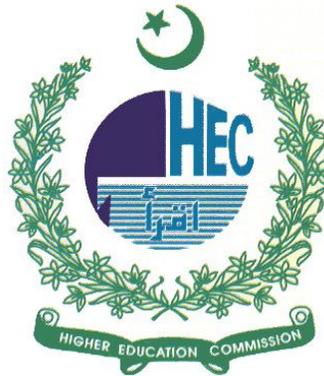


**National Agriculture Education Accreditation Council**



**Report of the  
Accreditation Inspection Committee  
(AIC)**

**Allama Iqbal Open University, Islamabad**

## **EXECUTIVE SUMMARY**

A three member committee comprising Prof. Dr. Sher Muhammad, Institute of Agri. Extension and Rural Development, University of Agriculture, Faisalabad, Professor® Fazal Karim Rajput Ex-Chairman, Department of Agri. Education, Extension and Short courses, SAU, Tandojam and Mr. Naseer Alam Khan Secretary, NAEAC, HEC, Islamabad visited Allama Iqbal Open University (AIOU), Islamabad on 20-21 December, 2012 to carryout accreditation of M.Sc. (Hons.) Agricultural Extension Degree Program. Before undertaking visit to the department, the committee thoroughly reviewed the self assessment report prepared by the Chairman Department of Agri. Extension, AIOU, Islamabad. The review process was carried out as per the TORs provided to the committee.

The meeting of the Committee started with recitation from the Holy Quraan by Prof. (R) Fazal Karim Rajput. Prof. Dr. Nowshad Khan, Dean Faculty of Sciences/Chairman Department of Agricultural Sciences and his colleagues Dr. Farhat-Ullah Khan, Engr. Shafiq Qadir Memon, Dr. Chaman Lal, Ms. Kanwal Hanif and Ms. Fouzia Anjum participated in the meeting. Dr. M Idrees Khan, Associate Professor, Agriculture University, Khyber Pakhtunkhwa also participated being one of the resource persons of the program. The accreditation exercise was conducted in a conducive environment for two full days. The review process began with a brief but comprehensive historical overview of the university by Prof. Dr. Nowshad Khan followed by a brief presentation by Engr. Shafiq Qadir Memon who covered all the academic programs offered by the Department of Agricultural Sciences. Dr. Farhat-Ullah Khan gave a comprehensive presentation about various aspects related to accreditation. He informed the committee that the Department of Agricultural Sciences was established in 1975. However M.Sc. (Hons.) Agri. Extension was started in 2001. Since then 20 post graduate students have been produced. The committee was told that the department has 07 permanent teachers, 01 Professor, 01 Assistant Professor and 05 Lecturers. One faculty member Mr. M. Tarique Tunio is on long leave abroad for Ph.D. In addition, the department has engaged 17 teachers as visiting faculty to run the academic programs.

The committee also visited the class rooms, computer Lab. and the faculty offices which were found to be well equipped and in good condition. The committee had a detail interaction with the faculty to get their views about the strengths and weakness of the program. Moreover, the committee also spent sufficient time with the students to obtain their views about the adequacy and relevance of the curriculum and its delivery mechanism besides knowing the difficulties and shortcomings in the ongoing program of the department. We had a very lively discussion with the students and the faculty.

The committee also got the opportunity to meet with the worthy Vice Chancellor in his chamber along with the Dean, Faculty of Sciences. The Vice Chancellor extended a warm welcome to the committee and briefed about various steps being taken to improve the quality of education especially the establishment of video conferencing facilities all over the country.

## COMPOSITION OF AIC

### AIC Committee

- |      |   |                  |
|------|---|------------------|
| i.   | Prof. Dr. Sher Muhammad<br>Inst. of Agri. Extension & Rural Development, UAF                                  | Convener         |
| ii.  | Prof. (Retd.) Fazal Karim Rajput<br>Ex-Chairman, Dept. of Agri. Extension and Short Courses, SAU,<br>Tandojam | Member           |
| iii. | Mr. Naseer Alam Khan<br>Secretary – NAEAC   | Member/Secretary |

### TORs of AIC

- To validate the self-assessment report (SAR) of degree in M.Sc. (Hons.) prepared by the department/discipline.
- To carryout external evaluation of the degree programs in a transparent, neutral, holistic and participatory manner for accreditation and rating of degree program **based on the evaluation criteria of NAEAC.**
- To submit synthesized and concise analytical report (7-8 pages) consisting of short introduction, brief criterion-wise analysis, **self-explanatory SWOT analysis and explicit actionable recommendations along with completely filled-in and signed evaluation manual (toolkit)** based on the validation of SAR and interaction with the Chairman, faculty members, students and support staff and alumni as well as detail on-site visit of physical infrastructure, facilities and other teaching- learning resources available for the offering of degree program.
- To submit clear, precise and justified actionable accreditation and rating recommendations about the degree programs to the Chairman NAEAC.

