

# Supplement B

## Applicability of above-ground crop monitoring to identify soil compaction

### Tables

Table SB1: Results of the z-tests for all vegetation indices (plots pooled for each site and date). Statistically significant differences are in bold. The intensity of the background coloration illustrates the value of the z-statistic. Positive z-scores (red) indicate a higher VI for uncompacted soils, vice versa, negative z-scores (blue) a higher VI at compacted soils.

Herzogbirbaum		VI	Apr 06	Jun 10	Jun 29
2022	ARVI2		-14.16	-15.80	-4.78
	CCCI		-3.80	-18.71	-12.73
	CG		-13.51	-19.71	-13.86
	Cirededge		-15.74	-19.07	-14.26
	CTVI		-14.17	-15.77	-4.81
	CVI		-11.32	-18.19	-16.36
	GNDVI		-13.74	-19.45	-14.00
	GSAVI		-16.93	-16.86	3.97
	MSAVI		-16.47	-15.48	4.57
	NDRE		-15.98	-18.85	-14.34
	NDVI		-14.16	-15.80	-4.78
	OSAVI		-15.24	-15.80	-0.62
	RTVlcore		-18.94	-16.46	3.26
	SAVI		-16.28	-15.09	3.49
	SR800550		-12.70	-16.91	-4.58
	TriVI		-17.31	-13.90	7.42
WDRVI		-13.55	-16.21	-4.63	

Herzogbirbaum		VI	Apr 18	May 24	Jun 29
2023	ARVI2		-2.61	-14.51	9.05
	CCCI		-1.27	12.04	3.16
	CG		-4.18	-0.60	1.73
	Cirededge		-5.73	4.17	6.50
	CTVI		-2.77	-14.44	8.90
	CVI		-8.29	14.65	-6.38
	GNDVI		-5.29	-0.92	1.26
	GSAVI		-0.48	-12.87	0.30
	MSAVI		-0.15	-15.78	6.67
	NDRE		-6.05	4.16	6.47
	NDVI		-2.61	-14.51	9.05
	OSAVI		-1.24	-15.73	8.42
	RTVlcore		-0.24	-12.52	8.93
	SAVI		-0.38	-15.64	6.89
	SR800550		-1.29	-15.35	9.93
	TriVI		0.32	-16.01	5.08
WDRVI		-1.67	-15.12	9.70	

Groß-Enzersdorf		VI	Apr 28	Jun 02	Jun 28	Jul 28	Aug 09	Aug 24	Sep 14
2022	ARVI2		7.40	6.30	6.40	-0.85	-1.99	-8.83	-13.58
	CCCI		3.54	-9.30	-1.75	-4.69	-1.33	4.99	7.11
	CG		3.73	1.42	2.80	-2.45	-2.93	-1.38	-4.72
	Cirededge		1.35	0.85	2.48	-3.96	-3.27	-3.46	-6.73
	CTVI		7.58	6.20	6.25	-0.82	-1.92	-8.80	-13.25
	CVI		-1.20	-9.40	-3.76	-2.27	-1.50	4.13	5.69
	GNDVI		5.92	1.66	3.66	-2.44	-2.01	-4.43	-4.92
	GSAVI		7.81	5.69	7.85	1.72	1.63	1.32	-5.19
	MSAVI		8.40	7.24	7.94	1.34	0.19	-4.85	-12.75
	NDRE		2.46	0.66	3.17	-4.18	-2.93	-5.90	-6.82
	NDVI		7.40	6.30	6.40	-0.85	-1.99	-8.83	-13.33
	OSAVI		8.23	6.73	7.72	0.57	-0.56	-7.38	-13.35
	RTVlcore		3.59	5.59	7.62	-1.07	0.24	-1.56	-5.76
	SAVI		8.95	7.08	7.72	1.28	0.18	-5.40	-12.92
	SR800550		2.55	6.59	7.44	-1.39	-3.25	-4.09	-14.05
	TriVI		9.98	7.50	7.06	1.39	0.20	-5.90	-12.43
WDRVI		4.98	6.58	7.50	-1.13	-2.70	-7.52	-14.03	

