

Supplementary material 1

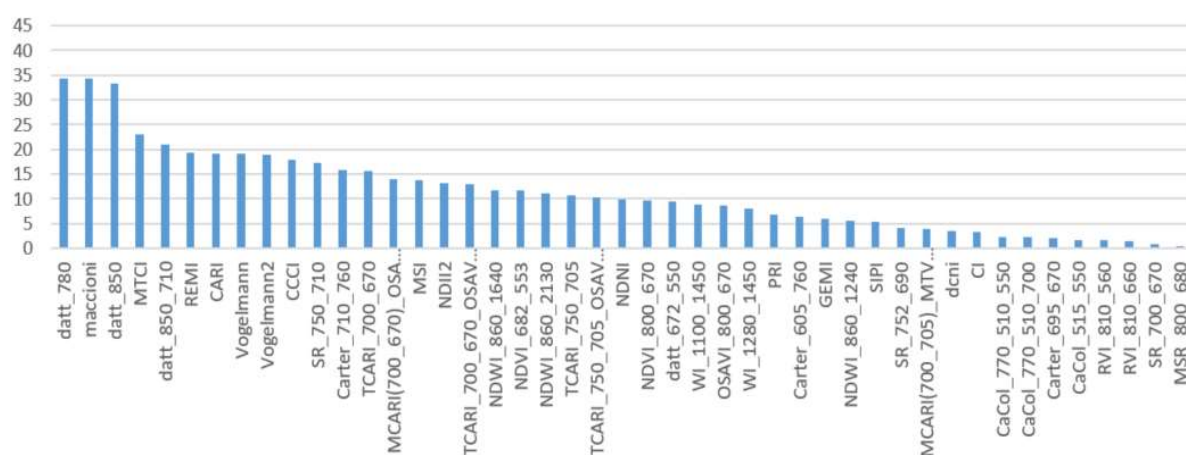


Figure S1-a: Results of ANOVA for the selected Vegetation indices applied on HySpex. x : Selected VI and y : F-value of the ANOVA. All selected VI have a p-value < 0.05

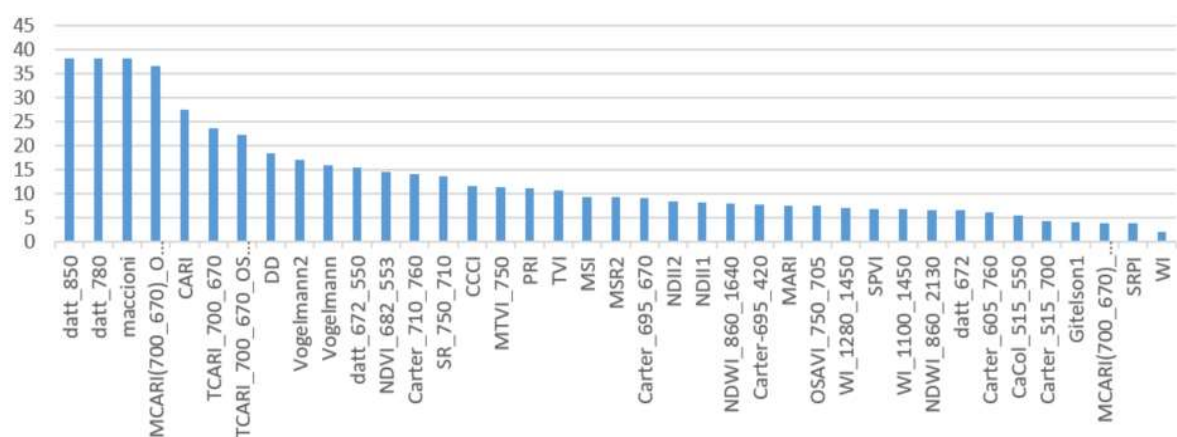


Figure S1-b: Results of ANOVA for the selected Vegetation indices applied on HYPXIM at 4m. x : Selected VI and y : F-value of the ANOVA. All selected VI have a p-value < 0.05

