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Rawalpindi

Department of Horticulture
B.Sc. (Hons)
Self-Assessment Report
2012-14

Program Self-Assessment Team
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Introduction

Department of Horticulture started working with the establishment of the Barani Agricultural College in 1979. The department began B.Sc. (Hons) agriculture and the subject gained the status of major discipline for undergraduate students in 1986. All the teachers in the department involved in the various projects (topics include pathogen-free crop, soilless cultivation, soil-based crops, bulb crops, medicinal plants, the use of edible coatings to improve the shelf life of organic farming, protected cultivation of different vegetables, and the use of biotechnology tools for crop improvement), thereby Share horticulture. The Department received a significant response from here onwards. The department has been produced by famous horticulturist contribute to the country in different capacities. The department has the responsibility to advance high standards of teaching and research in horticulture area.

In horticulture, gardening plans to develop understanding of the issues of establishing the necessary skills. Its curriculum emphasizes the important aspects of plant emergence of Pakistan's economy out of the issue. In addition, crop management was given a lot of importance in the curriculum. In addition, the new, modern technology has been introduced, were excellent research.

The department of horticulture not only generate and extend knowledge for enhancing the food quality but also improve the environmental condition of our people. Between our countries, horticultural landscape design company to develop interest in the focus of men and women students. Therefore, due to overwhelming response, the department is focused on providing all possible facilities linked polished and training with other organizations such students, the future of the practice.
SECTION 1

Components of Self-Assessment Process

This report has been prepared on the basis of criteria as guided by the Self-assessment manual.

Criterion-1: PROGRAM MISSION, OBJECTIVES AND OUTCOMES

Introduction

The Department of Horticulture provides students with the knowledge and ability to job performance in a changing world. Horticulture is a diverse profession that encompasses all aspects of crop production and crop management. The aim of the department is to increase the production yield, quality and profit through the use of crop possessions. Given more emphasis on qualitative and quantitative improvement of horticultural crops through the use of modern techniques of horticultural crop production. The introduction, evaluation, characterization and development of horticultural crops are continuous processes of teaching and research at under-graduate level.

Standard 1-1: The program must have documented measurable objectives that support faculty / college and institution mission statement.

Mission Statement of the B.Sc (Hons) Program

The mission of the B.Sc (Hons) Program is to educate and provide training for B. Sc. (Hons.) Agri. Students by increasing the scientific knowledge and skills to enable them productive. The goal of the Department of Horticulture is to give knowledge quality education and research-oriented education, the expansion of horticulture.

Programme Objectives of the Department

1. Development & Strengthening of Horticulture Department for imparting sound footing education to B.Sc. students
2. To contribute basic and applied high quality knowledge and skills in the field of horticulture applying highly advanced analytical techniques for crop management and improvement.
3. To lead students and conduct research on advanced scientific lines in the field of horticulture.
4. To counter new problems in Horticulture.

**Main Elements of Strategic Plan to Achieve Mission and Objectives**

1. Growth of sound training system based on occurrence and vision gathered by developing diversity in bachelor course contents.
2. By frequently revising and updating the basic core and elective courses as well as study tours.
3. By imparting the practical knowledge and laboratory skills to the undergraduate students.
4. The students were imparted basic theoretical and practical knowledge.

**Expected Outcome**

1. The students’ vision and in depth approach will be more extensive.
2. The quality, confident and well equipped human resource development will be achieved in the field of horticulture.
3. The incorporated knowledge of allied fields will help to develop the confidence of students, consequently crop productions will increase.
4. The smooth, dynamic and problem; free progress will continue in the area of horticulture.
<table>
<thead>
<tr>
<th>Objective</th>
<th>How Measured</th>
<th>When Measured</th>
<th>Improvement Identified</th>
<th>Improvement made</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Development &amp; Strengthening of Horticulture Department for imparting sound footing education to B.Sc. students</td>
<td>On the basis of recognition of Horticultural crops in the area and determining their impact</td>
<td>During the conductance of examination and SAR in each semester</td>
<td>Facilities provided for teaching are not sufficient</td>
<td>Teaching method have been revised in order to make them more attractive and understandable</td>
</tr>
<tr>
<td>2 To contribute basic and applied high quality knowledge and skills.</td>
<td>knowledge of students was measured through conducting exams during the semester</td>
<td>At the time of admission or semester</td>
<td>Some new courses need to be included in the curriculum</td>
<td>Curriculum changes have been made on required basis</td>
</tr>
<tr>
<td>3 To lead students and conduct research on advanced scientific lines in the field of horticulture.</td>
<td>Through training courses</td>
<td>Regular activity</td>
<td>Related subject to be recommended or studied</td>
<td>Improved better then before and continued</td>
</tr>
<tr>
<td>4 To counter new problems in Horticulture.</td>
<td>Through discussion, consultation and practical implementation with the farmers</td>
<td>Regular activity</td>
<td>New courses to be included in curriculum, research on new problem</td>
<td>Recommendation of new curriculum is suggested</td>
</tr>
</tbody>
</table>
Standard 1-2: The program must have documented outcomes for graduating students. It must be demonstrated that the outcomes support the program objectives and that graduating students are capable of performing these outcomes.

PROGRAM OUTCOMES

The program outcomes are tabulated in the following Table 2. Each program aligned in the table with each objective

<table>
<thead>
<tr>
<th>Program Objectives</th>
<th>Program Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>XX</td>
</tr>
<tr>
<td>2</td>
<td>XX</td>
</tr>
<tr>
<td>3</td>
<td>XXX</td>
</tr>
<tr>
<td>4</td>
<td>XX</td>
</tr>
</tbody>
</table>

X: - Relevant
XX: - Relevant and Satisfactory
XXX: - Very Relevant and Very Satisfactory
Performa 1 & 10 Course and Teacher Evaluation (2012-14)

Teacher Evaluation

Dr. Imran Hassan

Data were collected from 16 students. The evaluation criteria parameters showed that the 64% of the students strongly agreed, 28% agreed, 7% uncertain, 0% disagreed, and 0% strongly disagreed that the instructor was prepared for each class. The data of other parameters inferred that major proportion of the students is agreed that the teacher is fair in examination; the instructor came with good preparation. Instructor demonstrates knowledge of the subject, instructor had completed the whole course, the Instructor provided additional material apart from the textbook, the Instructor gave citations regarding current situations with reference to Pakistani context, the Instructor communicates the subject matter, the Instructor shows respect towards students and encourages class participation effectively, the Instructor maintained an environment that was conducive to learning, the Instructor arrived on time, the Instructor returned the graded scripts etc. in a reasonable amount of time, the Instructor was available during the specified office hours after class for consultations, the Subject matter presented in the course has increased their knowledge of the subject, the syllabus clearly states course objectives requirements, procedures and grading criteria, the course integrates theoretical course concepts with real-world applications, and the assignments and exams covered the materials presented in the course, the course material is modern and updated.

Comments/Suggestions:

1. The teacher always relates the course topics with his practical incidents under the local environmental conditions for proper understanding of the students.
2. The teacher’s attitude was affable during and after his lectures with the students.
3. The pace of course covering was commendable and understanding of the theme of the course was also appreciable.
Course Evaluation
HORT-301 3(2-2) Introduction to Horticulture
Dr. Imran Hassan

Cumulative graph regarding students' opinion for course evaluation questionnaire revealed that most of the students showed strong agreement to the question asked regarding the various aspects of course taught like, course objectives, class environment, ideas presented, course organization etc. A good number of students showed agreement; however few were uncertain or disagreed to the questions asked.
Teacher Evaluation: Ms. Najma Yousaf Zahid

Data were collected from 27 B. Sc. students. The individual parameter showed that 60% the students strongly agreed, 38% agreed, 2% uncertain, 0% disagreed and 0% strongly disagreed that the course objectives were clear. The data of other parameters inferred that major proportion of the students are agreed that the teacher was fair in examination, came with good preparation, the instructor demonstrates knowledge of the subject, instructor had completed the whole course, the Instructor provided additional material apart from the textbook, the Instructor gave citations regarding current situations with reference to Pakistani context, the Instructor communicates the subject matter, the Instructor shows respect towards students and encourages class participation effectively, the Instructor maintained an environment that was conducive to learning, the instructor arrived on time, the Instructor returned the graded scripts etc. in a reasonable amount of time, the Instructor was available during the specified office hours after class for consultations.

Comments/Suggestions

1. Kind and good teacher with amiable and parental attitude with the students.
2. Always teaches his practical experiences to make the understanding of the subject effective.
3. Course was accomplished in appropriate time and was very motivating.
As per cumulative graph pertaining to students course evaluation Performa, around 47% students showed strong agreement to the questions asked whereas most of them showed agreement. Small numbers of students were uncertain in answering the questions.
**Teacher Evaluation**

Dr. Shahid J. Butt

Data were collected from 43 B.Sc. students. The individual parameters showed that the 73% of the students strongly agreed, 24% agreed, 3% uncertain, 0% disagreed, and 0% strongly disagreed that the teacher is fair in examination. Most of the students agreed that the instructor came with good preparation in each class. Most of the students agreed that instructor demonstrates knowledge of the subject and completed the whole course, he provided additional material apart from the textbook, Citations regarding current situations were imparted, communicates the subject matter, shows respect towards students and encourages class participation effectively, the instructor maintained an environment that was conducive to learning, the instructor arrived on time, the instructor returned the graded scripts etc. in a reasonable amount of time, the instructor was available during the specified office hours after class for consultations, the Subject matter presented in the course has increased their knowledge of the subject.

**Comments/Suggestions**

1. General information given by teacher based on his practical experience from the prevalent environment was indeed very effective.
2. Good behavior of the teacher and was available any time.
3. Course was completed in due time and was very interesting.
The aggregate analysis of Performa 1 revealed that around 61% of the students strongly agreed to the various aspects of course evaluation questionnaire like course objectives, work load, feedback on assessment, usefulness of material in practical etc. Whereas, many of them showed general agreement. About 08% students were uncertain and are disagreed in answering their responses.
Teacher Evaluation

Dr. Amjad Farooq

Data were collected from 36 B.Sc. students. The individual parameters showed that the 60% of the students strongly agreed, 27% agreed, 7% uncertain, 6% disagreed, and 0% strongly disagreed that the teacher is fair in examination. Most of the students agreed that the instructor came with good preparation in each class. Most of the students agreed that instructor demonstrates knowledge of the subject, instructor had completed the whole course, the Instructor provided additional material apart from the textbook, the instructor gave citations regarding current situations with reference to Pakistani context, the instructor communicates the subject matter, the instructor shows respect towards students and encourages class participation effectively, the instructor maintained an environment that was conducive to learning, the instructor arrived on time, the instructor returned the graded scripts etc. in a reasonable amount of time, the instructor was available during the specified office hours after class for consultations, the Subject matter presented in the course has increased their knowledge of the subject.

Comments/Suggestions

1. General information given by teacher based on his practical experience from the prevalent environment was indeed very effective.
2. Good behavior of the teacher and was available any time.
3. Course was completed in due time and was very interesting.
A perusal of Performa 1 depicted that about 43% students strongly agreed to different aspects of course evaluation questionnaire. However, around 37% students were satisfied with the class environment, assessment, L&T method etc. Only a few students were uncertain and disagreed.
Data were collected from 22 students. The evaluation criteria parameters showed that the 79% of the students strongly agreed, 21% agreed, 0% uncertain, 0% disagreed, and 0% strongly disagreed that the instructor was prepared for each class. The data of other parameters inferred that major proportion of the students are agreed that, the performance and expertness of the teacher, the instructor came with good preparation. Instructor demonstrates knowledge of the subject, instructor had completed the whole course, the Instructor provided additional material apart from the textbook, the Instructor gave citations regarding current situations with reference to Pakistani context, the Instructor communicates the subject matter, the Instructor shows respect towards students and encourages class participation effectively, the Instructor maintained an environment that was conducive to learning, the Instructor arrived on time, the Instructor returned the graded scripts etc. in a reasonable amount of time, the Instructor was available during the specified office hours after class for consultations, the Subject matter presented in the course has increased their knowledge of the subject, the syllabus clearly states course objectives requirements, procedures and grading criteria, the course integrates theoretical course concepts with real-world applications, and the assignments and exams covered the materials presented in the course, the course material is modern and updated.

Comments / Suggestions

- Instructor was fine in conduct and always wearisome to assist.
- Instructor was prepared for each class.
As regards cumulative student course evaluation graph, around 59% students expressed strong agreement on questions asked regarding course progress, learning outcomes, L&T methods, pace of course, feedback, usefulness of materials, and similar number of students showed agreement. However, about 13% students were uncertain in answering the questions and are disagreed with the contents.
Teacher Evaluation

Mr. Usman Shaukat Qureshi

Data were collected from 50 students. The individual parameter showed that the students are strongly agreed (62% and 64 % respectively) that the teacher is prepared for each class and demonstrate the subject knowledge in a very effective way. More than 90 % of the students were strongly agreed and agreed that the instructor has completed whole the course in time, provide additional information and also fair in examination. Similarly, most of the students agreed that instructor showed respect towards students and encourages class participation effectively; the Instructor maintained an environment that was conducive to learning. More than 90% students are of the view that the Instructor arrived and leave the class on time and returned the graded scripts etc. in a reasonable amount of time. Most of the students agreed that the Instructor was available during the specified office hours after class for consultations, the Subject matter presented in the course has increased their knowledge of the subject, the syllabus clearly states course objectives requirements and the assignments and exams covered the materials presented in the course, the course material is modern and updated.

