Introduction

India has about 30 per cent of the total area under rice in the world. It occupies second position in rice production after China and is major exporting nation in the world today. Punjab State is the first in average yield and West Bengal in total production. In the last few years, releasing of dwarf varieties including Pusa Basmati-1 has helped farmers improving their yields significantly. The export of 5.0 million tonne of non-Basmati and 0.5 million tonnes of Basmati rice is an all time record (The Hindu survey of Indian agriculture, 2000). The preponderance of the agricultural sector in the Indian economy is very well known. It provides gainful employment to nearly 70 per cent of the population of the country and contributes about 26 percent to national income besides earning 18 percent valuable foreign exchange by export (Agricultural Census 1999-2000).

Rice is the major crop of India as well as South East Asia also for the whole world. India has about 44.97-million hectare area under rice (India 2002). Though, India is rice exporting country but its per unit productivity is very low. During the last two years rice productivity registered a steady increase with a significant jump in production from 84.75 million tonnes to 89.47 million tonnes. During this period, area under rice increased from 44.5 to 44.9 m ha (India, 2002). The consistency was maintained with record rice production during 2000 despite deficit. This was mainly attributed to timely and marginal increase in area. Higher production was registered in West Bengal, Uttar Pradesh and Andhra Pradesh.

Rice is also the major crop of Uttar Pradesh, contributing about 16 percent to the national production. As per 2000-2001 statistics U.P produced 11.16 million tonnes of rice, under about 5.93 million-hectare area.
The eastern part of the country is important rice-growing belt because it has most distinctive and important intensive subsistence tillage areas in monsoon lands. The rice cropland occupancy provides the largest production. Indeed it covers nearly 23 percent of the total cropped area and is the most valuable food grain crop of eastern Uttar Pradesh. Rice production is restricted by its heavy water requirement having favorable temperature range. Therefore, rice is mostly grown under humid subtropical and tropical climatic conditions. Rainfall in this part annually is over 1500 mm and over 150 mm during each month of the growing season by and large. The rice cropland dominates the agricultural landscape where annual rainfall is 1200 to 1500 mm. The crop needs a good supply of water, which is often supplied artificially with intensive irrigation system, regardless of the climate. The rice bowl of eastern Uttar Pradesh is one such example. Despite being rice-exporting country India has very poor productivity. The average yield obtained at National level is 23 q/ha and Uttar Pradesh has only 22 q/ha.

The achievable rice yield as reported by Bhowal, et al. is in the range of 62-110 q/ha under experimental conditions. The statewise yield difference between recently introduced improved varieties and the traditionally cultivated varieties has been reported in the range of 8.26 to 49.03 q/ha (The Hindu survey of Indian agriculture, 2000) with no exception of Eastern Uttar Pradesh. In Eastern Uttar Pradesh gap in achievable and farmers yield has been rewarded to the tune of 71.5 per cent, which may be decreased by adoption of improved technologies and right public policies. This shows that there is a wide gap between achievable yield and yield obtained at farmers' field. Besides constraints like ignorance, peasant way-of-life, availability of inputs, in time etc are responsible for this gap.

A technological gap is operationalized as the gap between the level of recommendation and the extent of its adoption against recommendation (Thripathi, 1982 and Sadamate, 1978). It is envisaged that the technological gap was bent upon both the sides of the same point “adoption”, this is the concern of present study. It is proposed to measure the gap at the level of knowledge about adoption of improved scientific rice technology by the farmers. The farmers are expected to adopt all components of recommendations at a given time. The desired target of production can only be achieved when majority of farmers adopt the new technology.

The adoption of agricultural technology is influenced by various socio-personal, physical and communicational gap of recommended technology by the farmers and its relationship with the characteristics. A large number of findings on scientific agriculture have been evolved but not all of
them have reached in the hands of farmers. This has ultimately caused a wide gap between available scientific knowledge and its practical adoption. Wider the technological gap, the lesser will be the production and vice-versa. Keeping these facts in view, this study is designed to know the extent of technological gap on the production of rice in district Faizabad which is the main producer of rice in eastern Uttar Pradesh.

The objectives as outlined would help in focusing on the econometric evaluation, whether the production parameters with the advancement of the technology have brought out any change into the rice cultivation for economic gain. Therefore, we have to formulate a null hypothesis so as to identify the parameters governing production relations in view of technological gap in recommended technology and traditional methods of farmers' practices. It would also help in identifying the sources of total change in terms of output performance with adoption of new technology.

The farmers' profits can be increased either by increasing the production of rice per hectare or reducing the cost of production by adopting improved technology.

Today the world is passing through the age of information explosion. The scientific and technological innovations and developments are taking place with very fast speed. India is striving hard for the faster growth of development. But still we are lacking far behind than other countries of the world. No doubt, we have achieved self-sufficiency in food grains, but still we need to produce cheaper food grain to cater the needs of our large population living below poverty line.

The productivity of rice in India may be increased if farmers adopt scientific technology. The agricultural scientist should improve the genetic potential of the crop and the extension worker should transfer the technology at the farmers' level by using appropriate methods. It is also important to find out the constraints associated with the production of rice.

Keeping in view the above facts, a study was undertaken to find out technological gaps in recommended rice production technology. The specific objectives of the study were as under:

1. To study the knowledge level of rice growers about recommended package of practices of rice cultivation.
2. To estimate gap in the adoption of technology by the farmers.
3. To study socio-economic structure of the farmers growing rice as main crop.

4. To ascertain the relationship of technological gap with socio-economic, technological and communication variables.

5. To identify the constraints responsible for low productivity of rice and to prioritize researchable issues in rice cultivation.

6. To develop a communication strategy for accelerating the adoption of modern technology in rice cultivation on the basis of the finding of the study and suggestions of respondents.

**Scope of study**

The study proposes to examine the burning issue of technological gaps and the constraints in rice production. It briefly gives a general account of technological development in rice with the idea to have a basic understanding of the present situation relating to eastern Uttar Pradesh. The study also analyzes the agronomic practices of rice cultivation under various resource situations, the gaps between recommended and existing practices and the constraints thereabout. The average technological gap in the adoption of recommended rice production practiced by farmers of six villages in Faizabad was determined.

The findings of the study should help in identifying the factor responsible for reducing the technological gap in cultivation of rice and other constraints associated with the adoption. This study should also provide suggestions accelerating the rate of adoption of modern technologies in rice cultivation. Attempt will also be made to process the figures on various dimensions, which would be of great help to the scholars and planners of agricultural technology transfer, and to build up an suitable theoretical frame work on theory of technological gap.

**Limitations of the study**

Due to shortage of technical manpower, time and finance it could not be possible to go deeper into the various dimensions of the study. Since the data were to be collected from the secondary resources, therefore, realization and adoption aims were not developed within these limitations. The care has been taken to make the study as much objective and systematic as possible. It may also be noted that the findings of the study may not be applicable beyond the area of investigation in view of the localized nature of climatic condition and also the farmers’ characteristics.
Organization of the chapters

The present study has been assembled in five chapters. The first chapter deals with introduction including objectives, scope, limitations and the chapters of the contents.

The second chapter is devoted to the review of the work done by earlier researcher. The research methodology has been presented in the third chapter. This primarily covers sampling technique, selection of block-village, respondents, tools and techniques of data collection and analysis.

The results/findings and the discussion thereon has been discussed in the fourth chapter. Significant constraints associated with the technological gap in rice cultivation have also been identified and discussed in this chapter.

The fifth and the last chapter summarize the study and enlist the suggestions for the improvement.