



**Post Harvest Research Centre
Faisalabad**



Dr. Muhammad Abrar
Director
Off : 0419201686
Cell: 03007273025
phrcfsd@gmail.com

Over View

Post Harvest Research Centre was established in 1989-90 with assistance of ADP/UNDP. The Post harvest technology deals with “produce management after harvesting till consumption” and to maintain quality during storage in order to obtain the maximum market price. The major objective of this Research Centre is to conduct Research and Development work on postharvest quality, safety and marketability of fresh horticultural produce and to extend the research based information to the farmers and exporters.

In 2008-9 Food Technology Section and Bio-Chemistry Section were brought under the umbrella of Post Harvest Research Centre. The Food Technology Section was established in 1968 with the objective to carry out research and development studies on processing, preservation and development of new value added products from various fruits and vegetables. This section has potentially contributed in value addition by developing food products and has trained thousands of human resources both male and female in food processing and preservation techniques. Pilot scale production and sale of various food products is another allied objective, helping to popularize the use of good quality food products among the masses, as well as to deposit handsome income annually to the government treasury.

Accordingly, Bio-Chemistry Section undertakes research, relating to nutritional evaluation of crops and provides analytical services to the farmers, scientists, industrialists and Research Institutions for quality testing of their research materials and products. It also evaluates nutritive values of different varieties of fodder crops for animal feeding and develops strategies for utilization of agro-industrial products, by-products and wastes.

Effect of Hot Water Treatment on Papaya Post Harvest Quality and Enzyme Activity during Low Temperature Storage

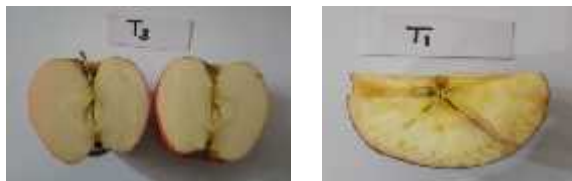
Papaya is a tropical fruit that possesses good nutritional quality attributes but may suffer some post-harvest handling problems due to its susceptibility to decay and insect pests. Papaya fruit at color break stage were procured from the orchard. The fruit was sorted based on uniformity of shape, size, peel color and defected fruits were discarded. Then papaya fruit were immersed in hot water at 55 °C for 3, 6 and 9 mins. Immediately after the HWT the fruit were cooled at 25 °C within 20 min and stored at 12°C±1°C and 85-90% relative humidity. Data regarding weight loss %, decay on skin, firmness, pH, TSS, acidity, and color were noted after 5 days interval. This study showed that papaya immersed in Hot water at 55 °C for 6 minutes showed best quality result as no spots were observed on the surface of fruit and fruit retained its marketing quality upto 21 days.



Impact of CA (controlled atmosphere) Storage on Storage Behaviour and Post Harvest Quality of Apples

This study was aimed to explore the physicochemical behavior of apple stored at

controlled oxygen and carbon dioxide level and at low temperature.



Apples (Red Delicious) were procured from Murree Hill Fruit Research Station and pre-cooled by Reefer Container. Pre-cooled apples were immersed in Calcium Chloride solution (3%) and TBZ solution (1000 ppm) for 3 minutes. Apples were stored at various concentrations of oxygen and carbon dioxide in CA chambers. The storage temperature was set at 0°C± 2°C and 85-95% RH for further studies. Data regarding weight loss %, firmness, TSS, acidity and color was determined at 15 days interval. Apples stored in atmosphere of 2% O₂ and 1% CO₂ showed best results for quality and extended shelf life up to 6 months



Effect of Different Storage Techniques on Physiology of Tomato

Tomatoes have a short post harvest life due to rapid ripening and microbial decay. This study was designed to extend shelf life of tomatoes using different storage methods.

Tomatoes (hybrid variety) were harvested at mature green stage from selected farm. Tomatoes were pre-cooled, washed with 200

ppm sodium hypochlorite solution and dried. Then tomatoes were subjected to various conditions of storage including low temperature storage at 10 °C, CO₂ and O₂ @ 5% each and modified atmosphere packaging (polyethylene). Physico-chemical parameters (weight loss %, color, total soluble solid, Firmness, acidity and decay %) were analyzed after four days interval. Tomatoes stored in Controlled Atmospheric Laboratory chambers (5%O₂+ 5%CO₂) showed best result regarding storage life and quality parameters followed by MAP (Packed in polyethylene bags of 0.05mm) upto 60 & 40 days respectively.



