3   | 15.7   | 9.1    | 6.9    | 5.1    |
| TSP-150    | 11.4               | 10.0   | 16.7   | 16.7   | 9.6    | 7.2    | 5.7    |
| Control    | 4.4                | 4.7    | 5.9    | 8.0    | 4.6    | 3.8    | 2.8    |
| P value    | 0.0001             | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 |
| LSD        | 2.3                | 2.3    | 1.7    | 1.6    | 1.6    | 0.91   | 1.1    |

Table S9. The effect of P source on P concentration in corn for the Eram-Lebo soil.

| Treatments | Corn harvests     |        |       |        |      |        |       |
|------------|-------------------|--------|-------|--------|------|--------|-------|
|            | 1                 | 2      | 3     | 4      | 5    | 6      | 7     |
|            | ------(g/kg)----- |        |       |        |      |        |       |
| CM1-50     | 2.8               | 1.4    | 1.0   | 1.0    | 0.7  | 1.0    | 1.2   |
| CM2-50     | 3.1               | 1.4    | 1.0   | 1.0    | 0.9  | 1.0    | 1.3   |
| TL-50      | 2.9               | 1.2    | 1.0   | 1.1    | 1.0  | 1.0    | 1.3   |
| HM-50      | 3.6               | 2.1    | 1.1   | 1.0    | 1.0  | 1.1    | 1.4   |
| SS-50      | 3.0               | 1.7    | 1.0   | 1.1    | 0.9  | 1.2    | 1.3   |
| TSP-50     | 2.6               | 2.7    | 1.2   | 1.2    | 1.1  | 1.0    | 1.3   |
| CM1-150    | 2.7               | 2.7    | 1.5   | 1.4    | 1.7  | 1.3    | 1.5   |
| CM2-150    | 3.1               | 2.5    | 1.6   | 1.4    | 1.4  | 1.3    | 1.6   |
| TL-150     | 3.0               | 3.0    | 1.4   | 1.2    | 1.1  | 1.1    | 1.3   |
| HM-150     | 3.5               | 3.3    | 1.6   | 1.3    | 1.2  | 1.3    | 1.4   |
| SS-150     | 2.8               | 1.7    | 1.6   | 1.2    | 1.2  | 1.3    | 1.5   |
| TSP-150    | 4.6               | 2.6    | 1.3   | 1.3    | 1.3  | 1.5    | 1.9   |
| Control    | 1.8               | 1.1    | 1.0   | 1.1    | 1.1  | 1.0    | 1.2   |
| P value    | 0.0001            | 0.0001 | 0.001 | 0.0001 | 0.01 | 0.0004 | 0.003 |
| LSD        | 0.5               | 0.6    | 0.3   | 0.1    | 0.4  | 0.2    | 0.3   |

Table S10. The effect of P source on P removed by corn for the Eram-Lebo soil.

| Treatments | Corn harvests      |        |        |        |       |        |        |
|------------|--------------------|--------|--------|--------|-------|--------|--------|
|            | 1                  | 2      | 3      | 4      | 5     | 6      | 7      |
|            | ------(mg/kg)----- |        |        |        |       |        |        |
| CM1-50     | 14.6               | 8.1    | 6.2    | 5.6    | 2.0   | 2.3    | 1.7    |
| CM2-50     | 14.8               | 7.3    | 6.3    | 5.8    | 2.5   | 2.3    | 2.1    |
| TL-50      | 12.3               | 6.1    | 5.6    | 5.6    | 2.7   | 2.1    | 1.8    |
| HM-50      | 21.3               | 8.2    | 6.8    | 5.8    | 2.7   | 2.6    | 2.3    |
| SS-50      | 14.8               | 7.8    | 6.3    | 6.0    | 2.5   | 2.6    | 2.1    |
| TSP-50     | 17.1               | 6.9    | 8.1    | 7.5    | 3.1   | 2.6    | 2.6    |
| CM1-150    | 20.6               | 18.0   | 13.6   | 11.0   | 4.9   | 4.5    | 3.9    |
| CM2-150    | 23.3               | 15.7   | 12.8   | 11.7   | 3.8   | 4.8    | 4.4    |
| TL-150     | 19.9               | 14.0   | 11.0   | 9.0    | 3.1   | 3.6    | 3.4    |
| HM-150     | 35.2               | 17.0   | 14.0   | 11.3   | 3.3   | 4.4    | 4.0    |
| SS-150     | 14.8               | 15.3   | 13.7   | 9.7    | 3.4   | 4.4    | 3.8    |
| TSP-150    | 25.9               | 12.5   | 11.1   | 10.3   | 3.7   | 5.7    | 5.3    |
| Control    | 4.1                | 2.5    | 3.1    | 4.3    | 3.1   | 1.9    | 1.7    |
| P value    | 0.0001             | 0.0001 | 0.0001 | 0.0001 | 0.008 | 0.0001 | 0.0001 |
| LSD        | 4.4                | 2.3    | 3.1    | 1.6    | 1.2   | 0.90   | 1.1    |

