Conclusion

Rice plays an important role in Indian economy. It is grown over 44.97 million hectares in the country (India 2002). This constitutes about 37 percent of the total area under food grain crop. The annual production of food grain of the country achieved 195.92 million tonnes during 2000-2001 (India 2002). While production has risen significantly in the post independent period, the yield increase has not been uniform all over the country despite the fact that the available rice varieties have very high yield potential. The gap between the potential and actual harvested yield is very wide. The low yield performance of high yielding rice varieties is a matter of serious concerns for our planners, policy makers, scientists and extension agents. It possesses as how to over come the constraints to achieve higher rice production or the yield near to potential yield of the high yielding varieties. Till now no systematic efforts have been made to critically analyze the technological gap and carefully identify the constraints that affects rice production in major rice blocks in district Faizabad. Technological gap and the constraints analysis in the adoption of rice technology among farmers in Faizabad districts were under taken with the following specific objective.

a) To study the knowledge level of rice growers about recommended practice of rice cultivation.

b) To estimate gap in the adoption of technology by the farmers.

c) To study socio-economic structure of the farmers growing rice as main crop.
d) To ascertain the relationship of technological gap with socio economic, technological and communication variables

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

f) 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

The present study was conducted in Faizabad district of Eastern Uttar Pradesh. The study has been assembled in five chapters namely introduction, Review of literature, Methodology, Findings and discussions and conclusion with implications and suggestions. Thus the total number of (300) respondents (140 small, 120 medium and 40 large) from six villages of three blocks were interviewed through a schedule questionnaire, average percentage correlation „t-test and multiple regression were used to analyze the data.

Findings

Knowledge

i. Near about 47.00 percent rice growers had medium level of knowledge with regard to rice package of practices where 31.33 and 21.67 of the farmers possessed medium and low level of knowledge respectively.

ii. Among the categories of rice growers large percentage of small farmers (46.66 percent) have low knowledge level (19.81), and medium farmers (40.00 percent)
have medium level of knowledge (23.07 percent), but the lowest percent of large farmers (13.33 percent) have high level of knowledge (25.78 percent).

iii. The overall knowledge level of rice grower in study area was found to be 21.90 percent only. In another word less than one fourth farmers of the study area were well versed with improved package of practices of rice cultivation.

**Determination of technological gap**

a) The overall technological gaps of all the respondents in study area was determined 49.28 percent. The gaps were 37.43, 46.77 and 54.83 percent between large, medium and small rice growers respectively.

b) The maximum gap was observed in plant protection (out of six main packages of practices in rice cultivation). Suitable varieties, fertilizer application and sowing operation practices, irrigation, harvesting and marketing in descending order followed it.

c) Among seven sowing sub operation seed treatment ranked at first place of gap series followed by soil treatment, method of sowing, time of sowing, soil preparation, seed rate, spacing ranking at II, III, IV, V VI and VII places respectively in descending order of technological gap.

d) Simultaneously, dose of fertilizer, method of fertilizer application, and time of application the three sub practices gained 52.40, 55.00 and 51.87 percent gaps respectively in the study area.

e) The maximum gap of plant protection measures was determined 64.36 percent in protection from insect and pests practices in all the farmers of study area.
Protection from weeds and disease practice showed 52.63 percent and 42.56 percent gaps respectively. However, the highest gap of the study was found to be 70.01 percent in protection from insect and pests in small farmers.

**Analysis of technological gap in terms of independent variables**

**Small farmers technological gap and independent variables:**

The technological gap had significant negative correlation with education, source credibility, attitude and knowledge but had positive and highly significant with age, caste, leadership, socio-economic status, and extensions contact. Hence, family type, social participation, change proneness, risk orientation, credit orientation and tenure status did not establish any correlation with technological gap of small farmers.

The four socio-economic variables like education, social participation, socio-economic status and credit orientation accounted for 56.40 percent variation in the technology gap. However, the regression coefficient were significant only in case of education, social participation, and socio-economic status.

