

USE OF CAESIUM-137 TO DETERMINE ROLE OF RIPARIAN BUFFERS IN TRAPPING SEDIMENT AND PHOSPHORUS FROM AGRICULTURAL FIELDS

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SURFACE WATER MANAGEMENT CHALLENGES IN THE CANADIAN PRAIRIES

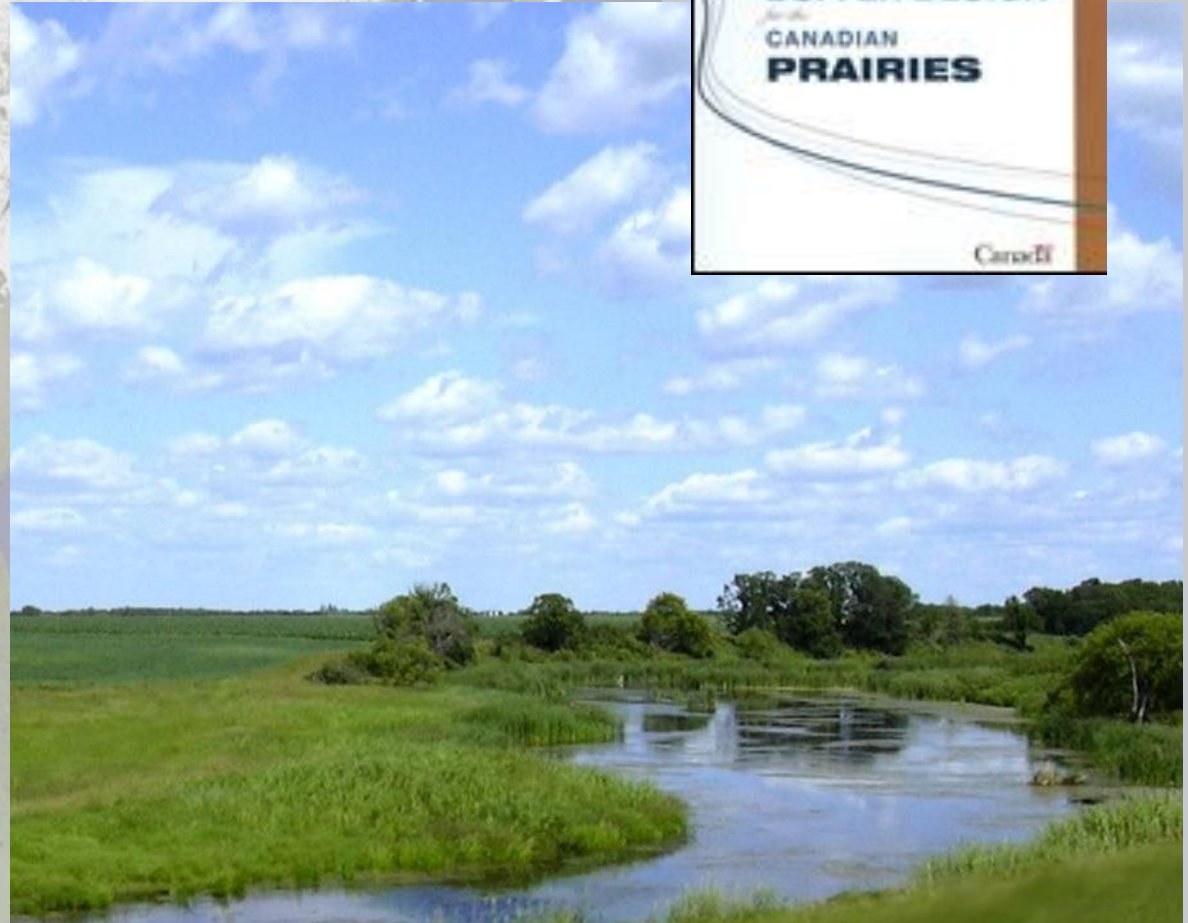
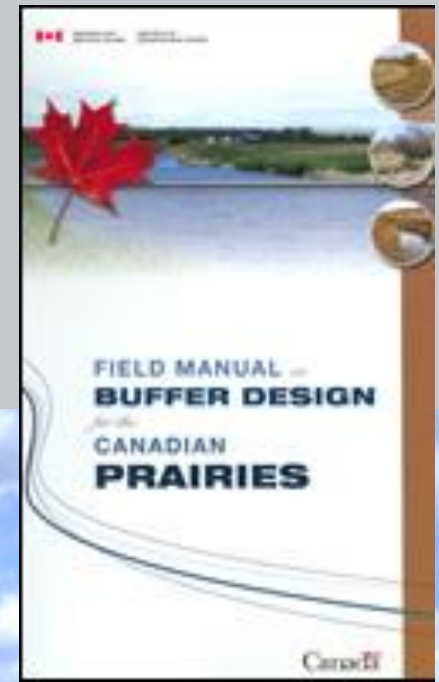
*Eutrophication
and Algae Blooms:*



SURFACE WATER MANAGEMENT CHALLENGES IN THE CANADIAN PRAIRIES

Riparian Buffers

are considered to be an effective means of reducing the loading of nutrients in runoff to surface waters.