Table S11. The effect of P source on dry weight in corn for Crete soil.

| Treatments | Corn harvests      |        |        |        |      |        |      |
|------------|--------------------|--------|--------|--------|------|--------|------|
|            | 1                  | 2      | 3      | 4      | 5    | 6      | 7    |
|            | ------(g/pot)----- |        |        |        |      |        |      |
| CM1-50     | 15                 | 9      | 18     | 15     | 8    | 6      | 5    |
| CM2-50     | 13                 | 8      | 17     | 16     | 9    | 6      | 5    |
| TL-50      | 14                 | 6      | 18     | 15     | 9    | 6      | 6    |
| HM-50      | 17                 | 7      | 19     | 17     | 10   | 6      | 6    |
| SS-50      | 15                 | 7      | 18     | 17     | 10   | 7      | 6    |
| TSP-50     | 15                 | 5      | 19     | 16     | 7    | 8      | 6    |
| CM1-150    | 19                 | 12     | 19     | 19     | 12   | 9      | 7    |
| CM2-150    | 15                 | 14     | 19     | 19     | 12   | 9      | 7    |
| TL-150     | 16                 | 8      | 18     | 18     | 11   | 8      | 7    |
| HM-150     | 21                 | 14     | 20     | 19     | 10   | 8      | 6    |
| SS-150     | 17                 | 12     | 19     | 20     | 11   | 8      | 6    |
| TSP-150    | 18                 | 6      | 19     | 19     | 10   | 8      | 6    |
| Control    | 12                 | 5      | 13     | 14     | 7    | 5      | 4    |
| P value    | 0.0001             | 0.0001 | 0.0001 | 0.0001 | 0.01 | 0.0001 | 0.02 |
| LSD        | 2.6                | 2.5    | 1.6    | 1.6    | 2.8  | 1.1    | 1.3  |

Table S12. The effect of P source on P concentration in corn for Crete soil.

| Treatments | Corn harvests      |       |      |        |        |        |        |
|------------|--------------------|-------|------|--------|--------|--------|--------|
|            | 1                  | 2     | 3    | 4      | 5      | 6      | 7      |
|            | ----- (g/kg) ----- |       |      |        |        |        |        |
| CM1-50     | 3.2                | 3.5   | 1.1  | 1.1    | 1.0    | 1.0    | 1.3    |
| CM2-50     | 3.3                | 3.3   | 1.2  | 1.1    | 1.1    | 1.1    | 1.6    |
| TL-50      | 3.1                | 3.8   | 1.0  | 1.1    | 1.0    | 1.0    | 1.3    |
| HM-50      | 3.8                | 4.1   | 1.2  | 1.1    | 1.1    | 1.1    | 1.6    |
| SS-50      | 3.7                | 3.6   | 1.3  | 1.2    | 1.2    | 1.1    | 1.5    |
| TSP-50     | 3.3                | 4.4   | 1.5  | 1.3    | 1.6    | 1.3    | 2.1    |
| CM1-150    | 3.4                | 3.6   | 1.8  | 1.7    | 1.9    | 1.6    | 2.2    |
| CM2-150    | 3.2                | 3.2   | 1.7  | 1.6    | 1.6    | 1.6    | 2.7    |
| TL-150     | 3.3                | 4.4   | 1.6  | 1.4    | 1.5    | 1.3    | 1.8    |
| HM-150     | 3.9                | 4.0   | 2.1  | 1.7    | 2.1    | 1.8    | 2.5    |
| SS-150     | 3.5                | 3.8   | 1.6  | 1.5    | 1.8    | 1.6    | 2.5    |
| TSP-150    | 3.9                | 4.8   | 1.8  | 1.5    | 1.8    | 1.7    | 3.1    |
| Control    | 3.5                | 3.0   | 1.1  | 1.0    | 0.9    | 1.0    | 1.2    |
| P value    | 0.55               | 0.004 | 0.02 | 0.0001 | 0.0001 | 0.0001 | 0.0001 |
| LSD        |                    | 0.8   | 0.6  | 0.2    | 0.3    | 0.4    | 0.6    |

Table S13. The effect of P source on P removal by corn for Crete soil.