COMMENTS / SUGGESTIONS

1. Environment was friendly and conducive for learning.
2. Good way of teaching.
3. Scientific approach with good communication skills.
4. Teacher was punctual reached and leave the class in time.
The aggregate analysis regarding Medicinal and aromatic plants course, revealed that around 73% students strongly agreed to the various aspects of course evaluation questionnaire like course progress, participation, learning outcomes, L&T methods, pace of course, feedback on course and assessment, usefulness of materials, whereas, 13% students showed general agreement. However, a small proportion of students were uncertain in their response.
Teacher Evaluation

Dr. Khalid Mahmood Qureshi

Data were collected from 53 B. Sc. students. The individual parameters showed that the 40% of the students strongly agreed, 46% agreed, 9% uncertain, 5% disagreed, and 0% strongly disagreed that the instructor was prepared for each class. The data of rest of the parameters inferred that major proportion of the students are agreed that the teacher is fair in examination, the instructor came with good preparation the instructor demonstrates knowledge of the subject, instructor had completed the whole course, the instructor provided additional material apart from the textbook, the instructor gave citations regarding current situations with reference to Pakistani context, the instructor communicates the subject matter, the instructor shows respect towards students and encourages class participation effectively, the instructor maintained an environment that was conducive to learning, the instructor arrived on time, the instructor returned the graded scripts etc. in a reasonable amount of time, the instructor was available during the specified office hours after class for consultations, the Subject matter presented in the course had increased their knowledge of the subject, the syllabus clearly states course objectives requirements, procedures and grading criteria, the course integrates theoretical course concepts with real-world applications, and the assignments and exams covered the materials presented in the course, the course material is modern and updated.

Comments / Suggestions

i. He conveyed the lectures in such a way that we understood them properly.

ii. Need of more practical work in labs.

iii. Good behavior of the teacher and was available in most of the time.

iv. Completed course in time.

v. Prepared for each class.

vi. He had full command in his subject.
The syllabus clearly states course objectives, requirements, procedures and grading criteria.

The instructor maintains an environment that is conducive to learning.

The instructor demonstrates knowledge of the subject.

The course material is modern and updated.

The instructor gives citations regarding current situations with reference to Pakistani context.

The instructor provides additional material apart from the textbook.

The course integrates theoretical concepts with real-world applications.

The instructor communicates the subject matter effectively.

The instructor was available during the specified office hours and for after-class consultations.

The instructor shows respect towards students and encourages class participation.

The assignments and exam covered the materials presented in the course.

The subject matter presented in the course has increased your knowledge of the subject.

The instructor returns the graded scripts etc. in a reasonable amount of time.

The instructor arrives on time.

The instructor is fair in examination.

The instructor provided course split schedule during the 1st week of semester.
A perusal of student course evaluation Performa 1, expressed that about 63% students showed strong agreement on questions asked like course organization, learning outcomes, learning resources, L&T methods, feedback, assessment, and dealing of problems whereas 17% showed agreement. However, about 15% students were uncertain in answering the questions, and a few disagreed with the contents.
Teacher Evaluation

Dr. Nadeem Akhtar Abbasi

Data were collected from 83 students which showed that the students were strongly agreed (37% and 31 % respectively) that the teacher is prepared for each class and demonstrate the subject knowledge in a very effective way. More than 70 % of the students were strongly agreed and agreed that the instructor has completed whole the course in time, provide additional information and also fair in examination. Similarly, most of the students agreed that instructor showed respect towards students and encourages class participation effectively; the Instructor maintained an environment that was conducive to learning. More than 80% students are of the view that the Instructor arrived and leave the class on time and returned the graded scripts etc. in a reasonable time. Most of the students agreed that the Instructor was available during the specified office hours after class for consultations, the Subject matter presented in the course has increased their knowledge of the subject, the syllabus clearly states course objectives requirements and the assignments and exams covered the materials presented in the course, the course material is modern and updated.

COMMENTS / SUGGESTIONS

1. Environment was friendly.
2. Teaching method was good.
3. Has scientific approach with good communication skills.
4. Teacher was punctual reached and leave the class in time.
The graphical analysis of Performa 1, expressed that about 59% students strongly agreed to the various aspects of course evaluation questionnaire like work load, course objectives, course progress, learning outcomes, L&T methods, pace of course Protected Vegetable Farming, assessment and understanding, feedback, usefulness of materials etc. Around 20% students showed general agreement with various aspects of Performa. About 07% students were uncertain in answering the questions.
**Teacher Evaluation**

Data were collected from 47 B. Sc. students. The individual parameters showed that the 52% of the students strongly agreed, 34% agreed, 7% uncertain, 5% disagreed, and 2% strongly disagreed that the instructor was prepared for each class. The data of rest of the parameters inferred that major proportion of the students are agreed that the teacher is fair in examination, the instructor came with good preparation the instructor demonstrates knowledge of the subject, instructor had completed the whole course, the instructor provided additional material apart from the textbook, the instructor gave citations regarding current situations with reference to Pakistani context, the instructor communicates the subject matter, the instructor shows respect towards students and encourages class participation effectively, the instructor maintained an environment that was conducive to learning, the instructor arrived on time, the instructor returned the graded scripts etc. in a reasonable amount of time, the instructor was available during the specified office hours after class for consultations, the Subject matter presented in the course had increased their knowledge of the subject, the syllabus clearly states course objectives requirements, procedures and grading criteria, the course integrates theoretical course concepts with real-world applications, and the assignments and exams covered the materials presented in the course, the course material is modern and updated.

**Comments / Suggestions**

- He conveyed the lectures in a conceptual way.
- More practical must be arranged in labs.
- Prepared for each class.
- Good behavior of the teacher and was available any time.
- Completed course in time.
Hort-607

In-Vitro Propagation of Horticultural Crops

Ms. Mehwish Yaseen

The cumulative analysis of Performa 1, suggested that 57% students strongly agreed to difference aspects of course evaluation questionnaire like work load, course objectives and organization, course evaluation, learning materials, L&T methods, pace of course, assessment and timely feedback, usefulness of materials, etc. Around 43% students were in general agreement. Only a small proportion of students was uncertain and/or disagreed.
Teacher Evaluation

Ms. Najma Yousaf Zahid

Data were collected from 57 B. Sc students. The individual parameters showed that the 41% of the students strongly agreed, 37% agreed, 9% uncertain, 8% disagreed, and 4% strongly disagreed that the teacher prepared for each class. Similarly, most of the students agreed that instructor demonstrates knowledge of the subject, instructor had completed the whole course, the Instructor provided additional material apart from the textbook, the Instructor gave citations regarding current situations with reference to Pakistani context, the Instructor shows respect towards students and encourages class participation effectively, the instructor maintained an environment that was conducive to learning, the Instructor arrived on time, the Instructor returned the graded scripts etc. in a reasonable amount of time, the Instructor was available during the specified office hours after class for consultations, the Subject matter presented in the course has increased their knowledge of the subject, the syllabus clearly states course objectives requirements, procedures and grading criteria, the course integrates theoretical course concepts with real-world applications, and the assignments and exams covered the materials presented in the course, the course material is updated.

Comments / Suggestions

1. Scientific approach of teaching.
2. Environment was gracious and supportive.
3. Good way of teaching, a man of foresight
The graphic analysis showed that about 81% students strongly agreed to the various aspects of course evaluation questionnaire like work load, course objectives, course progress, participation, learning outcomes, L&T methods, pace of course, assessment, feedback, usefulness of materials etc. About, 12% students showed general agreement and a small number of students were uncertain in answering the questions.
Teacher Evaluation

Data were collected from 48 B. Sc. students. The evaluation criteria parameters showed that the 65% of the students strongly agreed, 26% agreed, 8% uncertain, 1% disagreed, and 0% strongly disagreed that the instructor was prepared for each class. The data of other parameters inferred that major proportion of the students are agreed that the teacher was fair in examination, came with good preparation, the instructor demonstrates knowledge of the subject, instructor had completed the whole course, the Instructor provided additional material apart from the textbook, the Instructor gave citations regarding current situations with reference to Pakistani context, the Instructor communicates the subject matter, the Instructor shows respect towards students and encourages class participation effectively, the Instructor maintained an environment that was conducive to learning, the instructor arrived on time, the Instructor returned the graded scripts etc. in a reasonable amount of time, the Instructor was available during the specified office hours after class for consultations.

Comments/Suggestions

1. Kind and good teacher with amiable and parental attitude with the students.
2. Always teaches his practical experiences to make the understanding of the subject effective.
3. Course was accomplished in appropriate time and was very motivating.
Hort-503  3(2-2)  Principles of Vegetable Production   Dr. Shahid J. Butt

The analysis for Performa 1, revealed that 90% students strongly agreed to difference aspects of course evaluation questionnaire like, course objectives, pace of course, ideas presented, assessment and feedback, usefulness of materials and demonstration etc. About 04% students were in general agreement with various aspects of Performa and a few students were uncertain.
Teacher Evaluation

Mr. Usman Shaukat Qureshi

Data were collected from 50 M. Sc. students. The individual parameters showed that the 46% of the students strongly agreed, 43% agreed, 7% uncertain, 2% disagreed, and 2% strongly disagreed that the instructor was prepared for each class. The data of rest of the parameters inferred that major proportion of the students are agreed that the teacher is fair in examination, the instructor came with good preparation the instructor demonstrates knowledge of the subject, instructor had completed the whole course, the instructor provided additional material apart from the textbook, the instructor gave citations regarding current situations with reference to Pakistani context, the instructor communicates the subject matter, the instructor shows respect towards students and encourages class participation effectively, the instructor maintained an environment that was conducive to learning, the instructor arrived on time, the instructor returned the graded scripts etc. in a reasonable amount of time, the instructor was available during the specified office hours after class for consultations, the Subject matter presented in the course had increased their knowledge of the subject, the syllabus clearly states course objectives requirements, procedures and grading criteria, the course integrates theoretical course concepts with real-world applications, and the assignments and exams covered the materials presented in the course, the course material is modern and updated.

Comments / Suggestions

- He conveyed the lectures in a conceptual way.
- More practicals must be arranged in labs.
- Prepared for each class.
- Good behavior of the teacher and was available any time.
The aggregate analysis for Perfora 1, showed that about 65% students strongly agreed to difference aspects of course evaluation questionnaire viz. course objectives, learning outcomes, class environment, pace of course, assessment and feedback, usefulness of materials, dealing of problems etc. About 25% students were in general agreement with various aspects of Perfora.
Perform 2
Faculty Course Review Report

This Performa deals with faculty course review report to be filled by each teacher at the course completion. The mode of examination is based on 30% mid & 60% final exams with 10% evaluation for assignments during the study programmed. The overall comments are summarized as below:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Credit Value</th>
<th>Assessment Methods/Exams</th>
<th>No. of Students</th>
<th>Comments on curriculum</th>
<th>Any Changes for Future in Course</th>
<th>Semester</th>
<th>Course Instructor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hort-301</td>
<td>Introductory Horticulture</td>
<td>3(2-2)</td>
<td>Mid term And Final</td>
<td>189</td>
<td>Good</td>
<td>Should be divided</td>
<td>Fall</td>
<td>Dr. Imran Hassan</td>
</tr>
<tr>
<td>Hort-501</td>
<td>Principles of Fruit Production</td>
<td>3(2-2)</td>
<td>Mid term And Final</td>
<td>191</td>
<td>Good but lengthy</td>
<td>Should be divided</td>
<td>Spring</td>
<td>Ms. Najma Yousaf Zahid</td>
</tr>
<tr>
<td>Hort-503</td>
<td>Principles of Vegetable Production</td>
<td>3(2-2)</td>
<td>Mid term And Final</td>
<td>196</td>
<td>Good</td>
<td>Should be divided</td>
<td>Fall</td>
<td>Dr. Shahid J. Butt</td>
</tr>
<tr>
<td>Hort-505</td>
<td>Principles of Ornamental Crop Production</td>
<td>3(2-2)</td>
<td>Mid term And Final</td>
<td>195</td>
<td>Excellent but lengthy</td>
<td>Should be divided</td>
<td>Spring</td>
<td>Dr. Amjad Farooq</td>
</tr>
<tr>
<td>Hort-507</td>
<td>Arid Horticulture</td>
<td>4(3-2)</td>
<td>Mid term And Final</td>
<td>187</td>
<td>Very good</td>
<td>No</td>
<td>Fall</td>
<td>Dr. Muhammad Shafiq</td>
</tr>
<tr>
<td>Hort-509</td>
<td>Medicinal and aromatic plants</td>
<td>2(1-2)</td>
<td>Mid term And Final</td>
<td>25</td>
<td>Well prepared</td>
<td>No</td>
<td>Spring</td>
<td>Mr. Usman Shaukat Qureshi</td>
</tr>
<tr>
<td>Hort-601</td>
<td>Commercial Flower Production</td>
<td>3(2-2)</td>
<td>Mid term And Final</td>
<td>25</td>
<td>Well prepared</td>
<td>No</td>
<td>Fall</td>
<td>Mr. Usman Shaukat Qureshi</td>
</tr>
</tbody>
</table>
The students are assessed by the exam, assignments, practical work and presentations. All courses are taught as followed by the curriculum revised by the HEC curriculum committee. The assignment standard during the course of semester was satisfactory to great extent. It was realized that the changes proposed in earlier faculty course review report improved the quality of courses undertaken. The comments were cited that the constructive changes for research and teaching will be proposed in future.

