
**Hill Fruit Research station
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**Dr. Muhammad Afzal,
Horticulturist**

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 under the then Fruit Specialist, Faisalabad. In year 1984 the staff was upgraded with the Horticulturist and five Assistant Research Officers in order to strengthen the ongoing work.

RESEARCH WORK DONE

PROPAGATION OF AVOCADO (*PERSEA AMERICANA*) BY DIFFERENT TECHNIQUES OF GRAFTING

The experiment was initiated in to produce true to type avocado plants through asexual propagation method using different grafting techniques as treatment, i.e. Cleft Grafting, T-Grafting and Side Grafting.

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

VARIETAL COMPARISON OF DIFFERENT VARIETIES OF AVOCADO (*PERSEA AMERICANA*) AT LOWER HILLS OF MURREE (TRET)

The experiment was designed to find better variety of avocado at lower altitude of Murree.

Flowering time was recorded in the last week of March in V₂, V₃, V₄, V₅, and V₆. Whereas, V₁ flowered in the 1st week of April. The fruit of

all selections matured during end October except V₂ and V₅ both of which did not show any recordable fruit setting. Green skin color of fruit was noted in V₆ while it was recorded as purple in all other selections, the highest fruit weight of 484 grams was noted in V₁ followed by V₃, V₆ and V₄ with fruit weight as 393, 387 and 323 grams respectively.

PERFORMANCE OF DIFFERENT OLIVE (*OLEA EUROPEA*) VARIETIES AT LOWER HILL, MURREE

The experiment was included in the research program to evaluate the olive varieties for commercial cultivation.

Maximum fruit size (2.86 x 1.86) and fruit weight (6 g) were observed in T₁ (Ottobratica) whereas, highest fruit yield/ tree was recorded as (1009 g) in T₄ (Pendolino) with minimum fruit yield of 156 g/ tree in T₁ (Ottobratica).

STRENGTHENING OF GENEPOOL OF WALNUT (*JUGLANS REGIA*) THROUGH SELECTION OF NEW WALNUT VARIETIES AT LOWER ALTITUDE OF MURREE

The experiment was included in the research program to select new strain / variety having better quality characteristics.

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 (2.10 ft) and stock girth (46 cm) was recorded in V_2 with maximum scion girth (41.7 cm) in V_1 and Maximum plant spread (91 cm) in V_3 .

IMPROVING THE QUALITY OF STRAWBERRY (*FRAGARIA X ANANASSA*) 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.

Negligible and very little sized fruit were observed in T_3 & T_2 (Horizontal & Vertical pipes). However, highest number (1145) of runners was produced in T_3 (Ridges) followed by 495 in T_2 and 150 in T_3 .

RESPONSE OF DIFFERENT OLIVE (*OLEA EUROPEA*) 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.

Among all the eleven varieties, T_1 (Arbequina) surpassed all others depicting highest sprouting %age of 89.67. The rooting %age was noted maximum as (48.67 %), maximum root length (5.13cm) & success

(36.33%) in T_{11} (Ottobratica). While the highest number of roots was counted as (6.23) in T_8 (Koroneiki). This experiment will be executed in April due to long spell of chilling temperature.

EFFECT OF DIFFERENT TIMES ON THE TRUE TO TYPE PROPAGATION OF AVOCADO (*PERSEA AMERICANA*) THROUGH ARIAL LAYERING

This experiment was included in the research plan to produce true to type plants through asexual propagation.

Maximum number of roots (2.33) was found in T_5 (July plantation) with longest roots measuring 1.87 cm and success as 10.33% in the same treatment. Whereas, rooting was not seen in T_6 (August plantation). Due to long spell of chilling temperature and restricted flow of cell sap, the experiment will be executed during the month of April under T_2 and data will be recorded accordingly.