## **History and Background of Degree Program**

AIOU, Islamabad was established in 1974 as a distance learning institution offering various academic programs especially to those students who could not continue their education in a formal way due to job or some other factor(s). In 1975, an independent Department of Agricultural Sciences was established. However M.Sc. (Hons.) Agri. Extension was started in 2001

## **Mission and Objectives of M.Sc. (Hons.) Degree Program**

The mission of the department, through offering the degree program through distance learning, is to produce technically trained and professionally competent graduates who could better serve the farming community. The department through this degree program aims to achieve the following objectives:

- To improve the level of knowledge of students in extension methodologies.
- To impart extension skills for improving diffusion and adoption of innovations.
- To improve ability and self confidence of students to serve as effective extension workers.
- To promote human resource development in agricultural extension.

## **CRITERION WISE ANALYSIS**

### **Strength and Quality of Faculty**

The committee was told that the Department of Agricultural Sciences has seven permanent faculty members with different specializations. One faculty member is abroad on study leave. There are only two faculty members who possess Ph.D degrees in Agri. Extension while others are having master degrees in various disciplines other than Agri. Extension. In addition, the department has 17 teachers on its list of visiting faculty who are engaged as resource persons from time to times in workshops which is a regular feature of its academic programs. Out of 17 resource persons, 10 are specialized in Agri. Extension and almost all have Ph.D degrees (see appendix 1). The faculty members have a service experience ranging between 2 and 35 years and possess adequate capacity to effectively deliver the curriculum. The effective delivery of the prescribed curriculum in order to achieve better academic standards can mainly be enhanced by

inducting capable and competent faculty on regular footings as per requirements and the limit fixed by the HEC. Since it is a distance learning institutions, it requires relatively less regular faculty. Presently there are two regular faculty members who are specialized in Agri. Extension. Addition of two faculty members with the said specialization would be sufficient to effectively run the program.

Generally the faculty uses interactive approach and encourages students' participation in discussion. Multi-media are used besides reliance on lecturing combined with the use of white boards. During the interaction with the students, the committee observed that they were generally satisfied with curriculum delivery except few shortcomings like lack of practicals and non availability of latest teaching material in the farm of text/reference books. Teaching is done through tutorial system established all over the country however workshops are arranged twice a year at the main campus in which the attendance of the students is compulsory.

It is important to note here that AIOU, Islamabad offers a special sort of teaching learning environment (distance learning) in which teacher and taught have a very occasional face to face contact and follows its own curricula. Therefore, the students produced have no comparison with those of other universities, which deliver in a face to face mode in which it is mandatory for students to attend regular classes.

### **Curricula Design and Development**

Dr. Farhatullah Khan, Coordinator Agri. Extension presented the curricula offered by the department to the students of M.Sc. (Hons.) Agri. Extension. He told that the curricula were periodically reviewed and revised by the Board of Studies, and Board of Faculty. The curricula were thoroughly examined by the committee and many shortcomings were observed. The curricula lack practical contents. Deficiency courses for the students who do not have background in Agri. Extension were not clearly defined. The committee desired to have clear cut list of deficiency courses to be offered to such students. The committee emphasized the need to conduct a thorough review of the existing curricula with the participation of all stakeholders. Hopefully, as a result of this exercise, the faculty would revisit and update the contents of each course and address the issues of overlaps, redundancy and other shortcomings.

## **Infrastructure and Learning Resources**

The committee also paid visit to the main library. The Librarian briefed the committee about the procedure for using library. He informed that there was a good collection of books related to various disciplines and subjects including Agri. Extension. Sufficient funds were available for purchase of books. When the demand for new books comes from the departments, it is immediately processed to get necessary approval. The books if available in the market are purchased and supplied to the concerned department within short time. He also informed the committee that computer and internet facility is available in the library for all students. However, the list of books provided by the department (see appendix 2) depicts that most of the books are irrelevant and outdated.

