




Concentrated PK Fertilisers

## TRIAL REPORT 3

# Fibrophos for Arable

Carried out By:	LA Project 484
Levington Agriculture Ltd Levington Park Ipswich Suffolk IP10 0LU	Trial work commenced: 31.03.1994 Trial work completed: 08.08.1994 Lab work completed: 28.10.1994
	P A Wallace 



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FIELD TRIAL OF FIBROPHOS ON SPRING BARLEYC O N T E N T S

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## Project Plans

ABBREVIATIONS

CV%	Co-efficient of Variation
GM	General Mean
ha	hectare
kg	kilogram
LA	Levington Agriculture Ltd
LSD	Least Significant Difference
m	metre
mg/l	milligrams/litre
MRT	multiple range test
NS	not significant
SE	Standard Error
+	(P=0.10) significant at 0.10 probability level
*	(P=0.05) significant at 0.05 probability level
**	(P=0.01) significant at 0.01 probability level

FIELD TRIAL OF FIBROPHOS ON SPRING BARLEYOBJECTIVE

To evaluate the effectiveness of P and K in Fibrophos when applied to spring barley.

SUMMARY

A replicated trial was carried out by Levington Agriculture on spring barley grown at Kirton in Suffolk on soil of pH 7.5, phosphate index 1 (low) and potash index 0 (very low). Fibrophos was compared with TSP and muriate of potash at various rates, and against an untreated control (no phosphate or potash). The harvested grain was tested for specific weight and P, K, N and S in the grain determined.

Grain yield t/ha @ 85 % DM

Differences between treatments were not statistically significant by analysis of variance, but means could be separated by Duncan's multiple range test.

Phosphate variable, potash balanced

Fibrophos tended to result in an increase in yield with a maximum at 250 kg/ha of Fibrophos (60 kg P<sub>2</sub>O<sub>5</sub>/ha). A similar response was seen with TSP but maximum yield was obtained (the same as 250 kg/ha Fibrophos) at 120 kg P<sub>2</sub>O<sub>5</sub>/ha.

Potash variable, phosphate balanced

Increasing rate of Fibrophos tended to cause an increase in yield with a maximum yield at 833 kg/ha of Fibrophos (100 kg K<sub>2</sub>O/ha). The difference in yield from untreated control (treatment 11) and positive rates of Fibrophos (treatments 5 and 6) were significant by Duncan's MRT as shown below. Less response was seen with MP but maximum yield was obtained (although lower than 833 kg/ha Fibrophos) at 150 kg K<sub>2</sub>O/ha.

<u>Trt</u>	<u>kg P<sub>2</sub>O<sub>5</sub></u>		<u>kg K<sub>2</sub>O</u>		<u>Grain yield</u> <u>t/ha @ 85% mc</u>	<u>Duncan's MRT</u> <u>letter code</u>
	<u>FF</u>	<u>TSP</u>	<u>FF</u>	<u>MP</u>		
11	0	0	0	0	3.99	a
5	100	100	50	0	4.45	b
6	200	0	100	0	4.53	b

**Grain specific weight kg/hl**

Highly significant increases in specific weight were found due to treatments relative to control which received no phosphate or potash.

Phosphate variable, potash balanced

There was a significant increase in grain specific weight from 500 kg/ha of Fibrophos (120 kg P<sub>2</sub>O<sub>5</sub>/ha). There was no significant response with TSP.

Potash variable, phosphate balanced

There was also a significant increase in grain specific weight from 833 kg/ha of Fibrophos (100 kg K<sub>2</sub>O/ha). There was no significant response with MP.

**Grain analysis**

Although significant differences in grain nutrient contents and yield were found, they were small. However, highly significant effects were found between treatments for N:S ratio.

The control treatment gave a N:S ratio of 15.1 which is considered to be within the borderline range for deficiency (14-16), whereas Fibrophos acting as a source of potash gave a N:S ratio of 13.9 at 417 kg product/ha with additional phosphate, and a N:S ratio of 13.8 at 833 kg product/ha alone, ratios considered to indicate that deficiency was unlikely.