ASSESSMENT OF THE ROLE OF RIPARIAN BUFFERS IN FILTERING SEDIMENTS AND NUTRIENTS IN RUNOFF



Study in southern
Manitoba funded by
Environment Canada
through the
*Lake Winnipeg Basin
Stewardship Fund*

ASSESSMENT OF THE ROLE OF RIPARIAN BUFFERS IN FILTERING SEDIMENTS AND NUTRIENTS IN RUNOFF



TRAPPING SEDIMENT AND PHOSPHORUS FROM AGRICULTURAL FIELDS IN RIPARIAN BUFFERS

Elma Field Site and associated Reference Sites

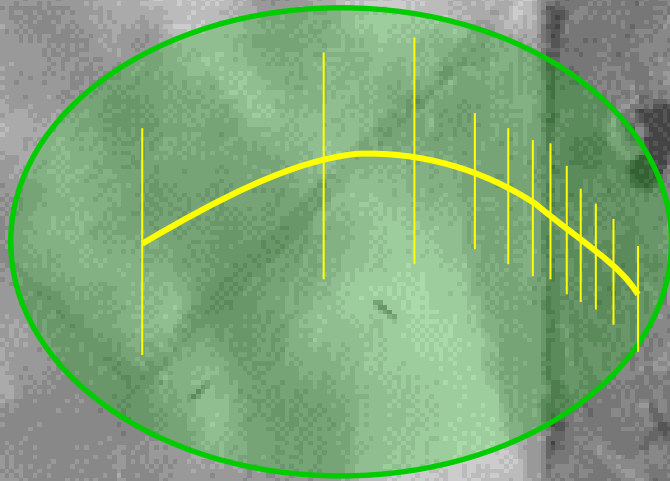


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Elma Field Site and
associated Reference Sites