After 40 days in CA



At the end of storage

Standardization of Post Harvest Protocol for Fig Fruit

Figs are highly perishable, which limits storage for long periods and different post harvest treatments are prerequisite to expand the potential markets. Figs are climacteric and slightly sensitive to ethylene action which stimulates fruit softening and decay. Low temperatures and a high relative humidity, modified Atmospheric packaging (MAP) and wax coatings are used for extending its shelf stability and quality.

The fig fruit were harvested on the basis of change in skin color. After washing with antifungal i.e 200ppm sodium hypochlorite solution and drying, figs were subjected to different post harvest treatments like hot water, wax and MAP as per treatment plan. Then fruit were stored at ambient and in cold chambers at 1±1°C and 95% RH.

The shelf stability of fruits was checked up to 10 weeks by physico-chemical and organoleptic evaluation at weekly basis during storage. Data regarding the skin color, specific gravity, dry matter, firmness and total soluble solid was recorded.

Fig fruits stored in MAP created by polyethylene retained their acceptable freshness up to 42 days followed by fruits treated with hot water at 40°C. However, fruits stored at ambient Conditions were deteriorated after 3 days.



Effect of Low Temperature Conditioning on the Storage Quality of Pear Fruit (Pyrus Communis)

Pear fruit is rich in antioxidants, flavonoids and dietary fiber. Appearance of rapid post harvest browning in fruit peel and core during storage and short life span pose a challenge for their marketing. This study was planned to investigate the potential of low temperature conditioning (LTC) to inhibit peel browning and to extend shelf life of pear fruit.

After harvesting the fruits were given a low temperature conditioning (LTC) at 8°C for 1, 3, 6, and 9 days respectively. Fruits without LTC

treatment were regarded as control. All the treatments were stored at $0^{\circ}\text{C} \pm 1^{\circ}\text{C}$ for acceptable period. Physico-chemical data illustrated that Pear fruit kept at 8°C for 6 days remained best in a storage study of 42 days.

Effect of Harvesting Time on Storage Quality of Kinnow Fruit

Pakistan is among top ten citrus producing countries of the world. "Easy peeler" citrus (Kinnow) has assumed special economic importance and export demand being acknowledged for its high juice content, special flavor, and therapeutic values. This study was planned to assess the effects of harvesting time on Kinnow fruit quality and shelf life extension. Kinnow fruit was harvested at mature stage from the Citrus Research Institute, Sargodha in three consecutive months (December, January, and February). After sorting and grading fruit were immersed in hot water at 50°C for 3 minutes with antifungal Thiabendazole (TBZ) @ 1000ppm.



Air dried fruits were stored in Cold chambers and also in controlled atmosphere (CA) Laboratory ($5\% \text{O}_2 + 10\% \text{CO}_2$) at 5°C and 85-90 % relative humidity up to one month. Data regarding weight loss, decay %, pH, acidity, TSS, vitamin C and juice % were

evaluated at weekly basis during storage period which revealed that Kinnow harvested in December and stored in CA showed better retention of quality parameters followed by January and February harvesting respectively.

Impact of Ca Storage on Storage Behavior and Post Harvest Quality of Litchi

Litchi is an excellent source of vitamin C, B-complex vitamins such as thiamin, niacin, and folates and minerals like potassium & copper. The project was designed to explore the effects of CA storage on the storage quality of mature litchi.

Litchi was purchased from the local market and pre-cooled by air blast cooling method. Sorting and grading of litchi were carried out manually on color, size, mechanical damage and diseases incidence basis. Pre-cooled litchi then immersed in 200 ppm TBZ solution. After subsequent drying, fruit was packed in mesh bags and stored in controlled atmosphere laboratory (CA) at different concentration of O_2 and CO_2 chambers at $5 \pm 2^{\circ}\text{C}$ and 90-95% RH for further studies. Data regarding physico-chemical parameters indicated that litchi stored in CA chamber having $4\% \text{O}_2$ and $7.5\% \text{CO}_2$ at 5°C with 90-95% relative humidity, maintained peel color and fruit firmness better than other treatments. CA storage also appears to be an effective method for decay control during storage and maintain quality of litchi fruits upto four weeks.