On the basis of the value of beta weight of these variables socio-economic status was found to be most important factor in influencing the gap of small farmers.

Technological gap had significant and negative correlation with source credibility but had positive and significant relationship with extension contact variables in the small category respondents. Only 46.66 percent variation was explained in determining the gap with the help of two variables.
Attitude and knowledge had significant negative correlation with the technological gap of small rice growers. These two variables explained 55.20 percent variation in determining the technological gap of the small category of farmers. The co-efficient of regression were found significant in both the variables.

2. Medium farmers technological gap and independent variables

Technological gap had significant negative correlation with education, social participation, socio-economic status, credit orientation, source credibility, attitude and knowledge but positive and significant relationship with risk orientation and extension contact in medium farmers. Though, rest of socio-economic variables like age, caste, family type, change proneness, leadership, tenure status, did not show significant relationship in case of medium rice growers.

The other four selected socio-economic variables like education, social participation, socio-economic status, credit orientation showed 50.30 percent variation. However, education and credit orientation showed negative and significant correlation but social participation and socio-economic status showed positive and significant correlation.

Technological gap has significant and negative correlation with extension contacts and source credibility of medium rice growers and showed the multiple correlation value revealed 62.20 percent variation between technology gap and these two variables. The regression co-efficient was found significant in both the factors.
The other two selected technological variables attitude and knowledge counted negative and significant correlation with technological gap of medium farmers. These two technological variables explained 32.80 percent variation in determining the gap of medium category of farmers.

2. Large farmers technological gap and independent variables

I. The technological gap had significant negative correlation with family type but positive and significant relationship with age, caste, education, social participation, change proneness, socio-economic status, extension contact, source credibility, attitude and knowledge variables of large rice growers. Technological gap did not show any correlation with risk orientation, leadership, credit orientation, and tenure status.

II. All the four variables like education, social participation, socio-economic and credit orientation represented only 41.70 percent variation with technological gap. The regression co-efficient was found significant only in case of education, social participation and socio-economic status.

III. The two communication variables viz, extension contact and source creditability have 20.60 percent variations with technological gap in case large respondents and both the variables were positively significant in regression equation.

The technological gap had significant positive correlation with attitude and knowledge of technological variables. The two variables explained 35.00 percent variation, which was found significant at regression equation in case of large farmers.

4. Identification of constraints in adoption of modern technologies of rice cultivation

The main constraints pertaining for technological gap by small farmers were lack of
technical guidance (76.43 percent), lack of money (63.10 percent), lack of knowledge 
(61.62 percent), more labour (46.00 percent), high cost of inputs (45.48 percent) and 
availability of materials (32.71 percent). Besides, that medium farmers faced these cause as 
lack of technical guidance (60.28 percent), lack of knowledge (51.22 percent), lack of 
knowledge (38.06 percent) more labour (35.83 percent), high cost of inputs (31.50 percent),
complicity of practice (20.67 percent), Drought proneness (19.72 percent), low rainfall (19.22 percent) non availability of materials (18.89 percent), whereas, the large farmers indicated that the different order they faced lack of technical guidance (67.50) percent, Lack of money (61.50) percent, lack of knowledge (49.33) percent, More labour (47.50) percent, High cost (45.83 percent, non-availability of material (40.00) percent it means large farmers were not much impeded with the factor of lack of money. However, the overall main constrains were emerged from this study, lack of technical guidance, lack of knowledge, high cost of inputs and lack of money in transfer of technology in rice cultivation.
Implication and suggestion

In the current plan major emphasis has been given to raise rice production. Therefore, increase the rice production adoption, the latest technologies among the farmers have to be hastened. The present study suggests the following possible implications.

1. Decrease in technological gap is possible only by the increase in adoption of improved technology such as choice of suitable varieties, plant protection measures and good marketing management etc. in rice cultivation.

