

Table S1. Volatile compounds in control and PEF-treated samples of Red Bunching onions (immediately after PEF and 24 h after PEF).

Cultivar	Compound	Mean ± SEM*							
		T0				T24			
		Control	Low PEF	Medium PEF	High PEF	Control	Low PEF	Medium PEF	High PEF
Red Bunching	Nonane	0.61 ± 0.01 ^{ab}	0.065 ± 0.02 ^a	0.064 ± 0.02 ^a	0.07 ± 0.003 ^a	0.07 ± 0.01 ^a	0.06 ± 0.01 ^a	0.05 ± 0.01 ^{bc}	0.05 ± 0.01 ^c
	Decane	0.05 ± 0.004 ^{ab}	0.06 ± 0.004 ^{ab}	0.06 ± 0.003 ^{ab}	0.06 ± 0.01 ^{ab}	0.064 ± 0.01 ^a	0.05 ± 0.01 ^{ab}	0.05 ± 0.01 ^b	0.05 ± 0.001 ^b
	Undecane	0.004 ± 0.001 ^b	0.004 ± 0.001 ^a	0.01 ± 0.001 ^a	0.01 ± 0.001 ^a	0.004 ± 0.001 ^a	0.004 ± 0.001 ^a	0.01 ± 0.001 ^a	0.01 ± 0.001 ^a
	PSO	0.01 ± 0.01 ^{cd}	0.02 ± 0.01 ^b	0.02 ± 0.002 ^{ab}	0.023 ± 0.002 ^a	0.01 ± 0.01 ^{cd}	0.02 ± 0.03 ^{bc}	0.02 ± 0.001 ^{bc}	0.01 ± 0.001 ^d
	2M2P	0.04 ± 0.01 ^{bc}	0.05 ± 0.01 ^a	0.05 ± 0.002 ^{ab}	0.06 ± 0.003 ^a	0.05 ± 0.01 ^{ab}	0.04 ± 0.01 ^{cd}	0.04 ± 0.01 ^{cd}	0.03 ± 0.01 ^d
	DMT	0.2 ± 0.01 ^{cd}	0.24 ± 0.01 ^a	0.21 ± 0.01 ^{abc}	0.22 ± 0.01 ^{abc}	0.2 ± 0.01 ^{bc}	0.23 ± 0.01 ^{ab}	0.21 ± 0.01 ^{abc}	0.2 ± 0.02 ^c
	DPDs	3.2 ± 0.5 ^d	9.52 ± 0.6 ^c	9.9 ± 0.5 ^c	10.8 ± 0.9 ^c	4.02 ± 0.5 ^d	22.1 ± 3.3 ^b	28.4 ± 2.6 ^a	28.8 ± 2.3 ^a
	MPDs	0.041 ± 0.01 ^d	0.123 ± 0.01 ^{cd}	0.114 ± 0.01 ^{cd}	0.19 ± 0.02 ^c	0.04 ± 0.02 ^d	0.18 ± 0.02 ^c	0.33 ± 0.02 ^b	0.6 ± 0.1 ^a
	MPrDs	0.04 ± 0.01 ^d	0.05 ± 0.01 ^d	0.05 ± 0.01 ^{cd}	0.06 ± 0.01 ^{bc}	0.04 ± 0.01 ^d	0.07 ± 0.01 ^{abc}	0.08 ± 0.01 ^{ab}	0.08 ± 0.01 ^a
	PrPTs	0.01 ± 0.01 ^{ef}	0.012 ± 0.01 ^{def}	0.02 ± 0.02 ^{de}	0.03 ± 0.02 ^{cd}	0.01 ± 0.01 ^f	0.04 ± 0.01 ^c	0.1 ± 0.01 ^b	0.11 ± 0.02 ^a
	PPrDS	1.4 ± 0.1 ^d	3.9 ± 0.3 ^b	4.4 ± 0.26 ^b	5.7 ± 0.5 ^a	1.26 ± 0.1 ^d	2.85 ± 0.2 ^c	4.2 ± 0.3 ^b	5.4 ± 0.3 ^a
	MPTS	0.002 ± 0.001 ^d	0.003 ± 0.002 ^d	0.003 ± 0.002 ^d	0.01 ± 0.001 ^d	0.002 ± 0.001 ^d	0.02 ± 0.003 ^c	0.03 ± 0.003 ^b	0.05 ± 0.004 ^a
	DPTS	0.1 ± 0.02 ^{cd}	0.18 ± 0.02 ^c	0.18 ± 0.02 ^c	0.26 ± 0.03 ^c	0.08 ± 0.01 ^{cd}	1.58 ± 0.2 ^b	2.78 ± 0.44 ^a	3.3 ± 0.3 ^a
	PPrTS	0.01 ± 0.001 ^d	0.01 ± 0.001 ^d	0.01 ± 0.001 ^d	0.01 ± 0.001 ^d	0.01 ± 0.001 ^d	0.04 ± 0.004 ^c	0.06 ± 0.01 ^b	0.08 ± 0.01 ^a

