Institute of Freshwater Ecology

Source Mineral Controls on the Transport of Pesticides in Agricultural Catchments

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Report To: ADAS/MAFF
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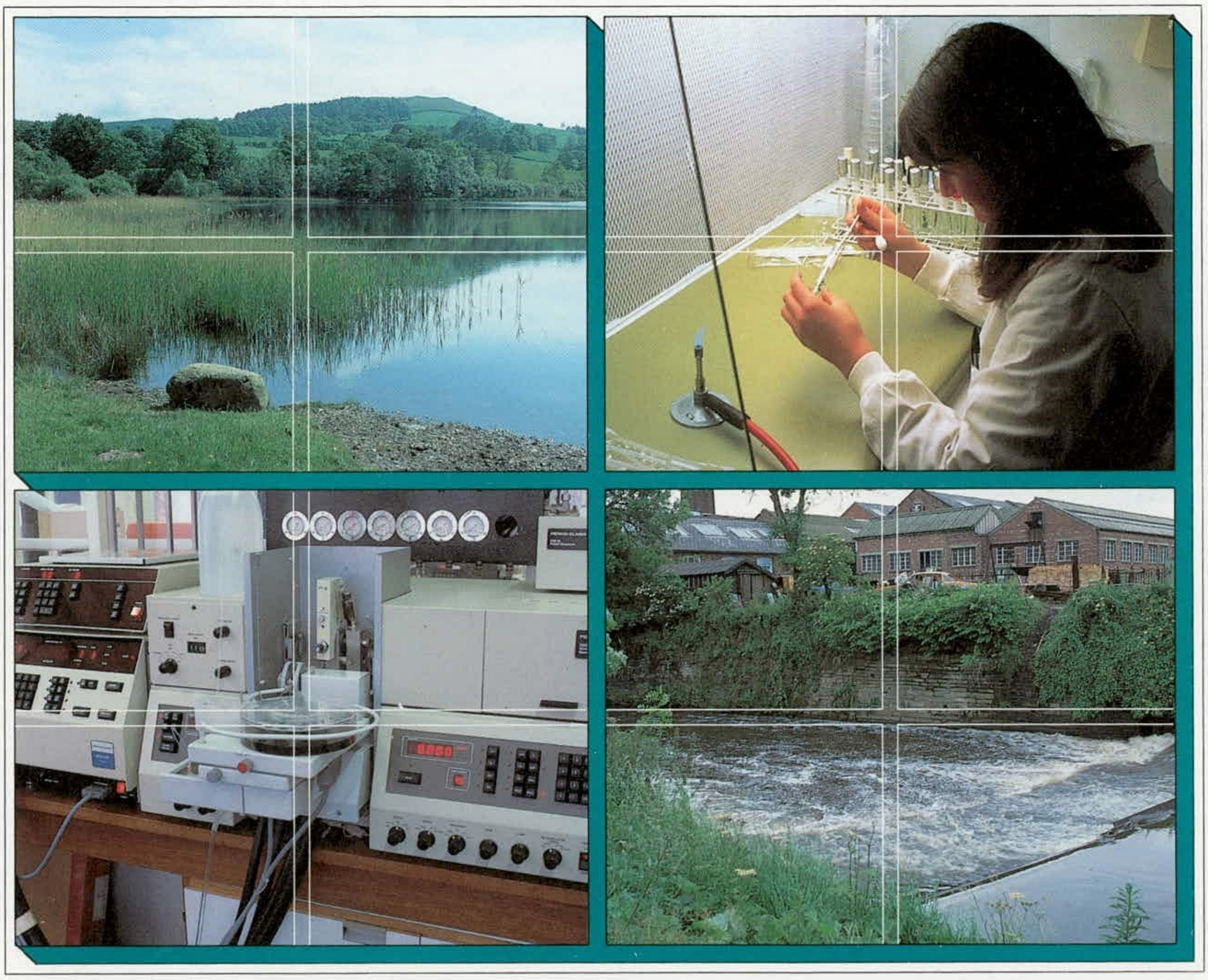

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Project Leader:	W.A. House
Report Date:	17 June 1996
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Source Mineral Controls on the Transport of Pesticides in Agricultural Catchments

Progress Report: June 1996

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Appendix 3. Results of the suspended solids measurements and pesticide analysis of the storm water and sediment samples for the 1995/96 autumn/winter period.

SUMMARY

This report is concerned with progress from August 1995 to June 1996 in PHASE I of the programme. Measurements are reported of the concentration of selected pesticides: isoproturon (IPU), trifluralin, flutriafol and propiconazol, associated with suspended solids and dissolved in drainage water during storm events in 1994/95 and initial results from storm events in 1995/96. The mineral and particle-size analysis of the sediments collected in the autumn/winter of 1994/95, which were previously analysed for pesticides, are also reported in detail. Regression analysis of the results indicates some correlation between the various size fractions and mineral components and the pesticide concentrations in the whole sediment.

1.0 OBJECTIVES

To determine which soil/sediment components are most active in the transport of pesticides applied to agricultural catchments and how these components are likely to vary in different soil types. In addition, the results will lead to a better understanding of the role of buffer zones in the control of pesticide runoff.

2.0 INTRODUCTION

This report is concerned with progress from August 1995 to June 1996 in PHASE I of the programme. Measurements are reported of the concentration of selected pesticides: isoproturon (IPU), trifluralin, flutriafol and propiconazol (1 &2), associated with suspended solids and dissolved in drainage water during storm events. The main objective of the research is the investigation of the relationships between the concentration of the compounds associated with the suspended solids, the distribution coefficients and sediment properties including their mineralogy and particle-size distributions. Initial results are included of the pesticide concentrations in waters and sediments sampled in storm events during last winter (1995/96). All samples and their codes were supplied by ADAS.

3.0 MINERAL AND PARTICLE-SIZE ANALYSIS

Following the isolation of suspended solids, soxhlet extraction and analysis of the extracts by GC/MS, the samples collected during the autumn/winter 1994/95 were subject to mineralogical (X-ray diffraction) and particle-size analysis (laser granulometry) at PRIS (Postgraduate Research Institute for Sedimentology, University of Reading). The results from the mineralogical analysis are shown in Table 1 and the particle-size distributions are submitted in Appendix 1.

3.1 Mineral Analysis

41 samples were analysed for a range of mineral components listed in Table 1. Some samples were too small to be separated from the filter pads and so were not included in the analysis. Only the samples with codes: BRN, FS and NAP contained appreciable calcite. All the samples contained expandable clays (including montmorillonite) and mica (containing illite). The highest concentrations of kaolinite were found in samples

coded LLf1. Siderite ($FeCO_3$) was also found in some samples, probably as a results of the resuspension of anoxic materials during transit. This mineral has been found in anoxic stream sediments. No attempt has yet been made to relate the mineral composition to the storm hydrographs or sources within the catchments.

The results have been analysed for correlations between the K_d's (calculated in the last report), the amount of pesticide associated with the suspended solids and the various mineral components. The data are summarised in Table 2 and the best correlations are illustrated in Figure 1. The corresponding regression equations are listed in Table 3. As shown, the best correlations are obtained between the K_d's (rather than the amount of pesticide associated with the suspended solids) and particular mineral components in sediment. Poor correlations are observed with the quartz content (likely to be the predominant mineral in the coarser fraction) with generally better relationships with the finer clay fractions such as the expandable clays mica and kaolinite. It is possible that propiconazol interacts with the interlayers of the expandable clay whereas trifluralin adsorbs on the edge-sites of kaolinite. The regression of mica with flutriafol indicates a K_d =0 with about 25 % mica in the sample whereas the other correlations indicate K_d's closer to zero when none of the mineral component is present. Combining the clay fractions, e.g. expandable clays+mica+kaolinite, does not produce better correlations than those found with the individual components essentially because very low K_d's were measured in some samples containing over 60 % of these clays.

3.2 Particle-size Analysis

Information on the particle-size distributions of the sediments in the size range of 0.1 to 1000 μm are tabulated in Appendix 1. The sediments were dispersed in Calgon and ultrasonicated during the processing to ensure only the primary particles were measured. The original particle structures and degree of aggregation of the sediment in the field is unknown. The compactation during filtration and subsequent solvent extraction of the sediment, is likely to have destroyed the aggregate structure and thus particle-size distribution of suspended solids in the original samples. However, the size-distributions shown in the Appendix 1 are a fundamental property of the suspension which is independent of the aggregate structure.

The results are also summarised in Fig. 2 in terms of the size groups: clay (< 2 μm), silt (2-63 μm) and sand (63-900 μm). Silt is the major size-fraction in all the samples with most containing between 10 and 20 % (by volume) of the smaller clay component. As shown, the sand fraction is a relatively minor component (< 5%). These results are in contrast with river bed-sediments which generally contain mineral components dominated by the sand size-fraction. In contrast to the other sediments, both the FS samples which were analysed contained similar volumes of the silt and clay fractions.

The correlations between the various size-fractions and the amount of pesticide associated with the suspended solids or K_d's are shown in Table 4 and 5 respectively. Generally, the best correlations were found for the K_d's, especially for IPU and trifluralin with the clay fraction as well as flutriafol and propiconazol with the sand fraction. The silt fraction shows poor correlations with all the pesticide K_d values. All the regression relationships listed in Tables 4 and 5 are illustrated in Appendix 2.

4.0 CONTRIBUTION OF SUSPENDED SOLIDS TO THE TRANSPORT OF THE SELECTED PESTICIDES.

Assuming a linear sorption isotherm, the percentage of the pesticides transported in association with suspended solids is given by:

% transport of pesticides with suspended solids= $100.\ K_d.\ SS/(K_d.\ SS + 10^6)$ [1]

where SS is the suspended solids concentration (mg/l) and K_d, the distribution coefficient in l/kg. The experimental data from the 1994/95 sampling are shown in Fig 3 for the four pesticides which were considered. Figure 4 shows the data for trifluralin in more detail with the optimised value of K_d (by numerical optimisation to obtain the minimum least-squares deviation between the calculated results from eqn.(1) and the observed data). The results show the low transport of the IPU and flutriafol with suspended solids (<10 %). In contrast, both trifluralin and propiconazol are associated with solids so that for trifluralin, at high values of suspended solids, the majority of the compounds is transported in suspension. The deviations from the form of eqtn.(1) indicate the variability in K_d's associated with the different composition and mineralogy of the solids. The results from the more detailed analysis of the 1995/96 data will help in the further understanding of the important factors controlling the variability in the distribution coefficients for these sediments.

5.0 RESULTS FROM THE SUSPENDED SOLIDS MEASUREMENTS AND PESTICIDE ANALYSIS OF THE 1995/96 STORM SAMPLES.

Some effort was made to investigate methods to reduce the length of the extraction and filtration procedure of the suspended solids intended for pesticide analysis. This involved centrifugation of suspended solids prior to filtration. However this proved inappropriate for trifluralin because of its loss during processing, caused by the sorption to the container. Hence, the method of separation and extraction remained essentially unchanged from the previous analysis for the 1994/95 samples. The only modification was that the filter pads were not pre-equilibrated with the sample prior to filtration.

The results of measurements of the suspended solids are listed in Appendix 3. The analysis of the water and sediments for the third event (1995/96) are also shown in the Appendix 3 together with the calculated distribution coefficients, K_d. These results will be examined in detail once the remaining batches from the 1995/96 storm sampling have been analysed. The first event is currently being analysed on GC/MS and the second event samples have been extracted and concentrated but have not yet been analysed by GC/MS. Once the pesticide results are available, the mineralogy and particle-size distributions will be determined by PRIS (University of Reading). It is however clear that insufficient sediment is available for some samples to permit separation from the filter pads and if possible, these will have to be analysed *in-situ*.

TABLE 1. Mineral analysis of 1994/95 samples					Composition corrected mass, %					
Sample	Expandable	Mica	Kaolinite	Chlorite	Quartz	K-feld	Plag Feld	Calcite	Siderite	Haematite
BRN1 189	7	14	6	1	27	0	0	44	0	1
FS3 407	33	24	13	3	12	1	2	10	0	2
FS4 408	29	24	14	2	12	1	2	15	0	1
FS5 409	26	21	13	0	18	1	1	19	0	1
Fx 1006	34	31	6	8	17	0	2	0	0	2
Fxd 1248	23	34	5	9	22	1	2	1	1	2
Fxd 1252	33	36	5	9	12	1	1	0	0	3
Fxd 1254	37	34	8	4	10	0	2	0	0	5
Fxd 1331	33	33	5	8	19	1	1	0	0	2
Fxd 1337	46	31	4	7	6	0	1	0	0	5
JBS 1271	13	36	5	10	26	1	5	1	1	2
JBS 1275	23	34	4	9	22	1	3	1	1	2
JBS 1351	26	33	5	8	22	0	3	0	0	3
JBS 1354	15	35	4	9	29	1	3	1	1	2
JBS 1356	27	31	5	9	23	0	2	0	0	3
LLd 1025	24	35	9	8	19	0	2	0	0	3
LLd 1028	34	31	8	6	13	0	2	0	0	6
LLd 1319	28	28	7	6	24	0	2	0	0	5
LLd 1321	34	31	7	7	15	0	2	0	0	4
LLd 1323	39	28	7	6	12	0	2	0	0	6
LLd 465	27	32	9	8	16	0	3	0	0	5
LLd 468	21	32	10	9	24	0	2	0	0	2
LLd 473	32	36	8	8	8	0	2	0	0	6
LLd 476	34	34	8	7	10	0	2	0	0	5
LLd 478	37	33	6	7	9	0	2	0	0	6
LLfl 1049	28	28	10	8	23	0	2	1	0	2
LLfl 1050	17	32	12	9	23	1	2	0	1	3
LLfl 1051	19	30	14	8	21	1	2	1	1	3
LLfl 1052	22	33	12	9	18	1	2	0	1	2
LLfl 1053	19	31	12	9	23	1	2	0	0	3
LLfl 1054	19	33	13	8	20	1	2	0	1	3
LLfl 1289	12	35	12	10	26	1	2	0	0	2
LLfl 1291	16	32	12	9	26	0	2	0	1	2
LLfl 1293	19	27	14	8	25	1	3	0	1	2
LLfl 1297	10	33	12	8	27	1	4	2	1	2
Mffl 961	27	29	6	8	23	1	2	0	1	3
Mfs 1277	17	36	5	9	25	0	2	1	1	4
Mfs 1279	8	40	4	8	35	0	3	0	0	2
Mfs 1281	18	44	0	10	23	0	2	0	0	3
NAP1 230	29	20	15	0	12	1	1	21	0	1
NAP2 366	29	20	16	0	12	1	1	19	0	2

TABLE 2

Regression analysis of the pesticide distribution coefficients, Kd, pesticide amounts (ug/kg) and mineral composition

	Expandable	Mica	Kaolinite	Chlorite	Quartz	K-feld	Plag Feld	Calcite	Siderite	Haematite	Kd, IPU	Kd,trifluralin	Kd,flutriafol
Expandable	1.00												
Mica	-0.12	1.00											
Kaolinite	-0.09	-0.54	1.00										
Chlorite	-0.26	0.82	-0.44	1.00									
Quartz	-0.87	0.20	-0.14	0.41	1.00								
K-feld	-0.27	-0.19	0.45	-0.09	0.13	1.00							
Plag Feld	-0.35	0.49	-0.13	0.51	0.40	0.09	1.00						
Calcite	-0.17	-0.80	0.28	-0.80	-0.05	0.14	-0.51	1.00					
Siderite	-0.50	0.19	0.10	0.40	0.45	0.49	0.44	-0.22	1.00				
Haematite	0.55	0.31	-0.30	0.18	-0.51	-0.56	0.02	-0.45	-0.25	1.00			
Kd,isoproturon	0.10	-0.18	-0.08	-0.26	-0.32	-0.32	-0.29	[redacted]	-0.30	0.29	1.00		
Kd,trifluralin	-0.18	-0.07	[redacted]	0.06	-0.08	0.23	0.02	0.08	0.14	-0.14	0.45	1.00	
Kd,flutriafol	0.10	[redacted]	-0.57	0.14	-0.08	-0.44	-0.09	-0.14	-0.31	0.33	0.20	-0.48	1.00
Kd,propiconazol	[redacted]	0.18	-0.37	-0.09	-0.59	-0.27	0.16	0.02	-0.25	[redacted]	0.78	0.31	0.68
SS, IPU	0.24	0.18	-0.02	0.11	-0.39	-0.34	0.06	-0.16	-0.23	0.53	[redacted]	0.47	0.05
SS, trifluralin	-0.19	-0.11	0.54	0.04	0.10	0.16	-0.02	-0.02	0.07	-0.21	0.01	[redacted]	-0.53
SS, flutriafol	0.14	0.22	-0.43	-0.01	-0.21	-0.49	-0.18	0.06	-0.37	0.48	0.48	-0.09	[redacted]
SS, propiconazol	-0.01	0.38	-0.36	0.13	-0.04	-0.32	-0.05	-0.04	-0.27	0.22	0.22	0.32	0.75
	Expandable	Mica	Kaolinite	Chlorite	Quartz	K-feld	Plag Feld	Calcite	Siderite	Haematite	Kd, IPU	Kd,trifluralin	Kd,flutriafol

Regression analysis of the pesticide distribution coefficients, Kd, pesticide amounts (ug/kg) and mineral composition

	Kd,propiconazol	SS IPU	SS trifluralin	SS flutriafol	SS propiconazol	
Expandable						Expandable
Mica						Mica
Kaolinite						Kaolinite
Chlorite						Chlorite
Quartz						Quartz
K-feld						K-feld
Plag Feld						Plag Feld
Calcite						Calcite
Siderite						Siderite
Haematite						Haematite
Kd,isoproturon						Kd, IPU
Kd,trifluralin						Kd,trifluralin
Kd,flutriafol						Kd,flutriafol
Kd,propiconazol	1.00					Kd,propiconazol
SS, IPU	[redacted]	1.00				SS IPU
SS, trifluralin	-0.25	0.24	1.00			SS trifluralin
SS, flutriafol	0.73	0.31	-0.31	1.00		SS flutriafol
SS, propiconazol	[redacted]	0.23	0.42	[redacted]	1.00	SS propiconazol
	Kd,propiconazol	SS ,IPU	SS, trifluralin	SS, flutriafol	SS, propiconazol	

Table 3. Regression equations for the relationships between the K_d's and the mineral components shown in Fig. 1. K_d in units of l/kg and composition in mass %. Equation: K_d=m*(%mineral)+c

clay	pesticide	slope, m	intercept, c	R^2
expandable	propiconazol	1.36	-6.90	0.17
haematite	propiconazol	10.39	-3.59	0.32
kaolinite	trifluralin	21.55	66.48	0.27
mica	flutriafol	5.09	-126.65	0.21
calcite	isoproturon	1.63	13.71	0.15

TABLE 4

Amount of pesticide associated with suspended solids/ ug/kg

	IPU	Trifluralin	Flutriafol	Propiconazol-1	Propiconazol-2	Propiconazol 1+2	Clay Fraction Clay	Silt	Sand
LLD/468	8013.9	1248.2		188.85	99.256	288.11	14.84	83.22	1.93
LLF1/1049	642.64	1163	10.172	24.811		17.062	19.36	79.58	1.06
LLF1/1050		1192.2	42.829	28.785		20.836	21.35	77.07	1.58
LLF1/1053		1095.8	46.319	41.438		34.171	19.51	78.82	1.67
LLF1/1054		1154.4	22.428	25.945		19.808	19.73	78.55	1.72
MFF1/961	3.796	232.28	29.904	22.521		7.202	22.61	75.59	1.81
LLfl/289	61.757	507.46		21.333	8.128	29.46	15.57	82.94	1.49
LLfl/1293	142.06	503.94	30.86	182.33	70.29	252.62	19.7	78.65	1.66
JBs/1271	120.62	272.29	26.046	122.51	31.101	153.61	17.3	79.4	3.31
JBs/1275	58.402	66.934	33.304				13.78	82.28	3.95
JBs/1354	29.509	62.058	25.272				18.08	77.62	4.3
FXd/1248	110.54		33.556				16.32	81.92	1.76
FXd/1252	54.285		41.462	182.5	11.212	193.72	20.45	77.4	2.15
FXd/1331	81.892	114.84	32.312			10.371	19.57	78.42	2
FS4/408	10.985	710.77	33.017	353.65	47.062	400.71	43.9	54.44	1.66
FS6/409	36.36	1848.2	9.436	70.903	37.141	108.04	47.44	51.8	0.76

Regression analysis of pesticide amount (ug/kg) and size composition of the sediment

	IPU	Trifluralin	Flutriafol	Propiconazol-1	Propiconazol-2	Propiconazol 1+2	Clay	Silt	Sand
IPU	1.00								
Trifluralin	0.39	1.00							
Flutriafol	-0.55	-0.31	1.00						
Propiconazol-1	0.18	-0.15	0.20	1.00					
Propiconazol-2	0.76	0.27	-0.19	0.39	1.00				
Propiconazol 1+2	0.34	0.02	0.11	0.98	0.60	1.00			
Clay	-0.22	0.46	-0.34	0.39	-0.08	0.35	1.00		
Silt	0.24	-0.41	0.33	-0.41	0.08	-0.37	-1.00	1.00	
Sand	-0.08	-0.71	0.18	0.24	-0.06	0.19	-0.43	0.34	1

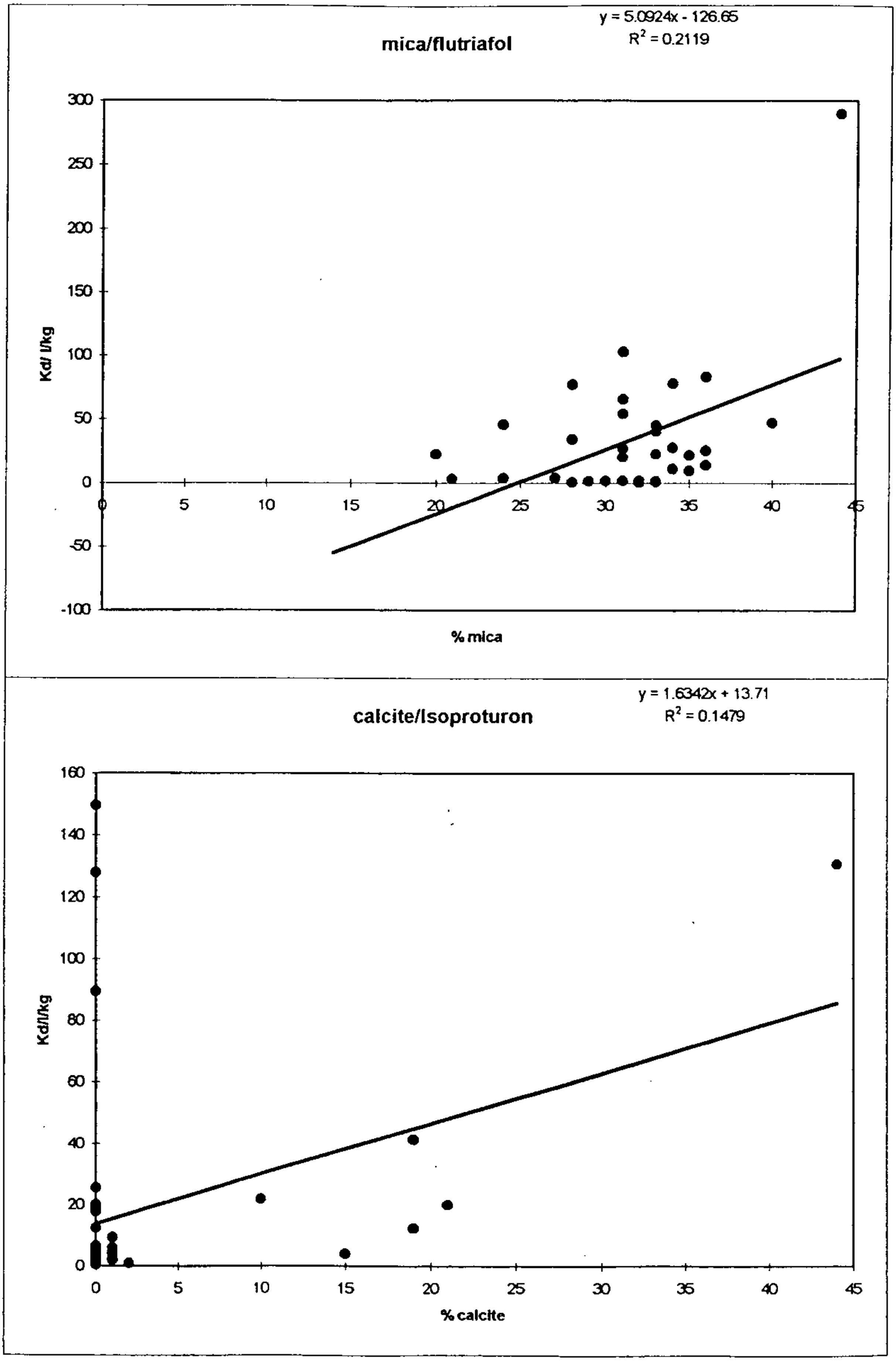
TABLE 5

Distribution coefficients, Kd, in l/kg

	IPU	Trifluralin	Flutriafol	Propiconazol-1	Propiconazol-2	Propiconazol 1+2	Clay	Silt	Sand
LLD/468	8.7	256.8		4.5	2.9	3.8	14.84	83.22	1.93
LLF1/1049	2.1	343.8	0.4	4.1		1.5	19.36	79.58	1.06
LLF1/1050		349.9	1.6	4.7		1.8	21.35	77.07	1.58
LLF1/1053		366.5	1.7	6.7		3	19.51	78.82	1.67
LLF1/1054	1.8	385.4	0.8	4.4		1.8	19.73	78.55	1.72
MFF1/961	0.7	203.8	1.1	3.5		0.6	22.61	75.59	1.81
LLfl/289		247.2		6.6	2.8	4.8	15.57	82.94	1.49
LLfl/1293	1.3	258.3	3.8	55.4	25.1	41.5	19.7	78.65	1.66
JBs/1271	4	351.2	14	114.6	30.7	73.8	17.3	79.4	3.31
JBs/1275	4.7	88.3	27.6				13.78	82.28	3.95
JBs/1354	2.3		21.7				18.08	77.62	4.3
FXd/1248	2.4		10.8				16.32	81.92	1.76
FXd/1252	2.2		25.4	174.1	12.5	99.4	20.45	77.4	2.15
FXd/1331	5	151.6	22.5			5.7	19.57	78.42	2
FS4/408	4	412.6	3.4	92	13.4	54.6	43.9	54.44	1.66
FS6/409	41.2	365.2	3.1	24.9	13.8	19.5	47.44	51.8	0.76

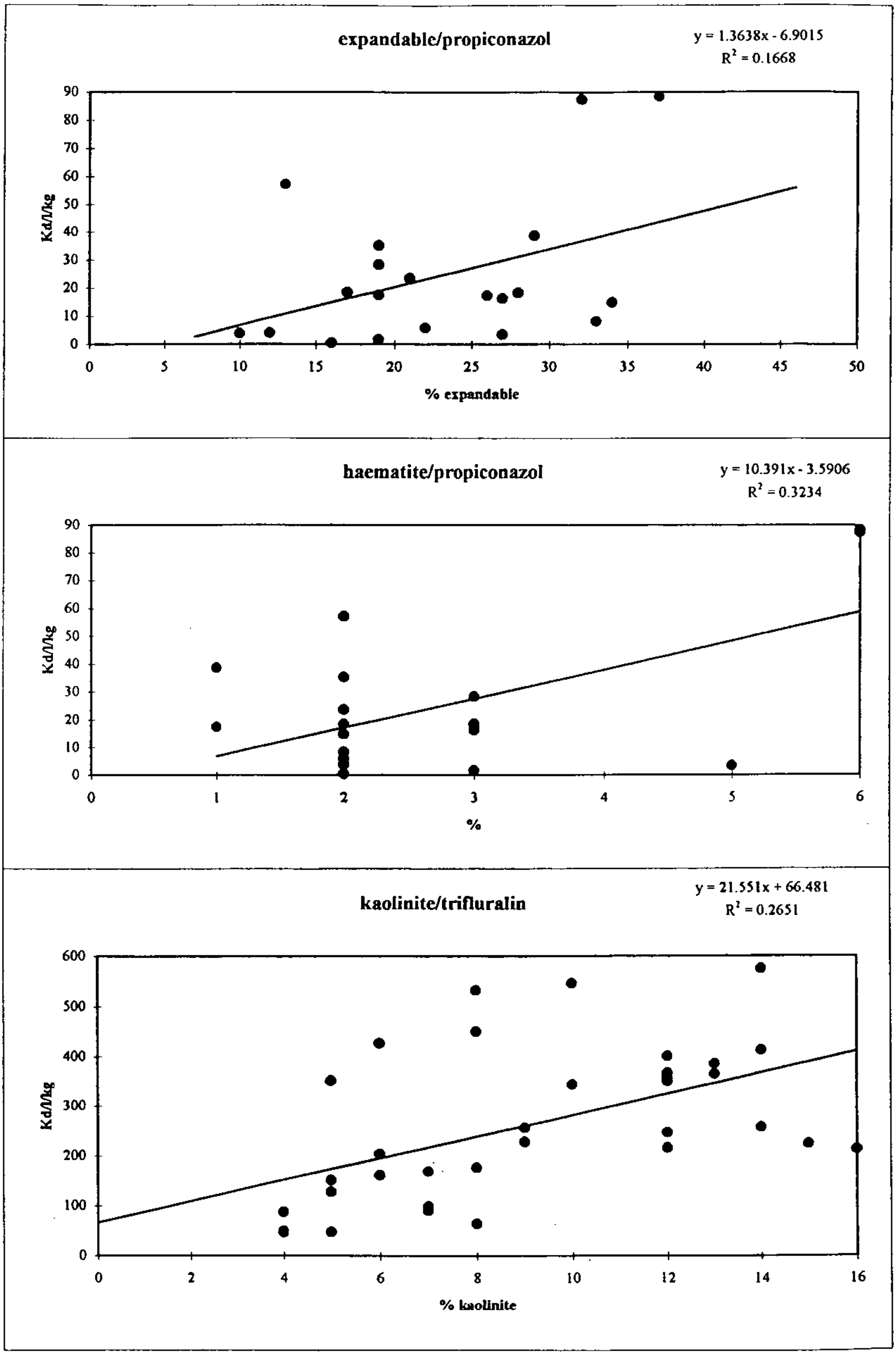
Regression analysis of pesticide distribution coefficients, Kd, (ug/kg) and size composition of the sediment

