PROCEEDINGS OF THE
ANNUAL GENERAL MEETING, 1993

The Fourth Annual General Meeting of the Pakistan Society of Food Scientists and Technologists was held on Thursday December 16, 1993 in the Old Senate Hall of the University of Agriculture, Faisalabad. The Secretary of the Society, Dr. Javaid Aziz Awan, welcomed the participants and invited the dignitaries on the stage. The meeting started by recitation from the Holy Quran by Mr. Muhammad Iqbal followed with *Naat-e-Rasool-e-Maqbool* (pbuh) by Mr. Yasser Arafat. In his Presidential address Prof. Dr Muhammad Shafiq Chaudhry, President Pakistan Society of Food Scientists and Technologists elaborated on the functions and history of the Society. He said that within a short period, the professional and associate membership had increased to about 300 with nearly 50% coming from the food processing industry. In addition to the generous financial contributions by the industry, Standard Manufacturing Co. (pvt.) Ltd., has also conveyed its intention to institute a scholarship to an outstanding student of Food Technology in the University of Agriculture, Faisalabad.

Mr. Sultan Ali Chaudhry, the Chief Guest, in his inaugural address emphasized the need and importance of food science and technology. He said that the food processing industry in Pakistan contributed nearly 30 per cent of the manufacturing added value as against 19 per cent accounted for by the textile industry. He further added that food shortage could be prevented by controlling the losses in food commodities which amounted to about 10 per cent in cereals and legumes, and 20 per cent in fruits, vegetables and fish. After the address of the Chief Guest, the Secretary of the Society invited the guests to tea hosted by Peracha Food Industries (manufacturers of Wonder Bread and other bakery products) in honour of the participants.

TECHNICAL SESSIONS

Two technical sessions were held, one in the morning and one in the afternoon. These were chaired by Dr. F. H. Shah (Director General, Retd., PCSIR Laboratories Complex, Lahore) who was assisted by S. Mehtab-ud-Din (Managing Director, Standard Manufacturing Co. pvt. Ltd., Lahore).

Following papers were delivered:

1. Food research activities at the Nuclear Institute for Agriculture and Biology, Faisalabad by Dr. Muhammad Jamil Qureshi, Principal Scientific Officer, Nuclear Institute for Agriculture and Biology, Faisalabad.
2. Brief history and activities of Food Technology Section, Ayub Agricultural Research Institute, Faisalabad by Mian Abdul Malik, Food Technologist, Ayub Agricultural Research Institute, Faisalabad.
3. Local production of carboxymethyl cellulose by Dr. Tanveer A. Chaudhry, Principal Scientific Officer, P.C.S.I.R. Laboratories Complex, Lahore.
4. Fluid extraction and chromatography in foods by Dr. Maqbool Ahmad Bhatti, Synarome Manufacturing Co. (pvt.) Ltd., Shah Alam Market, Lahore.
5. Flavours by Mr. Muhammad Aslam, Director Technical (Flavourist), Standard Manufacturing Co. Pvt Ltd., Karachi.
6. A brief history of Pakistan biscuit and wafer industry by Al Haj Qutubudin A. Khan, Consultant Adviser Biscuits, Wafer, Confectionery, 786 Victoria Park, Shahrah-e-Quaid-e-Azam, Lahore.
7. Research activities in the Department of Food Technology, University of Agriculture, Faisalabad by Dr. Muhammad Ismail Siddique, Associate Professor, Department of Food Technology, University of Agriculture, Faisalabad.

Some papers presented in the Technical Sessions are being published in this and subsequent issues of the Food Science News.

BUSINESS SESSION

The Business Session was chaired by the President, Prof. Dr. Muhammad Shafiq Chaudhry who was assisted by the Vice-President, Prof. Dr. Muhammad Saeed and the Secretary, Dr. Javaid Aziz Awan. It was divided into two parts. In the first part of the session elections for the Executive

Council were held for all the offices which were to fall vacant on December 31, 1993. Dr. F.H. Shah was requested by the President to act as Election Commissioner and conduct the elections. Dr. Shah invited Syed Tafazzal Hussain Shah to assist him. The Election Commissioner invited nominations from the house for each office. Following nominations were received:

1. President - Prof. Dr. M. Shafiq Chaudhry.
   Proposed by Mr. Hamid Ahmad.
   Seconded by Dr. Mumtaz Ali.
2. Vice-President - Prof. Dr. Muhammad Saeed.
   Proposed by Dr. Irshad Hussain Tirmazi.
   Seconded by Mian Abdul Malik.
3. Secretary - Dr. Javaid Aziz Awan
   Proposed by Dr. Faqir Muhammad Anjum.
   Seconded by Dr. Wazir Hussain Shah.
4. Joint Secretary - Dr. Wazir Hussain Shah
   Proposed by Dr. Javaid Aziz Awan.
   Seconded by Syed Asif M. Rizvi.
5. Treasurer - Ms Nuzhat Huma.
   Proposed by Dr. Javaid Aziz Awan
   Seconded by Mr. Said Wahab.
6. Student Counsellors - Mr. M. Asghar Siddique
   - Mr. Imran Ali
   - Mr. Muhammad Ayub Khan

Since there was only one nomination for each office, the nominees were declared as having been elected unanimously. From among the nominees of the office of Student Counsellors, Mr. Muhammad Ayub Khan withdrew his candidature in favour of the other candidates. Hence Mr. Muhammad Asghar Siddique and Mr. Imran Ali stood elected. The Election Commissioner, Dr. F. H. Shah announced the result and congratulated the new Executive Council of the Society. The newly elected members of the Executive Council immediately took oath of their respective offices.

