APPENDICES

Appendix Table 4-1. Extractable P on soil yard waste poultry litter, and poultry litter compost mixtures after 56 days incubation.

Treatment	P rate	Incubation period (days)				
		0	5	14	28	56
	----------	----------	mg P kg^{-1}	----------	----------	----------
Yard waste	26.2	6.7	0.77	0.64	0.45	1.2
Poultry litter	26.2	16.6	9.9	8.2	9.1	11.9
Poultry litter-yard waste compost						
C:N 15:1	17.5	10.9	4.4	3.64	3.7	4.1
	26.2	12.3	5.6	6.74	6.5	7.3
C:N 20:1	17.5	9.4	3.2	3.2	2.0	3.8
	26.2	9.7	4.3	4.9	4.9	5.1
C:N 25:1	17.5	10.7	5.1	4.2	3.4	5.2
	26.2	11.03	6.9	6.4	6.5	7.3

Appendix Table 4-2. Extractable P on sand yard waste poultry litter, and poultry litter compost mixtures after 56 days incubation.

Treatment	P rates	Incubation period (days)				
		0	5	14	28	56
	----------	----------	----------	mg P kg^{-1} ----------	----------	----------
Yard waste	26.2	0.6	0.6	0.4	0.3	1.1
Poultry litter	26.2	12.8	10.8	15.2	18.7	28.6
Poultry litter-yard waste compost						
C:N 15:1	17.5	2.7	5.8	7.8	7.9	8.8
	26.2	16.3	10.4	9.8	10.9	9.9
C:N 20:1	17.5	7.3	2.3	4.9	5.0	3.6
	26.2	2.6	7.3	7.8	8.9	5.6
C:N 25:1	17.5	4.8	6.7	7.1	6.5	7.3
	26.2	8.3	10.7	12.1	9.8	13.2

Appendix Table 5-1. Effect of poultry litter-yard waste compost on dry matter weight, tissue P, and P uptake by corn grown in the greenhouse on the Vance topsoil.

Treatment		Plant				
P source	P rate	Dry matter	Tissue P	Tissue N	P uptake	N uptake
	mg kg^{-1}	----g pot^{-1}----	----------%----------		----------mg pot^{-1}----------	
Control	0	2.7g †	0.23d	2.5a	6.2f	6.8c
Inorganic fertilizer($Ca(H_2P0_4)_2.H_20$)						
	8.7	3.7gf	0.24dc	2.4a	8.8ef	8.8c
	13.1	4.1efg	0.27bcd	2.2a	11.1def	9.0bc
	26.2	5.5cde	0.31ab	2.3a	17.0bc	12.7abc
Organic Amendment (Poultry litter-yard waste compost)						
C:N (15:1)	8.7	5.8bcd	0.26bcd	2.6a	15.1cd	15.1abc
C:N (15:1)	13.1	6.6abc	0.28abcd	2.5a	18.5abc	16.5a
C:N (15:1)	26.2	7.9a	0.30abc	2.2a	23.8a	17.4a
C:N (20:1)	8.7	4.9def	0.27bcd	2.3a	13.2cde	11.3abc
C:N (20:1)	13.1	5.7bcd	0.27bcd	2.5a	15.3cd	14.3abc
C:N (20:1)	26.2	7.1bcd	0.33a	2.3a	23.4a	16.3a
C:N (25:1)	8.7	5.9bcd	0.28abcd	2.2a	16.5cd	13.0abc
C:N (25:1)	13.1	6.5abcd	0.29abcd	2.4a	18.8abc	15.6ab
C:N (25:1)	26.2	7.3ab	0.30abc	2.3a	22.0ab	16.8a

†Means in the same column followed by the different letters are significantly different at 0.05 level of significance.

Appendix Table 5-2. Effect of yard waste-poultry litter compost on dry matter weight, tissue P, and P uptake by corn grown in the greenhouse on the Starr mixed horizon.

