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Electronic Supplementary Information (ESI)

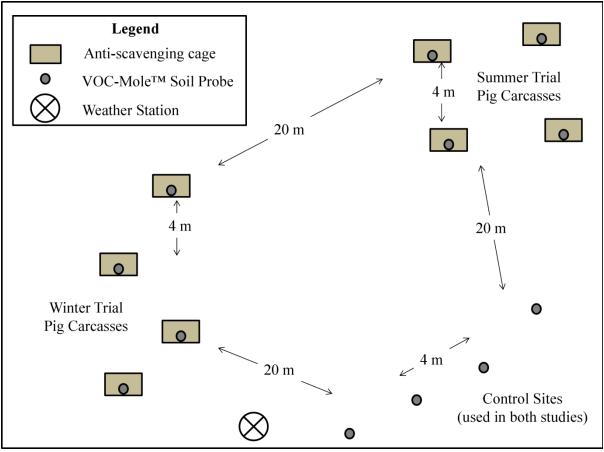


Figure S1. Schematic of field research site indicating the setup of the summer and winter trials (not to scale).

Table S1. Presence of significant VOCs detected during Winter 2013 trial according to compound class and stage of decomposition.

Advanced Decay Fresh Bloat Active Decay Dry Remains **Sulphur-containing** Dimethyl disulphide \mathbf{X} \mathbf{X} \mathbf{X} Cyclohexane, isothiocyanato- \mathbf{X} Nitrogen-containing Methenamine X X X Benzamide, N,N-diethyl-4-methyl- \mathbf{X} Benzonitrile X Aromatic Benzene \mathbf{X} Benzene, ethyl- \mathbf{X} \mathbf{X} Benzene, propyl-X Toluene \mathbf{X} Ester Acetic acid, methyl ester \mathbf{X} \mathbf{X} \mathbf{X} Propanoic acid, methyl ester X Butanoic acid, methyl ester X Benzoic acid, methyl ester \mathbf{X} Aldehyde Heptanal \mathbf{X} Nonanal \mathbf{X} Benzaldehyde \mathbf{X} Ketone 2-Butanone X 3-Buten-2-one (Methyl vinyl ketone) \mathbf{X} 2-Pentanone X \mathbf{X} 3-Pentanone X X 5-Hepten-2-one, 6-methyl-X Alcohol Ethanol X 2-Propanol X 1-Hexanol, 2-ethyla-Terpineol \mathbf{X} Hydrocarbon Pentane \mathbf{X} \mathbf{X} Pentane, 2-methyl-X \mathbf{X} Hexane X \mathbf{X} \mathbf{X} Hexane, 2,2-dimethyl-X 3-Hexene \mathbf{X} Heptane \mathbf{X} 1-Heptene \mathbf{X} Octane \mathbf{X} 1-Octene X Undecane \mathbf{X} \mathbf{X} Heptadecane Cyclopropane, ethylidene-X Cyclopropane, 1-ethyl-2-methyl-, cis-X \mathbf{X} 1,3,5,7-Cyclooctatetraene \mathbf{X} à-Pinene X

Table S2. Presence of significant VOCs detected during Summer 2014 trial according to compound class and stage of decomposition.