The second part of the Business Session was chaired by the President, Prof. Dr. Muhammad Shafiq Chaudhry who was assisted by the Vice-President, Prof. Dr. Muhammad Saeed and the Secretary, Dr. Javaid Aziz Awan. Prof. Dr. Muhammad Shafiq Chaudhry thanked the members for the confidence posed in the newly elected Executive Council and assured that he and other members would put in more efforts to make the Society more effective. Before inviting suggestions on the activities of the Society, the Secretary also thanked the members. He requested the members to intimate personal news and news about developments in their respective organizations. He requested all members to send a copy each of their published papers to reproduce abstracts in the Food Science News for the interest of others. The Secretary informed the members that some mail was returned to the office undelivered because the member had moved or the address was incomplete. He urged the members to intimate him with any change in the address.

Members actively participated in the proceedings of the Business Meeting and forwarded suggestions which were noted for compliance at appropriate time. Members suggested that a directory of the food industries should be compiled by the Society and that the Society should arrange some seminars. The members also badly felt the need for a journal.

At the end of the meeting, the Secretary thanked the University of Agriculture, Faisalabad for the facilities provided for the meeting. He also paid tribute to the assistance given by the staff and students of the Department of Food Technology as well as Mr. Muhammad Sultan Mahmood. Financial and material support provided by:

Synarome Manufacturing Co. (pvt) Ltd., Lahore,
Standard Manufacturing Co. (pvt) Ltd., Lahore,
Peracha Food Industries (pvt.) Ltd., Lahore,
Pakistan Industrial Promoters (pvt.) Ltd., Lahore,
Punjab Beverages (pvt) Ltd., Faisalabad,

and others was also gratefully acknowledged. He also thanked all the participants and exhibitors who came from all over Pakistan and wished them safe journey home. Before departing, all the delegates were invited to tea hosted by Standard Manufacturing Co. Pvt. Ltd., Lahore.

INAUGURAL ADDRESS

Sultan Ali Chaudhry

Ex. President of Agriculture Chamber Punjab,
Ex. Member of Advisory Council of Integrated Rural Development Programme,
Ex. Member of Agriculture Pesticide Technical Advisory Committee of Pakistan,
Ex. Member Provincial Council Punjab
Managing Director, Zimcon (Pvt.) Ltd and Punjab Farm Machinery Corp. (Pvt.) Ltd.

Dr. Shafiq Chaudhry,
Distinguished Guests and delegates

I am very pleased to be here today amongst such a large gathering of food scientists. It is a source of great satisfaction that you have such an active society and have made significant progress in a short span of four years. It is also interesting to see that the membership of this society is drawn from the teaching institutes, research institutes and the food processing industries, a perfect blend for a viable and functional organization.

Food is basic to life and is the primary requirement of human beings. Food production, food trade and food processing activities are of immense importance to ensure a regular and uninterrupted supply of pure and hygienic food to the people, which ultimately affects human health.

In Pakistan the food processing industries contribute nearly 30 per cent of the manufacturing value added as against 19 per cent accounted for by the textile industry. The size and number of food processing industries has grown significantly and so has food production. But it has not kept pace with growing requirements of food in the country.

Food shortages are prevalent in the world and Pakistan is no exception. Except for the first few years of our independence, we have been importing various food items such as grains and vegetable oils. Total production of foods in Pakistan has no doubt increased significantly over the years, but the per capita availability of foods has decreased due primarily to very high rate of increase in the population. However, that is not the whole story. Food losses have also contributed to this problem. It has been estimated that our post harvest losses in case of grains and pulses are more than 10 per cent and in case of non grain foods like fruits, vegetables and fish, the losses are more than 20 per cent. In terms of rupees the losses of food grains (primarily wheat and rice) are of the value of more than 4000 million rupees. The value of non grain food losses in the post harvest phase is even higher. If we can control these losses an additional 10 per cent of food grains and 20 per cent of non grain foods can become available for human consumption which can make our country self sufficient in food over night. Provided of course the rate of increase in population is also controlled. At the present rate of increase in population the total population of Pakistan will reach 145 million by the turn of the century. This will further squeeze the per capita availability of foods in the country. The present Government is assigning high priority to population control.

To control food losses is a very big challenge to you, the food scientists, technologists and the industrialists. It is for you to develop such methods/procedures/ programmes in order to minimize these losses in the processing and marketing channels.

Once we have achieved the target of self sufficiency, we will need to go ahead to produce food for those countries of the world which are perpetually deficient in foods. Our country is blessed with such natural resources that we can not only feed our people but should also be able to spare significant quantities of food for the other needy countries. With these few words I declare this 4th meeting of the Pakistan Society of Food Scientists and Technologists open.