| Treatments | Corn harvests       |        |       |        |       |        |        |
|------------|---------------------|--------|-------|--------|-------|--------|--------|
|            | 1                   | 2      | 3     | 4      | 5     | 6      | 7      |
|            | ----- (mg/kg) ----- |        |       |        |       |        |        |
| CM1-50     | 24                  | 16     | 9     | 8      | 3     | 3      | 3      |
| CM2-50     | 22                  | 13     | 10    | 9      | 3     | 3      | 4      |
| TL-50      | 22                  | 11     | 9     | 9      | 3     | 3      | 4      |
| HM-50      | 32                  | 14     | 11    | 10     | 3     | 3      | 4      |
| SS-50      | 27                  | 13     | 11    | 10     | 3     | 4      | 5      |
| TSP-50     | 25                  | 12     | 14    | 10     | 7     | 6      | 7      |
| CM1-150    | 32                  | 23     | 17    | 16     | 5     | 9      | 7      |
| CM2-150    | 24                  | 21     | 16    | 15     | 4     | 8      | 10     |
| TL-150     | 26                  | 17     | 15    | 12     | 4     | 6      | 6      |
| HM-150     | 41                  | 27     | 21    | 15     | 6     | 8      | 8      |
| SS-150     | 29                  | 22     | 15    | 16     | 5     | 8      | 8      |
| TSP-150    | 36                  | 15     | 17    | 14     | 5     | 8      | 9      |
| Control    | 22                  | 7      | 7     | 6      | 3     | 2      | 3      |
| P value    | 0.0004              | 0.0001 | 0.002 | 0.0001 | 0.001 | 0.0001 | 0.0001 |
| LSD        | 7.7                 | 4.3    | 5.8   | 2.6    | 1.9   | 1.6    | 1.8    |



Table S14. The effect of P source on corn dry weight for Wabash soil.

| Treatments | Corn harvests      |        |        |        |      |        |        |
|------------|--------------------|--------|--------|--------|------|--------|--------|
|            | 1                  | 2      | 3      | 4      | 5    | 6      | 7      |
|            | ------(g/pot)----- |        |        |        |      |        |        |
| CM1-50     | 14                 | 8.4    | 18     | 14     | 8.4  | 5.2    | 4.3    |
| CM2-50     | 12                 | 7.9    | 18     | 16     | 9.3  | 5.3    | 4.1    |
| TL-50      | 11                 | 6.2    | 19     | 17     | 10   | 6.3    | 4.5    |
| HM-50      | 14                 | 4.9    | 19     | 17     | 10   | 5.5    | 4.2    |
| SS-50      | 14                 | 6.0    | 19     | 18     | 10   | 5.6    | 4.3    |
| TSP-50     | 15                 | 3.7    | 16     | 17     | 11   | 6.6    | 5.6    |
| CM1-150    | 18                 | 13     | 19     | 16     | 11   | 7.3    | 6.2    |
| CM2-150    | 15                 | 14     | 19     | 18     | 11   | 8.0    | 6.8    |
| TL-150     | 18                 | 7.3    | 19     | 18     | 11   | 8.0    | 7.0    |
| HM-150     | 25                 | 8.5    | 19     | 20     | 11   | 7.3    | 6.2    |
| SS-150     | 20                 | 11     | 20     | 20     | 11   | 7.4    | 6.4    |
| TSP-150    | 15                 | 6.0    | 19     | 19     | 8.0  | 8.0    | 5.6    |
| Control    | 7.0                | 2.8    | 12     | 12     | 7.0  | 4.1    | 2.8    |
| P value    | 0.0001             | 0.0001 | 0.0003 | 0.0001 | 0.01 | 0.0001 | 0.0001 |
| LSD        | 2.6                | 2.2    | 2.6    | 1.6    | 2.6  | 1.2    | 1.3    |

Table S15. The effect of P source on P concentration in corn for Wabash soil.

| Treatments | Corn harvests     |        |        |        |        |        |        |
|------------|-------------------|--------|--------|--------|--------|--------|--------|
|            | 1                 | 2      | 3      | 4      | 5      | 6      | 7      |
|            | ------(g/kg)----- |        |        |        |        |        |        |
| CM1-50     | 2.4               | 2.6    | 1.3    | 1.1    | 1.0    | 1.0    | 1.1    |
| CM2-50     | 2.1               | 2.6    | 1.2    | 1.2    | 1.0    | 1.0    | 1.3    |
| TL-50      | 2.5               | 2.6    | 1.2    | 1.1    | 1.1    | 1.0    | 1.3    |
| HM-50      | 2.8               | 3.5    | 1.2    | 1.2    | 1.0    | 1.1    | 1.3    |
| SS-50      | 2.5               | 2.9    | 1.3    | 1.1    | 1.0    | 1.0    | 1.3    |
| TSP-50     | 2.4               | 3.1    | 1.3    | 1.2    | 1.2    | 1.1    | 1.3    |
| CM1-150    | 2.6               | 3.1    | 1.8    | 1.6    | 1.5    | 1.6    | 1.7    |
| CM2-150    | 3.1               | 2.7    | 1.6    | 1.6    | 1.5    | 1.7    | 1.8    |
| TL-150     | 2.9               | 3.9    | 1.5    | 1.5    | 1.8    | 1.9    | 1.9    |
| HM-150     | 3.5               | 4.5    | 1.5    | 1.5    | 1.7    | 1.7    | 1.9    |
| SS-150     | 3.2               | 3.0    | 1.5    | 1.4    | 1.5    | 1.5    | 1.6    |
| TSP-150    | 4.1               | 3.2    | 1.4    | 1.4    | 2.3    | 1.9    | 2.5    |
| Control    | 2.3               | 2.9    | 1.4    | 1.1    | 1.0    | 1.1    | 1.3    |
| P value    | 0.0001            | 0.0006 | 0.0001 | 0.0004 | 0.0004 | 0.0001 | 0.0001 |
| LSD        | 0.6               | 0.7    | 0.2    | 0.3    | 0.5    | 0.3    | 0.3    |

