

## Effect on tobacco cultivars

### Interaction between heavy metal (Cadmium) and virus

The table shows the effect of individual and combined cadmium and virus stress on the physiology of tobacco cultivars

**Crop:** Tobacco (*Nicotiana tabacum*) cv. Samsun and Samsun NN  
**Virus:** Tobacco mosaic virus (TMV)  
**Stress 1:** Plants were watered with solution containing 0, 0.25, 0.75, or 2.0 µg/ml Cd as CdCl<sub>2</sub> for 5 days  
**Stress 2:** TMV inoculum was applied to a single leaf that was one-half to two-thirds expanded on each plant.

Cultivars	Stress treatments	Plant response to stress	
		Type A parameter *	Type C parameter *
		Assessment of symptoms	Foliar concentration of Cadmium (µg/g)
Samsun	TMV	56.7 <sup>a</sup>	0
	TMV +0.25 µg/ml CdCl <sub>2</sub>	55 <sup>a</sup>	82.4
	TMV +0.75 µg/ml CdCl <sub>2</sub>	70.8 <sup>a</sup>	336.7
	TMV +2µg/ml CdCl <sub>2</sub>	64.2 <sup>a</sup>	351.7
Samsun NN	TMV	125 <sup>b</sup>	0
	TMV +0.25 µg/ml CdCl <sub>2</sub>	143 <sup>b</sup>	48
	TMV +0.75 µg/ml CdCl <sub>2</sub>	220 <sup>b</sup>	146
	TMV +2µg/ml CdCl <sub>2</sub>	342 <sup>b</sup>	254

*Control values not provided a-% of leaves with symptoms, b- number of lesions*

**For raw data** – Click here (.xlsx file)

**Reference-** Harkov R and Brennan E. (1981) Cadmium in Foliage Alters Plant Response to Tobacco Mosaic Virus. *Journal of the Air Pollution Control Association* 31(2): 166-167.

**Note:** Values are presented as it is from the source article without subjecting to the calculation.

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

**The inference from the study:** Harkov and Brennan 1981 reported the effect of Cadmium on TMV infection in tobacco cv Samsun. The experiments indicated that percent of mosaic leaves was more significant in the plants treated with Cd at concentrations 0.75 and 2 µg/ml. The cultivar Samsun was relatively more tolerant to combined heavy metal stress and TMV infection than Samsun NN. Samsun was also shown to be hyperaccumulator of cadmium, accumulating more cadmium than Samsun NN without any effects on yield. **The study thus suggests that the effect of combined Cd and TMV infection on tobacco varies with the concentration of the heavy metal and is more prominent in Samsun NN as compared to Samsun.**