



Research Article

## Effect of potassium and zinc on yield, quality and economics of cowpea (*Vigna sinensis* L.) var. GC-4

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**Abstract :** A field experiment was conducted on medium black calcareous soil of the Instructional Farm, Junagadh Agricultural University, Junagadh (Gujarat) during the season of *Kharif*-2008. Significantly higher grain yield ( $1587 \text{ kg ha}^{-1}$ ) was recorded with application of  $60 \text{ kg K}_2\text{O ha}^{-1}$ . Significantly highest grain yield ( $1553 \text{ kg ha}^{-1}$ ) was recorded with  $40 \text{ kg zinc ha}^{-1}$ . The maximum grain protein content of 23.59 per cent as well as the higher net realization Rs.21725  $\text{ha}^{-1}$  with BCR (3.43) was accrued under the application of  $60 \text{ kg K}_2\text{O ha}^{-1}$ . The higher net realization of Rs.20545  $\text{ha}^{-1}$  with 3.18 BCR was realized under the application of  $40 \text{ kg zinc ha}^{-1}$ . Considering the treatment combinations,  $\text{K}_3\text{Zn}_2$  ( $60 \text{ kg K}_2\text{O ha}^{-1} + 40 \text{ kg zinc ha}^{-1}$ .) recorded the highest net realization of Rs. 24344  $\text{ha}^{-1}$  with BCR 3.54. It is indicated that the potential production and profit from *Kharif* season cowpea (cultivar GC-4) can be secured by fertilizing the crop with  $60 \text{ kg K}_2\text{O ha}^{-1}$  along with  $40 \text{ kg zinc ha}^{-1}$ .

**Key Words :** Cowpea, Potash, Zinc

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### INTRODUCTION

Cowpea is the most versatile *Kharif* as well as summer pulse, because of its smothering nature, drought tolerant character, soil restoring properties and multipurpose uses. It covers the ground and checks soil erosion and works as mulch to reduce the evaporation losses apart from being a leguminous crop. Cowpea can fix about 80 to 90  $\text{kg N ha}^{-1}$  under ideal condition. At present India is passing through a shortage of protein where the people are predominantly vegetarian, pulses are the main source of protein and thus are of vital importance in daily diet. However, requirement of pulses are going up due

to population explosion while its production is not increasing to that extent consequently, the price of pulses has increased exorbitantly and common man can not afford to purchase the same. Hence, the production of pulses have to be increased either by increasing the land or by increasing productivity.

Amongst the nutrients N and P are given the priority and very little attention is paid towards the K and micronutrients which are of prime importance for the nutrition of cowpea from the nutrition point of view.

The potassium is one of the major plant nutrient for the growth and development of plants. The major functions are associated with enzyme involved in photosynthesis, metabolism of carbohydrate and physiological processes, such as root growth, water uptake and utilization efficiency, synthesis of protein and amino acids, enzyme activation and yield determining process *viz.*, drought, pest and disease tolerance.

Zinc plays vital role in plant growth and development. Zinc also catalyses the biosynthesis of indole acetic acid (IAA), acting as metal activator of the enzyme, there by ultimately

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