Table S16. The effect of P source on P removal by corn for the Wabash soil.

| Treatments | Corn harvests       |        |        |        |        |        |        |
|------------|---------------------|--------|--------|--------|--------|--------|--------|
|            | 1                   | 2      | 3      | 4      | 5      | 6      | 7      |
|            | ----- (mg/kg) ----- |        |        |        |        |        |        |
| CM1-50     | 17                  | 11     | 11     | 8.3    | 2.7    | 2.4    | 2.5    |
| CM2-50     | 13                  | 10     | 10     | 9.3    | 2.8    | 2.6    | 2.7    |
| TL-50      | 13                  | 7.4    | 11     | 9.2    | 3.0    | 3.1    | 3.0    |
| HM-50      | 20                  | 8.7    | 12     | 10     | 3.0    | 2.9    | 2.8    |
| SS-50      | 17                  | 8.5    | 12     | 10     | 2.9    | 2.9    | 2.8    |
| TSP-50     | 18                  | 6.0    | 10     | 9.3    | 3.3    | 3.6    | 3.8    |
| CM1-150    | 24                  | 19     | 17     | 13     | 4.2    | 5.9    | 5.3    |
| CM2-150    | 23                  | 19     | 15     | 14     | 4.2    | 6.6    | 6.1    |
| TL-150     | 26                  | 14     | 13     | 14     | 5.0    | 7.7    | 6.5    |
| HM-150     | 42                  | 19     | 15     | 14     | 4.6    | 6.3    | 5.9    |
| SS-150     | 32                  | 16     | 15     | 14     | 4.1    | 5.5    | 5.1    |
| TSP-150    | 31                  | 10     | 14     | 13     | 6.5    | 7.8    | 7.0    |
| Control    | 8.0                 | 4.1    | 9.0    | 6.2    | 2.6    | 2.3    | 1.9    |
| P value    | 0.0001              | 0.0001 | 0.0001 | 0.0001 | 0.0007 | 0.0001 | 0.0001 |
| LSD        | 7.2                 | 2.0    | 2.0    | 2.3    | 1.5    | 1.1    | 1.0    |

Table S17. The effect of P source on corn dry weight for the Woodson soil.

| Treatments | Corn harvests       |        |        |        |        |        |        |
|------------|---------------------|--------|--------|--------|--------|--------|--------|
|            | 1                   | 2      | 3      | 4      | 5      | 6      | 7      |
|            | ----- (g/pot) ----- |        |        |        |        |        |        |
| CM1-50     | 20                  | 7.4    | 19     | 16     | 7.1    | 4.1    | 3.9    |
| CM2-50     | 18                  | 4.1    | 18     | 16     | 8.0    | 4.6    | 4.5    |
| TL-50      | 17                  | 3.2    | 19     | 16     | 7.5    | 4.1    | 4.3    |
| HM-50      | 19                  | 4.1    | 21     | 18     | 8.4    | 4.9    | 4.7    |
| SS-50      | 18                  | 4.4    | 19     | 17     | 6.8    | 5.2    | 4.2    |
| TSP-50     | 18                  | 2.3    | 18     | 15     | 10     | 5.9    | 5.3    |
| CM1-150    | 22                  | 13     | 21     | 20     | 12     | 8.1    | 7.1    |
| CM2-150    | 23                  | 12     | 20     | 19     | 11     | 9.0    | 7.3    |
| TL-150     | 21                  | 7.2    | 21     | 18     | 11     | 7.1    | 6.5    |
| HM-150     | 26                  | 7.5    | 23     | 20     | 13     | 8.1    | 7.2    |
| SS-150     | 22                  | 12     | 23     | 21     | 12     | 7.8    | 7.8    |
| TSP-150    | 22                  | 3.5    | 20     | 16     | 11     | 7.4    | 6.5    |
| Control    | 12                  | 2.5    | 11     | 10     | 5.5    | 3.5    | 3.7    |
| P value    | 0.0001              | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 |
| LSD        | 1.7                 | 1.8    | 2.3    | 1.4    | 1.8    | 1.2    | 1.1    |

Table S18. The effect of P source on P concentration in corn for Woodson soil.