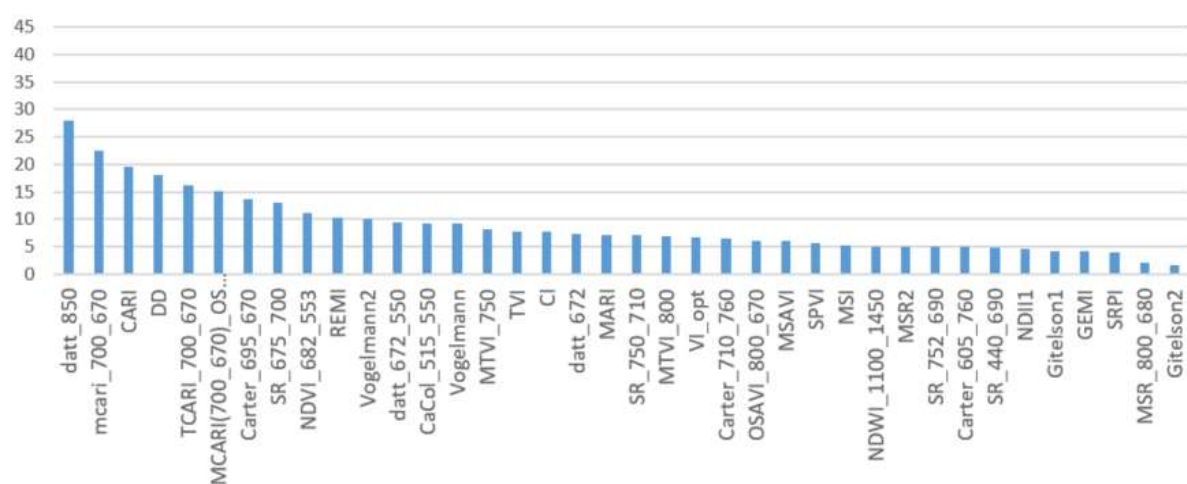


Figure S1-c: Results of ANOVA for the selected Vegetation indices applied on HYPXIM at 8m. x : Selected VI and y : F-value of the ANOVA. All selected VI have a p-value < 0.05

Supplementary material 2

A.	Horse chesnut	Fir	Maple	Mediterranean hackberry	Dwarf palm	Common privet	Southern magnolia	Shrub mix	Lawn	London plane	Oak	Black locust	Silver linden	Linden	Total Predicted	User's accuracies
Horse chesnut	19	0	0	0	0	0	0	0	0	1	0	0	0	1	21	90%
Fir	0	5	0	0	0	4	2	2	0	0	0	0	0	1	14	36%
Maple	0	0	4	0	0	0	0	0	0	0	0	0	0	2	6	67%
Mediterranean hackberry	0	0	1	23	2	1	2	0	0	3	1	1	2	1	37	62%
Dwarf palm	0	1	0	2	4	1	0	3	0	1	0	0	0	3	15	27%
Common privet	0	3	0	2	1	13	0	1	0	0	0	1	0	0	21	62%
Southern magnolia	0	2	0	2	2	0	9	1	0	0	0	0	0	1	17	53%
Shrub mix	0	0	0	0	2	1	0	3	2	0	0	1	0	2	11	27%
Lawn	0	0	1	0	1	0	0	2	10	0	0	0	0	0	14	71%
London plane	0	1	0	0	0	2	3	1	2	133	0	5	0	3	150	89%
Oak	0	0	0	0	0	0	0	0	0	0	7	1	0	0	8	88%
Black locust	0	0	0	3	0	0	0	0	1	5	2	9	0	1	21	43%
Silver linden	0	0	0	0	0	0	0	1	0	0	1	0	4	4	10	40%
Linden	2	1	4	3	4	0	0	0	2	1	1	3	11	44	76	58%
Total Training	21	13	10	35	16	22	16	14	17	144	12	21	17	63	421	
Producer's accuracies	90%	38%	40%	66%	25%	59%	56%	21%	59%	92%	58%	43%	24%	70%		