KEYNOTE ADDRESS

Prof. (Retd.) Dr. Muhammad Shafiq Chaudhry
President,
Pakistan Society of Food Scientists and Technologists.

Chief Guest, Sultan Ali Chaudhry and delegates:

It is my proud privilege to welcome you to the Fourth Annual General Meeting of Pakistan Society of Food Scientists and Technologists. Today, I would like to share with you some of my feelings about our Society. This Society was in the making for the past 35 years. I recall the first mention of such an Association in 1960 from Mr. C. W. Eddy who contributed immensely towards the introduction of teaching of Food Technology in Pakistan. This proposition was considered by our friends in the PCSIR organization on various occasions. However, the realization of this objective remained elusive till the year 1980 when a group of Food Technologists from University of Agriculture, Faisalabad and Ayub Agricultural Research Institute, Faisalabad got together and declared the formation of Pakistan Society of Food Scientists and Technologists. This society remained dormant for nearly a decade. This dormancy was broken in 1990 by which time a whole new generation of young Food Technologists had come of age. It was here in the Senate Hall of the University of Agriculture, Faisalabad that we decided to revive the Society and had held the First Annual General Meeting. During the past three years, we have progressed steadily and significantly towards the achievement of goals defined in the By-Laws of our Society. It is indeed gratifying to note that the number of our Professional members has increased to 300, out of which nearly 50% come from the food processing industries and the balance is contributed by teaching and research institutes. Food processing industries have not only contributed the largest number of professional members but have also contributed generously financially. Mr. Mahtab-ud-Din, Managing Director of SMC is present with us today and he has very graciously conveyed his intention to institute a scholarship to outstanding student of Food technology in the University of Agriculture, Faisalabad.

The Society had initiated the publication of Food Science News on quarterly basis which has served as a useful means of communication among our members. Some of our worthy members have suggested that we may start thinking about expanding the scope of Food Science News by publishing scientific papers and reviews. I had indicated similar intentions in my Message published in the first issue of this publication. The matter shall be considered by the Executive Committee. In order to broaden the canvass of our activities, I have been actively considering the introduction of the concept of Chapters. I, with the help of the Executive Council, shall endeavor to present a revised Constitution of our Society in the next Annual General Meeting which shall contain the provision of Chapters.

Whatever little we have achieved so far, has been possible because of you, the members of this Society. I hope that this spirit of cooperation will continue and that our Society will grow and flourish in the years to come.

A Brief History of Biscuit and Wafer Industry of Pakistan[1]

Al Haj Qutubuddin A. Khan
Consultant Adviser
Biscuits, Wafer, Confectionery,
786 Victoria Park,
Shahrah-e-Quaid-e-Azam, Lahore.

I have been invited to present a brief history of biscuits and wafer industry of Pakistan.

At the time of partition in August, 1947, we inherited only one biscuit industry which was located in Sukkar (Sindh) and was known as J.B. Mangaram. After the partition, the same company was renamed as Yaqub Biscuits. It had a production capacity of 1200 tons per annum. This status continued till 1953 and in 1954 three more industries were established in the country, having a production capacity of 3600 tons per year. Then, in 1960 two more factories came up having capacity to produce 3000 tons per annum. The total production capacity in the country was approximately 7800 tons till 1967/1968. From 1970 there was further improvement in the manufacturing of biscuits, with the introduction of locally fabricated equipment. Many biscuit manufacturing concerns based on locally fabricated machines were established throughout Pakistan. These units could produce approximately 10 tons biscuits at a time. A large industry known as English Biscuit Manufacturers was also in operation in 1969/70 which had a production capacity of 8000 tons per annum. During this period there was a great consumer demand for biscuits which had been created due to mass advertising by Peak-Freans Products, Sunny Biscuits of Lahore, and Montgomery of Sahiwal.

Between 1983 and 87, five new projects were set up and three expansions were made in the existing industries. At present the modern factories with foreign machinery have the capacity to produce 40,000 tons of biscuits per annum: and the unorganized sector equipped with locally fabricated machines (which number about 100) produce about 40,000 tons of biscuits per annum. The craft bakeries are not included in the above estimates.

These changes have created a great impact on the biscuit and wafer industry in Pakistan. Today, we are producing excellent biscuits of international standards. This awareness came because of the fact that leading manufacturers have aroused interest in the consumer minds through advertisements. The Pakistanis serving abroad are also pioneers of introducing the taste of biscuits to their families. Our population growth is also growing at a very high rate with resultant increase in urban population. These changes have created a demand for such foods because they meet the immediate entertainment needs of people.

Ladies and Gentlemen, I would like to inform you that our cost of production is increasing at a very fast rate. The basic reason of increase is the rising cost of packaging material which is mostly imported. If the Government takes this matter into consideration and creates such industry to produce packaging material at a lower price for the uplift of this industry as well as standard of packaging to gain better shelf live.

Our per capita consumption of biscuits is still only 800 grams per year, whereas it is 1.5 kg in our neighbouring country, India. In the developed countries it is as high as 6 to 8 kg per year.