**TREATMENTS**

	Rate of Fibrophos Product kg/ha	P <sub>2</sub> O <sub>5</sub> (kg/ha)			K <sub>2</sub> O (kg/ha)		
		FP	TSP	TOTAL	FP	MP	TOTAL
1. Fibrophos as a P Source	0	0	0	0	0	150	150
2. " " "	250	60	0	60	30	120	150
3. " " "	500	120	0	120	60	90	150
4. Fibrophos as a K Source	0	0	200	200	0	0	0
5. " " "	417	100	100	200	50	0	50
6. " " "	833	200	0	200	100	0	100
7. TSP and MP as P and K Sources	0	0	60	60	0	150	150
8. " " "	0	0	120	120	0	150	150
9. " " "	0	0	200	200	0	150	150
10. " " "	0	0	200	200	0	75	75
11. Control	0	0	0	0	0	0	0

FP = Fibrophos 24% P<sub>2</sub>O<sub>5</sub>, 12% K<sub>2</sub>O  
TSP = Triple Superphosphate 47% P<sub>2</sub>O<sub>5</sub>  
MP = Muriate of Potash 60% of K<sub>2</sub>O

**METHODS**

The trial was conducted by Levington Agriculture at Kirton, Suffolk on spring barley. The Fibrophos was tested at three rates as a source of phosphate by balancing the potash with muriate of potash, and at three rates as a source of potash by balancing the phosphate with TSP, against TSP and muriate of potash in four combinations, and untreated control. Each treatment was replicated four times in the trial which was of factorial design and statistically analysed accordingly.

Site details are shown in table 1 and the trial diary in Table 2.

No visual differences in growth were seen during the season and there was no lodging at harvest. The plots were harvested, at which time there was no lodging, yield was recorded and the grain assessed for specific weight and P, K, N and S content.

Full details are shown in the attached Project Plans.

**RESULTS**

The results tables 3 and 4 have been set out to show the responses to Fibrophos at the various rates against TSP and muriate of potash, and untreated control.

**Grain yield t/ha @ 85 % DM**

Differences between treatments were not statistically significant by analysis of variance, but means could be separated by Duncan's multiple range test.

Phosphate variable, potash balanced

There was an upward trend in yield with increasing rate of Fibrophos (Treatments 1-3) with a maximum yield at 250 kg/ha of Fibrophos (60 kg P<sub>2</sub>O<sub>5</sub>/ha). A similar response was seen with TSP (Treatments 1,7,8,9) but maximum yield was obtained (the same as 250 kg/ha Fibrophos) at 120 kg P<sub>2</sub>O<sub>5</sub>/ha.

Potash variable, phosphate balanced

There was also an upward trend in yield with increasing rate of Fibrophos (Treatments 4-6) with a maximum yield at 833 kg/ha of Fibrophos (100 kg K<sub>2</sub>O/ha). The difference in yield from untreated control (treatment 11) and positive rates of Fibrophos (treatments 5 and 6) were significant by Duncan's MRT as shown below. Less response was seen with MP (Treatments 4,10,9) but maximum yield was obtained (although lower than 833 kg/ha Fibrophos) at 150 kg K<sub>2</sub>O/ha.

Trt	kg P <sub>2</sub> O <sub>5</sub>		kg K <sub>2</sub> O		Grain yield t/ha @ 85% mc	Duncan's MRT letter code
	FF	TSP	FF	MP		
11	0	0	0	0	3.99	a
5	100	100	50	0	4.45	b
6	200	0	100	0	4.53	b

Fibrophos application resulted in the highest yields which may be due to the combination of factors including P and K content and other nutrients.

**Grain specific weight kg/hl**

Highly significant increases in specific weight were found due to treatments relative to control which received no phosphate or potash.

Phosphate variable, potash balanced

There was a significant increase in grain specific weight from 500 kg/ha of Fibrophos (120 kg P<sub>2</sub>O<sub>5</sub>/ha) when comparing treatments 1-3. There was no significant response with TSP (Treatments 1,7,8,9).