**General Remarks**

- It is also suggested that basic structure shall be bettered with faculty staff expended so that to upgrade the level of department into institute etc.
- It is commended that financial management system is too length and takes a lot time to follow the process. It may be simplified and be efficient.

The faculty staff unanimously opined to improve the efficiency of administration routine work and student teacher coordination.

**Performa 3: Survey of Graduating Students**

Results of survey of graduating students based on Performa 3 (Annexure III) are given in Figure- 3. The graduating students in the last semester were surveyed before the
award of degree. On the average basis 52.66 % students showed their high satisfaction regarding all the parameters, whereas 38.46 % of the students surveyed were satisfied regarding all information asked. The results of graduating students are summarized and given in Figure No. 3

**Figure No :3 Survey of the Graduating Students**

<table>
<thead>
<tr>
<th>Satisfaction Level</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very Satisfied</td>
<td>52.66%</td>
</tr>
<tr>
<td>Satisfied</td>
<td>38.46%</td>
</tr>
<tr>
<td>Uncertain</td>
<td>5.12%</td>
</tr>
<tr>
<td>Dissatisfied</td>
<td>3.41%</td>
</tr>
<tr>
<td>Very Dissatisfied</td>
<td>0.42%</td>
</tr>
</tbody>
</table>

**Performa 5: Results of Faculty Survey**

The data generated as a result of faculty survey, showed that 43% of faculty members were very satisfied, 32% satisfied, 12 uncertain, 03% dissatisfied and 10% very dissatisfied are satisfied with their job clarity about promotion process. However, most of the faculty themselves reported as very satisfied mentoring and administrative support, job security, support from the department, their progress through ranks. The least time availability to faculty to interact with their family is due to extra load on present teachers as some times of the faculty members proceed on training, workshops etc so the poor strength of remaining faculty in the campus has to bear out the load of course work and other assignments.
Alumni Survey:

Results obtained from alumni survey showed that when the alumni were asked regarding the knowledge they obtained from this department, the overall response was very good. 81% of the alumni agreed that the problem formulation and solving skills were well acquainted with scientific knowledge. 75% of the students showed their agreement regarding collecting and analyzing appropriatae data. Most strong positive response was given by alumni regarding ability to link theory to practice where 90% alumni showed agreement which means department was able to impart research skills in students. Regarding Oral Communication 79% alumni showed agreement. Alumni showed agreement towards communication skills by 80%. There was a lack in report writing as shown by agreement of 62% alumni and 10% uncertain.
Proforma 8

Employer Survey

Feedback about 21 employees was obtained from organizations viz. Pakistan Horticultural Authority, Khyber Pakhtoon Khaw Forest Department, NIGAB Research Institute-National Agriculture Research Centre Islamabad (NARC), Pir Mehr Ali Shah Arid Agriculture University Rawalpindi and Banks. Their views were keen observed and discussed in the department for future improvements. The major emphasis was to know the employers comments on the quality of education regarding: knowledge, communication skill, work skill and interpersonal skill these students have. Survey reflects that our graduates fall above average and in all areas, their abilities were rated above 80%. This indicates that our graduates are well adaptable and show their better potential in any given environment. However, some employers have given general comments about some weaknesses, particularly the practical workability. The point has been well noted and will be tried to overcome for our future and current students.

Employer survey for the determination of student’s skill level

Standard 1-3: The results of Program’s assessment and the extent to which they are used to improve the program must be documented.

The results are being communicated to the respective departmental head through the Dean for corrective measures where needed.

Strength of the department

The main strength of the department is the availability of highly qualified teachers in variety of subjects such as crop physiology, fodder production, stress physiology, crop
nutrition, weed science, crop modeling etc. and their full acquaintance with respective subjects. Majority of the faculty members are foreign qualified and are well versed in their area of interest. Their work has been published in national and international Journals. They have also implemented national research projects and are highly conscious of the problems to be taken by the postgraduate students.

**Weakness Identified in the Program**

Lack of infrastructure to transfer the recommended practices and technology to farmers. Access to latest literature and availability of updated review is not up to the mark. There is a need for short foreign trainings of young faculty members. Greenhouse facilities are also lacking. Lecture rooms, common rooms, post-graduate laboratories are also lacking.

**Major Feature of Improvement Plans**

Improve the quality of education in the Department of Horticulture through audio-visual means and the use of modern equipment as well as providing the latest literature, magazines, books, reviews and access to the Internet feature. Comprehensive enhance the knowledge and skills of faculty members with regard to the latest global developments in the discipline through exchange and training programs, short-term and cooperative research project inside and outside Pakistan.

**General Comments**

- Emphasis on practical work
- Improvement of communication skill, including writing and presentation
- Development of the habit of reading to up-date knowledge
- To inculcate the moral and ethical values

**Standard 1-3: The results of program’s assessment and the extent to which they are used to improve the program must be documented**

**Skills and capabilities reflected in performance as Horticulturist**

Special importance has been given on the practical work in the profession of horticulture to build confidence and communication skills effectively in writing, oral and
demonstration to use modern tools and techniques for their profession. Efforts also have been made to explicate and design the experiments/project and to work effectively in a team, to manage a crop problem and assimilate ability to recognize future needs.

Major future improvement plans

- An essential and distinguishing attribute of horticulture education through audio visual aids and modern tools along with provision of latest literature, journals, books, reviews and access to internet.
- Flourishing the facilities for horticulture crop improvement, hydroponics setup, germplasm units and develop extension material.

Strength and weaknesses of the department

Strength

The main strength of the department is the availability of highly qualified teachers including (8 PhDs), with good experience of their respective subjects, having vast knowledge of horticultural production and management systems and associated problems. Faculty members have local as well as foreign degrees (USA, UK, Turkey, China etc) and are experts in their area of specialization. Four faculty members got postdoctoral research experience from Australia, Italy and UK and China. Many faculty members have national research projects and are highly conscious of the problems to be taken by the post-graduate students. 2 professors, 1 Associate Professor, 4 Assistant Professor & 5 Lecturers specialized in their subjects are currently engaged in their academic and research activities.

Weaknesses

Advanced teaching and research is being handicapped due to lack of important equipments as hydroponics system including a fully equipped and the set of automated greenhouses and cold storage facilities for post-graduate students. To introduce the most economical protected horticulture, there is a dire need to establish the chain of greenhouse based on the Chinese energy saving technology (in progress). For the research to solve the problems in the area of post- harvest there is need for controlled atmosphere storage and multi-temperature storage chambers. In case of biotechnology, there is need for vector construction, electorporation and gene transformation equipment. Additionally, to ensure the production of pathogen-free plant material, a complete system of ELISA and other diagnostic
kits for detection and determination of plant pathogens. Areas for seed production of vegetables and ornamentals are not available. Lecture rooms, post-graduate laboratories and survey / offices for faculty members are also lacking. A landscape studio is indispensable to coup up the present needs of landscape horticulture. The is a need to have a computer with efficient internet access for every faculty member

**Standard 1-4: The department must assess its overall performance periodically using quantifiable measures.**

**Present students’ enrolment**

In the past, the enrolment was significantly less compared with the present status. The new trend is that the applicants give high preference to opt the horticulture as a major subject in the agriculture faculty as illustrated in the following table:

**Table-3: Quantitative assessment of the department (during 2012-14)**

<table>
<thead>
<tr>
<th>Sr. #</th>
<th>Particular</th>
<th>No.</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Undergraduates (B.Sc. Hons) produced</td>
<td>61</td>
<td>90% of them joined and 10% did not continue their education.</td>
</tr>
<tr>
<td></td>
<td>Students: Faculty rates</td>
<td>7:1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Average grade point</td>
<td>2.5</td>
<td>Fulfils HEC criteria</td>
</tr>
</tbody>
</table>

The evaluation process pointed high efficiency of system and satisfactory impact of outcomes. Almost all the graduate and post graduates got jobs in various organizations (provincial department, universities, research organizations, banks and private firms).

**Performance for research activities**

The faculty staff of Horticulture department is awfully engaged in teaching and research activities, consequently the findings are being published in reputed national and international journals along with the presentation of the findings of problem-oriented and solution-oriented research outcomes at different national and international forums. The following table shows some laudable performance in the form of publication:
Table- 4: Performance for research activities during the year 2012-14

<table>
<thead>
<tr>
<th>Faculty</th>
<th>Journal Publications (National &amp; International)</th>
<th>Conference Publications (Proceedings/Abstract)</th>
<th>Projects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr. Nadeem Akhtar Abbasi</td>
<td>19</td>
<td>01</td>
<td>02</td>
</tr>
<tr>
<td>Dr. Ishfaq Ahmad Hafiz</td>
<td>07</td>
<td>--</td>
<td>01</td>
</tr>
<tr>
<td>Dr. Khalid Mahmood</td>
<td>4</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Dr. Imran Hassan</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Ms. Najma Yousaf Zahid</td>
<td>3</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Dr. Shahid J. Butt</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dr. M. Azam Khan</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Mr. Umer Habib</td>
<td>1</td>
<td>--</td>
<td>-</td>
</tr>
<tr>
<td>Ms. Mehwish Yaseen</td>
<td>5</td>
<td>--</td>
<td>1</td>
</tr>
<tr>
<td>Dr. Touqeer Ahmad</td>
<td>02</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>

The staff is well trained in horticultural crop production, post-harvest technology, biotechnology, protected cultivation, vegetable breeding, hydroponics/soilless crop production, floriculture, landscape horticulture, and many other specialized fields in horticulture.

**Community services**

- Holding of national and international conferences/workshops and training programme on horticulture for students, teachers and farming community
- Advisory services to the farmers, especially for Pothohar region.
- Knowledge dissemination for the promotion of greenhouse and tunnel technology in arid region.
- To guide the education institutes for improved landscaping.
- Guidance and supervision of students and interested people for the promotion of horticulture.
- Coordination and participation in different horticultural competitions (e.g. fruit, flower and vegetable shows).
- Supervision of students on internship in various organizations.
Departmental administrative services for faculty and students

- To achieve the task assigned by the competent authority.
- The department maintains a ratio of 4:1 for the academic (technical) and administrative non-technical staff which fulfils this standard set by the HEC.
- Administrative meetings (departmental, university, academic council, and syndicate) are attended as and when required. Generally two meetings of academic council are held per month. Board of studies of the department meets quarterly.
- Sharing the role in publishing the university magazine.
- Quick office disposal; no complaint pertaining to delay has ever received from authorities.
- Proper records of individuals’ students, their theses etc. are maintained.

Criterion 2: CURRICULUM DESIGN AND ORGANIZATION

Degree Title: B.Sc.(Hons) Agri, Major Horticulture

All the courses for degree program were built up by a committee constituted by the Higher Education Commission, Pakistan. The committee consists of experts and learned professors, subject-matter specialists from other universities and research organization from Pakistan. When and if needed, curriculum for the Department of Horticulture is revised/updated through different bodies. At department level, Board of Studies, which constituted of senior faculty members, is responsible for updating the curriculum. This body is authorised to formulate syllabus and course content. The chairman of the Department is the convener of this body. The courses are then sent to the Board of Faculty for approval. The Dean of the Faculty, who is also the Convener, conducts meeting. As per university rules courses after the approval from the Faculty Board, are placed before the University Academic Council for their approval.

Definition of credit hour

A student must complete a definite number of credit hours. One credit hour is one theory lecture or two hours laboratory (practical / week). One credit hour carries 20 marks. The semester is of 18 weeks.
Degree plan

Presently three degree programs are organized by the department. B.Sc. (Hons) Agric. Majoring in Horticulture: The B.Sc. (Hons) degree program consists of 4 academic years/8 semesters.

Pre-requisites

Minimum academic requirements for B.Sc. Honours in Horticulture

A person retaining intermediate science certificate (Pre-Medical & Pre-Engineering) or an equivalent certificate from any recognized institute with at least second division or overall 45% marks.

The candidates domiciled in the Barani Areas of Punjab are eligible for admission. The admission to the university is on merit which is determined on entry test and past academic performance. Merit is determined as per the following formula:

```
Matric  10%
Intermediate 50%
Entry test 40%
```

Degree Requirements:

As a whole a student has to study 140 credit hours. In the first four semesters, students study minor courses (Agriculture Sciences, Information Technology and Veterinary Sciences etc.). After the completion of four semesters, students choose a specialized field (major) of study. In the other four semesters courses of major specialized subject are taught including some other courses of other departments (Detail is given in Table-6). The final semester includes internship of 15 credit hours. Students are placed in research institutes to learn research techniques practically.

Degrees are awarded after completing the required number of credit hours (courses) followed by internship report and its presentation.