Treatment		Plant				
P source	P rate	Dry matter	Tissue P	Tissue N	P uptake	N uptake
	mg kg^{-1}	----g pot^{-1}----	----------%----------		----------mg pot^{-1}----------	
Control	0	2.8e†	0.14abc	2.4abc	3.9e	6.7c
Inorganic fertilizer (Ca (H_2P0_4)$_2$.$H_2$0)						
	8.7	3.1ed	0.13c	2.5abc	4.0e	7.8c
	13.1	5.1c	0.14abc	2.7a	7.1cd	14.0bc
	26.2	6.4ab	0.13c	2.7a	8.3bc	17.3a
Organic Amendment (Poultry litter-yard waste compost)						
C:N (15:1)	8.7	5.6bc	0.16abc	2.5abc	9.0bc	14.0b
C:N (15:1)	13.1	5.6bc	0.17a	2.3c	9.5b	12.8b
C:N (15:1)	26.2	7.1a	0.17a	2.5abc	12.1a	17.8a
C:N (20:1)	8.7	3.1ed	0.14abc	2.6abc	4.3e	8.1de
C:N (20:1)	13.1	3.8d	0.15abc	2.6abc	5.7ed	9.8cd
C:N (20:1)	26.2	5.2c	0.16abc	2.3c	8.3bc	12.0cb
C:N (25:1)	8.7	3.9d	0.14abc	2.4abc	5.5ed	9.3cde
C:N (25:1)	13.1	5.1c	0.15abc	2.7ab	7.6bcd	13.6b
C:N (25:1)	26.2	5.4c	0.16abc	2.6abc	8.6abc	14.0b

†Means in the same column followed by the different letters are significantly different at 0.05 level of significance

Appendix Table 5-3. Effect of yard waste-poultry litter compost on dry matter weight, tissue P, tissue N, P uptake, and N uptake by corn grown in the greenhouse on the Vance subsoil.

Treatment		Plant				
P source	P rate	Dry matter	Tissue P	Tissue N	P uptake	N uptake
	mg kg^{-1}	----g pot^{-1}----	----------%----------		----------mg pot^{-1} ----------	
Control	0	1.0f †	0.11abc	3.4a	1.1f	3.5e
Inorganic fertilizer (Ca (H_2P0_4)$_2$.$H_2$0)						
	13.1	1.8edf	0.09bc	2.7abc	1.6ef	4.8ed
	26.2	2.0edf	0.09bc	2.6bc	1.8ef	5.1ed
	52.4	2.7cd	0.10abc	2.1c	2.7cde	5.6ed
	78.6	3.2cb	0.12ab	2.1c	3.8bc	6.7cd
Organic Amendment (Poultry litter-yard waste compost)						
C:N (15:1)	52.4	3.3cb	0.13a	2.1c	4.3b	6.9cd
C:N (20:1)	13.1	1.3ef	0.11abc	2.7ab	1.4f	3.5e
C:N (20:1)	26.2	2.1ed	0.09bc	2.2bc	1.9ef	4.6ed
C:N (20:1)	52.4	3.2cb	0.08c	2.1c	2.6cde	6.7cd
C:N (25:1)	13.1	1.9edf	0.09bc	2.8ab	1.7ef	5.1ed
C:N (25:1)	26.2	2.7ed	0.09bc	2.4bc	2.4def	6.6cd
C:N (25:1)	52.4	3.9 b	0.09bc	2.2bc	3.7bc	8.6bc
Poultry litter	13.1	3.3cb	0.11abc	2.5bc	3.6bcd	8.2bc
Poultry litter	26.2	3.8b	0.12ab	2.5bc	4.6b	9.4b
Poultry litter	52.4	5.9a	0.12ab	2.2bc	7.0a	13.0a

†Means in the same column followed by the different letters are significantly different at 0.05 level of significance.

Appendix Table 5-4. Effect of yard waste-poultry litter compost on dry matter weight, tissue P, tissue N, P uptake and N uptake by corn grown in the greenhouse on the mine tailings.