B.	Horse chesnut	Fir	Maple	Mediterranean hackberry	Dwarf palm	Common privet	Southern magnolia	Shrub mix	Lawn	London plane	Oak	Black locust	Silver linden	Linden	Total Predicted	User's accuracies
Horse chesnut	18	0	1	0	0	0	0	0	0	0	0	0	0	0	19	95%
Fir	0	3	1	1	0	2	3	2	0	2	0	0	0	1	15	20%
Maple	0	0	2	0	0	0	0	0	1	1	0	0	0	0	4	50%
Mediterranean hackberry	0	0	1	25	1	1	1	1	0	2	0	3	1	4	40	63%
Dwarf palm	0	0	0	1	6	1	0	0	0	0	0	0	0	1	9	67%
Common privet	0	5	0	1	1	13	1	2	0	0	1	0	0	1	25	52%
Southern magnolia	0	2	0	0	2	0	8	0	1	1	1	0	0	0	15	53%
Shrub mix	0	0	0	0	1	1	0	5	1	0	0	1	0	0	9	56%
Lawn	1	0	1	1	0	0	1	0	10	0	0	1	0	1	16	63%
London plane	0	1	1	1	0	2	1	0	2	129	0	3	1	4	145	89%
Oak	0	0	0	0	0	0	0	1	0	0	5	0	1	1	8	63%
Black locust	0	0	0	1	0	0	0	0	0	2	0	8	0	2	13	62%
Silver linden	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2	50%
Linden	2	2	3	4	5	2	1	3	2	7	5	5	13	47	101	47%
Total Training	21	13	10	35	16	22	16	14	17	144	12	21	17	63	421	
Producer's accuracies	86%	23%	20%	71%	38%	59%	50%	36%	59%	90%	42%	38%	6%	75%		

Table S2: Example of confusion matrices for the SVM classification applied with 10-Folds method on (top) reduced image HySpex at 2m by MNF and (down) reduced image HYPXIM 4m by MNF

Supplementary material 3

	2-folds	Number of individuals	HySpex 2m		HYPXIM 4m		HYPXIM 8m		Sentinel2 10m	
			PA	UA	PA	UA	PA	UA	PA	UA
SVM	Maple	10	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%
	Oak	12	16,7%	33,3%	41,7%	71,4%	50,0%	66,7%	0,0%	0,0%
	Fir	13	7,7%	25,0%	0,0%	0,0%	7,7%	14,3%	0,0%	0,0%
	Shrub mix	14	0,0%	0,0%	28,6%	44,4%	0,0%	0,0%	7,1%	100,0%
	Dwarf palm	16	6,3%	25,0%	50,0%	57,1%	37,5%	60,0%	25,0%	66,7%
	Southern magnolia	16	25,0%	33,3%	62,5%	55,6%	50,0%	66,7%	37,5%	54,5%
	Lawn	17	47,1%	80,0%	52,9%	69,2%	41,2%	63,6%	0,0%	0,0%
	Silver linden	17	0,0%	0,0%	0,0%	0,0%	23,5%	23,5%	0,0%	0,0%
	Horse chesnut	21	76,2%	94,1%	85,7%	100,0%	52,4%	50,0%	23,8%	71,4%
	Black locust	21	33,3%	58,3%	47,6%	45,5%	38,1%	53,3%	4,8%	50,0%
	Common privet	22	54,5%	46,2%	63,6%	50,0%	54,5%	27,9%	9,1%	15,4%
	Mediterranean hackberry	35	65,7%	46,9%	80,0%	66,7%	54,3%	52,8%	28,6%	24,4%
	Linden	63	87,3%	49,1%	55,6%	43,8%	68,3%	54,4%	60,3%	34,5%
	London plane	144	95,1%	83,5%	88,9%	84,8%	91,0%	84,5%	91,0%	57,7%
RF	Maple	10	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%
	Oak	12	58,3%	100,0%	0,0%	0,0%	33,3%	80,0%	33,3%	44,4%
	Fir	13	23,1%	33,3%	0,0%	0,0%	7,7%	20,0%	0,0%	0,0%
	Shrub mix	14	0,0%	0,0%	7,1%	33,3%	0,0%	0,0%	0,0%	0,0%
	Dwarf palm	16	12,5%	50,0%	25,0%	100,0%	37,5%	85,7%	56,3%	60,0%
	Southern magnolia	16	31,3%	38,5%	50,0%	66,7%	31,3%	55,6%	43,8%	41,2%
	Lawn	17	17,6%	100,0%	35,3%	100,0%	17,6%	75,0%	5,9%	25,0%
	Silver linden	17	5,9%	14,3%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%
	Horse chesnut	21	61,9%	76,5%	95,2%	90,9%	52,4%	78,6%	57,1%	48,0%
	Black locust	21	28,6%	54,5%	23,8%	62,5%	23,8%	100,0%	19,0%	57,1%
	Common privet	22	45,5%	45,5%	63,6%	48,3%	27,3%	23,1%	4,5%	5,9%
	Mediterranean hackberry	35	68,6%	50,0%	71,4%	56,8%	60,0%	53,8%	40,0%	37,8%
	Linden	63	82,5%	48,6%	69,8%	36,1%	77,8%	46,7%	61,9%	37,5%
	London plane	144	94,4%	79,5%	90,3%	78,3%	93,1%	69,8%	90,3%	78,3%

