



ORIGINAL RESEARCH PAPER

Agricultural Science

INFLUENCE OF SEED PRIMING WITH ORGANICS AND BOTANICALS ON SEED QUALITY OF GREEN GRAM (VIGNA RADIATA.)" VARIETY- LGG-460

KEY WORDS:

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INTRODUCTION

Mung bean [*Vigna radiata* (L.) Wilczek] is an important pulse crop ranking third after chickpeas and pigeon peas. Mung bean, also known as green gram, moong, green bean, mash bean, and golden gram belongs to the subgenus *Ceratotropis*. Mung bean is a self-fertilizing diploid legume with the chromosome number, $2n=2x=22$ (Karpechenko, 1925) having a genome size of 579 Mbp. Mungbean is one of the most important pulse crops. It is grown in almost all parts of the country. Mung bean is cultivated in the temperate, tropical, and sub-tropical zones of Asia which include India, Pakistan, Myanmar, Indonesia, Bangladesh, Srilanka, Nepal, China, Korea, and Japan. India accounted for 75 percent of the world's mung bean production grown over an area of 3.83 million hectares with 1.60 m tonnes of annual production and 418 Kg per hectare productivity. Though, globally, India represents the largest producer (18.5 million tonnes) and processor of pulses, also imports around 3.5 million tonnes annually on average to sustain the consumption needs of more than 22 million tonnes (Patel, 2021).

De Candolle (1855) believes that the mungbean originated in India. According to Vavilov (1926) also mungbean is a native of India and central Asia. It is grown in these areas since the pre-historic period. Zuckovskij (1962) is of opinion that *Vigna sublobata* which grows in wild from India to Indonesia is the progenitor of mung bean. Lukoki et al., (1980) reported that *Vigna sublobata* is not the ancestor of mungbean but it appears to be so close to mungbean that some taxonomists have described it as *Vigna radiata* var. *sublobata*. Mung bean is grown throughout southern Asia including India, Pakistan, Bangladesh, Sri Lanka, Thailand, Cambodia, Vietnam, Indonesia, Malaysia, China, etc. It is also grown in parts of Africa and the U.S.A. and has recently been introduced in Australia. In India, mungbean is grown on an area of about 3 million hectares with a production of about 1 million tonnes.

Seed pre-sowing treatment will modify the physiological and biochemical nature of seeds, to get the characteristics that are favorable for drought tolerance. Although it varies from crop to crop, the principle remains the same. When dry seeds are soaked in water/chemical solutions the quiescent cells get hydrated and germination initiated. It also results in enhanced mitochondrial activity leading to the formation of high-energy compounds and vital biomolecules. The latent embryo gets enlarged. When the imbibed seeds are dried again, triggered germination is halted. When such seeds are sown re-imbibition begins and the germination event continues from where it is stopped previously. Beneficial effects of seed hardening include accelerated rapid germination and growth rate of seedlings, hardened plants recovering much more quickly from wilting than those from untreated plants, induces resistance of salinity and to drought conditions, seeds withstanding higher temperatures for prolonged periods, flowering slightly accelerated, compete more efficiently with weeds due to early emergence and

results in more yield (Basra et al., 2005).

Priming affects the lag phase of germination and causes early DNA replication (Bino et al., 1992), increased RNA and protein synthesis (Skelly et al., 1988), greater ATP availability, faster embryo growth (Tavili et al., 2010) and repair of deteriorated seed parts (Siddique et al., 2018). The present study was conducted to find out the Influence of Seed priming with Organics and Botanicals on the seed quality of green gram variety and suitable pre-sowing seed treatment favorable for the green crop.

The present study was conducted to find out the "Influence of Seed priming with Organics and Botanicals on seed quality of green gram (*Vigna Radiata*.)" Variety- LGG-460 treatments on seed quality parameters and suitable pre-sowing seed treatment favorable for the green crop.

MATERIALS AND METHODS

The experiment will be laid out in a completely Randomized Design with 12 treatments and 4 replications.

Green gram seeds (Variety) were subjected to various pre-sowing treatments like Panchagavya, Cow urine, Curry leaf extract, Moringa leaf extract, and Neem leaf extract at various concentrations along with distilled water control.

After completion of pre-sowing treatments hundred seeds of each treatment were placed for germination in four replications in Completely Randomized Design (CRD). The paper methods were used for samples and placed in a germination chamber at 25°C temperature. The laboratory data were collected for germination percentage, root length, shoot length, seedling length, seedling fresh weight, seedling dry weight, seed vigor index I, and seed vigor index II.