2. For increasing adoption of improved technologies for rice cultivation, there is need to give more emphasis on the variable like education, credit orientation, attitude, knowledge, extension contacts and source of credibility. The low level of knowledge even among the large farmers of study area clearly suggests that functional literacy and adult literacy programme should be given special attention up to date knowledge regarding technologies know how of rice cultivation will help the development of favorable attitude towards rice cultivation.

3. The results of the present study indicated socio-economic status was one of the most influencing factors for all the three categories of farmers of the study area. Possible efforts need to be made to increase the credit facilities to the rice growers in time.

4. According to extension functionaries research must give top priority to evolve high yielding disease and pest resistant varieties. There is also a need to lay out demonstration on improved agronomic practices for rice cultivation over and above the most important factor is to impart training to the rice growers.
5. Timely availability of inputs like certified/foundation and disease resistant varieties and providing adequate technical guidance to the farmers.

6. Plant protection chemical and equipments will play a significant role in boosting the rice productivity of study area.

These suggestions can be implemented by providing adequate knowledge on the spot supply of the necessary inputs to the farmers through government agencies and extension personal. Dis-honesty in rice weighing centers low rates by dissatisfactory rice mill owener were found lethal constraints in increasing the gap in adoption of improved technologies for rice cultivation.

**Policy implication**

Rice is the basic source of household income in the study villages, accounting for about 46 percent of total income. There is a shift in factor income in rice production from labour to capital with higher land productivity.

1. The farmers should strengthen extension approach to bridge up the gap in adoption of rice technology. This could be done by planned and systematic approach to address the problems of low production and productivity of rice in the farm of by effective and extensive training programme, organizing demonstrations, making individuals contact by using audio-visual aids.

2. Increasing area under rice crops in the Faizabad districts where competition with sugarcane hinders the spread of rice area and efforts should be made to evolve high
yielding short duration Basmati, Pest and disease resistant and inputs responsive rice crop varieties.

3. To develop the sound and proper knowledge among the farmers, the training and visit system scheme should be opened at every district Kharif Goshthy and scientific seminar should be arranged by the directorate of extension to acquaint the extension personnel about the recent advances in rice cultivation.

4. The government of India not only managed to establish many financial institutions to the rural area but also make many beneficial provisions in the budget so that the process of loaning should be more convenient i.e. the bribery and much time consuming should be eradicated in order to ease the farmers. The loan should be given in cash to the rice growers.

5. Launching special projects in the potential areas for intensive cultivation of rice crops.

6. Growing to export quality of rice and their export should be given priority. It will help farmers to earn more and income to the farming community. Minimum support price of rice should be announced before the onset of the next crop season.

Suggestions for future research

This section concerns with the design for promoting farmers’ adoption of the recommended package of practices so as to minimize technological gap.

The finding of this research study indicated that more than 70% rice growers did not follow recommended package of practices. Therefore, the farmers are yet to learn to adopt recommended practices. This speaks status of extension system. Hence, the missing threads of
educational and motivation ingredients of our transfer of technology system needs exploration and revitalization. There is, therefore an urgent need to provide recent technical know how to the potential users through different possible extension methods.

The multiple regression analysis pointed out education, extension contact and source credibility as the crucial variable, which influenced the technological gap of all the seven segments of crop production technology. Next in hierarchy was investment orientation, profitability of technology influenced the other components each other.

The farmers with high level of education, extension contact who have high level of education, extension contact, mass media and possess adequate knowledge of technology should be included in the initial stage of introduction of an innovation for its adoption. Secondly, group of such farmers should be encouraged for innovative demonstrations on their fields. Rather, they may be motivated for using part of their farm as simulation demonstration farm to demonstrate the techniques and worth of new practices in field situations, which will greatly help in convincing the farmers for speedy acceptance innovative techniques.

The study highlighted the wide technological gap between the practices recommended and their adoption by the farmers.