Table S3-1: Producer's and User's Accuracies (PA and UA) obtained from the MNF-reduced image datasets, with RF and SVM classifiers trained with 2-folds for the 14 species training dataset.

	10-folds	Number of individuals	HySpex 2m		HYPXIM 4m		HYPXIM 8m		Sentinel2 10m	
			PA	UA	PA	UA	PA	UA	PA	UA
SVM	Maple	10	40,0%	66,7%	20,0%	50,0%	0,0%	0,0%	10,0%	33,3%
	Oak	12	58,3%	87,5%	41,7%	62,5%	58,3%	100,0%	25,0%	50,0%
	Fir	13	38,5%	35,7%	23,1%	20,0%	23,1%	33,3%	7,7%	14,3%
	Shrub mix	14	21,4%	27,3%	35,7%	55,6%	0,0%	0,0%	21,4%	50,0%
	Dwarf palm	16	25,0%	26,7%	37,5%	66,7%	12,5%	50,0%	50,0%	50,0%
	Southern magnolia	16	56,3%	52,9%	50,0%	53,3%	31,3%	38,5%	50,0%	72,7%
	Lawn	17	58,8%	71,4%	58,8%	62,5%	17,6%	100,0%	17,6%	27,3%
	Silver linden	17	23,5%	40,0%	5,9%	50,0%	5,9%	14,3%	0,0%	0,0%
	Horse chesnut	21	90,5%	93,5%	85,7%	94,7%	61,9%	76,5%	66,7%	56,0%
	Black locust	21	42,9%	42,9%	38,1%	61,5%	28,6%	54,5%	23,8%	45,5%
	Common privet	22	59,1%	61,9%	59,1%	52,0%	45,5%	45,5%	18,2%	26,7%
	Mediterranean hackberry	35	65,7%	62,2%	71,4%	62,5%	68,6%	50,0%	51,4%	35,3%
	Linden	63	69,8%	57,9%	74,6%	46,5%	82,5%	48,6%	68,3%	44,3%
	London plane	144	92,4%	88,7%	89,6%	89,0%	94,4%	79,5%	91,0%	80,9%
RF	Maple	10	20,0%	100,0%	0,0%	0,0%	20,0%	100,0%	30,0%	37,5%
	Oak	12	66,7%	100,0%	16,7%	100,0%	50,0%	100,0%	58,3%	100,0%
	Fir	13	15,4%	20,0%	0,0%	0,0%	23,1%	42,9%	30,8%	40,0%
	Shrub mix	14	7,1%	25,0%	7,1%	33,3%	7,1%	50,0%	21,4%	60,0%
	Dwarf palm	16	12,5%	40,0%	37,5%	66,7%	31,3%	83,3%	43,8%	50,0%
	Southern magnolia	16	43,8%	58,3%	50,0%	61,5%	50,0%	80,0%	62,5%	55,6%
	Lawn	17	52,9%	90,0%	41,2%	100,0%	17,6%	75,0%	17,6%	33,3%
	Silver linden	17	5,9%	50,0%	0,0%	0,0%	5,9%	33,3%	11,8%	28,6%
	Horse chesnut	21	95,2%	90,9%	90,5%	95,0%	57,1%	70,6%	61,9%	50,0%
	Black locust	21	42,9%	60,0%	33,3%	70,0%	38,1%	72,7%	33,3%	38,9%
	Common privet	22	50,0%	45,8%	59,1%	48,1%	36,4%	32,0%	9,1%	13,3%
	Mediterranean hackberry	35	71,4%	55,6%	77,1%	60,0%	62,9%	45,8%	40,0%	38,9%
	Linden	63	84,1%	54,1%	73,0%	40,7%	69,8%	46,3%	57,1%	41,9%
	London plane	144	93,1%	81,7%	91,0%	78,4%	94,4%	73,5%	91,0%	80,9%

Table S3-2: Producer's and User's Accuracies (PA and UA) obtained from the MNF-reduced image datasets, with RF and SVM classifiers trained with 10-folds for the 14 species training dataset.

