



Hill Fruit Research Station  
Sunny Bank, Murree



Dr. Muhammad Afzal  
Horticulturist  
Off: +92-51-9269240  
Fax: +92-51-3756566  
Cell: +92-335-9379138  
[hfrs.muree@gmail.com](mailto:hfrs.muree@gmail.com)

## ANNUAL ABRIDGED REPORT FOR THE YEAR 2016-17

### Overview

Hill Fruit Research Station Murree is the premier research center in the Punjab Province for temperate fruits and is endeavoring hard for the progress and Improvement of plantation of high quality fruit in Murree hills area where apple, cherry, and other hill fruits are successfully produced. The station was established in 1952 as sub-station under the then Fruit Specialist, Faisalabad. In year 1984 it was upgraded as station in order to strengthen the research work. This station is composed of three research farms namely; Progeny Garden at Sunny Bank, Progeny Garden at Lower Topa and Nursery & Mother Block at Tret to carry out the research work on Apple, Pear, Plum, Peach, Apricot, Persimmon, Loquat, Avocado, Almond, Walnut, Pecan Nut, Hazel Nut, Cherry and Olive. In addition, special emphasis is given during the current year to the varietal development and approval along with registration of nursery for production of certified nursery plants.

The main objectives of the Hill Fruit Research Station, Murree are as under:

- 1 Introduction, acclimatization and selection of high yielding and better quality varieties of deciduous fruits
- 2 Execution of research to solve the problems faced by the growers
- 3 Development of appropriate production technology for deciduous fruits
- 4 Production and supply of pedigreed fruit plants of the recommended varieties to the growers at cheaper rates

### Approval of new varieties

Two candidate selections of Avocado and Walnut as chance seedlings with the proposed names “Murree Gola” and “Odum Murree Selection” has been selected for approval and the data recording about their descriptors has been initiated.

### CURRENT RESEARCH ACTIVITIES

### AVOCADO

#### Propagation of Avocado through Cuttings by the Use of Different Concentrations of IBA

Experiment was started during April 2016 and repeated in July 2016 to produce true to type avocado plants through asexual Propagation. Experiment was laid out according to Randomized Complete

Block Design. (RCBD) having three replications with fifteen cuttings. The avocado variety used in this experiment was California Long. The 15 cm long cuttings of new growth were treated with IBA at concentrations of 1000 mg/L, 2000 mg/L, 3000 mg/L and 4000 mg/L compared with Control. The cuttings were then planted in plastic bags having sand and soil (50:50).

Maximum success percentage (60%) was recorded in T<sub>0</sub> (Control) till now. No shoot and leaf growth is recorded in the live cuttings. However, the experiment is under continuous observation and the final results will be recorded at the end.

### **Propagation of Avocado by Different Techniques of Grafting**

The experiment was initiated in 2015 to produce true to type avocado plants through asexual propagation method using different grafting techniques. Experiment was laid out according to Randomized Complete Block Design (RCBD) having four replications using twenty cuttings for each treatment, i.e. Cleft Grafting, T-Grafting and Side Grafting. The cuttings were then planted in plastic bags having sand and soil (50:50).

Maximum success percentage was observed in cleft grafting and T-grafting (20%). The grafted plants did not show any shoot and leaf growth.

### **Effect of Different Times on the True to Type Propagation of Avocado through Aerial Layering**

The experiment included in the research plan to produce true to type plants through asexual propagation. Experiment was laid out according to randomized complete block design (RCBD) having three replications with twenty layering units for each treatment.

Only primordial growth was observed with a little root growth in few cuttings. So the final results will be provided at the end of this season.

### **Varietal Comparison of Different Varieties of Avocado at Lower Hills of Murree (Tret)**

The experiment was designed to find better variety of avocado at lower altitude of Murree. The experiment was laid out according to Randomized Complete Block Design. (RCBD) having one replication with one plant / treatment.

V<sub>2</sub> (Selection II) and V<sub>4</sub> (Selection IV) were the early varieties with flowering during mid March. V<sub>1</sub> (Selection I) and V<sub>3</sub> (Selection III) remained mid season flowering during end of March While in V<sub>5</sub> (Selection V) and V<sub>6</sub> (Selection VI) started flowering late in the start of April. Further observations are continued till the end of fruit harvest and recorded accordingly.