Treatment		Plant				
P source	P rate	Dry matter	Tissue N	Tissue P	P uptake	N
	----mg kg^{-1}-	----g pot^{-1}-	----------%----------		--------mg pot^{-1}----------	
Control	0	1.3g	3.4 ab †	0.09b	1.2g	4.3g
		Inorganic fertilizer				
$Ca(H_2PO_4)_2.H_2O$	15.3	2.4ef	3.0abc	0.15ab	3.6cde	7.2efg
	30.6	2.6 ef	3.1abc	0.12ab	3.1edgf	7.9edgf
	61.2	4.2cb	2.8c	0.12ab	5.0bc	11.6bcd
	91.8	4.2cb	2.9bc	0.13ab	5.5ab	12.3abc
		Organic Amendment (Poultry litter-yard waste compost)				
C:N (15:1)	15.3	1.9gf	3.2abc	0.11ab	2.1gef	6.3efg
C:N (15:1)	30.6	2.7efd	3.1abc	0.11ab	3.1edgf	8.1cdef
C:N (15:1)	61.2	5.6a	2.8c	0.11ab	6.1ab	15.7ab
C:N (20:1)	15.3	1.8gf	3.1abc	0.09b	1.6gf	5.7gf
C:N (20:1)	30.6	2.2fg	3.0abc	0.11ab	2.4gef	6.5gef
C:N (20:1)	61.2	3.4bcd	2.8c	0.14ab	4.7bcd	9.4cdef
C:N (25:1)	15.3	1.9gf	2.9bc	0.12ab	2.3gef	5.6gf
C:N (25:1)	30.6	2.5ef	2.9bc	0.11ab	3.0edgf	7.4gef
C:N (25:1)	61.2	3.7bc	2.7c	0.13ab	4.8bcd	10.0 cde
Poultry litter	15.3	2.6ef	3.5a	0.10ab	2.6edgf	9.3cdef
Poultry litter	30.6	2.7efd	3.4ab	0.12ab	3.4cdef	9.3cdef
Poultry litter	61.2	4.6ab	3.4ab	0.16a	7.5a	15.9a

Appendix Table 5-5. Effect of yard waste poultry litter compost on Cu and Zn concentration in young corn plant tissue in the greenhouse on the Starr mixed horizons and Vance topsoil.

		Starr		Vance topsoil	
Treatment		Elements			
P source	P rate	Cu	Zn	Cu	Zn
	---------- mg kg^{-1}----------				
Control	0	9.2a†	163ab	10.4a	76a
Inorganic fertilizer (Ca $(H_2P0_4)_2.H_20$)					
	8.7	10.5a	149ab	10.4a	66ab
	13.1	8.9a	140ab	8.9a	61ab
	26.2	8.2a	125b	8.0a	47ab
Organic Amendment (Poultry litter-yard waste compost) compost)					
C:N (15:1)	8.7	8.0a	164ab	8.4a	59ab
C:N (15:1)	13.1	8.4a	161ab	8.3a	42b
C:N (15:1)	26.2	8.6a	199ab	10.0a	47ab
C:N (20:1)	8.7	10.1a	210ab	7.6a	55ab
C:N (20:1)	13.1	9.5a	200ab	8.1a	61ab
C:N (20:1)	26.2	9.1a	200ab	8.4a	50ab
C:N (25:1)	8.7	9.4a	225a	8.6a	64ab
C:N (25:1)	13.1	8.5a	208ab	12.6a	50ab
C:N (25:1)	26.2	7.3a	179ab	5.9a	57ab

† Means in the same column followed by the different letters are significantly different at 0.05 level of significance.

Appendix Table 5-6. Effect of yard waste-poultry litter compost on Cu and Zn concentration in young corn plants grown corn plant tissue in the greenhouse on theVance subsoil.