Minimum Grade Point Average for obtaining the degree in 2.50. To remain on the roll of the university a student shall be required to maintain the following minimum GPA/CGPA in each semester.
<table>
<thead>
<tr>
<th>Semester</th>
<th>CGPA</th>
</tr>
</thead>
<tbody>
<tr>
<td>First</td>
<td>0.75</td>
</tr>
<tr>
<td>Second</td>
<td>1.00</td>
</tr>
<tr>
<td>Third</td>
<td>1.25</td>
</tr>
<tr>
<td>Fourth</td>
<td>1.50</td>
</tr>
<tr>
<td>Fifth</td>
<td>1.75</td>
</tr>
<tr>
<td>Sixth</td>
<td>2.00</td>
</tr>
<tr>
<td>Seven</td>
<td>2.25</td>
</tr>
<tr>
<td>Eight</td>
<td>2.50</td>
</tr>
</tbody>
</table>

**Examination and Weightage:**

a) Theory

In theory paper, student’s evaluation is done by mid-term examination, assignments/quizzes/presentations and final examination. Both the mid-term and final examinations are compulsory. A student, who misses the mid-term examination, is not allowed a make-up examination and is awarded zero marks in that examination. In case a student does not appear in the final examination of a course, he shall be deemed to have failed in that course. In theory, weightage to each component of examination is as prescribed here under:

- Mid Examination 30%
- Assignments plus others 10%
- Final Examination 60%

b) Practical

For practical examination (if applicable) 100% weightage is given to practical final examination.

**Eligibility for examination:**

A student is eligible to sit for the examination provided that he/she has attended not less than 75 % of the classes in theory and practical, separately.

The minimum pass marks for each course are 40% for undergraduate.
Table-5: Scheme of studies for B. Sc. (Hons.) Agriculture (first semester)

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGR-301</td>
<td>Basic Agriculture</td>
<td>3(2-2)</td>
</tr>
<tr>
<td>AEC-301</td>
<td>Principles of Agricultural Economics</td>
<td>3(3-0)</td>
</tr>
<tr>
<td>ENG-301</td>
<td>Functional English</td>
<td>3(3-0)</td>
</tr>
<tr>
<td>HORT-301</td>
<td>Introduction to Horticulture</td>
<td>3(2-2)</td>
</tr>
<tr>
<td>IS-301/ET-301</td>
<td>Islamic Studies/ Ethics</td>
<td>2(2-0)</td>
</tr>
<tr>
<td>MATH-301/BIOL-301</td>
<td>Mathematics-I/ Biology</td>
<td>3(3-0) 3(2-2)</td>
</tr>
<tr>
<td>SS-301</td>
<td>Introduction to Soil Science</td>
<td>3(3-0)</td>
</tr>
</tbody>
</table>

Second semester

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGR-302</td>
<td>Summer Crops</td>
<td>3(2-2)</td>
</tr>
<tr>
<td>ENG-302</td>
<td>Communication Skills</td>
<td>3(3-0)</td>
</tr>
<tr>
<td>FT-302</td>
<td>Introduction to Food Sciences Technology</td>
<td>2(2-0)</td>
</tr>
<tr>
<td>HORT-302</td>
<td>Principles of Horticultural Practices</td>
<td>2(1-2)</td>
</tr>
<tr>
<td>MATH-302/BIOL-302</td>
<td>Mathematics-II/ Biology-2</td>
<td>3(3-0) 3(2-2)</td>
</tr>
<tr>
<td>FR-302</td>
<td>Introduction to Rangeland &amp; Wildlife Management</td>
<td>3(2-2)</td>
</tr>
<tr>
<td>SS-302</td>
<td>Soil and Water Conservation</td>
<td>2(2-0)</td>
</tr>
<tr>
<td>SSH-302</td>
<td>Pakistan Studies</td>
<td>2(2-0)</td>
</tr>
</tbody>
</table>

Third semester

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGR-401</td>
<td>Winter Crops</td>
<td>3(2-2)</td>
</tr>
<tr>
<td>AS-401</td>
<td>Animal Husbandry</td>
<td>3(2-2)</td>
</tr>
<tr>
<td>ENT-401</td>
<td>Introductory Entomology</td>
<td>2(1-2)</td>
</tr>
<tr>
<td>FT-401</td>
<td>Food Processing and Preservation</td>
<td>3(2-2)</td>
</tr>
<tr>
<td>IT-401</td>
<td>Introduction to Information Technology</td>
<td>3(1-4)</td>
</tr>
<tr>
<td>Course No.</td>
<td>Course Title</td>
<td>Credit Hours</td>
</tr>
<tr>
<td>-----------</td>
<td>--------------------------------------------</td>
<td>--------------</td>
</tr>
<tr>
<td>PBG-401</td>
<td>Introductory Genetics</td>
<td>2(1-2)</td>
</tr>
<tr>
<td>PP-401</td>
<td>Introduction to Plant Pathogens</td>
<td>2(1-2)</td>
</tr>
<tr>
<td>AE-401</td>
<td>Introduction to Agricultural Extension Education</td>
<td>2(1-2)</td>
</tr>
</tbody>
</table>

### Fourth semester

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGR-402</td>
<td>Field Crop Physiology</td>
<td>3(2-2)</td>
</tr>
<tr>
<td>ENT-402</td>
<td>Applied Entomology</td>
<td>3(2-2)</td>
</tr>
<tr>
<td>FR-402</td>
<td>Introduction to Forestry and Watershed Management</td>
<td>3(3-0)</td>
</tr>
<tr>
<td>AS-402</td>
<td>Poultry Husbandry</td>
<td>2(1-2)</td>
</tr>
<tr>
<td>PBG-402</td>
<td>Introductory Plant Breeding</td>
<td>3(2-2)</td>
</tr>
<tr>
<td>PP-402</td>
<td>Introduction to Plant Pathology</td>
<td>3(2-2)</td>
</tr>
<tr>
<td>STAT-402</td>
<td>Introduction to Statistics</td>
<td>3(3-0)</td>
</tr>
</tbody>
</table>

### Fifth semester

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>AEN-501</td>
<td>Farm Mechanization</td>
<td>2(1-2)</td>
</tr>
<tr>
<td>AGRO-501</td>
<td>Arid Zone Agriculture</td>
<td>2(2-0)</td>
</tr>
</tbody>
</table>

**General Courses**

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hort- 501</td>
<td>Winter Vegetables</td>
<td>3(2-2)</td>
</tr>
<tr>
<td>Hort-503</td>
<td>Medicinal and aromatic Plants</td>
<td>3(2-2)</td>
</tr>
<tr>
<td>Hort-505</td>
<td>Production of Tropical &amp; Sub-tropical Fruits</td>
<td>3(2-2)</td>
</tr>
<tr>
<td>Hort-507</td>
<td>Physiology of Horticultural Plants</td>
<td>3(2-2)</td>
</tr>
</tbody>
</table>

**Major Courses**

### Sixth semester

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>AEN-502</td>
<td>Conservation Engineering and Water Resources Development</td>
<td>2(1-2)</td>
</tr>
<tr>
<td>Course No.</td>
<td>Course Title</td>
<td>Credit Hours</td>
</tr>
<tr>
<td>-----------</td>
<td>------------------------------------------------------------------</td>
<td>--------------</td>
</tr>
<tr>
<td>SS-508</td>
<td>Instrumentation and Laboratory Techniques</td>
<td>2(0-4)</td>
</tr>
<tr>
<td><strong>Major Courses</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hort-502</td>
<td>Summer Vegetables</td>
<td>3(2-2)</td>
</tr>
<tr>
<td>Hort-504</td>
<td>Temperate Fruits Productions</td>
<td>3(2-2)</td>
</tr>
<tr>
<td>Hort-506</td>
<td>Pre and post harvest Technology of Horticultural crops</td>
<td>3(2-2)</td>
</tr>
<tr>
<td>Hort-508</td>
<td>Landscape Plants</td>
<td>3(2-2)</td>
</tr>
<tr>
<td>Hort-510</td>
<td>Arid Zone Horticulture</td>
<td>2(1-2)</td>
</tr>
</tbody>
</table>

**Seventh semester**

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>STAT-601</td>
<td>Experimental Designs</td>
<td>2(1-2)</td>
</tr>
<tr>
<td>SOC-601</td>
<td>Rural and Pastoral Sociology</td>
<td></td>
</tr>
<tr>
<td>MGT-601</td>
<td>Introduction to Agri. Business Management</td>
<td>2(2-0)</td>
</tr>
<tr>
<td><strong>Major Courses</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hort-601</td>
<td>Commercial Flower Production</td>
<td>3(2-2)</td>
</tr>
<tr>
<td>Hort-603</td>
<td>Certified Seed and Nursery Production of Horticultural Crops</td>
<td>3(2-2)</td>
</tr>
<tr>
<td>Hort-605</td>
<td>Forcing of High Value Crops</td>
<td>3(2-2)</td>
</tr>
<tr>
<td>Hort-607</td>
<td>Breeding of Vegetable Crops</td>
<td>3(2-2)</td>
</tr>
<tr>
<td>Hort-609</td>
<td>Project Planning and Scientific Writing</td>
<td>2(1-2)</td>
</tr>
<tr>
<td>Hort-611</td>
<td>In Vitro Propagation of Horticultural Crops</td>
<td>2(1-2)</td>
</tr>
</tbody>
</table>

**Eighth semester**

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hort-611</td>
<td>Internship including Report writing and Presentation</td>
<td>15(0-30)</td>
</tr>
</tbody>
</table>

**Standard 2-1:** The curriculum must be consistent and supports the program’s documented objectives.

The assessment of curriculum given in the following table and the courses are cross tabulated according to the program outcomes.
Table-6: Courses vs program outcomes

<table>
<thead>
<tr>
<th>Course/ Groups of Course</th>
<th>Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Hort-604, Hort-605, Hort-607</td>
<td>XX</td>
</tr>
<tr>
<td>Hort-603</td>
<td>XXX</td>
</tr>
<tr>
<td>Hort-301, Hort-302, Hort-601</td>
<td>X</td>
</tr>
<tr>
<td>Hort-505, Hort-602</td>
<td>XXX</td>
</tr>
<tr>
<td>Hort-501, Hort-504</td>
<td>XX</td>
</tr>
<tr>
<td>Hort-604</td>
<td>XX</td>
</tr>
<tr>
<td>Hort-503</td>
<td>XX</td>
</tr>
<tr>
<td>Hort-507</td>
<td>XXX</td>
</tr>
<tr>
<td>Hort-508</td>
<td>XX</td>
</tr>
<tr>
<td>Hort-506</td>
<td>XXX</td>
</tr>
</tbody>
</table>

X: relevant
XX: relevant and satisfactory
XXX: very relevant and satisfactory

- The curriculum fits very well and satisfies the core requirements for the program, as specified the respective accreditation body.
- The curriculum satisfied the general arts and professional and other discipline required for the program according to demands and requirements set by HEC.

Standard 2-2: Theoretical background, problem analysis and solution design must be stressed within the problem core material.

The meeting standard of this clause is tabulated in the following:

Table-7: Standard 2-2 requirement (percentage of elements in courses)

<table>
<thead>
<tr>
<th>Elements</th>
<th>Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theoretical backgrounds</td>
<td>Hort-301, Hort-302, Hort-501, Hort-503, Hort-504, Hort-505, Hort-603, Hort-604</td>
</tr>
<tr>
<td>Problem analysis</td>
<td>Hort-507, Hort-602, Hort-607, Hort-506</td>
</tr>
<tr>
<td>Solution design</td>
<td>Hort-508, Hort-601</td>
</tr>
</tbody>
</table>

59
Standard 2-3 to standard 2-5

The above cited standards have already been justified in table 8.

Standard 2-6: Information Technology Component of the Curriculum must be developed and applied in the Program.

While the curriculum was prepared, all aspects of information technology were considered and after a critical analysis, relevant aspects were integrated into the program as:

- Computer, I.T. and statistics courses based on computer practical usage are included in the curriculum to fulfill the I.T. requirements for the students of B.Sc (Hons) Agric. degree.

Standard 2-7: Oral and written communication skills of the student must be developed and applied in the program.

- A course of 2 credit hours developing communication skills has been integrated in the curriculum of B.Sc. (Hons) level.
- Assignments are given to BSC (Hons) students on specific titles (part of the course) which are presented orally and are submitted as written report, to increase their oral and written communication skills.

Criterion 3: LABORATORIES AND COMPUTING FACILITIES

There are four laboratories in the department. The facilities and shortcomings of these laboratories are listed as under.

- Laboratory Title: 1. Tissue Culture Laboratory I,
  2. Tissue Culture Laboratory II
  3. Horticulture Analytical Laboratory
  4. Horticulture Analytical Post harvest laboratory.
- Location and Area: Faculty of Agriculture and Food Sciences, A-Block, 1st Floor and ground floor, Main Campus
- Objectives: Laboratories are used for: Practical exercise and demonstrations to graduate students in their
introductory and major courses. Research work for the graduate.

- **Shortcoming:** The number of labs is not sufficient. The standard requirements in view of operation and quality, available resources and expansion programs are vitally required. Major apparatus viz. equipment; along with necessary chemicals are needed. Teachers usually arrange the lecture material and helping literature at their own expense. Some manuals/broachers are being prepared by the academic staff.