DEVELOPMENT OF EDIBLE COATING TO ENHANCE SHELF LIFE OF STRAWBERRY FRUIT

Strawberry is a non-climacteric fruit with a very short postharvest life. Quality Losses are mostly due to its relatively high metabolic activity. Fruit is susceptible to water loss, bruising and mechanical injuries due to their soft texture and lack of a protective rind. Edible coatings can extend the shelf life and improve the quality of fruits and vegetables. The aim of this study was to protect fruit from deterioration, extend shelf life and provide a barrier against hazards.

Strawberry fruit was harvested at half ripe stage from progressive farm at Sharaqpur. Fruit were pre-cooled and washed with 150 ppm sodium hypochlorite solution. After that dipping was done in wax solutions of chitosan and carnauba at various concentrations for 60-90 sec. Fruits were stored at $2 \pm 1^{\circ}\text{C}$ and 95% RH for acceptable period. Fruits were evaluated for physico-chemical quality (weight loss %, color, TSS, Firmness, acidity and decay %) at 5-days interval during storage. Strawberry fruits treated with 1% chitosan and 1% carnauba coatings showed better overall performance in storage. While higher concentration of coating material cause gumminess in humid environment and enhance fruit rotting. However, decay % was higher in all treatments, so calcium salts and antifungal chemicals should be included in wax coating material to control decay problem and increase shelf stability of fruits.

FOOD TECHNOLOGY

Medicinal Value Addition of Apple Jam



Apple jam having Medicinal properties was developed with the addition of ginger, aloevera and black pepper in different concentrations with respect to organoleptic evaluation. Ginger at the level of 6% was ranked to be best during six months storage. Similarly for Aloevera concentration of 40% was ranked at the top for organoleptic evaluation. For black pepper 2.5% was ranked at the top for organoleptic evaluation.

Quality Assessment and Shelf Prolongation of Fresh Tomato Juice

Aninnovative product from tomato was prepared as ready to serve juice. After washing, sorting and trimming, tomato fruit was cooked and passed through fine pulper to obtain pulp. Tomato juice was prepared from pulp. Novel tomato juices were prepared following the standard recipe formula. The developed samples were filled in 300 ml PET bottles and stored at ambient storage conditions for further studies. The storage study showed that the treatment containing 25% tomato juice ranked the best regarding physico-chemical and sensory characteristics as compared to other treatments having 15%, 20% and 30% tomato juice.

Kiwi Fruit Value Addition/Processed Products with Non Nutritive Sweetener

This project was designed to develop value added products i.e squash, jam and ready to serve beverage of kiwi fruit according to the product specification with non-nutritive sweeteners (sucrose, Acesulfame K, aspartame) and to study the shelf life of kiwi fruit products during storage. Sensory and physico-chemical analysis showed the acceptability of all samples. No adverse flavor and taste was observed in all the samples during storage.



Development and Optimization of Therapeutic Herbal Turmeric Drink

Turmeric detoxifies the body mind and in this way helps the body cure itself. Fresh turmeric (*Curcuma longa*) and spices (cardamom and fennel seeds) was procured from local market. After washing and peeling the extract of turmeric and spices was prepared by boiling in 100 ml of water for 15 minutes. The filtered extract of both commodities was mixed



through blending machine according to the treatment plan. Pasteurization will be done after adding sugar, preservatives, color and Vit. C @ 0.1% of the drink. The drink will be prepared by mixing the carbonated water according to the standard formula. The brix of each treatment will be maintained approximately at 12.0 and filled in glass bottles. The samples so obtained will be stored at ambient temperature. The physico-chemical results showed that the treatment with 60 percent of turmeric extract was found best.

Development of Grape Juice Concentrates Through Vacuum Concentration Technique for RTS Drinks

Grape juice concentrate was developed through vacuum concentration technique. Five treatments were designed by varying the concentration of citric acid and sodium benzoate. The developed samples were hot filled in 300 ml PET bottles and stored at ambient conditions to evaluate the quality parameters during storage. Different ingredients like sugar, color and flavor were incorporated in the developed grape juice concentrate for ready to serve drink.