Treatment		Elements		Compost
P source	P rate	Cu	Zn	Rate
	----------mg kg^{-1}----------			
Control	0	3.1b†	43abc	---
Inorganic fertilizer (Ca $(H_2P0_4)_2.H_20$)				
	13.1	7.3ab	41bc	---
	26.2	7.3ab	40bc	---
	52.4	6.2ab	37bc	---
	78.6	5.7ab	37bc	---
Organic Amendment				
Poultry litter-yard waste compost				
C:N (15:1)	52.4	5.7ab	38bc	1100
C:N (20:1)	13.1	3.9ab	55a	540
C:N (20:1)	26.2	8.3ab	39bc	1100
C:N (20:1)	52.4	10.9a	36c	2200
C:N (25:1)	13.1	5.7ab	41bc	950
C:N (25:1)	26.2	7.3ab	45abc	1900
C:N (25:1)	52.4	4.2ab	38bc	3800
Poultry litter	13.1	6.8ab	48ab	1100
Poultry litter	26.2	7.3ab	46abc	2200
Poultry litter	52.4	8.9ab	43abc	4400

†Means in the same column followed by the different letters are significantly different at 0.05 level of significance.

Appendix Table 5-7. Effect of yard waste-poultry litter compost on Cu and Zn in young corn plants corn grown in the greenhouse on the mine tailings.

Treatment		Elements		Compost
P source	P rate	Cu	Zn	Rate
	----------mg kg^{-1}----------			
Control	0	9.4ab†	65a	---
Inorganic fertilizer (Ca $(H_2P0_4)_2.H_20$)				
	15.3	7.8ab	81a	---
	30.6	6.2ab	71a	---
	61.2	5.7ab	82a	---
	91.8	4.7b	62a	---
Organic Amendment				
Poultry litter-yard waste compost				
C:N (15:1)	15.3	7.3ab	73a	610
C:N (15:1)	30.6	9.4ab	84a	1220
C:N (15:1)	61.2	7.8ab	76a	2400
C:N (20:1)	15.3	7.8ab	60a	620
C:N (20:1)	30.6	12.6ab	81a	1240
C:N (20:1)	61.2	9.4ab	74a	2480
C:N (25:1)	15.3	10.1ab	69a	1090
C:N (25:1)	30.6	10.4ab	71a	2180
C:N (25:1)	61.2	6.2ab	69a	4370
Poultry litter	15.3	14.0a	74a	1270
Poultry litter	30.6	12.5ab	67a	2550
Poultry litter	61.2	13.5a	64a	5098

†Means in the same column followed by the different letters are significantly different at 0.05 level of significance.

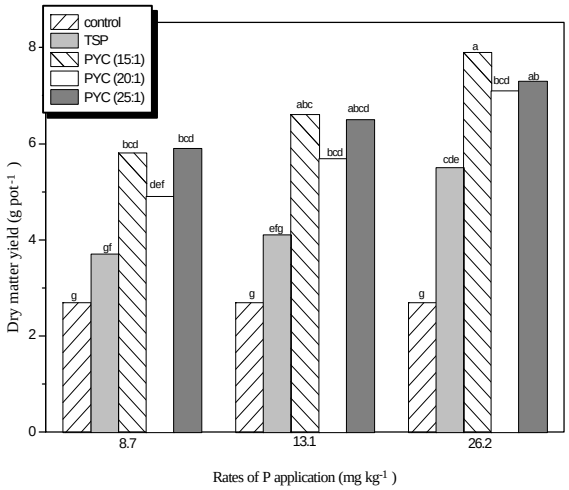

Fig. 1. Dry matter yield of corn as affected by the rate of P applied as PYC at 15:1, 20:1, 25:1, and TSP on Vance topsoil.

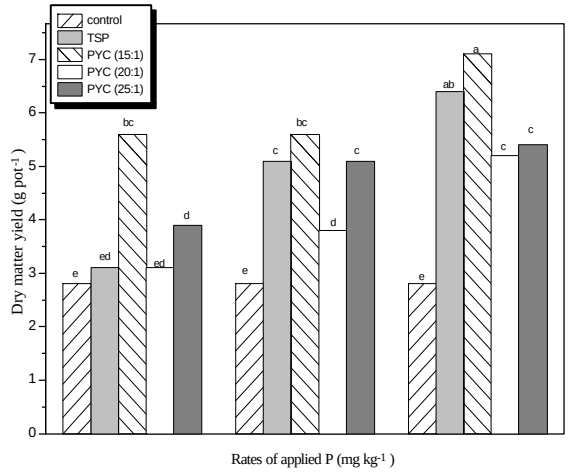

Fig. 2. Dry matter yield of corn plant as affected by rate of P applied as PYC at C:N 15:1 ,20:1, 25:1, and TSP on Starr soil