	Fresh	Bloat	Active Decay	Advanced Decay	Dry/ Remains
Sulphur-containing				Decay	
Sulphur dioxide				X	
Carbon disulphide			X		
Dimethyl disulphide	X	X	X	X	X
Dimethyl trisulphide		X	X	X	X
Dimethyl tetrasulphide		X	X		
Methyl thiolacetate			X		
Methanethiol			X	X	X
Methane, isothiocyanato-			1	X	X
Thiophene, 2-pentyl-				X	
Thiophene, 3-methyl-				X	
Nitrogen-containing					
Methenamine					X
Methylamine, N,N-dimethyl-			X	X	
Acetonitrile, (dimethylamino)-			11		X
Butanenitrile, 2-methyl-				X	
Butanenitrile, 3-methyl-				X	
Formamide, N,N-dimethyl-				X	
Benzonitrile			X	X	X
Indole			Α	X	Α
Pyrazine, methyl-			X	Α	
				v	
Pyrazine, 2,6-dimethyl-			X	X	v
Pyridine, 2-methyl-				X	X
Pyridine, 2,6-dimethyl-				X	X
Pyrrole			X		
Aromatic					
1H-Pyrrole, 1-butyl-			X		
2-n-Butyl furan			X		
5H-1-Pyrindine			X		
Benzene			X	X	
Benzene, 1,3-dimethyl-			X	X	X
Benzene, 1,2,3-trimethyl-					X
Benzene, ethyl-			X	X	X
Benzene, 1-methyl-3-(1-methylethyl)-					X
Furan, 2-methyl-			X	X	
Furan, 2-ethyl-			X		
Furan, 2-pentyl-			X	X	X
Furan, 2-butyltetrahydro-			X		
Phenol			X	X	
Phenol, 4-methyl-			X		
o-Cymene			X	X	X
Anisole				X	
p-Xylene				X	X
Styrene			X	X	X
Toluene			X	X	X
Halogenated/Other					
1-Iodo-2-methylundecane	X				
1,6-Octadien-3-ol, 3,7-dimethyl-, 2-aminobenzoate				X	
Ether					
Ethanol, 2-methoxy-				X	
1,4-Dioxane				X	
1,3-Dioxolane, 2-methyl-				X	X
2,2-Dimethoxybutane			X	X	X
Butane, 1-methoxy-3-methyl-					X
Eucalyptol				X	X

Table S2 continued.

Table S2 continued.				Advanced	
	Fresh	Bloat	Active Decay	Decay	Dry/ Remains
Ester					
Acetic acid, methyl ester					X
Acetic acid ethenyl ester	X				
2-Propenoic acid, methyl ester				X	
Butanoic acid, methyl ester			X		
Butanoic acid, 2-methyl-, methyl ester			X		
Butanoic acid, 3-methyl-, methyl ester			X		
Benzoic acid, methyl ester				X	
Thiocyanic acid, methyl ester				X	X
Nitric acid, 1-methylethyl ester					X
Salicylic acid, tertbutyl ester				X	
1-Hexyl-3-butenyl acetate				X	
Aldehyde					
Acetaldehyde				X	
Propanal, 2-methyl-			X		
2-Methylprop-2-enal			X	X	
Butanal			X		
Butanal, 2-methyl-			X	X	X
Butanal, 3-methyl-			X	X	X
2-Butenal, 2-methyl-, (E)-			X		
2-Butenal, 3-methyl-				X	
Pentanal					X
Hexanal	X		X	X	X
Heptanal	X		X		X
Octanal	X		X		X
Nonanal	X		X	X	X
Benzaldehyde			X	X	X
Ketone					
2-Butanone				X	X
2-Butanone, 3-methyl-			X	X	X
2,3-Butanedione			X	X	X
3-Buten-2-one (Methyl vinyl ketone)			X	X	X
1-Penten-3-one					
2-Pentanone			X	X	X
2-Pentanone, 3-methyl-			X		X
2,3-Pentanedione			X	X	X
3-Pentanone				X	X
3-Penten-2-one			X	X	X
3-Pentanone, 2,4-dimethyl-				X	X
4-Methylpentan-2-one (Methyl isobutyl ketone)			X	X	X
Cyclopentanone				X	
2-Hexanone			X	X	X
2-Hexanone, 5-methyl-					X
3-Hexanone			X	X	X
2,3-Hexanedione			X		
2-Heptanone			X	X	X
5-Hepten-2-one, 6-methyl-				X	X
2-Octanone				<u> </u>	X
1-Octen-3-one			X	X	X
3-Octanone			X	X	X
2-Nonanone			X	X	X
2-Undecanone			A	X	X
			v		X
Phenylethanone			X	X	, A

Table S2 continued.