The committee also visited the class rooms and laboratories of the department. The department has three class rooms for teaching and three laboratories which are fully equipped with necessary equipment. Multimedia facility is available in the class rooms. Computers with internet facilities are provided to all faculty members and supporting staff of the department.

During interaction with the students, the committee was informed that the hostel facilities in the university and other physical infrastructure in the department are quite sufficient and reasonably good. At present there are two hostels for students and the visiting faculty. The students were quite satisfied with the available hostel facilities.

## **Student Support and Progression**

**Cultural and Co-curricular Activities:** Since the students belong to different areas scattered all over the country and they get education as distance learning, still their grooming in cultural activities, including adequate exposure to cultural and co-curricular activities seems critical to their success in the field. At present there existed no society of students in the department which could organize such co-curricular activities. The students need to be motivated and encouraged to have such form and participate actively to further polish their personalities.

**Developing Application Skills:** The objective of developing application skills can be achieved through the practical work assigned to the students. Although most of the students already have field experience yet special exposure visits and practical contents would have positive impact on the curriculum delivery process. Presently, there is no formal system of exposure visits for the students, even in the case of more demanding practical subjects, practical contents are missing.

Therefore, special focus is required on this area to improve the practical skills of the students through including practical contents in the curriculum.

**Class Attendance/Discipline:** Since it is a distance learning program, regular attendance is not mandatory. However during workshops which are held twice a year, the students' attendance is compulsory. Those who fail to meet the minimum requirement (80%) are barred from appearing in the final examination. However in the tutorial meetings the attendance is not compulsory, the students visit their respective tutors as and when they need any guidance.

**Class Assignments:** Though class assignments weigh 30% in the final score/grade, these are less frequently checked by the respective tutors properly which limits the positive effect of assignments in deepening the understanding of the subject matter and in improving their analytical and presentation skills. Class assignments are of great significance particularly for self learning of the students and deserve to be adopted as an effective teaching learning tool. The students should be discouraged to copying the material word by word. The topics for class assignments should be carefully selected so that the students could not get readymade material either from print or electronic media. Feedback to the students relating to their assignments should also be provided so that they may know their shortcomings. There should be some mechanism through which the regular faculty could monitor the marking of assignments by respective tutors. They may check some assignments at random, if not all.

### **Research and Consultancy Activities**

**M.Sc. (Hons.) Thesis Research:** The students enrolled in the M.Sc. (Hons.) program have to complete thesis research and successfully defend it before an external examiner. Thesis research helps in building analytical skills of the students and in nurturing a research culture among them. Research topics are generally selected by the students in consultation with the respective supervisor. In the absence of adequate experienced and regular senior faculty to supervise thesis research, the analytical rigor and methodological procedures, quite often get compromised. The students are encouraged to seek guidance/assistance from the supervisors as and when required. However students face many problems with regard to research guidance when they select research supervisor out of field or even when they take supervisors from agriculture department/extension organizations (other than agricultural universities). The committee

however went through a few approved research synopses which revealed some technical mistakes. The same were discussed with the potential supervisors so that in future such mistakes may not be repeated. It is hoped that by addressing the issues relating to research synopses the thesis quality would certainly be improved.

### **Governance and Leadership**

From the interaction that the committee had with the faculty and students, positive impression about their overall morale and commitment was seen. The faculty appeared to be quite satisfied with their performance. A good working environment existed in the department, cohesion among the faculty members was observed, which indicates good governance. The committee got the opportunity to have a meeting with the worthy Vice Chancellor in his chamber. He was so kind that he spared some time from his busy schedule as he was going abroad to perform 'umra'. He extended warm welcome to the committee members and asked about their observations about the accreditation experience. The Vice Chancellor briefed the committee with various initiatives being taken by the university for quality education like establishment of video conference facilities at different locations. The committee was impressed by the leadership qualities of the Vice Chancellor and the initiatives taken by him. In the end he prayed to Allah Almighty for better future of the university and that of the country. The Vice Chancellor also honored the committee members with the university shields as a token of respect which will be remembered for a long time.

### **Recent Innovations and Best Practices**

In order to improve the academic standard the faculty has introduced participatory teaching learning techniques. The faculty regularly arranges workshops at the main campus relating to various courses. Teaching is mostly done through multi-media, which is a healthy sign. It is hoped that with the inclusion of latest books, revision of curricula, proper monitoring of assignments' evaluation process and selection of relevant and competent research supervisors, the teaching and research quality would be improved.