^{a,b,c} Different letter within the same row differ significantly using Fisher's LSD post hoc test ($p < 0.001$). * Ratio to internal standard (0.1 ppm Fenchyl alcohol); Low PEF = 0.3 kV/cm, Med PEF = 0.7 kV/cm, High PEF = 1.2 kV/cm.

Table S2. Volatile compounds in control and PEF-treated samples of Ishikura onions (immediately after PEF and 24 h after PEF).

Cultivar	Compound	Mean ± SEM*							
		T0				T24			
		Control	Low PEF	Medium PEF	High PEF	Control	Low PEF	Medium PEF	High PEF
Ishikura	Nonane	0.04 ± 0.002 ^{bc}	0.04 ± 0.001 ^{ab}	0.04 ± 0.002 ^a	0.04 ± 0.002 ^a	0.04 ± 0.001 ^{bc}	0.04 ± 0.003 ^{abc}	0.04 ± 0.001 ^c	0.03 ± 0.001 ^d
	Decane	0.04 ± 0.001 ^{bc}	0.05 ± 0.001 ^{ab}	0.05 ± 0.001 ^a	0.05 ± 0.003 ^a	0.042 ± 0.001 ^{bc}	0.04 ± 0.002 ^{bc}	0.04 ± 0.003 ^c	0.03 ± 0.001 ^d
	Undecane	0.003 ± 0.001 ^{cd}	0.003 ± 0.001 ^b	0.004 ± 0.002 ^a	0.004 ± 0.001 ^a	0.003 ± 0.001 ^{bcd}	0.003 ± 0.001 ^{bc}	0.003 ± 0.001 ^{bcd}	0.003 ± 0.001 ^d
	PSO	0.006 ± 0.001 ^c	0.007 ± 0.001 ^b	0.008 ± 0.001 ^a	0.008 ± 0.001 ^a	0.006 ± 0.001 ^c	0.007 ± 0.001 ^b	0.007 ± 0.001 ^{bc}	0.006 ± 0.001 ^{bc}
	2M2P	0.04 ± 0.003 ^b	0.05 ± 0.003 ^b	0.05 ± 0.003 ^{ab}	0.053 ± 0.003 ^a	0.05 ± 0.003 ^b	0.042 ± 0.001 ^b	0.032 ± 0.001 ^c	0.02 ± 0.0007 ^d
	DMT	0.19 ± 0.01 ^a	0.2 ± 0.01 ^a	0.21 ± 0.01 ^a	0.21 ± 0.01 ^a	0.20 ± 0.01 ^a	0.211 ± 0.01 ^a	0.2 ± 0.01 ^a	0.19 ± 0.01 ^a
	DPDS	1.42 ± 0.04 ^e	3.6 ± 0.1 ^d	4.3 ± 0.1 ^d	4.5 ± 0.24 ^d	1.2 ± 0.1 ^e	18.5 ± 1.1 ^c	23.5 ± 0.7 ^b	25.6 ± 0.7 ^a
	MPDS	0.04 ± 0.001 ^d	0.31 ± 0.01 ^c	0.37 ± 0.02 ^c	0.41 ± 0.01 ^c	0.04 ± 0.002 ^d	0.4 ± 0.02 ^c	1.5 ± 0.07 ^b	2.04 ± 0.07 ^a
	MPrDS	0.03 ± 0.004 ^{bc}	0.032 ± 0.004 ^{abc}	0.04 ± 0.003 ^{ab}	0.042 ± 0.002 ^a	0.03 ± 0.005 ^c	0.032 ± 0.003 ^{abc}	0.04 ± 0.0045 ^{abc}	0.04 ± 0.003 ^a
	PrPTs	0.01 ± 0.001 ^e	0.022 ± 0.003 ^d	0.031 ± 0.002 ^c	0.035 ± 0.001 ^c	0.008 ± 0.001 ^e	0.04 ± 0.001 ^c	0.12 ± 0.006 ^b	0.162 ± 0.006 ^a
	PPrDS	1.21 ± 0.1 ^e	3.6 ± 0.2 ^b	3.94 ± 0.2 ^b	4.5 ± 0.2 ^a	1.04 ± 0.07 ^e	1.7 ± 0.08 ^d	3.13 ± 0.2 ^c	3.7 ± 0.13 ^b
	MPTS	0.004 ± 0.001 ^c	0.006 ± 0.001 ^c	0.01 ± 0.001 ^c	0.011 ± 0.001 ^c	0.004 ± 0.0002 ^c	0.012 ± 0.001 ^c	0.092 ± 0.006 ^b	0.145 ± 0.02 ^a
	DPTS	0.061 ± 0.01 ^d	0.132 ± 0.005 ^d	0.16 ± 0.011 ^d	0.19 ± 0.01 ^d	0.023 ± 0.002 ^d	0.43 ± 0.03 ^c	3.9 ± 0.14 ^b	4.5 ± 0.1 ^a
	PPrTS	0.01 ± 0.001 ^c	0.012 ± 0.001 ^c	0.015 ± 0.001 ^c	0.016 ± 0.001 ^c	0.008 ± 0.001 ^c	0.12 ± 0.008 ^b	0.15 ± 0.008 ^a	0.16 ± 0.01 ^a