	IPU	Trifluralin	Flutriafol	Propiconazol-1	Propiconazol-2	Propiconazol 1+2	Clay	Silt	Sand
IPU	1.00								
Trifluralin	0.23	1.00							
Flutriafol	-0.17	-0.75	1.00						
Propiconazol-1	-0.18	0.33	0.92	1.00					
Propiconazol-2	-0.23	0.33	-0.06	0.47	1.00				
Propiconazol 1+	-0.13	0.31	0.61	0.99	0.57	1.00			
Clay	0.68	0.50	-0.38	0.13	0.02	0.16	1.00		
Silt	-0.67	-0.47	0.32	-0.17	-0.05	-0.19	-1.00	1.00	
Sand	-0.36	-0.52	0.73	0.55	0.52	0.53	-0.43	0.34	1.00



y = 5.0924x - 126.65
R² = 0.2119
mica/flutriafol
Kd/ l/kg
% mica
y = 1.6342x + 13.71
R² = 0.1479
calcite/Isoproturon
Kd/l/kg
% calcite

Figure 1



expandable/propiconazol
y = 1.3638x - 6.9015
R² = 0.1668
Kd/l/kg
% expandable
haematite/propiconazol
y = 10.391x - 3.5906
R² = 0.3234
Kd/l/kg
%
kaolinite/trifluralin
y = 21.551x + 66.481
R² = 0.2651
Kd/l/kg
% kaolinite

Figure 1

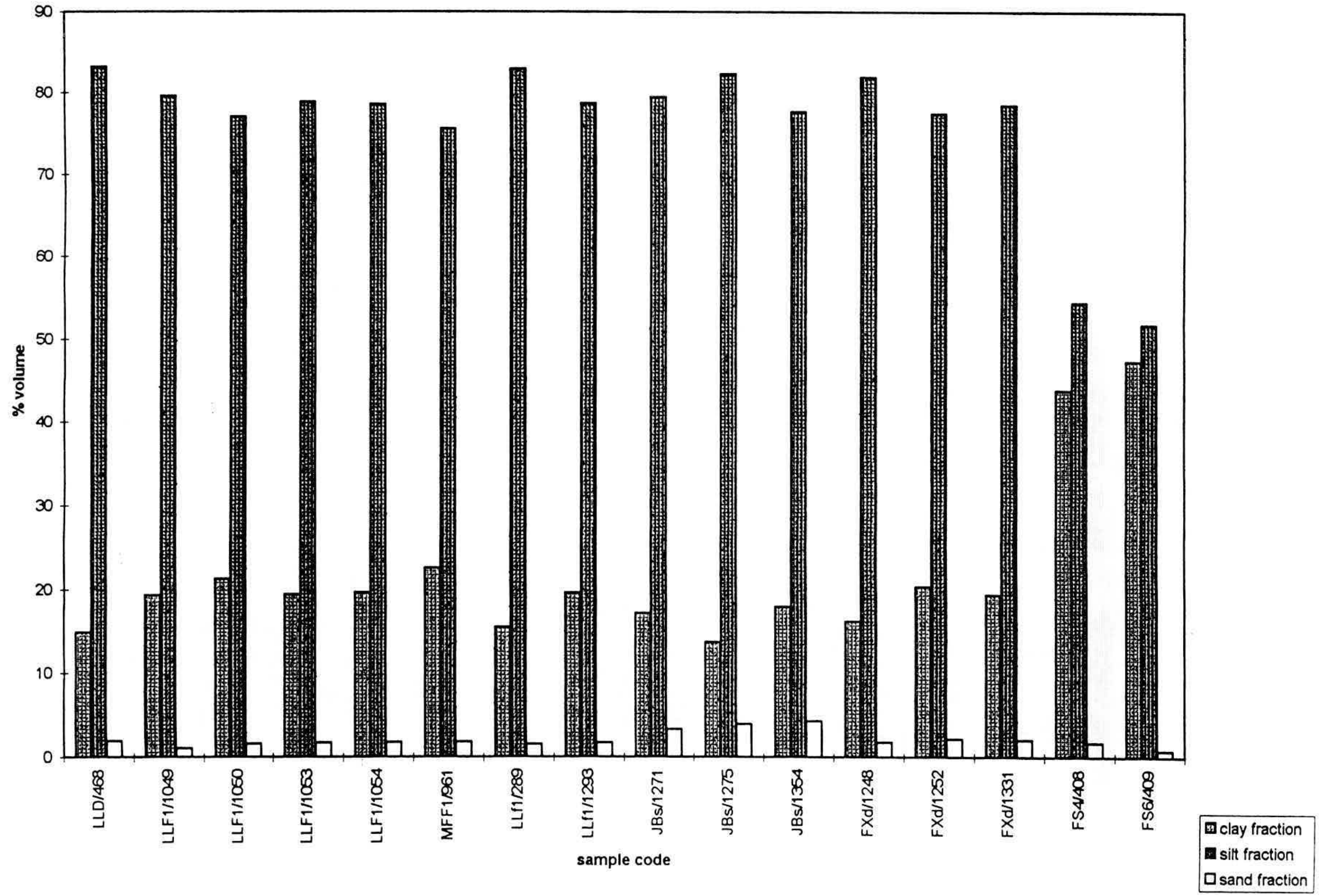


Figure 2. Particle-size fractionation by groups

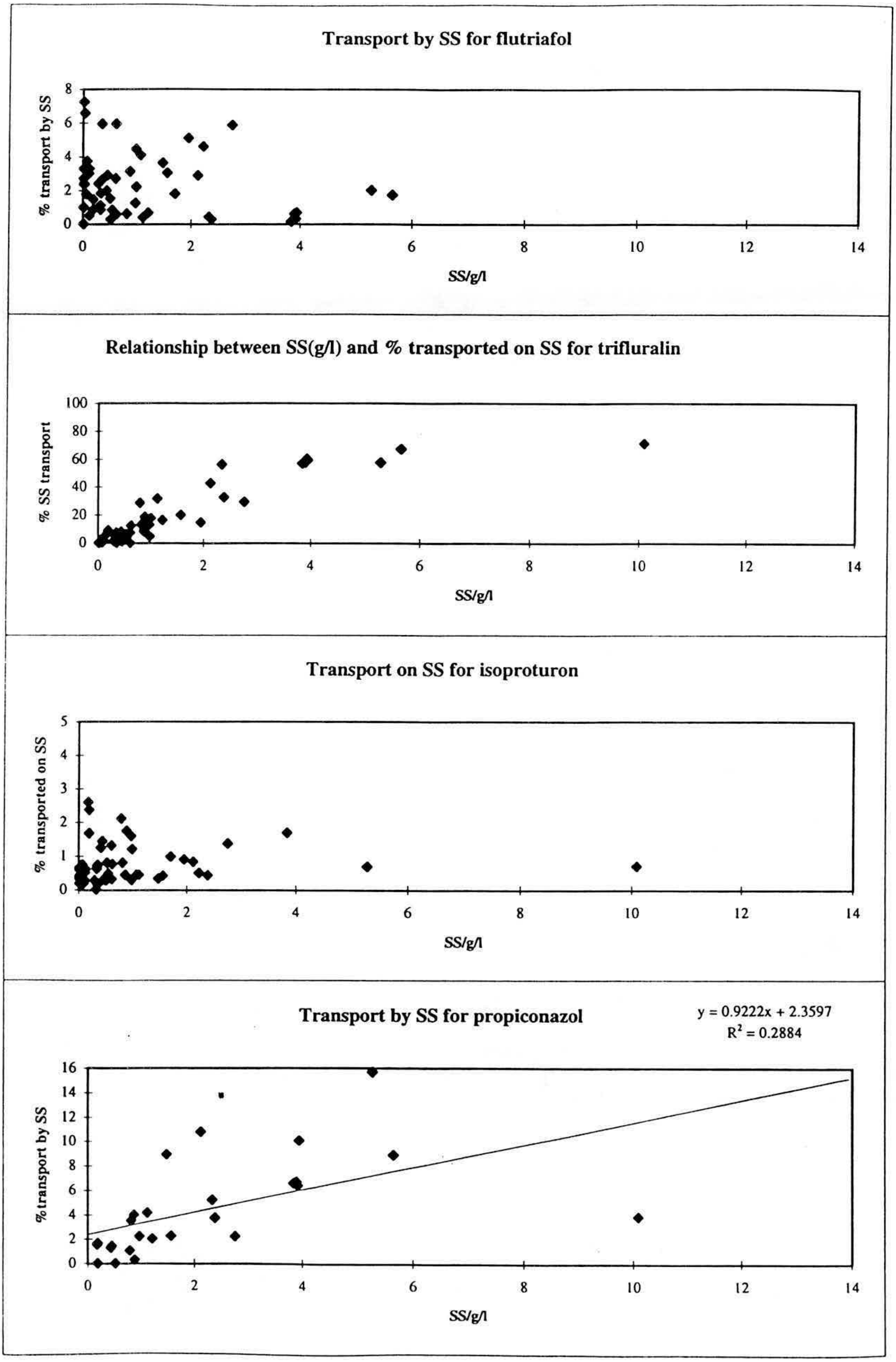
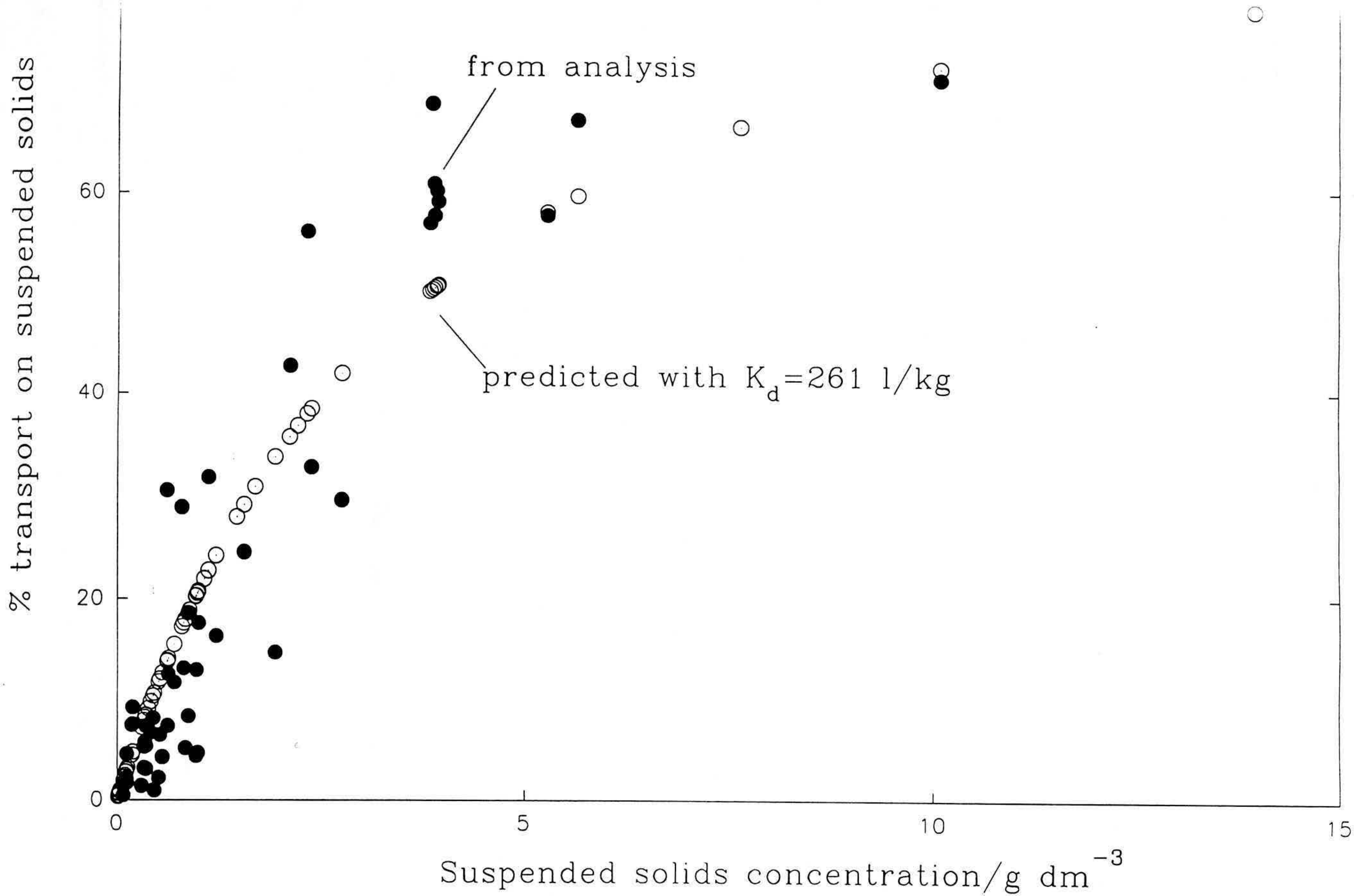

Transport by SS for flutriafol
% transport by SS
0
2
4
6
8
0
2
4
6
8
10
12
14
SS/g/l
Relationship between SS(g/l) and % transported on SS for trifluralin
% SS transport
0
20
40
60
80
100
0
2
4
6
8
10
12
14
SS/g/l
Transport on SS for isoproturon
% transported on SS
0
1
2
3
4
5
0
2
4
6
8
10
12
14
SS/g/l
Transport by SS for propiconazol
y = 0.9222x + 2.3597
R² = 0.2884
%transport by SS
0
2
4
6
8
10
12
14
16
0
2
4
6
8
10
12
14
SS/g/l

Figure 3



from analysis
predicted with K_d=261 l/kg
% transport on suspended solids
0
20
40
60
0
5
10
15
Suspended solids concentration/g dm^-3

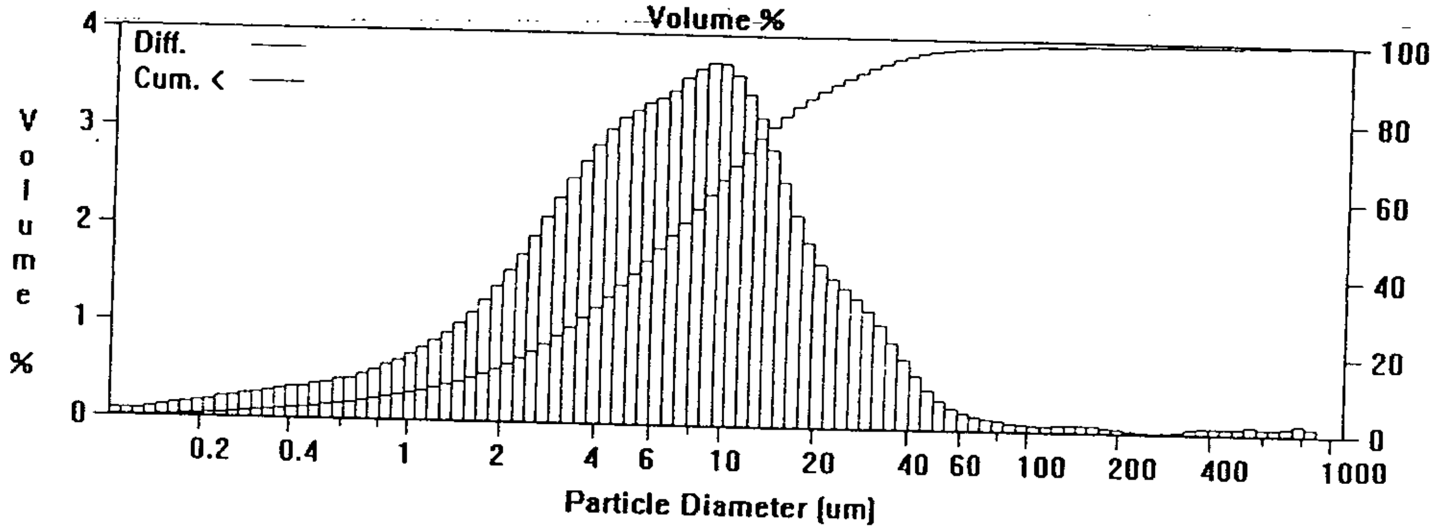
Figure 4

APPENDIX 1

COULTER LS Particle Size Analysis 8:44 30 Apr 1996

maff.$01

File name:	MAFF.001	Group ID:	MAFF
Sample ID:	LLD 468	Run number:	2
Operator:	DMT		
Comments:	MAFF PROJECT : PL0513 DISPERSED IN CALGON		
Start time:	9:46 29 Apr 1996	Run length:	60 Seconds
Pump Speed:	48		
Obscuration:	9%		
Optical model:	Fraunhofer		
LS 130	Fluid module		
Software:	1.50	Firmware:	1.3 1.8



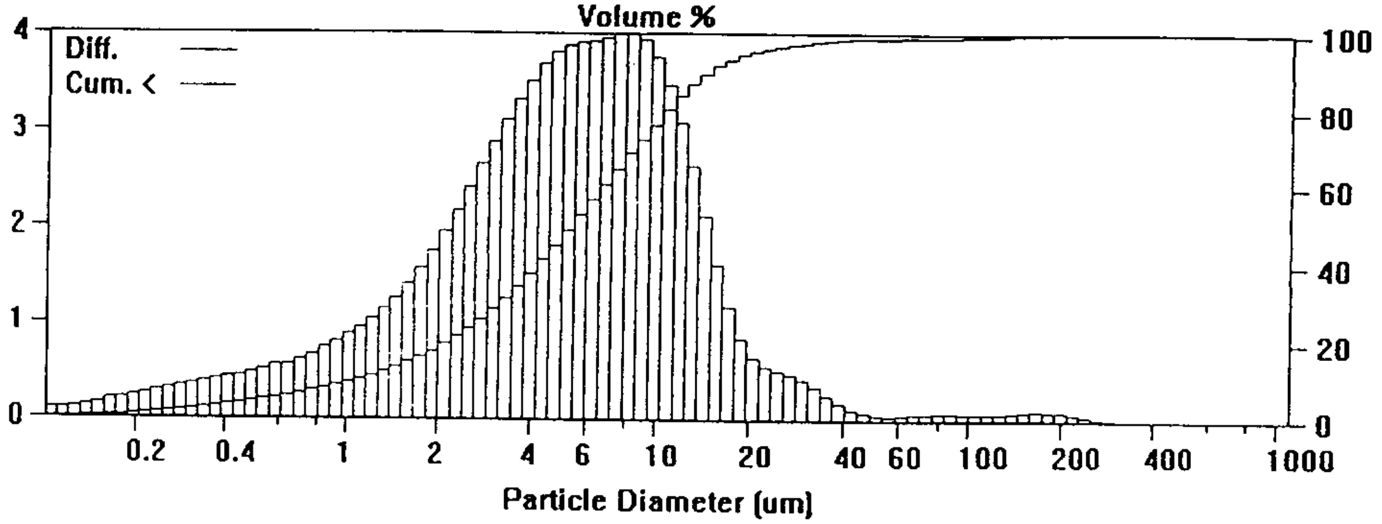
Volume Statistics (Arithmetic) maff.$01

Calculations from 0.10 um to 900.00 um

Volume	100.0%		
Mean:	15.19 um	95% Conf. Limits:	4.497-25.88 um
Median:	6.818 um	Std. Dev.:	54.56 um
Mean/Median Ratio:	2.228	Variance:	2976 um^2
Mode:	9.065 um	Coef. Var.:	359.2%
		Skewness:	11.18 Right skewed
		Kurtosis:	138.5 Leptokurtic

% >	5.000	16.00	50.00	84.00	95.00
Size um	34.66	17.51	6.818	2.144	0.697

ile name:	MAFF.$02	Group ID:	MAFF
ample ID:	LLF1 1049	Run number:	3
p. ator:	DMT		
o...nents:	MAFF PROJECT : PL0513		
	DISPERSED IN CALGON		
a ime:	9:58 29 Apr 1996	Run length:	60 Seconds
in . Speed:	48		
bscuration:	11%		
pt al model:	Fraunhofer		
0	Fluid module		
ftware:	1.50	Firmware:	1.3 1.8



Volume Statistics (Arithmetic) maff.$02

ic ations from 0.10 um to 900.00 um

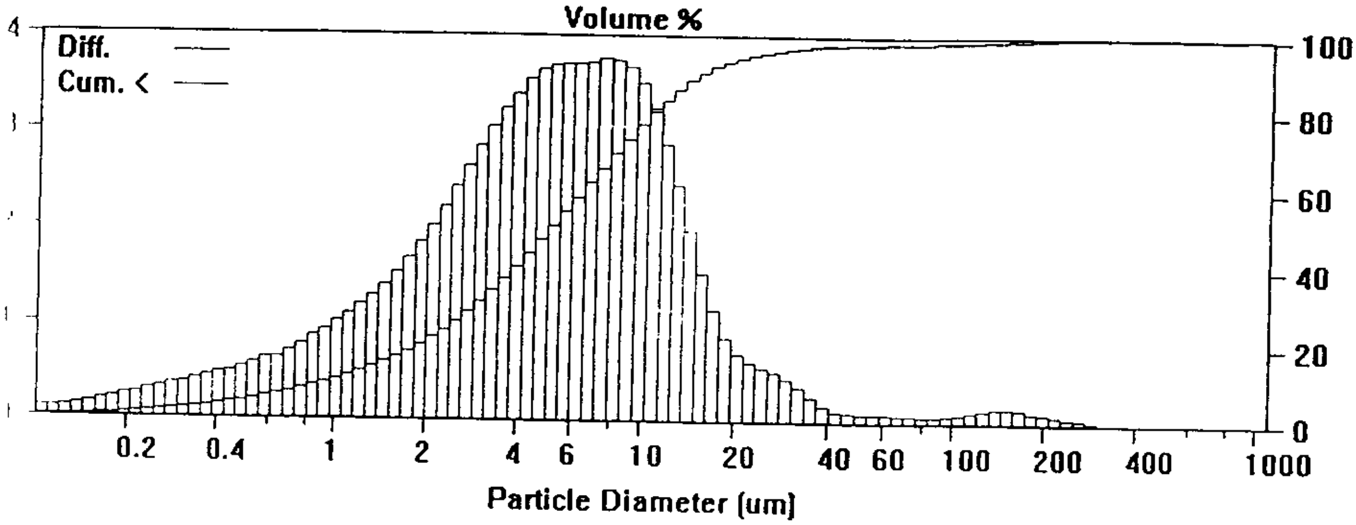
ume	100.0%		
an:	8.045 um	95% Conf. Limits:	4.943-11.15 um
di a:	5.136 um	Std. Dev.:	15.83 um
a.. Median Ratio:	1.566	Variance:	250.5 um^2
de:	7.556 um	Coef. Var.:	196.7%
		Skewness:	9.167 Right skewed
		Kurtosis:	103.4 Leptokurtic

%	5.000	16.00	50.00	84.00	95.00
Size um	19.06	11.42	5.136	1.661	0.515

...... LS Particle Size Analysis

maff.$03

...me:	MAFF.$03	Group ID:	MAFF
...e ID:	LLFT 1050	Run number:	4
...tor:	DMT		
...ents:	MAFF PROJECT : PL0513		
	DISPERSED IN CALGON		
...me:	10:17 29 Apr 1996	Run length:	60 Seconds
Speed:	48		
...ration:	11%		
...l model:	Fraunhofer		
...l	Fluid module		
...re:	1.50	Firmware:	1.3 1.8



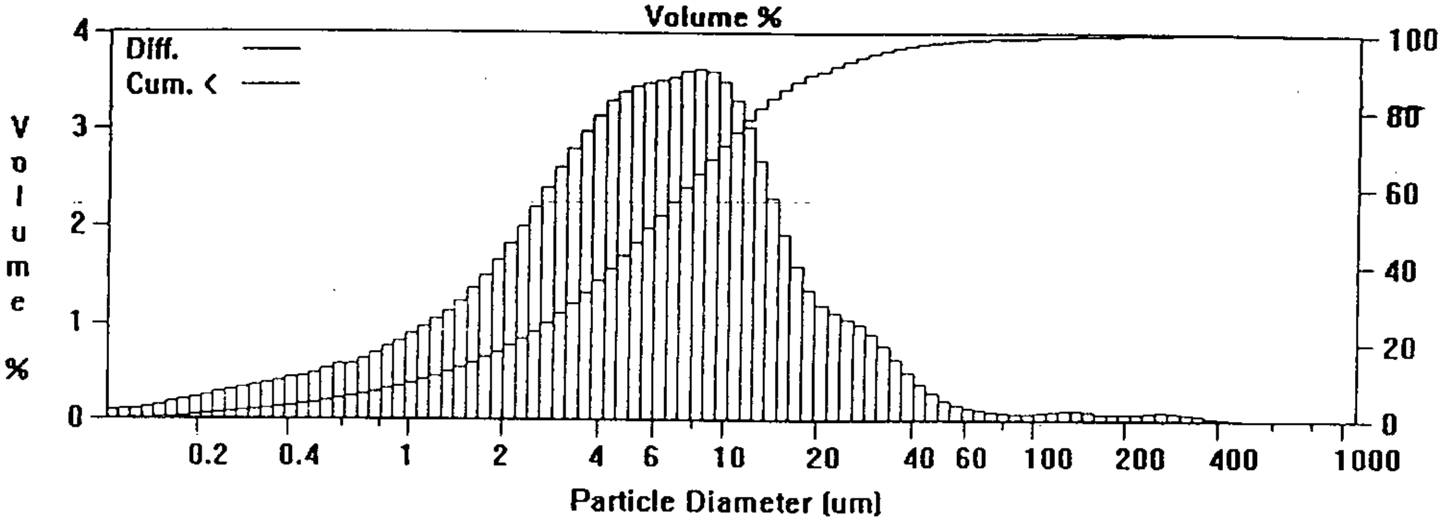
Volume Statistics (Arithmetic) maff.$03

...tions from 0.10 um to 900.00 um

	100.0%		
	8.782 um	95% Conf. Limits:	4.957-12.61 um
:	4.943 um	Std. Dev.:	19.51 um
...edian Ratio:	1.777		
	7.556 um	Variance:	380.7 um^2
		Coef. Var.:	222.2%
		~~Skewness:~~	~~7.878~~ Right skewed
		Kurtosis:	73.31 Leptokurtic

	5.000	16.00	50.00	84.00	95.00
um	21.44	11.59	4.943	1.492	0.494

File name:	MAFF.$04	Group ID:	MAFF
Sample ID:	LLF1 1051	Run number:	5
Operator:	DMT		
Comments:	MAFF PROJECT : PLO513 DISPERSED IN CALGON		
Start time:	10:27 29 Apr 1996	Run length:	60 Seconds
Pump Speed:	48		
Obscuration:	11%		
Optical model:	Fraunhofer		
LS 130	Fluid module		
Software:	1.50	Firmware:	1.3 1.8