## **SWOT ANALYSIS**

### **Strengths**

- Well qualified and experienced visiting faculty.
- Good coordination among the faculty members and supporting staff.
- Excellent infrastructure: Faculty offices well furnished with computer and internet facilities.
- Good seating and light arrangement in class rooms and laboratories.
- Multimedia available in the class rooms and laboratories.
- Good library services available even after office timings.
- The department has sufficient operational budget to carryout academic programs.
- The academic program is being run as a distance education, which provides opportunity to those interested students who could not continue their education as a regular student to improve their qualification.

### **Weaknesses**

- Lack of attendance of students in attending fortnightly tutorial classes.
- No practical classes conducted to demonstrate the extension skills of the students.
- Assignments are copied from the books word by word, generally students do not write assignments in their own words.
- Lack of latest text/reference books relevant to courses offered in M.Sc. (Hons.) program.
- Shortcomings in the scheme of studies (inadequacy of contents, lack of latest books, lack of practical contents etc.)

### **Opportunities**

- Expanding demand for quality education in the field of agricultural extension.
- There is great number of employees who want to improve their qualification but for want of study leave they cannot do so as a regular student. So AIOU provides opportunities to such interested students.
- Private companies and NGOs doing extension work can be the main employers for agriculture extension graduates.
- Close linkages with the department of agricultural extension can be helpful for training of M.Sc. (Hons.) Agri. Extension students in the field to demonstrate extension techniques and skills,

## **Threats**

- Competition with other agricultural universities offering similar programs.
- Competition with other disciplines of the university within the university.
- Students do not acquire practical skills because no practical classes are conducted. This may adversely affect their performance in the field.
- No preference given to extension graduates for appointment to the posts of Agriculture Officers by the Public Service Commission
- Quite often the students face difficulty in getting their leaves sanctioned from their respective organizations to attend the workshops at AIOU, Islamabad.

## **ACTIONABLE RECOMMENDATIONS**

- Priority attention needs to be given to design a mechanism to monitor the evaluation process of assignments by the respective tutors. Appropriate measures need to be taken at central level to discourage copying of assignments word by word from the course material provided by the university.
- At least two more faculty members should be inducted on regular basis.
- Opportunities and incentives should be provided to the faculty for preparing research proposals on agriculture extension.
- There is dire need to review and revise the scheme of studies of M.Sc. (Hons.) to avoid overlapping of courses/duplication of course contents.
- Some agricultural courses of applied nature should be included in the scheme of studies at post graduate level.
- Due attention should be given on post-graduate research undertaken by M.Sc. (Hons.) students. The research supervisors should be selected from agricultural universities rather than field.
- The existing trend of faculty research seems to be weak, which needs to be strengthened. The faculty should place higher value on post-graduate research undertaken by the students besides focusing on faculty research. The research topics should be identified carefully and collectively through brain-storming sessions, for which experienced persons could be invited.

- Sufficient latest books/reference material should be made available in the library.
- There should be clearly defined deficiency courses for the students who get admission in Agri. Extension with no extension background (students who have not studied extension as a major subject at their under graduate level.

## APPENDIX 1

### FACULTY PROFILE

#### FULL TIME FACULTY MEMBERS

S.#	Name and Designation	Qualification	Specialization	Experience (Years)
1	Prof. Dr. Nowshad Khan, Dean	PhD Post Doc	Agricultural Extension	32
2	Dr. Farhat Ullah Khan	PhD	Agricultural Extension	18
3	Engr. Shafique Qadir Memon	ME	Agricultural Engineering	18
4	Dr. Chaman Lal	MSc (Hons.)	Livestock Management	7
5	Ms. Kanwal Hanif	MSc (Hons.)	Entomology	3
6	Ms. Fouzia Anjum	MSc (Hons)	Horticulture	2
7	Dr. Muhammad Tarique Tunio (On study leave abroad)	MSc (Hons.)	Livestock Management	5

