



Effect on grapefruit cultivar (*Citrus paradisi* L. cv. *Volkamer lemon*, *Sour Orange*)

1. The net impact of individual and combined stress on plant growth

Crop: Grapefruit (*Citrus paradisi* L. cv. *Volkamer lemon*, *Sour Orange*)
 Stress 1: Low temperature (-5.5 °C)
 Stress 2: Ozone (10.5, 39.5, 74.6, 107.8 nl/l)
 Stage of plant: 6 month old Sapling

The table shows the impact of low temperature and ozone on percent survival of leaf stem and plant in grapefruit cultivars.

	Treatment	Plant response to stress (reduction over control %)		
		Type A parameters*		
		% Survival		
		Leaf	Stem	Plant
Volkamer lemon	<i>Ozone 10.5 nl/l + Low temperature (-7.5 °C) 10 days later (Sequential stress)</i>	78	53	92
	<i>Ozone 39.5 nl/l + Low temperature (-7.5 °C) 10 days later (Sequential stress)</i>	82	7	50
	<i>Ozone 74.6nl/l + Low temperature (-7.5 °C) 10 days later (Sequential stress)</i>	90	10	50
	<i>Ozone 107.8 nl/l + Low temperature (-7.5 °C) 10 days later (Sequential stress)</i>	77	13	67
Sour Orange	<i>Ozone 10.5 nl/l + Low temperature (-7.5 °C) 10 days later (Sequential stress)</i>	85	33	82
	<i>Ozone 39.5 nl/l + Low temperature (-7.5 °C) 10 days later (Sequential stress)</i>	66	23	55

	<i>Ozone 74.6nl/l + Low temperature (-7.5 °C) 10 days later (Sequential stress)</i>	70	51	100
	<i>Ozone 107.8 nl/l + Low temperature (-7.5 °C) 10 days later (Sequential stress)</i>	90	11	50

Note:

‘***’ - Values are presented as it is from the source article without subjecting to the calculation.

‘*’ - For more information on parameters classification, please refer to ‘methodology’ tab.

For raw data – Click here (.xlsx file)

Reference - Eissenstat DM, Syvertsen JP, Dean TJ, Yelenosky G, Johnson JD (1991) Sensitivity of frost resistance and growth in citrus and avocado to chronic ozone exposure. *New Phytologist* 118: 139-146.

Inference from the study: Eissenstat et.al. (1991) studied the interaction of ozone and low temperature in citrus cultivars Volkamer lemon and Sour orange. Stress treatment was given sequentially with four ozone concentrations. Survival percent reduced with higher ozone concentrations in cultivar Pancho/ Waldin but not in cultivar Simmonds/Waldin. **Thus, this stress combination negatively affect physiology of citrus.**