a,b,c Different letter within the same row differ significantly using Fisher's LSD post hoc test ($p < 0.001$). * Ratio to internal standard (0.1 ppm Fenchyl alcohol); Low PEF = 0.3 kV/cm, Med PEF = 0.7 kV/cm, High PEF = 1.2 kV/cm.

Table S3. Volatile compounds in control and PEF-treated samples of Yellow sweet Spanish onions (immediately after PEF and 24 h after PEF).

Cultivar	Compound	Mean ± SE ^a							
		T0				T24			
		Control	Low PEF	Medium PEF	High PEF	Control	Low PEF	Medium PEF	High PEF
Yellow sweet Spanish	Nonane	0.06 ± 0.003 ^{cd}	0.06 ± 0.004 ^{bcd}	0.06 ± 0.004 ^{abc}	0.067 ± 0.003 ^{ab}	0.062 ± 0.002 ^{abc}	0.07 ± 0.004 ^a	0.06 ± 0.002 ^{abc}	0.05 ± 0.002 ^d
	Decane	0.06 ± 0.002 ^{cde}	0.063 ± 0.003 ^{bcd}	0.064 ± 0.003 ^{abc}	0.07 ± 0.002 ^{ab}	0.062 ± 0.0022 ^{bcd}	0.07 ± 0.002 ^a	0.06 ± 0.002 ^{de}	0.05 ± 0.002 ^e
	Undecane	0.004 ± 0.0002 ^d	0.004 ± 0.0001 ^{cd}	0.005 ± 0.0003 ^b	0.007 ± 0.0004 ^a	0.004 ± 0.0003 ^d	0.005 ± 0.0003 ^{bc}	0.005 ± 0.0003 ^{bcd}	0.004 ± 0.0002 ^{cd}
	PSO	0.02 ± 0.001 ^c	0.033 ± 0.003 ^b	0.04 ± 0.003 ^a	0.04 ± 0.003 ^a	0.019 ± 0.001 ^c	0.03 ± 0.002 ^b	0.03 ± 0.001 ^{cd}	0.032 ± 0.0024 ^b
	2M2P	0.037 ± 0.002 ^{cd}	0.062 ± 0.004 ^b	0.06 ± 0.005 ^b	0.08 ± 0.01 ^a	0.034 ± 0.004 ^{cd}	0.042 ± 0.005 ^c	0.03 ± 0.004 ^{cd}	0.03 ± 0.005 ^d