Potash variable, phosphate balanced

There was also a significant increase in grain specific weight from 833 kg/ha of Fibrophos (100 kg K<sub>2</sub>O/ha) when comparing treatments 4-6. There was no significant response with MP (Treatments 4,10,9). The significant response of treatment 4 over 11 (control) being due to phosphate as shown by comparing treatment 9 (+K) with 4 (-K).

**Grain P content and P yield**

Significant differences in P contents and yields were found.

Phosphate variable, potash balanced

Fibrophos did not significantly affect P content or P yield, whereas TSP significantly increased both at 120 kg P<sub>2</sub>O<sub>5</sub>/ha.

Potash variable, phosphate balanced

Due to the higher rates of TSP to balance P at the low rates of Fibrophos, and the effect of TSP observed above, Fibrophos appeared to result in a reduced P content with increasing rate of Fibrophos. However, P yield was not significantly affected by Fibrophos rates. Muriate of potash did not significantly affect P content or P yield.

**Grain K content and K yield**

Significant differences in K contents were found, but not in K uptake.

Phosphate variable, potash balanced

Fibrophos significantly increased K content of grain at 120 kg P<sub>2</sub>O<sub>5</sub>/ha, despite K being balanced, although K yields were not significantly affected. TSP did not show any significant effects in grain K content or K yield.

Potash variable, phosphate balanced

There was a trend of increasing K yield with increasing Fibrophos rate. Muriate of potash significantly increase K content at 75 kg K<sub>2</sub>O but not at the higher rate. There was a similar non-significant trend in K yield.

**Grain N content and N yield**

Significant differences in N contents were found, but not in N uptake.

Phosphate variable, potash balanced

Fibrophos significantly decreased N content of grain at 60 kg P<sub>2</sub>O<sub>5</sub>/ha, but not at 120 kg P<sub>2</sub>O<sub>5</sub>/ha, but N yield was not significantly affected. TSP did not give any significant effects on N content or N yield.

Potash variable, phosphate balanced

Fibrophos significantly decreased N content of grain at 100 kg K<sub>2</sub>O/ha, but N yield was not significantly affected. Muriate of potash did not give any significant effects on N content or N yield.

**Grain S content and S yield, and N:S ratio**

No significant differences in S contents or yield were found. However, highly significant effects were found between treatments for N:S ratio.

The control treatment gave a N:S ratio of 15.1 which is considered to be within the borderline range for deficiency (14-16), whereas Fibrophos acting as a source of potash gave a N:S ratio of 13.9 at 417 kg product/ha with additional phosphate, and a N:S ratio of 13.8 at 833 kg product/ha alone, ratios considered to indicate that deficiency was unlikely.

**TABLE 1** SITE DETAILS

Trial Id:	4840
Site name:	Kirton
County:	Suffolk
OS Map Ref:	TM 266407
Soil analysis:	
pH	7.5
P mg/l (index)	28 (1)
K mg/l (index)	59 (0)
Mg mg/l (index)	8 (0)
Organic matter %	0.6
Clay %	10
Silt %	32
Sand %	58
Texture	Sandy loam
Last crops 1993:	Spring barley
1992:	Set-a-side
1991:	Linseed
1990:	Winter barley
Trial crop:	Spring barley
Variety:	Alexis
Date sown:	10.3.94

**TABLE 2** TRIAL DIARY

17.3.94	Soil sampled
31.3.94	Site marked out
20.4.94	Treatment P and K applied
	Uniform nitrogen applied GS 13
8.8.94	Plots harvested