STUDIES ON THE ADAPTATION POTENTIAL OF AVOCADO (*PERSEA AMERICANA*) AT DIFFERENT ACOLOGICAL POCKET IN THE PUNJAB

Present project was initiated to study the performance and adoption of Avocado at various locations of the Punjab in the current era of climate change.

The experimental units comprising of three Avocado varieties, i.e., California Long, Ceylon Blue and Murree Gola has been transplanted at the selected sites/ different horticultural Institutes, Stations and Sub-Stations of the Punjab ranging from Northern district of Rawalpindi to the Southern area of Dera Ghazi Khan and Bahawalpur during the

last week of February and 1st week of March, 2019. Further observations are in progress at all locations.

DEVELOPMENT AND OPTIMIZATION OF AVOCADO (*PERSEA AMERICANA*) VALUE ADDED PRODUCTS

This experiment was started as a joint venture between the Postharvest Research Centre, Faisalabad and Hill Fruit Research Station, Sunny Bank, Murree to study nutritional & biochemical aspects of different avocado varieties; to develop & optimize avocado jam & sauce recipe from different avocado varieties and to study the stability of avocado products during storage.

PROPAGATION OF AVOCADO (*PERSEA AMERICANA*) THROUGH CUTTINGS BY THE USE OF DIFFERENT CONCENTRATIONS OF IBA

This experiment is to be conducted during the months of April and July to produce true to type avocado plants through asexual Propagation. 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) during July, 2018.

Maximum sprouting percentage (60%) was recorded in T₀ (Control), T₁, T₃ and T₄. Highest number of leaves (3.7) was recorded in T₁ (IBA@1000 mg/L) with no rooting.

ACHIEVEMENTS:

1. Provided pedigree fruit plants to the growers on cheaper rates
2. Nursery area has been increased to ensure maximum output.
3. Plantation of 100000 olive cuttings in improved medium (perlite+ sand & soil + sand mixture) in polythene bags and SPTs under Green sheds for root initiation purposes in collaboration with olive Horticulturist of BARI, Chakwal.
4. Initiation of variety approval of Avocado and Walnut along with registration of nursery for certified plant production.
5. Targeted production of nursery plants of various deciduous and hill fruits.
6. Survey, selection and collection of new varieties of various deciduous and hill fruits.
7. Capacity building through trainings about PPRA rules and harvesting and post harvest processing of olive fruit in the Punjab.
8. 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.
9. Performed as External Examiner for Ph.D. Thesis defense at HIS, UAF

- **Publications:**

1. Bioanalytical Characterization and Nutraceutical potential of Avocado Seed extracts. Submitted in the journal “Fruits”
2. Bioanalytical Analysis and Nutraceutical benefits of Avocado (California long) Seed Extracts. Presented in the 2nd International Conference Future Med-2019 (OP-02)

- **Senior Scientist List (BS 18 & BS-18+165)**

Name of Officer & Designation	BS	Place of Posting	Mobile No.	E-mail Address
Dr. Muhammad Afzal, Horticulturist	18+165/sp	Hill Fruit Research Station, Murree	0335-9379138	Mafzal834@gmail.com

- **TV program:**

A programme was recorded regarding the research activities of Hill Fruit Research Station, Murree with senior producer of PTV (Home), Lahore under “Haryali Programme”.

- **Other Activities**

1. Trainings:

- i. Two days training on “**Implementation of Procurement Management Information System (PMIS)**” on 17-12-2018 to 18-12-2018 at Soil Conservation office Rawalpindi

2. Presentations:

- i. Annual Performance Review Meeting of Rawalpindi Division on 10-11 Sept. 2018
- ii. Presented the history and activities of Hill Fruit Research Station, Murree to the GOC and high command of 2nd Div. H.Q. Pak Army at Murree in December-2018
- iii. Progress Review Meeting of Rawalpindi Division on 19-01-2019 at BARI, Chakwal

3. Advisory Services:

113 advisory services were rendered through field visits and telephonic conversation