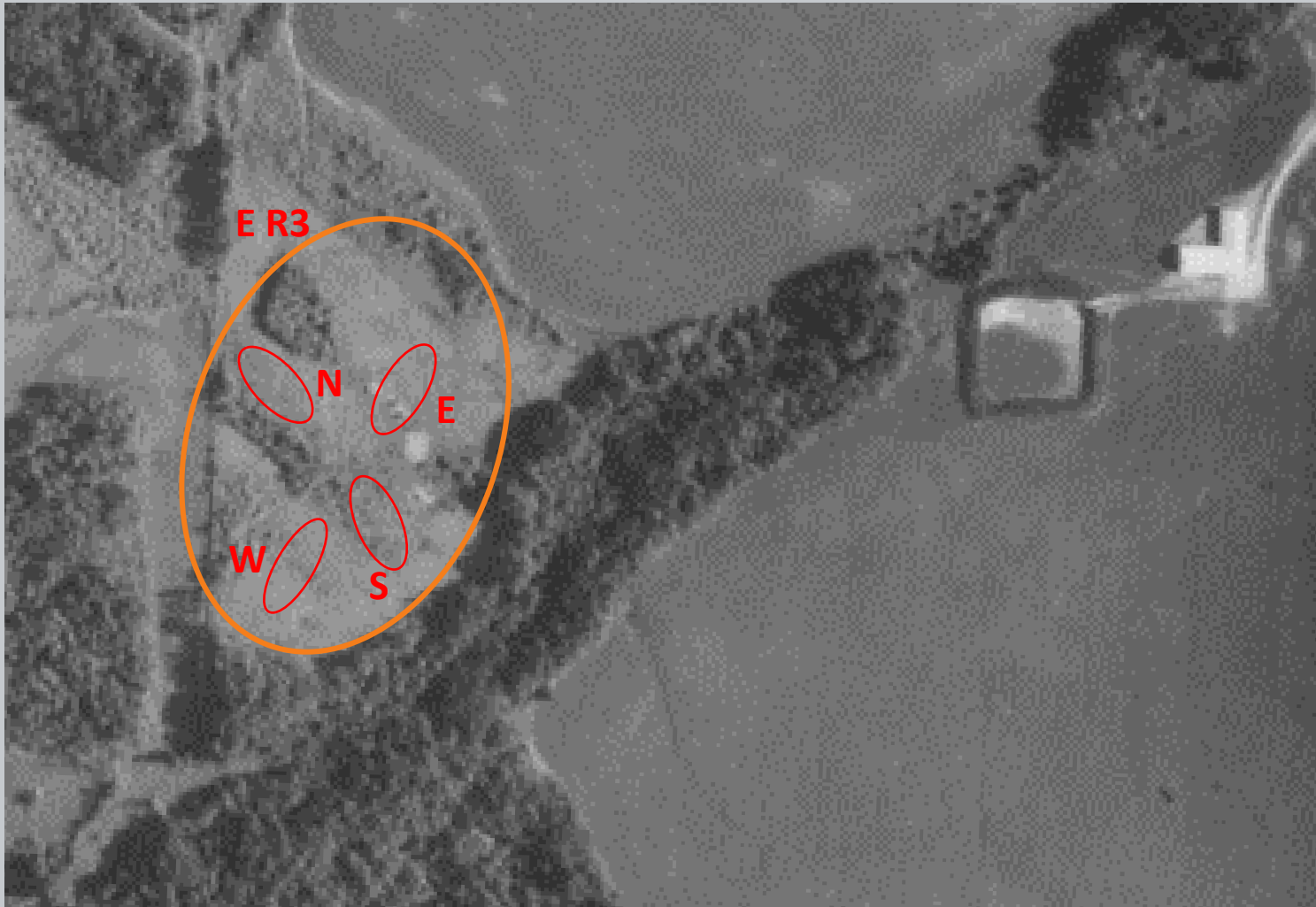
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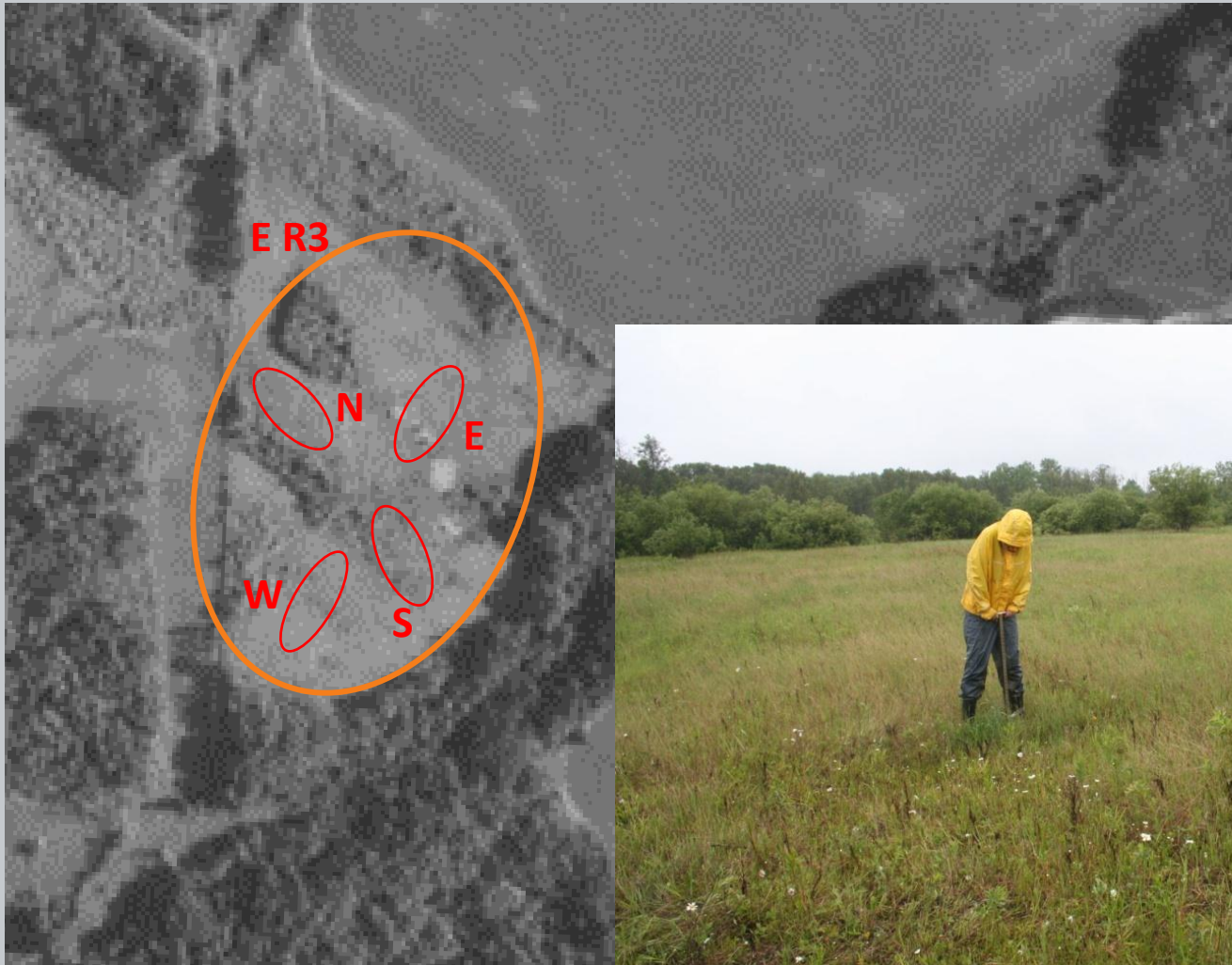
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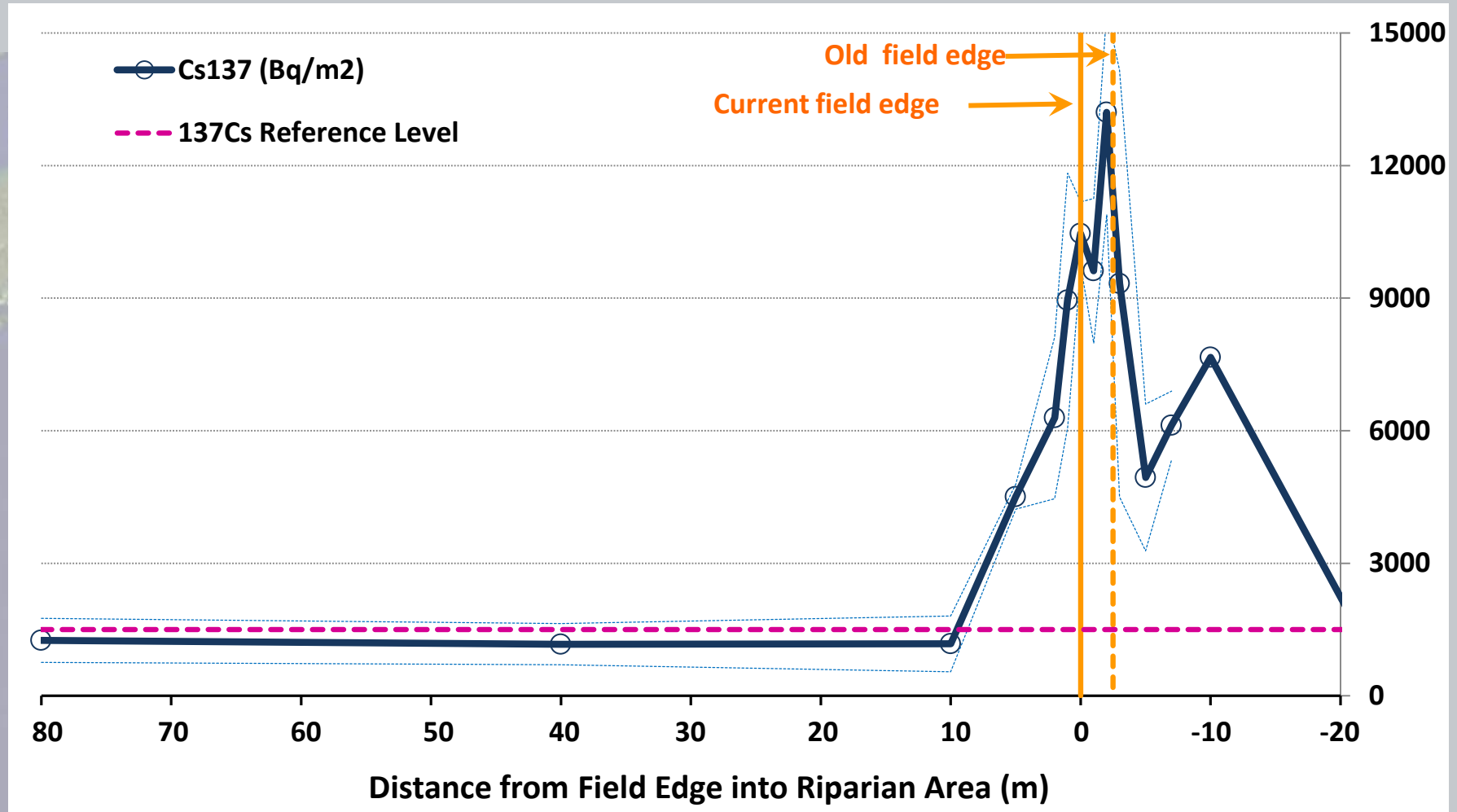
Elma Field Site and
associated Reference Sites