- **Safety Regulations:** Safety measures are not available against fire (Extinguishers), minor hazards and accidents, injuries (First Aid Kit). However, the University maintains a Medical Dispensary for such incidents where the required apparatus is insufficient.

**Standard 3-1:** Laboratory Manuals/ documentation/instructions experiments must be available and readily accessible to faculty and students.

Laboratory manuals (tissue culture lab, horticulture manuals etc) are available. The department library has the collection of books but still a number of books are required.

**Standard 3-2:** There must be adequate support personnel for instruction and maintaining laboratories

There is shortage of laboratory assistants and laboratory attendants and are direly needed to maintain laboratory, equipment, glassware, chemicals, material etc.

**Standard 3-3:** The University computing infrastructure and facilities must adequate to support program’s objectives.
• **Computing facilities support**: Not available to all students.

• **Shortcoming in computing infrastructure**: Computers with internet facilities should be available to all students.

• **Safety Arrangements**: There are no proper safety arrangements and no security plan is available in case of emergency. The department is located on the 2nd floor; there are no emergency exits for the labs. No fire extinguishers have been installed in any laboratory or in the offices. No first aid kits/facilities provided in the laboratories/department.

**Criterion 4: STUDENT SUPPORT AND ADVISING**

Our University organizes support programs for students and provide information regarding admission, scholarship schemes etc. Department in its own capacity arranges orientation and guided tours of the department. Director Students Affairs is also there and arranges various cultural and social activities and solves the students’ problems. However currently there is no Parent/Teacher association.

**Standard 4-1**: Courses must be offered with sufficient frequency and number for students to complete the program in a timely manner.

• Courses are taught as per criteria of HEC.

• At undergraduate level subjects/ courses are offered as per scheme of study provided by the HEC and approved by Academic Council.

• Elective courses are offered as per policy of HEC and the University.

**Standard 4-2**: Courses in the major area of study must be structured to ensure effective interaction between students, faculty and teaching assistants.

To ensure effective interaction and understanding between students, faculty and teaching assistants, at the time of course formulation both theoretical and field/practical aspects are focalized. Theoretical problems are explained and assignments are also given to the students whereas practical are carried out in the labs and filed. Field visits and study tours to various research organizations are also organized to keep them update on the latest developments in the area and to stimulate them for discussion through teacher/student interaction.
• Courses are developed and decided in the board of studies meeting.
• At the commencement of the semester, faculty members interact frequently among themselves and with students. Students are welcome to ask question in class and even after the class.
• Emphasis is always given for an effective interaction between each section of B.Sc. (Hons) classes.

**Standard 4-3: Guidance on how to complete the program must be available to all students and access to academic advising must be available to make course decisions and career choices.**

Several steps have been taken to provide students guidance such as:

• Students are informed about the program requirement through the office of the head of the department.
• Through the personal communication of the teachers with the students.
• Monthly meetings are organized by the head of the department for counseling of the students. In addition, students can also contact with the relevant teachers whenever they face any problem.
• It is necessary for the students to participate in the monthly meeting.
• In case of some problem Director Student Affairs appointed by the university, helps the students. Tutorial System in all departments has been efficiently working. Tow period on Thursday are reserved for students for extracurricular activities. However, there is no such counseling Cell in the department.
• Student can interact with the teachers/scientist in universities or research organization whenever they needed and there is an open option for the students to get the membership in the professional societies like National Rose Society Islamabad, Horticultural Society of Pakistan, National Horticulture Society, Pakistan Horticulture Society, Pakistan Botanical Society and other relevant professional societies.

**Criterion 5: PROCESS CONTROL**

It includes student admission, students’ registration, faculty recruitment activities, which are dealt by various statutory bodies and the university administration.
Standard 5-1: The process by which students are admitted to the program must be based on quantitative and qualitative criteria and clearly documented. This process must be periodically evaluated to ensure that it is meeting its objectives.

- The process of admission is well established and followed as per rules and criteria set by HEC. For this purpose an advertisement is published in the National News Papers by the Registrar Office.
- Admission criteria for B.Sc. (Hons) Agri. F.Sc. pre medical and pre engineering and entry test.

Standard 5-2: The process by which students are registered in the program and monitoring of students progress to ensure timely completion of the program must be documented This process must be periodically evaluated to ensure that it is meeting its objectives.

- The student name, after completion of the admission process, is forwarded to the Registrar Office for proper registration in the specific program and the registration number is issued to the student.
- After the 4th semester students are allotted different majors (e.g. Horticulture, in our case) by the Dean Faculty of Crop and Food Sciences.
- Students are evaluated through Mid, Final and Practical exams and through Assignments.
- Registration is done for one time for each degree but evaluation is done through the result of each semester. Only those students who fulfill the criteria of the University, they are promoted to the next semester.
- In general, the students are registered on competition bases keeping in view the academic and research standards.

Standard 5-3: The process of recruiting and retaining highly qualified faculty members must be in place and clearly documented. Also processes and procedures for faculty evaluation, promotion must be consistent with institution mission statement. These processes must be periodically evaluated to ensure that it is meeting with its objectives.

- Vacant and newly created positions are advertised in the national newspapers, applications are received by the Registrar office, and call letters are issued to the
short-listed candidates on the basis of experience, qualification, publications and other qualities/activities as determined by the University.

- The candidates are interviewed by the University Selection Board and Principal and alternate candidates are selected.
- Selection of candidates is approved by the Syndicate for issuing orders to join within a specified period.
- Induction of new candidates depends upon the number of approved vacancies.
- Standard set by HEC are followed.
- At present, no procedure exists for retaining highly qualified faculty members. However, the revised pay scales structure is quite attractive.
- HEC also supports appointment of highly qualified members as foreign faculty Professors, National Professors and deputes them in concerned departments of the University.

Standard 5-4: The process and procedures used to ensure that teaching and delivery of course material to the students emphasizes active learning and that course learning outcomes are met. The process must be periodically evaluated to ensure that it is meeting its objectives.

- To provide high quality teaching, department periodically revises the curriculum depending upon requirements, innovations and new technology.
- With the emergence of new fields, new courses are introduced, and included in the curriculum.
- The easily available books in the University library are provided to the students for the preparation of different courses. Additionally, copying and internet facilities are also available to the students.
- Notes are also prepared by the teachers and given to the students other than different handouts
- Most of the lectures are supplemented by overheads, slides and pictures.
- All efforts are made that the courses and knowledge imparted meet the objectives and outcome. The progress is regularly reviewed in the staff meetings.

Standard 5-5: The process that ensures that graduates have completed the requirements of the program must be based on standards, effective and clearly
documented procedures. This process must be periodically evaluated to ensure that it is meeting its objectives.

- The controller of examinations announces the dates of commencement of examination. After each semester, the controller office notifies the results of the students. The evaluation procedure consists of quizzes, mid and final examinations, practicals, assignments and reports, oral and technical presentations. The minimum pass marks for each course is 40% for undergraduate and Master degree and 50 % for Ph.D. in theory and practical separately.

- In theory, weightage to each component of examination is as prescribed here under:

<table>
<thead>
<tr>
<th>Component</th>
<th>Weightage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mid Examination</td>
<td>30%</td>
</tr>
<tr>
<td>Assignments</td>
<td>10%</td>
</tr>
<tr>
<td>Final Examination</td>
<td>60%</td>
</tr>
</tbody>
</table>

- Grade points are as follows

<table>
<thead>
<tr>
<th>Marks obtained</th>
<th>Grade</th>
<th>Grade point</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>80-100 %</td>
<td>A</td>
<td>4</td>
<td>Excellent</td>
</tr>
<tr>
<td>65-79 %</td>
<td>B</td>
<td>3</td>
<td>Good</td>
</tr>
<tr>
<td>50-64 %</td>
<td>C</td>
<td>2</td>
<td>Satisfactory</td>
</tr>
<tr>
<td>40-49 %</td>
<td>D</td>
<td>1</td>
<td>Pass</td>
</tr>
<tr>
<td>Below 40 %</td>
<td>F</td>
<td>0</td>
<td>Fail</td>
</tr>
</tbody>
</table>

- Gold medals are awarded to the students who secure highest marks. Degrees are awarded to the students on the annual convocation that is held late every year.

**Criterion 6: FACULTY**

**Standard 6-1:** There must be enough full time faculties who are committed to the program to provide adequate coverage of the program areas/ courses with continuity and stability. The interests and qualifications of all faculty members must be sufficient to teach all courses, plan, modify and update courses and curricula. All faculty members must have a level of competence that would normally be obtained through graduate work in the discipline. The majority of the faculty must hold a Ph.D. in the discipline.
Table-8: Faculty distribution by program areas in Horticulture

<table>
<thead>
<tr>
<th>Program area of specialization</th>
<th>Courses in the area and average number of sections per year</th>
<th>Number of faculty members in each area</th>
<th>Number of faculty with Ph.D. degree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Post-harvest</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Tissue Culture</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Protected Cultivation</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Floriculture</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Landscape Horticulture</td>
<td>1</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Fruit crops</td>
<td>3</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

**Standard 6-2:** All faculty members must remain current in the discipline and sufficient time must be provided for scholarly activities and professional development. Also, effective programs for faculty development must be in place.

- Professional training and availability of adequate research and academic facilities are provided to the faculty members according to the available resources.
- Currently two faculty members are abroad on study leave for doctoral degree as sponsored by the different organizations.
- Incentives in the form of allowances to theses supervisors have been implemented lately to promote high standard research.
- Existing facilities include mainly internet access, which is available through networking system in addition to library facility with latest books is also available.
- Effective programs for faculty development have been just introduced since the last semester.

**Standard 6-3:** All faculty members should be motivated and have job satisfaction to excel in their profession

- Time to time provision of enthusiasm to the young faculty by the senior faculty members.

**Faculty survey**

The results of faculty survey were summarized in the form of bar chart quoted in the previous pages.
Survey of graduating students

The graduating students in last semester were surveyed as per Performa 3 before the award of degree. The results of graduating students were summarized in the form of bar charts in the previous pages.

Criterion 7: INSTITUTIONAL FACILITIES

The university administration has been struggling hard to strengthen all the departments and up-gradation of departments and establishing new faculties and Institutes. The university is also trying to attract highly qualified faculty. Following needs to focus on:

- The institution must have the infrastructure to support new trends in learning such as e-learning including digital publications, journals etc.
- The library must possess an up-to-date technical collection relevant to the program and must be adequately staffed with professional personnel. Insufficient library’s technical collection of books. Recommended books, relevant journals of the programs are not available to the students and to the teachers as well.
- These aspects need to be strengthened in number and space.
- Class rooms must be adequately equipped, especially the multimedia facility and offices must be adequate to enable faculty to carry out their responsibilities. In horticulture, offices for faculty staff are not available, thus they are accommodated minimum two/room, and in spite the rooms are quite narrow in space, subsequently affecting the quality performance.

Standard 7-1: The institution must have the infrastructure to support new trends in learning such as e-learning

The faculty has access to E-library which is very helpful for the high quality education and producing research of international standard. They also have access to the internet. However the department has the following shortcomings/problems:

- Majority of the faculty members do not have access to the PCs. Computers are not provided by the university.
- The internet services provided by the university are poor. The speed of internet is slow and often internet does not work. The telephones are also connected with the internet and the services are often breached.
• Breach of power intermittently, due to which research and academic work both are suffered.
• Majority of equipments is either out of order or outdated.
• Latest and modern molecular equipments or apparatus are lacking.
• Untrained supporting staff.
• Faculties lack practical knowledge of modern and molecular techniques.
• Scanty budget for consumables.
• Fans and tube lights are out of order and are not properly and timely repaired.

**Standard 7-2: The library must possess an up-to-date technical collection relevant to the program and must be adequately staffed with professional personnel.**

The University Central Library has very limited number of books, journals and periodicals. It’s a small library in term of space and facilities with no catalogue systems. It does not meet the standards of a University Library. However department itself owns few books.

**Standard 7-3: Class-Rooms must be adequately equipped and offices must be adequate to enable faculty to carry out their responsibilities.**

Currently the class rooms are not enough and the space is not only limited but also some basic facilities are lacking. Multimedia are not available for the lecture halls. Practical lab space is also lacking. This affects the quality of teaching. The faculty offices are another serious problem of the department. Some faculty members are sharing small rooms and the other are having their desks in the laboratories.

**Criterion 8: INSTITUTIONAL SUPPORT**

The following are mentioned against this criterion:
• Due to unavailability of class rooms, classes are taken in the laboratories. Therefore, it is imperative to arrange more classes for quality teaching.
• As mentioned earlier, faculty offices are inadequate and therefore two or three teachers have one office room.
• Space limitation is the major constraint in the development and strengthening of discipline.
• There must be sufficient support and financial resources to attract and retain high quality faculty and provide the means for them to maintain competence as teachers and scholars.

• The experienced teachers are not provided the house accommodation by the university and are living in the rented houses with exorbitant rent within the source of mere salary, thus become difficult to concentrate on the efficient working. Therefore house accommodation is indispensably required for the department staff.

• Insufficient secretarial support, technical staff and office equipment.

• Staff attendant/s not available.