Production and Quality Assessment of Karonda- Sweet Orange Functional RTS Beverage



Value added functional beverage was prepared by utilizing karonda and sweet orange juice in different combinations. The treatments were designed by using different ratios of karonda and sweet orange juice. After procurement of fruits from local market, the juice was extracted from both the fruit mixed together through high speed blending machine, according to the treatments. Pasteurization was done after adding sugar, preservative and all other ingredients. Drink was hot filled in PET bottles of 300 ml capacity. The ready to serve Karonda-Orange functional drink so prepared was stored at ambient temperature. The physico-chemical results showed that the treatment with 70:30 of Karonda-orange juices was found the best.

Development and Optimization of Therapeutic Herbal Turmeric Drink

Turmeric detoxifies the body mind and in this way helps the body cure itself. Fresh turmeric (*Curcuma longa*) and spices (cardamom and fennel seeds) was procured from local market. After washing and peeling the extract of turmeric and spices was prepared by boiling in water for 15 minutes. The filtered extract of both commodities was mixed through blending machine according to the treatment plan. Pasteurization will be done after adding sugar, preservatives, color and Vit. C @ 0.1% of the drink. The drink will be prepared by

mixing the carbonated water according to the standard formula. The brix of each treatment will be maintained approx. 12.0 and filled in glass bottles. The samples so obtained will be stored at ambient temperature.

Development and Storage Study of Pomegranate- Pineapple RTS Drink



Pomegranate and Pineapple drink was prepared by varying the percentage of fruit juices. After standardization the prepared drink was hot filled in PET bottles of 300 ml capacity and stored at ambient condition. The physico-chemical analysis and organoleptic evaluation showed that the treatment with 70:30 of pomegranate: juice pineapple juice was found the best

Development of Dietetic Bael- Peach Jam



Bael fruit and peach was procured locally. After washing, peeling and de stoning the fruits, pulp of fruits was prepared. The diet jam was prepared by using low caloric sweetener sorbitol. The physico-chemical analysis of all the treatments was carried out after one-month storage interval as well as the samples were evaluated organoleptically. The results showed that the diet jam prepared with 80% bael pulp and 20%peach pulp ranked best as compared to other treatment having

bael and peach pulp with ratio 100:0, 90:0, 70:30 and 60:40.

Beetroot and kinnow fruit were utilized to develop a value added drink by using different levels of sugar beet and kinnow Prepared drink were analyzed for physico-chemical and sensory characteristics after 15 days interval. The treatment with 70 % beetroot juice and 30% orange juice was found best.

Processing and Quality Evaluation of Coconut Based Jam with Date



A new range of coconut jam with date was developed. After preliminary operations, coconut milk was obtained through squeezing the pulp by muslin cloth. This coconut milk along with 2% fiber and date pulp was utilized in jam preparation. Jam samples so prepared were filled in glass jars and stored at ambient temperature for further studies.

After Physico-chemical analysis the treatment having 90% coconut milk and 10% date pulp was ranked best.

BIO-CHEMISTRY SECTION

Quality comparison of different apple varieties grown in Punjab

Sample of fifteen varieties of apple (Nugget, Amri, Masheddi, Double Red, Sky Spur,

Optimization of Beetroot-Orange Functional Drink



Golden, Jona gold, Star king delicious, Red golden, Spartin, King red delicious, Golden delicious, Golden russet, Ida red and Red chief) were collected from Fruit Research Station, Murree hills and analyzed for pulp, juice, seed, vitamin- C, pH, acidity, TSS, malic acid, firmness, reducing, non- reducing and total invert sugars. Reducing sugar (6.65%), total sugar (11.11%), vitamin C (5.56mg/100ml), TSS (12.9%) and pH (3.8) were found higher in Mashhadi while maximum non- reducing sugar (5.57%), acidity (1.28%) and firmness (7.23kg) were found in variety Golden.