Volume Statistics (Arithmetic) maff.$04

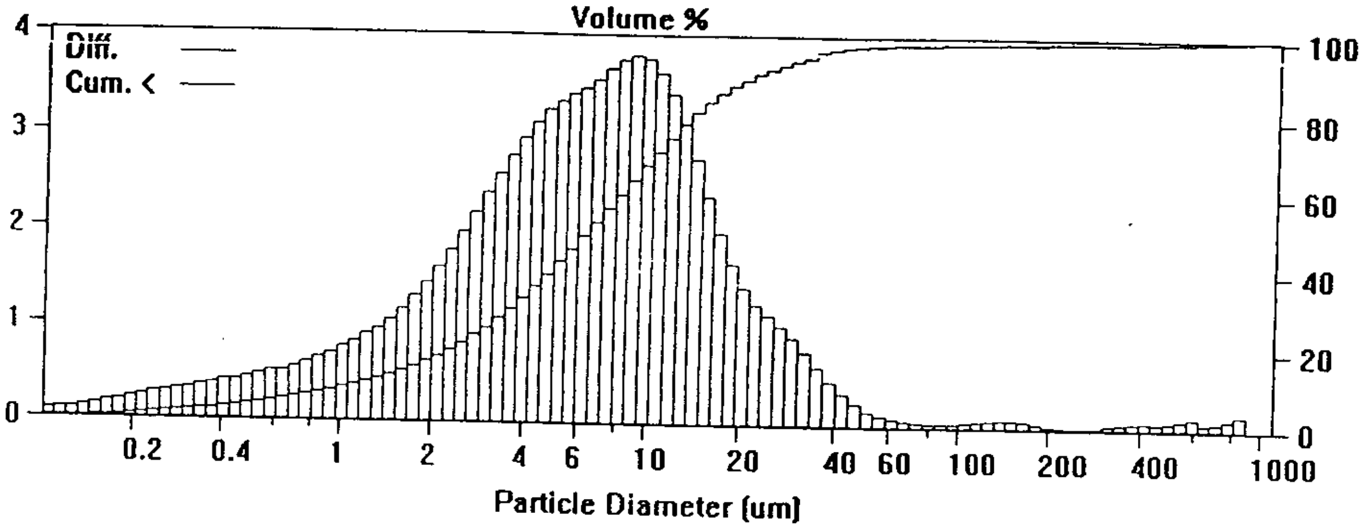
Calculations from 0.10 um to 900.00 um

Volume	100.0%		
Mean:	10.49 um	95% Conf. Limits:	5.713-15.26 um
Median:	5.606 um	Std. Dev.:	24.36 um
Mean/Median Ratio:	1.871	Variance:	593.5 um^2
Mode:	8.276 um	Coef. Var.:	232.3%
		Skewness:	9.399 Right skewed
		Kurtosis:	109.9 Leptokurtic

% >	5.000	16.00	50.00	84.00	95.00
Size um	29.45	14.17	5.606	1.677	0.530

maff.$05

name:	MAFF.$05	Group ID:	MAFF
nple ID:	LLF1 1052	Run number:	6
:rator:	DMT		
nments:	MAFF PROJECT : PL0513 DISPERSED IN CALGON		
rt time:	10:37 29 Apr 1996	Run length:	60 Seconds
np Speed:	48		
curation:	11%		
ical model:	Fraunhofer		
130	Fluid module		
ware:	1.50	Firmware:	1.3 1.8



Volume Statistics (Arithmetic) maff.$05

ılations from 0.10 um to 900.00 um

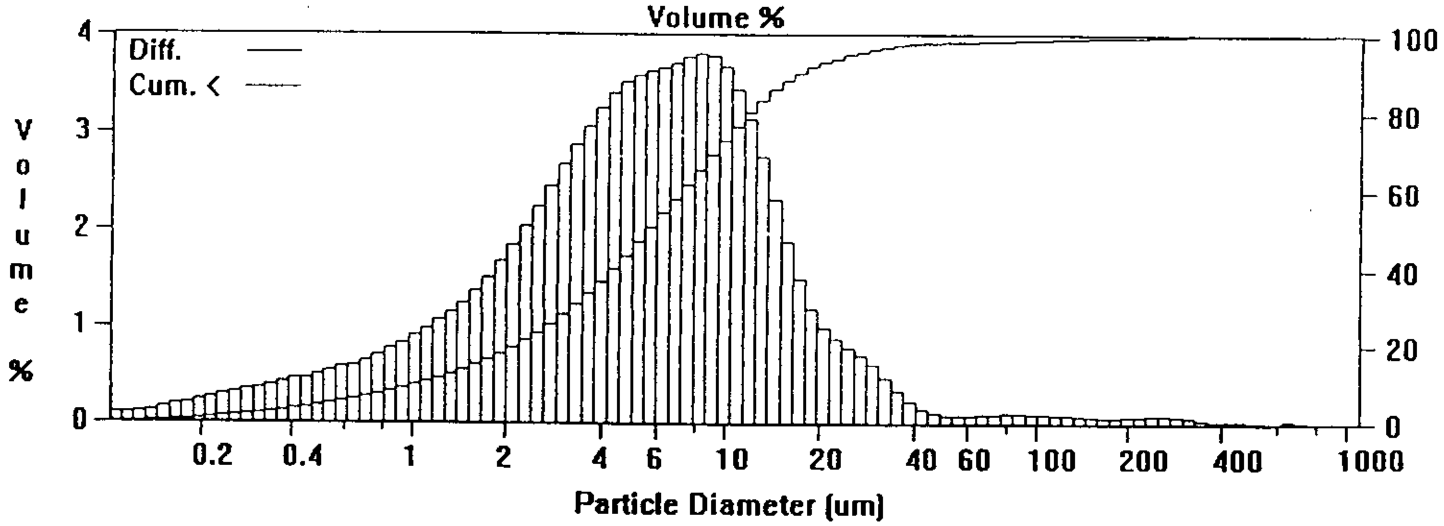
ne	100.0%		
:	15.40 um	95% Conf. Limits:	2.982-27.82 um
an:	6.251 um	Std. Dev.:	63.35 um
/Median Ratio:	2.463	Variance:	4014 um^2
:	9.065 um	Coef. Var.:	411.4%
		Skewness:	10.22 Right skewed
		~~Kurtosis:~~	~~112.4 Leptokurtic~~

·	5.000	16.00	50.00	84.00	95.00
c um	29.67	15.13	6.251	1.877	0.550

COULTER[R] LS Particle Size Analysis 10:52 29 Apr 1996

maff.$06

File name:	MAFF.$06	Group ID:	MAFF
Sample ID:	LLF1 1053	Run number:	7
~~Operator:~~	~~DMT~~		
Comments:	MAFF PROJECT : PL0513 DISPERSED IN CALGON		
Start time:	10:50 29 Apr 1996	Run length:	60 Seconds
Pump Speed:	48		
Obscuration:	12%		
Optical model:	Fraunhofer		
LS 130	Fluid module		
Software:	1.50	Firmware:	1.3 1.8



Volume Statistics (Arithmetic) maff.$06

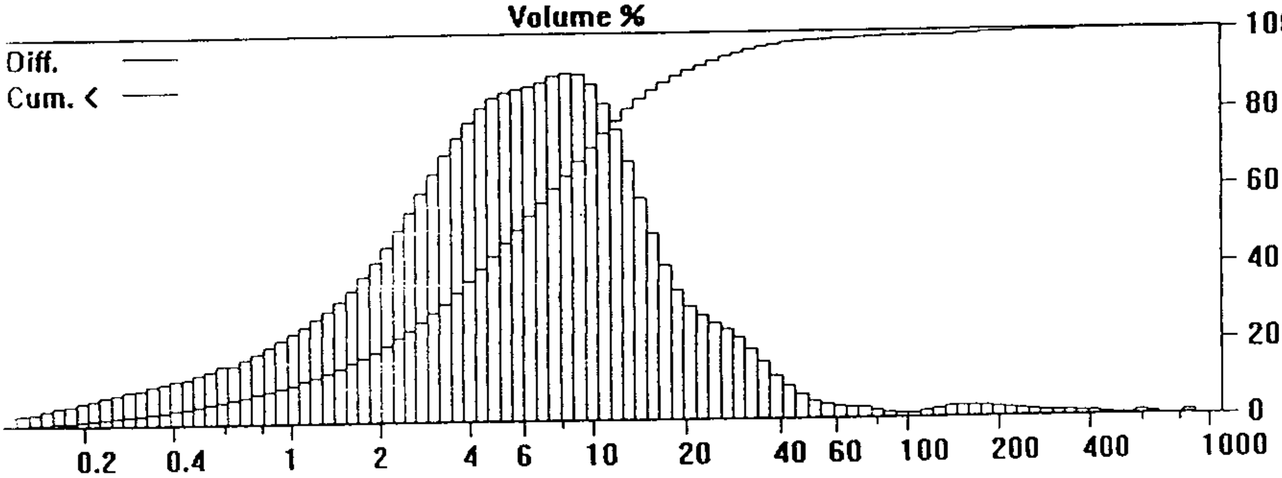
Calculations from 0.10 um to 900.00 um

Volume	100.0%		
Mean:	10.23 um	95% Conf. Limits:	4.507-15.96 um
Median:	5.412 um	Std. Dev.:	29.22 um
Mean/Median Ratio:	1.891	Variance:	854.1 um^2
Mode:	8.276 um	Coef. Var.:	285.5%
		Skewness:	11.91 Right skewed
		Kurtosis:	185.6 Leptokurtic

% >	5.000	16.00	50.00	84.00	95.00
Size um	24.35	12.81	5.412	1.631	0.510

maff.$07

:	MAFF.$07	Group ID:	MAFF
):	LLFI 1054	Run number:	8
	DMT		
s:	MAFF PROJECT : PL0513		
	DISPERSED IN CALGON		
:	10:59 29 Apr 1996	Run length:	60 Seconds
ed:	48		
on:	11%		
odel:	Fraunhofer		
	Fluid module		
	1.50	Firmware:	1.3 1.8



Volume Statistics (Arithmetic) maff.$07

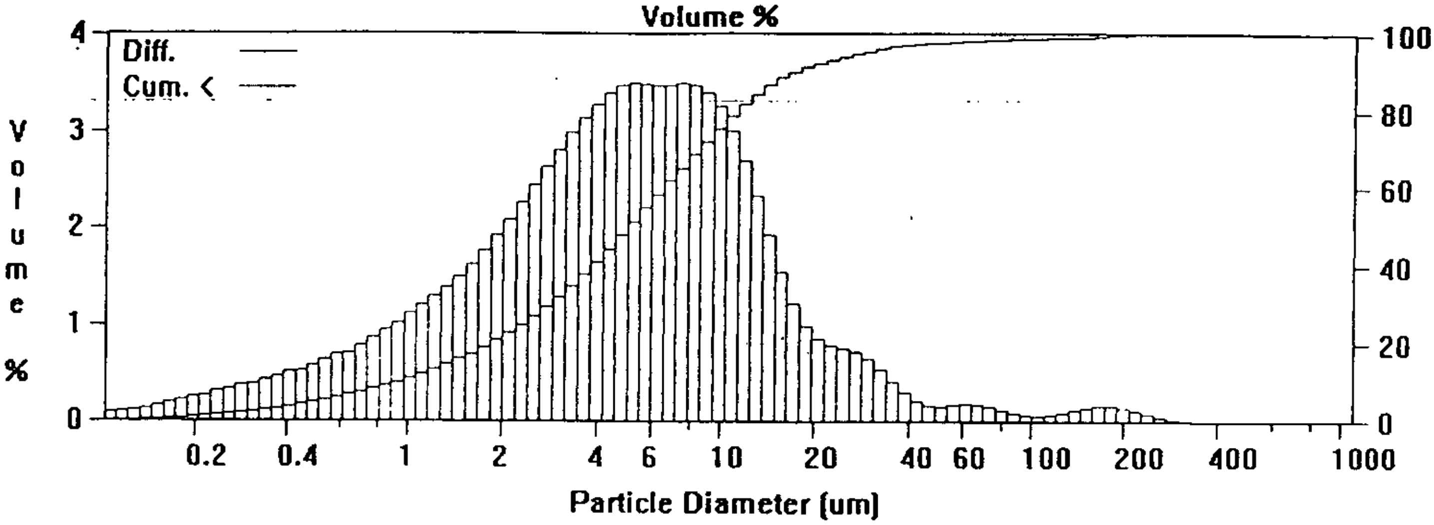
ons from 0.10 um to 900.00 um

	100.0%		
	11.52 um	95% Conf. Limits:	4.432-18.60 um
	5.550 um	Std. Dev.:	36.15 um
edian Ratio:	2.075	Variance:	1307 um^2
	~~8.276 um~~	~~Coef. Var.:~~	~~313.9%~~
		Skewness:	13.05 Right skewed
		Kurtosis:	221.6 Leptokurtic

	5.000	16.00	50.00	84.00	95.00
m	29.39	14.08	5.550	1.605	0.507

maff.$08

File name:	MAFF.$08	Group ID:	MAFF
Sample ID:	MFF1 961	Run number:	9
Operator:	DMT		
Comments:	MAFF PROJECT : PL0513 DISPERSED IN CALGON		
Start time:	11:23 29 Apr 1996	Run length:	61 Seconds
Pump Speed:	48		
Obscuration:	9%		
Optical model:	Fraunhofer		
LS 130	Fluid module		
Software:	1.50	Firmware:	1.3 1.8



Volume Statistics (Arithmetic) maff.$08

Calculations from 0.10 um to 900.00 um

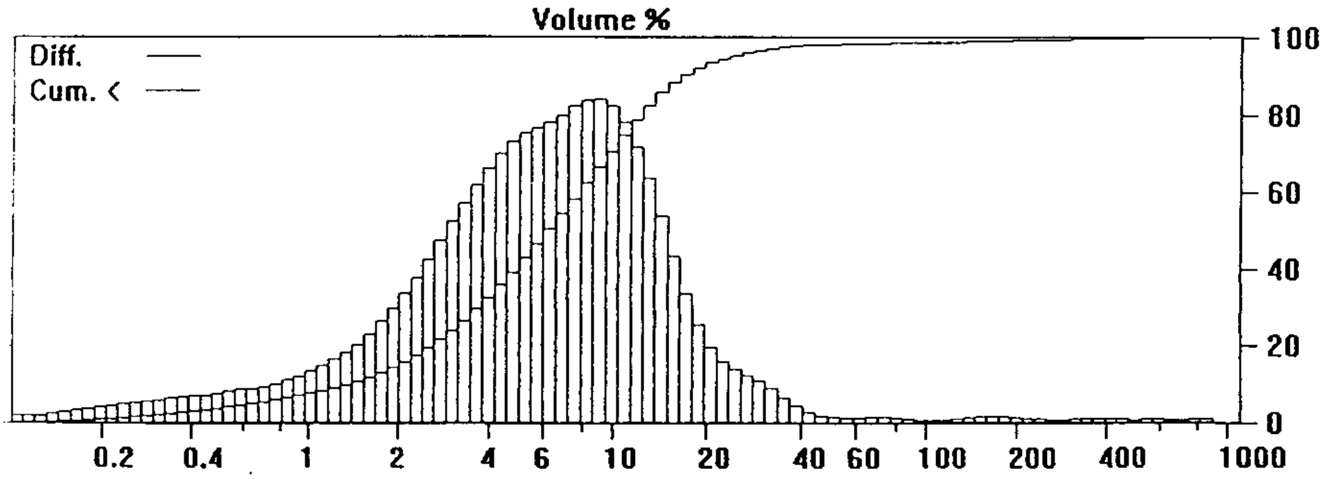
Volume	100.0%		
Mean:	9.381 um	95% Conf. Limits:	5.288-13.47 um
Median:	4.859 um	Std. Dev.:	20.88 um
Mean/Median Ratio:	1.931	Variance:	436.1 um^2
Mode:	5.249 um	Coef. Var.:	222.6%
		Skewness:	7.483 Right skewed
		Kurtosis:	67.10 Leptokurtic

%>	5.000	16.00	50.00	84.00	95.00
Size um	26.51	12.29	4.859	1.402	0.486

R[R] LS Particle Size Analysis 11:35 29 Apr 1996

maff.$09

ıne:	MAFF.$09	Group ID:	MAFF
: ID:	LLf1 1289	Run number:	10
ır:	DMT		
:nts:	MAFF PROJECT : PL0513		
	DISPERSED IN CALGON		
ne:	11:33 29 Apr 1996	Run length:	60 Seconds
;peed:	48		
ation:	11%		
model:	Fraunhofer		
	Fluid module		
e:	1.50	Firmware:	1.3 1.8



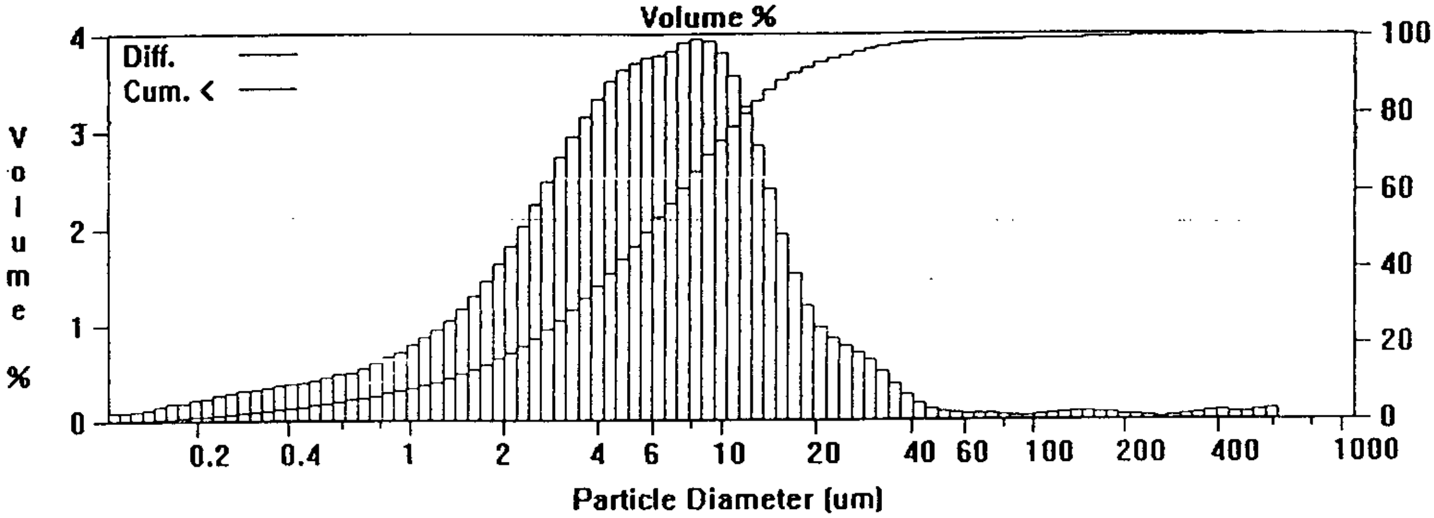
Volume Statistics (Arithmetic) maff.$09

tions from 0.10 um to 900.00 um

	100.0%		
	11.80 um	95% Conf. Limits:	3.083-20.51 um
:	5.962 um	Std. Dev.:	44.47 um
ledian Ratio:	1.979	Variance:	1977 um^2
	9.065 um	Coef. Var.:	376.9%
		Skewness:	12.93 Right skewed
		Kurtosis:	192.4 Leptokurtic

	5.000	16.00	50.00	84.00	95.00
um	23.05	13.05	5.962	2.051	0.612

File name:	MAFF.$10	Group ID:	MAFF
Sample ID:	LLI1 1291	Run number:	11
Operator:	DMT		
Comments:	MAFF PROJECT : PL0513 DISPERSED IN CALGON		
Start time:	11:41 29 Apr 1996	Run length:	61 Seconds
Pump Speed:	48		
Obscuration:	11%		
Optical model:	Fraunhofer		
LS 130	Fluid module		
Software:	1.50	Firmware:	1.3 1.8



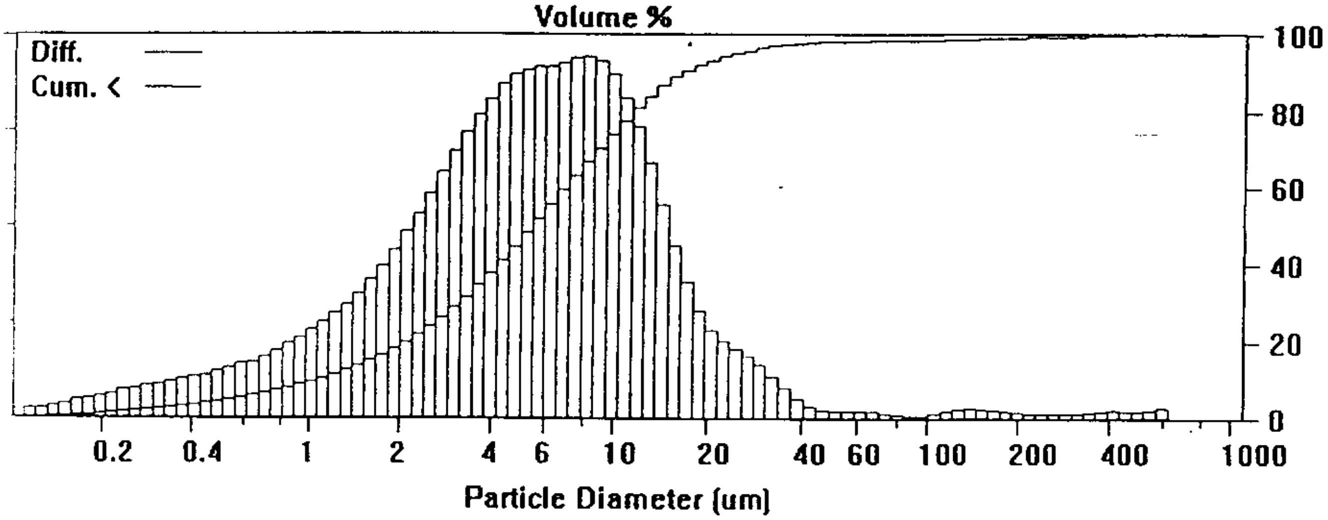
Volume Statistics (Arithmetic) maff.$10

Calculations from 0.10 um to 900.00 um

Volume	100.0%		
Mean:	11.65 um	95% Conf. Limits:	3.768-19.54 um
Median:	5.617 um	Std. Dev.:	40.22 um
Mean/Median Ratio:	2.074	Variance:	1618 um^2
Mode:	8.276 um	Coef. Var.:	345.2%
		Skewness:	10.63 Right skewed
		Kurtosis:	125.2 Leptokurtic

% >	5.000	16.00	50.00	84.00	95.00
Size um	24.63	12.93	5.617	1.855	0.581

ıne:	MAFF.$11	Group ID:	MAFF
· ID:	LLTI 1283 (1293)	Run number:	12
ır:	DMT		
·nts:	MAFF PROJECT : PL0513		
	DISPERSED IN CALGON		
ne:	11:51 29 Apr 1996	Run length:	61 Seconds
·peed:	48		
ation:	10%		
model:	Fraunhofer		
	Fluid module		
e:	1.50	Firmware:	1.3 1.8



Volume Statistics (Arithmetic) maff.$11

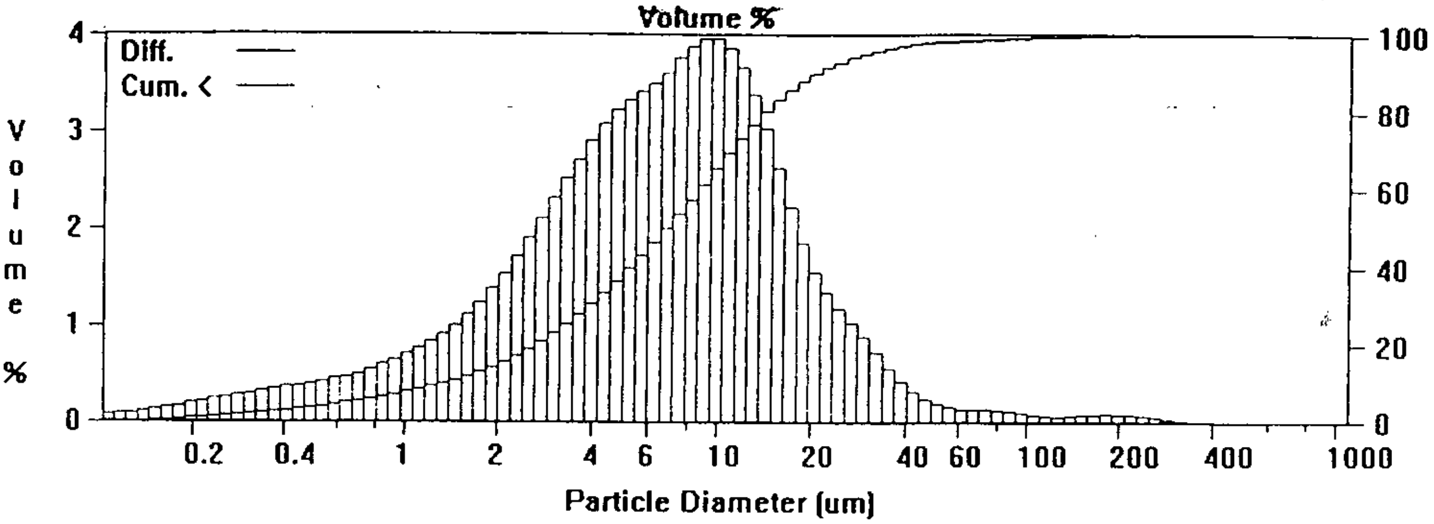
Ions from 0.10 um to 900.00 um

	100.0%		
	11.26 um	95% Conf. Limits:	3.514-19.01 um
	5.254 um	Std. Dev.:	39.54 um
·edian Ratio:	2.144	Variance:	1563 um^2
	8.276 um	Coef. Var.:	351.0%
		Skewness:	10.60 Right skewed
		Kurtosis:	125.9 Leptokurtic

	~~5.000~~	~~16.00~~	~~50.00~~	~~84.00~~	~~95.00~~
um	23.51	12.42	5.254	1.628	0.523

maff.$12

File name:	MAFF.$12	Group ID:	MAFF
Sample ID:	LLf1 1297	Run number:	13
Operator:	DMT		
Comments:	MAFF PROJECT : PL0513 DISPERSED IN CALGON		
Start time:	12:03 29 Apr 1996	Run length:	61 Seconds
Pump Speed:	48		
Obscuration:	11%		
Optical model:	Fraunhofer		
LS 130	Fluid module		
Software:	1.50	Firmware:	1.3 1.8



Volume Statistics (Arithmetic) maff.$12

Calculations from 0.10 um to 900.00 um

Volume	100.0%		
Mean:	10.58 um	95% Conf. Limits:	6.817-14.34 um
Median:	6.579 um	Std. Dev.:	19.18 um
Mean/Median Ratio:	1.608	Variance:	367.8 um^2
Mode:	9.929 um	Coef. Var.:	181.3%
		Skewness:	8.496 Right skewed
		Kurtosis:	96.69 Leptokurtic

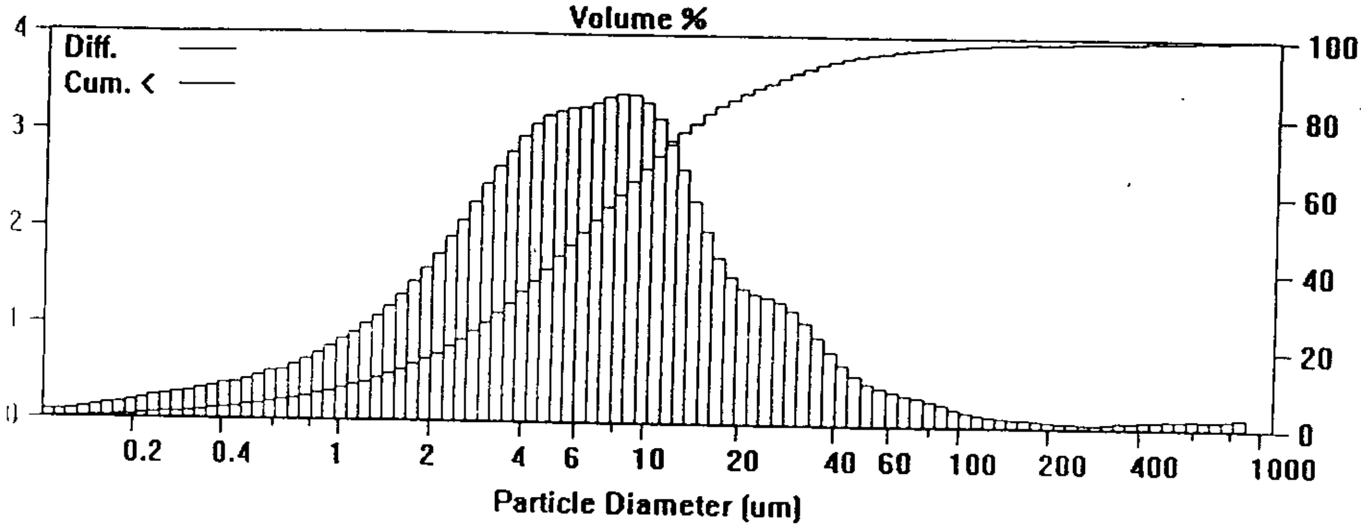
% >	5.000	16.00	50.00	84.00	95.00
Size um	28.46	15.40	6.579	2.040	0.611

