Table 1. Application of metals as priming agents towards secondary non-metallic stress tolerance.

Priming metal	Plant material	Secondary stress	Effects	Reference
Ag (10–30 mM Ag nanoparticles)	*Pennisetum glaucum* seeds	salt stress (120-150 mM NaCl)	↑ biomass ↑ proline content ↑improved antioxidant defense, ↑accumulation of phenolic compounds	[36]
Ca (0.3–0.5 mM $Ca(OH)_2$,$Ca(NO3)_2$, and $CaCl_2$)	*Oryza sativa* seeds	oxidative stress (fluoride induced)	↑ seed germination ↑seedling growth ↑antioxidant response, ↑activity and expression of antioxidant enzymes and proline and glycine betaine synthesis pathway enzymes ↓reduced ROS and fluoride accumulation	[38]
Cu (80 µM $CuSO_4$)	*Zea mays* seedlings	biotic stress (insect herbivore attack)	↑ JA synthesis ↑volatile organic compounds (VOCs) emission	[39]
Cu (69.4µM nano-Cu^{o}nanoparticles)	*Zea mays* seedlings	drought	↑shoot morphology ↑plant biomass and improved grain yield ↑ content of chlorophyll, carotenoids and anthocyanins ↓ROS production	[32]
K (50 mM KCl)	*Brassica oleracea* seeds	salt stress	↑seed survival rate, ↑seedling morphology, ↔ nutritional status and phenolic compounds profile	[30]
K (150–300 kg·ha^{-1} K_2O)	*Gossypium hirsutum* plants	drought	↑ fiber strength ↑ concentrations of carbohydrates (sucrose, cellulose) ↑glucanase activity	[31]
V ($VOSO_4$, 10^{-6} M oxidovanadium(IV) complexes)	*Arabidopsis thaliana* seedlings	oxidative stress (100 mM H_2O_2 treatment)	↑ leaf morphology, plastids and cell walls protected from H_2O_2 accumulation	[37]
Zn (4 mM $ZnSO_4$)	*Zea mays* seeds	salt stress (100 mM NaCl)	↑ biomass ↑ nutrient and micronutrient status	[34]
Zn (4 mM $ZnSO_4$), K (23 mM K_2SO_4)	*Zea mays* seeds	salt stress, saline-sodic soil	↑biomass ↑elevated shoot Ca and Zn concentrations ↑ photosynthesis	[35]
Zn (10 mM NA[1])	*Zea mays* seeds	drought	↑ germination capacity, ↑activity of antioxidant enzymes ↑ higher Zn translocation to shoots	[33]

↓ decrease/reduction; ↑ increase/enhancement, ↔ no effect. [1] data unavailable