## **OLIVE**

### **Performance of Different Olive Varieties at Lower Hills, Murree**

The experiment was included in the research program to evaluate the olive varieties for commercial cultivation. The experiment was laid out according to RCBD having one replication with three plants / treatment.

Until now (30<sup>th</sup> May) Maximum height was observed as (5.06 m) in T<sub>3</sub> (Leccino), stock girth (239 cm) in Ottobratica, Stem girth (32 cm) in T<sub>2</sub> (Frontoio), leaf length (6.5 cm) in T<sub>5</sub> (Coratino). While, earlier flowering and fruit setting were observed in T<sub>3</sub> (Leccino).

## **Response of Different Olive Varieties on the Rooting of their Cuttings at Murree**

The experiment included in the research plan to evaluate the best cultivar of olive for propagation through cuttings. Experiment was laid out according to randomized complete block design (RCBD) having three replications with ten cuttings for each treatment.

No root growth is observed except root primordial in few cuttings. So results will be recorded at the end of this season.

## **WALNUT**

### **Strengthening of Gene pool of Walnut through Selection of New Walnut Varieties at Lower Altitude of Murree**

The experiment was included in the research programme to select new strain / variety having better quality characteristics. The experiment was laid out according to Randomized Complete Block Design. (RCBD) having three replications using three plants per treatment.

Three Walnut Selections (i.e.,  $V_1$  = Walnut Selection I,  $V_2$  = Walnut Selection II and  $V_3$  = Walnut Selection III) were collected from local (Ghora Gali) area and planted at Research Farm, Tret during 2014. Maximum plant height (2.16 m) and scion girth (8cm) was recorded in  $V_2$  with maximum stock girth (42.6) in  $V_1$ .

## **STRAWBERRY**

### **Improving the Quality of Strawberry Fruits by Planting in Raised PVC Pipes**

The experiment was included in the research plan to provide new

improved variety to the end user in addition to existing varieties at lower hills. The experiment was laid out according to Randomized Complete Block Design (RCBD) having three replications using three plants per treatment.

Until now flower appeared in the 4<sup>th</sup> week of May. Further, the data will be provided on the onset and maturity of fruit.

### Meteorological Data for the year 2017-18

Month	Rain fall (mm)	Snow fall (Inches)	Hail storms (Inches)	Temperature	
				Minimum <sup>0</sup> C	Maximum <sup>0</sup> C
July, 2016	485	-	-	18	24
Aug, 2016	359	-	-	15.4	23
Sept, 2016	14	-	-	14.5	24.5
Oct, 2016	44	-	-	14	22.8
Nov, 2016	476	-	2	13.3	17
Dec, 2016	87	10	-	2	14
Jan, 2017	2	-	-	0.4	7
Feb, 2017	128	732	-	1	6
Mar, 2017	123	-	2	2.5	14
Apr, 2017	175	38	4	2.8	13
May, 2017	56	-	2	2.8	25

#### A. ACHIEVEMENTS:

1. Evolved improved management practices for deciduous orchards.
2. Provided pedigreed fruit plants to the growers.
3. Use of sprays like Novastar, Cabriotop, Biofer for the protection of plants from insect pests as well to enhance the growth of the plants.
4. Nursery area in the substation Tret has been increased to ensure maximum output.
5. Green sheds and low tunnels are developed for the nursery plants as well as for the sowing of seeds like avocado, walnut, pecan nut etc.
6. General cleanliness of the whole areas at all the three locations with the use of round up weedicide and brush cutters as well as manually with hand tools.
7. Arrangement of water storage tanks (plastic tanks and iron drums) in nursery at Tret.
8. Plantation of 100000 olive cuttings in improved medium (perlite+ sand & soil+sand mixture) in polythene bags and kept in SPT under Green sheds for root initiation purposes in collaboration with olive Horticulturist of BARI, Chakwal.
9. Initiation of variety registration of Avocado and Walnut along with registration of nursery for certified plant production.
10. Targeted production of nursery plants of various deciduous and hill fruits.
11. Survey, selection and collection of new varieties of various deciduous and hill fruits.
12. Capacity building through trainings about PPRA rules and harvesting and post harvest processing of olive fruit in the Punjab.

13. Review and Evaluation of Research paper with Journal of Agriculture Research (JAR), AARI, Faisalabad and Project Proposal with PARB, Lahore under collaborative activities with other organizations.

**Publications**

Urdu publications	=	2
Workshops/Conferences attended	=	2
Advisory services	=	33

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