[1]Paper presented at the 4th Annual General Meeting of the Pakistan Society of Food Scientists and Technologists held in December, 1993 at the University of Agriculture, Faisalabad.

RECENT PUBLICATIONS

The abstracts are being reproduced in the quarterly Food Science News to keep the scientists and professionals abreast with the latest findings. Those interested in particular articles should please write directly to the author whose address appears with the abstract. The researchers are requested to send reprints of their recent publications (from 1990 onwards) to the Secretary, Pakistan Society of Food Scientists and Technologists, C/o Department of Food Technology, University of Agriculture, Faisalabad-38040, for publication in the forthcoming issues of Food Science News.

FRUITS AND VEGETABLE

HABIB AHMAD RATHOOR, MOHAMMAD SAEED, SAID WAHAB AND MOHAMMAD JAWAID DURRANI. **Studies on the influence of packaging materials on the total glycoalkaloid content of potato cultivars during storage.** J. Sci. Technol., Univ. Peshawar, 15: 31. 1991.
Department of Food Science & Technology,
NWFP Agricultural University, Peshawar.

The effect of various packaging materials on the total glycoalkaloid content in potato cultivars of cardinal and desiree packaged in perforated and non-perforated bags of jute and polyethylene were investigated. The studies were made at 20-31 °C and 76.70 to 65.00% relative humidity for a duration of 60 days. The TGA content was influenced significantly by packages, cultivars and storage period. The TGA level was comparatively lower in potato cultivars which were packaged in jute bags perforated and non-perforated than polyethylene perforated and non-perforated bags during the entire storage period. The TGA content was significantly higher in unpackaged potato tubers under similar storage conditions.

ABDUL JABBAR, MOHAMMAD RAUF KHAN, SHERIN IQBAL AND N.A. SUFI. **Quality characteristics of some citrus fruits grown in NWFP.** J. Sci. Technol., Univ. Peshawar, 12: 41. 1988.
PCSIR Laboratories, Peshawar.

Physico-chemical composition of citrus fruits such as Red Blood, Ruby Red, Musambi; Feutrell's Early, Kinnow, Washington Navel, Jaffa Malta Nagpuri, Sikri and Hamlin of different Divisions of NWFP. like Peshawar, Mardan, FATA and Hazara was determined. The quality parameters included were: average weight, average size, juice content, pH, acidity, total soluble solids, Brix acid ratio and ascorbic acid content. The results revealed that the highest weight was of Washington Navel of Peshawar Division (287 g), highest per cent juice of Musambi of Hazara (68%); L. ascorbic acid was found to be highest in Washington Naval of Mardan (63 mg/100 g), while the maximum Brix acid ratio (76) was in Feutrell's Early of FATA. The overall results revealed wide variations among the varieties as well as the division for different quality parameters.

MUHAMMAD JAWAID DURRANI, RAFIULLAH KHAN. MUHAMMAD SAEED AND ADAM KHAN. **Development of concentrated beverages from "Anna apples" with or without preservatives by controlling activity of water for shelf stability.** Sarhad J. Agri., VIII (1): 23. 1992.
Department of Food Science & Technology,
NWFP Agricultural University, Peshawar.

Sweetened apple juice concentrates having intermediate moisture content were developed. Crystalline sucrose alone, sucrose:glucose mixture (7:3) and fructose were used as sweeteners and humectant. Apple concentrates with crystalline sucrose having 60.55% TSS indicated 0.915 water activity (a_w). The concentrates prepared with sucrose:glucose (7:3) having 68.5% and fructose 69.5% TSS resulted in a_w of 0.68 and 0.83 respectively, indicating maximum shelf stability due to their lower a_w values even without added chemical preservative.

The concentrates with sucrose:glucose (7:3) sweetener had the highest overall acceptability with regard to its organoleptic quality.

MUHAMMAD RAUF KHAN, ABDUL JABBAR, SHERIN IQBAL AND N.A. SUFI. **Natural sodium and potassium content of citrus fruits grown in N.W.F.P.** J. Sci. Technol., Univ. Peshawar, 13: 1989.
PCSIR Laboratories, Peshawar.

In Pakistan citrus fruits are consumed directly as human food more than any other fruit. Moreover citrus fruits are prescribed in diets to correct electrolyte balance because of their favourable sodium to potassium ratio. With this consideration,

natural sodium and potassium content of citrus fruits such as Red Blood, Ruby Red, Musambi, Feutrell's Early, Kinnow, Washington Naval, Jaffa, Malta Nagpuri, Siki and Hamlin of different localities of NWFP like Peshawar, Mardan, FATA and Hazara, were studied. The results showed that the sodium contents ranged 5-29mg/liter of juice while the potassium 1260-2730mg/liter. The sodium to potassium ratio ranged from 1:60 to 1:344. The study indicated considerable variations among varieties and locations for natural sodium and potassium contents and sodium to potassium ratio.

N.A. SUFI, SHERIN IQBAL, MUHAMMAD RAUF KHAN AND AZRA YASMIN. **Studies on pear juice. I - Preparation of enzymatically clarified juice and its concentration to produce high degree Brix concentrate.** Pak. J. Sci. Ind. Res., 35 (12): 1992.
PCSIR Laboratories, Peshawar.