	DMT	0.18 ± 0.01 ^{abc}	0.2 ± 0.01 ^{ab}	0.22 ± 0.02 ^a	0.17 ± 0.024 ^{bc}	0.20 ± 0.023 ^{bc}	0.2 ± 0.01 ^{bc}	0.16 ± 0.02 ^{bc}	0.15 ± 0.01 ^c
	DPDS	2.68 ± 0.5 ^d	4.93 ± 0.22 ^d	5.83 ± 0.3 ^d	4.2 ± 0.3 ^d	3.11 ± 0.2 ^d	30.5 ± 1.4 ^b	33.3 ± 1.1 ^a	27.7 ± 1.14 ^c
	MPDS	0.01 ± 0.002 ^d	0.13 ± 0.03 ^c	0.16 ± 0.012 ^c	0.08 ± 0.014 ^{cd}	0.014 ± 0.003 ^d	0.32 ± 0.04 ^b	0.56 ± 0.06 ^a	0.4 ± 0.04 ^b
	MPrDS	0.02 ± 0.002 ^c	0.023 ± 0.002 ^{bc}	0.03 ± 0.002 ^b	0.021 ± 0.001 ^c	0.02 ± 0.003 ^c	0.03 ± 0.002 ^b	0.04 ± 0.003 ^a	0.03 ± 0.001 ^b
	PrPTs	0.02 ± 0.004 ^c	0.058 ± 0.004 ^c	0.08 ± 0.003 ^c	0.05 ± 0.003 ^c	0.02 ± 0.002 ^c	0.4 ± 0.02 ^b	0.51 ± 0.046 ^a	0.34 ± 0.04 ^b
	PPrDS	1.9 ± 0.2 ^e	3.2 ± 0.3 ^d	3.4 ± 0.19 ^{cd}	2.74 ± 0.2 ^d	1.94 ± 0.13 ^e	3.9 ± 0.25 ^{bc}	4.93 ± 0.3 ^a	4.41 ± 0.4 ^{ab}
	MPTS	0.003 ± 0.0003 ^d	0.006 ± 0.0003 ^d	0.006 ± 0.001 ^d	0.034 ± 0.0003 ^d	0.003 ± 0.0003 ^d	0.03 ± 0.003 ^c	0.08 ± 0.007 ^a	0.05 ± 0.005 ^b
	DPTS	0.08 ± 0.013 ^c	0.3 ± 0.03 ^c	0.37 ± 0.04 ^c	0.26 ± 0.04 ^c	0.09 ± 0.01 ^c	6.3 ± 0.4 ^a	6.62 ± 0.25 ^a	5.13 ± 0.44 ^b
	PPrTS	0.013 ± 0.0013 ^c	0.018 ± 0.0012 ^c	0.025 ± 0.002 ^c	0.018 ± 0.003 ^c	0.012 ± 0.001 ^c	0.17 ± 0.03 ^b	0.27 ± 0.03 ^a	0.19 ± 0.02 ^b

^{a,b,c} Different letter within the same row differ significantly using Fisher's LSD post hoc test ($p < 0.001$).

* Ratio to internal standard (0.1 ppm Fenchyl alcohol).