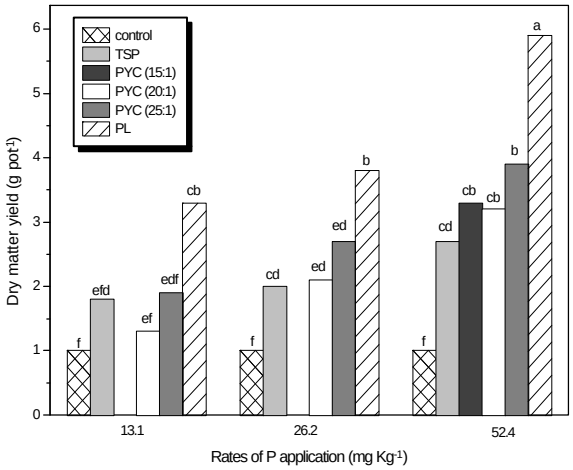

Fig. 3. Dry matter yield of corn plant as affected by the rate of P applied as PYC at 15:1, 20:1, 25:1, TSP, and PL on Vance subsoil.

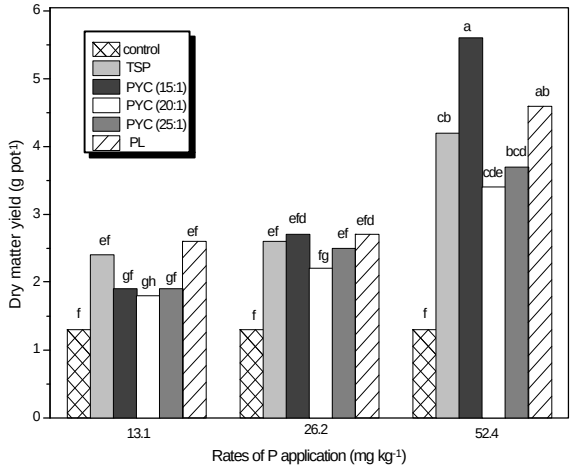

Fig. 4. Dry matter yield of corn plant as affected by rate of P applied as PYC at 15:1, 20:1, 25:1, TSP, and PL on mine tailings.

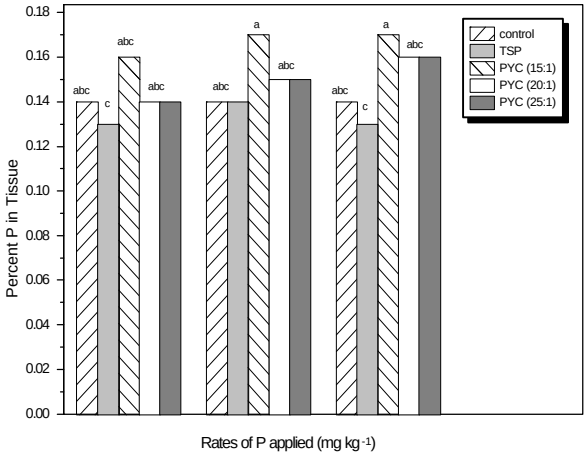

Fig. 5. Phosphorus concentration of corn plat as affected by the rate of P application of PYC and TSP on Starr soil.