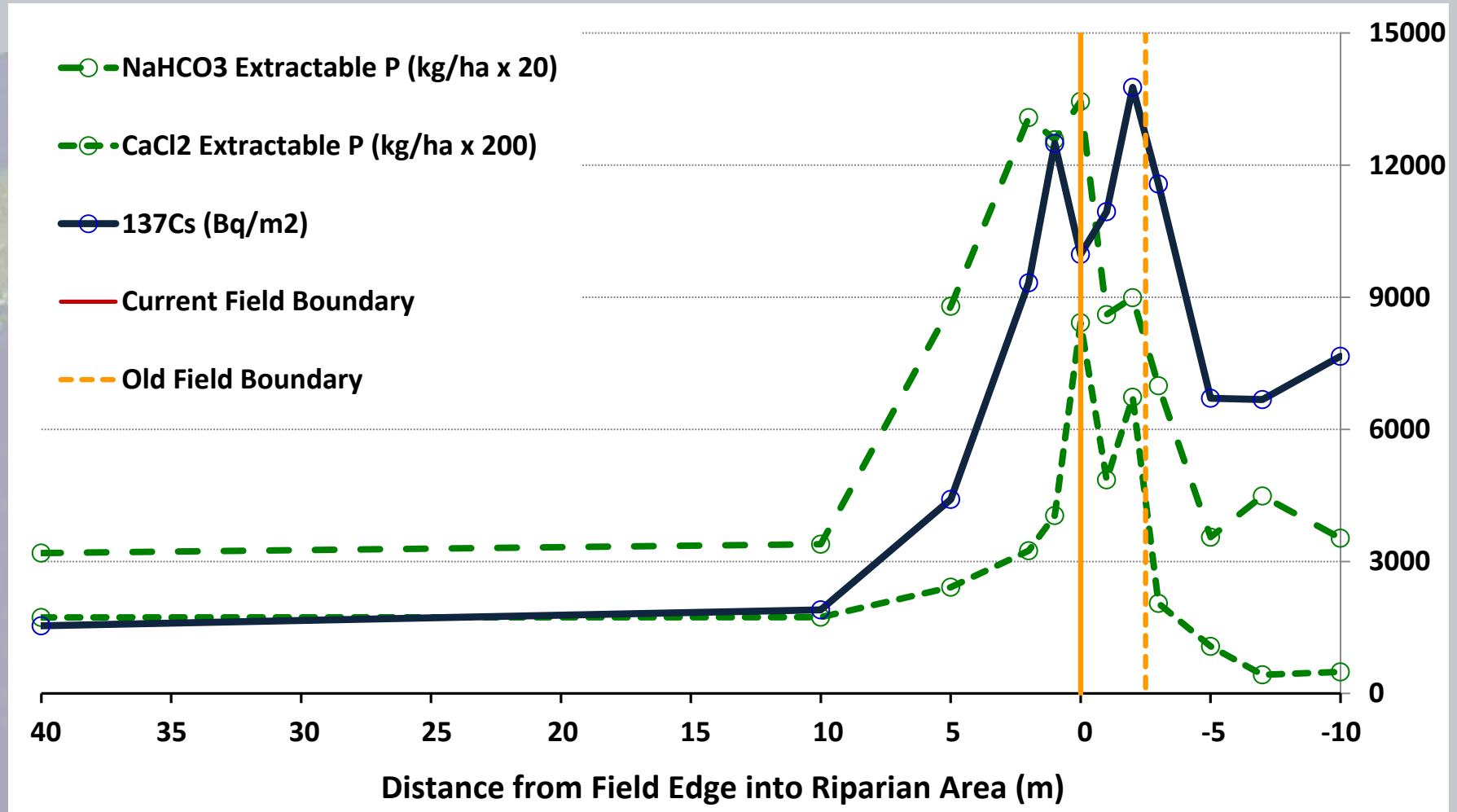
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TRAPPING SEDIMENT AND PHOSPHORUS FROM AGRICULTURAL FIELDS IN RIPARIAN BUFFERS

CaCl2 Extractable P Summary

Z	80	40	10	5	Z	2	1	0	-1	-2	-3	-5	-7	-10
0-15		4.20	4.40	4.60	0-5	4.30	6.40	13.90	13.80	21.00	8.20	1.00	1.30	2.30
15-30		0.00	0.20	1.40	5-10	3.20	4.10	8.00	4.80	6.80	1.70	0.50	0.80	1.40
30-45		0.00	0.00	0.00	10-15	2.30	2.10	7.50	5.20	4.10	1.00	0.20	0.40	0.30
45-60		0.00	0.00	0.00	15-20	1.50	1.80	4.60	2.40	2.40	0.80	0.10	0.10	0.00
					20-25	1.10	1.80	2.60	1.00	2.10	0.60	0.00	0.00	0.00
					25-30	0.60	1.00	1.10	0.30	1.40	0.60	3.00	0.00	0.00
					30-35	0.20	0.30	0.40	0.10	0.60	0.40	0.00	0.10	0.00
					35-40	0.00	0.20	0.10	0.00	0.60	0.10	0.00	0.00	0.00
					40-45	0.00	0.20	0.90	0.00	0.20	0.00	0.00	0.00	0.00
					45-50	0.00	0.00	0.30	0.00	0.20	0.00	0.00	0.00	0.00
					50-55	0.00	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00
					55-60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
					60-65	0.00		0.00	0.00	0.10		0.00	0.00	0.00
					65-70			0.00	0.00	0.10		0.00		0.00
					70-75				0.00	0.00				