TABLE 3 Summary of grain analysis

<u>Treatment</u>	<u>Nutrient Source/rate</u>	<u>Grain % P of DM</u>	<u>Grain % K of DM</u>	<u>Grain % N of DM</u>	<u>Grain % S of DM</u>	<u>Grain N:S ratio</u>
11	Control (nil)	0.40	0.63	2.29	0.152	15.07
Phosphate Fibrophos						
1	0	0.38	0.59	2.33	0.154	15.16
2	60	0.38	0.65	2.19	0.149	14.74
3	120	0.38	0.60	2.24	0.154	14.58
TSP						
1	0	0.38	0.59	2.33	0.154	15.16
7	60	0.39	0.61	2.29	0.155	14.82
8	120	0.41	0.61	2.23	0.152	14.65
9	200	0.41	0.61	2.28	0.157	14.57
Potash Fibrophos						
4	0	0.41	0.63	2.23	0.158	14.18
5	50	0.40	0.62	2.16	0.156	13.87
6	100	0.38	0.64	2.07	0.150	13.81
Muriate of potash						
4	0	0.41	0.63	2.23	0.158	14.18
10	75	0.42	0.67	2.28	0.156	14.61
9	150	0.41	0.61	2.28	0.157	14.57
LSD (0.05)		0.03	0.04	0.13	0.007	0.72
Significance		*	*	*	NS	**
CV%		4.84	4.38	4.15	3.306	3.42
S.E./plot		0.02	0.03	0.09	0.005	0.50

TABLE 4 Summary of grain and nutrient yields

Treatment	Nutrient Source/rate	Grain Yield t/ha @85%	Specific weight kg/hl	Grain P yield kg/ha	Grain K yield kg/ha	Grain N yield kg/ha	Grain S yield kg/ha
11	Control (nil)	3.99	57.10	13.73	21.28	77.41	5.15
Phosphate Fibrophos							
1	0	4.18	57.80	13.59	21.04	82.54	5.46
2	60	4.36	58.85	14.19	23.94	81.15	5.52
3	120	4.31	59.63	13.76	21.91	82.00	5.62
TSP							
1	0	4.18	57.80	13.59	21.04	82.54	5.46
7	60	4.08	58.53	13.40	21.13	79.19	5.35
8	120	4.39	57.85	15.11	22.90	83.29	5.68
9	200	4.37	58.20	15.32	22.56	84.56	5.83
Potash Fibrophos							
4	0	4.18	58.43	14.63	22.34	79.26	5.60
5	50	4.45	58.65	15.17	23.56	81.30	5.87
6	100	4.53	59.55	14.51	24.60	79.43	5.76
Muriate of potash							
4	0	4.18	58.43	14.63	22.34	79.26	5.60
10	75	4.26	57.65	15.08	23.99	82.54	5.65
9	150	4.37	58.20	15.32	22.56	84.56	5.83
LSD (0.05)		0.39	1.10	1.25	2.51	5.95	0.45
Significance		NS	**	*	+	NS	+
CV%		6.27	1.31	6.02	7.67	5.08	5.60
S.E./plot		0.27	0.76	0.87	1.74	4.12	0.31

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TABLE 5 Fibrophos Trials

LA Trial ID : 4840  
 Site name : Kirton  
 Client name & number : John Hatcher & Co Ltd  
 Assessment Date : 8/8/94  
 DAT 1 : 110  
 Variable : Grain % P of DM

Treatment	Rep 1	Rep 2	Rep 3	Rep 4	Mean	Duncan's MRT 5%
1 Fibrophos P source	0.38	0.38	0.36	0.41	0.38	ab
2 " "	0.37	0.37	0.39	0.40	0.38	ab
3 " "	0.38	0.39	0.37	0.36	0.38	a
4 Fibrophos K source	0.37	0.42	0.43	0.43	0.41	bc
5 " "	0.37	0.42	0.39	0.43	0.40	abc
6 " "	0.35	0.38	0.40	0.38	0.38	a
7 TSP/MP as PK source	0.41	0.39	0.38	0.37	0.39	abc
8 " "	0.40	0.41	0.40	0.41	0.41	abc
9 " "	0.38	0.42	0.43	0.42	0.41	bc
10 " "	0.41	0.44	0.40	0.42	0.42	c
11 Control	0.43	0.41	0.38	0.40	0.40	abc

