SUMMARY, CONCLUSION AND SUGGESTIONS

Indiscriminate and unilateral use of pesticides as plant protection tool during sixties and seventies to sustain crop production potential of high-yielding varieties in the intensive cropping system has resulted into several risks and ill effects such as human and animal health hazards, ecological imbalance, resistance in pests to pesticides, resurgence of minor pests and environmental pollution. Besides, destruction of natural enemies of pest and increased level of pesticides residue in soil, water, food and fodder crops have also surfaced. Therefore, there is an urgent need to promote the approaches, which are ecologically safe and cost effective for sustaining crop production.

IPM (Integrated Pest Management) is such an approach, which entails ideal use of the most effective, economically safest, ecologically sustainable and sociologically acceptable combination of physical, chemical and biological methods to limit the harmful effects of crop pests. IPM is developed around the knowledge of ecology of the pest agents and takes the maximum advantage of the natural mechanism of pest suppression. There is a distorted view of IPM as pest control without chemical or biological control. In fact, IPM is based on the optimization, not elimination of chemical pesticides. The IPM approach encompasses all available control techniques to contain and combat the pest infestation with the aim of lessening the pesticides load in the environment.

Annual crop loss due to pests in India is estimated at Rs. 2000 crores per year. Pest control in India has been heavily dependent on the use of synthetic chemicals. The two crops viz., cotton and rice alone account for more than two-third of pesticides used in the country.
The main purpose of IPM programme in paddy, mustard and gram is to reduce crop losses, increase the yield, decrease pesticide usage, improve the pests monitoring mechanism, upgrade the involvement of farm men and women in IPM decision making and protect the environment on the sustainable basis.

Paddy is grown practically in all parts of the country. Wet and humid conditions associated with paddy fields provide a natural habitat to a number of friendly insects as well as crop pests. It is generally felt that in most situations, it is possible to raise a healthy rice crop without the use of pesticide, provided appropriate cultural practices are adopted. Among pulses, gram is an important crop grown in diverse soil and agro-climatic conditions. In recent years, new spectrums of pests have been found to lower the productivity of the crop. Mustard is an important oilseed crop and is ranked the second in area and production in India. Insect-pests cause moderate to heavy losses to the crop yield.

It has been often observed that farmers tend to use excessive and indiscriminate doses of pesticides particularly under irrigated conditions and also excessive doses of fertilizers. These practices are undoubtedly unsustainable. Although these problems have been well recognized for two decades, there has hardly been any Improvement in the situation.

With this background, a study entitled, “ Farmers’ perception about IPM in irrigated areas” was undertaken with the following objectives.

1. To study the awareness and knowledge level of the farmers as regards to IPM technologies for major crops.

2. To study the adoption level of IPM technologies in the cultivation of major crops.
3. To delineate the technological adoption gaps in relation to IPM practices of major crops.

4. To measure the attitude of farmers towards IPM technologies.

5. To identify various constraints affecting the adoption of IPM technologies.

6. To suggest an extension strategy for the adoption of IPM technologies.

The study was conducted in one of the district of Central Uttar Pradesh. The area falls under jurisdiction of Chandra Shekhar Azad University of Agriculture and Technology, Kanpur. Among the six divisions viz Allahabad, Kanpur, Lucknow, Arga, Chitrakoot Dham, Jhansi, Kanpur with largest area under irrigation and due to existence of the university, was most likely to have the spread of IPM technology among farmers, thus it was selected as locale of the study.

The selection of development blocks of the district was also done on the basis of random selection. Hence, two development blocks viz., Malasa and Rajpur were selected for the present investigation.

A comprehensive list of all the villages falling under jurisdiction of both the development blocks was prepared separately with the help of block records. Thereafter, ten villages, five from each block were selected on random basis.

A list of respondents (farmers) from each village was also prepared. From the each village 20 respondents were selected randomly. Thus, 200 respondents in total were selected for the final interview.

Paddy, mustard and gram crops were selected on the basis of more acreage and pest infestation. Prior to preparation of information collecting devices, a pilot
study was conducted. An interview schedule was prepared on the basis of the pilot study. The schedules were pre-tested in a village other than those selected for final investigation.