Effect of cutting interval on crude protein, fiber content and dry matter yield of alfalfa

This experiment was conducted in collaboration with Agronomy (Forage Production) Section AARI, Faisalabad. Three stages of fodder for cutting were selected. First cutting was taken 30 days after sowing in all treatments and then cuttings were taken after an interval of 20, 30, and 40 days after first cutting and collected samples were analyzed for crude protein, crude fat, crude fiber, total minerals and Nitrogen Free Extract (NFE). Ash content (11.0%), dry matter (22.8%) and NFE (45.9%) were found better

in second cutting while crude protein (14.5%) and crude fat (5.02%) were found better in third cutting of alfalfa.

Chemical composition of Aloe vera with respect to seasonal variation

Samples of Aloe vera were collected from pots after every three months, starting from July 2016. Fresh plant leaves were used to determine gel %, and fresh gel was used to record pH, vitamin C and TSS. Plant leaves were dried and analyzed for dry matter, crude protein, crude fat, ash, crude fiber, NFE, zinc and iron. During winter (October to March, 2016) Gel percentage (68.7%) and TSS (1.21%) was higher while during summer (April to June, 2017) vitamin C (3.54 mg/ 100 ml) and crude protein (15.4%) was found maximum in various samples of Aloe vera.

Quality comparison of hybrid vs. synthetic varieties of maize and rice

This experiment was conducted in collaboration with Maize Research Station, AARI, Faisalabad, Rice Research Institute, Kala Shah Kaku and Oilseeds Research Institute, Faisalabad. Eight hybrid (FH 922, FH-949, FH-1046, YH-1899, Pearl, YH 1898, FH 988 and FH-1036) and four synthetic varieties of maize (MMRI-yellow, 30Y87, DK 6789, NT-6621) while three hybrid (Maharani 1, Maharani 2 and Sallar) and three synthetic varieties (Super Kernel, KainnatandSupri) of rice were analyzed for crude protein, crude fat, crude fiber, ash and NFE. Maharani 1 in rice was found better due to crude protein (7.68%), crude fat (1.22%), ash content

(0.64%) and crude fiber (0.45%). FH-1036 in maize was found better due to higher crude fat (3.82%) and crude protein (8.49%). Overall hybrid performed better than synthetic both in rice and maize.



Assessment of antioxidant potential of different fruits

Five fruits each of summer (Mango, peach, plum, and grapes) and winter (Banana, apple, dates, guava) were collected from local market. Analysis of samples showed that pH of all the ten fruits were in highly acidic range (2.9 in plum to 4.1 in banana) except date (6.3). In summer fruits higher percentage of TSS, acidity and total phenols was observed in grapes (25%, 0.78%, 1725 µg GAE /ml respectively) while Vitamin C and antioxidants (26.67 mg/100 ml and 90.72% respectively) were found higher in mango. In winter fruits antioxidants (85.85%) and acidity (1.78%) was higher in date while phenols (482.62 µg GAE /ml) and vitamin C (180.67 mg/100ml) was found higher in guava.

Effect of different substrates on the nutritional composition of selected varieties of Mushroom (Agaricus bisporus)

An experiment was conducted to evaluate the effect of different substrates and their combinations on nutritional composition of

Oyster (*Pleurotus* spp.) and Button Mushroom (*Agaricus bisporus*). Substrates were wheat straw, rice straw and cotton waste and their possible combinations. Results revealed that maximum dry matter (16.85 %) and crude fat (2.50 %) were observed with substrates, comprised of rice straw and cotton waste, maximum crude protein (26.60 %) was observed in substrate comprised of wheat straw & cotton waste in oyster mushroom. In case of button mushroom maximum dry matter (12.53 %) and ash (8.35 %) was observed in substrate comprised of wheat straw, maximum crude protein (19.51%) was found in mushroom grown on wheat straw and cotton waste.

Quality evaluation of ruminant's milk with reference to seasonal variation

A study was conducted to evaluate the Ruminants' milk and volatile fatty acid contents of ghee with reference to seasonal variation. Buffalo and cow milk samples were collected in every month from five farmers of Faisalabad and evaluated for different quality parameters. Results revealed that buffalo milk has maximum pH (6.86) and water contents (87.14%) in May, and maximum crude protein (4.87%) in February, while it has maximum fat (5.1%) and specific gravity (1.031) in the month of December. Moreover, ghee made from buffalo milk has highest Reichert-Meissl value (26.95) in December. In case of cow milk, maximum pH (6.62), crude protein (4.10%) and fat (4.4%) was observed in December, while ghee made from cow milk

has maximum Reichert-Meissl value (24.90) also in December.

