

Table S1. Low temperature protection methods in different plant species.

methods		example of plants	exemplary effects	reference
agrotechnical methods	covers	tomato	- increased yield	[15]
	fogging	mango trees citrus	- increased yield - decreased number of leaf injuries	[13, 18]
	sprinkler irrigation	fruit trees strawberry tea	- lower mortality of flowers - higher yields	[14, 19]
	air disturbance	fruit trees tea grapevine	- reduced frost injuries	[19]
	heaters	grapevines fruit trees	- reduced frost injuries	[19-21]
biochemical treatments – phytohormones	abscisic acid	wheat rice maize grapevine chickpea	- higher soluble sugar accumulation - increased antioxidant activity - altered chloroplast structure	[4, 24-33]
	salicylic acid	wheat barley maize spinach cabbage	- increased antioxidant activity - increased proline content - lower membrane injuries - improved photosynthetic efficiency	[34-39]
	jasmonic acid/ methyl jasmonate	wheat tomato	- increased antioxidant activity - increased proline content - improved photosynthetic efficiency	[40-42]
	cytokinins	rice coffee	- increased antioxidant activity - delayed chlorophyll degradation	[43-44]
	auxins	oilseed rape	- rearrangement of protein composition	[45]
	brassinosteroids	wheat maize rye oilseed rape	- increased antioxidant activity - higher soluble sugar accumulation - improved photosynthetic efficiency	[48-54]
biochemical treatments – osmoprotectants	proline	maize oilseed rape citrus quinoa pepper	- increased antioxidant activity - improved germination rate - increased proline content	[58-61]
	glycine betaine	wheat tomato maize	- increased antioxidant activity - higher soluble sugar accumulation - improved germination rate	[63-65]
	inositol	oilseed rape	- increased Ca ²⁺ influx	[71]
	polyamines	wheat maize oilseed rape grapevine	- decreased chlorophyll degradation - lower membrane injuries - increased proline content - increased antioxidant activity	[75-78]
biochemical treatments –	chitosan	rice	- improved photosynthetic efficiency - higher root and shoot weight	[80]

biocompounds and other substances	silicone	barley soybean	- increased antioxidant activity - higher soluble sugar accumulation - increased diversity of microorganisms in rhizosphere	[83, 84]
	melatonin	wheat rice oilseed rape tea tomato	- increased antioxidant activity - higher osmoprotectants content - improved photosynthetic efficiency	[87-93]
	microelements (Se, Mb, Zn, Ca, P)	wheat rice tea tobacco	- increased antioxidant activity - improved photosynthetic efficiency - maintaining hormonal balance	[95-100]
	sodium alginate, kaolin, humic acid	grapevine	- higher soluble sugar accumulation - decreased ROS content	[101-103]
	sugars (glucose, sucrose)	melon cucumber	- higher soluble sugar accumulation - increased antioxidant activity	[104-105]
	strigolactones	pepper litchi	- reduced photoinhibition - increased photosynthetic efficiency - increased expression of cold tolerance genes	[107]
Plant-microbe interactions	- arbuscular mycorrhizal fungi - plant growth promoting bacteria	rice barley	- increased proline content - lower membrane injuries - increased antioxidant activity - higher yields	[110-112]