	2-folds	Number of individuals	HySpex 2m		HYPXIM 4m		HYPXIM 8m		Sentinel2 10m	
			PA	UA	PA	UA	PA	UA	PA	UA
SVM	Shrub mix	14	0,00 %	0,00 %	14,29 %	50,00 %	7,14 %	11,11 %	7,14 %	33,33 %
	Arecaceae	16	12,50 %	40,00 %	31,25 %	62,50 %	31,25 %	55,56 %	43,75 %	63,64 %
	Lawn	17	52,94 %	75,00 %	47,06 %	80,00 %	52,94 %	90,00 %	5,88 %	50,00 %
	Magnoliaceae	21	33,33 %	38,89 %	28,57 %	35,29 %	28,57 %	35,29 %	28,57 %	37,50 %
	Fagaceae	22	54,55 %	80,00 %	9,09 %	50,00 %	22,73 %	26,32 %	4,55 %	5,88 %
	Oleaceae	23	4,35 %	17,86 %	0,00 %	3,57 %	8,70 %	6,90 %	0,00 %	0,00 %
	Fabaceae	26	30,77 %	29,63 %	42,31 %	55,00 %	38,46 %	43,48 %	11,54 %	37,50 %
	Sapindaceae	29	72,41 %	84,00 %	58,62 %	94,44 %	34,48 %	55,56 %	31,03 %	40,91 %
	Pinaceae	32	53,13 %	56,67 %	40,63 %	38,24 %	34,38 %	35,48 %	15,63 %	16,67 %
	Ulmaceae	49	53,06 %	50,00 %	63,27 %	55,36 %	44,90 %	51,16 %	26,53 %	30,23 %
	Tiliaceae	80	82,50 %	57,39 %	76,25 %	46,21 %	76,25 %	55,96 %	70,00 %	40,29 %
	Platanaceae	144	88,89 %	90,78 %	88,19 %	89,44 %	90,97 %	83,97 %	91,67 %	76,74 %

RF	Shrub mix	14	0,00 %	0,00 %	0,00 %	0,00 %	0,00 %	0,00 %	0,00 %	0,00 %
	Arecaceae	16	6,25 %	100,00 %	25,00 %	100,00 %	37,50 %	100,00 %	43,75 %	63,64 %
	Lawn	17	23,53 %	80,00 %	29,41 %	100,00 %	11,76 %	100,00 %	5,88 %	25,00 %
	Magnoliaceae	21	23,81 %	45,45 %	9,52 %	28,57 %	14,29 %	42,86 %	23,81 %	29,41 %
	Fagaceae	22	59,09 %	100,00 %	0,00 %	0,00 %	0,00 %	0,00 %	13,64 %	27,27 %
	Oleaceae	23	0,00 %	20,00 %	0,00 %	20,83 %	0,00 %	11,76 %	0,00 %	8,33 %
	Fabaceae	26	15,38 %	66,67 %	19,23 %	45,45 %	23,08 %	66,67 %	19,23 %	38,46 %
	Sapindaceae	29	51,72 %	78,95 %	72,41 %	84,00 %	34,48 %	52,63 %	48,28 %	50,00 %
	Pinaceae	32	59,38 %	52,78 %	53,13 %	47,22 %	28,13 %	31,03 %	15,63 %	12,20 %
	Ulmaceae	49	63,27 %	48,44 %	67,35 %	60,00 %	46,94 %	41,82 %	22,45 %	30,56 %
	Tiliaceae	80	87,50 %	52,63 %	81,25 %	43,33 %	85,00 %	48,23 %	62,50 %	36,50 %
	Platanaceae	144	93,06 %	81,21 %	88,89 %	82,05 %	93,06 %	71,28 %	88,89 %	79,01 %

Table S3-3: Producer's and User's Accuracies (PA and UA) obtained from the MNF-reduced image datasets, with RF and SVM classifiers trained with 2-folds for the 12 families training dataset.

