



# Economics and productivity of biological efficient and profitable cropping systems in central plain zone of Uttar Pradesh

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**Abstract :** An experiment was executed with nine crop sequences during 2006-10 at C.S.Azad University of Agriculture and Technology, Kanpur, Uttar Pradesh. All these sequences were evaluated for their system productivity, energy productivity, production efficiency, land use efficiency and economic analysis. Highest system productivity 392.94 q REY / ha. was obtained through maize + black gram – potato – onion crop sequence followed by maize – garlic – green gram (319.30 q REY /ha) while highest energy productivity (54055 K. calory ) was worked out for hybrid rice- wheat – green gram(G+R) crop sequence. Highest land use efficiency (90 %) measured through maize – mustard – onion crop sequence while maximum production efficiency 136.4 kg/ha/ day was achieved by maize + black gram – potato – onion crop sequence. The highest net return of Rs.210997/ha and profitability of Rs.578/ha / day was obtained through maize + black gram – potato – onion followed by maize – garlic – green gram (G+R) crop sequence, while highest return per rupee investment (1:2.81) was computed on hybrid rice- wheat cropping system followed by maize + black gram – potato – onion crop sequence (1: 2.72). On the basis of different biological indices and economical analysis maize + black gram – potato – onion crop sequence observed as biological efficient followed by maize – garlic – green gram (G+R) crop sequence over all other cropping systems.

**Key Words :** Economics, Productivity, Biological efficient, Profitable cropping systems

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## INTRODUCTION

The rice –wheat system is dominant cropping system of irrigated areas of Central Plain Zone of Uttar Pradesh. This system requires high input resources for higher productivity resulted higher cost per unit area and time. Following continuously the same system has adverse effect on soil health, ultimately decline in factor productivity of the system (Kumar and Yadav, 1993). In addition, leguminous crops in the system have favourable impact on soil health as well as improving the productivity of succeeding crop. The evolution of a large number of high yielding short duration varieties coupled with efficient technologies and implements for tillage has paved the path to substitute with a number of crops.

Inclusion of pulses, oilseeds and vegetables in the system is more beneficial and fetching higher return per unit area than cereals after cereals (Kumpavat, 2001). Therefore, the study was carried out to explore the possibilities of biological efficient and profitable cropping systems with regard to productivity and economic return.

## MATERIALS AND METHODS

The field experiment was conducted during 2006-07, 2007-08, 2008-09 and 2009-10 at Student's Instructional Farm, C.S.Azad university of Agriculture and Technology, Kanpur under All India Coordinated Research Project on Cropping Systems to identify the biological efficient and economically

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