ıame: MAFF.$13
ıle ID: JBs 1271
ıtor: DMT
ıents: MAFF PROJECT : PLO513
DISPERSED IN CALGON
Time: 12:12 29 Apr 1996
ı Speed: 48
ıration: 9%
al model: Fraunhofer
:0 Fluid module
are: 1.50

Group ID: MAFF
Run number: 14

Run length: 60 Seconds

Firmware: 1.3 1.8



Volume Statistics (Arithmetic) maff.$13

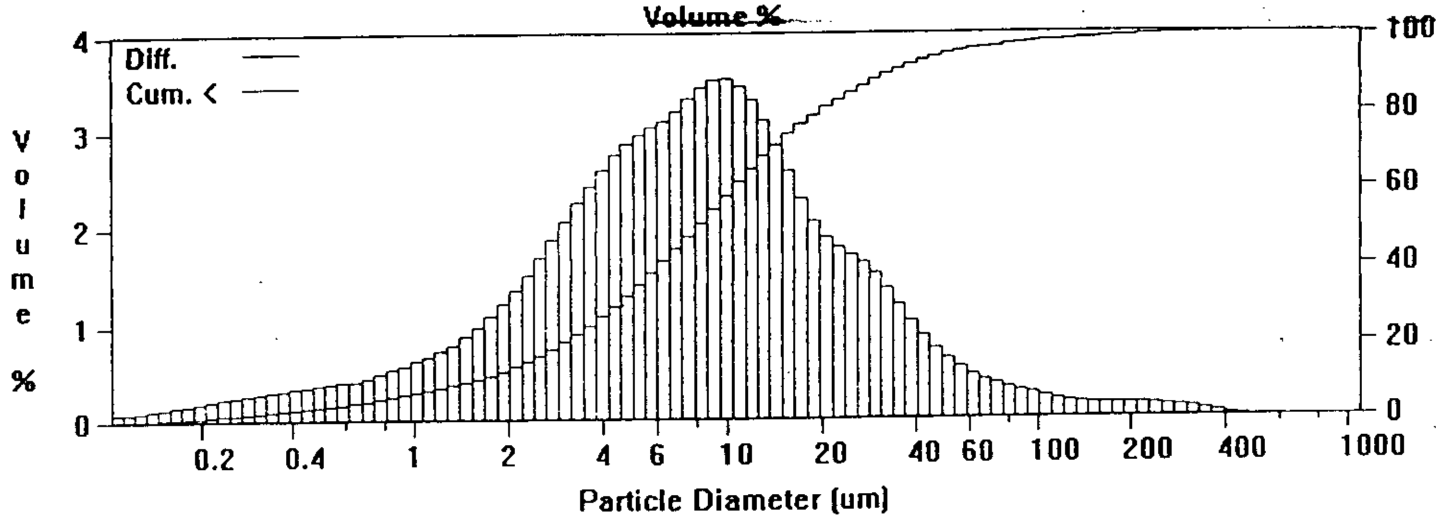
ıtions from 0.10 um to 900.00 um

:	100.0%		
	17.11 um	95% Conf. Limits:	5.098-29.13 um
ı:	6.192 um	Std. Dev.:	61.30 um
Median Ratio:	2.764	Variance:	3758 um^2
	8.276 um	Coef. Var.:	358.2%
		Skewness:	9.734 Right skewed
		Kurtosis:	106.5 Leptokurtic

	~~5.000~~	~~16.00~~	~~50.00~~	~~84.00~~	~~95.00~~
um	44.02	18.20	6.192	1.856	0.617

maff.$14

File name:	MAFF.$14	Group ID:	MAFF
Sample ID:	JBs 1275	Run number:	15
Operator:	DMT		
Comments:	MAFF PROJECT : PL0513 DISPERSED IN CALGON		
Start time:	12:21 29 Apr 1996	Run length:	61 Seconds
Pump Speed:	48		
Obscuration:	10%		
Optical model:	Fraunhofer		
LS 130	Fluid module		
Software:	1.50	Firmware:	1.3 1.8



Volume Statistics (Arithmetic) maff.$14

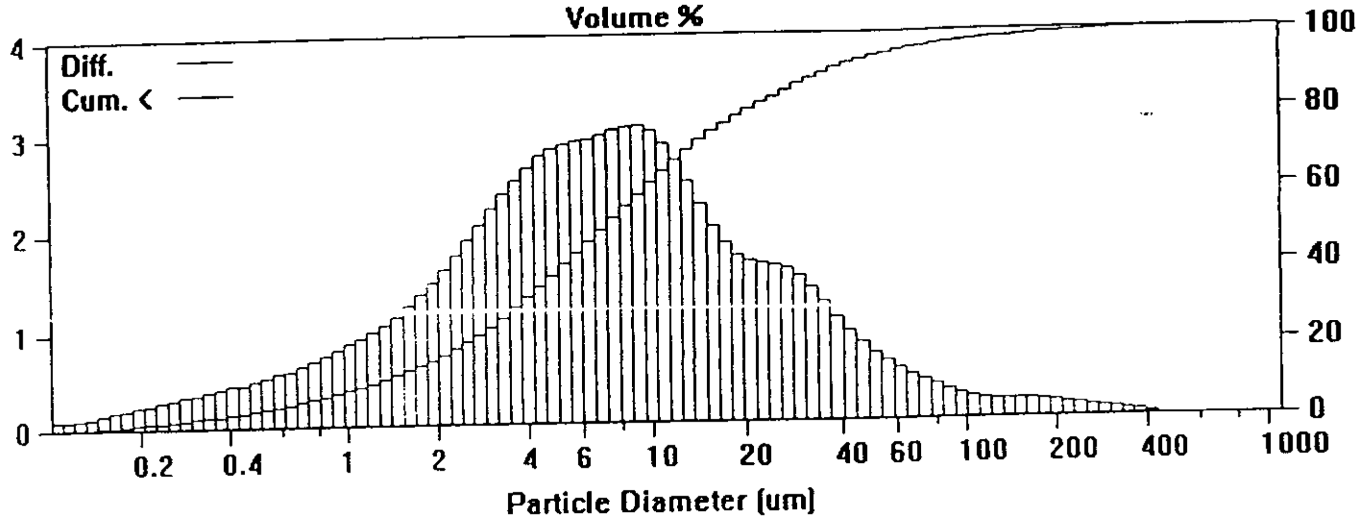
Calculations from 0.10 um to 900.00 um

Volume	100.0%		
Mean:	16.21 um	95% Conf. Limits:	9.706-22.72 um
Median:	7.752 um	Std. Dev.:	33.20 um
Mean/Median Ratio:	2.092	Variance:	1102 um^2
Mode:	9.929 um	Coef. Var.:	204.8%
		Skewness:	6.569 Right skewed
		Kurtosis:	56.55 Leptokurtic

%>	5.000	16.00	50.00	84.00	95.00
Size um	52.10	22.98	7.752	2.315	0.681

maff.$15

ıame:	MAFF.$15	Group ID:	MAFF
ıle ID:	JBs 1$54 (1354)	Run number:	10
ator:	DMT		
nents:	MAFF PROJECT : PL0513 DISPERSED IN CALGON		
time:	12:33 29 Apr 1996	Run length:	60 Seconds
ı Speed:	48		
uration:	11%		
al model:	Fraunhofer		
30	Fluid module		
vare:	1.50	Firmware:	1.3 1.8



Volume Statistics (Arithmetic) maff.$15

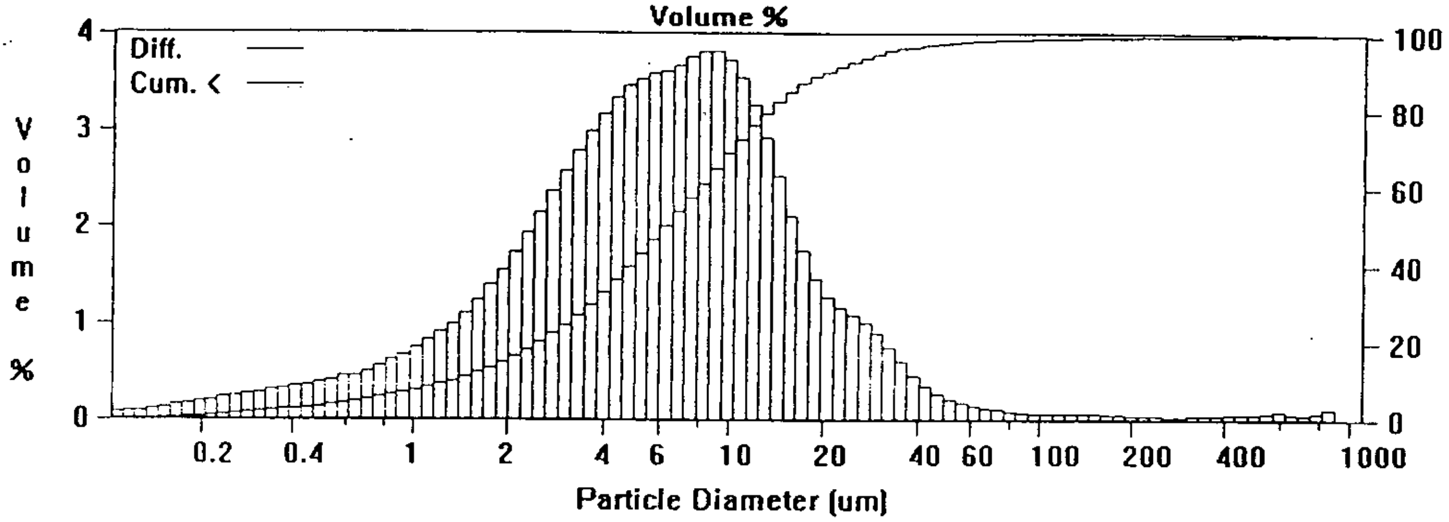
ulations from 0.10 um to 900.00 um

ıme	100.0%		
ın:	15.89 um	95% Conf. Limits:	9.493-22.28 um
lian:	6.681 um	Std. Dev.:	32.62 um
an/Median Ratio:	2.378	Variance:	1064 um^2
de:	9.065 um	Coef. Var.:	205.3%
		Skewness:	5.918 Right skewed
		Kurtosis:	45.61 Leptokurtic

% >	5.000	16.00	50.00	84.00	95.00
ize um	55.94	23.74	6.681	1.751	0.540

maff.$16

File name:	MAFF.$16	Group ID:	MAFF
Sample ID:	FXd 1248	Run number:	17
Operator:	DMT		
Comments:	MAFF PROJECT : PL0513 DISPERSED IN CALGON		
Start time:	12:41 29 Apr 1996	Run length:	61 Seconds
Pump Speed:	48		
Obscuration:	12%		
Optical model:	Fraunhofer		
LS 130	Fluid module		
Software:	1.50	Firmware:	1.3 1.8



Volume Statistics (Arithmetic) maff.$16

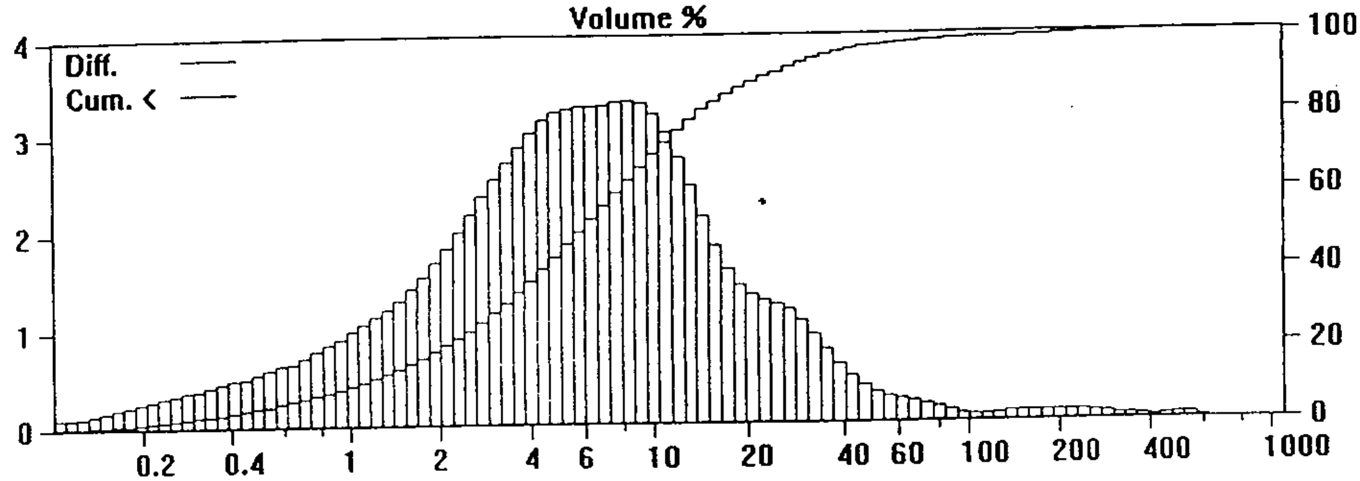
Calculations from 0.10 um to 900.00 um

Volume	100.0%		
Mean:	13.53 um	95% Conf. Limits:	3.364-23.69 um
Median:	6.016 um	Std. Dev.:	51.85 um
Mean/Median Ratio:	2.249	Variance:	2689 um^2
Mode:	9.065 um	Coef. Var.:	383.3%
		Skewness:	11.89 Right skewed
		Kurtosis:	158.1 Leptokurtic

% >	5.000	16.00	50.00	84.00	95.00
Size um	30.07	14.67	6.016	1.964	0.634

maff.$17

...name:	MAFF.017	Group ID:	MAFF
...ple ID:	FXd 1252	Run number:	18
...ator:	DMT		
...ments:	MAFF PROJECT : PL0513 DISPERSED IN CALGON		
...time:	12:50 29 Apr 1996	Run length:	60 Seconds
...p Speed:	48		
...uration:	10%		
...al model:	Fraunhofer		
...30	Fluid module		
...vare:	1.50	Firmware:	1.3 1.8



Volume Statistics (Arithmetic) maff.$17

...ulations from 0.10 um to 900.00 um

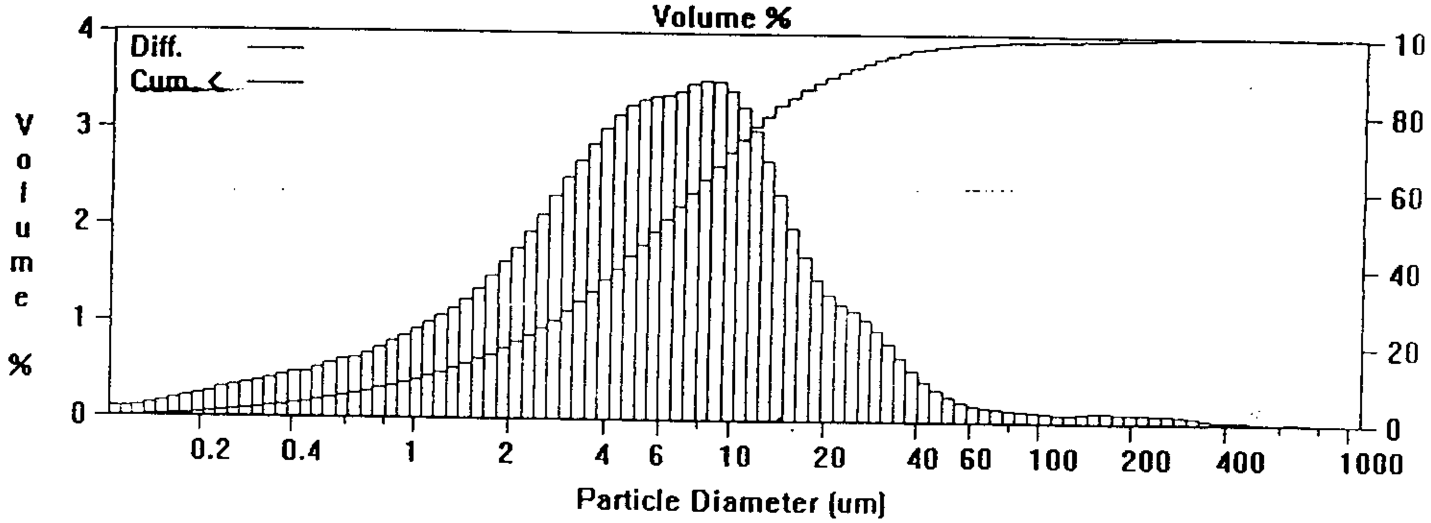
...me	100.0%		
...n:	12.10 um	95% Conf. Limits:	5.781-18.41 um
...lian:	5.543 um	Std. Dev.:	32.23 um
...n/Median Ratio:	2.182	Variance:	1039 um^2
...de:	8.276 um	Coef. Var.:	266.4%
		Skewness:	9.841 Right skewed
		Kurtosis:	122.6 Leptokurtic

...% >	5.000	16.00	50.00	84.00	95.00
...ize um	34.46	15.70	5.543	1.538	0.493

maff.$18

File name: MAFF.$18
Sample ID: FXd 1331
Operator: DMT
Comments: MAFF PROJECT : PL0513
DISPERSED IN CALGON
Start time: 13:04 29 Apr 1996
Pump Speed: 48
Obscuration: 11%
Optical model: Fraunhofer
LS 130 Fluid module
Software: 1.50

Group ID: MAFF
Run number: 19
Run length: 60 Seconds
Firmware: 1.3 1.8



Volume Statistics (Arithmetic) maff.$18

Calculations from 0.10 um to 900.00 um

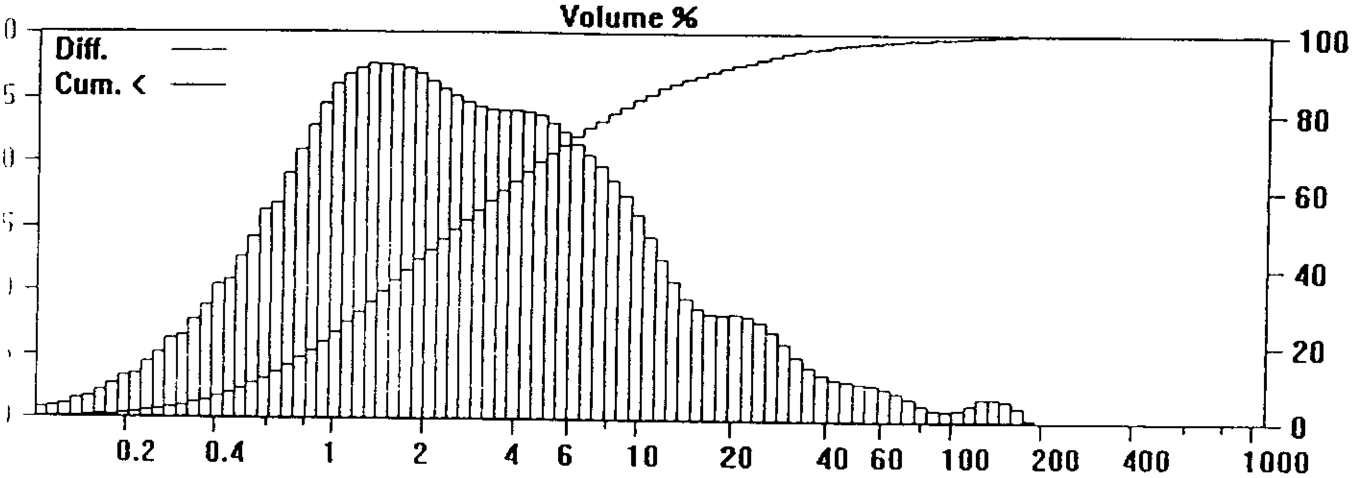
Volume 100.0%
Mean: 11.57 um
Median: 5.719 um
Mean/Median Ratio: 2.023
Mode: 8.276 um

95% Conf. Limits: 5.834-17.30 um
Std. Dev.: 29.25 um
Variance: 855.6 um^2
Coef. Var.: 252.9%
Skewness: 10.14 Right skewed
Kurtosis: 140.0 Leptokurtic

%>	5.000	16.00	50.00	84.00	95.00
Size um	32.23	15.05	5.719	1.611	0.502

maff.$19

ame:	MAFF.$19	Group ID:	MAFF
le ID:	FS4 408 (FS4,408)	Run number:	20
tor:	DMT		
ents:	MAFF PROJECT : PL0513 DISPERSED IN CALGON		
ime:	13:11 29 Apr 1996	Run length:	60 Seconds
Speed:	48		
ration:	12%		
l model:	Fraunhofer		
l	Fluid module		
re:	1.50	Firmware:	1.3 1.8



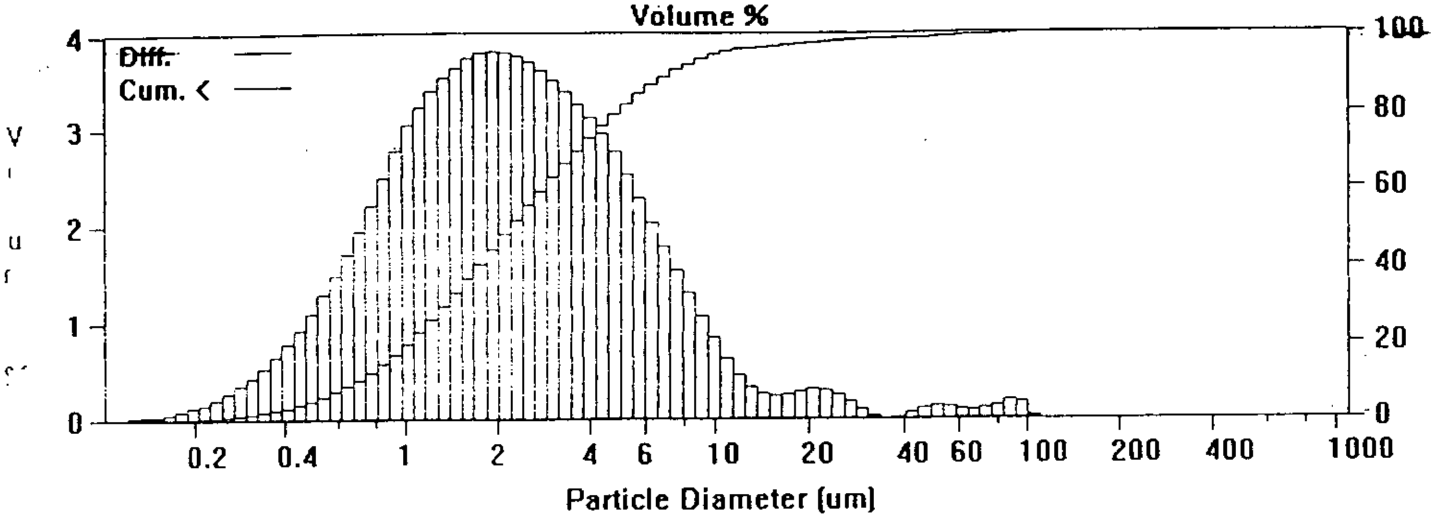
Volume Statistics (Arithmetic) maff.$19

tions from 0.10 um to 900.00 um

	100.0%		
	7.274 um	95% Conf. Limits:	4.096-10.45 um
:	2.480 um	Std. Dev.:	16.22 um
Median Ratio:	2.934	Variance:	262.9 um^2
	1.467 um	Coef. Var.:	222.9%
		Skewness:	5.830 Right skewed
		Kurtosis:	42.11 Leptokurtic

	5.000	16.00	50.00	84.00	95.00
um	28.07	10.00	2.480	0.754	0.369

ile name:	maff.$23	Group ID:	MAFF
ample ID:	FS5 409	Run number:	24
p ator:	DMT		
o... ments:	MAFF PROJECT : PL0513 DISPERSED IN CALGON		
t time:	14:44 29 Apr 1996	Run length:	60 Seconds
u p Speed:	48		
bscuration:	12%		
p cal model:	Fraunhofer		
S 30	Fluid module		
oftware:	1.50	Firmware:	1.3 1.8

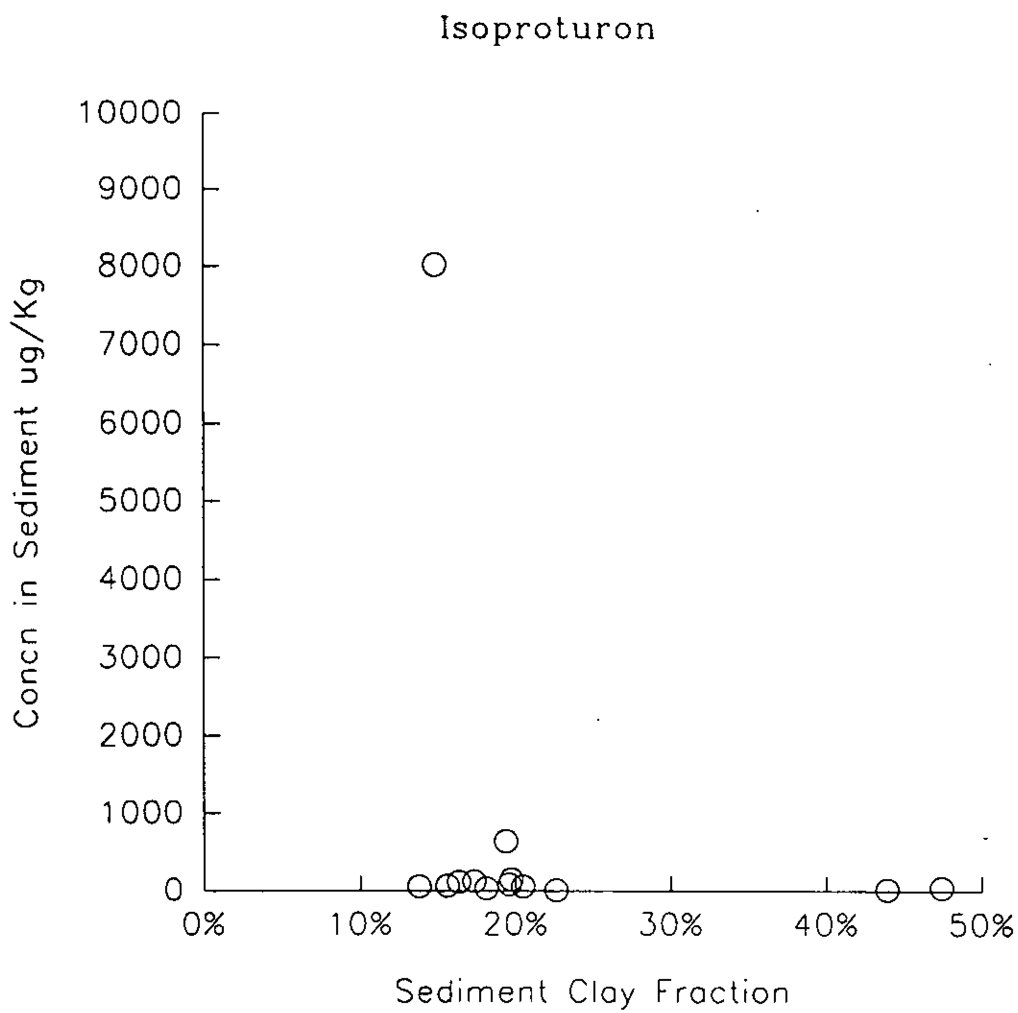


Volume Statistics (Arithmetic) maff.$23

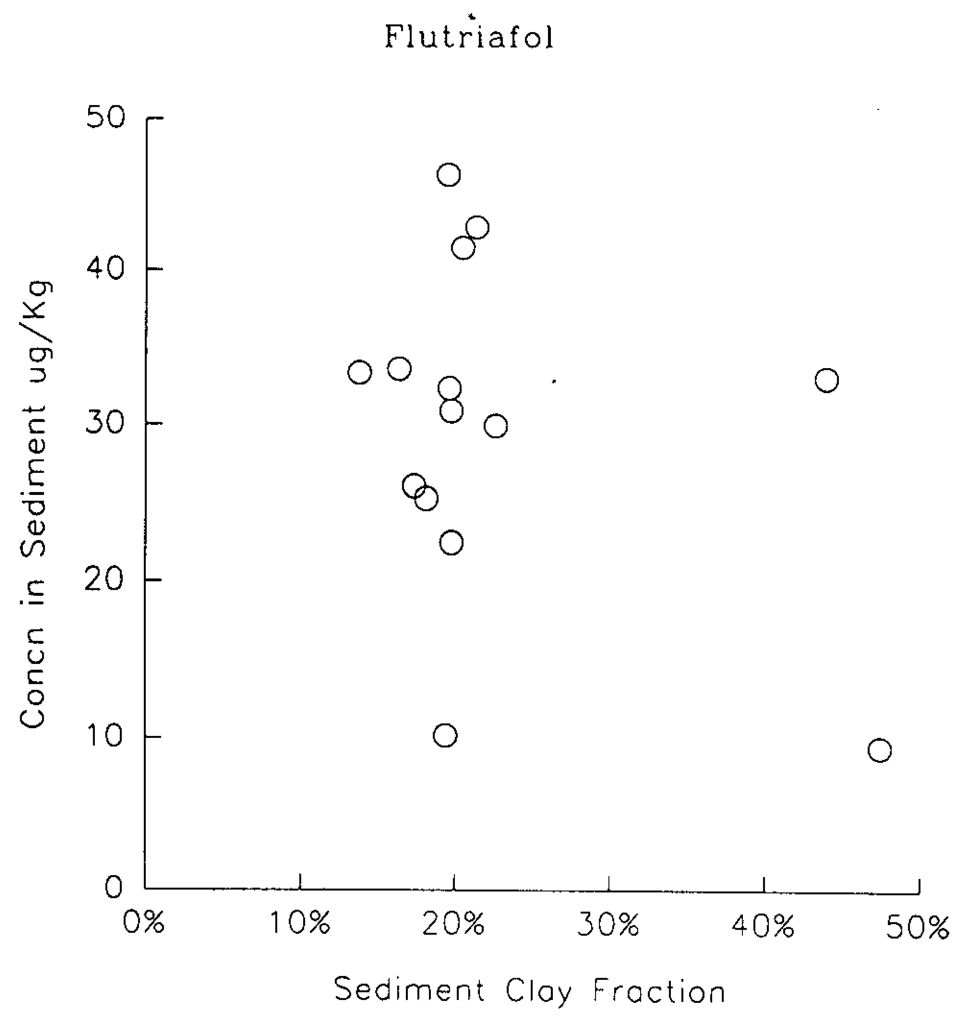
c culations from 0.10 um to 900.00 um

ume	100.0%		
lean:	4.064 um	95% Conf. Limits:	2.372-5.757 um
ian:	2.129 um	Std. Dev.:	8.633 um
n/Median Ratio:	1.909	Variance:	74.53 um^2
lode:	1.928 um	Coef. Var.:	212.4%
		Skewness:	7.463 Right skewed
		Kurtosis:	64.99 Leptokurtic