| Treatments | Corn harvests     |       |        |        |        |        |        |
|------------|-------------------|-------|--------|--------|--------|--------|--------|
|            | 1                 | 2     | 3      | 4      | 5      | 6      | 7      |
|            | ------(g/kg)----- |       |        |        |        |        |        |
| CM1-50     | 2.8               | 3.1   | 1.3    | 1.0    | 0.9    | 1.2    | 1.2    |
| CM2-50     | 2.8               | 4.4   | 1.3    | 1.1    | 1.0    | 1.2    | 1.2    |
| TL-50      | 2.8               | 3.0   | 1.1    | 1.0    | 0.9    | 1.2    | 1.1    |
| HM-50      | 3.2               | 4.7   | 1.1    | 1.0    | 1.0    | 1.3    | 1.2    |
| SS-50      | 2.8               | 3.8   | 1.2    | 1.1    | 1.3    | 1.2    | 1.3    |
| TSP-50     | 3.9               | 3.7   | 1.5    | 1.3    | 1.0    | 1.2    | 1.3    |
| CM1-150    | 3.1               | 2.9   | 1.6    | 1.7    | 1.5    | 1.6    | 1.7    |
| CM2-150    | 3.3               | 3.0   | 1.6    | 1.6    | 1.6    | 1.7    | 1.6    |
| TL-150     | 2.8               | 4.2   | 1.3    | 1.3    | 1.2    | 1.2    | 1.3    |
| HM-150     | 4.8               | 4.6   | 1.6    | 1.6    | 1.6    | 1.6    | 1.7    |
| SS-150     | 4.2               | 2.8   | 1.5    | 1.4    | 1.5    | 1.5    | 1.7    |
| TSP-150    | 6.9               | 5.4   | 2.7    | 2.1    | 1.7    | 1.6    | 1.7    |
| Control    | 2.9               | 4.0   | 1.1    | 1.1    | 0.9    | 1.1    | 1.2    |
| P value    | 0.0001            | 0.002 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 |
| LSD        | 0.7               | 1.2   | 0.3    | 0.2    | 0.4    | 0.2    | 0.2    |

Table S19. The effect of P source on corn P removal for Woodson soil.

| Treatments | Corn harvests      |        |        |        |        |        |        |
|------------|--------------------|--------|--------|--------|--------|--------|--------|
|            | 1                  | 2      | 3      | 4      | 5      | 6      | 7      |
|            | ------(mg/kg)----- |        |        |        |        |        |        |
| CM1-50     | 28                 | 11     | 12     | 8.0    | 2.6    | 2.5    | 2.4    |
| CM2-50     | 25                 | 9.0    | 12     | 8.4    | 2.7    | 2.7    | 2.7    |
| TL-50      | 23                 | 5.0    | 10     | 8.0    | 2.6    | 2.5    | 2.5    |
| HM-50      | 31                 | 10     | 12     | 8.7    | 2.7    | 3.1    | 2.9    |
| SS-50      | 25                 | 8.5    | 11     | 9.0    | 3.7    | 3.1    | 2.7    |
| TSP-50     | 34                 | 4.2    | 14     | 10     | 2.8    | 3.4    | 3.3    |
| CM1-150    | 34                 | 18     | 17     | 17     | 4.3    | 6.5    | 5.9    |
| CM2-150    | 37                 | 18     | 17     | 15     | 4.5    | 7.2    | 5.7    |
| TL-150     | 30                 | 15     | 14     | 12     | 3.5    | 4.4    | 4.2    |
| HM-150     | 63                 | 17     | 18     | 16     | 4.5    | 6.4    | 6.2    |
| SS-150     | 46                 | 16     | 18     | 15     | 4.4    | 6.0    | 6.8    |
| TSP-150    | 74                 | 10     | 26     | 17     | 4.7    | 6.0    | 5.5    |
| Control    | 17                 | 5.0    | 6.0    | 5.0    | 2.7    | 1.9    | 2.2    |
| P value    | 0.0001             | 0.0006 | 0.0001 | 0.0001 | 0.0002 | 0.0001 | 0.0001 |
| LSD        | 7.0                | 2.5    | 4.5    | 1.3    | 1.0    | 1.3    | 0.8    |

Table S20. The effect of P source on corn dry weight for the Ulysses soil.

| Treatments | Corn harvests      |        |        |        |        |        |        |
|------------|--------------------|--------|--------|--------|--------|--------|--------|
|            | 1                  | 2      | 3      | 4      | 5      | 6      | 7      |
|            | ------(g/pot)----- |        |        |        |        |        |        |
| CM1-50     | 14                 | 6.0    | 14     | 11     | 5.2    | 3.2    | 2.8    |
| CM2-50     | 15                 | 3.3    | 14     | 11     | 5.5    | 3.3    | 3.0    |
| TL-50      | 11                 | 2.8    | 13     | 9.0    | 4.1    | 3.4    | 2.0    |
| HM-50      | 16                 | 3.1    | 14     | 12     | 5.2    | 3.7    | 2.8    |
| SS-50      | 13                 | 4.0    | 14     | 13     | 6.4    | 4.0    | 3.2    |
| TSP-50     | 10                 | 2.6    | 12     | 9.0    | 4.8    | 3.3    | 2.8    |
| CM1-150    | 16                 | 10     | 16     | 19     | 11     | 6.7    | 6.0    |
| CM2-150    | 18                 | 7.4    | 16     | 18     | 11     | 6.4    | 5.1    |
| TL-150     | 16                 | 3.6    | 14     | 17     | 7.0    | 5.1    | 3.8    |
| HM-150     | 22                 | 6.0    | 18     | 19     | 11     | 6.7    | 4.8    |
| SS-150     | 19                 | 6.1    | 18     | 20     | 11     | 7.5    | 5.3    |
| TSP-150    | 14                 | 3.1    | 14     | 16     | 8.3    | 5.0    | 4.1    |
| Control    | 5.8                | 2.2    | 14     | 4.8    | 2.3    | 2.2    | 1.5    |
| P value    | 0.0001             | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 |
| LSD        | 2.3                | 1.7    | 3.1    | 2.2    | 2.6    | 1.1    | 0.9    |