Effect of irrigation frequencies and its time of application on HCN level in sorghum

The experiment was conducted in collaboration with Agronomy (Forage Production) Section AARI, Faisalabad. Irrigation was applied at different intervals (20, 30, 40 days) after sowing and data regarding HCN level and protein was recorded. Results revealed that there was non-significant difference among the treatments regarding crude protein while HCN was higher in treatments where irrigation was applied at 30 and 40 days after sowing.

Effect of exogenous application of gibberellic acid on nutritional quality of wheat under drought stress

In a pot experiment, the effect of exogenous application of gibberellic acid (GA) on nutritional quality of wheat under drought stress was studied. GA at the rate of 10^{-4} M was applied at 7, 21 and 28 days after germination. Moisture levels of pots were maintained at 40, 60, 80 and 100% of field capacity (FC). Results revealed that maximum grain yield (22.22 g/pot), crude protein (13.15%), crude fat (2.15 %) was observed at 100% FC with GA application. GA enhances yield of wheat at all the level of field capacities.

Differential response of Mung bean (*Vignaradiata*) genotypes towards nutritional quality due to microbial inoculation

In a field trial, the response of 4 mung bean genotypes (Chakwal Mung-2006, AZRI Mung-06, NM-2006 and NM-2011) towards their nutritional quality due to microbial inoculation was studied. Results revealed that the varieties respond differently due to inoculation. Grain yield (1.37 t/ha) and crude protein (25.83 %) was higher in NM-2011, dry matter (95.19%) and phosphorus (0.309%) was higher in AZRI-06 while maximum crude fat (1.42%) was observed in Chakwal Mung 2006 with inoculation.

Effect of potassium on nutritional quality and yield of wheat

A field experiment was conducted to see the effect of potassium on nutritional quality and yield of wheat. Experiment comprised of four doses of potassium 40, 60, 80, 100 kg/ha. Results revealed that potassium application @ 100 kg/ha along with NP produced maximum grain yield (3.51 t/ha), ash (1.82 %), crude fat (2.21 %), crude protein (12.88 %), phosphorus (0.236 %), potassium (0.75 %) and calcium (0.036 %).

Evaluation of nutritional difference in vegetables grown in tunnels (Off season) and field condition (On season)

Four vegetables (cucumber, bitter gourd, capsicum and tomato) samples were collected from farmer's tunnels (Off season vegetable) as well as from farmers' fields (seasonal vegetables). Samples were analyzed and it

was concluded that in all the four vegetables the moisture contents (97, 94.4, 98.1, and 97.4% respectively) and carbohydrates (96, 97.4, 98.1 and 97.4% respectively) were observed higher in vegetables grown in tunnels as compared to moisture contents (94.5, 91.4, 95.4 and 96.1%) and carbohydrates (93.9, 97, 95.4 and 96.5%) in the same vegetables grown in the field without tunnels.

Effect of spatial variation on nutritional quality of vegetables grown in different Tehsils of Faisalabad

Samples of cauliflower and turnip were collected from various villages of Tehsil Jaranwala and Faisalabad. Proximate analysis showed that moisture percentage (97.5, 95.2%), ash (0.38, 0.87%), fats (0.64, 0.15) and protein (1.68, 1.9%) were higher in both the vegetables collected from villages of Tehsil Jaranwala while crude fiber (0.52, 0.46%) and carbohydrates (97.7, 97.8%) were found higher in vegetables collected from villages of Tehsil Faisalabad.

Nutritional quality evaluation of fodder (wheat grass) grown by using brackish water

A field experiment was conducted in collaboration with Soil Salinity Research Institute PindiBhattian to see the nutritional quality of wheat grass fodder grown by using brackish water. Wheat grass was irrigated with brackish water alone and in combination with gypsum and H₂SO₄ @ 50 and 100 % of

gypsum requirement (GR). Results revealed that Gypsum application @ 100% GR on the basis of residual sodium carbonate of water produced maximum fresh fodder yield (10.42 t/ha), ash (14.37 %), crude fat (5.40 %), crude protein (18.20 %) and phosphorus (0.310 %) while maximum dry matter (29.53 %), potassium (1.30 %) and calcium (0.081 %) was observed where H₂SO₄ @ 100% GR was applied.