† Low PEF = 0.3 kV/cm, Med PEF = 0.7 kV/cm, High PEF = 1.2 kV/cm.

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The explanation of * symbol is explain in the footnote

Table S4. Results of ANOVA representing the volatile compounds in onion varieties upon PEF treatment.

Volatile compounds	Treatment	Timepoint	Treatment *Timepoint	Treatment	Timepoint	Treatment *Timepoint	Treatment	Timepoint	Treatment *Timepoint
	Ishikura			Red Bunching			Yellow Sweet	Spanish bulbs	
Nonane	F = 2.5 <i>p</i> = 0.072	F = 26.4 <i>p</i> < 0.001	F = 9.9 <i>p</i> < 0.001	F = 3.5 <i>p</i> = 0.02	F = 6.1 <i>p</i> = 0.02	F = 6.5 <i>p</i> = 0.001	F = 1.9 <i>p</i> = 0.13	F = 0.1 <i>p</i> = 0.87	F = 6.4 <i>p</i> = 0.001
Decane	F = 2.4 <i>p</i> = 0.076	F = 27.7 <i>p</i> < 0.001	F = 8.3 <i>p</i> < 0.001	F = 0.7 <i>p</i> = 0.56	F = 0.2 <i>p</i> = 0.64	F = 1.2 <i>p</i> = 0.32	F = 4.1 <i>p</i> = 0.01	F = 2.7 <i>p</i> = 0.103	F = 10.1 <i>p</i> < 0.001
Undecane	F = 2.8 <i>p</i> = 0.055	F = 27.5 <i>p</i> < 0.001	F = 9.1 <i>p</i> < 0.001	F = 0.5 <i>p</i> = 0.61	F = 2.1 <i>p</i> = 0.16	F = 1.1 <i>p</i> = 0.4	F = 10.5 <i>p</i> < 0.001	F = 6.8 <i>p</i> = 0.012	F = 10.8 <i>p</i> < 0.001
2-Methyl-2-pentenal	F = 8.1 <i>p</i> < 0.001	F = 68.7 <i>p</i> < 0.001	F = 27.3 <i>p</i> < 0.001	F = 0.1 <i>p</i> = 0.94	F = 27.4 <i>p</i> < 0.001	F = 8.6 <i>p</i> = 0.001	F = 4.2 <i>p</i> = 0.01	F = 54.8 <i>p</i> < 0.001	F = 8.3 <i>p</i> < 0.001
Dimethyl thiophene	F = 0.4 <i>p</i> = 0.78	F = 0.3 <i>p</i> = 0.61	F = 1.7 <i>p</i> = 0.18	F = 4.2 <i>p</i> = 0.01	F = 0.9 <i>p</i> = 0.34	F = 0.5 <i>p</i> = 0.65	F = 1.3 <i>p</i> = 0.27	F = 6.8 <i>p</i> = 0.012	F = 1.5 <i>p</i> = 0.23
Propanethial S-oxide	F = 8.5 <i>p</i> < 0.001	F = 12.9 <i>p</i> < 0.001	F = 5.4 <i>p</i> = 0.003	F = 5.2 <i>p</i> = 0.003	F = 15.9 <i>p</i> < 0.001	F = 6.6 <i>p</i> < 0.001	F = 30.9 <i>p</i> < 0.001	F = 19.9 <i>p</i> < 0.001	F = 3.6 <i>p</i> = 0.02
Dipropyl disulfide	F = 298.9 <i>p</i> < 0.001	F = 1451.4 <i>p</i> < 0.001	F = 179.6 <i>p</i> < 0.001	F = 32.5 <i>p</i> < 0.001	F = 89.2 <i>p</i> < 0.001	F = 9.7 <i>p</i> < 0.001	F = 167.2 <i>p</i> < 0.001	F = 1236.2 <i>p</i> < 0.001	F = 133.4 <i>p</i> < 0.001
