

## Seed priming to mitigate abiotic stress and to improve plant performance in Cucumber (*Cucumis sativus* L.)

<sup>1</sup>Rame Gowda, <sup>1</sup>Sowmya K. J., <sup>2</sup>Bhanuprakash K., <sup>2</sup>Yogeesha H S, <sup>3</sup>Puttaraju T.B and <sup>4</sup>Channakeshava B. C.

<sup>1</sup>National Seed Project (Crops), University of Agricultural Sciences, GKVK, India

<sup>2</sup>Section of Seed Science and Technology, Indian Institute of Horticultural Research, India

<sup>3</sup>Department of Horticulture, University of Agricultural Sciences, GKVK, India

<sup>4</sup>Department of Seed Science and Technology, UAS, GKVK, India

A study was conducted to test the performance of primed cucumber seeds in terms of planting value and biomass production under moisture and temperature stress conditions. The primed seeds subjected to moisture stress under various water holding capacity (WHC) (25, 50, 75 and 100 %) indicated significantly higher final emergence (FEM), Bartlett Rate Index (BRI) an indicative of speed of germination, plant survival percentage (PSP) and plant dry weight (PDW) (86.50%, 0.466, 80.21 and 3.64g, respectively) in high vigour seeds. Among various WHC, higher FEM (85.36%), BRI (0.450), PSP (83.79 %) and PDW (3.68g) were noticed in W<sub>1</sub> (100 % WHC). But, among the priming treatments, higher FEM (82.44%), BRI (0.491), PSP (88 %) and PDW (3.51g), were obtained in seeds primed with KNO<sub>3</sub> @ 1 %. Cucumber seeds primed with KNO<sub>3</sub> @ 1 % or Ethrel @ 100 ppm, increased the FEM, BRI, PSP, PDW, and decreased the mean emergence time (MET) both at 100 and 75 per cent WHC, besides better germination obtained at 50 per cent WHC, compared to control. Further, when primed seeds were subjected to temperature stress (15, 25 and 35°C), significantly higher FEM and BRI (83.29% and 0.509) were registered even at high temperature 35°C. PSP and PDW were significantly higher (77.86% and 1.35 g) at 25°C. Among the priming treatments, higher FEM, BRI and PSP (87.08 %, 0.501 and 81.83 %) were registered with KNO<sub>3</sub> @ 1% and higher PDW (1.38g) was noticed with hydropriming. However, the MET was significantly lower (2.79days) in high vigour seeds and also at 35°C (2.27days). Among priming treatments, the MET was lowest (2.32days) with KNO<sub>3</sub> @ 1%. Therefore, the study suggested that cucumber seeds primed with KNO<sub>3</sub> @ 1% or Ethrel @ 100 ppm or cow dung slurry followed by hydropriming performed better even at sub optimal (15°C)/ supra optimal temperature (35°C).

### Biography

Rame Gowda has completed his Ph.D in Seed Technology in 1993 from Tamil Nadu Agricultural University, Coimbatore, India and post doctoral studies from Scottish Agricultural College, University of Edinburgh, UK. He has guided thirty postgraduate students on various aspects of Seed Science and Technology. He is working as Special Officer (Seeds), at National Seed Project (Crops), University of Agricultural Sciences, Bangalore. He has published more than 45 research papers in reputed journals and serving as member, editorial board for Seed Research Journal published by the Indian Society of Seed Technology, New Delhi and also serving as referee for various Plant Science Journals.

rg\_seed@rediffmail.com