Mean 0.39 0.40 0.39 0.40 0.40

LSD(0.05) 0.03

LSD(0.01) 0.04

Significance \*

CV% 4.84

S.E./PLOT 0.02

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TABLE 6 Fibrophos Trials

LA Trial ID : 4840  
 Site name : Kirton  
 Client name & number : John Hatcher & Co Ltd  
 Assessment Date : 8/8/94  
 DAT 1 : 110  
 Variable : Grain % K of DM

Treatment	Rep 1	Rep 2	Rep 3	Rep 4	Mean	Duncan's MRT 5%
1 Fibrophos P source	0.61	0.58	0.58	0.60	0.59	a
2 " "	0.64	0.72	0.59	0.63	0.65	cd
3 " "	0.61	0.61	0.59	0.58	0.60	ab
4 Fibrophos K source	0.65	0.62	0.62	0.62	0.63	abcd
5 " "	0.64	0.62	0.60	0.63	0.62	abcd
6 " "	0.60	0.70	0.62	0.64	0.64	bcd
7 TSP/MP as PK source	0.63	0.59	0.60	0.62	0.61	abc
8 " "	0.63	0.60	0.61	0.61	0.61	abc
9 " "	0.61	0.63	0.60	0.59	0.61	abc
10 " "	0.71	0.67	0.60	0.68	0.67	d
11 Control	0.68	0.61	0.62	0.60	0.63	abcd

Mean 0.64 0.63 0.60 0.62 0.62

LSD(0.05) 0.04

LSD(0.01) 0.05

Significance \*

CV% 4.38

S.E./PLOT 0.03

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TABLE 7 Fibrophos Trials

LA Trial ID : 4840  
 Site name : Kirton  
 Client name & number : John Hatcher & Co Ltd  
 Assessment Date : 8/8/94  
 DAT 1 : 110  
 Variable : Grain % N of DM

Treatment	Rep 1	Rep 2	Rep 3	Rep 4	Mean	Duncan's MRT 5%
1 Fibrophos P source	2.35	2.35	2.25	2.35	2.33	c
2 " "	2.16	2.10	2.35	2.15	2.19	abc
3 " "	2.36	2.20	2.20	2.20	2.24	bc
4 Fibrophos K source	2.13	2.30	2.20	2.30	2.23	bc
5 " "	2.03	2.30	2.15	2.15	2.16	ab
6 " "	2.01	2.05	2.10	2.10	2.07	a
7 TSP/MP as PK source	2.36	2.40	2.20	2.20	2.29	bc
8 " "	2.27	2.35	2.20	2.10	2.23	bc
9 " "	2.26	2.40	2.25	2.20	2.28	bc
10 " "	2.23	2.45	2.25	2.20	2.28	bc
11 Control	2.45	2.40	2.20	2.10	2.29	bc

Mean 2.24 2.30 2.21 2.19 2.23

LSD(0.05) 0.13  
 LSD(0.01) 0.18  
 Significance \*

CV% 4.15  
 S.E./PLOT 0.09

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**TABLE 8** Fibrophos Trials

LA Trial ID : 4840  
 Site name : Kirton  
 Client name & number : John Hatcher & Co Ltd  
 Assessment Date : 8/8/94  
 DAT 1 : 110  
 Variable : Grain % S of DM

Treatment	Rep 1	Rep 2	Rep 3	Rep 4	Mean	Duncan's MRT 5%
1 Fibrophos P source	0.150	0.150	0.151	0.163	0.154	ab
2 " "	0.149	0.139	0.150	0.157	0.149	a
3 " "	0.164	0.140	0.151	0.161	0.154	ab
4 Fibrophos K source	0.157	0.157	0.153	0.163	0.158	b
5 " "	0.151	0.158	0.154	0.159	0.156	ab
6 " "	0.152	0.143	0.146	0.158	0.150	ab
7 TSP/MP as PK source	0.153	0.156	0.154	0.155	0.155	ab
8 " "	0.150	0.154	0.153	0.152	0.152	ab
9 " "	0.151	0.151	0.158	0.167	0.157	ab
10 " "	0.151	0.161	0.152	0.161	0.156	ab
11 Control	0.153	0.151	0.154	0.149	0.152	ab