Methyl propyl disulfide	F = 414.8 <i>p</i> < 0.001	F = 723.0 <i>p</i> < 0.001	F = 229.3 <i>p</i> < 0.001	F = 43.4 <i>p</i> < 0.001	F = 56.9 <i>p</i> < 0.001	F = 17.3 <i>p</i> < 0.001	F = 51.9 <i>p</i> < 0.001	F = 128.5 <i>p</i> < 0.001	F = 18.3 <i>p</i> < 0.001
Methyl propenyl disulfide	F = 5.2 <i>p</i> < 0.001	F = 0.2 <i>p</i> < 0.001	F = 0.01 <i>p</i> < 0.001	F = 13.9 <i>p</i> < 0.001	F = 17.1 <i>p</i> < 0.001	F = 1.7 <i>p</i> < 0.001	F = 14.3 <i>p</i> < 0.001	F = 11.4 <i>p</i> < 0.001	F = 1.6 <i>p</i> < 0.001
Propenyl propenyl disulfide	F = 0.003 <i>p</i> < 0.001	F = 0.68 <i>p</i> < 0.001	F = 0.99 <i>p</i> < 0.001	F = 0.001 <i>p</i> < 0.001	F = 0.001 <i>p</i> < 0.001	F = 0.18 <i>p</i> < 0.001	F = 0.001 <i>p</i> < 0.001	F = 0.001 <i>p</i> < 0.001	F = 0.21 <i>p</i> < 0.001
Propenyl propyl thiosulfinate	F = 290.9 <i>p</i> < 0.001	F = 558.3 <i>p</i> < 0.001	F = 156.9 <i>p</i> < 0.001	F = 40.3 <i>p</i> < 0.001	F = 84.3 <i>p</i> < 0.001	F = 15.9 <i>p</i> < 0.001	F = 50.9 <i>p</i> < 0.001	F = 269.2 <i>p</i> < 0.001	F = 32.5 <i>p</i> < 0.001
Propenyl propyl disulfide	F = 147.5 <i>p</i> < 0.001	F = 74.2 <i>p</i> < 0.001	F = 11.4 <i>p</i> < 0.001	F = 94.8 <i>p</i> < 0.001	F = 5.6 <i>p</i> = 0.02	F = 1.5 <i>p</i> = 0.22	F = 30. <i>p</i> < 0.001	F = 31.8 <i>p</i> < 0.001	F = 4.6 <i>p</i> = 0.006
Dipropyl trisulfide	F = 761.3 <i>p</i> < 0.001	F = 2355.4 <i>p</i> < 0.001	F = 700.8 <i>p</i> < 0.001	F = 29.2 <i>p</i> < 0.001	F = 142.3 <i>p</i> < 0.001	F = 21.3 <i>p</i> < 0.001	F = 105.2 <i>p</i> < 0.001	F = 774.4 <i>p</i> < 0.001	F = 89.5 <i>p</i> < 0.001
Methyl propyl trisulfide	F = 61.9 <i>p</i> < 0.001	F = 151.6 <i>p</i> < 0.001	F = 51.5 <i>p</i> < 0.001	F = 57.6 <i>p</i> < 0.001	F = 238.6 <i>p</i> < 0.001	F = 44.1 <i>p</i> < 0.001	F = 47.3 <i>p</i> < 0.001	F = 240.2 <i>p</i> < 0.001	F = 42.5 <i>p</i> < 0.001

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Volatile compounds	Treatment	Timepoint	Treatment *Timepoint	Treatment	Timepoint	Treatment *Timepoint	Treatment	Timepoint	Treatment *Timepoint
	Ishikura		Red Bunching			Yellow Sweet Spanish bulbs			
Propenyl	F = 78.1	F = 548.3	F = 64.9	F = 22.3	F = 119.8	F = 16.9	F = 24.9	F = 152.9	F = 20.9
propyl trisulfide	p < 0.001	p < 0.001	p < 0.001	p < 0.001	p < 0.001	p < 0.001	p < 0.001	p < 0.001	p < 0.001

* Indicates the two-way ANOVA interaction between treatment and time point.

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