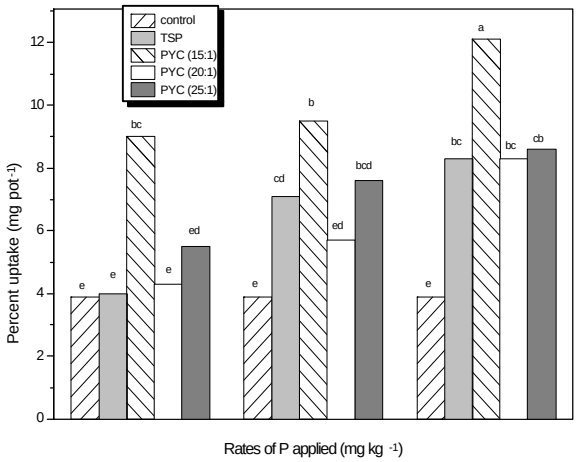

Fig. 6. Phosphorus uptake by corn as affected by rate of P applied as PYC at C:N 15:1, 20:1, 25:1, and TSP on Starr soil.

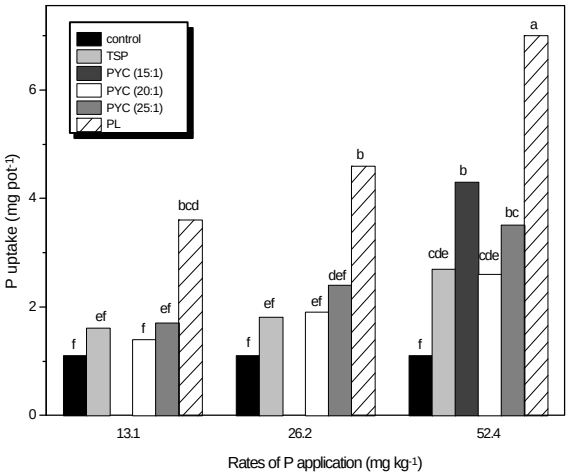

Fig. 9. Phosphorus uptake by corn plant as affected by rate of P applied as PYC at C:N of 15:1, 20-;1, and 25:1, TSP ,and PL on Vance subsoil.

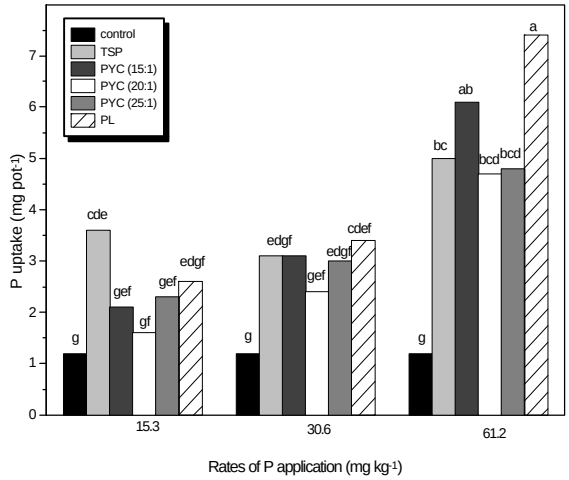

Fig. 10. Phosphorus uptake by corn plant as affected by different rate of P applied as PYC, TSP, and PL on mine tailings.

Appendix 6-1. Effect of compost on corn tissue P and P uptake, dry matter, of young corn plants extractable P, and corn grain yield in a field experiment on Vance sandy loam.

Treatment					Ext.P †	Grain	Compost *
P source	P rate	Tissue P	P uptake	DM		Yield	rate
	--kg ha^{-1}--	--%--	----------kg ha^{-1}----------		----------kg ha^{-1}----------		
Control	0	0.18a‡	0.11d	64.5d	1.5c	6340d	---
	Inorganic fertilizer ($Ca(H_2PO_4)_2.H_2O$)						
	19.6	0.27a	0.32cd	119.7cd	3.1c	8860c	---
	39.2	0.29a	0.38cd	132.8cd	5.3bc	9530bc	---
	58.8	0.32a		234.5bcd	5.8bc	10520abc	---
	Organic amendments						
Poultry	39.2	0.36a		186.5bcd	9.7bc	11470ab	3900
Poultry Litter-Yard Waste compost							
C:N	43.6	0.36a	0.59cd	165.9bcd	9.3bc	11200ab	2850
C:N	87.2	0.28a	0.64bcd	228.3bcd	8.3bc		5700
C:N	130.2	0.40a	1.46ab	366.2ab	23.7	11740a	8550
C:N	43.6	0.37a	0.64bcd	173.6bcd	4.5bc	10570abc	3220
C:N	87.2	0.34a	1.06bc	312.0abc	7.0bc	11350ab	6440
C:N	130.2	0.37a	1.95a	528.1a	15.2ab	11690a	9660
C:N	43.6	0.32a	0.56cd	174.9bcd	4.3bc		4840
C:N	87.2	0.30a	0.75bcd	250.7bcd	11.6bc	11740a	9670
C:N	130.2	0.40a	1.19abc	299.8bc	9.9bc	10900ab	14500