TRAPPING SEDIMENT AND PHOSPHORUS FROM AGRICULTURAL FIELDS IN RIPARIAN BUFFERS

NaHCO₃ Extractable P Summary

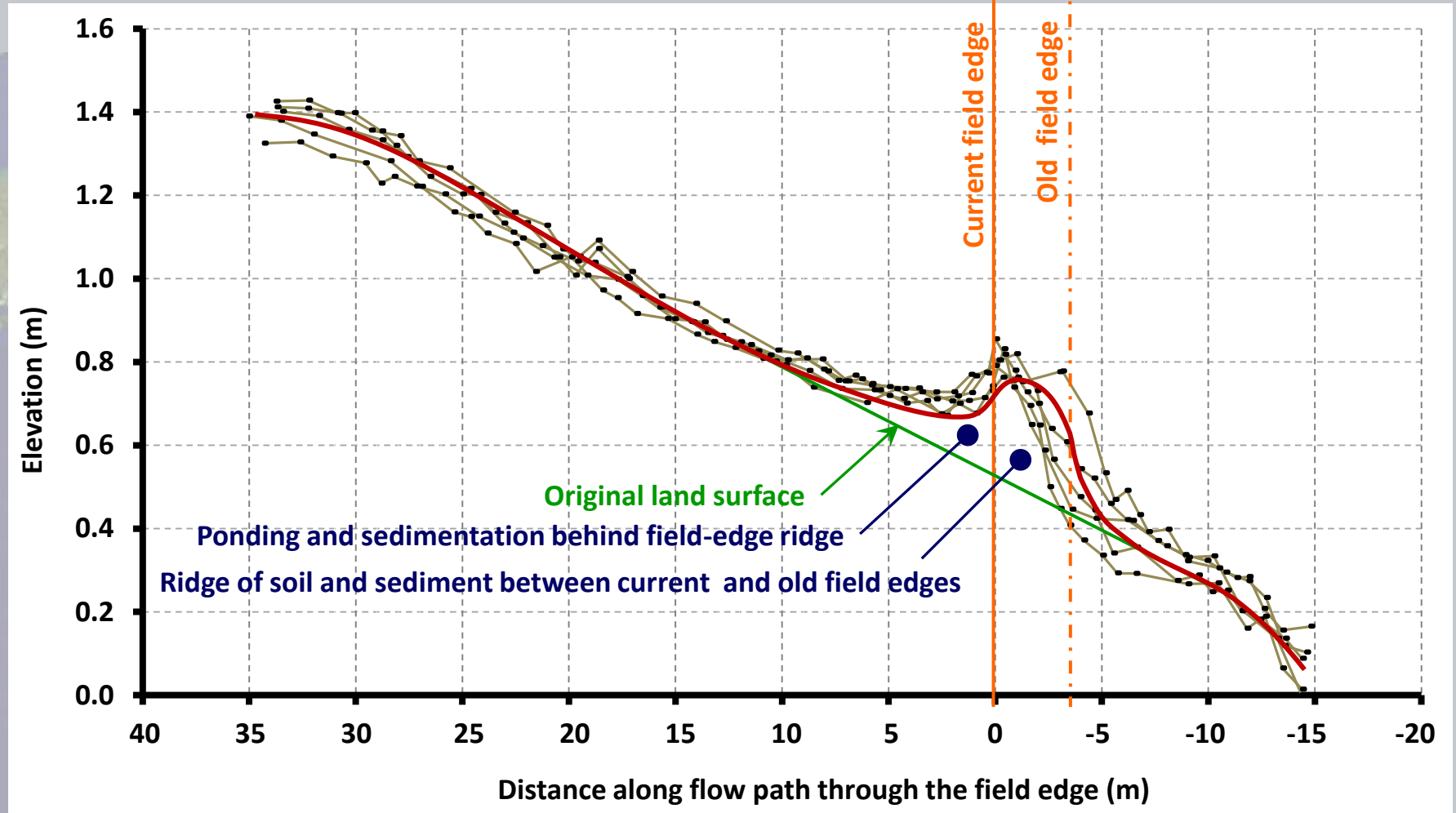
Z	80	40	10	5	Z	2	1	0	-1	-2	-3	-5	-7	-10
0-15		69.4	72.3	120.4	0-5	92.4	91.4	115.5	96.0	90.0	95.2	60.5	90.7	82.7
15-30		5.2	14.5	72.5	5-10	88.5	79.9	91.5	66.4	57.4	66.7	48.5	68.2	89.7
30-45		2.1	2.9	16.9	10-15	75.0	58.7	90.4	64.2	54.5	43.2	30.9	30.7	30.9
45-60		0.5	0.0	3.5	15-20	76.2	57.7	70.0	48.1	42.5	40.5	21.2	16.7	8.2
					20-25	53.7	49.0	60.9	37.9	39.7	32.4	7.5	9.9	9.5
					25-30	44.0	46.5	47.4	24.0	45.2	36.0	2.9	15.4	8.2
					30-35	26.0	29.7	31.4	16.2	36.7	27.2	7.4	15.9	7.4
					35-40	16.0	21.4	27.4	16.0	43.4	24.7	4.5	9.0	9.4
					40-45	13.2	31.0	15.5	9.2	26.9	11.0	4.1	3.0	2.4
					45-50	9.2	14.0	12.2	5.9	16.0	4.4	6.7	0.0	0.0
					50-55	4.9	13.0	12.2	8.5	8.4	2.0	0.0	0.7	0.4
					55-60	4.4	4.0	9.2	7.7	6.4	0.0	0.2	0.0	0.0
					60-65	3.2		15.0	7.2	3.2		0.0	0.7	0.0
					65-70			7.0	4.9	1.0		0.0		0.0
					70-75				1.9	0.7				