**Standard 8-1:** There must be sufficient support and financial resources to attract and retain high quality faculty and provide the means for them to maintain competence as teachers and scholars.

• At present department is not having sufficient financial resource to maintain the present needs of the department. Individual research grants for students and faculty are mainly supporting the departmental research activities. Due to lack of proper facilities like fruit orchard the students conduct their research at different areas. There is a dire need for increasing the financial resources allocated to the department to establish a library, laboratories and computer facilities. Horticulture department has submitted a project for strengthening of department and it is hoped to be funded during the next year. Suggestions and factors that can contribute to the motivation of the faculty are given as follows:

  • Research grants for young faculty members may be allocated.

  • Trainings should be arranged in abroad to train the faculty members.

**Standard 8-2:** There must be an adequate number of high quality graduate students.

The intake of B.Sc. (Hons) and M.Sc. (Hons) students is once in a year. A detail of the Students enrolled during the past seven years is given in the following Table.

**Table-9: Enrollment in different programs from 2006-2014**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>B.Sc. (Hons)</td>
<td>14</td>
<td>11</td>
<td>17</td>
<td>19</td>
<td>21</td>
<td>22</td>
<td>26</td>
<td>28</td>
</tr>
</tbody>
</table>
**Standard 8-3: Financial resources must be provided to acquire and maintain Library holdings, laboratories and computing facilities.**

Total budget of the department for the financial year 2012-14 is **Rs 8,10,000** which hardly fulfill the departmental needs particularly for the purchase of contingency items. Limited resources are provided from the university budget. The computing facilities were provided on limited basis from the approved HEC project of Horticulture department, where more facilities for library, laboratories and computers are suggested for quality improvement of the department.

**Executive Summary**

Horticulture is a diverse profession that encompasses all aspects of crop production, propagation and plant protection. The Department is leading in the areas of fruits, vegetables and flowers. The department started its B.Sc. (Hons.) degree program in 1986. The Department has well-structured academic program of B.Sc. (Hons) Agriculture. The courses aim to develop and strengthen student’s capacity to grasp principles and practices of horticulture based on scientific principles. Horticulture graduates have key understanding of the modern concepts of crop management, nursery raising and vegetable seed production. In addition they have sufficient specialist knowledge in selected areas to allow them to pursue a research degree in crop science. Graduates acquire scientific background as well as having gained experience in problem solving and have developed the communication, numerical and computer skills required for a wide range of careers. In order to assess whether department is fulfilling its objectives or not, surveys on various aspects such as course evaluation, teacher evaluation, alumni survey, graduating students surveys and faculty survey etc. have been conducted by the departmental members of the program team. The data revealed that students are satisfied with the subject approach of faculty members, their fairness in examination, and level of knowledge. However, the limited availability of lecture rooms and poor laboratories infrastructure were reported as major hurdles.
Annex-XI

DETAILED COURSE CONTENTS OF SCHEME OF STUDIES FOR B.Sc (Hons) AGRICULTURE MAJORING HORTICULTURE

HORT-301  INTRODUCTION TO HORTICULTURE  3(2-2)

THEORY

Introduction, history, importance and future scope, Definition and divisions of horticulture, Classification of horticultural crops, Plant parts, their modifications and functions, plant environment; climate (temperature, light, humidity etc.) and soil (structure, texture, fertility etc), propagation of Horticultural plants, Concept of tissue culture.

PRACTICAL:

Visit of experimental gardens and nurseries with general identification of important horticultural plants, Garden tools and their uses, Techniques of propagation, Visit of tissue culture laboratory.

Books Recommended:

Theory:

Establishment of gardens; site selection, layout methods, wind breaks; Management practices; irrigation, fertilizers and manures, training and pruning, cultivation and weed control; Plant protection measures and sanitation. Basic principles involved in harvest and post harvest handling; Establishment and maintenance of lawns, Concept of protected horticulture.

PRACTICAL:

Practice in layout methods, Selection of plants from nursery; Planting, after care, hoeing and weeding etc. identification and nomenclature of important fruits, vegetables and ornamental plants; Planting and maintenance of lawns, visit of plant growing structures and storages.

Books Recommended:

THEORY


PRACTICAL

Identification of horticultural plants, field practices and maintenance of horticultural plants. Visit of nurseries and fruits orchards.

Books Recommended

THEORY


Practical

Seed dormancy test. Field practice in selected asexual propagation techniques such as grafting, budding and layering. Visits to commercial nurseries.

Books Recommended

HORT-501  PRINCIPLES OF FRUIT PRODUCTION  3(2-2)

THEORY

Introduction to fruit science, fruit bud formation, development, along with their controlling factors, pollination and fruit setting problems, Mutations and bud variations. Parthenocarpy and seedlessness. Biennial bearing. Techniques to improve / select fruit strains for arid areas of Pakistan. Basic Principles involved in harvesting, grading, packing, transportation. Storage and marketing of fruits. Fruits marketing system in Pakistan and its scope for improvement.

PRACTICAL

Identification of fruit plants, pruning and training of important fruit trees. Study of fruits. Fruits bearing habit. Market survey for the study of fruits damage and their control.

BOOKS RECOMMENDED

HORT-503         WINTER VEGETABLES         3(2-2)

THEORY

Classification of winter vegetables. Climate/ soil requirements, cultural practices, harvesting, grading, transportation, storage, marketing. Production cost of winter vegetables. Description of important varieties of winter vegetables including tuber and bulbous crops. Basic concepts on vegetable breeding.

PRACTICAL

Identification of winter vegetables and seeds, their sowing and maintenance in the field. Visits of different vegetable farms. Vegetables floral studies.

BOOKS RECOMMENDED

THEORY

Importance, present status and future scope; Growing of annual, perennials, Cacti, succulents and flowering bulbs: their propagation and maintenance; classification of ornamentals trees, Palms, shrubs, climbers and turf grasses: their propagation, growth requirements, and their suitability for various purposes and locations.

PRACTICAL

Raising and transplanting of seasonal flowers; identification of annuals, perennials, cacti, succulents, flowers bulbs, trees, shrubs, palms, climbers and their propagation methods.

BOOKS RECOMMENDED

HORT-506

HARVEST AND POST HARVEST TECHNOLOGY OF HORTICULTURAL CROPS

THEORY

Introduction and importance; Indices of fruit maturity/ripening of important horticultural plants; Climacteric and non-climacteric commodities; Harvesting and curing/ripening of different fruits; Packing house operations (culling, grading, washing, cleaning, coloring, waxing and packing of important fruits, vegetables and flowers); Packing materials and containers; Storage (Principles and types, factors affecting shelf life of fruits, vegetables and flowers); Shipment of fruits, vegetables and flowers for local and foreign markets.

PRACTICAL

Determination of harvest indices; Practices in harvesting, grading, curing and packing techniques; Machinery and equipments used for various operations; Visits to the fruit, vegetable and floral markets, packing houses and cold storages etc.

BOOKS RECOMMENDED

HORT-507  PRODUCTION OF TROPICAL AND SUB-TROPICAL FRUITS
3(2-2)

THEORY

Cultivation of individual fruits with special reference to Botany, Climate, Soil
Propagation, root stock, cultural practices, maturity, ripening, harvesting production of fruits
such as mango, Banana, Date Palm, Ber, Jamman, Olive, Litchi, Cashew nut etc.

PRACTICAL

Identification and Botanical description of available tropical, subtropical fruits,
in florescence and fruits. Visit to different fruits orchards.

BOOKS RECOMMENDED

   publishing company Inc. West Port Connecticut.
   York.
   Essex. U.K.
THEORY

Introduction and importance of indoor plants. The indoor environment: light, temperature, humidity, Cultural requirements; production of flower and foliage plants for shade and semi shade; Growing medium, moisture and aeration; essential nutrient elements and fertilizer; Propagation; watering pests and diseases; acclimatization; Culture of important indoor and house plants.

PRACTICAL

Field trips; Identification of indoor plant; practice in watering and fertilization; Preparation of soil mixtures; Potting and repotting; propagation; Diagnosis of problems and treatments.

Books Recommended

THEORY

Introduction; Present Status and future scope; Environmental factors influencing plant growth; Soils: soil preparation, manures and fertilizers; propagation, harvesting, packing and storage of the following (1) Major cut flower crops: Carnation, Chrysanthemum, Roses, Snapdragon, Orchids etc., (2) Miscellaneous cut flower crops' marigold Jasminum Sambac (Motia), Aster, Calendula, Oerbea, Nomesia, Pausy, Stock, sweet Peas, Zinnia, (3) Bulbs: Amaryllis, Anemonel Freesia, Gladiolus, Hyacith, Iris, Liltum, Narcisus, Tulip, Tuberose etc.

PRACTICAL

Identification, Nursery raising, planting and cultural operation, Harvesting and Packing of important flowers.

BOOKS RECOMMENDED

HORT- 603 CERTIFIED SEED PRODUCTION OF HORTICULTURAL CROPS 3(2-2)

THEORY

Importance of seed production. Seed germination and its controlling factors in arid areas. Cultivation, harvesting, extraction, drying, cleaning processing, storage and marketing of certified seeds of Root, bulk, fruit and leafy vegetables; various flowers and important fruits of and areas.

PRACTICAL

Seed identification, germination tests. Selling and Crossing Techniques in horticultural crops extraction, drying and storage of seeds.

BOOKS RECOMMENDED

THEORY

Classification, importance, mode of action of growth regulators, their uses in various physiological functions of the plants such as seed dormancy, rooting and plant growth, flowering, fruit set and parthenocarpacy, fruit thinning, fruit maturity, fruit ripening, senescence and plants resistance in relation to uses of growth regulators.

BOOKS RECOMMENDED

Annex- XII

FACULTY

The brief summary of CV’s regarding all faculty staff is given below, where as detail of each faculty member is given in the proceeding paragraphs:

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
<th>Qualification</th>
<th>Specialization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr. Nadeem Akhtar Abbasi</td>
<td>Professor</td>
<td>Ph. D</td>
<td>Pre and Post-harvest physiology of horticulture crops</td>
</tr>
</tbody>
</table>
| Dr. Ishfaq Ahmed Hafiz      | Professor      | Ph. D         | 1. Protected Vegetable Farming 
2. In-Vitro propagation of Horticultural Crops 
3. Certified Seed and Nursery Production of Horticultural Crops |
| Dr. Khalid Mahmood Qureshi  | Associate Professor | Ph. D | 1. Arid Zone Horticulture |
| Dr. Imran Hassan            | Assistant Professor | Ph.D | 1. Introductory Horticulture 
2. Commercial Flower Production 
3. Horticultural Crop Production |
| Ms. Najma Yousaf Zahid      | Assistant Professor | M. Sc. (Hons) | 1. Production of Tropical & Sub-tropical Fruits 
2. Medicinal and Aromatic Plants |
| Dr. Shahid J. Butt          | Assistant Professor | Ph.D | 1. Winter Vegetables 
2. Temperate Fruit Production |
| Dr. Muhammad Azam Khan      | Assistant Professor | Ph.D | Protected Vegetable Farming |
| Mr. Umer Habib              | Lecturer       | M. Sc. (Hons) | Ornamental Horticulture |
| Ms. Mehwish Yaseen          | Lecturer       | M. Sc. (Hons) | Physiology of Horticultural Plants |
| Dr. Touqueer Ahmad          | Lecturer       | Ph. D         | Biotechnology/tissue culture of horticulture |
# Faculty Resume

<table>
<thead>
<tr>
<th>Name</th>
<th>Nadeem Akhtar Abbasi</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Personal</strong></td>
<td></td>
</tr>
<tr>
<td>Father’s Name</td>
<td>Muhammad Akhtar Abbasi</td>
</tr>
<tr>
<td>Date of Birth</td>
<td>03-03-1965</td>
</tr>
<tr>
<td>N.I.C. NO.</td>
<td>61101-1748794-1</td>
</tr>
<tr>
<td>Nationality</td>
<td>Pakistani</td>
</tr>
<tr>
<td>Postal Address</td>
<td>University of Arid Agriculture, Murree Road Rawalpindi.</td>
</tr>
<tr>
<td>Permanent Address</td>
<td>Village Phulgran (Korang Valley) Distt. Islamabad, Pakistan.</td>
</tr>
<tr>
<td>Phone</td>
<td>+92-51-9290771; 0300-5069600</td>
</tr>
<tr>
<td>Email</td>
<td><a href="mailto:nadeemabbasi65@yahoo.com">nadeemabbasi65@yahoo.com</a> <a href="mailto:nadeem.abbasi@uaar.edu.pk">nadeem.abbasi@uaar.edu.pk</a></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Experience</th>
<th>Assistant Research Officer (Horticulture) : Hill Fruit Research Station Murree under Ayyub Agriculture Research Institute, Faisalabad. Govt. of the Punjab from January 6, 1990 to December 1, 1999.</th>
</tr>
</thead>
</table>
| Duties Performed: | - Training Farmers/students  
- Management of Fruit/Nursery farms.  
- Report Writing.  
- Conducting research work on different fruit plants to solve farmers’ problems. |

**Additional Duties Performed under Chief Minister of the Punjab Project for Beautification of Murree 1997 to 1999:**
- Planning and Execution of landscape projects to beautify Murree city.  
- Management of the floriculture farm/nursery.  
- Training farmers/students in the area of floriculture.  
- Conducting research work on ornamental plants to determine the suitability for different areas of Murree.  