Three varieties of pears Leconte, Kieffer and Batang were analyzed for their physio-chemical composition. Juice yield was found to be 83.8,81.7 and 83.6% respectively in Leconte, Kieffer and Batang. Maximum ascorbic acid was found in the Laconte and minimum in the Kieffer. Pectolase enzyme was used to obtain clear pear juice. Physio-chemical changes during concentration of the juice were noted. The clear pear juice and concentrate was organoleptically evaluated. On overall quality, juice and concentrate obtained from Leconte was rated superior.

TASNEEM TARIQ, MUHAMMAD RAUF KHAN AND FAZLUR REHMAN. **Effect of storage on the quality of dehydrated guava** (*Psidium guajava* **L).** Pak. J. Sci. Ind. Res., 33 (8): 1990.
PCSIR Laboratories, Peshawar.

Guava was purchased from the local market for dehydration. The powder was packed in sealed polyethylene bags, closed jars and desiccator at room temperature (13.35%). The fresh guava was analyzed for chemical composition. The freshly prepared guava powder was also analyzed and contained 5.2% moisture and 1426.30 mg/100g ascorbic acid. The powder was also analyzed for non-enzymatic browning measured as optical density (O.D.) at 400nm. The guava powder packed in different containers, was analyzed periodically at monthly intervals for 9 months. Maximum retention of ascorbic acid was observed in powder stored in desiccator and minimum kept in polyethylene bags. The effect of SO_2 on the quality of guava powder and moisture on the loss of ascorbic acid was also studied.

MUHAMMAD RAUF KHAN AND N.A. SUFI. **Non-enzymatic browning in dehydrated vegetables during storage.** J. Sci. Technol., Univ. Peshawar, 13: 1989.
PCSIR Laboratories, Peshawar.

The present report covers the effect of SO_2, different packages and storage temperature on the non-enzymatic browning in dehydrated vegetables. The vegetables were stored for 6 months at room temperature and at 0-2°C. Maximum browning was observed in the dehydrated vegetables stored in unsealed polyethylene bags at room temperature. No significant browning was noticed in the vegetables stored in sealed pouches (Polyethylene bags) and tin containers at 0-2°C. The colour of the examined samples was measured as optical density by using spectrophotometer. The role of moisture content and SO_2 in non-enzymatic browning is also discussed.

MUHAMMAD RAUF KHAN, ABDUL JABBAR AND N.A. SUFI. **Preliminary studies on the preparation of intermediate moisture guava slices.** J. Sci. Technol., Univ. Peshawar, 12: 49. 1988
PCSIR Laboratories, Peshawar.

Intermediate moisture guava products (IMGP) were prepared after pretreatment of guava slices. The slices were dipped in the cold (room temperature) sugar syrup (67% sucrose) and dehydrated in the hot air cabinet dehydrator to moisture level of 27%. The products were stored in sealed polyethylene bags at different temperatures. Losses of L. ascorbic acid during process and storage has been studied. The lowest retention of L-ascorbic acid in the IMGP stored at room temperature and 37°C has been observed. highest retention of L-ascorbic acid was found in the IMGP stored at 0-2°C. The rate of colour deterioration in the intermediate moisture guava slices was studied as optical density (O.D.). Wide variations were observed in the optical density of the IMGP stored at varying temperatures. Difference in the total acidity and sugars concentration of the IMGP stored at varying temperatures. Difference in the total acidity and sugars concentration of the IMGP stored at different temperatures have been recorded. The role of moisture content in the IMGP is also discussed.

MUHAMMAD RAUF KHAN, SAMIULLAH AND N.A. SUFI. **Foam-mat drying of tomato ketchup.** Sarhad J. Agri., 2 (1) : 1986.
PCSIR Laboratories, Peshawar.

The Foam-mat drying technique has been applied for the dehydration of tomato ketchup. Effect of drying time and foam temperature on the rate of drying and quality of the product has been studied. The foam was dried at 60°C, 70°C and 80°C, for different lengths of time. Good quality tomato ketchup powder with rehydration ratio of 1:2.5 has been produced by drying the foam at 70°C for 50 minutes.

ABDUL JABBAR, MUHAMMAD RAUF KHAN, N.A. SUFI AND SHERIN IQBAL. **Quality characteristics of some guava (*Psidium guajava* L).** J. Sci. Technol., Univ. Peshawar, 12 : 45. 1988.
PCSIR Laboratories, Peshawar.

Physico-chemical qualities of some promising varieties of guavas (*Psidium guajava* L.) of the NWFP, were studied. A considerable variability in fruit weight, size, juice, pH, acidity, total soluble solids, sugar-acid ratio and ascorbic acid content, was observed. The white variety of guava of Peshawar produced the maximum fresh weight (194 g) with the largest size (51.57 cm^2) and the highest pH (3.99). The juice was the highest (80%) in the rose pink guava of D.I. Khan. The white guava of D.I. Khan exhibited the maximum total soluble solids (12.5%). The sugar-acid ratio (44) and ascorbic acid content (332 mg/100) were higher in guava-white of Kohat. The overall results showed wide variations among the varieties in relation to localities for different quality parameters.