† Mehlich-1 extractable P

‡ Means followed by the same letter within columns are significantly different at 0.05 level of significance

* Based on wet weight

Appendix 6-2. Effect of poultry-yard waste compost application on corn tissue N and N uptake corn, and dry matter of young corn plants, plant height and corn yield in a field experiment on Vance sandy loam.

Treatment					Plant		Compost *
P source	P rate	Tissue N	N	DM †	height	Yield	rate
	--kg ha^{-}	--%--	-------kg ha^{-1}-------		----cm----	---------kg ha^{-1}---------	
Control	0	2.5a ‡	1.6d	64.5d	113e	6340d	---
	Inorganic fertilizer ($Ca(H_2PO_4)_2.H_2O$)						
	19.6	2.8a	3.4cd	119.7cd	140cde	8860c	---
	39.2	2.6a	3.5cd	132.8cd	136de	9530bc	---
	58.8	2.9a		234.5bcd	160abcd		---
	Organic amendments						
Poultry	39.2	3.1a	5.8bcd	186.5bcd	164abcd	11470ab	3900
Poultry Litter-Yard waste compost							
C:N (15:1)	43.6	2.8a	4.6bcd	165.9bcd	160abcd	11200ab	2850
C:N (15:1)	87.2	3.0a	6.8bcd	228.3bcd	160abcd		5700
C:N (15:1)	130.2	2.9a	10.6ab		178ab	11740a	8550
C:N (20:1)	43.6	2.9a	5.0bcd	173.6bcd	150bcd		3220
C:N (20:1)	87.2	2.8a	8.7bc	312.0abc	171abcd	11350ab	6440
C:N (20:1)	130.2	3.1a	16.4a	528.1a	191a	11690a	9660
C:N (25:1)	43.6	2.7a	4.7bcd	174.9bcd	148bcde		4840
C:N (25:1)	87.2	2.9a	7.3bcd	250.7bcd	171abcd	11740a	9670
C:N (25:1)	130.2	2.6a	7.8bcd	299.8bc	176abc		14500

† Mehlich-1 extractable P

‡ Means followed by the same letter within columns are significantly different at 0.05 level of significance

Appendix. 6-3. Effect of poultry litter-yard waste compost application on corn tissue Cu and Zn grown in a field experiment on Vance sandy loam.

Treatment		Elements		Compost*
P source	P rate	Cu	Zn	rate
	---kg ha^{-1}--	---------mg kg^{-1}---------		------kg ha^{-1}-----
Control	0	8.9a†	69a	---
	Inorganic fertilizer (Ca $(H_2PO_4)_2.H_2O$)			
	19.6	8.4a	58a	---
	39.2	7.6a	53a	---
	58.8	8.3a	55a	---
Poultry litter	39.2	9.7a	67a	3900
	Yard Waste-Poultry Litter compost			
C:N (15:1)	43.6	9.7a	57a	2850
C:N (15:1)	87.2	9.9a	63a	5700
C:N (15:1)	130.2	9.2a	59a	8550
C:N (20:1)	43.6	9.9a	60a	3220
C:N (20:1)	87.2	7.6a	54a	6440
C:N (20:1)	130.2	8.9a	58a	9660
C:N (25:1)	43.6	8.2a	59a	4840
C:N (25:1)	87.2	9.3a	62a	9670
C:N (25:1)	130.2	8.5a	59a	14500

† Means followed by the different letters within columns are significantly at 0.05 level significance.

* Based on wet weight.