	10-folds	Number of individuals	HySpex 2m		HYPXIM 4m		HYPXIM 8m		Sentinel2 10m	
			PA	UA	PA	UA	PA	UA	PA	UA
SVM	Shrub mix	14	21,43 %	30,00 %	28,57 %	57,14 %	0,00 %	0,00 %	28,57 %	40,00 %
	Arecaceae	16	12,50 %	22,22 %	37,50 %	85,71 %	50,00 %	66,67 %	50,00 %	42,11 %
	Lawn	17	52,94 %	69,23 %	58,82 %	66,67 %	41,18 %	87,50 %	29,41 %	38,46 %
	Magnoliaceae	21	52,38 %	50,00 %	33,33 %	46,67 %	28,57 %	54,55 %	28,57 %	37,50 %
	Fagaceae	22	72,73 %	94,12 %	45,45 %	62,50 %	36,36 %	47,06 %	40,91 %	45,00 %
	Oleaceae	23	8,70 %	5,56 %	4,35 %	8,00 %	8,70 %	14,29 %	0,00 %	9,52 %
	Fabaceae	26	42,31 %	39,29 %	38,46 %	55,56 %	30,77 %	53,33 %	26,92 %	29,17 %
	Sapindaceae	29	75,86 %	81,48 %	68,97 %	80,00 %	44,83 %	65,00 %	44,83 %	65,00 %
	Pinaceae	32	56,25 %	56,25 %	53,13 %	47,22 %	28,13 %	25,71 %	18,75 %	21,43 %
	Ulmaceae	49	59,18 %	61,70 %	67,35 %	61,11 %	57,14 %	53,85 %	44,90 %	43,14 %
	Tiliaceae	80	80,00 %	64,65 %	70,00 %	50,45 %	80,00 %	52,46 %	65,00 %	50,98 %
	Platanaceae	144	93,75 %	89,40 %	88,19 %	88,19 %	89,58 %	86,00 %	87,50 %	84,56 %

RF	Shrub mix	14	7,14 %	100,00 %	0,00 %	0,00 %	7,14 %	50,00 %	14,29 %	50,00 %
	Arecaceae	16	0,00 %	0,00 %	31,25 %	83,33 %	31,25 %	100,00 %	56,25 %	64,29 %
	Lawn	17	58,82 %	90,91 %	41,18 %	100,00 %	11,76 %	66,67 %	17,65 %	33,33 %
	Magnoliaceae	21	38,10 %	53,33 %	38,10 %	72,73 %	23,81 %	71,43 %	33,33 %	36,84 %
	Fagaceae	22	68,18 %	83,33 %	0,00 %	0,00 %	45,45 %	76,92 %	40,91 %	56,25 %
	Oleaceae	23	0,00 %	17,65 %	0,00 %	19,05 %	0,00 %	15,79 %	0,00 %	0,00 %
	Fabaceae	26	26,92 %	53,85 %	30,77 %	80,00 %	26,92 %	63,64 %	19,23 %	45,45 %
	Sapindaceae	29	65,52 %	90,48 %	72,41 %	87,50 %	41,38 %	63,16 %	51,72 %	50,00 %
	Pinaceae	32	62,50 %	47,62 %	56,25 %	48,65 %	28,13 %	40,91 %	21,88 %	28,00 %
	Ulmaceae	49	61,22 %	57,69 %	73,47 %	61,02 %	67,35 %	52,38 %	51,02 %	39,68 %
	Tiliaceae	80	85,00 %	56,20 %	82,50 %	48,53 %	82,50 %	51,16 %	68,75 %	45,08 %
	Platanaceae	144	92,36 %	83,13 %	89,58 %	80,12 %	93,06 %	74,44 %	88,89 %	83,66 %

Table S3-4: Producer's and User's Accuracies (PA and UA) obtained from the MNF-reduced image datasets, with RF and SVM classifiers trained with 10-folds for the 12 families training dataset.