

## MECHANICAL DAMAGE TO CHICKPEA SEEDS AS AFFECTED BY NPK FERTILIZATION

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Vol. XLVII, No. 3 (159) / 2014**MECHANICAL DAMAGE TO CHICKPEA SEEDS AS  
AFFECTED BY NPK FERTILIZATION**F. SHAHBAZI<sup>1\*</sup>, S. FALAH<sup>1</sup>, H.R. EISVAND<sup>1</sup>

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**ABSTRACT.** The aim of research was to determine the effect of nitrogen (N), phosphorus (P) and potassium (K) fertilizers on the some physical properties and mechanical damage to chickpea seeds under impact. The material for tests was from a field experiment with varied levels fertilization with nitrogen (0 and 50 kg/ha, N), phosphorus (0 and 100 kg/ha, P<sub>2</sub>O<sub>5</sub>) and potassium (0 and 100 kg/ha, K<sub>2</sub>O). The variation of the mechanical damage was analyzed depending on the mode of varied fertilization, seed moisture content and impact energy. It was found that the chickpea seeds were bigger with NPK supply. The effects of phosphorus and potassium fertilizers rates on the mechanical damage to chickpea seeds was significant at 1% probability level ( $P < 0.01$ ) and increased its hardness and resilience therefore caused the better resistance to impact damage. Potassium fertilization rate had the most influence and phosphorus fertilization rate had the least. The effect of the nitrogen fertilizer rate was not significant ( $P > 0.05$ ). Harvesting chickpea seeds at higher moisture content and lower impact energy should give lower breakage when NPK is supplied, as well as when no NPK is supplied.

**Key words:** Chickpea; Mechanical damage; Harvesting; Handling; Fertilization.

**INTRODUCTION**

Many of today's seed production environments are managed at very high levels of chemical fertilizers to return plant nutrient to agricultural lands and ensure maximum yield potential. Consequently, it is important to understand the seed properties and resistance to impact changes in response to chemical fertilizers such as nitrogen, phosphorus and potassium. Chickpea (*Cicer arietinum* L.) seeds are subjected to a series of static and dynamic loads during harvesting, handling, processing, and storage. Such loads cause external and internal damage of seeds, which lead to decreases in quality and can eliminate both viability and vigor (Shahbazi, 2011). The harvesting and the postharvest operations negatively influence the quality of seeds. The

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