Table S21. The effect of P source on P concentration in corn for the Ulysses soil.

| Treatments | Corn harvests     |        |        |        |       |       |        |
|------------|-------------------|--------|--------|--------|-------|-------|--------|
|            | 1                 | 2      | 3      | 4      | 5     | 6     | 7      |
|            | ------(g/kg)----- |        |        |        |       |       |        |
| CM1-50     | 2.8               | 2.9    | 1.3    | 0.9    | 0.9   | 1.0   | 1.0    |
| CM2-50     | 2.6               | 4.0    | 1.4    | 1.0    | 0.9   | 1.1   | 1.1    |
| TL-50      | 2.9               | 3.5    | 1.4    | 1.0    | 1.1   | 1.2   | 1.3    |
| HM-50      | 3.3               | 4.4    | 1.5    | 1.1    | 1.1   | 1.1   | 1.1    |
| SS-50      | 3.0               | 3.5    | 1.6    | 1.0    | 0.9   | 1.1   | 1.1    |
| TSP-50     | 2.6               | 3.4    | 1.4    | 1.0    | 1.1   | 1.1   | 1.2    |
| CM1-150    | 3.1               | 3.1    | 1.9    | 1.5    | 1.8   | 1.6   | 1.5    |
| CM2-150    | 3.7               | 3.7    | 2.0    | 1.6    | 1.6   | 1.3   | 1.6    |
| TL-150     | 2.8               | 4.6    | 2.0    | 1.1    | 1.7   | 1.2   | 1.4    |
| HM-150     | 4.8               | 4.6    | 1.9    | 1.7    | 1.8   | 1.9   | 2.2    |
| SS-150     | 3.3               | 3.4    | 1.7    | 1.6    | 1.7   | 1.8   | 2.1    |
| TSP-150    | 3.4               | 3.8    | 1.7    | 1.1    | 1.4   | 1.4   | 1.6    |
| Control    | 2.7               | 2.6    | 1.0    | 1.0    | 1.4   | 1.0   | 1.0    |
| P value    | 0.0001            | 0.0001 | 0.0001 | 0.0001 | 0.005 | 0.002 | 0.0001 |
| LSD        | 0.4               | 0.7    | 0.3    | 0.2    | 0.6   | 0.4   | 0.4    |

Table S22. The effect of P source on corn P removal for the Ulysses soil.

| Treatments | Corn harvests             |        |        |        |       |        |        |
|------------|---------------------------|--------|--------|--------|-------|--------|--------|
|            | 1                         | 2      | 3      | 4      | 5     | 6      | 7      |
|            | -----<br>(mg/kg)<br>----- |        |        |        |       |        |        |
| CM1-50     | 20                        | 8.6    | 9.3    | 4.7    | 2.5   | 1.6    | 1.4    |
| CM2-50     | 19                        | 6.7    | 9.8    | 5.3    | 2.5   | 1.8    | 1.7    |
| TL-50      | 16                        | 4.9    | 9.6    | 4.3    | 3.0   | 2.0    | 1.3    |
| HM-50      | 26                        | 6.8    | 11.7   | 6.7    | 3.1   | 2.0    | 1.6    |
| SS-50      | 20                        | 6.9    | 11.0   | 6.8    | 2.6   | 2.2    | 1.8    |
| TSP-50     | 14                        | 4.5    | 8.4    | 4.2    | 2.9   | 1.8    | 1.7    |
| CM1-150    | 25                        | 15     | 16     | 14     | 5.0   | 5.4    | 4.6    |
| CM2-150    | 33                        | 14     | 16     | 15     | 4.4   | 4.4    | 3.9    |
| TL-150     | 23                        | 8.2    | 14     | 9.3    | 4.9   | 3.2    | 2.5    |
| HM-150     | 53                        | 14     | 17     | 16     | 5.1   | 6.6    | 5.2    |
| SS-150     | 31                        | 11     | 17     | 16     | 4.8   | 6.6    | 5.6    |
| TSP-150    | 25                        | 6.0    | 12     | 9.0    | 3.9   | 3.4    | 3.2    |
| Control    | 8.0                       | 2.8    | 2.5    | 2.4    | 2.4   | 1.1    | 0.7    |
| P value    | 0.0001                    | 0.0001 | 0.0001 | 0.0001 | 0.008 | 0.0001 | 0.0001 |
| LSD        | 4.1                       | 2.1    | 3.1    | 1.8    | 1.8   | 1.5    | 0.9    |