#### VISITING FACULTY

S.#	Name and Designation	Qualification	Specialization	Experience (Years)	Address/Phone /Cell No. & Email
1	Prof. Dr. Sher Muhammad	PhD	Agricultural Extension	30	Institute of Agri. Extension, UAF <a href="mailto:sherext@uaf.edu.pk">sherext@uaf.edu.pk</a> Ph. 041-9201075
2	Prof. Dr. Tanvir Ali Director	PhD	Agricultural Extension	32	Institute of Agri. Extension and Rural Development, UAF 041-920086
3	Dr. Khalid Mehmood Choudhry	PhD	Agricultural Extension	25	Institute of Agri. Extension and Rural Development, UAF

	Associate Professor				Ph.0300-7672759
4	Dr. Muhammad Idrees Associate Professor	PhD	Agricultural Extension	20	Department of Agricultural Extension, Agriculture University, Peshawar Ph.0334-9164192 <a href="mailto:dridreesext@yahoo.com">dridreesext@yahoo.com</a>
5	Dr. Ikram Saeed Director	PhD	Agricultural Economics	20	Directorate of Agribusiness and Marketing, PARC, Islamabad.
6	Dr. Muhammad Zafrullah Khan Associate Professor	PhD	Agricultural Extension	20	Department of Agricultural Extension, Agriculture University, Peshawar
7	Prof. Dr. Sarwat N. Mirza Dean	PhD	Range Forestry	20	Dean, Faculty of Forestry, Range Management, PMAS University of Arid Agriculture, Rawalpindi
8	Dr. Muhammad Ashraf Sahibzada Director (Retd.)	PhD	Agriculture	25	Technology Transfer Institute NARC, Islamabad H#714, St# 70, I-8/3 Islamabad.
9	Dr. Khalid Masood Director (Retd.)	PhD	Agricultural Extension	25	437-C ST,-5 River Avenue, Gulraiz-4 Rawalpindi
10	Dr. Ejaz Ashraf Assistant Professor	PhD	Agricultural Extension	18	Dept. of Agri. Extension, University of Sargodha
11	Dr. Muhammad Tahir Ali Shah Deputy Director	PhD	Agricultural Extension	20	Deputy Director (Curriculum) HEC, Islamabad
12	Muhammad Ali Lecturer	MSc (Hons)	Agricultural Extension	5	Department of Agricultural Extension, PMAS University of Arid Agriculture, Rawalpindi <a href="mailto:muhammadali@uair.edu.pk">muhammadali@uair.edu.pk</a> 0333-650689
13	Dr. Muhammad Azeem Chief Scientific Officer	PhD	Agricultural Economics	20	Social Sciences Division, NARC, Islamabad
14	Dr. Badar Naseem Siddique Chairman/Associate	PhD	Agricultural Extension	15	PMAS, University of Arid Agriculture, Rawalpindi

	Professor				Email: <a href="mailto:abq67@yahoo.com">abq67@yahoo.com</a> <a href="mailto:drbadar@pde.com.pk">drbadar@pde.com.pk</a>
15	Sheikh Abdul Latif Associate Professor (Retd.)	MS	Agricultural Education	30	C/O AIOU, Islamabad
16	Prof (Retd.) Fazal Karim Ex. Dean	MSc (Hons)	Agriculture	30	Sind Agriculture University Tando Jam
17	Dr. Muhammad Zakriya Assistant Prof.	PhD	Statistics	20	Allama Iqbal Open University, Islamabad

## APPENDIX 2

### LIST OF BOOKS

1. Maunder, H (1984) Agricultural Extension a Reference Manual. Food and Agriculture Organization of the United Nations, USA.
2. Muzaffar Hussain, Agricultural Extension in Islamic Cultural Milieu.
3. Rivera, W.M. (1987) Agricultural Extension Worldwide: issues, practices and emerging priorities, London, Croom Helm.
4. Abdul Ghafoor, 100 years of excellence education & research - University of Agriculture, Faisalabad.
5. FAO (1976). Training for Agriculture and Rural Development – FAO, Rome.
6. FAO (1977). Training for Agriculture and Rural Development - Food and Agriculture Organization of the United Nations, Rome.
7. GOP (1990). Census of Agriculture Province Report NWFP Agricultural Census Organization, Economic Affairs and Statistics Division, Lahore.
8. GOP (2004). 3<sup>rd</sup> National Seminar on Drainage in Pakistan. NWFP Agricultural University Peshawar.
9. Radwan Samir (1983).Agrarian policies and rural poverty in Africa. Geneva International Labor Organization, Geneva.
10. CENTO (1972).Agricultural aspects of arid and semi-arid zones - CENTO, Tehran.
11. Kumar Singh Ajit (1987). Agricultural development and rural poverty. New Delhi.
12. UAF. Agricultural Education - University of Agriculture Press, Faisalabad.