Mean 0.153 0.151 0.152 0.159 0.154

LSD(0.05) 0.007  
 LSD(0.01) 0.010  
 Significance NS

CV% 3.306  
 S.E./PLOT 0.005

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TABLE 9 Fibrophos Trials

LA Trial ID : 4840  
 Site name : Kirton  
 Client name & number : John Hatcher & Co Ltd  
 Assessment Date : 8/8/94  
 DAT 1 : 110  
 Variable : Grain N:S ratio

Treatment	Rep 1	Rep 2	Rep 3	Rep 4	Mean	Duncan's MRT 5%
1 Fibrophos P source	15.67	15.67	14.90	14.42	15.16	d
2 " "	14.50	15.11	15.67	13.69	14.74	cd
3 " "	14.39	15.71	14.57	13.66	14.58	abcd
4 Fibrophos K source	13.57	14.65	14.38	14.11	14.18	abc
5 " "	13.44	14.56	13.96	13.52	13.87	ab
6 " "	13.22	14.34	14.38	13.29	13.81	a
7 TSP/MP as PK source	15.42	15.38	14.29	14.19	14.82	cd
8 " "	15.13	15.26	14.38	13.82	14.65	bcd
9 " "	14.97	15.89	14.24	13.17	14.57	abcd
10 " "	14.77	15.22	14.80	13.66	14.61	abcd
11 Control	16.01	15.89	14.29	14.09	15.07	d
Mean	14.64	15.24	14.53	13.79	14.55	

LSD(0.05) 0.72  
 LSD(0.01) 0.97  
 Significance \*\*

CV% 3.42  
 S.E./PLOT 0.50

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TABLE 10 Fibrophos Trials

LA Trial ID : 4840  
 Site name : Kirton  
 Client name & number : John Hatcher & Co Ltd  
 Assessment : Harvest  
 Assessment Date : 8/8/94  
 DAT 1 : 110  
 Variable : Grain yield @ 85% DM t/ha

Treatment	Rep 1	Rep 2	Rep 3	Rep 4	Mean	Duncan's MRT 5%
1 Fibrophos P source	3.95	4.04	4.37	4.36	4.18	ab
2 " "	4.48	4.35	4.17	4.47	4.36	ab
3 " "	3.96	4.57	4.69	4.03	4.31	ab
4 Fibrophos K source	4.58	3.83	4.17	4.16	4.18	ab
5 " "	4.92	3.93	4.48	4.47	4.45	b
6 " "	4.80	4.47	4.59	4.25	4.53	b
7 TSP/MP as PK source	3.74	3.94	4.37	4.25	4.08	ab
8 " "	4.82	4.04	4.58	4.15	4.39	ab
9 " "	4.49	4.15	4.37	4.48	4.37	ab
10 " "	4.16	3.93	4.80	4.15	4.26	ab
11 Control	3.94	3.72	4.05	4.25	3.99	a

Mean 4.35 4.09 4.42 4.27 4.28

LSD(0.05) 0.39  
 LSD(0.01) 0.52  
 Significance NS

CV% 6.27  
 S.E./PLOT 0.27

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TABLE 11 Fibrophos Trials

LA Trial ID : 4840  
 Site name : Kirton  
 Client name & number : John Hatcher & Co Ltd  
 Assessment : Harvest  
 Assessment Date : 8/8/94  
 DAT 1 : 110  
 Variable : Grain specific weight kg/hl