Groß-Enzersdorf		VI	May 04	May 25	Jun 30	Aug 03	Sep 05
2023	ARVI2		-4.11	0.54	-0.30	-5.29	5.22
	CCCI		0.30	2.52	-2.92	-8.59	-8.57
	CG		-3.76	-2.83	-0.84	-8.10	-2.03
	Cirededge		-2.64	-4.47	-1.10	-10.66	-0.42
	CTVI		-4.21	0.22	-0.33	-5.25	5.10
	CVI		-2.82	-5.27	-1.45	-4.09	-6.85
	GNDVI		-4.54	-4.36	-1.72	-8.56	-2.32
	GSAVI		-3.87	-2.72	0.19	-5.80	-0.11
	MSAVI		-3.17	-0.76	0.58	-2.25	5.73
	NDRE		-3.15	-4.82	-1.83	-10.27	-0.58
	NDVI		-4.11	0.54	-0.30	-5.29	5.22
	OSAVI		-3.81	0.10	0.33	-3.02	5.80
	RTVlcore		-2.47	-7.06	0.63	-5.51	2.36
	SAVI		-3.42	-0.43	0.77	-2.03	5.72
	SR800550		-3.31	1.07	-0.24	-5.87	5.93
	TriVI		-2.50	-1.14	1.41	-0.71	6.08
WDRVI		-3.58	0.98	-0.15	-5.63	5.76	

Gavere		VI	May 12	Jun 16	Jul 14
2022	ARVI2		5.44	49.10	27.38
	CCCI		1.71	35.24	8.03
	CG		4.68	39.87	28.71
	Cirededge		5.00	43.03	20.94
	CTVI		5.41	48.91	27.95
	CVI		6.96	20.75	23.15
	GNDVI		6.17	45.81	31.29
	GSAVI		6.34	41.43	30.11
	MSAVI		5.56	43.64	27.14
	NDRE		5.99	48.35	21.98
	NDVI		5.44	49.10	27.38
	OSAVI		5.56	47.26	28.33
	RTVlcore		6.16	40.85	24.32
	SAVI		5.68	43.18	27.98
	SR800550		3.54	36.98	24.02
	TriVI		5.58	35.51	25.42
WDRVI		4.59	45.55	24.94	

Gavere		VI	Jun 08	Aug 10
2023	ARVI2		-2.77	0.91
	CCCI		9.12	5.22
	CG		-2.66	2.24
	Cirededge		0.40	4.12
	CTVI		-2.63	0.90
	CVI		2.44	2.76
	GNDVI		-2.01	2.27
	GSAVI		-3.37	2.66
	MSAVI		-3.66	0.10
	NDRE		0.42	4.04
	NDVI		-2.77	0.91
	OSAVI		-3.11	1.21
	RTVlcore		-1.17	3.21
	SAVI		-3.45	0.36
	SR800550		-3.28	1.44
	TriVI		-3.89	-0.73
WDRVI		-3.18	1.15	

Table SB2: Cohen's *d* test for all vegetation indices (absolute values; plots pooled for each site and date). The direction of the differences can be inferred from Table SB1. The intensity of the background coloration illustrates the magnitude of differences.

		VI	Apr 06	Jun 10	Jun 29
Herzogsbirbaum	2022	ARVI2	0.035	0.043	0.013
		CCCI	0.010	0.050	0.035
		CG	0.030	0.049	0.036
		Clrededge	0.036	0.048	0.036
		CTVI	0.035	0.043	0.013
		CVI	0.028	0.049	0.040
		GNDVI	0.034	0.053	0.037
		GSAVI	0.041	0.043	0.010
		MSAVI	0.038	0.041	0.012
		NDRE	0.039	0.050	0.037
		NDVI	0.035	0.043	0.013
		OSAVI	0.037	0.041	0.002
		RTVcore	0.044	0.041	0.008
		SAVI	0.039	0.039	0.009
		SR800550	0.027	0.042	0.012
		TriVI	0.041	0.035	0.019
WDRVI	0.030	0.043	0.012		

  

		VI	Apr 18	May 24	Jun 29
Herzogsbirbaum	2023	ARVI2	0.008	0.052	0.029
		CCCI	0.004	0.037	0.010
		CG	0.012	0.002	0.006
		Clrededge	0.016	0.012	0.021
		CTVI	0.008	0.053	0.028
		CVI	0.020	0.052	0.019
		GNDVI	0.017	0.003	0.004
		GSAVI	0.001	0.042	0.001
		MSAVI	0.000	0.052	0.022
		NDRE	0.018	0.012	0.021
		NDVI	0.008	0.052	0.029
		OSAVI	0.003	0.056	0.027
		RTVcore	0.001	0.037	0.027
		SAVI	0.001	0.051	0.023
		SR800550	0.004	0.044	0.033
		TriVI	0.001	0.047	0.017
WDRVI	0.005	0.048	0.032		

