Application of magnetic field for enhancement of yield in soybean and maize

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Soybean and Maize seeds were pre-treated with static magnetic field (SMF) of 200 mT for 1 h to evaluate the effect of magnetopriming on growth and yield characteristics under field conditions. Presowing SMF treatment of seeds with 200 mT (1 h) persisted in soybean and maize plants under field conditions till its maturity. SMF pre-sowing treatment showed significant enhancement in plant height, leaf area and biomass accumulation in both the crops. Nitrate reductase activity, photosynthetic pigments, leaf photosynthetic efficiency, leaf protein content and net rate of photosynthesis and stomatal conductance were significantly increased after SMF pre-sowing treatment as compared to the untreated controls. Thus pre-sowing exposure of seeds to SMF enhanced carbon and nitrogen metabolism and improved the yield in both soybean and maize. All the yield parameters of soybean like- number of pods, number of seeds per plant and seed weight per plant and yield parameters of maize like- weight of cobs/plant, number of seeds/cob and weight of seeds/cob were enhanced by SMF pretreatment of 200 mT (1 h). Magnetopriming of dry seeds of soybean and maize can be effectively used as a pre-sowing treatment for improving plant growth and yield under field conditions.

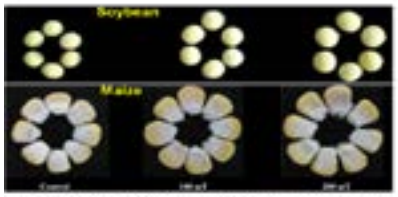

Fig. 1 Effect of pre-germination exposure of soybean and maize seeds to magnetic field on seed size.

Biography

K N Guruprasad has completed his Ph.D. in 1979 from Gujarat University and Joined as a Lecturer 1981 in School of Life Sciences, Devi Ahilya University and then Reader in 1987 and Professor in 1994 till his retirement in March 2017. Under his guidance, 23 students completed Ph.D. He has published 85 papers in reputed journals and 02 book chapters.

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