Treatment	Rep 1	Rep 2	Rep 3	Rep 4	Mean	Duncan's MRT 5%
1 Fibrophos P source	58.20	56.80	58.50	57.70	57.80	ab
2 " "	59.60	59.10	58.60	58.10	58.85	bc
3 " "	59.80	59.30	59.60	59.80	59.63	c
4 Fibrophos K source	60.30	57.30	58.50	57.60	58.43	bc
5 " "	60.20	57.40	59.60	57.40	58.65	bc
6 " "	59.90	59.60	58.90	59.80	59.55	c
7 TSP/MP as PK source	59.10	57.00	58.20	59.80	58.53	bc
8 " "	57.80	57.80	58.60	57.20	57.85	ab
9 " "	58.10	58.50	58.10	58.10	58.20	ab
10 " "	58.40	57.40	58.20	56.60	57.65	ab
11 Control	56.50	56.80	57.80	57.30	57.10	a

Mean 58.90 57.91 58.60 58.13 58.38

LSD(0.05) 1.10  
 LSD(0.01) 1.48  
 Significance \*\*

CV% 1.31  
 S.E./PLOT 0.76

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**TABLE 12 Fibrophos Trials**

LA Trial ID : 4840  
 Site name : Kirton  
 Client name & number : John Hatcher & Co Ltd  
 Assessment Date : 8/8/94  
 DAT 1 : 110  
 Variable : Grain P yield kg/ha

Treatment	Rep 1	Rep 2	Rep 3	Rep 4	Mean	Duncan's MRT 5%
1 Fibrophos P source	12.77	13.03	13.37	15.19	13.59	a
2 " "	14.08	13.68	13.81	15.18	14.19	abc
3 " "	12.80	15.15	14.75	12.33	13.76	ab
4 Fibrophos K source	14.41	13.66	15.25	15.19	14.63	abc
5 " "	15.47	14.03	14.86	16.32	15.17	bc
6 " "	14.28	14.44	15.60	13.74	14.51	abc
7 TSP/MP as PK source	13.05	13.06	14.13	13.37	13.40	a
8 " "	16.38	14.06	15.56	14.45	15.11	bc
9 " "	14.49	14.82	15.99	15.98	15.32	c
10 " "	14.50	14.71	16.32	14.80	15.08	bc
11 Control	14.41	12.97	13.10	14.44	13.73	ab
Mean	14.24	13.96	14.79	14.64	14.41	

LSD(0.05) 1.25  
 LSD(0.01) 1.69  
 Significance \*

CV% 6.02  
 S.E./PLOT 0.87

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**TABLE 12** Fibrophos Trials

LA Trial ID : 4840  
 Site name : Kirton  
 Client name & number : John Hatcher & Co Ltd  
 Assessment Date : 8/8/94  
 DAT 1 : 110  
 Variable : Grain P yield kg/ha

Treatment	Rep 1	Rep 2	Rep 3	Rep 4	Mean	Duncan's MRT 5%
1 Fibrophos P source	12.77	13.03	13.37	15.19	13.59	a
2 " "	14.08	13.68	13.81	15.18	14.19	abc
3 " "	12.80	15.15	14.75	12.33	13.76	ab
4 Fibrophos K source	14.41	13.66	15.25	15.19	14.63	abc
5 " "	15.47	14.03	14.86	16.32	15.17	bc
6 " "	14.28	14.44	15.60	13.74	14.51	abc
7 TSP/MP as PK source	13.05	13.06	14.13	13.37	13.40	a
8 " "	16.38	14.06	15.56	14.45	15.11	bc
9 " "	14.49	14.82	15.99	15.98	15.32	c
10 " "	14.50	14.71	16.32	14.80	15.08	bc
11 Control	14.41	12.97	13.10	14.44	13.73	ab
Mean	14.24	13.96	14.79	14.64	14.41	

LSD(0.05) 1.25  
 LSD(0.01) 1.69  
 Significance \*

CV% 6.02  
 S.E./PLOT 0.87

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**TABLE 13 Fibrophos Trials**

LA Trial ID : 4840  
 Site name : Kirton  
 Client name & number : John Hatcher & Co Ltd  
 Assessment Date : 8/8/94  
 DAT 1 : 110  
 Variable : Grain K yield kg/ha