5.1 Major Findings

The major findings related to the present study are summarized here under:

1. Maximum of 67.34 per cent farmers were unaware and 32.66 per cent were found aware regarding IPM technologies.

2. 78.00 per cent of farmers were having knowledge whereas, 22.0 per cent were unknown regarding the cultural methods of IPM technologies in paddy.

3. 72.30 per cent of farmers were unknown and about 27.70 per cent were having knowledge regarding the mechanical methods of IPM technologies in paddy.

4. 77.50 per cent of farmers were unknown and about 22.50 per cent were having knowledge regarding the biological methods of IPM technologies in paddy.

5. 68.10 per cent of farmers were unknown and the rest 31.90 per cent were having knowledge regarding judicious use of the chemical methods of IPM technologies in paddy.

6. 53.75 per cent of farmers were having knowledge whereas, 46.25 per cent were unknown regarding the cultural methods of IPM technologies in mustard.
7. 76.80 per cent of farmers were unknown and 23.20 per cent were having knowledge regarding the mechanical methods of IPM technologies in mustard.

8. 90.12 per cent of farmers were unknown and 9.88 per cent were having knowledge regarding the biological methods of IPM technologies in mustard.

9. 88.70 per cent of the farmers were unknown and rest 11.30 per cent were having knowledge regarding the judicious use of chemical methods of IPM technologies in mustard.

10. 69.75 per cent of farmers were having knowledge whereas, 30.25 per cent were unknown regarding the cultural methods of IPM technologies in gram.

11. 58.00 per cent of farmers were unknown and 42.00 per cent were having knowledge regarding the mechanical methods of IPM technologies in gram.

12. 79.25 per cent of farmers were unknown and 20.25 per cent were having knowledge regarding the biological methods of IPM technologies in gram.

13. 17.20 per cent of farmers were known and rest 82.80 per cent were unknown regarding the judicious use of chemical methods of IPM technologies in gram.

14. Ranging from 21 to 41 per cent of the farmers had full technological gap of IPM practices like deep summer, ploughing, puddling before transplanting, interculture operations, removal of the previous crop residues and drainage control system where as ranges from 12 to 60 per cent had no technological gap in the same of IPM practices.
15. More than 90.0 per cent farmers have full technological gap related to mechanical method of IPM practices like collection of pests and their destruction, use of rope in standing crop, pests monitoring in paddy. Light/pheromone traps were neither adopted partially nor fully.

16. In the case of biological methods of IPM like bio-fertilizers, tolerant/resistant varieties, bio-pesticides and bio-agents gap ranging from 75 to 100 per cent.

17. Farmers ranging from 70 to 100 per cent had full technological gap in adoption of IPM practices like seed treatment, judicious use of pesticides and soil treatments in paddy. However, 10.5 per cent of farmers had no technological gaps in adoption of balanced doses of manures/fertilizers.

18. The findings regarding adoption of cultural methods of IPM technologies in mustard demonstrate that 55.5 percent of the farmers adopted deep summer ploughing whereas 44.5 per cent exhibited either partial or full gaps. Similarly about 10.5 per cent of the farmers adopted removal of the previous crop residues whereas, remaining 89.5 per cent of the farmers either adopted it partially or did not adopt it at all.

19. In relation to the mechanical methods of IPM in mustard, like collection of pests and their destruction, use of light/pheromone traps and pests monitoring, 94.0 per cent farmers had full technological gaps. However, 20.5 per cent of the farmers had no technological gaps in adoption of rouging practices.
20. Bio-pesticides, bio-agents and bio-fertilizers in mustard were neither adopted partially nor fully. Tolerant/resistant varieties were adopted by only 3.0 per cent of farmers.

21. Soil treatment in mustard was neither adopted partially nor fully. Seed treatment and judicious use of pesticides were also not adopted by more than 94.0 per cent of the farmers.

22. The findings regarding adoption of the cultural methods for IPM technologies in gram exhibited 49.0 per cent adoption of deep summer ploughing whereas 51.0 per cent demonstrate partial or full gaps of these technologies only 6.0 per cent of the farmers adopted mixed cropping with mustard/linseed whereas the remaining 94.0 per cent either adopted partially or did not adopt it at all.