13. Tarrant, John. R. (1974). *Agricultural Geography*.
14. Martin. *The Agricultural Handbook: A guide to terminology*, Blackwell Science, Oxford.
15. Hewitt, E.C (1968) *Agricultural Science for Schools & Colleges - Crosby Lockwood & Son; London*.
16. GOP (2006). *Agricultural Statistics of Pakistan, Ministry of Food Economic Wing; Islamabad*.
17. *Agricultural strategies in 1990's issues and policies - Pakistan Association of Agricultural Social Scientists; Islamabad*.
18. Briggs David J. *Agriculture and Environment the Physical Geography of Temperate Agricultural Systems-Longman, London*.
19. Haen Hartwig (1985). *Agriculture and International Relation Analysis and Policy-St. Martin's Press, New York*.
20. William T Coyle (1992) *Agriculture and Trade in the Pacific Toward the 21<sup>st</sup> century – West View Press ; Bouldern*.
21. *Agriculture Book -2, Fields Crops - Macmillan; New York*.
22. Lenka Kanhu Charan (1992). *Agriculture for Rural Transformation-Indian Council of Agriculture Research ; New Delhi*.
23. Ghosh Rabindra Nath (1977). *Agriculture in Economic Development: with special reference to Punjab - Vikas ; New Delhi*.
24. Saeed, Hafeez (1975). *Agriculture in Pakistan; Islamabad*.
25. Muhammad, A. S. *Agriculture in Sindh Issues and Options – SZABIST, Karachi*.
26. Wilson Peter Northcote (1980). *Agriculture in the Tropics - E L B S, London by Webster C*.
27. Conze Peter. *Agriculture in the winds of change - Bismarck; Somalia*.
28. *Agriculture People and the Land Teacher's Guide - Allyn and Bacon, Boston*.
29. Philps. Michael (1971). *Agriculture-I. The Diffusion of Ideas through the Agricultural Community*.
30. Philps, Michael (1971). *Agriculture-II the Swing of Specialization*.
31. Philps, Michael. (1971). *Agriculture-III Government and Policy*.
32. Supe S V. (1983). *An introduction to extension education-Oxford ; New Delhi*.
33. UAF. *An introduction to the Socio Economic Research Project (Part 1) –UAF*.

34. Applications of Dynamic Programming to Agricultural Decision Problems - West view; Boulder.
35. Andrew Chris (1993). Applied Agricultural Research Foundations and Methodology – West view; Boulder.
36. Jakson, I.J (1977). Climate, water and agriculture in the tropics-Longman; London.
37. Saini, S.K. ( 2011). Commercial Agriculture Satish Serial Publishing House, ; Delhi.
38. Ramsmussen William W (1985) Computer Application in Agriculture – West View: Boulder.
39. Shagufta (2011). Cropping and Farming Systems - A. P. H. Publishing Corporation, New Delhi.
40. Crops and Cropping in Pakistan ; Islamabad.
41. GOP (2006). Crops Area and Production. Ministry of Food Agriculture economic wing ; Islamabad.
42. Dictionary of Agriculture. - Elsevier Science Ltd, Amsterdam.
43. Directory of Current Research in Agriculture - National Science Council of Pakistan, Islamabad.
44. I.S. MacDonald (1977). Distance Learning Programme for Agriculture. People's Open University Pakistan.
45. Gittinger, J Price (1976). Economic analysis of agricultural projects - Johns Hopkins University Press; Baltimore.
46. Gupta & Mohan Prakash (1984). Education Systems Analysis and Reforms with Special Reference to Agricultural Education – Agricola Publishing Academy; New Delhi.
47. Encyclopedia of Agricultural Science - Academic Press; San Diego.
- 48 Bowers Wendell (1973). Engineering Applications in Agriculture - Stips; Illinois.
49. Rajab Ali Memon (1997). Extension Methods - National Book Foundation; Islamabad.
50. Facts and Figures for Farmers - Missouri; St Louis, year of publication 1974.
51. UAF (2006). Farmer Friendly Technologies. University of Agriculture; Faisalabad.
52. Farming and Food in the Third World\_- National Book Foundation; Islamabad
53. Bramley Margaret (1965). Farming and Food Supplies-Goerge Allen & Unwin ; London.
- 54 Gagg J C (1975) Farms and farming-Blackwell; Oxford.
- 55 Hopkin, John A (1973). Financial Management in Agriculture - International Printers; Danville.