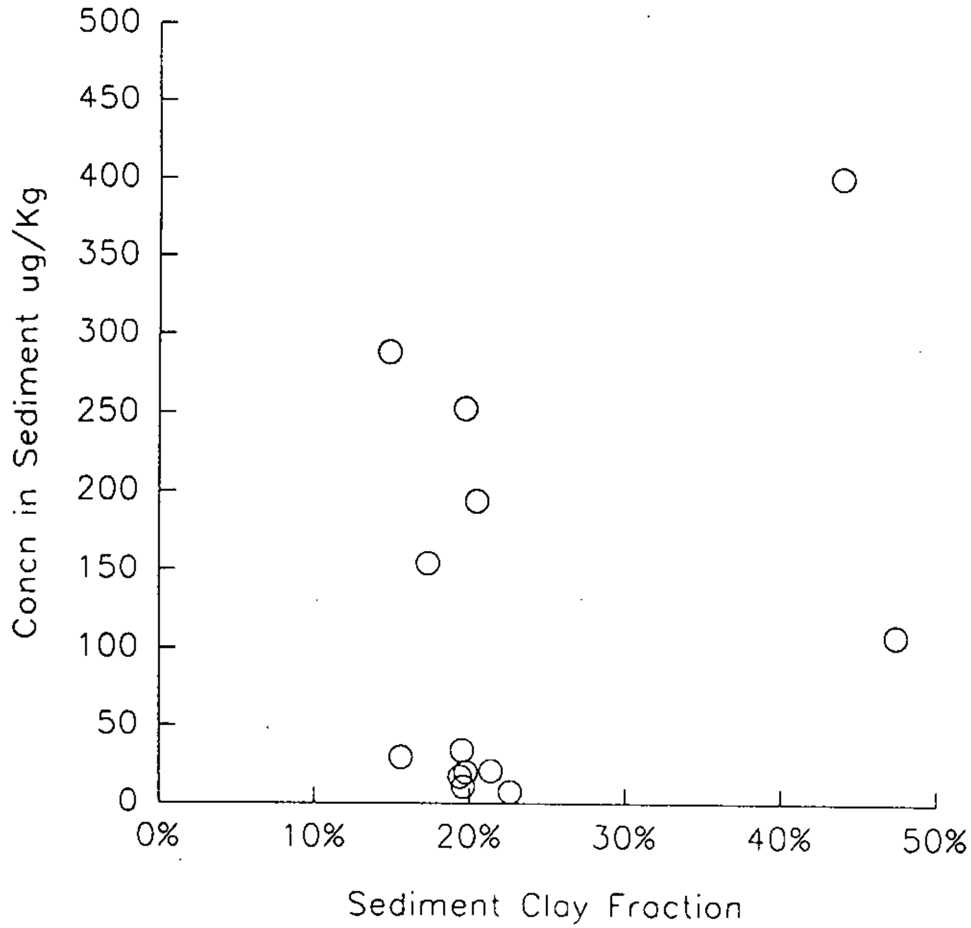
>	5.000	16.00	50.00	84.00	95.00
ize um	10.26	5.455	2.129	0.861	0.485

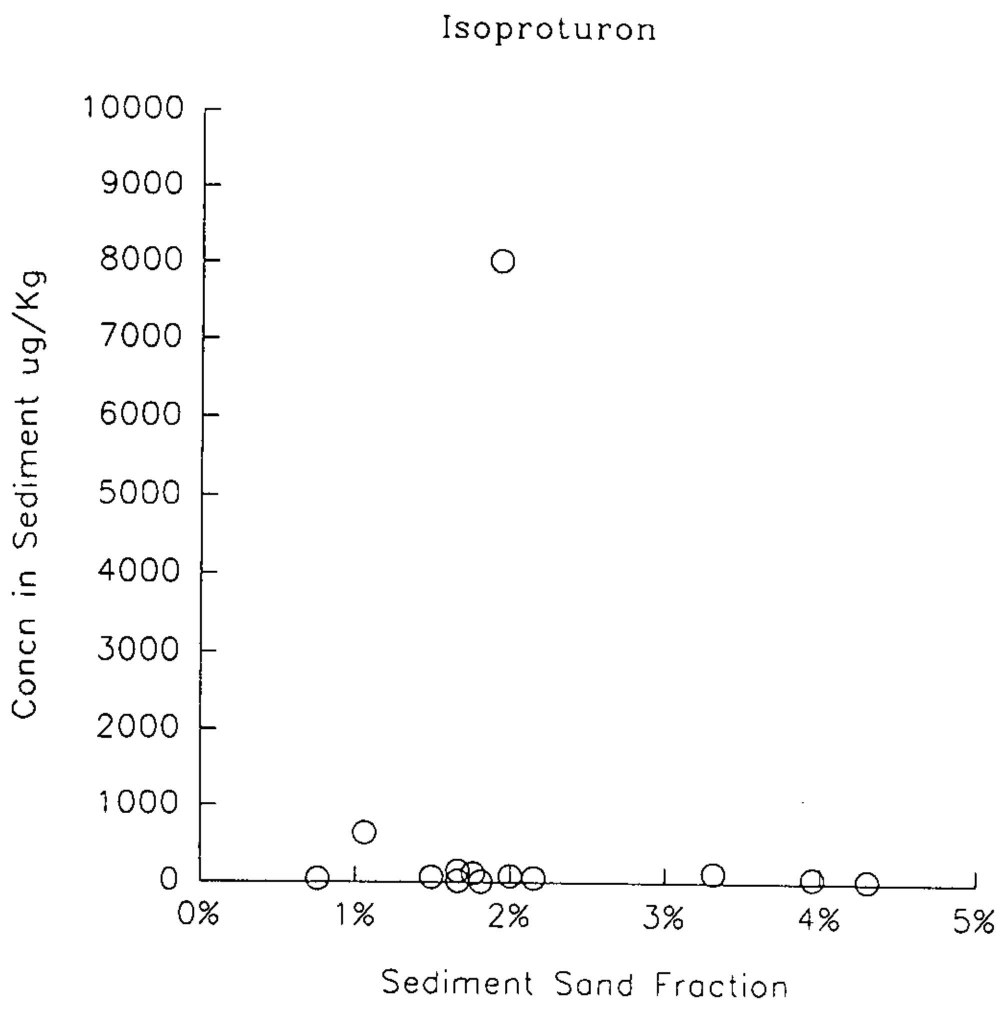


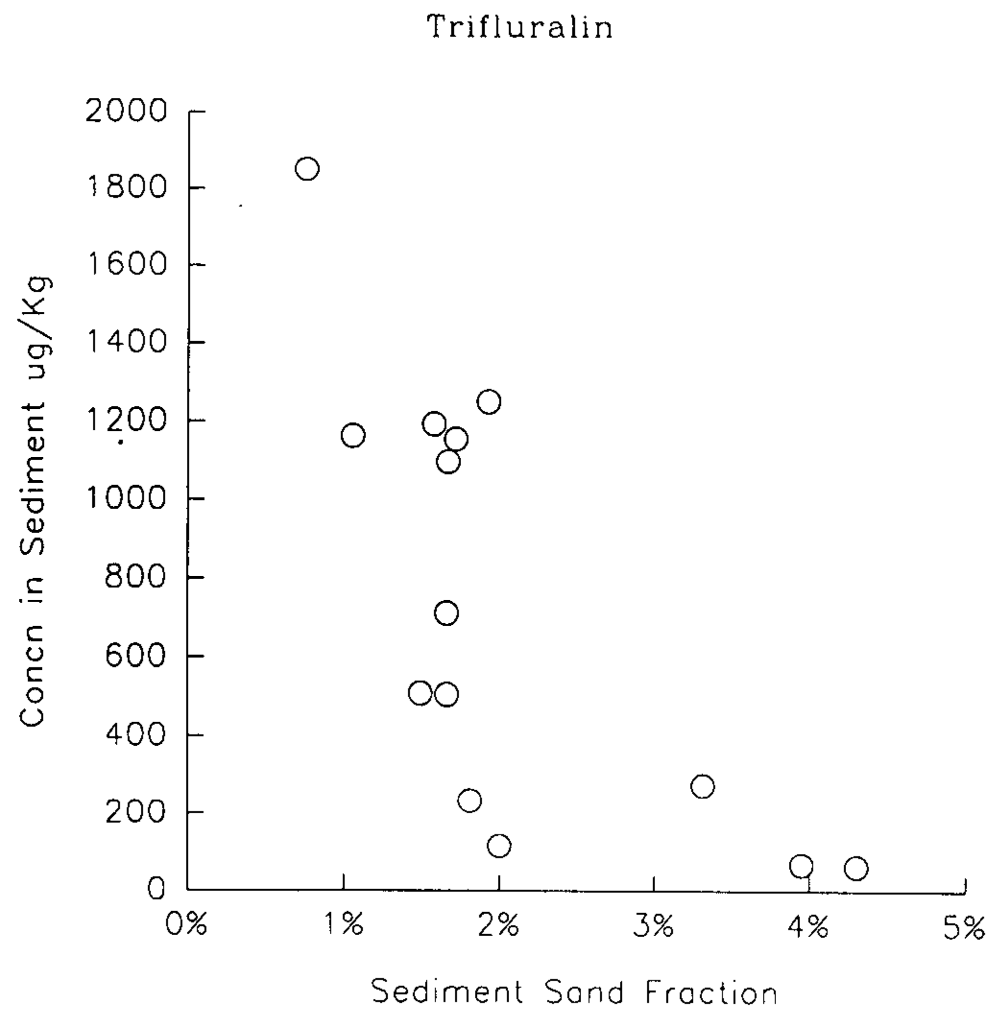
Isoproturon
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
Concn in Sediment ug/Kg
0%
10%
20%
30%
40%
50%
Sediment Clay Fraction


Flutriafol
Concn in Sediment ug/Kg
0
10
20
30
40
50
0%
10%
20%
30%
40%
50%
Sediment Clay Fraction

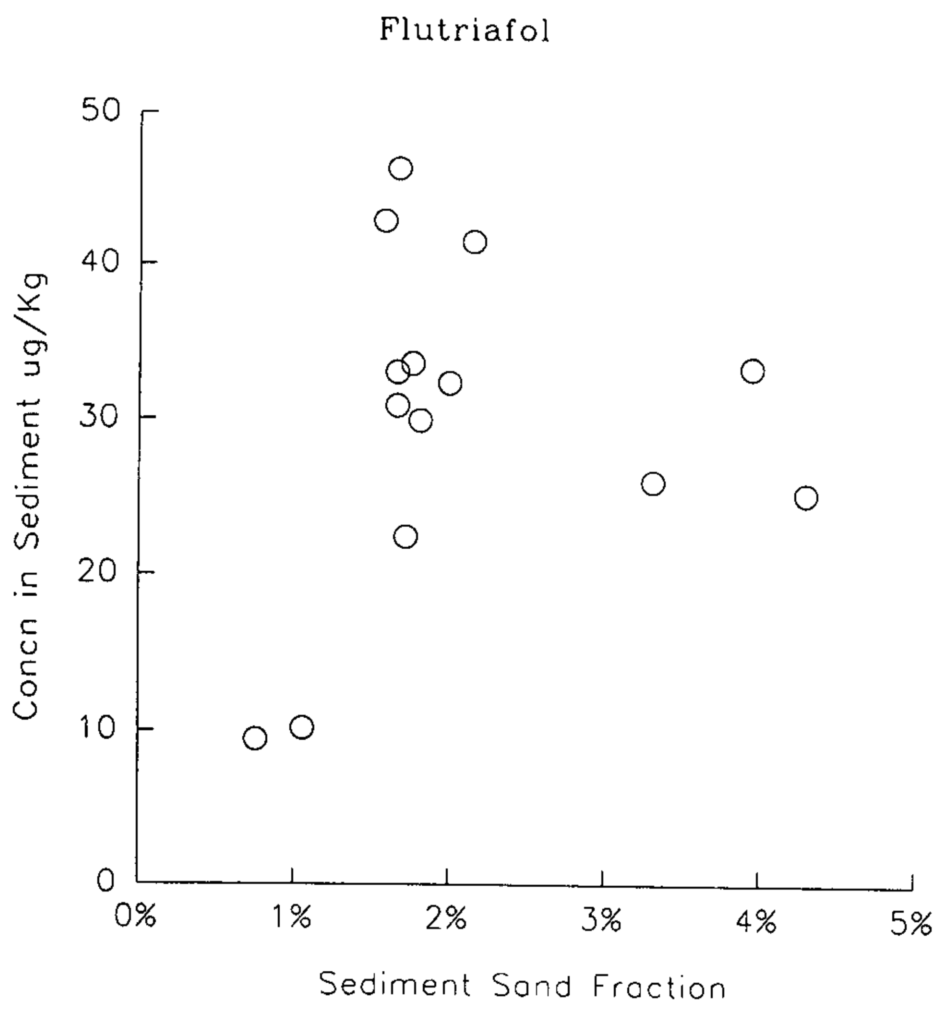
Propiconazol 1 & 2



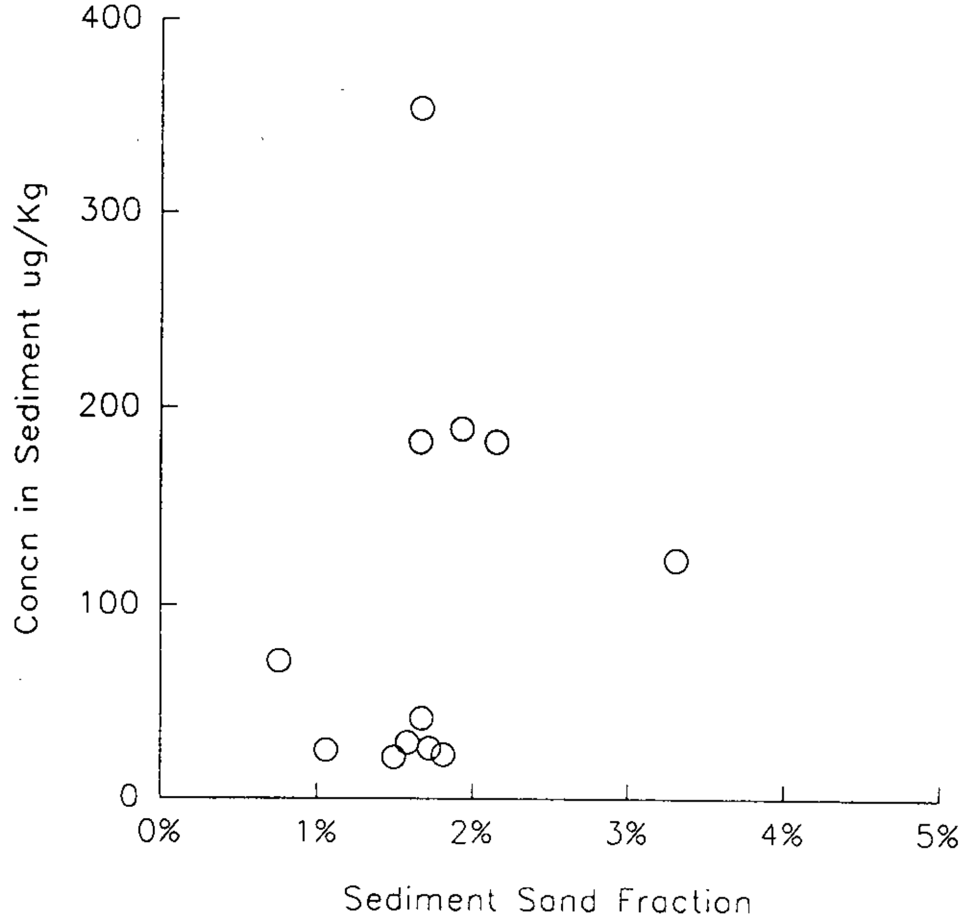

Isoproturon
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
Concn in Sediment ug/Kg
0%
1%
2%
3%
4%
5%
Sediment Sand Fraction

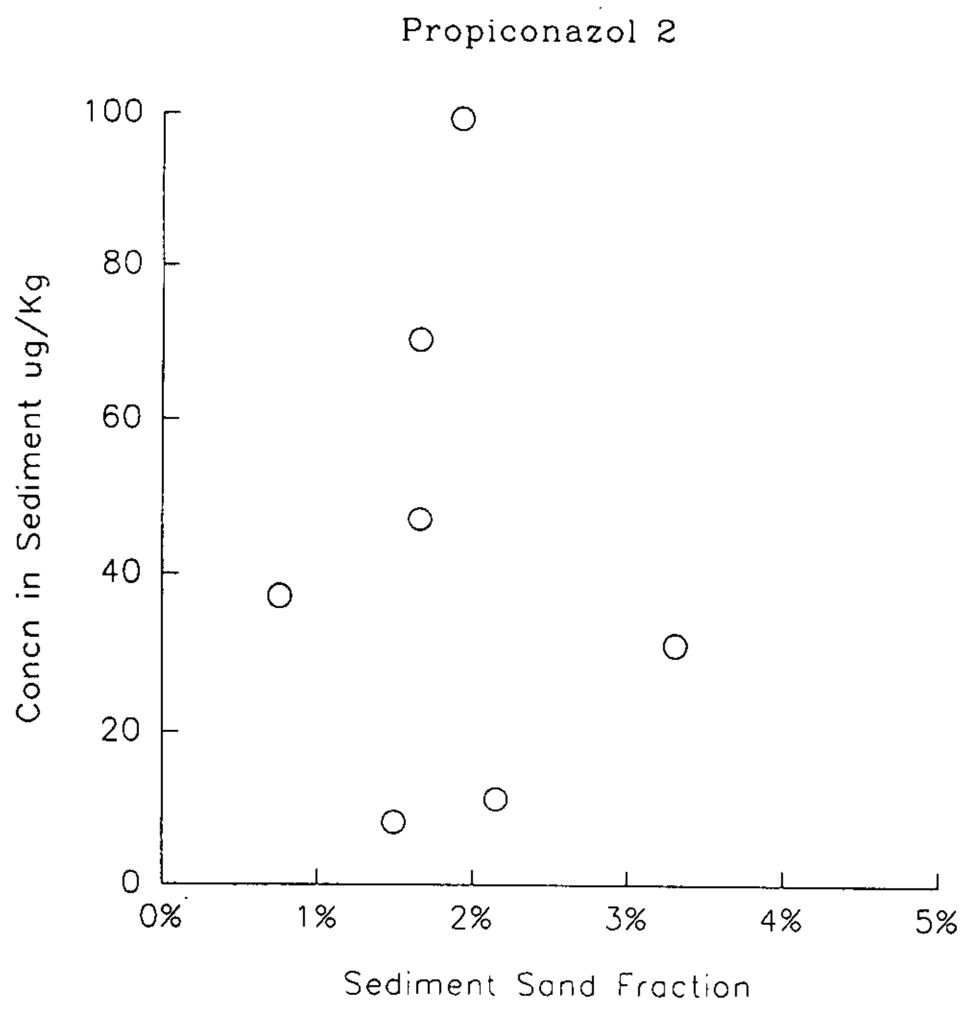


Trifluralin
Concn in Sediment ug/Kg
2000
1800
1600
1400
1200
1000
800
600
400
200
0
0%
1%
2%
3%
4%
5%
Sediment Sand Fraction

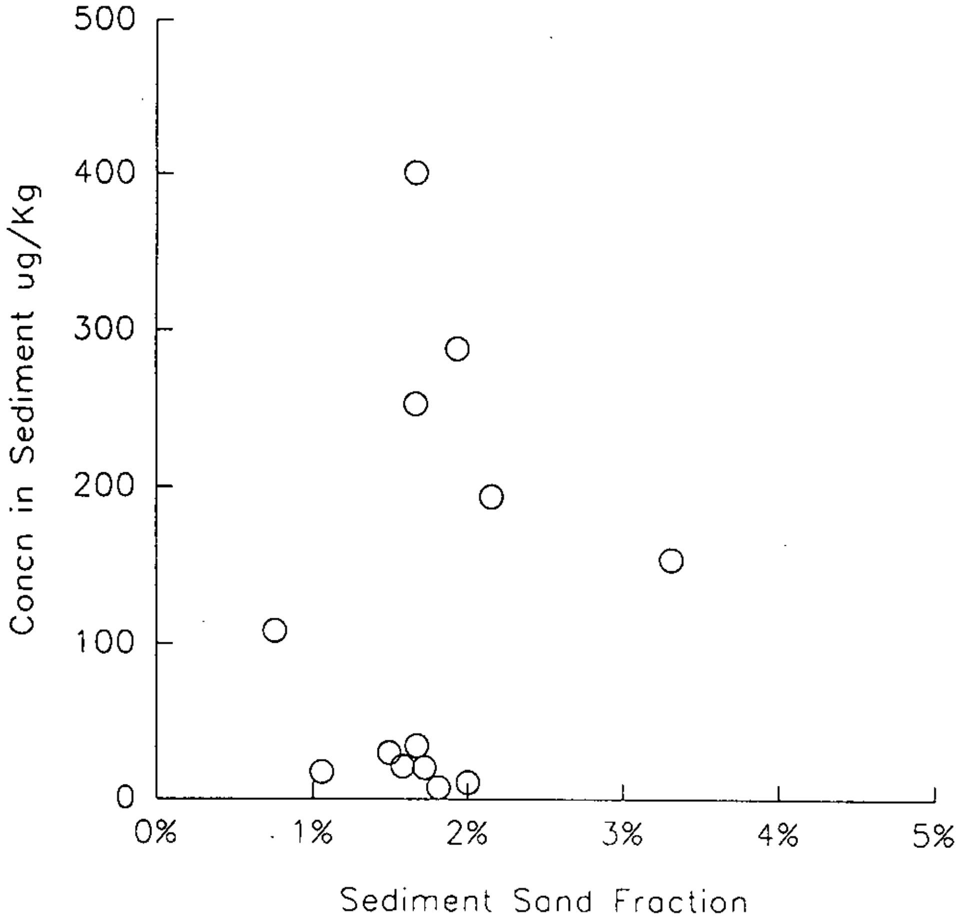

Flutriafol
Concn in Sediment ug/Kg
0
10
20
30
40
50
0%
1%
2%
3%
4%
5%
Sediment Sand Fraction

Propiconazol 1

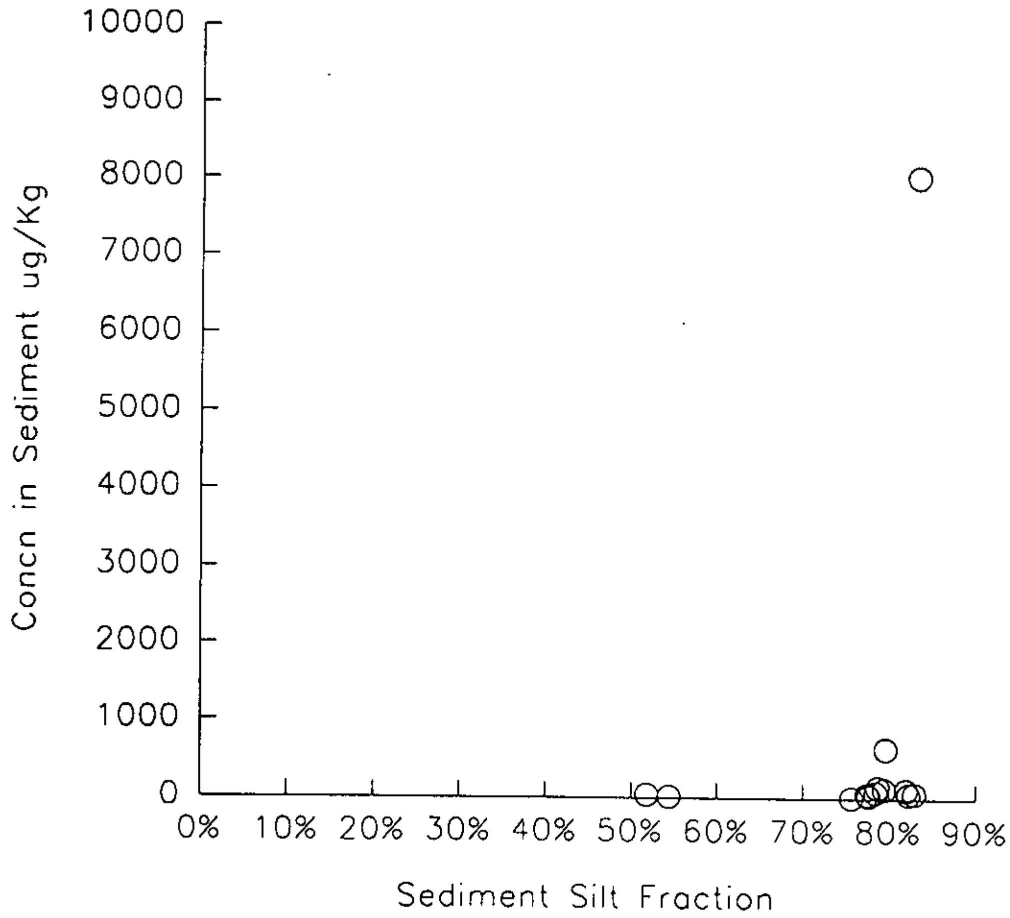


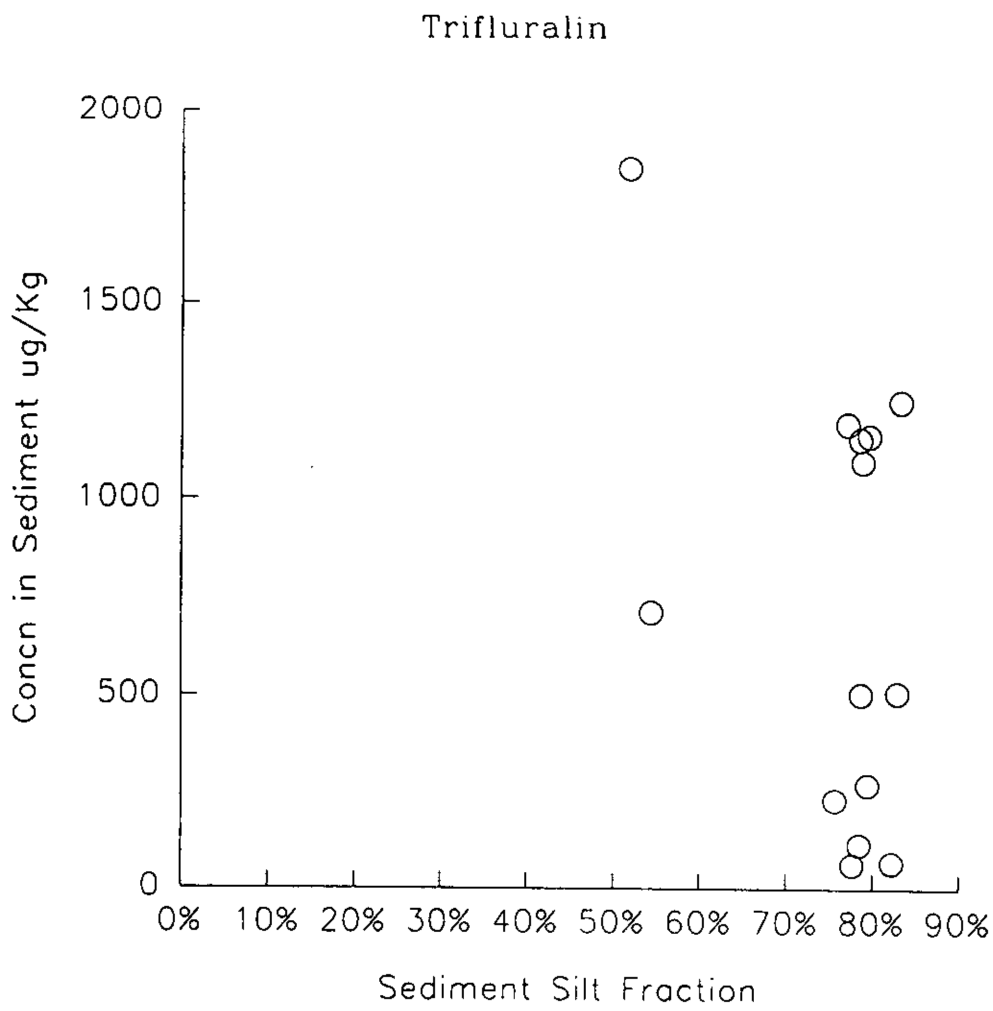

Propiconazol 2
Concn in Sediment ug/Kg
100
80
60
40
20
0
0%
1%
2%
3%
4%
5%
Sediment Sand Fraction