TRAPPING SEDIMENT AND PHOSPHORUS FROM AGRICULTURAL FIELDS IN RIPARIAN BUFFERS

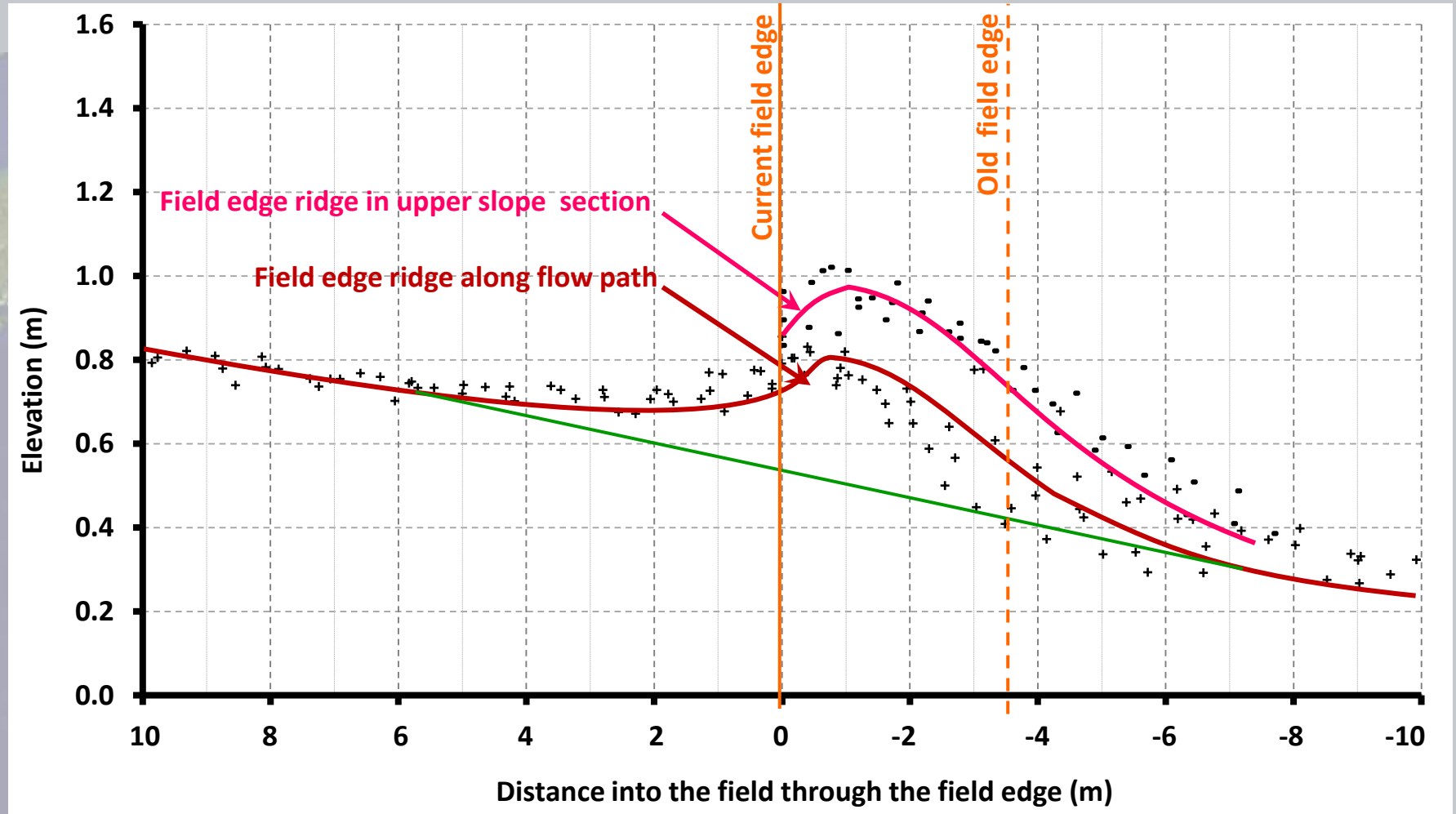
Total P Summary

Z	80	40	10	5	Z	2	1	0	-1	-2	-3	-5	-7	-10
0-15		667	704	808	0-5	702	827	1096	1340	1258	1137	1083	1046	1396
15-30		529	629	665	5-10	802	783	927	1071	990	1040	840	858	1233
30-45		579	611	521	10-15	733	683	877	958	821	783	790	696	677
45-60		592	536	315	15-20	633	671	690	727	790	740	508	565	665
					20-25	640	577	621	590	627	683	377	608	702
					25-30	565	583	621	527	683	640	358	677	646
					30-35	533	471	483	446	677	708	802	758	483
					35-40	552	440	459	465	902	765	621	471	565
					40-45	465	583	458	477	946	521	427	446	458
					45-50	415	465	465	390	696	352	440	402	396
					50-55	383	590	690	790	621	340	352	402	490
					55-60	340	358	602	790	633	296	365	399	490
					60-65	296		915	802	483		377	471	490
					65-70			658	577	371		433		490
					70-75				415	421				