ABDUL JABBAR, MOHAMMAD RAUF KHAN, N.A. SUFI AND SHERIN IQBAL. **Quality characteristics of commercial apple (*Pyrus malus*) cultivars grown in N.W.F.P.** J. Sci. Technol., Univ. Peshawar, 12: 37. 1986.
PCSIR Laboratories, Peshawar.

Physico-chemical characteristics of three apple cultivars were determined. The quality parameters included were average weight, size, juice, pH, acidity, total soluble solids, sugar acid ratio and ascorbic acid. The results indicated the highest weight (232 g) of Golden Delicious of Hazara, whereas the largest size (55.30 cm^2) and the maximum juice (84%) in the Ambri of Hazara. pH was prominent in Golden-Delicious of Hazara. Due to higher acidity (0.71%). Ambri of FATA was the sweetest due to 15% total soluble solids with sugar-acid ratio of 34. Ascorbic acid was higher (6 mg/100 g) in Golden Delicious of Peshawar and FATA, Red Delicious of FATA, and Ambri of Hazara. The overall results showed considerable variation among the varieties and localities for different quality parameters.

MUHAMMAD RAUF KHAN, SHERIN IQBAL AND N.A. SUFI. **Influence of variety on the quality of canned cauliflower.** Pak. J. Sci. Ind. Res., 31 (4) : 1988
PCSIR Laboratories, Peshawar.

Five varieties of cauliflower, grown locally namely Mid-early, Matra, Gachi, Faisalabad and Swat Local were studied for their chemical composition and suitability for canning. Data on chemical composition has been presented. The cutout examination of canned cauliflower varieties showed that the varieties Matra and Faisalabad had good colour, texture and taste. These varieties were rated superior to canned products from other varieties in overall quality besides meeting the requirements of Army Supply Corps (ASC) specifications for drained weight and disintegration. Ascorbic acid losses in canned cauliflower were 52.2 to 66.9% during 6 months storage and 66.3 to 70.1% during 12 months storage at room temperature (13-35°C). Maximum retention of ascorbic acid during processing and storage was observed in Matra and Faisalabad varieties, while maximum loss of ascorbic acid during processing and storage was observed in Matra and Faisalabad varieties, while maximum loss of ascorbic acid was recorded in Swat Local, Gachi and Mid-early varieties on overall basis. Cultivars Matra and Faisalabad were found suitable for canning.

CEREALS AND LEGUMES

RAFIULLAH KHAN, MOHAMMAD JAWAID DURRANI, SAID WAHAB, L.S. WEI AND MOHAMMAD SAEED. **Studies on the sensory evaluation, hunter colour values and total microbial count of canned sweetened intermediate moisture soy concentrates during storage.** Sarhad J. Agri., IX (6): 1993
Department of Food Science & Technology,
NWFP Agricultural University, Peshawar.

Intermediate moisture canned sweetened soy concentrates were formulated using fructose and sucrose/glucose (7:3). The desludged canned soy concentrate formulated with these two sweeteners were evaluated to be superior in taste and flavour to

whole soy concentrate with the same sweeteners. The hunter colour values indicated that the colour of desludged soy concentrates were comparatively darker than the whole soy. The prolong heating of soy slurry during evaporation have an adverse effect on the colour of the formulations. The microbial studies revealed no evidence of spoilage during four months storage. The protein content of the formulations were slightly lower than the commercial sweetened condensed cow's milk.

ALAM ZEB, MUHAMMAD SAEED, SAID WAHAB AND RAAD RAZAK. **Effect of natural fermentation on phytic acid in chickpea.** Scientific Khyber, 7 (1): 25. 1994.
Department of Food Science & Technology,
NWFP Agricultural University, Peshawar.

Influence of natural fermentation on phytic acid in white chickpea (*Cicer arientinum* L.) variety ILC 202 involving pH (2-8) and temperatures (30-50°C) was studied. The results revealed that phytic acid reduced at each temperature and pH of fermentation used for 24, 48, and 72 hrs. Fermentation influence at pH 6 was higher than in water and other pH values to reduce the level of phytic acid. Maximum elimination of phytic acid (92%) was achieved during fermentation of chickpea for 72 hrs at pH 6 and temperature of 50°C. It was found that fermentation is a simple and inexpensive method of lowering phytic acid in legumes.

RAFIULLAH KHAN. **Physico-chemical properties and shelf-stability of formulated intermediate moisture whole and desludged soy concentrates.** Sarhad J. Agri., 6 (4): 335. 1990.
Department of Food Science & Technology,
NWFP Agricultural University, Peshawar.

Formulations of whole and desludged concentrates using the Smith equation and parameters resulted higher a_w than the predicted value. This was attributed to some interaction between sugars and soy components. The interacted amount of each sugar was quantitatively determined and added back in the formulations to achieve the desired a_w (0.86) for shelf-stability. The activity, NMR mobility of water and rheological properties of the canned soy-sugar concentrates were also determined. Sucrose/glucose mixture (7:3) was found to be a better sweetener for incorporation in the soy-system. Desludged soy sucrose:glucose (7:3) had greater overall acceptability. All formulations had a_W below 0.86 and microbial studies revealed no evidence of spoilage, the product had shelf-stability greater than six months at ambient temperature.