There was lack of complete conformity between recommended and adoption. However, the intensity of technological gap about practices was of varying nature. But this was maximum in case of fertilizer application followed in order by plant protection and improved varieties. An analysis of inter-farmer technological gap about practices indicated that the marginal and small farmers, farmers having low extension contact
and socio-economic status did not follow the recommended package of practices, which resulted in yawning technological gap. It is, therefore, suggested that special campaign for knowledge-persuasion should be organized for all components of technology in general and components having wide technological gap in particular. Hence, the field extension workers should make concerted efforts to provide technical guidance and training to farmers. Moreover, the element of demonstration be added in the re-organized T&V system of agricultural extension and renamed as Training Visit and Demonstration system to carry out effectively motivational persuasion and educational functions which, indeed, accelerate the pace of adoption of innovations. Village level training camps covering the important major aspects of crop production technology be organized prior to sowing of crop. Secondly, the farmers having large holdings and belonged to high socio-economic status adopted the practices identical to recommendations than that of their counterpart-farmers who were in possession of less holding size and low socio-economic status. Less disparity between recommendation and their adoption was also found in farmers having higher extension contact as compared to their counterpart farmers possessing low extension contacts. A strategy emerged out of this finding, further, suggested that farmers with larger holding size, whose intensity of extension contact is frequent and higher and belong to high socio-economic status, should constitute the recipient group for utilization of newer practices in the first instance. The role of extension contact and communication media exposure has been clearly and amply demonstrated by the findings of this investigation. It is, therefore, suggested that extension
personnel-farmers [EP-F] linkages need revitalization to make these more functional for the purpose of giving momentum to adoption-persuasion process and also providing feedback which is necessary for reinforcement and future plans. The weak of defective linkages are reflected from wide technological gap among farmers. Therefore, it is suggested that periodic checking of EP-F linkages should be made and the factors responsible for ineffective linkages are tackled for their elimination. The Department of Agriculture should make concerted efforts to create mass-media network for encouraging farmers to use mass-media of varying nature for obtaining information concerning to their profession and also to enrich their professional knowledge necessary for efficient role performance. To achieve this, a mini farm communication centre equipped with farm literature, radio, television, education films and cassettes be opened in every village and village level extension worker may be made responsible for its upkeep and management. A small agricultural exhibition may also be set up to depict the exhibits of important and useful information for the education of farmers. The farm literature if not possible to provide free of cost, can be supplied to the farmers on subsidized rates. Incentives in any form may be provided to the farmers as these induce motivation for learning, which ultimately lead to effective discharge of roles and satisfaction.

The adoption rate is not commensurate with the enormous growth of technology, as is evident form the low or medium levels of adoption. Actual production breakthrough is limping because of certain forces working on transfer of technology system. Of course, the study highlighted numerous constraints, but the important are high cost of inputs, non-availability of inputs in required quantity and in time, lack of knowledge about
technology, lack of money, under-bagging and adulterated fertilizers, availability of spurious and adulterated plant protection chemicals etc. These impediments slow down the rate of technology adoption. Therefore, the department of agriculture may take suitable measures to overcome these to bring speedy improvements in technology-transmission-adoption process. „Single window“ based on the insight gained while conducting the present investigation following area of future research is suggested.

The present study was conducted in Faizabad district only because of suffering for usual limitation of technical management, power, time and finance at the disposal of researcher further it may be extended to all the districts of Uttar Pradesh.

1. A study to compare the effectiveness of marketing pattern of rice, adoption pattern of recommends practices of in rice in Uttar Pradesh.

2. Unit effect of the socio-economic and technological variables in the decision making process of the farmers.

3. There is need to examine the effectiveness of feedback mechanism operating from the field to the development and research system.

4. On the basis of the findings next study may be suggested credit, difficulties experienced by small, medium and large farmers in adopting the modern rice technology.

5. A study to examine the influence of government policies in respect of their effectiveness in augmenting the rice production effectively needs to be undertaken.