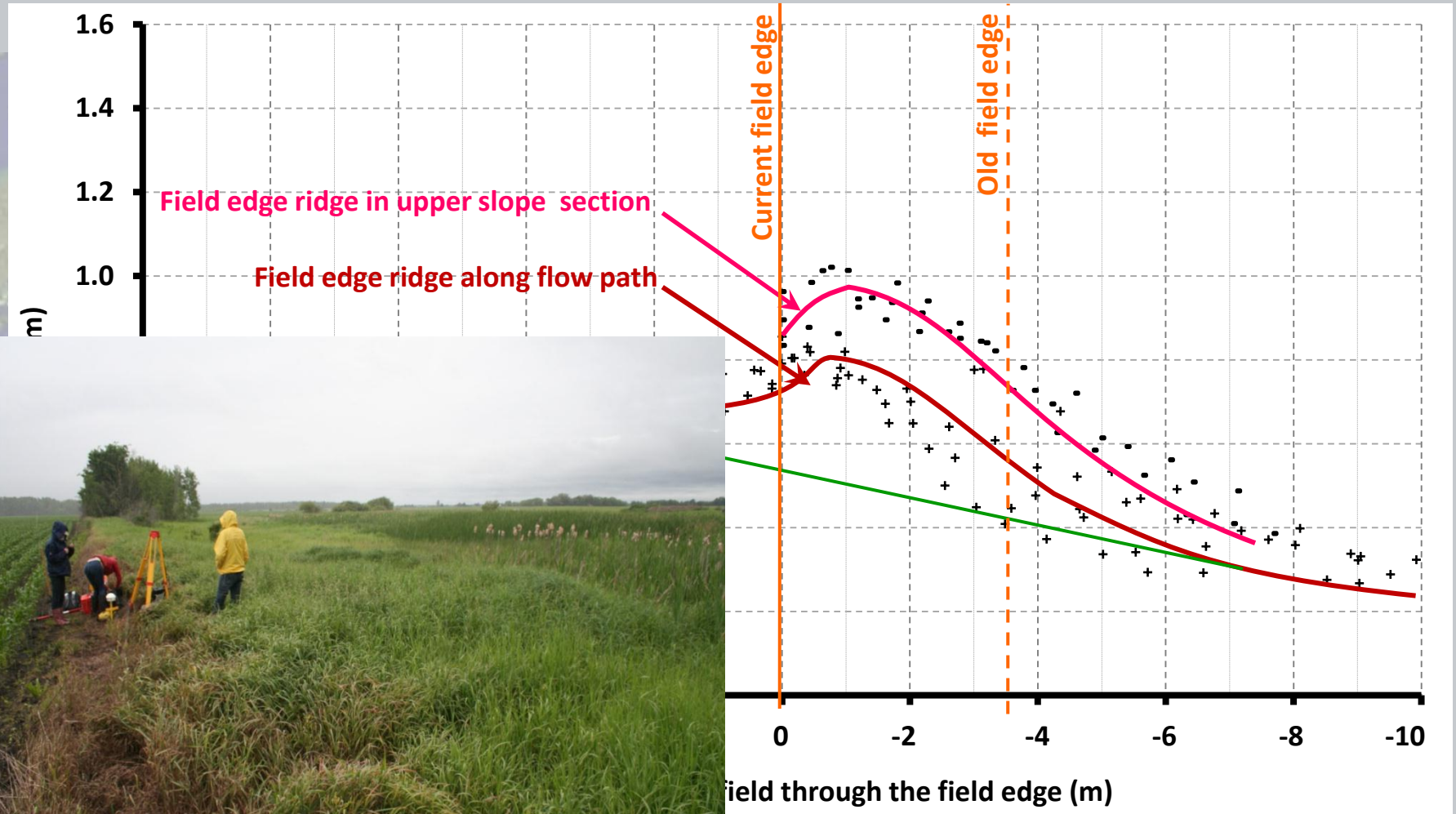
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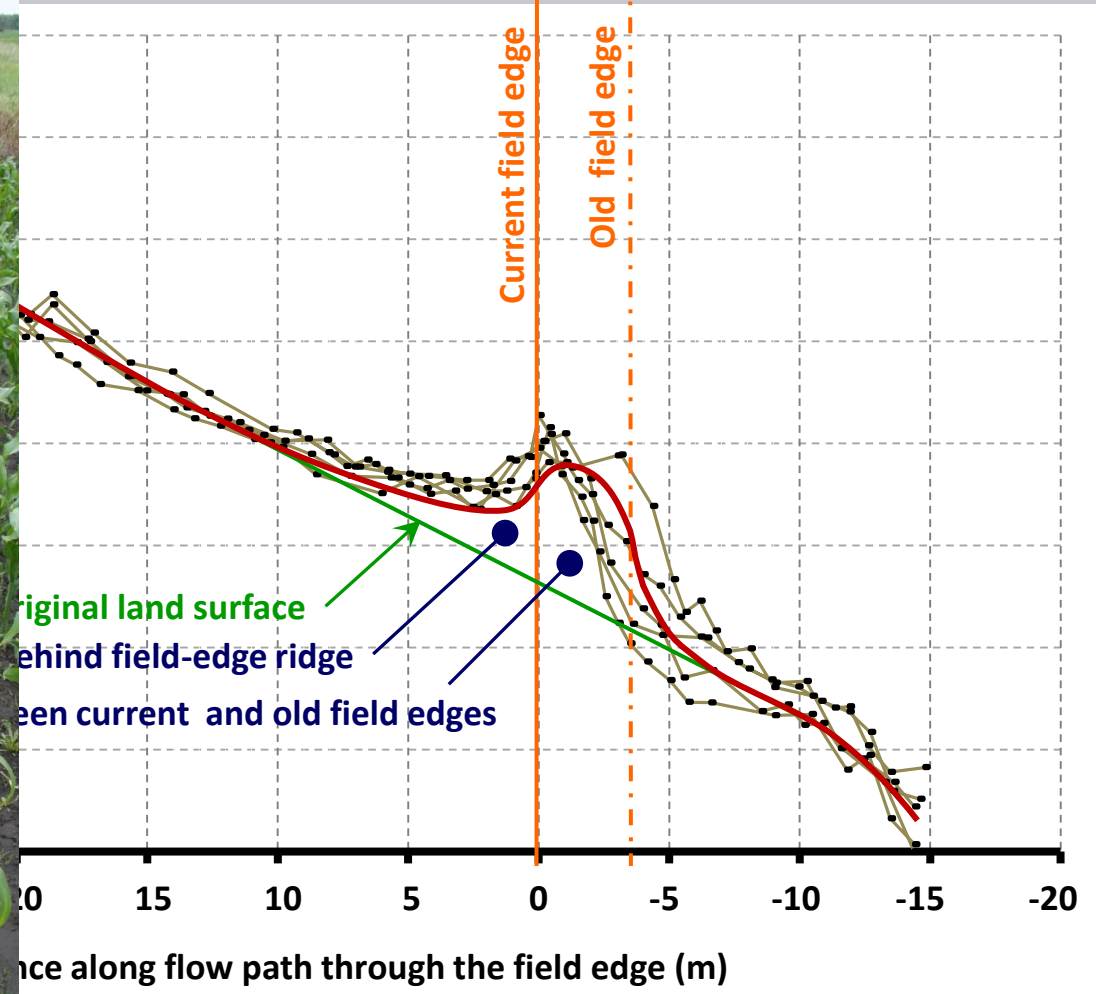
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ASSESSMENT OF THE ROLE OF RIPARIAN BUFFERS IN FILTERING SEDIMENTS AND NUTRIENTS IN RUNOFF