Treatment	Rep 1	Rep 2	Rep 3	Rep 4	Mean	Duncan's MRT 5%
1 Fibrophos P source	20.49	19.89	21.54	22.23	21.04	a
2 " "	24.35	26.61	20.89	23.91	23.94	abc
3 " "	20.54	23.70	23.52	19.87	21.91	abc
4 Fibrophos K source	25.32	20.17	21.98	21.90	22.34	abc
5 " "	26.76	20.70	22.85	23.91	23.56	abc
6 " "	24.49	26.60	24.18	23.13	24.60	c
7 TSP/MP as PK source	20.05	19.75	22.31	22.41	21.13	ab
8 " "	25.80	20.58	23.73	21.50	22.90	abc
9 " "	23.26	22.23	22.31	22.45	22.56	abc
10 " "	25.11	22.40	24.49	23.96	23.99	bc
11 Control	22.79	19.29	21.37	21.66	21.28	ab
Mean	23.54	21.99	22.65	22.45	22.66	

LSD(0.05) 2.51  
 LSD(0.01) 3.38  
 Significance +

CV% 7.67  
 S.E./PLOT 1.74

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**TABLE 14** Fibrophos Trials

LA Trial ID : 4840  
 Site name : Kirton  
 Client name & number : John Hatcher & Co Ltd  
 Assessment Date : 8/8/94  
 DAT 1 : 110  
 Variable : Grain N yield kg/ha

Treatment	Rep 1	Rep 2	Rep 3	Rep 4	Mean	Duncan's MRT 5%
1 Fibrophos P source	78.95	80.60	83.56	87.07	82.54	ab
2 " "	82.18	77.62	83.22	81.60	81.15	ab
3 " "	79.48	85.49	87.68	75.36	82.00	ab
4 Fibrophos K source	82.96	74.82	78.00	81.25	79.26	ab
5 " "	84.89	76.81	81.89	81.60	81.30	ab
6 " "	82.03	77.90	81.89	75.91	79.43	ab
7 TSP/MP as PK source	75.09	80.34	81.80	79.52	79.19	ab
8 " "	92.97	80.60	85.59	74.01	83.29	ab
9 " "	86.19	84.68	83.66	83.70	84.56	b
10 " "	78.87	81.92	91.83	77.53	82.54	ab
11 Control	82.11	75.91	75.82	75.82	77.41	a

Mean 82.34 79.70 83.18 79.40 81.15

LSD(0.05) 5.95  
 LSD(0.01) 8.01  
 Significance NS

CV% 5.08  
 S.E./PLOT 4.12

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TABLE 15 Fibrophos Trials

LA Trial ID : 4840  
 Site name : Kirton  
 Client name & number : John Hatcher & Co Ltd  
 Assessment Date : 8/8/94  
 DAT 1 : 110  
 Variable : Grain S yield kg/ha

Treatment	Rep 1	Rep 2	Rep 3	Rep 4	Mean	Duncan's MRT 5%
1 Fibrophos P source	5.04	5.14	5.61	6.04	5.46	ab
2 " "	5.67	5.14	5.31	5.96	5.52	ab
3 " "	5.52	5.44	6.02	5.52	5.62	ab
4 Fibrophos K source	6.12	5.11	5.42	5.76	5.60	ab
5 " "	6.31	5.28	5.87	6.03	5.87	b
6 " "	6.20	5.43	5.69	5.71	5.76	b
7 TSP/MP as PK source	4.87	5.22	5.73	5.60	5.35	ab
8 " "	6.14	5.28	5.95	5.36	5.68	b
9 " "	5.76	5.33	5.88	6.35	5.83	b
10 " "	5.34	5.38	6.20	5.67	5.65	ab
11 Control	5.13	4.78	5.31	5.38	5.15	a

Mean 5.65 5.23 5.73 5.76 5.59

LSD(0.05) 0.45  
 LSD(0.01) 0.61  
 Significance +

CV% 5.60  
 S.E./PLOT 0.31

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