

**ASSESSMENT OF THE QUALITY OF COMMERCIALY AVAILABLE
VEGETABLE SEEDS IN ANURADHAPURA DISTRICT: AN ATTEMPT TO
ASSURE SEED SYSTEM SECURITY**

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Seed system security is a major concern that contributes to ensuring food security in Sri Lanka. Commercial seeds are often reported to have low germination rates, which may lead to suboptimal yields. This study aimed to evaluate the reliability and performance of vegetable seeds from various commercial seed brands in the *Anuradhapura* district. A mixed-methods approach was employed and began with a survey of 20 commercial seed suppliers in *Anuradhapura* city limits and common seed brands and crop species with reported quality issues were purposely selected. This was followed by a laboratory evaluation of triplicate 45 seed samples obtained via a mystery shopper approach. Germination rates and seedling vigor were tested according to the standards of the International Seed Testing Association at the Central Seed Testing Laboratory, *Gannoruwa*. Additionally, the polyphasic OJIP chlorophyll fluorescent transient analysis was performed on seedlings to assess vigor. The results revealed that even among the same seed brand and crop, the seed quality varied widely. Moreover, 78% of the seed samples failed to achieve the germination rates stated on the seed pack under standard laboratory conditions. This phenomenon may be entangled with the common origin of poor-quality seed lots or probably adulteration, which are independent of crop type and seed brands. Associations generated through Chi-square analysis indicated no significant difference ($p < 0.05$) between the label information and measured parameters including germination rate. These findings suggest that the quality of commercially available vegetable seeds in *Anuradhapura* was highly inconsistent, thus the information on labels often failed to reflect seed performance accurately. This inconsistency poses significant risks of crop failures for farmers who rely on quality indicators on labels. Strong regulations on quality control measures and their proper implementation are required to enhance transparency and reliability within the seed supply chain to achieve seed system security.

Keywords: Label information, OJIP analysis, Seed germination, Seedling vigor