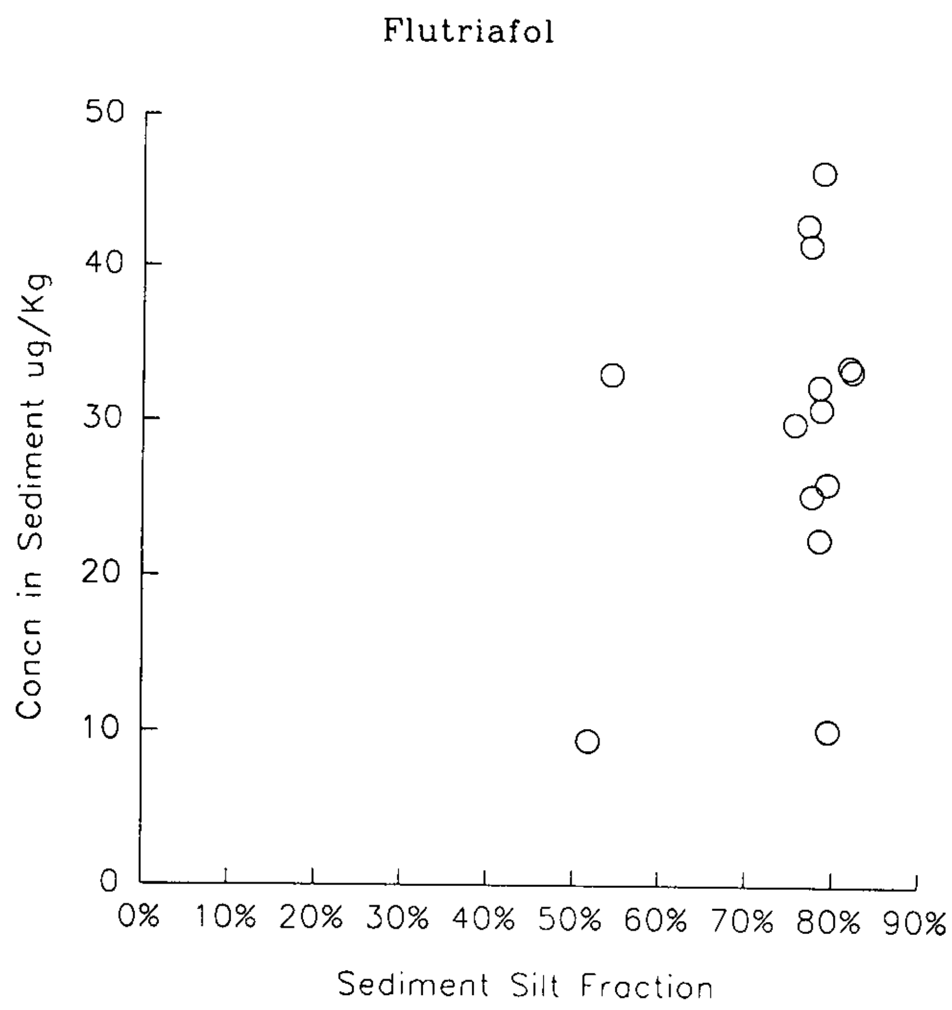
Propiconazol 1 & 2



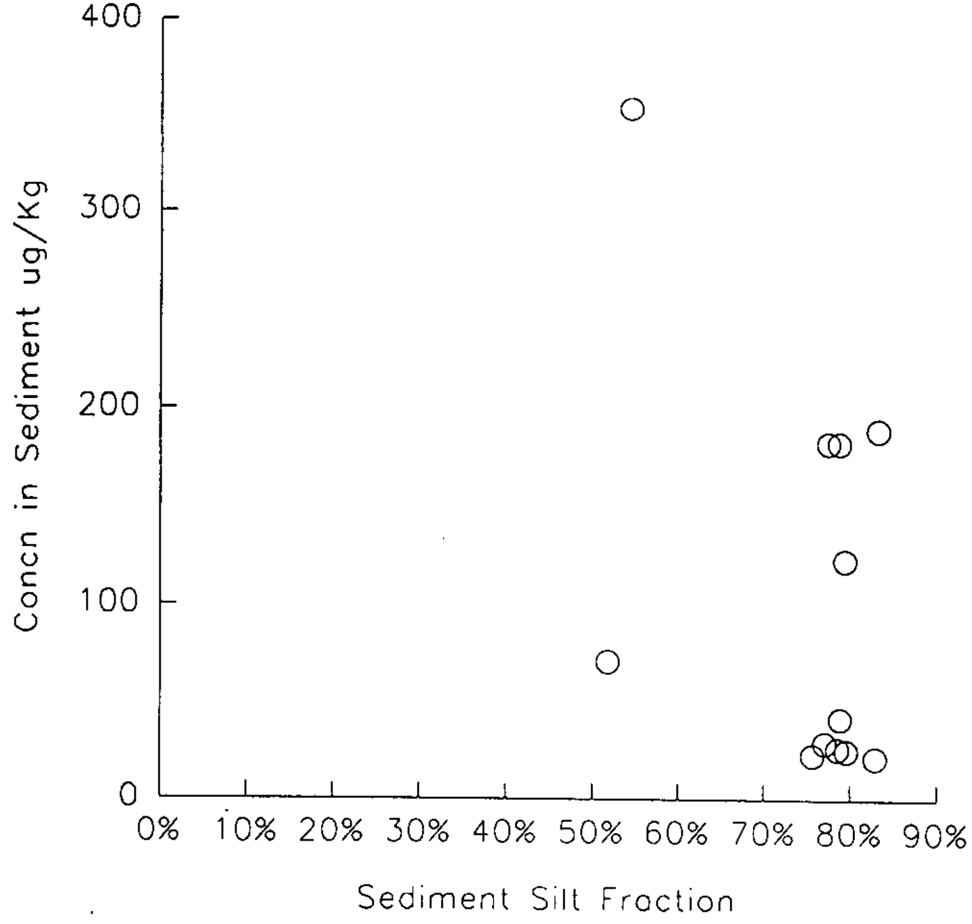
Isoproturon

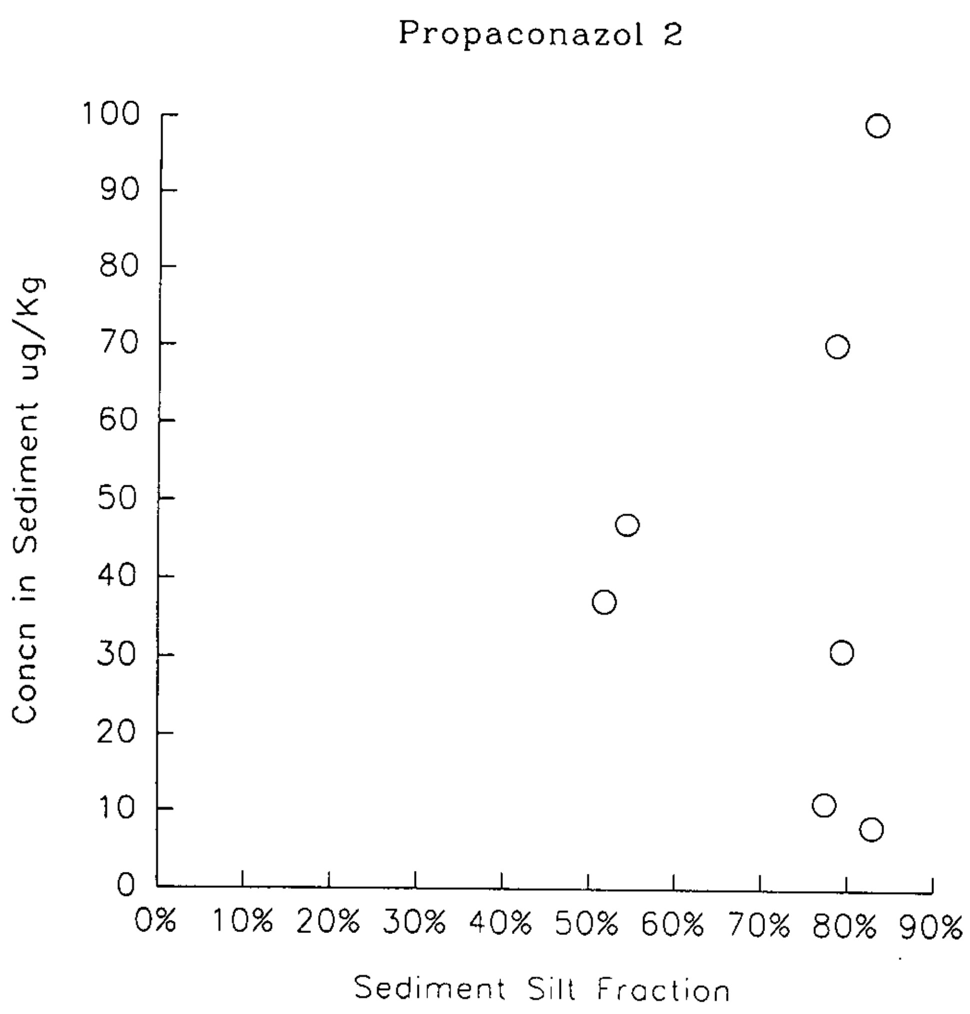


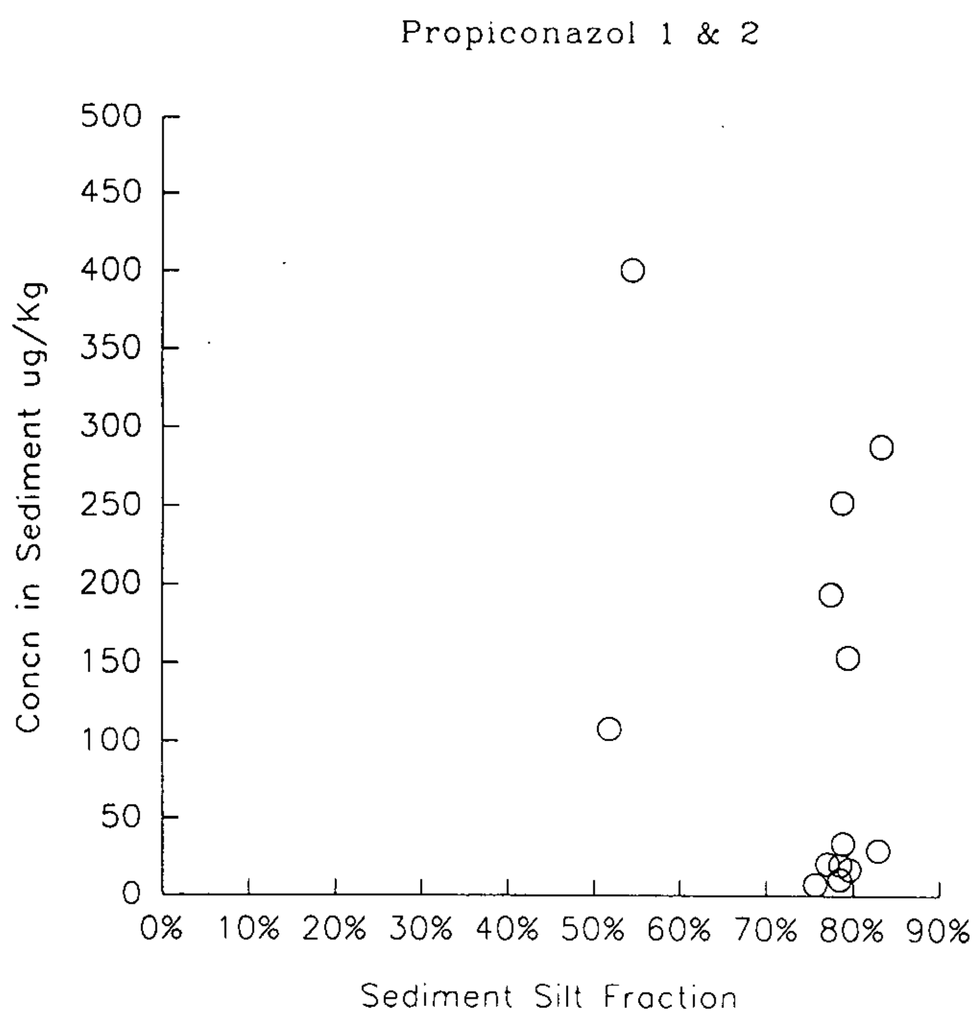

Trifluralin
Concn in Sediment ug/Kg
2000
1500
1000
500
0
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
Sediment Silt Fraction

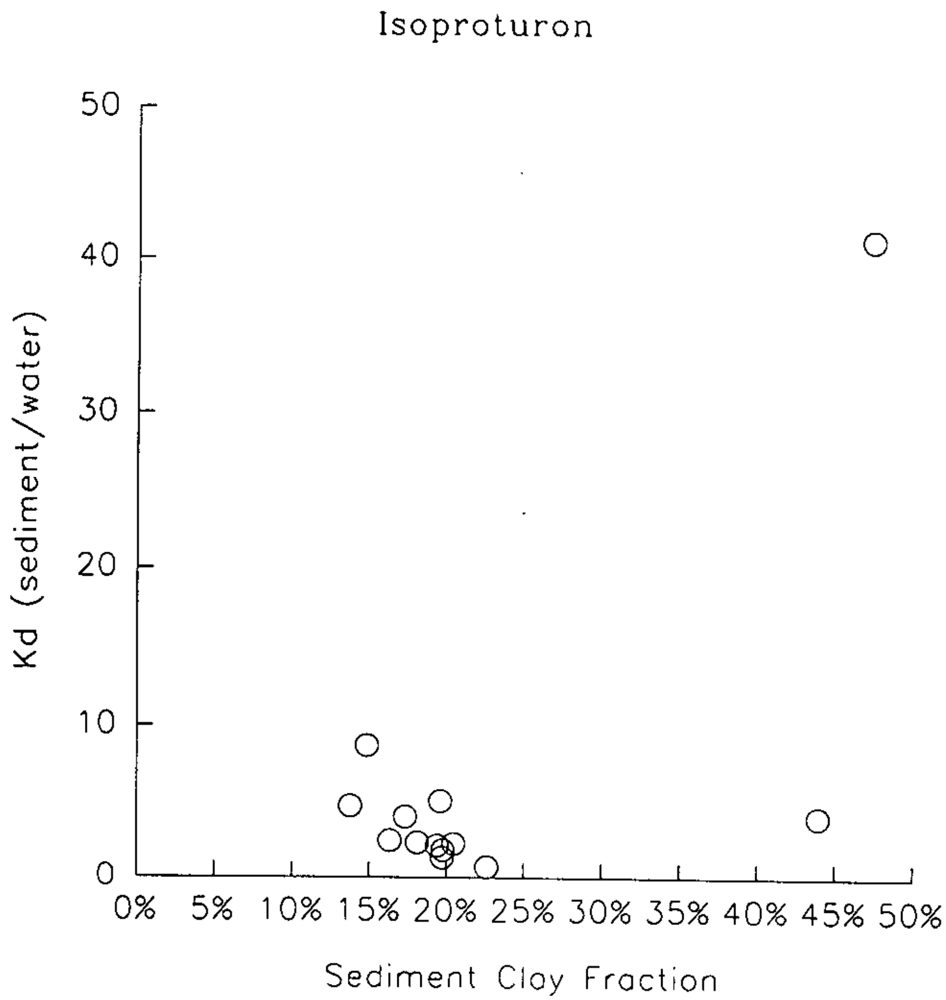

Flutriafol
50
40
30
20
10
0
Concn in Sediment ug/Kg
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
Sediment Silt Fraction

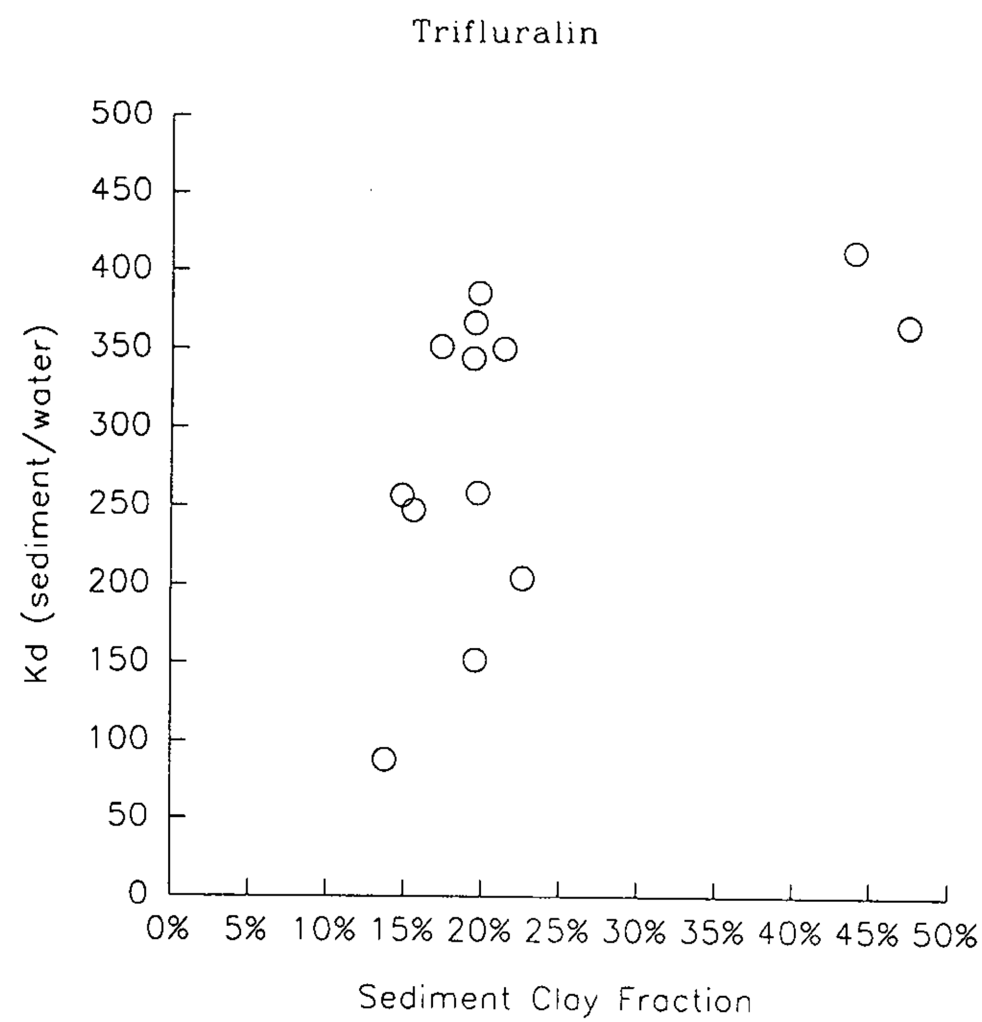
Propaconazol 1

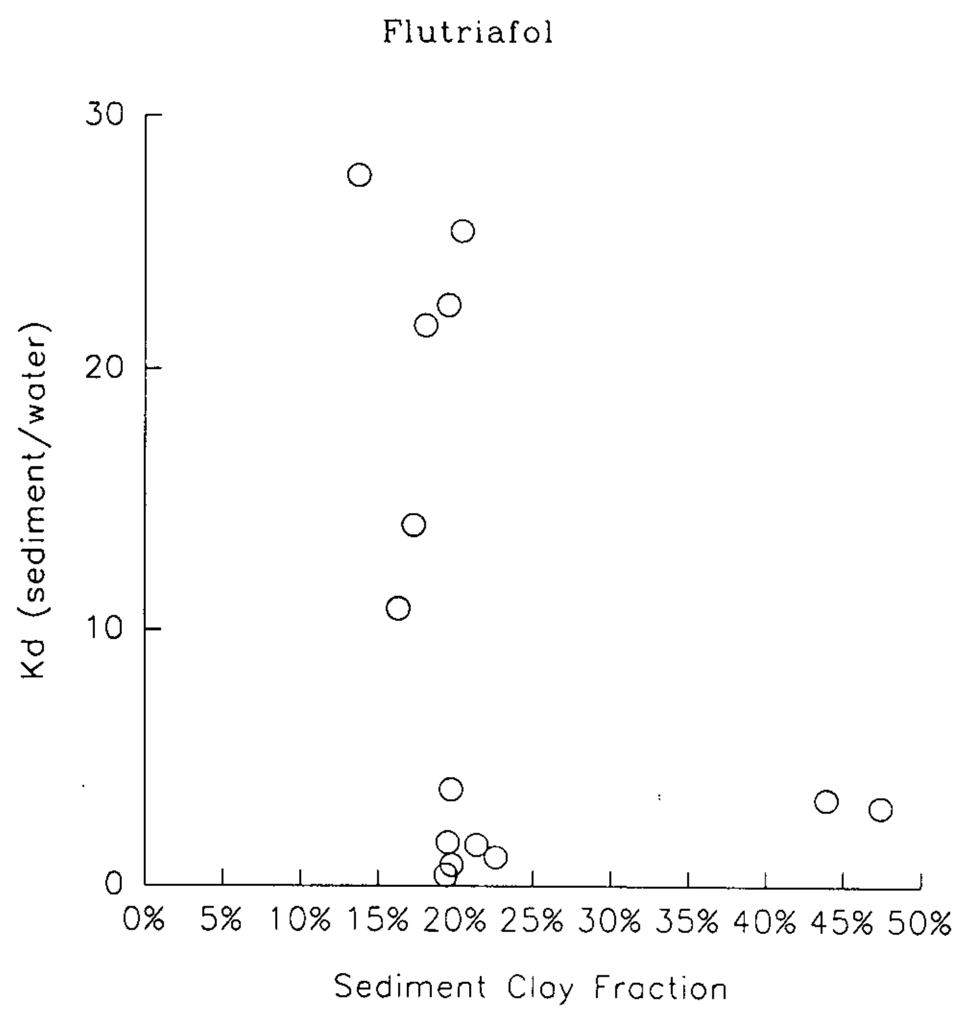



Propaconazol 2
Concn in Sediment ug/Kg
100
90
80
70
60
50
40
30
20
10
0
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
Sediment Silt Fraction

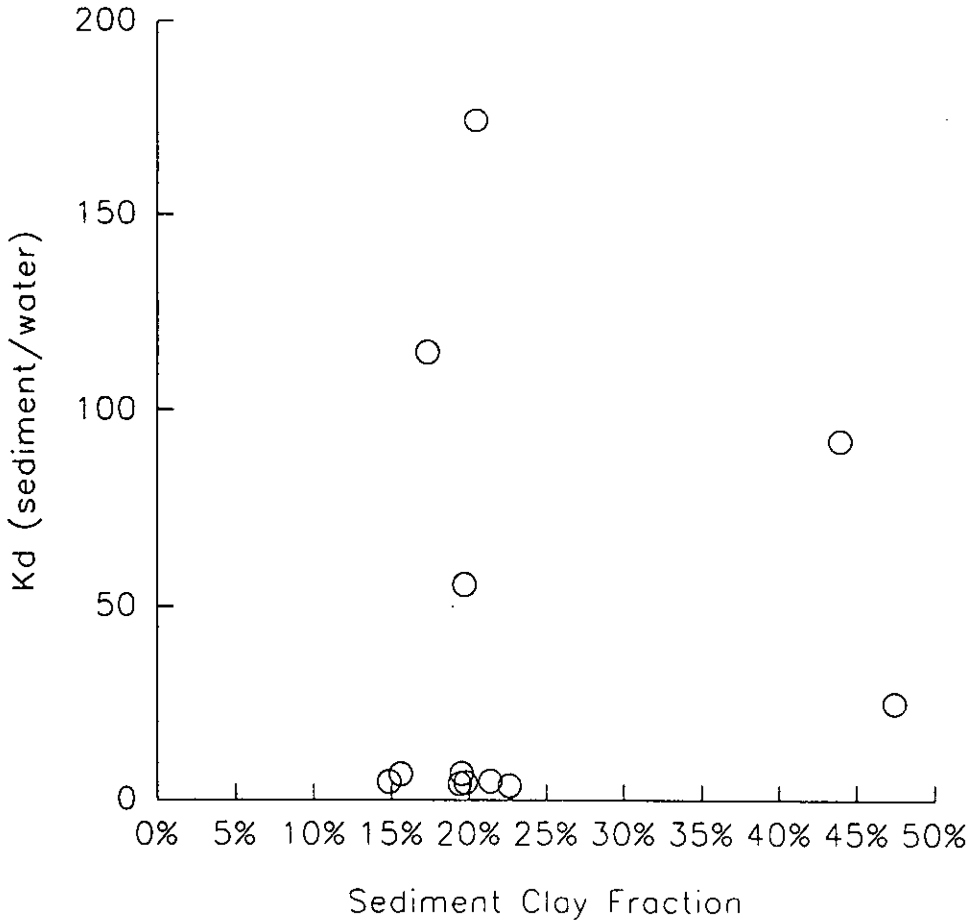

Propiconazol 1 & 2
Concn in Sediment ug/Kg
500
450
400
350
300
250
200
150
100
50
0
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
Sediment Silt Fraction


Isoproturon
Kd (sediment/water)
0
10
20
30
40
50
0%
5%
10%
15%
20%
25%
30%
35%
40%
45%
50%
Sediment Clay Fraction