**Assistant professor**: Department of Horticulture, University of Arid Agriculture, Rawalpindi, Pakistan, from 01-12-1999 to 2-12-2002.  
**Associate Professor**: Department of Horticulture, University of Arid Agriculture, Rawalpindi, Pakistan, from 02-12-2002 to 02-08-06.  
**Professor**: Department of Horticulture, University of Arid Agriculture, Rawalpindi, Pakistan, from 02-08-2006 to date.  
**Responsibilities:**
- Responsible for organising teaching and research programs in the department.  
- Active participation in teaching of various courses on fruits,
- Administrative and financial management of the department.  
- To disseminate the production technology of horticultural crops through publications, students and direct contact with farmers. Project Director: Higher Education Commission Project “Production of Pathogen Free Horticultural Plants”. Dec. 1, 2004 to Sep. 30, 2007 (Project completed successfully). Chairman University Purchase Committee: 27-09-07 to 10-09-12. Responsible to conduct purchase of all university items like equipment, chemicals, glass ware, furniture etc. according to the | vegetables, and floriculture/landscaping, Horticulture Business Management. Supervising Research Projects of Ph.D., M.Sc. and B.Sc. students. Incharge of the University lawns/gardens. Organized Mega Flower Shows, Flower Arrangements in the university two times every year since 2009. **Professor on Tenure Track System:** 28-05-2010 to date |
prescribed criteria.

**Coordinator of PMAS-AAUR Sub-Campus Khushab:** 05-01-07 to 01-01-2014. Established the sub-campus and after that provided support/guidance in running different academic programs. Financial matters of the sub-campus with the treasury at main campus are also handled.

**Principal Officer Estate Care/Security:** of PMAS AAUR. 31-03-08 to 04-03-2014. Responsible to take care of the university property, paying bills and keeping the university environment secure for smooth working.

- **Professor Incharge University Gardens/Lawns:** of PMAS-AAUR. 13-12-12 to date. Responsible for management of university lawns, landscape designing and its implementation including financial handling.

### PROJECTS:

3. Collection of loquat genotypes of Pakistan and their multiplication through conventional vegetative methods and tissue culture techniques, Rs. 2.5 million, Sponsored by HEC. (2010-2013)
4. Pre and post harvest treatments of food grade chemicals to improve peach fruit quality and shelf-life, Rs.1.992 million, Sponsored by PSF (2010-2013).
5. Jelly seed disorder in mango fruit-causes and control, Rs. 4,99,290 Sponsored by HEC. (2012-2013)
6. Oil extraction and mass propagation of scented rose species, Rs. 50000 Sponsored by HEC. (As a Co-PI). (2012-2013)

### TRAININGS/ WORKSHOPS/ CONFERENCES

1. Participated in Annual International Conference of International Society of Horticultural Sciences in Montreal, Canada in August 1995. (July 30 to August 3)
2. Training on “Diagnosis and management of fruit and vegetable crop diseases”, held at National Agriculture Research Center, Islamabad, Pakistan (12th May to 3rd June,

4. Participated in seminar on “Gas Chromatography: How to Gain Efficiency and Improve Results, June 2004 in Perth, WA organized by BIOLAB Ltd.

5. Workshop for information forming the basis of ‘Salty Business’, on 11-06-04 at Perth, WA, organized by Department of Agriculture, Govt. of WA.


9. First International Conference on Mango and Date Palm: Culture and Export held on 20th – 23rd June, 2005 at Univ. of Agriculture Faisalabad, Pakistan.


14. Participated and delivered lecture in “National Workshop on Streamlining Commercial Floriculture on Modern lines to gain foothold in Niche Markets” lecture titled “Postharvest management of cut flowers” on 26th March, 2009 held at NARC, Islamabad, organized by Horticultural Foundation of Pakistan.

15. Participated and presented country paper in “Seminar on Good Agricultural Practices (GAP) and Safety


17. Participated and presented papers in III International Symposium on Loquat in Antakya - Hatay, Turkey from 03-06 May, 2010.

18. Participated and presented paper in “Expert Consultation Meeting on Postharvest and Value Addition of Horticultural Produce 2010” from Nov. 29 to Dec. 2, 2010 at Marriott Hotel, Putrajaya, Malaysia organized by Malaysian Agricultural Research and Development Institute (MARDI) and Asia-Pacific Association of Agricultural Research Institutions (APAARI).


21. Participated and chaired a session in “Citrus Growers Conference” May 9-10, 2012 under Australia-Pakistan Agriculture Sector Linkages Program (ASLP Citrus Project) organized by IHS, Univ. of Agri. Faisalabad, HRI, NARC Islamabad.

22. Participated in Training Program (21st – 24th May, 2012) on International Featured Standards (IFS-6) offered by Star Farm Pakistan (Pvt.) Ltd. by Mr. Peter Wang (IFS Asia Representative and Head of IFS Asia Office, China).


24. Training course on “Treatment and Utilization of Agriculture Waste for Developing Countries” July 16 to Aug. 12, 2013 in Chengdu, China, organized by Biogas Institute of Ministry of Agriculture sponsored by Ministry of Commerce P.R. China.


26. Participated in Seminar on “Characterization of native &
potential mango varieties in relation to ceratocystis manginecans and other economic traits” at University of Agric. Faisalabad on Sep. 10, 2014, sponsored by PARB, organized by HIS and ORIC UAF.

<table>
<thead>
<tr>
<th>ORGANIZATIONAL MEMBERSHIP</th>
<th>1. International Society for Horticultural Science (ISHS) currently suspended for non-payment of fee.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2. Agricultural Foundation of Pakistan.</td>
</tr>
<tr>
<td></td>
<td>3. Life Member of Islamabad Horticultural Society, Islamabad; General Secretary for 2014-2015.</td>
</tr>
<tr>
<td></td>
<td>5. Member Pakistan National Society of Horticulture</td>
</tr>
</tbody>
</table>

**Publications**


- **Zahoor, S., M.S. Ahmed, N.A. Abbasi.** 2003. Effect of phosphorus levels and effective microorganisms on seed


- Abbasi, N. A. and M. M. Kushad. 2006. The activites of
• SOD, POD, and CAT in ‘Red Spur Delicious’ apple fruit are affected by DPA but not calcium in postharvest drench solutions. J. Amer. Pomologic. Soc. 60(2): 84-89. (Impact Factor = 0.522)


• Hasnain, R., N. A. Abbasi, I. A. Hafiz, T. Ahmad and Z.
<table>
<thead>
<tr>
<th>Author(s)</th>
<th>Year</th>
<th>Title</th>
<th>Journal</th>
<th>Volume</th>
<th>Issue</th>
<th>Pages</th>
<th>IF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chaudhary</td>
<td>2008</td>
<td>Effect of different bacterial dilutions on transformation efficiency of hot chilli (<em>Capsicum frutescens</em> L.) varieties.</td>
<td>Pak. J. Bot.</td>
<td>40(6)</td>
<td>2655-2662. (0.947)</td>
<td></td>
<td></td>
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<tr>
<td>Abbasi, N. A., Z. Iqbal, M. Maqbool and I. A. Hafiz</td>
<td>2009</td>
<td>Postharvest quality of mango (<em>Mangifera indica</em> L.) fruit as affected by chitosan coating.</td>
<td>Pak. J. Bot.</td>
<td>41(1)</td>
<td>343-357. (0.947)</td>
<td></td>
<td></td>
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<tr>
<td>Yaseen, M., T. Ahmad, N. A. Abbasi and I. A. Hafiz</td>
<td>2009</td>
<td>Assessment of apple rootstocks M. 9 and M. 26 for in vitro rooting potential, using different carbon sources.</td>
<td>Pak. J. Bot.</td>
<td>41(2)</td>
<td>769-781. (0.947)</td>
<td></td>
<td></td>
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<tr>
<td>Hussain, A., N. A. Abbasi, I. A. Hafiz and A. Akhtar</td>
<td>2009</td>
<td>Morpho-physical characteristics of eight loquat genotypes cultivated in Chakwal district, Pakistan.</td>
<td>Pak. J. Bot.</td>
<td>41(6)</td>
<td>2841-2849. (IF 0.947)</td>
<td></td>
<td></td>
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<tr>
<td>Siddiqui, S. S., M. Naeem and N. A. Abbasi</td>
<td>2009</td>
<td>Effect of</td>
<td></td>
<td></td>
<td></td>
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<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>Title</th>
<th>Journal/Conference</th>
<th>Volume/Issue/Publication Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abbas, G., I.A. Hafiz, N. A. Abbasi and A. Hussain</td>
<td>2012</td>
<td>Determination of processing and nutritional quality attributes of potato genotypes in Pakistan</td>
<td>Pak. J. Bot. 44(1): 201-208.</td>
<td>(IF 0.533)</td>
</tr>
<tr>
<td>Author(s)</td>
<td>Title</td>
<td>Journal</td>
<td>Volume</td>
<td>Pages</td>
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</tr>
<tr>
<td>Zakia. S., N. Y. Zahid, M. Yaseen, N.A. Abbasi, I.A. Hafiz and N. Mehmood.</td>
<td>Standardization of an efficient protocol for micropropagation of Aloe vera using different hormonal regimes. Accepted in “Pakistan Journal of Pharmaceutical Sciences”1083-1087</td>
<td></td>
<td></td>
<td>(IF 1.103)</td>
</tr>
<tr>
<td>Saeed, T., I. Hassan, N. A. Abbasi, G. Jilani.</td>
<td>Effect of gibberellic acid on the vase life and oxidative activities in senescing cut gladiolus flowers.</td>
<td>Plant Growth Regul.</td>
<td>72(1):89-95</td>
<td>1.67</td>
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during summer. Int. J. Agric. & Biol., 16(3):543-549. (IF 0.808)

**Technical Papers in Proceedings:**


<table>
<thead>
<tr>
<th>Name</th>
<th>Dr. Ishfaq Ahmad Hafiz</th>
</tr>
</thead>
</table>
| Personal | Father's Name: Muhammad Sharif  
Date of birth: July 19, 1960  
N.I.C. No.: 266-60-064671  
Postal Address: Department of Horticulture,  
University of Arid Agriculture  
Murree Road Rawalpindi Pakistan  
Permanent Address: Main Bazar Ashraf Town  
Pindorian Distt. & Teh. Islamabad  
E.mail: decenthafiz60@yahoo.com |
| Experience | Professor: PMAS- Arid Agriculture University, Rawalpindi  
27-03-2014 to date  
Associate Professor: PMAS- Arid Agriculture University, Rawalpindi  
2-08-2006 to 26-3-2014  
Assistant Professor: University of Arid Agriculture  
Rawalpindi  
30-8-2003 to 01-08-2006  
Assistant Research Officer: Horticulture Section, Ayub Agricultural Research Institute, Faisalabad.  
08-04-2000 to 29-8 2003  
Assistant Research Officer: Mango Research Station, Shujabad.  
21.07.98 to 07.04.2000  
Ph. D Scholar: ZAU, P.R. China  
9/95-7/98  
Assistant Research Officer: Barani Agricultural Research Institute Chakwal  
1/90-8/95.  
Agricultural Officer: Agriculture Extension Wing  
2/88-12/89 |
| Honor and Awards | 1 Acquired first position in Horticulture Major Subject in B.Sc. (Hons), Degree1986.  
2 Secured Ph.D. degree with excellent grade A  
3 First, best individual performer in Barani Agriculture Research Institute, Chakwal.  
4 Author and co-author of several research and technical papers.  
5 Appreciation from the worthy Vice Chancellor |
University of Arid Agriculture Rawalpindi.
6 Research Productivity Award from Govt. of Pakistan 2010-11

<table>
<thead>
<tr>
<th>Memberships</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Agricultural Foundation of Pakistan</td>
</tr>
<tr>
<td>2. International Society for Horticultural Science (ISHS)</td>
</tr>
<tr>
<td>3. Islamabad Horticultural Society, Islamabad</td>
</tr>
<tr>
<td>4. Pakistan Botanical Society (Life time Member since 2007)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Service Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Teaching of Courses of Horticulture Science to B.Sc (Hons), M.Sc. (Hons) and PhD Students</td>
</tr>
<tr>
<td>• Management of progeny orchards, Glasshouse and nursery management</td>
</tr>
<tr>
<td>• Incharge Laboratory</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Brief Statement of Research Interest</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Lawn In-charge of the PMAS- Arid Agriculture University, Rawalpindi.</td>
</tr>
<tr>
<td>2. Director of Farmers Market Private (Hydroponic Project)</td>
</tr>
<tr>
<td>3. Area In-charge of Experimental Orchard</td>
</tr>
</tbody>
</table>

**Technology Transfer**
1. Participated in different farmer's field days in Punjab.
2. Advised the officers of Horticultural Research Institutes on planning and development of horticulture industry.
3. Addressed to the fruit growers and grower groups on production technology and marketing/export.
4. Promoted new technology through TV, radio and newspapers.
5. Provided the technical information on fruit production and quality management according to the needs of target export markets.