Effect of Potassium on yield and nutritional quality of pearl millet fodder

A field experiment was conducted in collaboration with Fodder Research institute Sargodha to see the effect of potassium fertilizer on yield and quality of pearl millet fodder. Experiment comprised of three doses of potassium 30, 60, 90 kg/ha in combination with recommended dose of NP (70-60) kg/ha. Results revealed that Potassium application @ 90 kg/ha produced maximum fresh fodder yield (56.46 t/ha), ash (11.45 %), crude fat (1.92 %), crude protein (11.96 %), potassium (1.53 %), phosphorus (0.214 %) and calcium (0.099 %).

Nutritional quality evaluation of different varieties of Peach

Samples of eight peach varieties were collected from Hill Fruit Research Station Murree. From fruit analysis results, it was concluded that flesh (92.01%), pH (3.8), non-reducing sugar (2.12%), total sugar (7.2%), Fe (1.86%) and acidity (0.53%) was observed higher in Florida gold. TSS (15.6%), reducing sugar (5.47%), fiber (1.5%) and phosphorus

(4.13%) was observed higher in peach-3. However non-significant difference was found among all the varieties in case of dry matter and K contents.



Nectarine and Spring crest

Miscellaneous Activities.

- An amount of Rs. 11.26 lacs, from pilot plant production, was deposited into the Government Treasury.
- A 21 days in-house training course was conducted and 32 females were trained.
- 425 ladies; farmers and entrepreneurs have been trained at 16 different places, throughout the Punjab province.
- 40 Radio talks were got recorded for broadcasting. 30 Advisory Services were rendered.
- Supervised 110 students from different Universities and Colleges throughout Punjab Province.
- A total of 395 samples (wheat, maize, garlic, tomato, date, cookies, beverages, maize silage, mung bean, chickpea, guar, rice, guava, ber and berseem) received from different institutes/sections were analyzed for quality parameters i.e. fresh weight, dry matter, peel, stone, pulp, nitrogen, crude protein, crude fat, crude fiber, NFE, antioxidants, phenols, beta

carotene, sugar, vitamin C and mineral matter.

Publication:

- Akhtar, N., A. Hussain. A. Riaz and M. Aftab. 2018. Bioremediation of heavy metals stress by rhizobium chickpea symbiosis. J.Agric.Res. 56(1):27-34.
- Awais M.A; N.Ahmad, M.Rafique, M.Shafique, M. Z. Mushtaq, M.A Zahid and Z.Ahmad"Effectiveness of bacterial inoculation for improving grain yield and quality of chickpea (Desi)"Accepted for publication in journal of Soil and Environment Vol. 36 (2) 2017.

Senior Scientists

1. Dr. Muhammad Abrar, Director
Cell; # 0300-7273025
Email: mabrarft@gmail.com
2. Dr. Ata urRehman
Food Technologist
Cell: # 0333-6603579
Email: ftaari@gmail.com
3. Mr. Muhammad Asghar
Food Technologist
Cell: # 0300-6070366
Malikasghar66@gmail.com.
4. Mr. Nisar Ahmad
Agri. Chemist (Bio)
Cell: # 0300-9664642
Email: acbiochem@hotmail.com
5. Dr. Ahmad Din
Assistant Food Technologist
Cell: # 0321-7535783
Email: ahmaddinft@gmail.com
6. Ms. Zarina Yasmin

Assistant Food Technologist

Cell: # 0301-7151500

Email: phrcfsd@gmail.com

7. Ms. HumairaKausar
Assistant Food Technologist
Cell: # 0334-4884113
Email: ftaari@gmail.com

8. Mr. SharoonMasih
Assistant Food Technologist
Cell: # 0345-7891960
Email: ftaari@gmail.com

9. Mr. Khalid Hussain
Assistant Agri. Chemist
Cell # 0301-7083510
Email: acbiochem@hotmail.com