23. The IPM recommendations for gram viz. collection of pest and their destruction, light/pheromone traps and pest monitoring were not adopted by more than 90.0 per cent of the farmers. However, 25.5 and 36.0 per cent of the farmers had no technological gaps in adoption of rouing and nipping practices, respectively.

24. Use of biological methods of IPM such as bio-agents like N.P.V. and bio-pesticides were neither adopted partially nor fully in gram. Bio-fertilizers and tolerant/resistant varieties were also not adopted by more than 90.0 per cent of the gram growers.

25. By more than 90.0 per cent of the farmers had full technological gaps in adoption of judicious use of Chemical Methods of IPM practices like seed treatment, judicious use of pesticides and soil treatment.
26. Attitudes of farmers were favourable as regards to IPM is sustainable for crop production, large scale use of pesticide causes consequent resurgence of pests. IPM technology protects the beneficial insects, adoption of IPM has brought remarkable improvement in the condition of farmers and IPM decreases pollution. Attitudes of farmers towards IPM technologies were unfavourable viz., the present timing of IPM is not suitable for different crops and IMP is long term and knowledge intensive activity and hence these were discarded and remaining other statements which were higher than the ‘t’ value were retained for the use of final scale.

27. The most important socio-psychological constraint was conscious vigilance if required and the least affecting constraint was conservativeness and traditional mindedness of the farmers.

28. The most important constraint related to techno-promotional constraint was perceived to be poor technical information available with the extension functionaries and the least important constraint was lack of the needed assistance for the adoption of IPM technologies.

29. Most important bio-physical constraint as felt by the farmers was non-availability of bio-agents whereas, the least important constraint affecting the adoption of IPM technologies was lack of assured irrigation facilities.

30. The most important economical constraint was found to be high cost of IPM technologies whereas, the least important constraint was difficult crop loaning.
5.2 Conclusion

The following are the important and specific conclusions emerged out of the present investigation.

- Most of the farmers are unaware about IPM technologies.
- The knowledge regarding cultural methods of IPM technologies was higher than other methods viz., mechanical, biological and judicious use of chemical methods.
- A adoption level of the cultural methods of IPM technologies in paddy is higher than those in mustard and gram.
- Highest technological gaps were found in the adoption of biological and judicious use of chemical methods of IPM technologies in all the selected crops.
- Most of the farmers were having favourable attitude towards IPM technologies.
- The major socio-psychological, techno-promotional, bio-physical and economical constraints reflected in adoption of IPM technologies were conscious vigilance, if required inadequate practical demonstrations at farmer's fields, non-availability of bio-agents and high cost of IPM technologies.
5.3 Suggestions

On the basis of the results of the study, the following suggestions are made for promoting the adoption of IPM technologies for sustainable production of paddy, mustard and gram.

- Extension efforts need to be intensified to educate farmers about different methods of IPM technologies, its application according to topography and nature of crops.
- Regular visit of extension workers should be ensured so that farmers can get the solution of any problem related to IPM immediately.
- Mechanical instruments required may be made available of good quality, timely and in required numbers.
- Diffusion of knowledge on IPM technology should be proper and effective.
- Educational extension programmes need to be collaborating among organizations and allied departments.
- Tested ITKs should be used for protection of crop.
- Adoption of IPM technology must be promoted for different groups of farmers.
- The change agents and administrators assigned with the responsibilities of extension education programmes should take care of these constraints while formulating IPM programmes for paddy, mustard and gram crops.
- IPM is to be used at the farmer’s level and, therefore, it needs to be converted from a scientist-oriented to a farmer-oriented concept.
- The recent advances in information and communication technology have provided us a unique opportunity to achieve these objectives. Computer-based interaction systems installed at the Panchayat level can help the farmers in pest identification, forecasting of pest populations, range of option available for pest management with advantages and limitations of each of these option. This will help the farmers in identifying the based on their requirements and resources.

- Exposure visit of the farmers need to be conducted on farm having successful IPM technology.