Future Research:

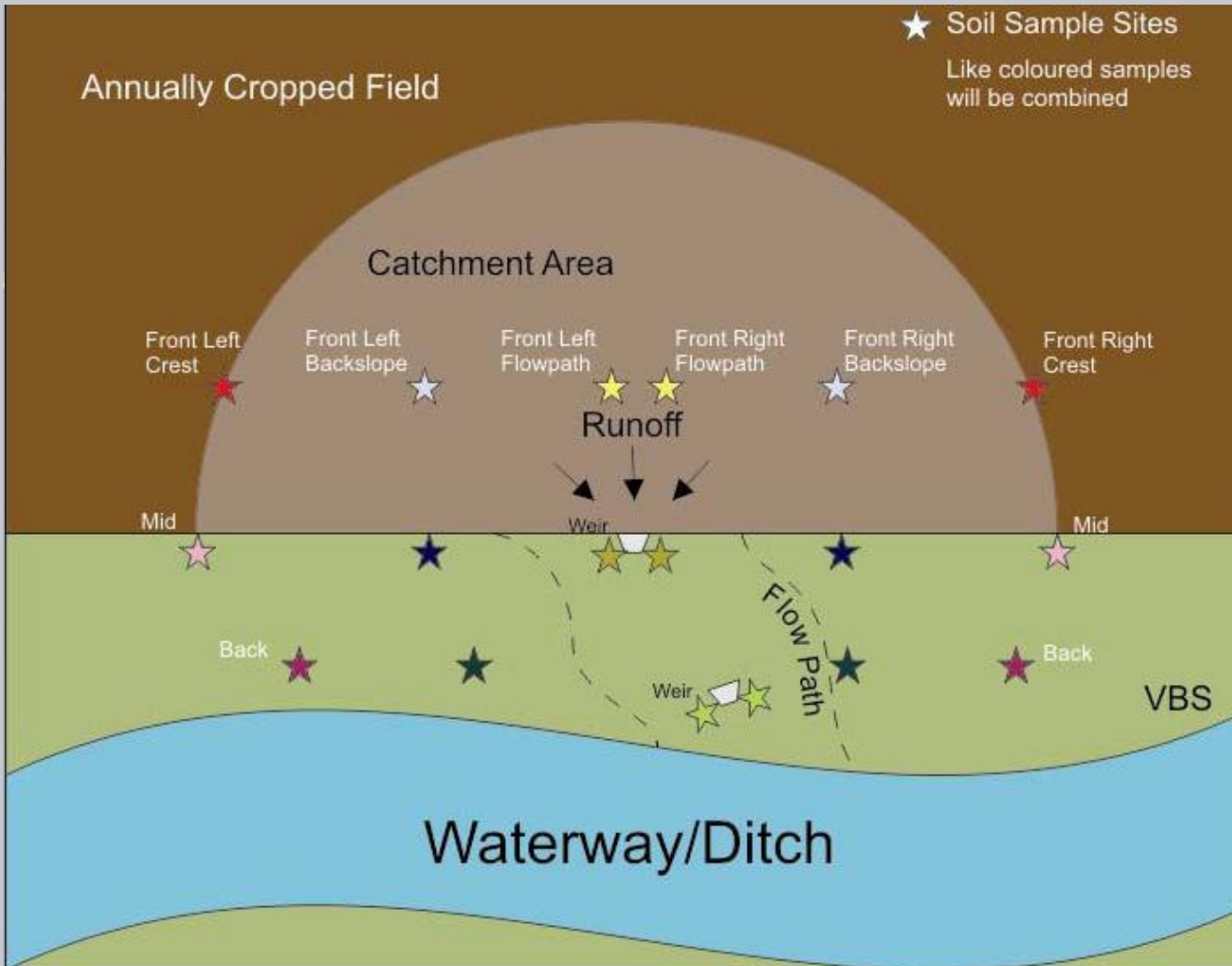
Future research will focus on designing and assessing riparian areas that temporarily detain runoff within the field and disperse it more uniformly through a greater extent of riparian area. The harvesting of sediment and vegetation will be examined.



MONITORING NUTRIENTS IN RUNOFF FROM AGRICULTURAL FIELDS THROUGH RIPARIAN BUFFERS



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