  

		VI	Apr 28	Jun 02	Jun 28	Jul 28	Aug 09	Aug 24	Sep 14
Groß-Enzersdorf	2022	ARVI2	0.013	0.017	0.014	0.002	0.004	0.018	0.030
		CCCI	0.007	0.022	0.004	0.011	0.003	0.012	0.022
		CG	0.007	0.003	0.007	0.006	0.006	0.003	0.011
		Clrededge	0.003	0.002	0.006	0.009	0.007	0.007	0.016
		CTVI	0.014	0.016	0.013	0.002	0.004	0.018	0.030
		CVI	0.003	0.019	0.008	0.005	0.003	0.010	0.013
		GNDVI	0.011	0.004	0.008	0.006	0.004	0.009	0.012
		GSAVI	0.015	0.014	0.018	0.004	0.004	0.003	0.013
		MSAVI	0.016	0.020	0.018	0.003	0.000	0.009	0.029
		NDRE	0.005	0.002	0.007	0.010	0.006	0.011	0.016
		NDVI	0.013	0.017	0.014	0.002	0.004	0.018	0.029
		OSAVI	0.015	0.018	0.017	0.001	0.001	0.015	0.030
		RTVcore	0.007	0.015	0.018	0.002	0.001	0.003	0.015
		SAVI	0.017	0.019	0.017	0.003	0.000	0.010	0.030
		SR800550	0.005	0.020	0.019	0.003	0.007	0.008	0.029
		TriVI	0.020	0.021	0.016	0.003	0.000	0.011	0.027
WDRVI	0.010	0.019	0.017	0.003	0.006	0.013	0.029		

  

		VI	May 04	May 25	Jun 30	Aug 03	Sep 05
Groß-Enzersdorf	2023	ARVI2	0.009	0.001	0.001	0.013	0.014
		CCCI	0.001	0.006	0.008	0.019	0.022
		CG	0.009	0.008	0.002	0.019	0.005
		Clrededge	0.007	0.012	0.003	0.023	0.001
		CTVI	0.010	0.001	0.001	0.013	0.013
		CVI	0.008	0.015	0.004	0.010	0.016
		GNDVI	0.011	0.012	0.005	0.021	0.006
		GSAVI	0.009	0.008	0.000	0.014	0.000
		MSAVI	0.007	0.002	0.001	0.006	0.017
		NDRE	0.008	0.013	0.005	0.023	0.001
		NDVI	0.009	0.001	0.001	0.013	0.014
		OSAVI	0.009	0.000	0.001	0.007	0.016
		RTVcore	0.006	0.020	0.002	0.013	0.007
		SAVI	0.008	0.001	0.002	0.005	0.016
		SR800550	0.007	0.003	0.001	0.014	0.017
		TriVI	0.006	0.003	0.004	0.002	0.017
WDRVI	0.008	0.003	0.000	0.014	0.016		

  

		VI	May 12	Jun 16	Jul 14
Gavere	2022	ARVI2	0.010	0.102	0.077
		CCCI	0.004	0.073	0.014
		CG	0.008	0.156	0.077
		Clrededge	0.009	0.154	0.047
		CTVI	0.010	0.098	0.075
		CVI	0.012	0.051	0.054
		GNDVI	0.012	0.100	0.073
		GSAVI	0.012	0.105	0.083
		MSAVI	0.011	0.114	0.091
		NDRE	0.011	0.119	0.048
		NDVI	0.010	0.102	0.077
		OSAVI	0.011	0.106	0.085
		RTVcore	0.011	0.121	0.062
		SAVI	0.011	0.105	0.089
		SR800550	0.007	0.215	0.082
		TriVI	0.011	0.093	0.090
WDRVI	0.009	0.149	0.081		

  

		VI	Jun 08	Aug 10
Gavere	2023	ARVI2	0.005	0.002
		CCCI	0.019	0.010
		CG	0.005	0.005
		Clrededge	0.001	0.009
		CTVI	0.005	0.002
		CVI	0.005	0.005
		GNDVI	0.004	0.005
		GSAVI	0.006	0.005
		MSAVI	0.007	0.000
		NDRE	0.001	0.008
		NDVI	0.005	0.002
		OSAVI	0.006	0.002
		RTVcore	0.002	0.006
		SAVI	0.006	0.001
		SR800550	0.006	0.003
		TriVI	0.007	0.001
WDRVI	0.006	0.002		