SHERIN IQBAL, AMJAD HUSSAIN AND N.A. SUFI. **Studies on sorghum. I. Chemical composition and amino acid, analysis of some indigenous varieties of sorghum.**
Pak. J. Sci. Res., 39-40, 1987-88.
PCSIR Laboratories, Peshawar.

In Pakistan, the staple food is wheat followed by rice and maize, sorghum is, however, grown on a vast area. The major portion of crop is utilized as animal feed. It is used in limited quantity as nan, chappatis and puffed sorghum. Twenty four varieties of sorghum grown in various parts of Pakistan were analyzed for proximate composition. Achokartaho and NKX 4071 were found to have a higher protein content (12.8 and 12.3% respectively) as compared to others. Red Janpur and Celoland contained lower protein content, 8.5 and 9% respectively. Out of four varieties examined for amino acids, three for them, i.e. D. G. Pirll, Local and J.S. 263, had higher lysine content than that of wheat.

FATS AND OILS

SHERIN IQBAL, AZRA YASMIN, N.A. SUFI AND ALTAF HUSSAIN. **Physico-chemical properties of guava seed oil.** Pak. J. Sci. Ind. Res., 34: (4) 1991.
PCSIR Laboratories, Peshawar.

Seed of guava fruit yielded 9.26% oil on fresh seed basis. The seed oil, extracted with solvent hexane, on analysis by gas chromatography showed a fatty acid composition of C 6:0 (0.26%), C 8:0 (0.83%), C 12:0 (0.02%), C 14:0 (0.06%), C 16:0 (8.14%), C 18:0 (3.04%), C 1(3.04%), C 18:28 (75.52%).

SHERIN IQBAL, AZRA YASMIN, MOHAMMAD RAUF KHAN AND N.A. SUFI. **Fatty acid composition of apricot kernel oil.** Sarhad J. Agri., IX (2) : 1993.
PCSIR Laboratories, Peshawar.

The apricot (*Prunus armeniaca*) variety NJA 13 cultivated in Parachinar, NWFP (Pakistan) was purchased from the local market. The kernels were used for the percentage of oil extracted and fatty acid composition. The apricot kernels contained 46.5% oil. The oil was analyzed for the fatty acids using gas chromatography. It showed fatty acid profile of C 6:0 (8.1938%), C10:0 (0.1507%), C12:0 (5.6258%), C14:0 (1.0642%), C16:0 (2.276%), C18:0 (1.75%), C18:1 (68.8822%), C18:2 (15.773%). The

apricot kernel oil was also analyzed for colour, specific gravity, refractive index, saponification value and iodine value. It was also evaluated for edible purposes and also is being used in cosmetics.

FOOD CHEMISTRY

RAFIULLAH KHAN, SAID WAHAB AND MOHAMMED JAWAID DURRANI, L.S. WEI. **Studies on flow property (viscosity) of nutritive sweeteners at various concentrations.** Sarhad J. Agri., Vol. X (5): 1994.
Department of Food Science & Technology,
NWFP Agricultural University, Peshawar.

Crystalline sweeteners namely sucrose commercial grades, glucose, sucrose/glucose mixture 7:3 and fructose at a solute concentration ranging from 30 to 60% were evaluated for their flow property (viscosity). A Haake Rotoviski model RV3 with a NV sensor system was used to record the flow curve as rpm vs torque. The shear stress and shear rate data were converted into viscosity. All the nutritive sweeteners showed a constant level of viscosity independent of shear rate indicating Newtonian flow behavior at the level of concentrations studied. The four sweeteners irrespective of their solubility and other characteristics showed that fructose had the lowest viscosity followed by glucose and sucrose/glucose 7:3 mixture. The four sweeteners had the viscosity less than 15 milli pascal seconds (mPas) upto 50% solute concentration which increased tremendously at 60% and above.

RAFIULLAH KHAN, D. STEHLI, L.S. WEI, M.P. STEINBERG AND S. MUNIR. Activity and mobility of water in sugar solutions and their rheological characteristics. Sarhad J. Agri., 6 (1): 47. 1994.
Department of Food Science & Technology,
NWFP Agricultural University, Peshawar.

For the preparation of a shelf-stable soy concentrate, water activity and viscosity are of primary importance. The ratio of solute and polymer water in a mixture is strongly influenced by the added sugar. Each sugar has its specific characteristics of solubility and water binding capacity. Four nutritive sweeteners, sucrose, sucrose:glucose mixture (7:3), glucose and fructose were evaluated for rheological characteristics, water activity and water mobility to determine their suitability as sweeteners for incorporation in sweetened soy concentrate. fructose and sucrose:glucose (7:3) exhibited greater water binding capacity. The two sweeteners also resulted in lower aw and viscosity of sugar-water system.