Table S23. The effect of P source on corn dry weight for the Harney soil.

| Treatments | Corn harvests             |        |        |        |        |        |        |
|------------|---------------------------|--------|--------|--------|--------|--------|--------|
|            | 1                         | 2      | 3      | 4      | 5      | 6      | 7      |
|            | -----<br>(g/pot)<br>----- |        |        |        |        |        |        |
| CM1-50     | 16                        | 13     | 16     | 14     | 7.8    | 4.1    | 4.2    |
| CM2-50     | 18                        | 10     | 16     | 15     | 7.0    | 3.9    | 4.0    |
| TL-50      | 17                        | 10     | 15     | 12     | 7.0    | 3.9    | 4.0    |
| HM-50      | 17                        | 9.0    | 16     | 17     | 8.3    | 4.5    | 3.6    |
| SS-50      | 17                        | 8.0    | 16     | 16     | 7.2    | 4.3    | 3.9    |
| TSP-50     | 18                        | 6.0    | 14     | 13     | 6.6    | 3.8    | 3.9    |
| CM1-150    | 20                        | 15     | 17     | 18     | 11     | 6.5    | 5.7    |
| CM2-150    | 21                        | 13     | 17     | 19     | 11     | 6.8    | 6.1    |
| TL-150     | 17                        | 11     | 16     | 17     | 9.3    | 5.3    | 4.5    |
| HM-150     | 19                        | 14     | 17     | 18     | 12     | 6.7    | 5.8    |
| SS-150     | 21                        | 14     | 17     | 20     | 11     | 7.1    | 5.3    |
| TSP-150    | 19                        | 8.0    | 17     | 18     | 10     | 5.3    | 4.4    |
| Control    | 14                        | 5.3    | 10     | 7.7    | 4.7    | 3.2    | 2.7    |
| P value    | 0.003                     | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 |
| LSD        | 3.0                       | 3.0    | 1.5    | 1.8    | 1.6    | 0.6    | 0.8    |

Table S24. The effect of P source on P concentration in corn for the Harney soil.

| Treatments | Corn harvests            |      |        |        |        |        |        |
|------------|--------------------------|------|--------|--------|--------|--------|--------|
|            | 1                        | 2    | 3      | 4      | 5      | 6      | 7      |
|            | -----<br>(g/kg)<br>----- |      |        |        |        |        |        |
| CM1-50     | 2.9                      | 2.1  | 1.4    | 1.1    | 0.9    | 1.1    | 1.1    |
| CM2-50     | 2.8                      | 2.4  | 1.4    | 1.1    | 0.9    | 1.1    | 1.3    |
| TL-50      | 2.7                      | 2.2  | 1.2    | 1.0    | 0.9    | 1.2    | 1.2    |
| HM-50      | 3.4                      | 2.9  | 1.3    | 1.3    | 1.0    | 1.2    | 1.3    |
| SS-50      | 2.9                      | 2.6  | 1.6    | 1.2    | 1.0    | 1.1    | 1.2    |
| TSP-50     | 3.0                      | 3.1  | 1.3    | 1.1    | 0.9    | 1.1    | 1.2    |
| CM1-150    | 3.2                      | 2.5  | 1.8    | 2.0    | 1.7    | 1.6    | 1.5    |
| CM2-150    | 3.5                      | 2.8  | 1.6    | 1.8    | 1.8    | 1.5    | 1.5    |
| TL-150     | 3.5                      | 3.0  | 1.6    | 1.4    | 1.2    | 1.1    | 1.3    |
| HM-150     | 4.9                      | 2.4  | 1.8    | 2.1    | 2.0    | 2.2    | 2.2    |
| SS-150     | 3.4                      | 2.7  | 2.0    | 1.9    | 1.8    | 1.7    | 2.0    |
| TSP-150    | 4.1                      | 2.7  | 1.4    | 1.4    | 1.5    | 1.5    | 1.5    |
| Control    | 2.4                      | 2.7  | 0.9    | 1.1    | 0.9    | 1.0    | 1.1    |
| P value    | 0.0001                   | 0.05 | 0.0007 | 0.0001 | 0.0001 | 0.0001 | 0.0001 |
| LSD        | 0.7                      |      | 0.4    | 0.2    | 0.3    | 0.2    | 0.2    |

Table S25. The effect of P source on corn P removal for the Harney soil.