Table S2 continued.		DI (Advanced	D (D :
	Fresh	Bloat	Active Decay	Decay	Dry/ Remains
Alcohol					
Ethanol			X	X	X
1-Propanol			X	X	X
1-Propanol, 2-methyl-			X		
2-Propanol			X	X	X
1-Butanol			X	X	X
1-Butanol, 3-methyl-			X	X	X
2-Butanol			X	X	X
1-Pentanol			X		
1-Penten-3-ol			X		
2-Pentanol			X	X	
1-Hexanol			X	X	
				A	
1-Heptanol			X		
1-Octanol			X		
6-Methyl-1-octanol		X			
1-Octen-3-ol			X		X
2-Methyl-1-undecanol				X	
1-Dodecanol				X	
1,6-Octadien-3-ol, 3,7-dimethyl-					X
Hydrocarbon					
1-Butene, 3-methyl-				X	
Butane, 2-methyl-			X		
Pentane			X		X
Hexane				X	X
Hexane, 2,2-dimethyl-			X		
Heptane			X	X	X
Heptane, 3-methylene-			X	X	
1-Heptene				X	X
Octane			X	X	X
1-Octene					X
2-Octene					X
Nonane				X	X
Undecane				X	X
1-Tridecene	X				1
Tetradecane	X				
1,13-Tetradecadiene	A			X	
Pentadecane		X		- A	
Hexadecane	X	A	X	X	X
8-Heptadecene	A		X	A	X
Eicosane			X		A
			A		X
1,3,5-Cycloheptatriene 1,4-Cyclohexadiene, 1-methyl-					+
					X
Cyclopropane, ethyl-		-			X
Cyclopropane, ethylidene-					X
Cyclopentane, butyl-		-		X	
Cyclohexene, 1-methyl-4-(1-methylethenyl)-		-			X
Camphene		-	X	X	X
Cetene		-		X	-
Limonene		ļ	X	X	X
Phellandrene				X	X
Pinene		1	X	X	X
Aromandendrene				X	X
Di		1	T	X	
Bicyclo[2.2.1]heptane, 2,2-dimethyl-3-methylene-					
Bicyclo[2.2.1]neptane, 2,2-dimethyl-3-methylene-					X
				X	X
Bicyclo[2.2.1]heptane, 7,7-dimethyl-2-methylene-					X

Table S3. Spearman's correlation coefficients (ρ) used to assess relationship strength between measured variables in the Winter 2013 trial. Significant correlation coefficients are represented with *(p-value < 0.05) **** (p-value < 0.05) ***** (p-value < 0.05) **** (p-value < 0.05) ***** (p-value < 0.05) ***** (p-value < 0.05) **** (p-value < 0.05) *** (p-value < 0.05) ** (p-value < 0.05) *** (p-value < 0.05

0.05) or **(p-value < 0.01).

	Day	Stage	VWC (%)	Нф	Solar Radiation (W/m²)	Rainfall (mm)	Temperature (°C)	Relative Humidity (%)
Total VOCs	.677**	.645**	.175	.622**	.637**	.462**	.688**	422**
Day	1	.978**	066	.513**	.993**	.671**	.945**	505**
Stage		1	117	.509**	.958**	.688**	.934**	541**
VWC (%)			1	001	337*	.006	019	082
pН				1	.436**	.562**	.553**	552**
Solar Radiation (W/m ²)					1	.560**	.944**	469**
Rainfall (mm)						1	.705**	537**
Temperature (°C)							1	418**
Relative Humidity (%)								1

Table S4. Spearman's correlation coefficients (ρ) used to assess relationship strength between measured variables in the Summer 2014 trial. Significant correlation coefficients are represented with *(p-value < 0.05) or **(p-value < 0.01).

	Day	Stage	VWC (%)	Hd	Solar Radiation (W/m²)	Rainfall (mm)	Temperature (°C)	Relative Humidity (%)
Total VOCs	312*	188	.139	218	372*	188	316*	.098
Day	1	.922**	.360*	.171	.773**	.466**	.864**	.500**
Stage		1	.256	.131	.807**	.216	.793**	.316*
VWC (%)			1	.111	.155	.397**	.413**	.335*
pН				1	.137	.247	.155	.022
Solar Radiation (W/m ²)					1	.025	.909**	091
Rainfall (mm)						1	.322*	.818**
Temperature (°C)							1	.200
Relative Humidity (%)								1