Title- “Effect of Botanical leaf priming on physiological changes in chickpea”

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Abstract:

Chickpea is a cool-season legume crop that is raised for food in various parts of the world. Since chickpeas are a significant source of protein (17.7%), carbohydrates (56.6%), methionine (0.1%), and the minerals phosphorus, calcium, magnesium, iron, and zinc, they play a significant role in achieving global food. The establishment of an effective crop stand is one of the major challenges in increasing crop productivity while poor seed emergence and seed quality are one of the factors which are playing important role in decreasing the productivity of chickpeas. Hence enhancing the seed quality in chickpea is biggest challenge in chickpea. “Seed Enhancement" is a post-harvest treatment that enhances germination or seedling growth at the time of sowing. It primarily consists of pre-sowing hydration treatment, Pelleting, Seed priming and seed coating. Seed priming is a method where the seeds initially imbibe water to start the early stages of germination but i.e. not enough for radical emergence and then dry back to their initial moisture content of seed. There are three phases in the seed priming process. Seed imbibition is the first stage, during which the seed rapidly absorbs water due to its low

water potential. The Stage II is the activation phase where at the cellular level, several metabolic and repairing processes occurred followed by the third stage where the radical emergence complete the germination process and then proceeded to the growth and cell elongation phase. Botanical priming is one of the priming techniques where leaf extract is used as a priming material which can enhance the quality of the seed. The purpose of this study was to determine the role of botanical seed priming in enhancing the seed quality. Here the experiment was laid out in a completely randomized design with four replications. The seeds were primed with five different priming treatments where seeds of chickpea were primed with turmeric leaf extract (1%) and neem leaf extract (1%), water (hydropriming), bavistin treated (positive control), and dry seeds (absolute control) for 18 hours. The result showed turmeric leaf extract (1%) and neem leaf extract was the best priming material for enhancing the seed's physiological parameters like germination percentage, root length, shoot length, vigor index I, and vigor index II of chickpea as compared to control and hydropriming. In conclusion, botanical priming is one of the best cost effective and eco-friendly methods for improving the quality of chickpea seeds.

Key words:

botanical priming, standard germination, root length, vigour index