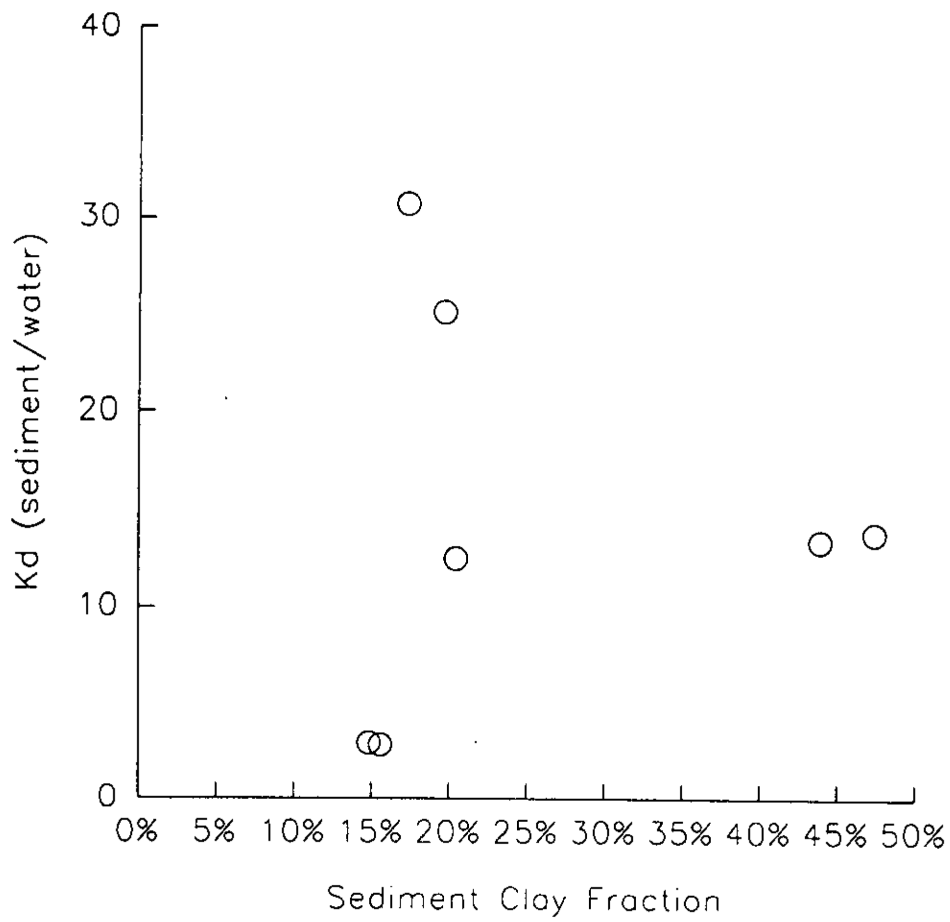

Trifluralin
Kd (sediment/water)
500
450
400
350
300
250
200
150
100
50
0
0%
5%
10%
15%
20%
25%
30%
35%
40%
45%
50%
Sediment Clay Fraction


Flutriafol
Kd (sediment/water)
30
20
10
0
0%
5%
10%
15%
20%
25%
30%
35%
40%
45%
50%
Sediment Clay Fraction

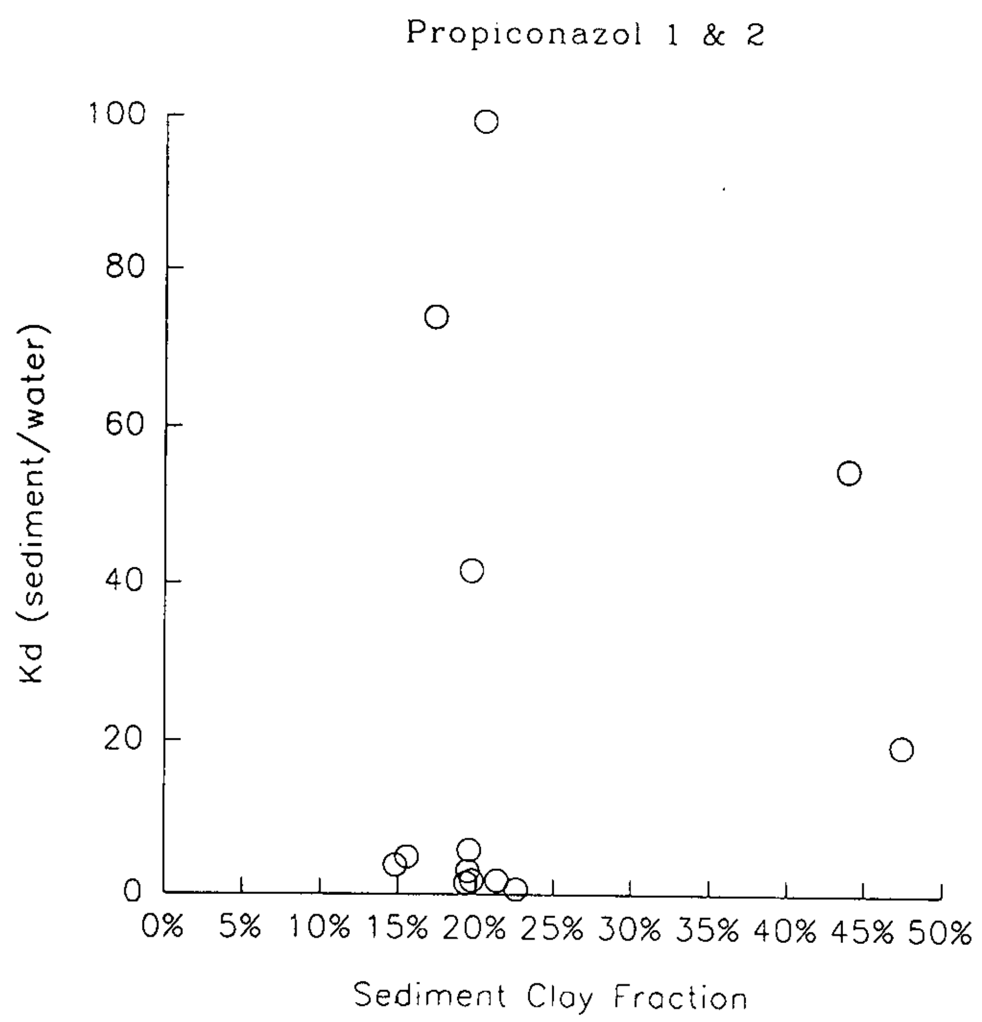
Propiconazol 1



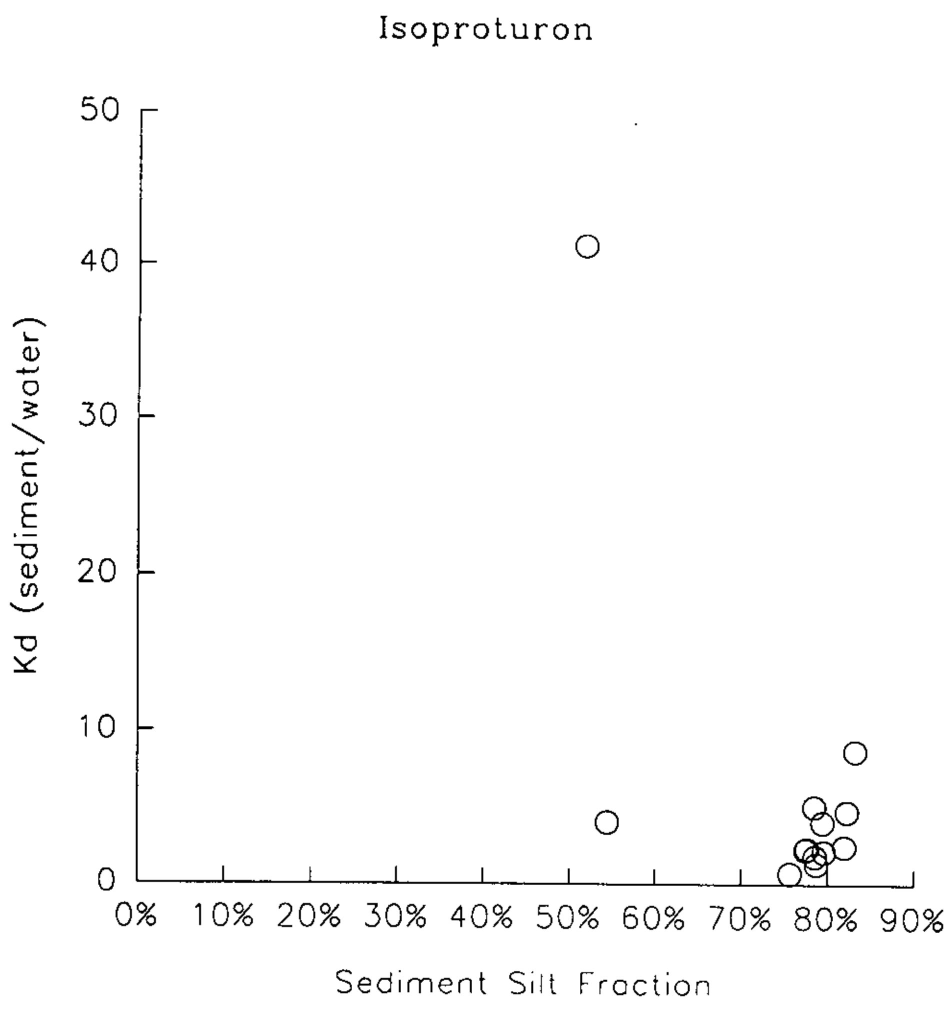
Propiconazol 2



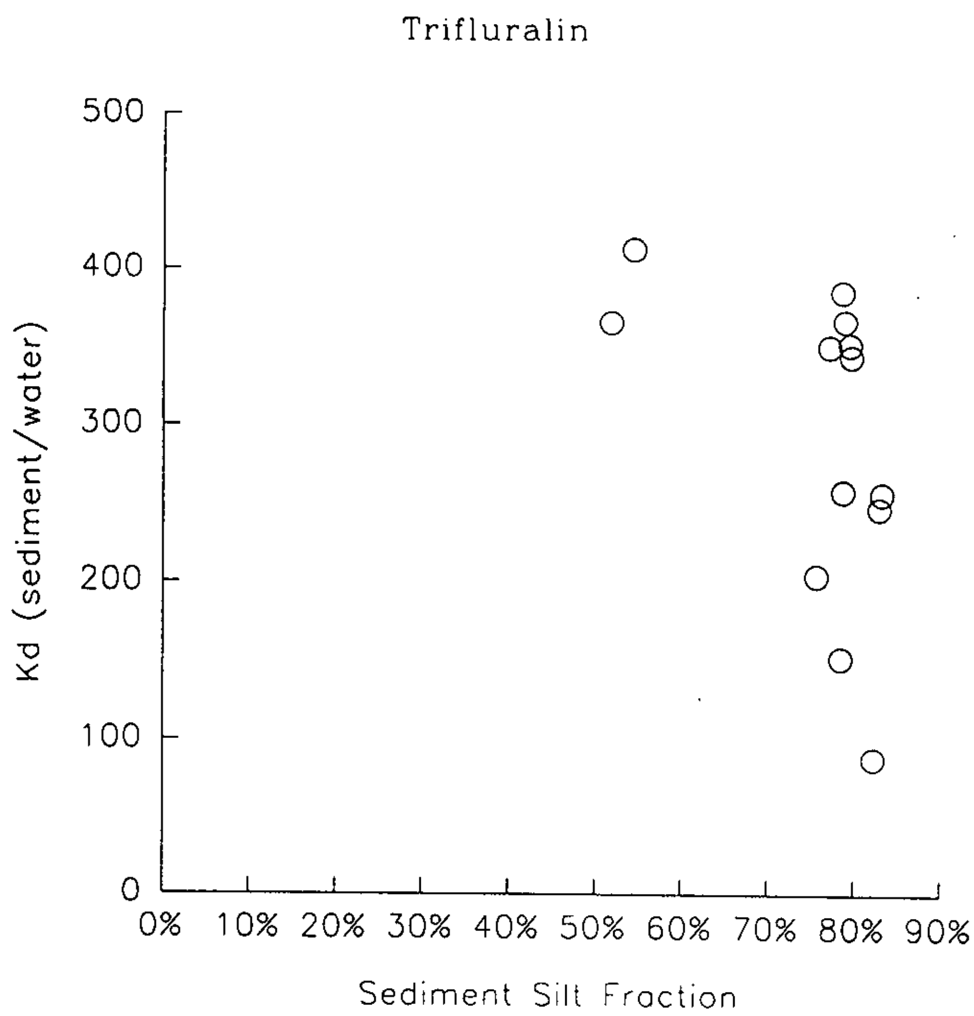
[redacted]

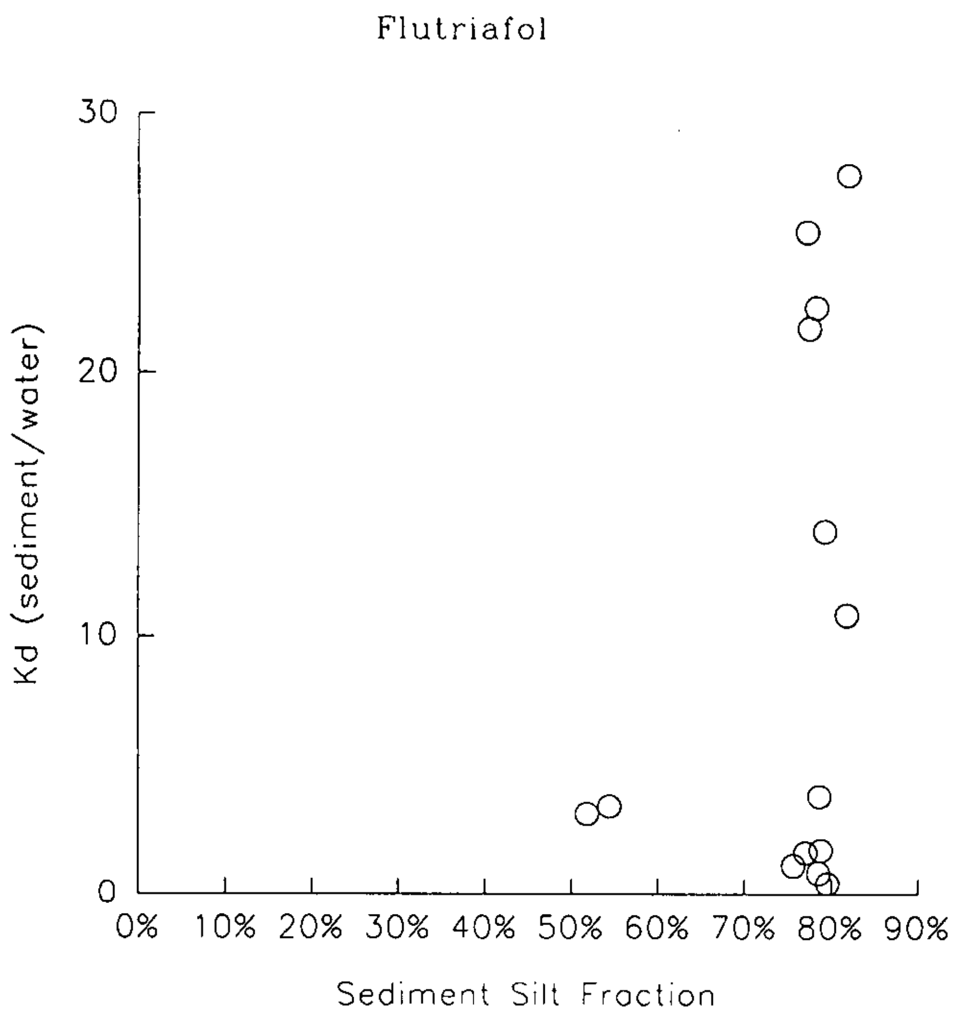


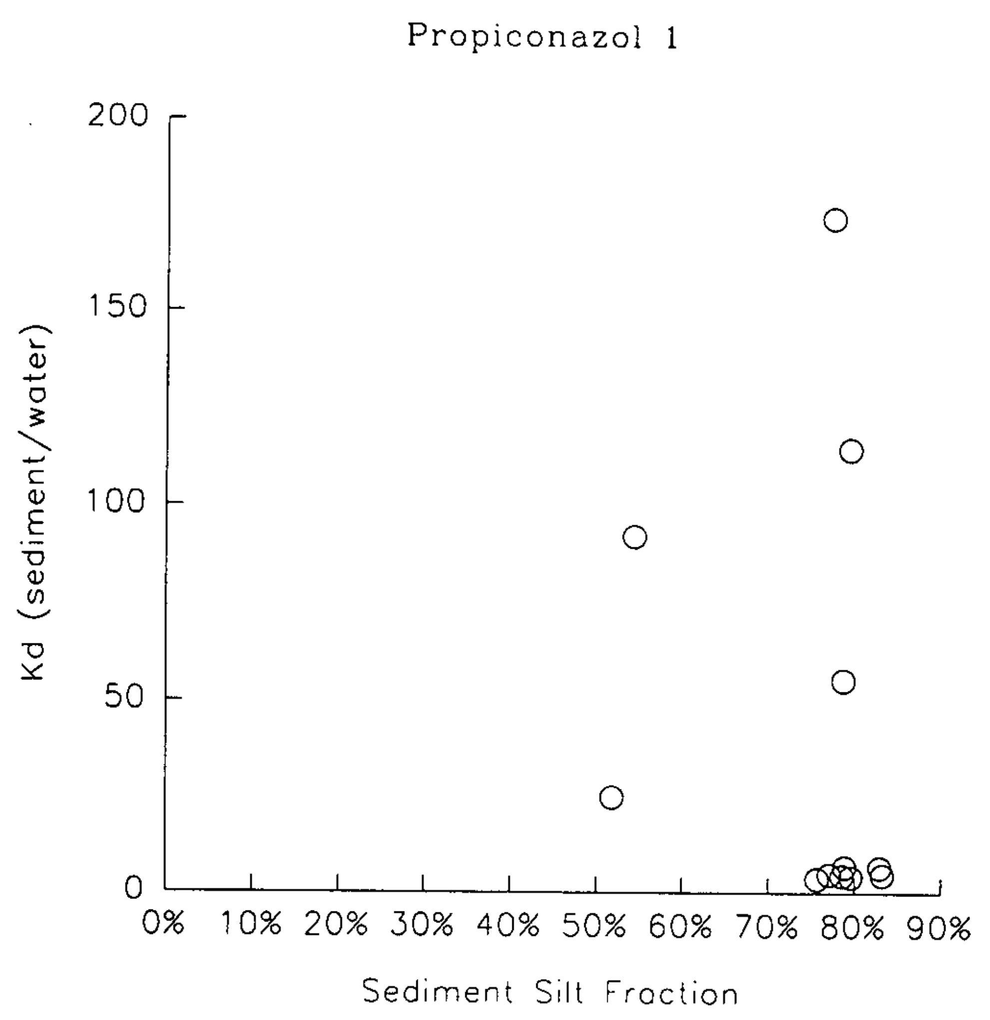
Propiconazol 1 & 2
Kd (sediment/water)
100
80
60
40
20
0
0% 5% 10% 15% 20% 25% 30% 35% 40% 45% 50%
Sediment Clay Fraction



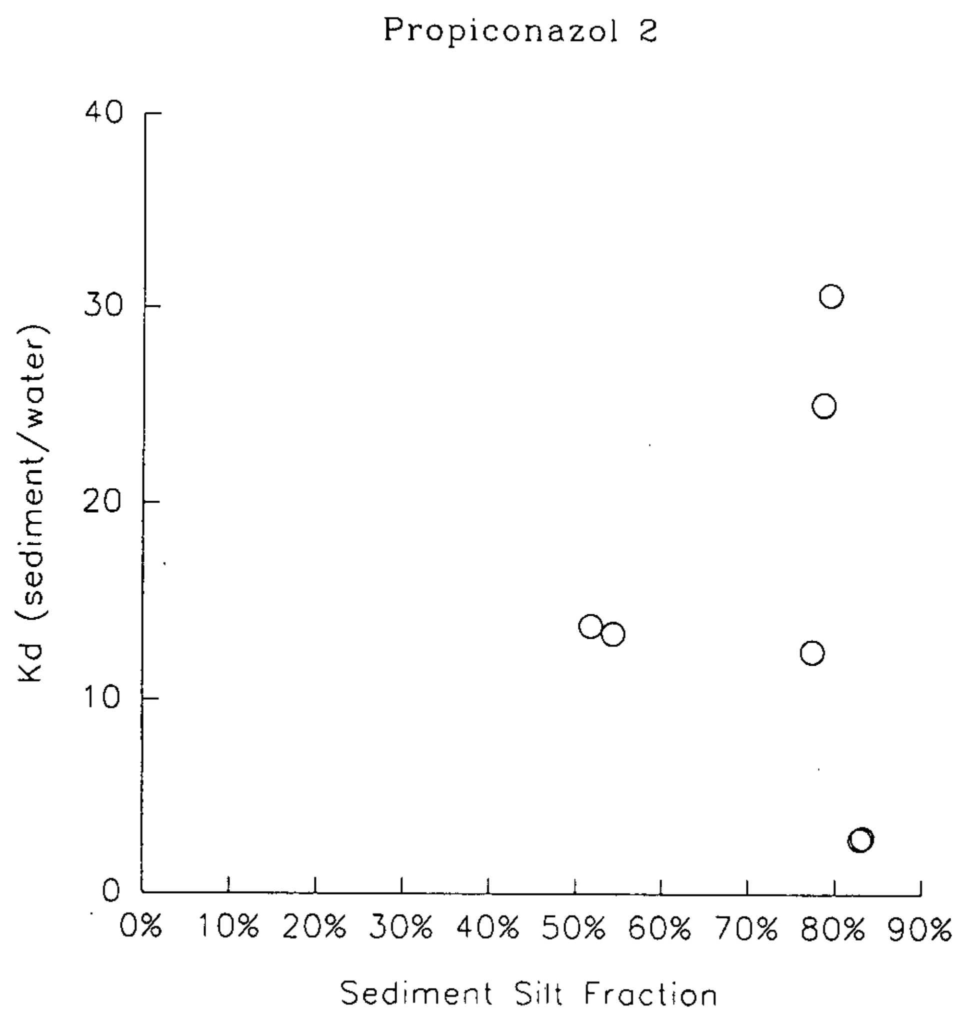
Isoproturon
Kd (sediment/water)
0
10
20
30
40
50
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
Sediment Silt Fraction


Trifluralin
Kd (sediment/water)
500
400
300
200
100
0
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
Sediment Silt Fraction

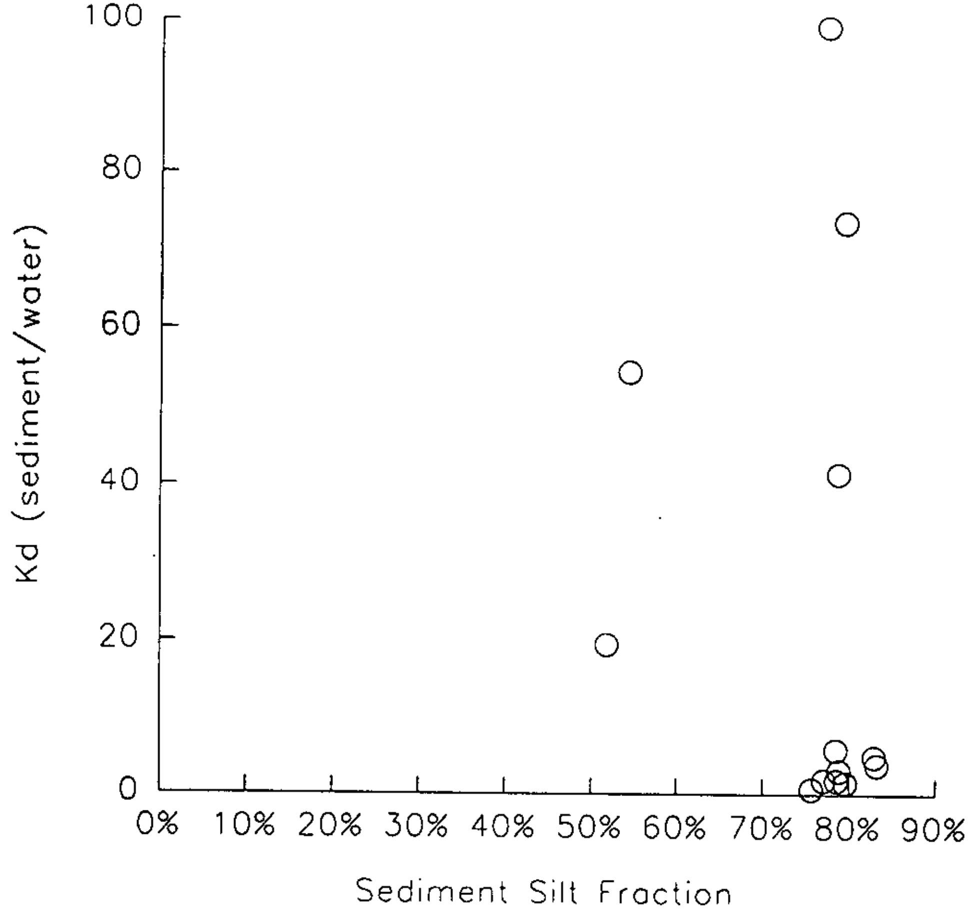

Flutriafol
Kd (sediment/water)
30
20
10
0
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
Sediment Silt Fraction

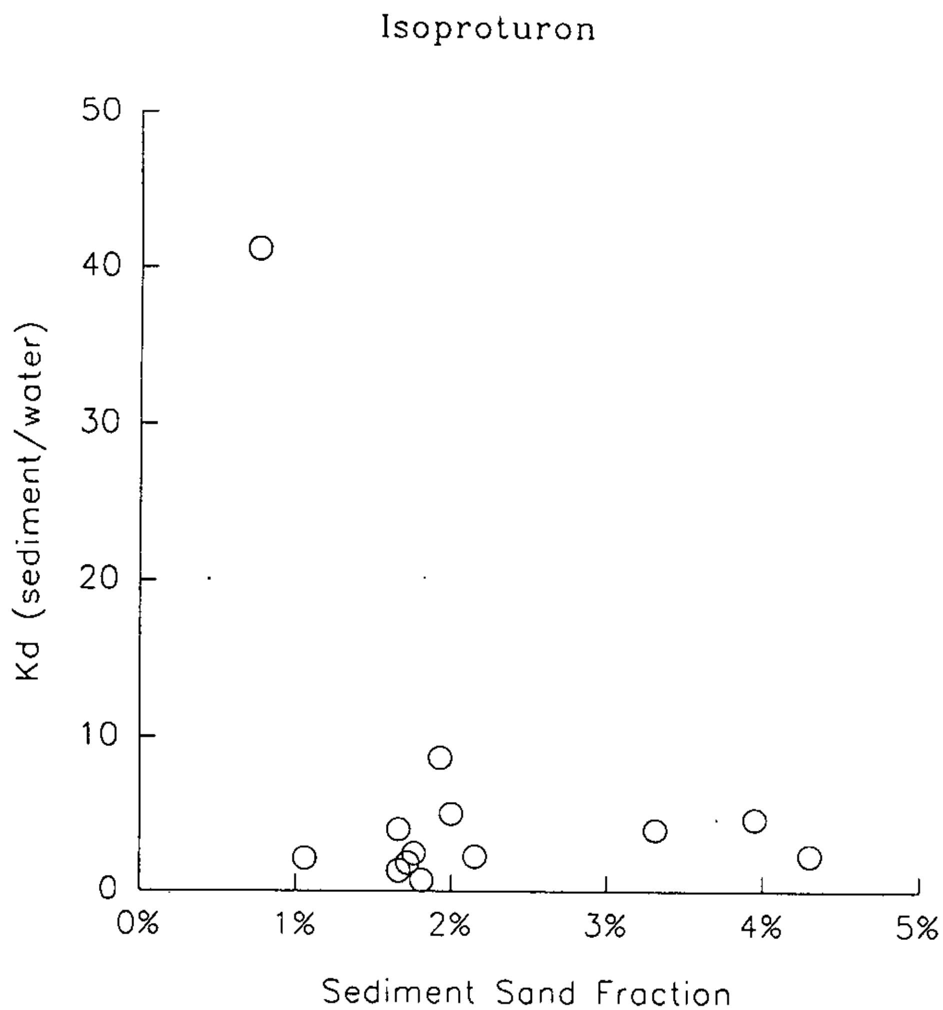


Propiconazol 1
Kd (sediment/water)
0
50
100
150
200
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
Sediment Silt Fraction