56. Food and Agriculture Profile of the Muslim World.
57. Rao, A. N. Food, Agriculture and Education - ICSU Press; Oxford.
58. Tata, S. N. (1989). Forty Years of Agricultural Research and Education in India-Indian Council of Agricultural Research ; New Delhi.
59. GOP (2006). Fruit, Vegetables and Condiments Statistics of Pakistan. Ministry of Food, Agriculture and Livestock; Islamabad.
60. Mosher, A. T. (1966). Getting Agriculture Moving Essential for Development and Modernization - Frederick; New York.
61. Whyte, R. G . (1959). Grasses in Agriculture - FAO; Italy.
62. Zaheer Iqbal Qazi (1975). Grooming the Punjab farmers for a green revolution - Punjab Board of Economic Inquiry; Lahore.
63. Komal Kumar Jain (1990). Growth of instability in agriculture - Himalaya; Bombay.
64. *Duke, James A* (1987) Handbook of agricultural energy potential in developing countries /- CRC Press Inc, Boca Raton.
65. Pimentel, David.(1980) Handbook of energy utilization in agriculture / - CRC Press, Boca Raton
68. Phipps, Lloyd J.(1959) Handbook on teaching vocational agriculture - Interstate ; Danville, Ill.
66. Nagpal, C.S. (1993) Indian Agriculture - Anmol Puublications ; New Delhi.
67. Slyke, Craig Van (2008).Information communication technologies: concepts, methodologies, tools, and applications. Information Science Reference, New York.
68. Kozak, A. (2008). Introductory probability and statistics: applications for forestry and natural sciences.
69. Dr. Nazir Ahmad (1988). Irrigated agriculture of Pakistan.
70. Lectures on agrarian transformation in Pakistan (198) - The Author; Islamabad.
71. Lectures on agricultural growth and employment - The Author; Islamabad.
72. Mass media for agricultural extension in Malawi (1982). International Extension College; Cambridge.
73. Butterworth Bill Materials handling in farm production a guide to the control of handling costs on the farm - Granada ; London.
74. Farouk.A. Modernizing subsistence agriculture an experimental survey - University of Dacca.

75. Weiss E A. (1983) Oilseed crop - Longman; London.
76. Saeed Hafeez. Pakistan agricultural revolution\_ - Press Corporation; Karachi.
77. Dr Abdul Ghafoor & Abdul Naveed ()Post Graduate Research Glimpses\_ - University of Agriculture ; Faisalabad.
78. Pandey, P.H. (2009) Post harvest technology and management Solution bank\_- Kalyani Publishers, Ludhiana.
79. Sanjay Kumar, Er. (2010). Principles and application of technologies in agriculture farm machinery - Kalyani Publishers, Ludhiana.
80. Jain, Alok. (2006). Professional communication skills / - Chand (S.) & Co Ltd, India, New Delhi:
81. Venkateswarlu, K. Project management techniques for research and development in agriculture\_- Sterling; New Delhi.
82. Reforming agricultural education in Pakistan (1992) Asian Agro. Dev. International; Islamabad.
83. Research extension linkages for effective technology transfer Oct, 26-30 1980 - NARC , Islamabad.
84. The rural world : Education and development / - Croom Helm, ; London by Malassis, Louis.
85. Nawab Haider Naqvi, Syed Structural Change in Pakistan's agriculture - Pakistan Institute of Development Economics; Islamabad
86. [Gowda, M.V.Srinivasa](#), Studies in agricultural development - Deep & Deep Publications; New Delhi
87. Teacher education in agriculture - Danville; Illinois
88. Technology options and economic policy for dry land agriculture: potential and challenge - Concept Publishing; New Delhi.
89. Rhodes, V. James. The agricultural marketing system - Grid Publishing; Columbus.
90. Training for agriculture and rural development - FAO; Rome.
91. Wrigley Gordon. Tropical agriculture the development of production - E L B S; Essex
92. Rao, C. H. Hanumantha. Unstable agriculture and droughts: implication for policy - Vikas Publishers; New Delhi.