<table>
<thead>
<tr>
<th>Projects Submitted</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Designing production technology for promising grapes varieties. Rs. 10.928 million, as Co PI. PARB.</td>
</tr>
<tr>
<td>• Mass propagation of promising varieties of olive through in vitro techniques. Rs. 42 million, as PI. PARB.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Approved/Ongoing</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Varietal Improvement of Gladiolus through in vitro Mutation. Rs 3.2 million, as PI approved by HEC.</td>
</tr>
<tr>
<td>• Technology transfer to potato growers in relation to pathogen free seed potato, management of diseases and adoption of improved agro techniques. Rs. 3.245 million, as PI. Approved by Endowment Fund</td>
</tr>
</tbody>
</table>
Secretariat (FDTTPC) UAAR.

- Production of Pathogen Free, True to Type Olive Plants through Tissue Culture. Rs 5.859 million. As Co PI, approved by HEC.

**Completed**

- Development of *In Planta* Transformation System for Wheat worked as CO PI in the Project of HEC


Nadeem Akhtar ABBASI†, Tariq PERVAIZ, Ishfaq Ahmed HAFIZ, Mehwish YASEEN, Azhar HUSSAIN (2013) Assessing the response of indigenous loquat cv. Mardan to phytohormones for in vitro shoot proliferation and rooting. Journal of Zhejiang University-SCIENCE B (Biomedicine & Biotechnology ISSN 1673-1581 (Print); ISSN 1862-1783 (Online)(IF 1.6)

<table>
<thead>
<tr>
<th>Personal</th>
<th>Dr. Khalid Mahmood</th>
</tr>
</thead>
<tbody>
<tr>
<td>Father’s Name</td>
<td>Allah Loke Qureshi</td>
</tr>
<tr>
<td>Date of Birth</td>
<td>07-03-1959</td>
</tr>
<tr>
<td>N.I.C. NO.</td>
<td>61101-1748794-1</td>
</tr>
<tr>
<td>Nationality</td>
<td>Pakistani</td>
</tr>
<tr>
<td>Postal Address</td>
<td>University of Arid Agriculture,</td>
</tr>
<tr>
<td></td>
<td>Murree</td>
</tr>
<tr>
<td></td>
<td>Road Rawalpindi</td>
</tr>
<tr>
<td>Permanent Address</td>
<td>Village &amp; P.O. Panjwarian, The:</td>
</tr>
<tr>
<td></td>
<td>Kharian Distt. Gujrat, Pakistan or</td>
</tr>
<tr>
<td></td>
<td>House # 359, Street # 13, Shehzad</td>
</tr>
<tr>
<td></td>
<td>Town Islamabad</td>
</tr>
<tr>
<td>Phone</td>
<td>+92-51-9290771; 0300-5241628</td>
</tr>
<tr>
<td>Email</td>
<td><a href="mailto:kmq_2008@hotmail.co.uk">kmq_2008@hotmail.co.uk</a></td>
</tr>
</tbody>
</table>

| Experience        | Date: January 10. 06.1985 to 02. 02. 2000. |
| Title             | Scientific Officer                |
| Institution       | Fruit Crops, National Agriculture Research Centre. Park Road Islamabad. |
| Date              | 02. 02. 2000 to 29-02-2007        |
| Title             | Senior Scientific Officer        |
| Institution       | Fruit Crops, National Agriculture Research Centre. Park Road Islamabad. |
| Date              | 01.03. 2007 to date              |
| Title             | Associate professor              |
| Institution       | Department of Horticulture, University of Arid Agriculture, Rawalpindi |

<p>| Honor and Awards  | • Awarded University BSc and MSc Merit Scholarships during 1980-1984. |
|                   | • Awarded six months training on citrus production and management in 1989 |
|                   | • Won ARP 11 Merit Scholarship for Ph.D. in 1994 funded by USA. |
|                   | • Got merit scholarship for Post doctorate in 2007 |</p>
<table>
<thead>
<tr>
<th>Membership</th>
<th>Islamabad Horticultural Society, Islamabad.</th>
</tr>
</thead>
</table>
| Service Activity      | • Teaching of courses of horticulture science at graduate, postgraduate and Ph.D. level students.  
                      | • Research and execution of developmental projects. |
| Brief Statement of Research Interest | • Production of Horticultural Crops  
                          | • Plant Physiology  
                          | • Soft Fruit Production |
| Publications          | •                                      |
| Research Grants and Contracts | **PROJECTS:**  
                          | • Four years project on “Introduction of soft fruits (strawberry, blackberry, raspberry, black currant) in potential areas of Pakistan for economic return” has been completed successfully.  
<pre><code>                      | • Three years project on “Underutilized Tropical fruit crops of Pakistan” funded by International Centre for Underutilized Crops (ICUC) has been completed successfully. |
</code></pre>
<p>| Other Research or Creative Accomplishments | No |</p>
<table>
<thead>
<tr>
<th>Name</th>
<th>Dr. Imran Hassan</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Personal</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Father Name:</strong></td>
<td>Maqsood-ul-Hasan</td>
</tr>
<tr>
<td><strong>Date of Birth:</strong></td>
<td>23-03-1970</td>
</tr>
<tr>
<td><strong>N.I.C No:</strong></td>
<td>37405-5803547-7</td>
</tr>
<tr>
<td><strong>Nationality:</strong></td>
<td>Pakistani</td>
</tr>
<tr>
<td><strong>Domicile:</strong></td>
<td>Rawalpindi</td>
</tr>
<tr>
<td><strong>Marital Status:</strong></td>
<td>Married</td>
</tr>
<tr>
<td><strong>Experience</strong></td>
<td>Fourteen years &amp; 10 months work experience of teaching, research and conducting examination of the undergraduate &amp; post-graduate student in the Department of Horticulture, Pir Mehr Ali Shah, Arid Agriculture University, Rawalpindi</td>
</tr>
<tr>
<td><strong>Additional Managerial Charge Experience:</strong></td>
<td>Worked for 7 years in all on additional charge as Incharge University Lawns from August, 1997 to May, 2000 and from May 2005 to May 2009 in PMAS, AAUR.</td>
</tr>
<tr>
<td></td>
<td>Served for 12 years and 8 months in all as from August, 1997 to Feb, 2002 and from May, 2005 to May 2009 nominated by Chairmen, Department of Horticulture, PMAS, AAUR.</td>
</tr>
<tr>
<td></td>
<td>Worked as Coordinator, Time Table &amp; Date Sheet of Horticulture Department from 2010 to date as nominated by Dean, FC&amp; FS, PMAS, AAUR</td>
</tr>
<tr>
<td></td>
<td>Served for 7 years from 1997 to 1999 and from May, 2005 to May 2009 as Incharge Laboratory, Department of Horticulture, PMAS, AAUR</td>
</tr>
</tbody>
</table>
Name: Usman Shoukat Qureshi

Personal
- Marital Status: Married
- Gender: Male
- Nationality: Pakistani
- Religion: Islam
- Date of Birth: January 15, 1986

Experience
- Currently working as Lecturer (BS-18), Department of Horticulture, Pir Mehr Ali Shah Arid Agriculture University Rawalpindi, Pakistan.
- Also having an additional charge of ‘Campus Management Officer (CMO)’ at Pir Mehr Ali Shah Arid Agriculture University Rawalpindi, Pakistan.

Publications
- Worked as a ‘Member of Nursery Production Unit’, PMAS Arid Agriculture University Rawalpindi, Pakistan.
- Internship at National Agriculture Research Centre (NARC) Pakistan in Horticulture Research Institute.

### Honor and Awards

**Microsoft Office:** Can prepare reports and use MS office for different purposes  
**Auto CAD:** Can use auto CAD programme for making Layouts of gardens, structures etc.  
**Flower Show:** I have organized and managed flowers show held by “PMAS, Arid Agriculture University Rawalpindi Pakistan”, “Parks and Horticulture Agency (PHA) Rawalpindi Pakistan”, “Attock Refinery Limited (ARL) Pakistan” and “Capital Development Authority (CDA) Islamabad Pakistan”.  
**Private Projects:** I have designed three residential lawns at Rawalpindi. Also I have worked with DHA Phase I authority and design children park.

### Publications


**Projects:**
- Research Project on “Phenological studies of Citrus”
- Research Project on “Effect of Calcium Chloride on Post Harvest quality of Tomatoes”
<table>
<thead>
<tr>
<th>Name</th>
<th>NAJMA YOUSAF ZAHID</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Personal</strong></td>
<td></td>
</tr>
<tr>
<td>Father's Name</td>
<td>Muhammad Yousaf Zahid</td>
</tr>
<tr>
<td>Date of Birth</td>
<td>17-04-1970</td>
</tr>
<tr>
<td>Nationality</td>
<td>Pakistani</td>
</tr>
<tr>
<td>N.I.C. No</td>
<td>37405-0555365-2</td>
</tr>
<tr>
<td>Language Skill</td>
<td>English &amp; Urdu</td>
</tr>
<tr>
<td>Marital Status</td>
<td>Married</td>
</tr>
<tr>
<td>Citizenship</td>
<td>Pakistani</td>
</tr>
<tr>
<td><strong>Experience</strong></td>
<td>Worked with AKRSP (Agha Khan Rural Support Programme), Gilgit as consultant Agriculturist from August 1995 to April 1998.</td>
</tr>
<tr>
<td></td>
<td>▪ In 1999, I worked as Co. P.I in three years project funded by German with collaboration of UAAR, at chitral (NAs areas).</td>
</tr>
<tr>
<td></td>
<td>▪ Worked as advisor horticulturist in a one year project funded by china and UAAR at Chatta Bakhtawar village, Islamabad.</td>
</tr>
<tr>
<td></td>
<td>▪ As member academic council at UAAR</td>
</tr>
<tr>
<td></td>
<td>▪ Technical talk programmes regarding Horticulture to communicate information’s to farmers in Kisan time programme on PTV world and Sohni Darti Tv Channels.</td>
</tr>
<tr>
<td></td>
<td>▪ As Supervisor &amp; committee member of M.Sc (Hons.) Hort students for thesis and 2 years research every year.</td>
</tr>
<tr>
<td><strong>Honor and Awards</strong></td>
<td>1. Indigenous PhD scholarship through ministry of science and technology in 2001.</td>
</tr>
<tr>
<td></td>
<td>2. Awarded by research project by University in 2007</td>
</tr>
</tbody>
</table>
46-51 jan 2012. 0.533 impact factor.


<table>
<thead>
<tr>
<th>Name</th>
<th>TOUQEER AHMAD</th>
</tr>
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<tbody>
<tr>
<td><strong>Personal</strong></td>
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<tr>
<td>Nationality:</td>
<td>Pakistani.</td>
</tr>
<tr>
<td>N. I. C. No:</td>
<td>37202-1589897-7</td>
</tr>
<tr>
<td>Passport No:</td>
<td>KH427022</td>
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<tr>
<td>Date of Birth:</td>
<td>23rd January 1977</td>
</tr>
<tr>
<td>Domicile:</td>
<td>Punjab (Chakwal).</td>
</tr>
<tr>
<td>Marital Status:</td>
<td>Single.</td>
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<tr>
<td>Gender:</td>
<td>Male.</td>
</tr>
<tr>
<td>Language Skills:</td>
<td>Full command on English, Urdu and Punjabi. Chinese (basic spoken)</td>
</tr>
</tbody>
</table>

| **Experience**        |                                                   |
| Position:             | Lecturer Horticulture                             |
| Period:               | 14th Feb 2005 To date                             |
| Organization:         | PMAS, Arid Agriculture University                |
| Field of Work:        | Teaching of various courses at PhD. Supervise the |
| M.Sc. and B.Sc level. | Post Graduate students in their research work. Creating technical manpower through providing training in respective fields. Collaborated with farmers/fruit industry in order to improve management and solve horticulture issues. |
| Position:             | Field Officer                                     |
| Period:               | 15th June 2004 To 14th Feb 2005                   |
| Organization:         | Pakistan Horticulture Development &               |
| Export Board          | Carry out research activities with the            |
| Field of Work:        |                                                   |
citrus industry to minimize the post-harvest losses in Citrus. Introduce improved orchard management practices (Good Agricultural Practices). Create awareness among different stakeholders specially the forming communities and traders on changing trade requirements regarding SPS and other issues under the WTO regime.

**Research Fellow**

1st November 2002 To 14th June 2004

National Agriculture Research Center

**Position:** Research Fellow

**Period:**

1st November 2002 To 14th June 2004

**Organization:** National Agriculture Research Center, Islamabad, Pakistan

**Field of Work:** Conduct project entitled “Production of Pathogen Free True to type

- Peach Rootstock GF 677 Plantlets through Tissue Culture”.
- Propagation of Fruit through Conventional & Tissue Culture Method

### Honor and Awards

- Establishment and Development of Plant Tissue Culture Lab in Horticulture Department of PMAS, AAUR. This landmark was achieved by my technical expertise and inspirational encouragement of Project Director, Prof. Dr. Nadeem Akhtar Abbasi
- Standardization of protocols for mass scale *in vitro* propagation of economical important fruit and ornamental crops

### Publications


- Ansar Ali, Touqeer Ahmad, Nadeem Akhtar Abbasi and Ishfaq