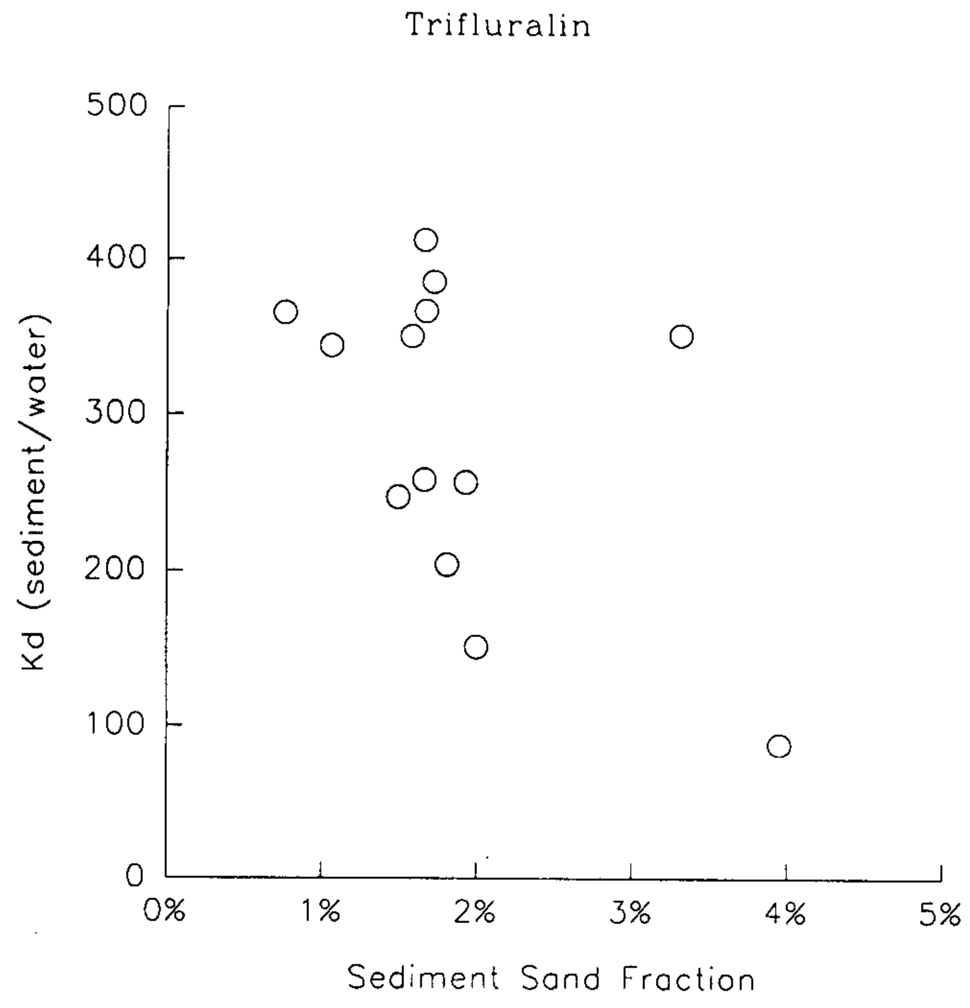

Propiconazol 2
Kd (sediment/water)
0
10
20
30
40
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
Sediment Silt Fraction

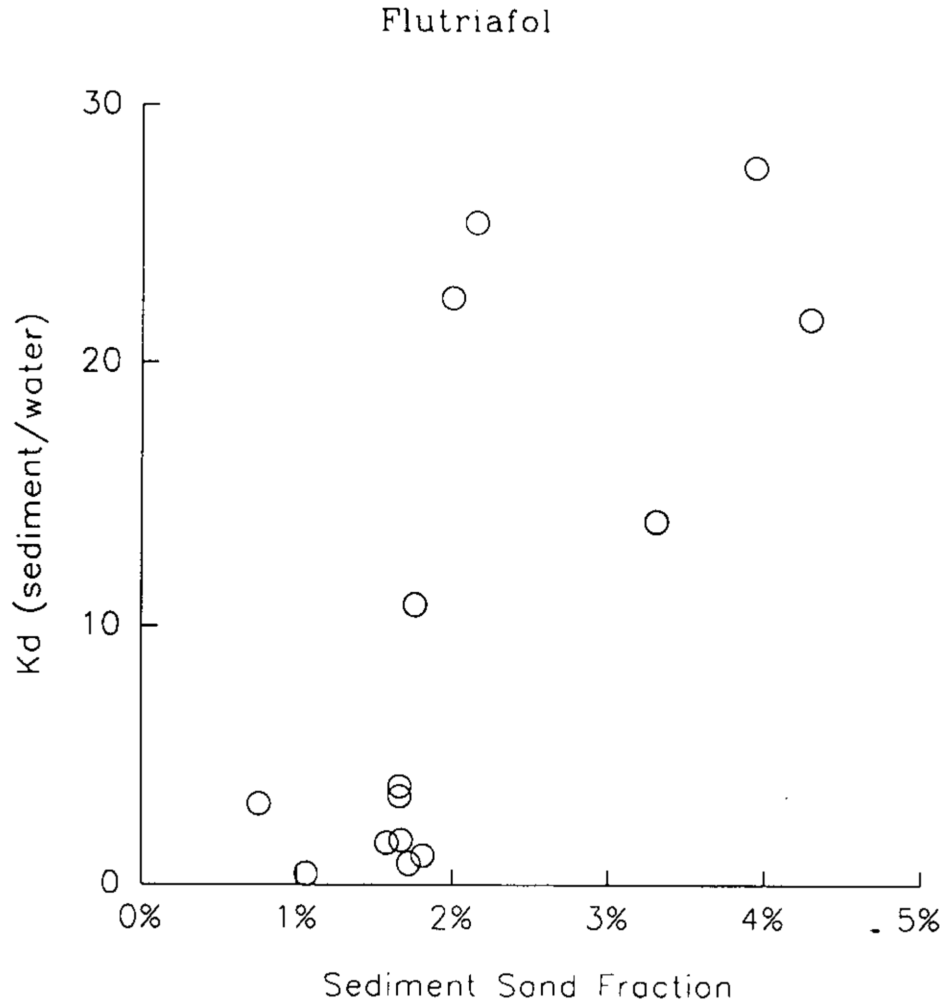
Propiconazol 1 & 2

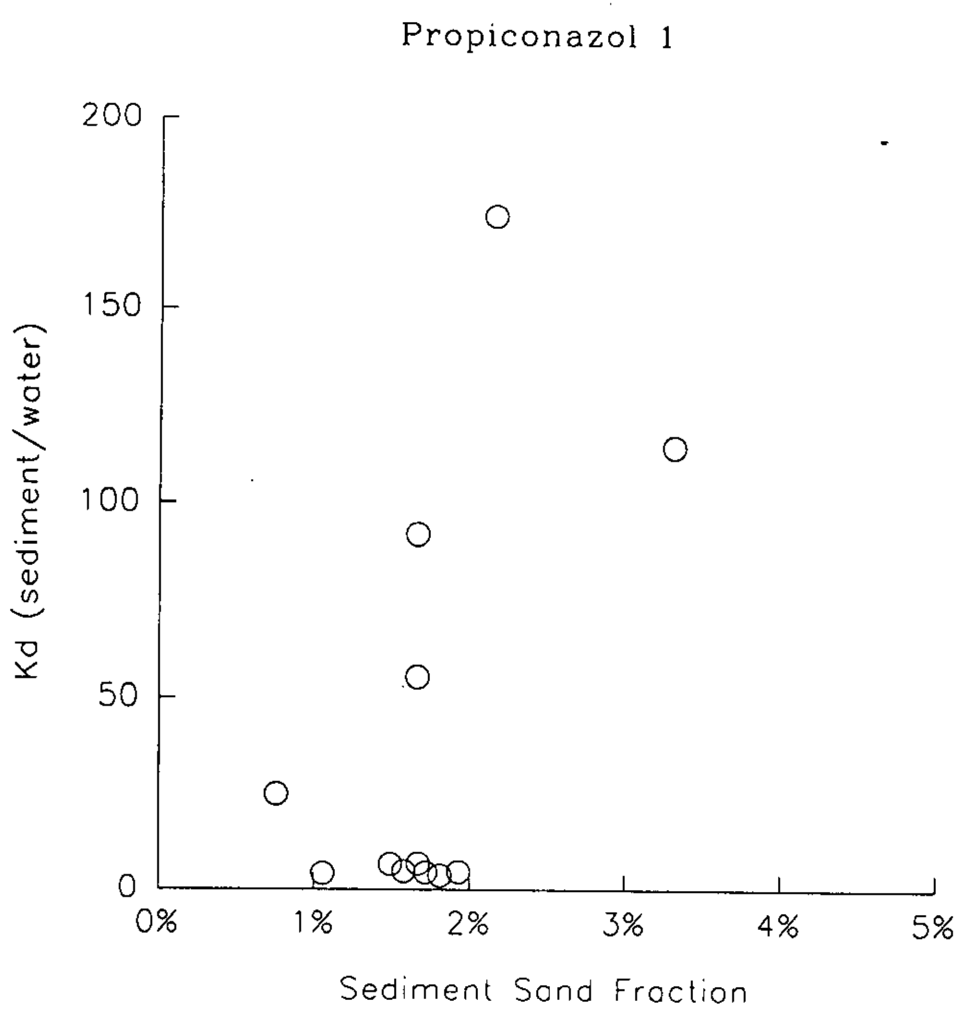




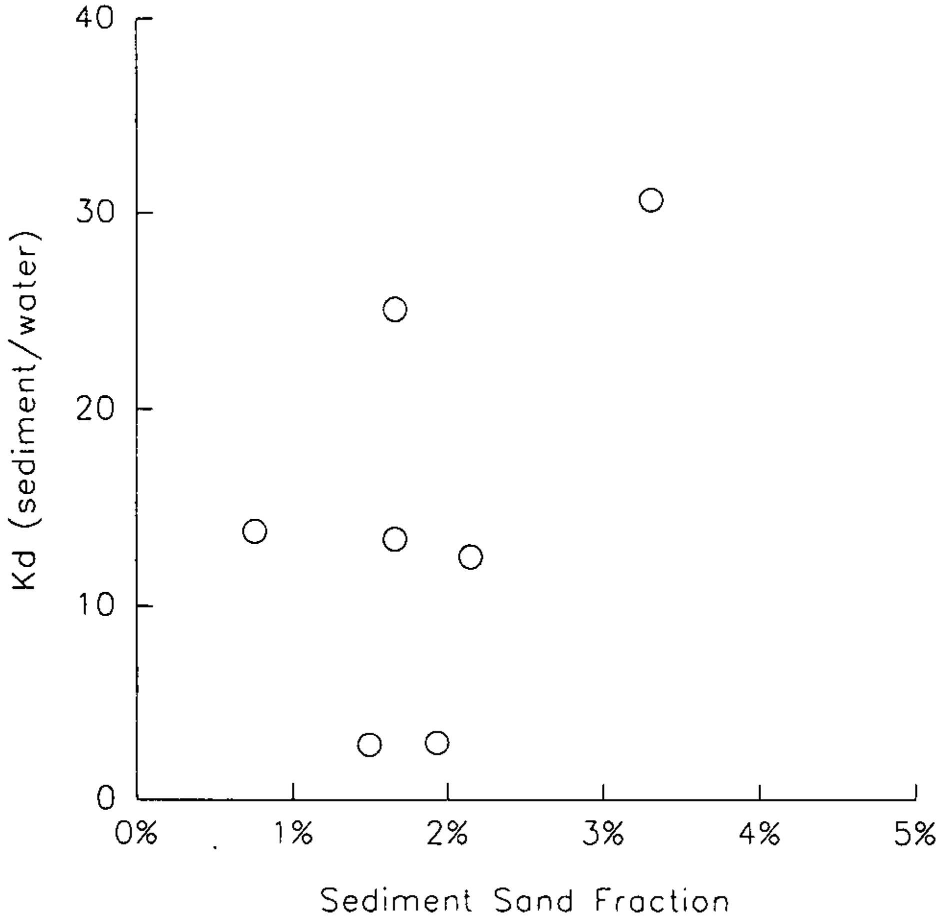
Isoproturon
Kd (sediment/water)
0
10
20
30
40
50
0%
1%
2%
3%
4%
5%
Sediment Sand Fraction

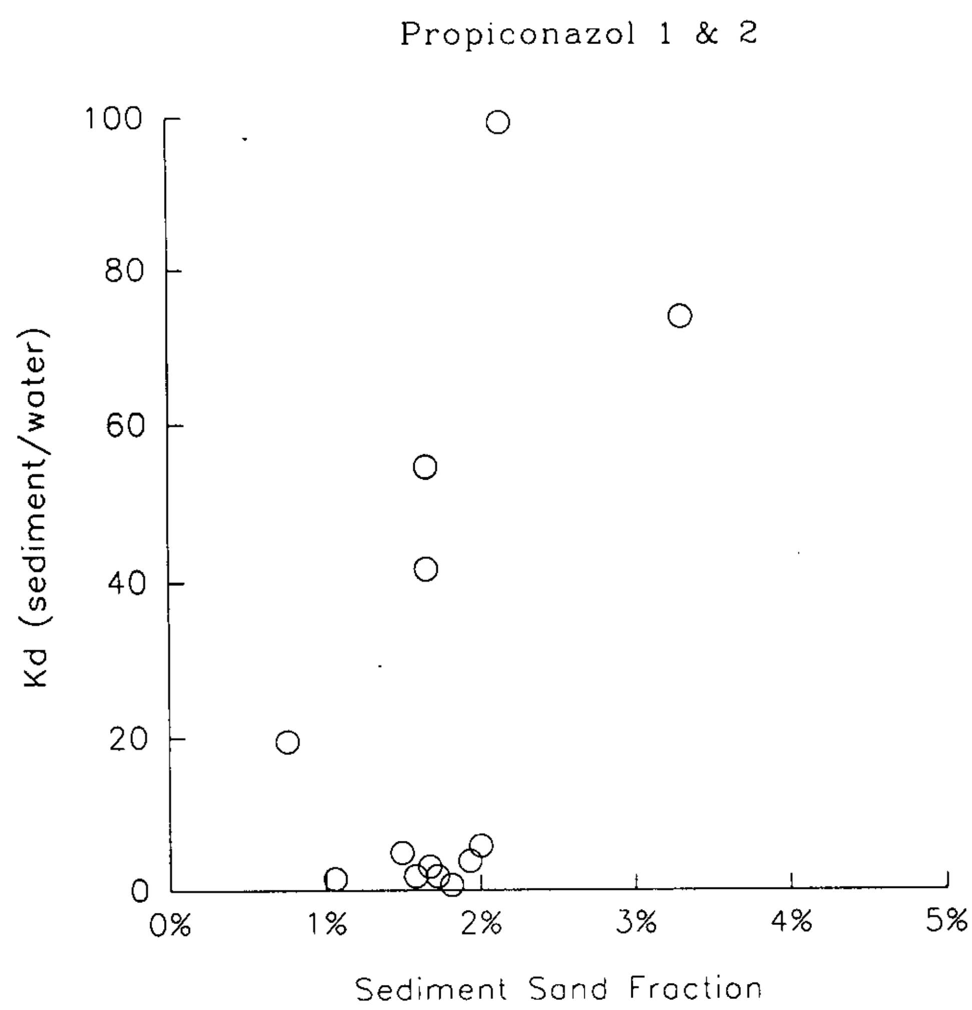

Trifluralin
Kd (sediment/water)
0
100
200
300
400
500
0%
1%
2%
3%
4%
5%
Sediment Sand Fraction


Flutriafol
Kd (sediment/water)
30
20
10
0
0%
1%
2%
3%
4%
5%
Sediment Sand Fraction


Propiconazol 1
Kd (sediment/water)
0
50
100
150
200
0%
1%
2%
3%
4%
5%
Sediment Sand Fraction

Propiconazol 2




Propiconazol 1 & 2
100
80
60
40
20
0
Kd (sediment/water)
0%
1%
2%
3%
4%
5%
Sediment Sand Fraction

APPENDIX 3

Nominal 1 Litre samples

Sample Code: S406001	SS conc g/l	Sample Code: S406001	SS conc g/l	Sample Code: S406001	SS conc g/l
First Event		*Second Event* 1st part		*Second Event* 2nd part	
FXd/427	0.062	BRN1/44	0.054	BRN1/185(6)	n.d
FXd/478	0.032	BRN1/80	0.057	BRN2/198	0.023
FXd/480	0.027	BRN1/86	0.121	BRN2/200	0.083
				BRN2/203	0.032
		BRN2/53	0.149		
MFs/407	1.246	BRN2/101	0.114	NAP1/145	0.012
MFs/409	0.544			NAP1/149	n.d
MFs/411	0.081	NAP1/17	0.191	NAP1/151	0.008
MFs/414	0.075	NAP1/20	0.159	NAP1/155	0.009
MFs/417	0.060	NAP1/23	0.227	NAP1/159	0.014
MFs/468	0.073	NAP1/27			
		NAP1/58		NAP2/165	0.041
		NAP1/61		NAP2/169	0.018
				NAP2/171	0.024
				NAP2/174	0.019
				NAP2/179	0.020

Nominal 100ml samples

Sample Code **95/1	Wt. Foil + Filters (g)	Wt. Filters (g)	Wt Sample + container (g)	Container Wt. (g)	Sample Wt. (g)	Wt Foil + Filter & dry Sed.t	Wt. dry Sedt. (g)	Sedt. Concn. (g/l)	Batch corr.n factor (g/filter)	Corr.d sed.t dry wt. (g)	Corr.d sed.t conc.n (g/l)	Sample Code **95/1
RM/95/												RM/95/
FXd/389	0.3128	0.0924	105.96	23.57	82.39	0.3568	0.0440	0.5340	0.0002	0.0442	0.5365	FXd/389
FXd/390	0.3185	0.0776	111.71	23.58	88.13	0.3483	0.0298	0.3381	0.0002	0.0300	0.3404	FXd/390
FXd/391	0.3059	0.0708	120.19	23.65	96.54	0.3446	0.0387	0.4009	0.0002	0.0389	0.4029	FXd/391
FXd/392	0.3167	0.0803	126.42	23.69	102.73	0.3359	0.0192	0.1869	0.0002	0.0194	0.1888	FXd/392
FXd/393	0.2838	0.0777	124.36	23.63	100.73	0.2907	0.0069	0.0685	0.0002	0.0071	0.0705	FXd/393
FXd/400 ?	0.3033	0.0864	108.23	23.71	84.52	0.3493	0.0460	0.5442	0.0002	0.0462	0.5466	FXd/400 ?
FXd/475	0.2957	0.0788	122.30	23.61	98.69	0.2974	0.0017	0.0172	0.0002	0.0019	0.0193	FXd/475
FXd/479	0.2906	0.0756	111.98	23.64	88.34	0.2923	0.0017	0.0192	0.0002	0.0019	0.0215	FXd/479
* FXd/481	0.2789	0.0785	69.91	23.63	46.28	0.2798	0.0009	0.0194	0.0002	0.0011	0.0238	* FXd/481
MFfd/516	0.2759	0.0754	118.53	23.73	94.80	0.2768	0.0009	0.0095	0.0003	0.0012	0.0127	MFfd/516
MFfd/517	0.3258	0.0736	95.68	23.64	72.04	0.3266	0.0009	0.0118	0.0003	0.0012	0.0160	MFfd/517
MFfd/518	0.3321	0.0756	112.04	23.68	88.36	0.3337	0.0016	0.0181	0.0003	0.0019	0.0215	MFfd/518
MFs/405	0.3302	0.0728	106.71	23.60	83.11	0.36815	0.0380	0.4566	0.0003	0.0383	0.4602	MFs/405
MFs/406	0.3320	0.0798	128.86	23.72	105.14	0.3344	0.0024	0.0233	0.0003	0.0027	0.0262	MFs/406
MFs/408	0.2998	0.0722	114.01	23.68	90.33	0.3028	0.0030	0.0332	0.0003	0.0033	0.0365	MFs/408
MFs/410	0.3109	0.0703	102.97	23.68	79.29	0.3168	0.0059	0.0744	0.0003	0.0062	0.0782	MFs/410
MFs/412	0.3116	0.0788	121.76	23.65	98.11	0.3162	0.0046	0.0469	0.0003	0.0049	0.0499	MFs/412
MFs/416	0.3056	0.0796	125.34	23.69	101.65	0.3125	0.0070	0.0684	0.0003	0.0073	0.0713	MFs/416
MFs/467	0.2924	0.0784	114.38	23.64	90.74	0.2944	0.0020	0.0220	0.0003	0.0023	0.0253	MFs/467
LLd/436a	0.2942	0.0728	111.50	23.71	87.79	0.2983	0.0041	0.0467	0.0003	0.0044	0.0501	LLd/436a
BW/94												BW/94
BRN1/5	0.3063	0.0774	120.30	23.63	96.67	0.3076	0.0013	0.0134	0.0003	0.0016	0.0166	BRN1/5
BRN1/6	0.3041	0.0750	116.82	23.62	93.20	0.3055	0.0015	0.0156	0.0003	0.0018	0.0188	BRN1/6
BRN1/7	0.2996	0.0748	117.66	23.58	94.08	0.30165	0.0021	0.0218	0.0003	0.0024	0.0250	BRN1/7
BRN1/10	0.2797	0.0738	117.77	23.64	94.13	0.28005	0.0004	0.0037	0.0003	0.0007	0.0069	BRN1/10
* BRN2/8	0.2748	0.0742	Blank	blank		0.2745	-0.0003		0.0003	0.0000		* BRN2/8
BRN2/9	0.2984	0.0738	116.98	23.63	93.35	0.3001	0.0017	0.0182	0.0003	0.0020	0.0214	BRN2/9
BRN2/15	0.2901	0.0738	118.14	23.69	94.45	0.2904	0.0003	0.0032	0.0003	0.0006	0.0064	BRN2/15
NAP1/1	0.2875	0.0711	114.17	23.64	90.53	0.2983	0.0109	0.1198	0.0003	0.0112	0.1232	NAP1/1
NAP1/2	0.2768	0.0772	118.67	23.65	95.02	0.28565	0.0089	0.0931	0.0003	0.0092	0.0963	NAP1/2
NAP1/3	0.3027	0.0740	118.77	23.56	95.21	0.3107	0.0081	0.0845	0.0003	0.0084	0.0877	NAP1/3

Nominal 100ml samples

Sample Code **95/4/	Wt. Foil + Filters (g)	Wt. Filters (g)	Wt Sample + container (g)	Container Wt. (g)	Sample Wt. (g)	Wt Foil + Filter & dry Sed.t	Wt. dry Sedt. (g)	Sedt. Concn. (g/l)	Batch corr.n factor (g/filter)	Corr.d sed.t dry wt. (g)	Corr.d sed.t conc.n (g/l)	Sample Code **95/4/
BW95/												BW95/
NAP1/468	0.2871	0.0689	118.81	23.62	95.19	0.2885	0.0014	0.0147	0.00058	0.0020	0.0208	NAP1/468
NAP1/474	0.3002	0.0740	122.22	23.64	98.58	0.3030	0.0028	0.0284	0.00058	0.0034	0.0343	NAP1/474
NAP1/479	0.2834	0.0766	123.75	23.66	100.09	0.2836	0.0002	0.0020	0.00058	0.0008	0.0078	NAP1/479
NAP1/480	0.2811	0.0765	123.33	23.60	99.73	0.2809	-0.0002	-0.0020	0.00058	0.0004	0.0038	NAP1/480
BRN(NAP)1/498	0.3122	0.0778	123.19	23.56	99.63	0.3142	0.0020	0.0201	0.00058	0.0026	0.0259	BRN(NAP)1/498
BRN(NAP)1/499	0.3925	0.1773	124.41	23.61	100.80	0.2954	-0.0971	-0.9633	0.00058	-0.0965	-0.9575	BRN(NAP)1/499
RM95/												RM95/
MFs/1349	0.3154	0.0794	112.08	23.55	88.53	0.3162	0.0008	0.0090	0.00058	0.0014	0.0156	MFs/1349
MFs/1351	0.3321	0.0900	104.03	23.66	80.37	0.3324	0.0003	0.0037	0.0003	0.0006	0.0075	MFs/1351
FXd/1368	0.2998	0.0798	118.09	23.67	94.42	0.3053	0.0055	0.0583	0.00058	0.0061	0.0644	FXd/1368
FXd/1370	0.2981	0.0810	114.49	23.60	90.89	0.2998	0.0017	0.0187	0.00058	0.0023	0.0251	FXd/1370
FXd/1372	0.2922	0.0787	116.68	23.61	93.07	0.2975	0.0053	0.0569	0.00058	0.0059	0.0632	FXd/1372
FXd/1373	0.3037	0.0815	116.77	23.60	93.17	0.3060	0.0023	0.0247	0.00058	0.0029	0.0309	FXd/1373
MFd/1382	0.3055	0.0852	125.61	23.66	101.95	0.3044	-0.0011	-0.0108	0.00058	-0.0005	-0.0051	MFd/1382
MFd/1383	0.3260	0.0797	125.63	23.58	102.05	0.3267	0.0007	0.0069	0.00058	0.0013	0.0125	MFd/1383
MFd/1386	0.3141	0.0925	131.17	23.69	107.48	0.3140	-0.0001	-0.0009	0.0003	0.0002	0.0019	MFd/1386
MFd/1389	0.3037	0.0761	123.54	23.50	100.04	0.3028	-0.0009	-0.0090	0.00058	-0.0003	-0.0032	MFd/1389
MFd/1417	0.2868	0.0661	117.27	23.59	93.68	0.2859	-0.0009	-0.0096	0.00058	-0.0003	-0.0034	MFd/1417
MFd/1420	0.2906	0.0730	120.14	23.47	96.67	0.2899	-0.0007	-0.0072	0.00058	-0.0001	-0.0012	MFd/1420
							wt change	mean correction factor	sd			
Blank4/a	0.2863					0.2853	-0.001					Blank4/a
Blank4/b	0.3019					0.3010	-0.0009					Blank4/b
Blank4/c	0.3194					0.3191	-0.0003	0.00058	0.00031			Blank4/c
Blank4/d	0.3206					0.3201	-0.0005					Blank4/d
Blank4/e	0.2972					0.2969	-0.0003					Blank4/e

Sample name	Isoproturon Water Concn ug/l	Corrected Conc.n in Sed.t ug/kg	K_d Isoproturon [sed]/[wat]	Trifluralin Water Concn ug/l	Corrected Conc.n in Sed.t ug/kg	K_d Trifluralin [sed]/[wat]	Flutriafol Water Concn ug/l	Corrected Conc.n in Sed.t ug/kg	K_d Flutriafol [sed]/[wat]
BRN1/185	0.3139	n.d	?	0.0000	n.d	?	0.0496	n.d	?
BRN2/198	2.5965	n.d	?	0.0000	0.00	?	0.0422	887.68	21032.6
BRN2/200	8.7679	n.d	?	0.0000	0.00	?	0.0588	227.59	3870.6
BRN2/203	4.7939	n.d	?	0.0000	0.00	?	0.0277	399.36	14442.3
NAP1/145	16.6799	n.d	?	0.0124	n.d	?	0.1397	n.d	?
NAP1/151	45.7065	1539.48	33.6817	0.0143	n.d	?	0.2092	247.50	1183.2
NAP1/155	55.3145	n.d	?	0.0253	n.d	?	0.1989	83.22	418.3
NAP1/159	63.6119	n.d	?	0.0344	252.67	7355.7	0.2006	171.65	855.9
NAP2/165	2.9269	n.d	?	0.0000	0.00	?	0.1194	65.70	550.0
NAP2/169	3.2553	n.d	?	0.0097	n.d	?	0.1577	89.78	569.3
NAP2/171	2.9907	n.d	?	0.0000	0.00	?	0.2011	208.39	1036.2
NAP2/174	1.4211	n.d	?	0.0000	0.00	?	0.1921	433.82	2257.9
NAP2/179	3.8861	n.d	?	0.0000	272.48	?	0.1353	299.17	2211.1

Sample name	Propiconazol 1 Water Concn ug/l	Corrected Conc.n in Sed.t ug/kg	K_d Isoproturon [sed]/[wat]	Propiconizol 2 Water Concn ug/l	Corrected Conc.n in Sed.t ug/kg	K_d Trifluralin [sed]/[wat]
BRN1/185	0	0.00	?	0	0.00	?
BRN2/198	0	0.00	?	0	0.00	?
BRN2/200	0	0.00	?	0	0.00	?
BRN2/203	0	0.00	?	0	0.00	?
NAP1/145	0	0.00	?	0	0.00	?
NAP1/151	0	0.00	?	0	0.00	?
NAP1/155	0	0.00	?	0	0.00	?
NAP1/159	0	0.00	?	0	0.00	?
NAP2/165	0	0.00	?	0	0.00	?
NAP2/169	0	0.00	?	0	0.00	?
NAP2/171	0	0.00	?	0	0.00	?
NAP2/174	0	0.00	?	0	0.00	?
NAP2/179	0	0.00	?	0	0.00	?

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