| Treatments | Corn harvests             |        |        |        |        |        |        |
|------------|---------------------------|--------|--------|--------|--------|--------|--------|
|            | 1                         | 2      | 3      | 4      | 5      | 6      | 7      |
|            | -----<br>(mg/kg)<br>----- |        |        |        |        |        |        |
| CM1-50     | 23                        | 14     | 11     | 7.3    | 2.6    | 2.2    | 2.4    |
| CM2-50     | 25                        | 12     | 11     | 7.7    | 2.5    | 2.1    | 2.6    |
| TL-50      | 22                        | 10     | 9.0    | 6.0    | 2.6    | 2.2    | 2.3    |
| HM-50      | 29                        | 13     | 13     | 11     | 2.8    | 2.7    | 2.3    |
| SS-50      | 25                        | 11     | 13     | 9.0    | 2.8    | 2.4    | 2.2    |
| TSP-50     | 27                        | 10     | 10     | 7.3    | 2.6    | 2.1    | 2.4    |
| CM1-150    | 31                        | 18     | 15     | 18     | 4.6    | 5.0    | 4.3    |
| CM2-150    | 36                        | 18     | 15     | 17     | 5.1    | 5.2    | 4.6    |
| TL-150     | 28                        | 14     | 13     | 12     | 3.2    | 3.1    | 3.0    |
| HM-150     | 45                        | 17     | 16     | 19     | 5.5    | 7.1    | 6.3    |
| SS-150     | 36                        | 16     | 17     | 19     | 5.1    | 6.0    | 5.4    |
| TSP-150    | 40                        | 11     | 12     | 13     | 4.0    | 4.0    | 3.4    |
| Control    | 17                        | 7.1    | 4.0    | 4.2    | 2.6    | 1.6    | 1.6    |
| P value    | 0.0001                    | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 |
| LSD        | 5.2                       | 1.6    | 2.3    | 2.1    | 0.8    | 0.8    | 0.6    |

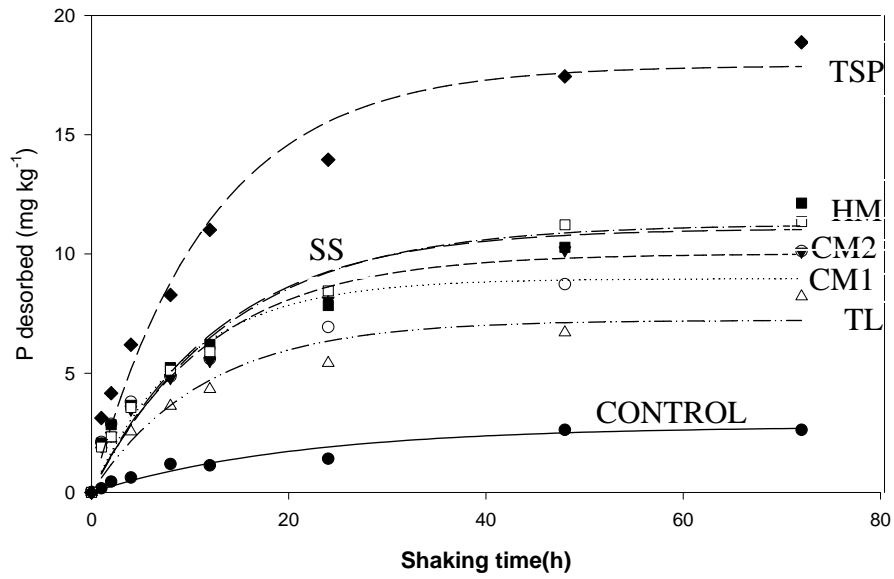


Figure S1. The effect of P source at 150 mg P / kg on P release from Eram-Lebo soil at T<sub>7</sub>.

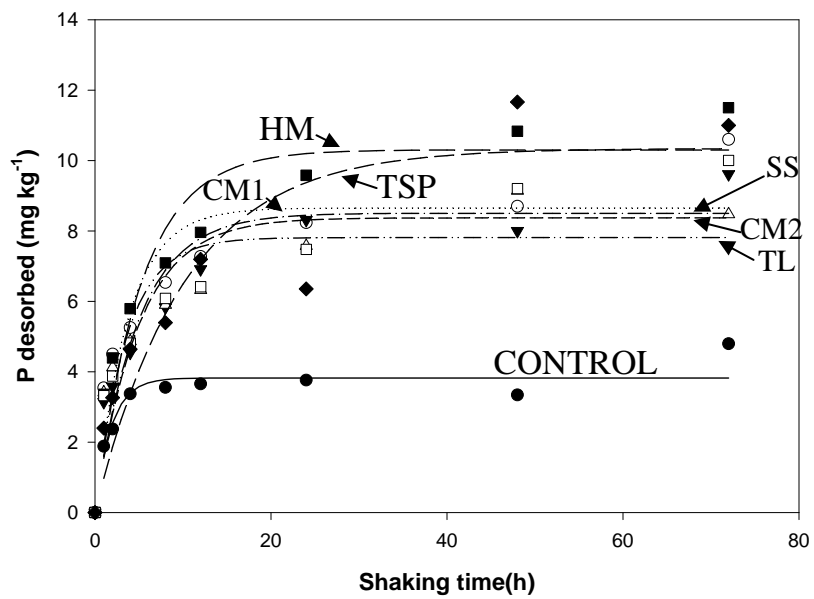


Figure S2. The effect of P source at 150 mg P / kg on P release from Ulysses soil at T7.