FREE PUBLICATIONS

Following publications, in Urdu are available free of cost from the Food Technologist, Agricultural Research Institute, Tarnab, Peshawar. Please send requests direct.

1. Importance and products of potatoes. No.44, 1991.
2. Home-scale production of tomato products. No. 45, 1991
3. Home-scale production of vegetable candy. No. 47, 1991.
4. Home-scale production of jam, jelly and marmalade. No. 48, 1991.
5. Home-scale production of squashes and syrups. No. 49, 1991.

GLIMPSES FROM THE FOURTH ANNUAL GENERAL MEETING

BUSINESS SESSION

Inaugural Session: Speaking on the occasion are: From Left to Right: Prof. (Ret Muhammad Iqbal presenting Naat-e-Rasool-e-Maqbool (pbuh) and Yaser Arafat re Aziz Awan, Sultan Ali Chaudhry and Prof. (Retd.) Dr. Shaukat Ali Chaudhry.

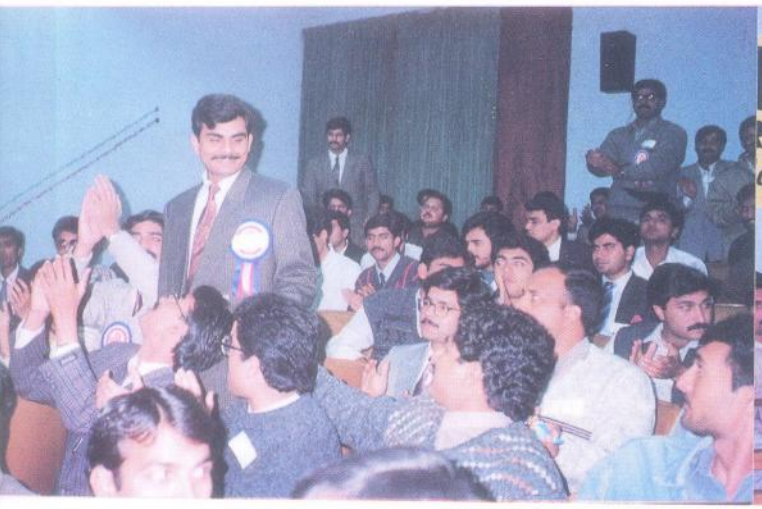
Technical Session: From Left to Right are: Tanveer Ali Chaudhry, Sultan Mahı Muhammad Aslam and Maqbool Ahmad Bhatti. On chairs sitting are: Mahtabuddin Agricultural Engineering and Technology, University of Agriculture, Faisalabad is pro

Elections: Dr. F.H. Shah and Syed Tafazzul Hussain Shah.

Applause on unanimous election.

Dr. M. Shafiq Chaudhry, Dr. Javaid Aziz Awan and Sultan Ali Chaudhry while
g from Holy Quran. Sitting on the chairs are: From Left to Right are: Dr. Javaid

d Chaudhry, Dr. M. Ismail Siddique, Jamil Qureshi, Qutubuddin A. Khan,
Dr. F.M. Shah. Amongst the audience Dr. A.D. Chaudhry, Dean, Faculty of
ent.



atulating newly elected student councillor, M. Asghar Siddique.

Installation Ceremony of newly elected executive council of PSFST.

A visit to the Department of Food Technology, University of Agriculture, Faisalabad.
Dr. Faqir M. Anjum briefing the delegates.

At the exhibition of SMC Stall.

IMPORTANT NOTICE

The Executive Council of the Pakistan Society of Food Scientists and Technologists in its meeting held on June 8, 1994 decided to bring out a Journal to cater for the needs of the scientists and professionals working in different spheres of the discipline. Following Editorial Board has been has been constituted in accordance with Article IX, Section II of the By-Laws:

Editor in Chief	*Dr. Javaid Aziz Awan* Associate Professor, Department of Food Technology, University of Agriculture, Faisalabad.
Member	*Dr. Wazir Hussain Shah* Principal Scientific Officer, PCSIR Laboratories Complex, Ferozepur Road, Lahore.
Member	*Dr. Faqir Muhammad Anjum* Associate Professor, Department of Food Technology, University of Agriculture, Faisalabad.

Starting from the first issue of 1995, research papers, review articles and others of interest to the professionals will be published in the Journal.

The name of the Journal will be decided at the next Annual General Meeting of the Society, scheduled to be held on December 22, 1994 at the NFWFP Agricultural University, Peshawar. Authors wishing to submit papers for publication in the Journal are requested to kindly read and comply with the GUIDELINES FOR AUTHORS.

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NEWS

Second International Conference on the Impact of Food Research on New Product Development will be held from 28th to 31st January 1995 at Sheikh Zayed Centre, University of Karachi, Karachi. This Conference is being organized jointly by the Department of Food Science and Technology, University of Karachi, Karachi, Department of Food, Fisheries and Environmental Studies, University of Humberside, Grimsby, U.K., Department of Food Science and Technology, University of California Davis, California, U.S.A. and Lever Brothers Pakistan Ltd., Karachi. All enquiries regarding the Conference should be addressed to the Department of Food Science and Technology, University of Karachi, Karachi.