

# Standardization of X-ray Radiography Methodology for the Detection of Hidden Insect Infestation in Different Varieties of Groundnut

A. Nagaraju, T. Ramesh Babu and B. Sarath Babu

*Department of Entomology, Acharya NG Ranga Agricultural University,  
Rajendranagar, Hyderabad - 500030, Andhra Pradesh, India  
National Bureau of Plant Genetic Resources - Regional Station,  
Rajendranagar, Hyderabad - 500030, Andhra Pradesh, India*

---

**Abstract**—*The primary objective of detecting hidden infestation in the groundnut has been achieved with investigations on different combinations of input factors of X-ray radiography viz., the voltage in kilovolts (KV), current in milliampere (mA) and period of exposure in seconds (s) to radiation. The results of experiment showed that these input factors varied with the different seed materials viz., groundnut. Compared to the light materials, high amounts of voltage and current is required for dense seed materials. Best contrast of image was obtained, when the exposure period varied from 10 – 12 seconds.*

*The results indicated that the standardized value for the detection of *Caryedon serratus* Oliver in different varieties of groundnut was 15 KV, 6 mA for 10 seconds for Kadiri-4, 20 KV, 6 mA for 10 seconds, for Narayani and JCG 88, 22 KV, 6 mA for 10 seconds for Abhaya, Rohini, ICGV 91114 and Harithandhra, 22 KV, 7 mA for 10 seconds for JCG 1014 and Kadiri-5, 25 KV, 6 mA for 10 seconds in case of Anantha, Greeshma, Dharani, ICGV 03043 and ICGV 06236, 25 KV, 7 mA for 10 seconds for TCGS 1073, 26 KV, 6 mA for 10 seconds in case of Kadiri-6, 26 KV, 8 mA for 10 seconds for TCGS 750, 28 KV, 6 mA for 10 seconds for Kadiri-7, 30 KV, 6 mA for 10 seconds for Kadiri-8 and 30 KV, 8 mA for 10 seconds in case of Bheema variety of groundnut. X-rays emanating from the voltage and current intensities used to detect the hidden infestation are soft X-rays and do not affect the viability of the seed materials and incase of groundnut germination percentage varied from 90-100%.*